



Electronic Timers

Time Switches

Sensing, Control & Monitoring Relays

Plug in Relays & Sockets, Latching Relays, Sequence Relays

Alarm Integrators & Annunciator Systems, Panel Audibles

MCB's, RCBO's & Fuse Holders

DC Power Supplies & DC to DC Converters

Voltage Transformers

Hour Counters & Operation Counters

Current Transformers

Din 48/72/96mm Analogue Meters

Digital Panel Meters

KWh & Multi Display Energy Meters

Electrical Transducers

Analogue Signal Isolators, Converters & Generators, Trip Amplifiers

Lightning & Voltage Surge Arresters



Tel: 01276 25858 & 0161 626 5316 www.foxtamcontrols.co.uk

INTRODUCTION





Foxtam Controls is a proud British designer and manufacturer of low voltage control and instrumentation products. We are delighted to introduce our latest all-encompassing catalogue, featuring all our latest innovations.

Founded in 1977 Foxtam Controls has an enviable reputation for engineering well designed, quality constructed products in line with latest market requirements. Our well funded research and development department, in conjunction with our external sales team, liaises closely with our customers and prospects within their relevant market sectors, bringing well executed products to market in a timely manner.

Supplying control panel and switchgear manufacturers along with OEM's and end users, many products have been developed for specific applications in industries such as railways and transportation, clean water supply and sewage treatment, telecommunications and PV solar installations.

We further support our own British manufactured products with some carefully selected complimenting products from quality overseas partners. These partners are generally located within Europe and Taiwan, our partners are carefully and continuously vetted to ensure quality and continuity of supply is maintained. Many of our partner relationships have been in existence in excess of 25 years.

Prior to April 2015 Foxtam Controls was known as Nortonics Foxtam Ltd. Nortonics Foxtam Ltd was in April 2015 purchased by Midland Automation Ltd, with the name reverting to Foxtam Controls. We trade as an autonomous division of Midland Automation Ltd, whilst maintaining the same ethos and disciplines that our customers expect.

The team at Foxtam Controls trusts that you will find our new catalogue an interesting and useful engineering aid to your control circuit and system design. We look forward to both welcoming new customers and serving our existing customers in the manner that they have come to expect.

Foxtam Controls can also give our customers access to another Midland Automation Ltd "group" business, Kempston Controls. Kempston Controls are franchised distributors for many international industry brand names within the fuses, sensors and industrial control sectors. The Foxtam Controls team can assist in making an introduction to our colleagues at our sister business as required.



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ELECTRONIC TIMERS, MECHANICAL EXTENSION TIMERS, ELECTROMECHANICAL & DIGITAL TIME SWITCHES

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เอ	O/TINAAF	contacts
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-		switches







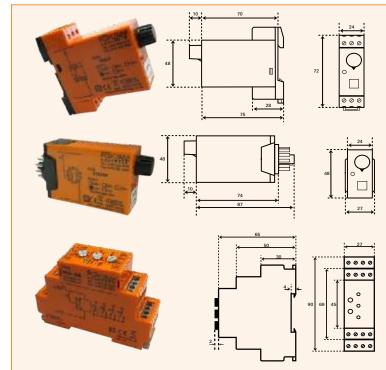
DIMENSIONS & ACCESSORIES

CLASSIC DIN RAIL TYPES: YRxx

CLASSIC PLUG IN TYPES: 8Rxx & 11Rxx

MODULAR DIN RAIL TYPES: UNI-xxx

Classic DIN rail: Maximum cable size 4mm² Modular DIN rail: Maximum cable size 2.5mm²



PANEL MOUNTING ADAPTOR - P

Material: Auto-extinguishable poly-carbonate

Colour: Black

Mounting by M4 screws to DIN 46121

Timer is mounted by clipping on

ASYMMETRICAL DIN ADAPTOR - A

Auto-extinguishable poly-carbonate Material:

Colour: **Black**

Timer is mounted by clipping on



SCREW TERMINAL SOCKET PF-083BE **PF-113BE**

Material: Auto-extinguishable poly-carbonate

Colour: **Black**

Mounting on a symmetric din or by single M4

Screw and locator

RETAINING SPRINGS

For 8 & 11 Series: NBS



FREE SOCKET 8 PIN US-08 11 PIN US-11

Material: Auto-extinguishable poly-carbonate

Colour:

Connection for timers in through panel mounting

Adaptor 8/11

THROUGH PANEL MOUNTING **ACCESSORY 8/11 ADAPTOR**

Material: Auto-extinguishable ABS

Colour: **Black**

Permits through panel mounting of 8 & 11 pin timers



DIN RAIL MODULAR MULTI VOLTAGE, MULTI TIME RANGE, MULTI FUNCTION TIMERS

TYPES: UNI-1M (spco) & UNI-4M (4pco)



- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- **SPCO** version
- **Unique 4PCO version**
- Multi voltage 12-250VAC/DC
- Multi time range 0.1 sec to 10 days
- **Eight selectable functions**
- **Dual LED indication**
- **CE** marked



PRODUCT

DESCRIPTION & MODE OF OPERATION

An attractive modern designed multi "everything" timer in a din rail mounted modular style housing of 1.5 modules width (27mm). The timer features the facility of double deck terminals thus enabling the timer to be available also in a unique 4PCO version. A selector switch is provided to select eight different time ranges from 0.1 sec to 10 days, fine time selection on a selected range is then achieved via a percentage potentiometer. A further selector switch is then used to select one of eight different functions. A green supply on LED is featured along with a red LED to indicate relay output status. All terminal details and the function selection information along with the CE mark is clearly marked on the sides of the housing.

On functions utilising the trigger input "S", this input should preferably be clean. However, within reason small loads can be connected between "S" & "A2", such as relay coils or indicator lights.

DIMENSIONS 0000 0000 0 90 0 0 0000 0000

SPECIFICATIONS

Timing:

Time ranges: 0.1sec to 10 days Repeat accuracy: $\pm 0.5\%$ of set value Reset time: Max 100mSec

Relay outputs:

Output contacts: UNI-1M 16Amps/250V AC1

UNI 4M 8Amps/250V AC1

UNI-1M 4000VA Max breaking capacity:

UNI-4M 2000VA

Mechanical life: 30 Million ons

Electrical life: 200K ops at max rated load

Supply voltage:

12-250V AC/DC Supply voltage: Max power consumption: 5VA / 2.8W 2.5KV 50Hz impulse Insulation:

Trigger Input (S):

Max consumption: 5mA Min input time: 25mSec Max input time: Continuous

General:

-20°C to +65°C Operating temperature: -20° C to $+65^{\circ}$ C Storage temperature: Max cable size: 2.5mm

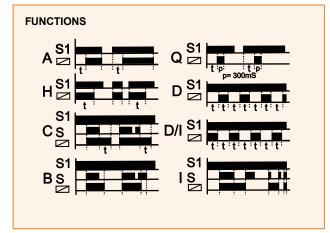
CE marked: Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0



GROUP

DIN RAIL MODULAR MULTI VOLTAGE, MULTI TIME RANGE, MULTI FUNCTION TIMERS

TYPES: UNI-1M (spco) & UNI-4M (4pco)

TIME RANGES

Position 1: 0.1 - 1 sec Position 5: 10 - 100 mins Position 2: 1 - 10 secs Position 6: 1 - 10 hr Position 3: 10 - 100 secs Position 7: 10 - 100 hrs 1 - 10 mins **Position 8:** Position 4: 1 - 10 days

TIMING FUNCTIONS

Function A: On delay - initiated by supply on terminals A1 & A2, which commences timing, the relay contacts energise after the timing period. Removal of the supply after timing has been completed and the relay contacts will de-energise, if removal of the supply is before timing has been completed the remaining time will be cancelled.

Function H: Interval timer - initiated by supply on terminals A1 & A2. Relay contacts energise immediately on connection of the supply. On completion of timing relay contacts de-energise. If the supply is removed during the timing period the relay contacts will de-energise immediately.

Function C: Delay off with trigger input (trailing edge) a permanent supply is required at all times on terminals A1 & A2, however this is not the controlling factor. The controlling factor is a trigger input from A1 onto terminal S. On an input being made to terminal S the relay contacts energise, on removal of the trigger input (trailing edge) the relay contacts time to deenergise. If the trigger input is reinstated after timing has commenced it will immediately cancel any remaining delay time and the trigger will need to be removed again for timing to commence once again. If the supply on terminals A1 & A2 is removed at any point when the relay contacts are energised irrespective of what state the trigger input is at, the relay contacts will de-energise. If the trigger input to terminal S is present before the connection of the supply to terminals A1 & A2, when the supply is connected the relay contacts will immediately energise and as above removal of S will commence timing.

Function B: Single shot timer / delay off with trigger input (leading edge) - as function "C" but the relay contacts energise and timing commences on the immediate input to terminal S (leading edge). Also

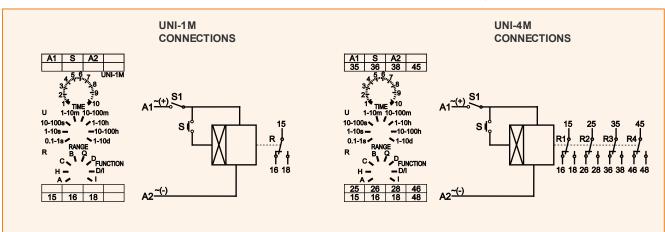
unlike function "C" if the trigger is still present after timing has been completed this will not have any effect, in all circumstances the trigger will need to be removed and reinstated for the function to happen again. If the trigger input to terminal S is present before the connection of the supply to terminals A1 & A2, when the supply is connected the relay contacts will immediately energise and timing commences.

Function Q: Delayed pulse (once only) - initiated by supply on terminals A1 & A2. The relay contacts will energise (pulse) briefly after the timing period and then de-energise. For the function to happen again the supply will have to be removed and re-connected. If the supply is removed before the pulse the set time will be cancelled. The pulse length is fixed at 300 mSec.

Function D: Flasher (pause first) - initiated by supply on terminals A1 & A2. Timing commences to energise relay contacts and then times to de-energise relay contacts. This cycle continues so long as the supply is connected. The time period on both energisation and denergisation will be the same. If the supply is removed at any point within the cycle any remaining time will be cancelled and if the relay contacts are energised they will de-energise.

Function DI: Flasher (pulse first) - exactly as function "D" but on the connection of the supply to terminals A1 & A2 the relay contacts immediately energise and then time to de-energise.

Function I: Latching relay "pulse on, pulse off.' via trigger input - a permanent supply is required at all times on terminals A1 & A2, however this is not the controlling factor. The controlling factor is a trigger input from A1 onto terminal S. On an input being made to terminal S the relay contacts will immediately energise, on a new trigger input the relay contacts will immediately de-energise. In brief the unit works as a "pulse on, pulse off' relay.



SLIM LINE DIN RAIL MODULAR MULTI VOLTAGE, MULTI TIME RANGE, MULTI FUNCTION TIMER PRODUCTION TIMER

TYPES: MINI-1M (spco)

FEATURES

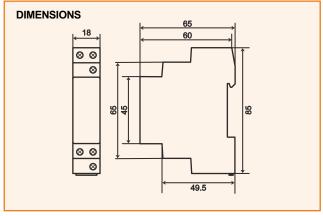
- Din rail mounted
- Modern modular design
- Width 18mm (1 module)
- SPCO output
- Multi voltage 12-240VAC/DC
- Multi time range 0.1 sec to 100 hours
- 10 selectable functions
- Dual LED indication
- Low power consumption
- CE marked



GROUP

DESCRIPTION & MODE OF OPERATION

An attractive modern designed multi "everything" timer in a din rail mounted modular style housing of 1 module width (18mm). The timer features large double deck terminals suitable for up to 4mm² cable. A selector switch is provided to select one of seven different time ranges from 0.1 sec to 100 hours, fine time selection on a selected range is then achieved via a percentage potentiometer. A further selector switch is then used to select one of ten different functions. A green supply on LED is featured along with a yellow LED to indicate relay output status. The green supply LED flashes to indicate timing. All terminal details and the function selection information along with the CE mark is clearly marked on the sides of the housing.



SPECIFICATIONS

Timing:

Relay outputs:

Output contacts: 8Amps/250V AC1
Max breaking capacity: 2000VA
Mechanical life: 10 Million ops

Electrical life: 500K ops at max rated load

Supply voltage:

Supply voltage: 12-240V AC/DC Supply tolerance: -15% to +10%

Max power consumption: 2VA

Insulation (I/P & O/P): 2KV 50Hz impulse Insulation (terminal to case): 4KV 50Hz impulse

Trigger Input (S):

Max consumption: 1.5mA
Min input time: >=60mSec
Max input time: Continuous

General:

Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C
Max cable size: 4mm²

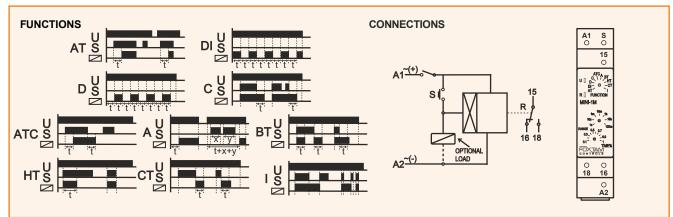
CE marked: Yes

In accordance with: EN61000-3-2, EN61000-4-2, EN61000-4-3

EN61000-4-4, EN61000-4-5, EN61000-4-11

CISPR 14.1

Housing material: Flame retardant (UL94-V0)



PRODUCT GROUP

В

SLIM LINE DIN RAIL MODULAR MULTI VOLTAGE, MULTI TIME RANGE, MULTI FUNCTION TIMER

TYPES: MINI-1M (spco)

TIME RANGES

Position 1: 0.1-1Sec Position 2: 1-10Secs Position 3: 0.1-1Min Position 4: 1-10Mins Position 5: 0.1-1Hr

Position 6: 1-10Hrs Position 7: 10-100Hrs

TIMING FUNCTIONS

Function AT: Delay on with trigger input (leading edge) - a permanent supply is required at all times on terminals A1 & A2 indicated via an illuminated green LED, however this is not the controlling factor. The controlling factor is a trigger input from A1 on to terminal S. On a permanent input being made to terminal S the green LED will start to flash as timing commences and at the end of the set time the relay contact will energise, (indicated via an illuminated amber LED) and remain energise until the S input is removed or the permanent supply voltage is removed. If the S input is removed during the timing period the set time period will be cancelled and a new S input will be required.

Function DI: Flasher (pulse first) - initiated by a supply on terminals A1 & A2, on initial connection of the supply voltage the relay contact will energise (indicated via an illuminated amber LED) and then time to de-energise and then time to energise, as timing is continuous the green LED flashes continuously. This cycle continues so long as the supply is connected. The time period for both energisation and denergisation will be the same. If the supply is removed at any point within the cycle any remaining time will be cancelled and if the relay contacts are energised they will de-energise.

Function D: Flasher (pause first) - exactly as function DI, but on connection of the supply to terminals A1 & A2 timing commences to energise the relay contact followed by timing to de-energise the relay contact and the cycle continues.

Function C: Delay off with trigger input (trailing edge) - a permanent supply is required at all times on terminals A1 & A2 indicated via an illuminated green LED, however this is not the controlling factor. The controlling factor is a trigger input from A1 on to terminal S. On an input being made to terminal S the relay contact energises (indicated via an illuminated amber LED), on removal of the trigger input (trailing edge) the relay contact times to de-energise, timing will be indicated via the green LED flashing. If the trigger input is reinstated after timing has commenced it will immediately cancel any remaining delay time and the trigger will need to be removed again for timing to commence once more. If the supply on terminals A1 & A2 is removed at any point when the relay contact is energised irrespective of what state the trigger input is at, the relay contact will de-energise. If the trigger input to terminal S is present before the connection of the supply to terminals A1 & A2, when the supply is connected the relay contact will immediately energise and as above removal of S will commence timing.

Function ATC: Delay on and delay off with trigger input - a permanent supply is required at all times on terminals A1 & A2 indicated via an illuminated green LED, however this is not the controlling factor. The controlling factor is a trigger input from A1 on to terminal S. On a permanent input being made to terminal S (leading edge) the relay contact will time to energise indicated via the green LED flashing, after timing the relay contact will energise indicated via an illuminated amber LED. Then on removal of the trigger input from S (trailing edge) the relay contact will time to de-energise again indicated via the green LED flashing. If during the "on" timing period the trigger input is removed from terminal S timing will be cancelled and will need to be connected again for timing to commence one more. During the "off" timing period if after removal of the trigger input from terminal S it is reconnected again timing will also be cancelled and the trigger will need to be removed for timing to commence again. If at any time the supply from terminals A1 & A2 is removed any timing will be cancelled and if the output relay is energised the relay will immediately denergise.

Function A: On delay-Straight on delay - initiated by supply on terminals A1 & A2, which commences timing (indicated via the green LED flashing). The relay contact energises after the timing period, indicated via an illuminated amber LED.

Removal of the supply after timing has been completed and the relay contact will de-energise, if removal of the supply is before timing has been completed the remaining time will be cancelled. Accumulative memory on delay – It is also possible to temporary interrupt the delay timing by making a maintained link between terminals A1 & S, when the link is then opened timing will pause. When the link is then closed timing will re-commence from where it left off. A permanent supply must be maintained at all times on terminals A1 & A2.

Function BT: Impulse on and off with time via trigger input - a permanent supply is required at all times on terminals A1 & A2 indicated via an illuminated green LED, however this is not the controlling factor. The controlling factor is a trigger input from A1 to terminal S. On a momentary trigger being made to terminal S (leading edge) the relay contact will immediately energise (indicated via an illuminated amber LED) and timing commences, at the end of timing the relay contact will deenergise, energisation will happen again with a new trigger input to terminal S. If however, the trigger input to terminal S is not momentary and is maintained for greater than the set time the relay contact will immediately energise and then de-energise after the set time exactly as above. But then once this has occurred on removal of the trigger input from terminal S (trailing edge) the relay contact will immediately energise and start to time to de-energise. If during either of the above scenarios the trigger input to terminal S is interrupted or uninterrupted as the case maybe this has no effect on the output contact but will reset the set time on each interruption back to zero. Removal of the supply at any time will immediately de-energise the relay contact if energised and reset totally the timing.

Function HT: Interval timer with optional trigger input Control. Without using trigger input - initiated by a supply on terminals A1 & A2 with a fixed link in place between terminals A1 & S. The relay contact will energise immediately on connection as above, indicated via an illuminated amber LED. Timing commences immediately indicated via the green LED flashing, on completion of timing the relay contact deenergises. If the supply is removed during timing the relay contact will de-energise immediately.

Using trigger input control - it is possible to use the input from terminal A1 to S as a trigger input, if the link is open on connection of the supply to terminals A1 & A2 the relay contact will not energise and will only energise when the link (trigger) is closed. If during the energised (timing state) the link (trigger) is opened the relay contact will de-energise.

Function CT: Delay off via impulse trigger input – a permanent supply is required at all times on terminals A1 & A2 indicated via an illuminated green LED however this is not the controlling factor. The controlling factor is a trigger input from A1 to terminal S. On an input being made to terminal S the relay contact will remain de-energise, but then on removal of the trigger input (trailing edge) the relay contact will immediately energise indicated via an illuminated amber LED. Timing will also immediately commence and the green LED will start flashing, after the set time the relay contact will de-energise. If the trigger input to S is reconnected during timing this will cause the energised relay to immediately de-energise and timing to be reset to zero, removal of the trigger will need to happen for the function to commence. If the supply on terminals A1 & A2 is removed at any point if energised the relay contact will de-energise and any timing will reset to zero.

Function I: Latching relay "pulse on, pulse off" via trigger input – a permanent supply is required at all times on terminals A1 & A2 indicated via an illuminated green LED however this is not the controlling factor. The controlling factor is a trigger input from from A1 to terminal S. On an input being made to terminal S the relay contact will immediately energise, on a new trigger input the relay contact will immediately de-energise. In brief the unit works as a "pulse on, pulse off" relay with no timing element involved.

IULTI FUNCTION TIMER\$

8 & 11 PIN PLUG IN MULTI VOLTAGE, MULTI TIME RANGE, MULTI FUNCTION TIMERS

TYPES: UNI-8-1M (spco) & UNI-11-1M (spco) & UNI-11-2M (dpco)

FEATURES

- 8 & 11 pin plug in
- SPCO versions
- DPCO versions
- Multi voltage 12-250VAC/DC
- Multi time range 0.1 sec to 10 days
- Eight selectable functions
- Dual LED indication
- CE marked



8 & 11 pin plug in versions of our multi "everything" timers. Available in either 8 or 11 pin SPCO or as an 11 pin DPCO. A selector switch is provided to select eight different time ranges from 0.1 sec to 10 days, fine time selection on a selected range is then achieved via a percentage potentiometer. A further selector switch is then used to select one of eight different functions. A green supply on LED is featured along with a red LED to indicate relay output status. All terminal details and the function selection information along with the CE mark is clearly marked on the sides of the housing.

On functions utilising the trigger input "S" this input should preferably be clean. However, within reason small loads can be connected between "S" & "A2", such as relay coils or indicator lights.

Please see page 5 for full function descriptions.

SPECIFICATIONS

Timing:

Time ranges: 0.1sec to 10 days
Repeat accuracy: $\pm 0.5\%$ of set value
Reset time: Max 100mSec

Relay outputs:

Output contacts: UNI-8-1M & UNI-11-1M 10Amps/250V AC1

UNI-11-2M 8Amps/250V AC1

Max breaking capacity: UNI-8-1M & UNI-11-1M 4000VA

UNI-11-2M 2000VA

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

Supply voltage:

Supply voltage: 12-250V AC/DC Max power consumption: 5VA / 2.8W

Insulation: 2.5KV 50Hz impulse to UL94V0

Trigger Input (S):

Max consumption: 5mA
Min input time: 25mSec
Max input time: Continuous
Clean contact input: Not required

<u>General:</u>

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage temperature: -20°C to $+65^{\circ}\text{C}$

CE marked: Yes

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

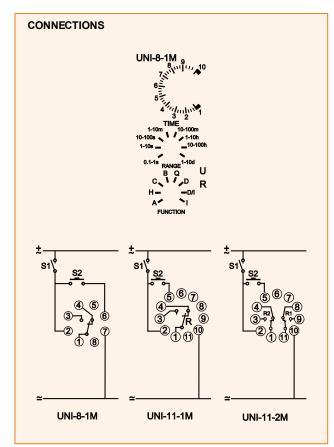
EN61010-1: 2002

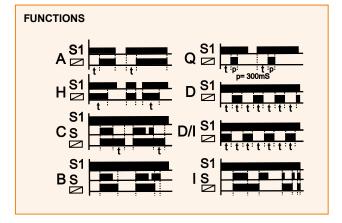
Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0



PRODUCT





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PRODUCT

GROUP

DELAY ON TIMER

14 PIN 4PCO DELAY ON TIMER, MULTI TIME RANGE

TYPE: TB48

FEATURES

- 14 pin 4PCO
- Plugs into standard 14 pin sockets
- Delay on
- Multi time range 0.02 Secs to 600 hours
- **LED** indication

DESCRIPTION & MODE OF OPERATION

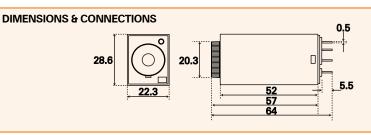
14 pin plug in 4PCO delay on timer, plugging into standard pin out 14 pin sockets. The timers are multi time range via eight selectable time ranges from 1 Sec to 600 hours selectable via dip switches behind a cover on the side of the timer. A dip switch can also change the function from delay on, to flasher mode. A choice of supply voltages are available in both AC and DC. The timers come complete with a red LED that on connection of the supply voltage flashes as timing immediately commences, on the completion of the timing period the output contacts energise and the LED illuminates steady. On removal of the supply voltage the output contacts de-energise and the LED extinguishes.

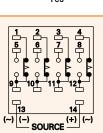
ORDERING INFORMATION

Supply voltage* Type **TB48** 12, 24VDC

12, 24, 110, 240VAC **TB48**

*Specify supply voltage





-10° C to $+50^{\circ}$ C 85% RH Yes

SPECIFICATIONS

12, 24, 110, 240VAC 50-60Hz

-15% / +15% (12VDC +10%)

1 sec, 10 secs, 1 min, 10 mins

1 hr, 10 hrs, 60 hrs, 600 hrs

5 Amps / 250VAC AC1

12. 24VDC

DC max 1.6W

AC max 2.9VA

 \leq 200 mSec

<u>+</u>1%

4PCO

100K ops

5M ops

Supply

Timina

Repeatability:

Relay output

Mechanical life:

Operating temp: Max humidity:

Reset time:

Output:

Rating: Flectrical life:

General

CF marked:

Supply voltages:

Supply tolerance:

Supply consumption:

Time ranges (selectable):

14 PIN RELAY SOCKETS FOR TB48 TIMERS

TYPES: PYF-14BE/3, PYF-14BE, PYF-14AEW

PYF-14AEW

Our most popular 14 pin socket, complete with a fixed marker tab and a screwdriver release tab.

PYF-14BE & PYF-14BE/3

"High sided" 14 pin sockets with tunnel clamps. A triple deck version, the PYF-14BE/3 allows segregation of voltages, coil terminals being on one side with two A2 terminals. All changeover terminals on the opposite side. Both socket types have a removable marker tab and screwdriver release tab.





PRODUCT **GROUP**

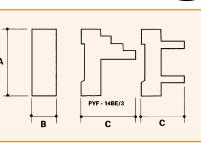
PYF-14BE/3

PYF-14AEW

DIMENSIONS PYF-14AEW 8888 29

DIMENSIONS mm PVF-14RF PYF-14BE/3

В 75 27 42 75 27 61



10

DIN RAIL MODULAR MULTI VOLTAGE, MULTI TIME RANGE, DELAY ON TIMERS

TYPES: UNI-1A (spco) & UNI-4A (4pco)



- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- SPCO version
- Unique 4PCO version
- Multi voltage 12-250VAC/DC
- Multi time range 0.1 sec to 10 days
- Dedicated delay on
- Dual LED indication
- CE marked



PRODUCT Group

DESCRIPTION & MODE OF OPERATION

A attractive modern designed multi voltage and multi time range delay on dedicated function timer in a din rail mounted modular style housing of 1.5 modules width (27mm). The timer features the facility of double deck terminals thus enabling the timer to be available as a unique 4PCO version. A selector switch is provided to select eight different time ranges from 0.1 sec to 10 days, fine time selection on a selected range is then achieved via a percentage potentiometer. A green supply on LED is featured along with a red LED to indicate relay output status. All terminal details and the function information along with the CE mark is clearly marked on the sides of the housing.

The function is initiated by a supply on terminals A1 & A2 which commences the timing, the relay contacts will then energise after the timing period. Removal of the supply after timing has been completed and the relay contacts will de-energise, if removal of the supply is before timing has been completed the remaining time will be cancelled.

FUNCTION A S1

SPECIFICATIONS

Timing:

 $\begin{array}{ll} \hbox{Time ranges:} & \hbox{0.1sec to 10 days} \\ \hbox{Repeat accuracy:} & \pm 0.5\% \ \hbox{of set value} \\ \hbox{Reset time:} & \hbox{Max 100mSec} \end{array}$

Relay outputs:

Output contacts: UNI-1A 16Amps/250V AC1

UNI-4A 8Amps/250V AC1

Max breaking capacity: UNI-1A 4000VA

UNI-4A 2000VA 30 Million ops

Mechanical life: 30 Million ops Electrical life: 200K ops at max rated load

Supply voltage:

Supply voltage: 12-250V AC/DC
Max power consumption: 5VA / 2.8W
Insulation: 2.5KV 50Hz impulse

General:

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage temperature: -20°C to $+65^{\circ}\text{C}$

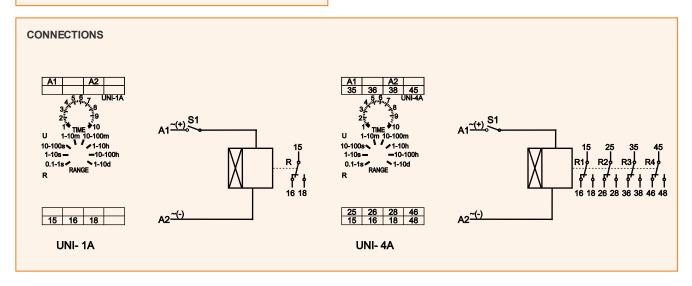
CE marked:

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0



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GROUP

DIN RAIL, 8 & 11 PIN PLUG IN DEDICATED VOLTAGE, **DEDICATED TIME RANGE, DELAY ON TIMERS** PRODUCT

TYPES: YRAF, 8RAF, 11RAF (spco) & 8R2AF, 11R2AF (dpco)

FEATURES

- Din rail & plug in versions
- SPCO & DPCO versions
- Simple & economic
- Ideal for OEM applications
- Single coil voltages 12VDC to 400VAC
- Single adjustable time ranges
- **Option for fixed times**
- **LED** indication
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Simple din rail mounted or 8 & 11 pin plug in delay on timers, with dedicated coil voltage and time range. These timers are ideal for mass production OEM applications, or for any application where operator interference must be kept to a minimum. These timers can also on request, subject to a minimum quantity of 10 pieces, be factory set with an exact time, thus ensuring absolutely no operator interference. The timers feature a red LED to indicate relay output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.

The function is initiated by a supply on terminals A1 & A2 which commences the timing, the relay contacts will then energise after the timing period. Removal of the supply after timing has been completed and the relay contacts will de-energise, if removal of the supply is before timing has been completed the remaining time will be cancelled.

ORDERING INFORMATION

TYPE	TIME RANGE		COIL VOLTAGE
YRAF (Din rail SPCO)	0.1 to 1 sec	3 to 300 sec	12V DC
8RAF (8 pin plug in SPCO)	0.1 to 3 sec	0.1 to 10 mins	24V AC/DC
11RAF (11 pin plug in SPCO)	0.1 to 10 sec	0.2 to 20 mins	48V AC/DC
8R2AF (8 pin plug in DPCO)	0.3 to 30 sec	0.3 to 30 mins	110V AC
11R2AF (11 pin plug in DPCO)	0.6 to 60 sec	0.6 to 60 mins	230V AC
	1 to 100 sec	1 to 100 mins	400V AC

Factory preset version remove "F" from type code and insert "P"

then specify exact fixed time required





SPECIFICATIONS

Timing:

Repeat accuracy: constant ambient:

 $\pm 0.5\%$ of set value

across temp range: Setting accuracy:

 $\pm 3\%$ 0 to +30%

Reset time:

during timing: 100mSec after timing:

50mSec

Relay outputs:

Output contacts:

SPC0 units 5Amps/250V AC1 DPC0 units 8Amps/250V AC1

250VAC, 30VDC

Max switching voltage: Mechanical life:

20 Million ops

Flectrical life:

50K ops at max rated load

Supply voltage:

Supply voltage tolerance:

±15% 50/60Hz

Frequency:

10VA

Max power consumption:

General:

Operating temperature: Storage temperature:

-20°C to +65°C

CF marked:

-20°C to +65°C Yes

In accordance with:

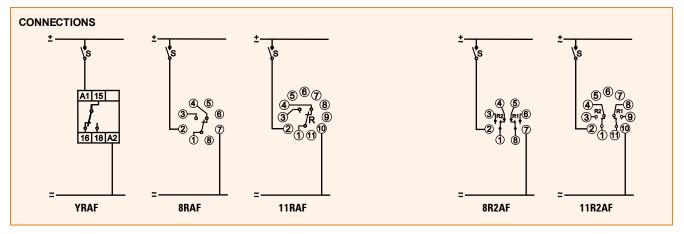
EN61000-6-1: 2007

EN61000-6-3: 2007

EN61010-1: 2002

Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0



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DIN RAIL, 8 & 11 PIN PLUG IN DUAL VOLTAGE, **MULTI TIME RANGE, DELAY ON TIMERS**

TYPES: YRA, 8RA, 11RA (spco) & 8R2A, 11R2A (dpco)



FEATURES

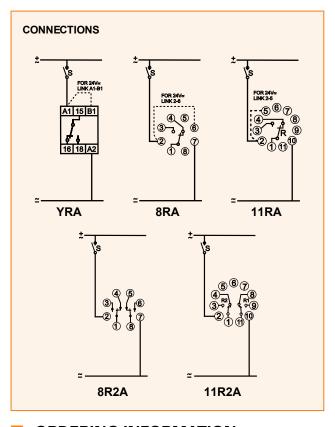
- Din rail & plug in versions
- **SPCO & DPCO versions**
- **Dual core voltages**
- Choice of three multi time ranges
- **LED** indication
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8 & 11 pin plug in dedicated delay on timers, with dual core voltage (SPCO versions* via a link can be selected for 24V AC/DC). A choice of one of three multi time ranges can be requested. The timers feature a red LED to indicate relay output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.

The function is initiated by a supply on terminals A1 & A2 which commences the timing, the relay contacts will then energise after the timing period. Removal of the supply after timing has been completed and the relay contacts will de-energise, if removal of the supply is before timing has been completed the remaining time will be cancelled.

*Except 12VDC coil versions





SPECIFICATIONS

Timing:

Repeat accuracy:

constant ambient: ±0.5% of set value

across temp range: $\pm 3\%$

Reset time:

during timing: 50mSec after timing: 25mSec

Relay outputs:

Output contacts:

SPC0 units 10Amps/250V AC1 DPCO units 8Amps/250V AC1

Max switching voltage: 250VAC, 250VDC Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

Supply voltage:

Supply voltage tolerance: ±15% 50/60Hz Frequency: Max power consumption: 7VA

General:

Operating temperature: -20°C to +65°C Storage temperature: -20° C to $+65^{\circ}$ C

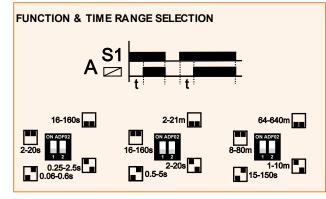
CF marked: Yes

In accordance with: EN61000-6-1: 2007

FN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0



ORDERING INFORMATION

TYPE YRA (Din rail SPCO) 8RA (8 pin plug in SPCO) 11RA (11 pin plug in SPCO) 8R2A (8 pin plug in DPCO) 11R2A (11 pin plug in DPCO)

TIME RANGE (specify S, M or L)

S (0.06 to 160 secs) M (0.5 sec to 21 mins) 0.06 to 0.6 sec $0.5\, to\, 5\, sec$ 2 to 20 sec 0.25 to 2.5 sec 16 to 160 sec 2 to 20 sec 16 to 160 sec 2 to 21 mins

L (15 sec to 640 mins) 15 to 150 sec 1 to 10 mins

8 to 80 mins 64 to 640 mins

COIL VOLTAGE

12V DC 24V AC/DC 48V AC/DC 110V AC 230V AC 400 VAC 48V AC/DC & 24V AC/DC* 110V AC & 24V AC/DC* 230V AC & 24V AC/DC* 400 VAC & 24V AC/DC*

*SPCO versions only

PRODUCT GROUP

DIN RAIL, 8 & 11 PIN PLUG IN, IN SERIES **THYRISTOR / TRIAC DELAY ON TIMERS**

TYPES: YSA, 8SA, 11SA



- Din rail & plug in versions
- Connects in series with the load
- Ideal for refrigeration compressors
- Operates on any supply 20-260V AC/DC
- Choice of three multi time ranges
- Single time ranges & fixed times
- **LED** indication
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8 & 11 pin plug in, in series thyristor / triac delay on timers. Operates on any supply from 20-260V AC/DC and is connected in series with the load. For these timers to operate there must be a load of at least 5mA, they cannot be used for "volt free" control. These timers are available in a choice of one of three multi time ranges, single time ranges or as a fixed time setting. The timers feature a red LED to indicate output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.

The function is initiated by a supply on terminals 15 & 18 or pins 1 & 3 which commences the timing. The output will then switch after the timing period. Removal of the supply after timing has been completed and the output will open, if removal of the supply is before timing has been completed the remaining time will be cancelled.

Timing:

Repeat accuracy:

constant ambient: $\pm 0.5\%$ of set value

across temp range: +3%

Reset time: 100mSec during timing: after timing: 25mSec

Output:

0.7Amps continuous (20°C) Output rating Imax:

Peak current: 20Amps <10mSec

Output rating Imin: 5mA

5mA max (can cause buzzing during timing) Leakage during timing:

Voltage drop after timing: 3.5V

1400V for 100uSec Transient protection:

Supply voltage:

20-260V AC/DC (on request 10-130V AC/DC) Supply voltage:

General:

-20°C to +65°C Operating temperature: -20°C to +65°C Storage temperature:

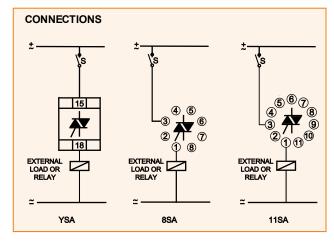
CF marked: Yes

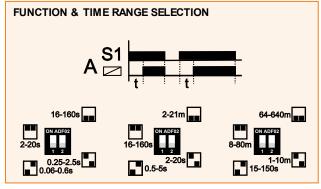
In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0





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ORDERING INFORMATION

TIME RANGE (specify F then time range, or P and factory set time, or S, M or L multi range version) **TYPE** M (0.5 sec to 21 mins) YSA (Din rail) \$ (0.06 to 160 secs) L (15 sec to 640 mins) 8SA (8 pin plug in) 0.06 to 0.6 sec 0.5 to 5 sec 15 to 150 sec 11SA (11 pin plug in) 0.25 to 2.5 sec 2 to 20 sec 1 to 10 mins 16 to 160 sec 8 to 80 mins 2 to 20 sec 64 to 640 mins 16 to 160 sec 2 to 21 mins F 0.1 to 1 sec 0.1 to 3 sec 0.1 to 10 sec 0.3 to 30 sec 0.6 to 60 sec 1 to 100 sec 3 to 300 sec 0.1 to 10 mins 0.2 to 20 mins 0.3 to 30 mins 0.6 to 60 mins 1 to 100 mins

P then specify factory fixed time required, max 10 mins (min qty 10 pieces)

DIN RAIL, MODULAR MULTI VOLTAGE, MULTI TIME

RANGE, ON DELAY WITH INSTANTANEOUS CONTACT TIMERS

TYPES: UNI-2X (2 x spco) & UNI-4X (2 x dpco)



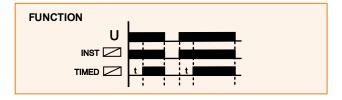
- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- 2 x SPCO version
- Unique 2 x DPCO version
- Multi voltage 12-250V AC/DC
- Multi time range 0.1 sec to 10 days
- Dual LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

An attractive modern designed on delay with instantaneous contact/s timer in a din rail mounted modular style housing of 1.5 modules width (27mm). The timer features the facility of double deck terminals thus enabling the timer to be available also in a unique 2 x DPCO version. A selector switch is provided to select eight different time ranges from 0.1 sec to 10 days, fine time selection on a selected range is then achieved via a percentage potentiometer A green supply on LED is featured along with a red LED to indicate the timed relay output status. All terminal details and the function selection information along with the CE mark is clearly marked on the sides of the housing.

TIMING FUNCTION

Initiated by supply on terminals A1 & A2, which immediately energises the instant contact/s and commences the timing of the timed contact/s, after the timing period these contacts energise. Removal of supply after timing has been completed and the relay contacts will de-energise, if removal of supply is before timing has been completed remaining time will be cancelled and the instantaneous contact/s will also de-energise.





PRODUCT Group

SPECIFICATIONS

Timing:

Relay outputs:

Output contacts UNI-2X: 2 x SPC0 16Amps/250V AC1

UNI-4X: 2 x DPCO 8Amps/250V AC1 pacity: UNI-2X 4000VA

Max breaking capacity: UNI-2X 4000VA UNI-4X 2000VA

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

Supply voltage:

Supply voltage: 12-250V AC/DC
Max power consumption: 5VA / 2.8W
Insulation: 2.5KV 50Hz impulse

General:

Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C
Max cable size: 2.5mm
CE marked: Yes

In accordance with: EN61000-6-1: 2007 FN61000-6-3: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

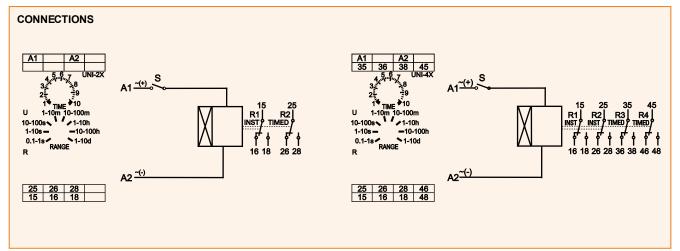
TIME RANGES

 Position 1:
 0.1 - 1 sec
 Position 5:
 10 - 100 mins

 Position 2:
 1 - 10 sec
 Position 6:
 1 - 10 hrs

 Position 3:
 10 - 100 sec
 Position 7:
 10 - 100 hrs

 Position 4:
 1 - 10 mins
 Position 8:
 1 - 10 days



8 & 11 PIN PLUG IN SINGLE VOLTAGE, SINGLE TIME RANGE, ON DELAY WITH INSTANTANEOUS CONTACT TIMERS

TYPES: 8RAXF, 11RAXF (2 x spco)

- FEATURES
- 8 & 11 pin plug in versions
- 2 x SPCO outputs
- Single coil voltages
- Single adjustable time ranges
- LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

8 & 11 pin plug in, delay with an instantaneous contact timer. Single coil voltage with a single adjustable time range. Initiated by the supply to the coil, which immediately energises the instant contact, and timing commences after the set time delay the timed contact energises. Removal of the coil supply after timing has been completed, then both relay contacts will denergise. If the coil supply is removed before timing has been completed, the remaining time will be cancelled and the instantaneous contact will also de-energise. The timers feature a red LED to indicate the timed relay output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.



Timing:

Repeat accuracy:

constant ambient: $\pm 0.5\%$ of set value

across temp range: $\pm 3\%$ Setting accuracy: 0 to 30%

Reset time:

during timing: 100mSec after timing: 50mSec

Relay outputs:

Output contacts: 2 x SPC0 5Amps/250V AC1

DPC0 5Amps/250V AC1

Max switching voltage: 250VAC, 30VDC
Max power rating: 960VA, 120W
Peak current: 20Amps <10mSec
Mechanical life: 20 Million ops

Electrical life: 50K ops at max rated load

Supply voltage:

 $\begin{array}{lll} \text{Supply voltage:} & \pm 15\% \\ \text{Frequency:} & 50/60\text{Hz} \\ \text{Max power consumption:} & 11\text{VA} \end{array}$

General:

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage temperature: -20°C to $+65^{\circ}\text{C}$

CE marked: Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

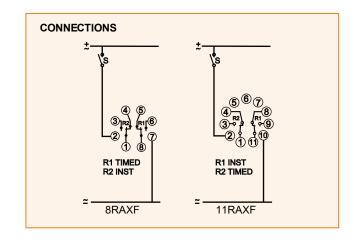
Housing material: Polycarbonate, Auto extinguishable

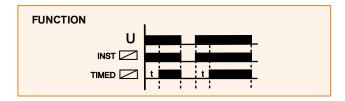
to UL 94 V-0

ORDERING INFORMATION

TIME RANGE **COIL VOLTAGE TYPE** 8RAXF (8 pin plug in) 0.1 to 1 sec 0.6 to 60 sec 0.2 to 20 mins 12V DC 11RAXF (11 pin plug in) 1 to 100 sec 0.3 to 30 mins 24V AC/DC 0.1 to 3 sec 3 to 300 sec 0.6 to 60 mins 48V AC/DC 0.1 to 10 sec 110V AC 0.3 to 30 sec0.1 to 10 mins 1 to 100 mins 230V AC







DIN RAIL, 8 & 11 PIN PLUG IN DEDICATED VOLTAGE, **DEDICATED TIME RANGE, INTERVAL TIMERS** PRODUCT

TYPES: YRHF, 8RHF, 11RHF (spco) & 8R2HF, 11R2HF (dpco)



- Din rail & plug in versions
- **SPCO & DPCO versions**
- Simple & economic
- Ideal for OEM applications
- Single coil voltages 12VDC to 400 VAC
- Single adjustable time ranges
- **Option for fixed times**
- **LED** indication
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Simple din rail mounted or 8 & 11 pin plug in dedicated interval timers, with dedicated coil voltage and time range. The function is initiated by the connection of the coil supply, the relay contact/s energise immediately, on completion of timing the relay contact/s de-energise. If the supply is removed during the timing period, the relay contact/s will de-energise immediately. These timers are ideal for mass production of OEM applications, or for any application where operator interference must be kept to a minimum. These timers can also on request, subject to a minimum quantity of 10 pieces, be factory set with an exact time, thus ensuring absolutely no operator interference. The timers feature a red LED to indicate relay output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.



GROUP

SPECIFICATIONS

Timing:

Repeat accuracy:

constant ambient: $\pm 0.5\%$ of set value

across temp range: $\pm 3\%$ 0 to 30% Setting accuracy:

Reset time:

100mSec during timing: after timing: 50mSec

Relay outputs:

SPC0 units 5Amps/250V AC1 Output contacts:

DPC0 units 8Amps/250V AC1

Max switching voltage: 250VAC, 30VDC Mechanical life: 30 Million ons

Electrical life: 50K ops at max rated load

Supply voltage:

+15%Supply voltage: 50/60Hz Frequency: 10VA Max power consumption:

General:

Operating temperature: -20°C to +65°C Storage temperature: -20°C to +65°C

CF marked: Yes

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61010-1: 2002

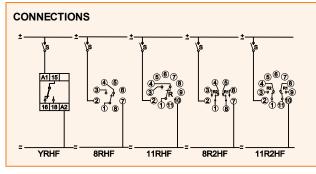
Polycarbonate, Auto extinguishable Housing material:

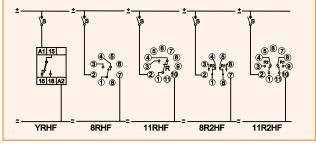
to UL 94 V-0

ORDERING INFORMATION

TYPE TIME RANGE **COIL VOLTAGE** YRHF (Din rail SPCO) 0.1 to 1 sec 3 to 300 sec 12V DC 24V AC/DC 8RHF (8 pin plug in SPCO) 0.3 to 3 sec 0.1 to 10 mins 0.2 to 20 mins 11RHF (11 pin plug in SPCO) 0.6 to 10 sec 48V AC/DC 0.3 to 30 mins 110V AC 8R2HF (8 pin plug in DPCO) 0.3 to 30 sec 11R2HF (11 pin plug in DPCO) 0.6 to 60 mins 230V AC 0.6 to 60 sec 1 to 100 sec 1 to 100 mins 400V AC

Factory preset version remove "F" from type code and insert "P", then specify exact fixed time required





FUNCTION

INTERVAL TIMERS

DIN RAIL, 8 & 11 PIN PLUG IN DUAL VOLTAGE, MULTI TIME RANGE, INTERVAL TIMERS

TYPES: YRH, 8RH, 11RH (spco) & 8R2H, 11R2H (dpco)



FEATURES

- Din rail & plug in versions
- SPCO & DPCO versions
- Dual coil voltages
- Choice of three multi time ranges
- LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8 & 11 pin plug in dedicated interval timers, with dual coil voltage (SPCO versions* via a link can be selected for 24V AC/DC), along with a choice of one of three multi time ranges. The function is initiated by the connection of the coil supply, the relay contact/s energise immediately, on completion of timing the relay contacts de-energise. If the supply is removed during the timing period, the relay contact/s will de-energise immediately. The timers feature a red LED to indicate relay output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.

*Except 12VDC coil versions



Timing:

Repeat accuracy:

constant ambient: $\pm 0.5\%$ of set value

across temp range: $\pm 3\%$

Reset time:

during timing: 50mSec after timing: 25mSec

Relay outputs:

Output contacts: SPCO units 10Amps/250V AC1

DPC0 units 8Amps/250V AC1

Max switching voltage: 250VAC, 250VDC Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

Supply voltage:

 $\begin{array}{lll} \text{Supply voltage:} & \pm 15\% \\ \text{Frequency:} & 50/60 \text{Hz} \\ \text{Max power consumption:} & 7 \text{VA} \end{array}$

General:

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage tem perature: -20°C to $+65^{\circ}\text{C}$

CE marked: Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

 TYPE
 TIME RANGE (specify S, M or L)

 YRH (Din rail SPCO)
 \$ (0.06 to 160 secs)
 M (0

 8RH (8 pin plug in SPCO)
 0.06 to 0.6 sec
 0.5 t

 11RH (11 pin plug in SPCO)
 0.25 to 2.5 sec
 2 to 20 sec

 8R2H (8 pin plug in DPCO)
 2 to 20 sec
 16 to 160 sec

 11R2H (11 pin plug in DPCO)
 16 to 160 sec
 2 to 21 mins

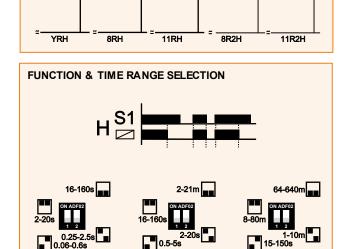
M (0.5 sec to 21 mins)
U (15 sec to 640 mins)
0.5 to 5 sec
15 to 150 sec
1 to 10 mins
16 to 160 sec
2 to 21 mins
4 to 640 mins
6 to 640 mins

COIL VOLTAGE

12V DC 24V AC/DC 48V AC/DC 110V AC 230V AC 400 VAC

400 VAC 48V AC/DC & 24V AC/DC* 110V AC & 24V AC/DC* 230V AC & 24V AC/DC* 400 VAC & 24V AC/DC*





*SPCO versions only

TERVAL TIMERS

DIN RAIL, 8 & 11 PIN PLUG IN, IN SERIES TRIAC INTERVAL TIMERS

TYPES: YSH, 8SH, 11SH



- Din rail & plug in versions
- Connects in series with the load
- Ideal product for refrigeration compressors
- Operates on any supply 24-250V AC
- Choice of three multi time ranges
- Single time ranges & fixed times
- LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8 & 11 pin plug in, in series triac interval timers. Operates on any supply from 24-250V AC and is connected in series with the load. For these timers to operate there must be a load of at least 5mA, they cannot be used for "volt free" control. These timers are available in a choice of one of three multi time ranges, single time ranges or as a fixed time setting. The timers feature a red LED to indicate output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.

The function is initiated by a supply on terminals 15 & 18 or pins 1 & 3, at this point the output will immediately switch and timing commences. After the delay time the output will open. For the function to occur again the supply has to be removed and re-applied. Removal of the supply during timing will cause the switch to immediately open and any remaining set time will be cancelled.

SPECIFICATIONS

Timing:

Repeat accuracy:

constant ambient: $\pm 0.5\%$ of set value

across temp range: $\pm 3\%$

Reset time:

during timing: 100mSec after timing: 25mSec

Output:

Output rating Imax: 0.7Amps continuous (20°C)

Peak current: 20Amps <10mSec

Output rating Imin: 5mA Voltage drop during timing: 8.2V

Transient protection: 1400 V for $100 \mu \text{Sec}$

Supply voltage:

Supply voltage: 24-250V AC

General:

 $\begin{array}{ll} \mbox{Operating temperature:} & -20\mbox{°C to } +65\mbox{°C} \\ \mbox{Storage temperature:} & -20\mbox{°C to } +65\mbox{°C} \\ \end{array}$

CE marked: Yes

In accordance with: EN61000-6-1: 2007

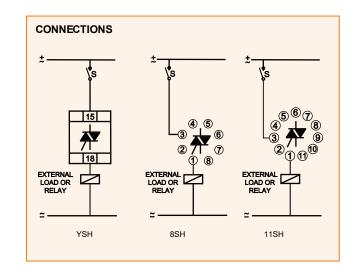
EN61000-6-3: 2007 EN61010-1: 2002

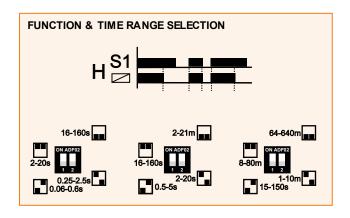
Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

PRODUCT GROUP







ORDERING INFORMATION

TYPE TIME RANGE (specify F then time range, or P and factory set time, or S, M or L multi range version) YSH (Din rail) M (0.5 sec to 21 mins) L (15 sec to 640 mins) \$ (0.06 to 160 secs) 8SH(8 pin plug in) 0.06 to 0.6 sec 0.5 to 5 sec 15 to 150 sec 11SH (11 pin plug in) 0.25 to 2.5 sec 2 to 20 sec 1 to 10 mins 8 to 80 mins 2 to 20 sec 16 to 160 sec 16 to 160 sec 2 to 21 mins 64 to 640 mins F 0.1 to 1 sec 0.1 to 3 sec 0.1 to 10 sec 0.3 to 30 sec0.6 to 60 sec 1 to 100 sec 3 to 300 sec 0.1 to 10 mins 0.2 to 20 mins 0.3 to 30 mins 1 to 100 mins 0.6 to 60 mins

P Specify factory fixed time required, max 10 mins (min qty 10 pieces)

GROUP

DIN RAIL MODULAR, MULTI VOLTAGE, MULTI TIME RANGE, DELAY OFF TIMERS VIA TRIGGER INPUT **PRODUCT**

(trailing edge)

TYPES: UNI-1C (spco) & UNI-4C (4pco)



- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- SPCO version & unique 4PCO version
- Multi voltage 12-250V AC/DC
- Multi time range 0.1 sec to 10 days
- Dedicated delay off (via trigger input)
- **Dual LED indication**
- **CE** marked

DESCRIPTION & MODE OF OPERATION

An attractive modern designed multi voltage and multi time range delay off (via trigger input, trailing edge) dedicated function timer in a din rail mounted modular style housing of 1.5 modules width (27mm). The timer features the facility of double deck terminals thus enabling the timer to be available also in a unique 4PCO version. A selector switch is provided to select eight different time ranges from 0.1 sec to 10 days, fine time selection on a selected range is then achieved via a percentage potentiometer. A green supply on LED is featured along with a red LED to indicate relay output status. All terminal details and the function information along with the CE mark is clearly marked on the sides of the housing.

A permanent supply is required at all times on terminals A1 & A2, however this is not the controlling factor. The controlling factor is a trigger input from A1 onto terminal S. On an input being made to terminal S the relay contacts energise, on removal of the trigger input (trailing edge) the relay contacts time to de-energise. If the trigger input is reinstated after timing has commenced, it will immediately cancel any remaining time delay and the trigger will need to be removed for timing to commence again. If the supply on terminals A1 & A2 is removed at any point when the relay contacts are energised, irrespective of what state the trigger is at, the relay contacts will deenergise. If the trigger input to terminal S is present before the connection of the supply to terminals A1 & A2 when the supply is connected, the relay contacts will immediately energise and as before removal of S will commence timing.

The trigger input "S", this input should preferably be clean. However, within reason small loads can be connected between "S" & "A2", such as relay coils or indicator lights.



SPECIFICATIONS

Timing:

0.1 sec to 10 days Time ranges: Repeat accuracy: $\pm 0.5\%$ of set value Max 100mSec Reset time:

Relay output:

UNI-1C 16Amps/250V AC1 Output contacts: UNI-4C 8Amps/250V AC1

Max breaking capacity: UNI-1C 4000VA, UNI-4C 2000VA

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

Supply voltage:

Supply voltage: 12-250V AC/DC Max power consumption: 5VA / 2.8W Insulation: 2.5KV 50Hz impulse

Trigger input (S):

Max consumption: 5mA 25mSec Min input time: Max input time: Continuous Clean contact input: Not required

General:

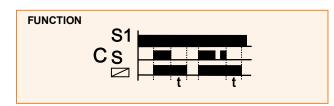
Operating temperature: -20°C to +65°C -20°C to +65°C Storage temperature: CE marked: Yes

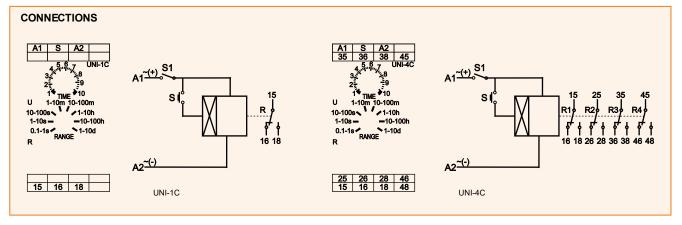
In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0





20

ELAY OFF TIMERS VIA TRAILING EDGE TRIGGER INPUT

DIN RAIL, 8 & 11 PIN PLUG IN DEDICATED VOLTAGE, **DEDICATED TIME RANGE, DELAY OFF TIMERS GROUP** VIA TRIGGER INPUT (trailing edge)

TYPES: YRCF, 8RCF, 11RCF (spco) & 11R2CF (dpco)

- **FEATURES**
- Din rail & plug in versions
- **SPCO & DPCO versions**
- Simple & economic
- Ideal for OEM applications
- Single coil voltages 12VDC to 230VAC
- Single adjustable time ranges
- Option for fixed times
- **LED** indication
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Simple din rail mounted or 8 & 11 pin plug in dedicated delay off via a trailing edge trigger input timers, with dedicated coil voltage and time range. These timers are ideal for mass production of OEM applications, or for any application where operator interference must be kept to a minimum. These timers can also on request, subject to a minimum quantity of 10 pieces, be factory set with an exact time, thus ensuring absolutely no operator interference. The timers feature a red LED to indicate relay output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.

A permanent supply is required at all times on to the coil terminals, however this is not the controlling factor. The controlling factor is a trigger input S2, on S2 closing the relay contacts energise, on removal of S2 (trailing edge) the relay contacts time to de-energise. If S2 is reinstated after timing has commenced, it will immediately cancel any remaining time delay and S2 will need to be removed for timing to commence again. If the coil supply is removed at any point when the relay contacts are energised, irrespective of what state the trigger is at, the relay contacts will de-energise. If S2 is closed before the connection of the coil supply, on the connection of the coil supply the relay contacts will immediately energise and on the opening of S2 timing will commence.

The command contact S2 should be isolated from other circuits and must only be connected to the same supply as the coil voltage to the timer. If this cannot be achieved, use UNI-1C or UNI-4C on page 18. Or for 8/11 pin plug in units see page 8.

ORDERING INFORMATION

<u>TYPE</u>	TIME RANGE		COIL VOLTAGE
YRCF (Din rail SPCO)	0.1 to 1 sec	3 to 300 sec	12V DC
8RCF (8 pin plug in SPCO)	0.3 to 3 sec	0.1 to 10 mins	24V AC/DC
11RCF (11 pin plug in SPCO)	0.6 to 10 sec	0.2 to 20 mins	48V AC/DC
11R2CF (11 pin plug in DPCO)	0.3 to 30 sec	0.3 to 30 mins	110V AC
	0.6 to 60 sec	0.6 to 60 mins	230V AC
	1 to 100 sec	1 to 100 mins	

Factory preset version remove "F" from type code and insert "P", then specify exact fixed time required



SPECIFICATIONS

Reneat accuracy:

constant ambient: $\pm 0.5\%$ of set value

across temp range: $\pm 3\%$ 0 to +30%Setting accuracy:

Reset time:

50mSec during timing:

Trigger input (S2):

Max power consumption: 5mA Min input time: 25mSec Max input time: Continuous

Relay outputs:

Output contacts: SPC0 units 10Amps/250V AC1

DPC0 units 8Amps/250V AC1

Max switching voltage: 250VAC, 30VDC Mechanical life: 20 Million ons

Electrical life: 50K ops at max rated load

Supply voltage:

Supply voltage tolerance: +15%50/60Hz Frequency: Max power consumption: 10VA

General:

Operating temperature: -20°C to +65°C Storage temperature: -20°C to +65°C

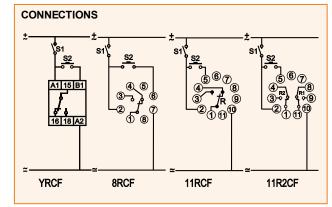
CF marked:

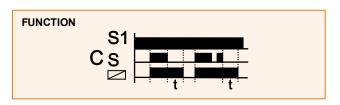
Yes EN61000-6-1: 2007 In accordance with:

EN61000-6-3: 2007 EN61010-1: 2002

Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0





DIN RAIL, 8 & 11 PIN PLUG IN DEDICATED VOLTAGE, **DEDICATED TIME RANGE, DELAY OFF TIMERS** PRODUCT **GROUP**

VIA TRIGGER INPUT (trailing edge)





- Din rail & plug in versions
- SPCO & DPCO versions
- Single coil voltages 12VDC to 230VAC
- Choice of three multi time ranges
- **LED** indication
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8 & 11 pin plug in dedicated delay off via a trailing edge trigger input timers, with dedicated coil voltage. The timers are SPCO output with a DPCO option for an 11 pin plug in. A choice of one of three multi time ranges can be requested. The timers feature a red LED to indicate relay output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.

A permanent supply is required at all times on to the coil terminals, however this is not the controlling factor. The controlling factor is a trigger input S2, on S2 closing the relay contacts energise, on removal of S2 (trailing edge) the relay contacts time to de-energise. If S2 is reinstated after timing has commenced, it will immediately cancel any remaining time delay and S2 will need to be removed for timing to commence again. If the coil supply is removed at any point when the relay contacts are energised, irrespective of what state the trigger is at, the relay contacts will de-energise. If S2 is closed before the connection of the coil supply, on the connection of the coil supply the relay contacts will immediately energise and on the opening of S2 timing will commence.

The command contact S2 should be isolated from other circuits and must only be connected to the same supply as the coil voltage to the timer. If this cannot be achieved, use UNI-1C or UNI-4C on page 19. Or for 8/11 pin plug in units see page 8.



SPECIFICATIONS

Timing:

Repeat accuracy:

constant ambient: +0.5% of set value

across temp range:

+3%

Reset time:

during timing: 50mSec

Trigger input (S2):

Max power consumption: 5mA 25mSec Continuous

Min input time: Max input time: Relay outputs:

Output contacts:

SPC0 units 10Amps/250V AC1 DPC0 units 8Amps/250V AC1

Max switching voltage: 250VAC, 30VDC Mechanical life: 30 Million ops

Flectrical life: 200K ops at max rated load

Supply voltage:

+15%

Supply voltage tolerance: Frequency:

50/60Hz

Max power consumption:

10VA

General:

Operating temperature: Storage temperature:

-20°C to +65°C -20°C to +65°C

CE marked:

In accordance with:

EN61000-6-1: 2007

EN61000-6-3: 2007

EN61010-1: 2002

Housing material:

Polycarbonate, Auto extinguishable

COIL VOLTAGE

12V DC

24V AC/DC

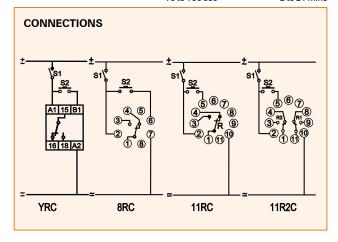
48V AC/DC

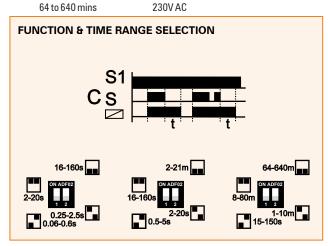
110V AC

to UL 94 V-0

ORDERING INFORMATION

TYPE TIME RANGE (specify S, M or L) \$ (0.06 to 160 secs) YRC (Din rail SPCO) M (0.5 sec to 21 mins) L (15 sec to 640 mins) 8RC (8 pin plug in SPCO) 0.06 to 0.6 sec 0.5 to 5 sec 15 to 150 sec 2 to 20 sec 1 to 10 mins 11RC (11 pin plug in SPCO) 0.25 to 2.5 sec **11R2C** (11 pin plug in DPCO) 2 to 20 sec 16 to 160 sec 8 to 80 mins 16 to 160 sec 2 to 21 mins 64 to 640 mins





DIN RAIL, 8 & 11 PIN PLUG IN DEDICATED VOLTAGE, DEDICATED TIME RANGE DELAY OFF TIMERS

VIA TRIGGER INPUT (leading edge)

TYPES: YRBF, 8RBF, 11RBF (spco) & 11R2BF (dpco)



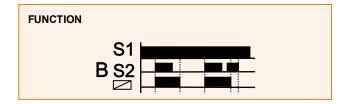
- Din rail & plug in versions
- SPCO & DPCO versions
- Simple & economic
- Ideal for OEM applications
- Single coil voltages 12VDC to 230VAC
- Single adjustable time ranges
- Option for fixed times
- LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

Simple din rail mounted or 8 & 11 pin plug in dedicated delay off via a leading edge trigger input timer, with dedicated coil voltage and time range. The timers are SPCO output with a DPCO option on an 11 pin plug in. These timers are ideal for mass production OEM applications, or for any application where operator interference must be kept to a minimum. These timers can also on request, subject to a minimum quantity of 10 pieces, be factory set with an exact time, thus ensuring absolutely no operator interference. The timers feature a red LED to indicate relay output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.

A permanent supply is required at all times on the coil terminals, however this is not the controlling factor. The controlling factor is a trigger input S2, on S2 closing the relay contacts energise and timing immediately commences (leading edge), after the set delay time the contacts de-energise. If the coil supply is removed during the timing period the contacts immediately de-energise. If the trigger input S2 is present before the connection of the coil supply the contacts will not energise, the coil supply has to be present before the timer sees the leading edge of the trigger input. If S2 is initiated again during timing this will have no effect, timing has to be completed before another leading edge of the trigger takes effect.

The command contact S2 should be isolated from other circuits and must only be connected to the same supply as the coil voltage to the timer. If this cannot be achieved, use UNI-1M or UNI-4M on page 4. Or for 8/11 pin plug in units see page 8.





GROUP

SPECIFICATIONS

Timing:

Repeat accuracy: constant ambient: $\pm 0.5\%$ of set value

across temp range: $\pm 3\%$ Setting accuracy: 0 to +30%

Reset time:

during timing: 50mSec

Trigger input (S2):

Max consumption: 5mA
Min input time: 25mSec
Max input time: Continuous

Relay outputs:

Output contacts: SPCO units 10Amps/250V AC1

DPCO units 8Amps/250V AC1 250VAC 30VDC

Max switching voltage: 250VAC, 30VDC Mechanical life: 20 Million ops

Electrical life: 50K ops at max rated load

±15%

Supply voltage:

Supply voltage tolerance:

Frequency: 50/60Hz

Max power consumption: 10VA

General:

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage temperature: -20°C to $+65^{\circ}\text{C}$

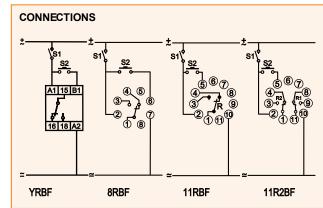
CE marked: Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 FN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0



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ORDERING INFORMATION

TYPE	TIME RANGE		COIL VOLTAGE
YRBF (Din rail SPCO)	0.1 to 1 sec	3 - 300 sec	12V DC
8RBF (8 pin plug in SPCO)	0.3 - 3 sec	0.1 to 10 mins	24V AC/DC
11RBF (11 pin plug in SPCO)	0.6 to 10 sec	0.2 to 20 mins	48V AC/DC
11R2BF (11 pin plug in DPCO)	0.3 to 30 sec	0.3 to 30 mins	110V AC
	0.6 to 60 sec	0.6 to 60 mins	230V AC
	1 to 100 sec	1 to 100 mins	

Factory preset version remove "F" from type code and insert "P", then specify exact fixed time required

DIN RAIL, 8 & 11 PIN PLUG IN DEDICATED VOLTAGE, **MULTI TIME RANGE, DELAY OFF TIMERS** PRODUCT **GROUP**

VIA TRIGGER INPUT (leading edge)





- Din rail & plug in versions
- SPCO & DPCO versions
- Single coil voltages 12VDC to 230VAC
- Choice of three multi time ranges
- LED indication
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Simple din rail mounted or 8 & 11 pin plug in dedicated delay off via a leading edge trigger input timer, with dedicated coil voltage and time range. The timers are SPCO output with a DPCO option for an 11 pin plug in. A choice of one of three multi time ranges can be requested. The timers feature a red LED to indicate relay output status. All terminal details along with the CE mark is clearly marked on the sides of the housing.

A permanent supply is required at all times on to the coil terminals, however this is not the controlling factor. The controlling factor is a trigger input S2, on S2 closing the relay contacts energise and timing immediately commences (leading edge), after the set delay time the contacts de-energise. If the coil supply is removed during the timing period the contacts immediately de-energise. If the trigger input S2 is present before the connection of the coil supply, the contacts will not energise, the coil supply has to be present before the timer sees the leading edge of the trigger input. If S2 is initiated again during timing this will have no effect, timing has to be completed before another leading edge of the trigger takes effect.

The command contact S2 should be isolated from other circuits and must only be connected to the same supply as the coil voltage to the timer. If this cannot be achieved, use UNI-1M or UNI-4M on page 4. Or for 8/11 pin plug in units see page 8.



SPECIFICATIONS

Timing:

Repeat accuracy:

 $\pm 0.5\%$ of set value constant ambient:

across temp range: $\pm 3\%$

0 to +30%Setting accuracy:

Reset time: during timing:

50mSec

Trigger input (S2): Max consumption:

5mA 25mSec Continuous

Min input time: Max input time: **Relay outputs:**

Output contacts:

SPC0 units 10Amps/250V AC1 DPC0 units 8Amps/250V AC1

250VAC, 30VDC Max switching voltage: Mechanical life: 30 Million ops

200K ops at max rated load

Electrical life:

Supply voltage: Supply voltage tolerance:

Frequency:

±15% 50/60Hz

10VA

Max power consumption: General:

-20°C to +65°C

Operating temperature: Storage temperature: -20°C to +65°C

CE marked: Yes

In accordance with:

EN61000-6-1: 2007

EN61000-6-3: 2007

EN61010-1: 2002

Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0

ORDERING INFORMATION

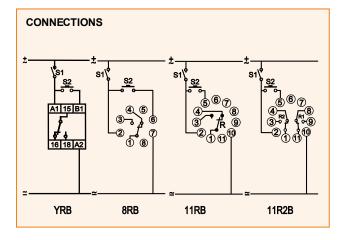
TYPE YRB (Din rail SPCO) 8RB (8 pin plug in SPCO) 11RB (11 pin plug in SPCO) 11R2B (11 pin plug in DPCO) TIME RANGE (specify S, M or L)

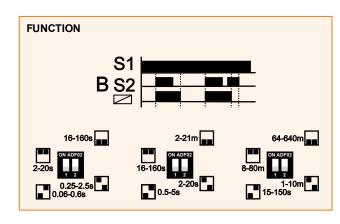
\$ (0.06 to 160 secs) M (0.5 sec to 21 mins) 0.06 to 0.6 sec 05to5sec 0.25 to 2.5 sec 2 to 20 sec 2 to 20 sec 16 to 160 sec 16 to 160 sec 2 to 21 mins

L (15 sec to 640 mins) 15 to 150 sec 1 to 10 mins 8 to 80 mins 64 to 640 mins

COIL VOLTAGE

12V DC 24V AC/DC 48V AC/DC 110V AC 230V AC





MULTI VOLTAGE, MULTI TIME RANGE TRUE DELAY OFF TIMERS

TYPES: UNI-1K (spco) & UNI-2K (dpco)

FEATURES

- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- SPCO & DPCO version
- Tri voltage 24VACDC, 110VAC, 230VAC
- Multi time range 0.1 sec to 30 mins
- LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

An attractive modern designed true delay off timer (capacitor discharge timer) in a din rail mounted modular style housing of 1.5 modules width (27mm). The units are supply voltage selectable via the connection of different terminals. The timer is available in both SPCO and DPCO formats. Two selector switches are provided to select four different time ranges from 0.1 sec to 30 mins, fine time selection on a selected range is then achieved via a percentage potentiometer. Two green supply on LED's are featured which indicate supply healthy. On removal of the supply voltage and therefore the commencing of timing both LED's on this timer will extinguish. All terminal details and the function information along with the CE mark is clearly marked on the sides of the housing.

The relay energises immediately the supply voltage is applied to terminals A1 & A2, A3 or A4 depending on the supply voltage. When the supply voltage is removed the relay is held energised by a charged capacitor, the removal of the supply voltage instigates the timing period. After the timing period has elapsed the relay will de-energise. A break in the supply of less than the set time will therefore be ignored. Since the relay is held energised after the removal of the supply by a charged capacitor it is necessary that the initial connection of the supply voltage must be at least 300m Sec to facilitate the charging of the capacitor.

By nature a true delay off timer uses different relay technology, by the means of a magnetically latching mechanism. However, if subjected to undue physical shock, for example "in transit" the contacts maybe on initial connection be in the incorrect state. If this is the case this can be easily rectified by the connection and removal of the auxiliary supply voltage. Thus allowing the contacts to time out and return to the correct state.



PRODUCT Group

SPECIFICATIONS

Timing:

Relay outputs:

Output contacts: UNI-1K 16Amps/250V AC1

UNI 2K 8Amps/250V AC1
Max breaking capacity: UNI-1K 4000VA

UNI-2K 2000VA 20 Million ops

Mechanical life: Supply voltage:

Supply voltage: 24VACDC, 110VAC, 230VAC

selectable via terminals Max power consumption: 7VA

Insulation:

General:

Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C

Max cable size: 2.5mm CE marked: Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

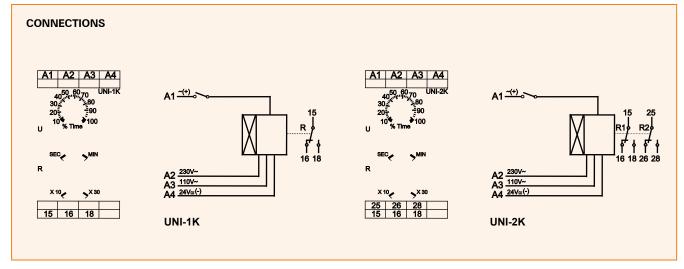
2.5KV 50Hz impulse

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

TIME RANGES





DIN RAIL 8 & 11 PIN PLUG IN DEDICATED VOLTAGE. **DEDICATED TIME RANGE, CAPACITOR** PRODUCT **GROUP DISCHARGE TRUE DELAY OFF TIMERS**

TYPES: YRKF, 8RKF, 11RKF (spco) & 8R2KF, 11R2KF (dpco)

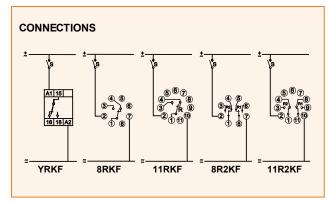
- **FEATURES**
- Din rail & plug in versions
- SPCO & DPCO versions
- Simple & economic
- Ideal for OEM applications
- Single coil voltages 12VDC to 230VAC
- Single adjustable time ranges
- **Option for fixed times**
- **LED** indication
- **CE** marked



Simple din rail mounted or 8 & 11 pin plug in dedicated true delay off timers (capacitor discharge type), with dedicated coil voltage and time range. These timers are SPCO output with a DPCO option on the 8 and 11 pin plug in versions. These timers are ideal for mass production of OEM applications, or for any application where operator interference must be kept to a minimum. These timers can also on request, subject to a minimum quantity of 10 pieces, be factory set with an exact time, thus ensuring absolutely no operator interference. The timers feature a red LED to indicate supply healthy. All terminal details along with the CE mark is clearly marked on the sides of the housing.

The relay energises immediately the supply voltage is applied, when the supply voltage is removed the relay is held energised by a charged capacitor, the removal of the power supply voltage instigates the timing period. After the timing period has elapsed the relay will de-energise. A break in the supply of less than the set time will therefore be ignored. Since the relay is held energised after the removal of the supply by a charged capacitor, it is necessary that the initial connection of the supply voltage must be at least 300mSec to facilitate the full charging of the capacitor.

By nature a true delay off timer uses different relay technology, by the means of a magnetically latching mechanism. However, if subjected to undue physical shock, for example "in transit" the contacts maybe on initial connection be in the incorrect state. If this is the case this can be easily rectified by the connection and removal of the auxiliary supply voltage. Thus allowing the contacts to time out and return to the correct state.





SPECIFICATIONS

Timing:

Repeat accuracy:

constant ambient: ±1% of set value

across temp range: $\pm 4\%$

Relay outputs:

SPC0 units 10Amps/250V AC1 Output contacts:

DPC0 units 8Amps/250V AC1

Max switching voltage: 250VAC, 30VDC Mechanical life: 5 Million ops

Supply voltage:

300mSec Min supply on time: Supply voltage tolerance: $\pm 15\%$

50/60Hz Frequency: Max power consumption: 10VA

General:

-20°C to +65°C Operating temperature: Storage temperature: -20°C to +65°C

CF marked: Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

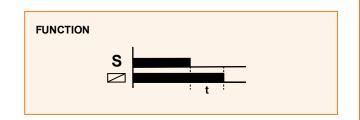
to UI 94 V-0

ORDERING INFORMATION

TYPE	TIME RANGE		COIL VOLTAGE
YRKF (Din rail SPCO)	0.1 to 1 sec	0.1 to 10 mins	12V DC
8RKF (8 pin plug in SPCO)	0.3 to 3 sec	0.2 to 20 mins	24V AC/DC
11RKF (11 pin plug in SPCO)	0.6 to 10 sec	0.3 to 30 mins	48V AC/DC
8R2KF (8 pin plug in DPCO)	3 to 300 sec		110V AC
11R2KF (11 pin plug in DPCO)			230V AC
F 4	#F# 6		·

Factory preset version remove "F" from type code and insert "P", then

specify exact fixed time required



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DIN RAIL 8 & 11 PIN PLUG IN DEDICATED VOLTAGE, MULTI TIME RANGE, CAPACITOR DISCHARGE TRUE DELAY OFF TIMERS

TYPES: YRKM, 8RKM, 11RKM (spco) & 8R2KM, 11R2KM (dpco)



- Din rail & plug in versions
- SPCO & DPCO versions
- Single coil voltages 12VDC to 230VAC
- Multi time range 0.5 sec to 21 mins
- LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8 & 11 pin plug in dedicated true delay off timers (capacitor discharge type), with dedicated coil voltage but multi time range. The timers are SPCO output with a DPCO option on the 8 and 11 pin plug in versions. These timers are multi time range, with four adjustable time ranges from 0.5 secs to 21 mins. The timers feature a red LED to indicate supply healthy. All terminal details along with the CE mark is clearly marked on the sides of the housing.

The relay energises immediately the supply voltage is applied, when the supply voltage is removed the relay is held energised by a charged capacitor, the removal of the power supply voltage instigates the timing period. After the timing period has elapsed the relay will de-energise. A break in the supply of less than the set time will therefore be ignored. Since the relay is held energised after the removal of the supply by a charged capacitor, it is necessary that the initial connection of the supply voltage must be at least 300m Sec to facilitate the full charging of the capacitor.

By nature a true delay off timer uses different relay technology, by the means of a magnetically latching mechanism. However, if subjected to undue physical shock, for example "in transit" the contacts maybe on initial connection be in the incorrect state. If this is the case this can be easily rectified by the connection and removal of the auxiliary supply voltage. Thus allowing the contacts to time out and return to the correct state

SPECIFICATIONS

Timing:

Repeat accuracy:

constant ambient: $\pm 1\%$ of set value

across temp range: $\pm 4\%$

Relay outputs:

Output contacts: SPCO units 10Amps/250V AC1
DPCO units 8Amps/250V AC1

Max switching voltage: 250VAC, 30VDC Mechanical life: 5 Million ops

Supply voltage:

 $\begin{array}{ll} \mbox{Min supply on time:} & 300\mbox{mSec} \\ \mbox{Supply voltage tolerance:} & \pm 15\% \\ \mbox{Frequency:} & 50/60\mbox{Hz} \\ \mbox{Max power consumption:} & 10\mbox{VA} \\ \end{array}$

General:

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage temperature: -20°C to $+65^{\circ}\text{C}$

CE marked: Yes

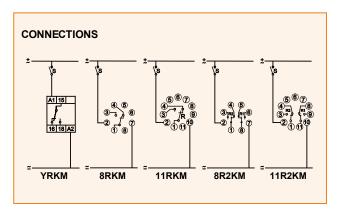
In accordance with: EN61000-6-1: 2007

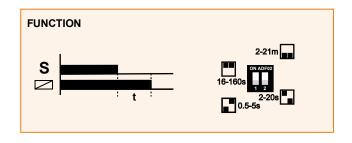
EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0







ORDERING INFORMATION

TYPE
YRK (Din rail SPCO)
8RK (8 pin plug in SPCO)
11RK (11 pin plug in SPCO)
8R2K (8 pin plug in DPCO)
11R2K (11 pin plug in DPCO)

TIME RANGE (specify M)
M (0.5 sec to 21 mins)
0.5 to 5 sec
2 to 20 sec
16 to 160 sec
2 to 21 mins

M) COIL VOLTAGE 12V DC 24V AC/DC 48V AC/DC 110V AC 230V AC

PRODUCT Group

MULTI VOLTAGE, MULTI TIME RANGE, STAR DELTA TIMERS

TYPES: UNI-2Q (2 x spco) & UNI-4Q (2 x dpco)



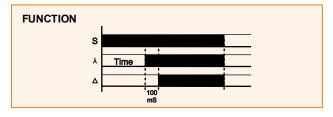
- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- 2 x SPCO version
- Unique 2 x DPCO version
- Multi voltage 12-250VACDC
- Multi time range 0.1 sec to 10 mins
- Dwell time 100mSec
- Dual LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

An attractive modern designed star delta timer in a din rail mounted modular style housing of 1.5 modules width (27mm). The timer features the facility of double deck terminals thus enabling the timer to be available also in a unique 2 x DPCO version. A selector switch is provided to select four different "star" time ranges from 0.1 sec to 10 mins, fine time selection on a selected range is then achieved via a percentage potentiometer. A green supply on LED is featured along with a red LED to indicate relay output status. All terminal details and the function information along with the CE mark is clearly marked on the sides of the housing.

TIMING FUNCTION

Initiated by supply on terminals A1 & A2, which immediately starts the "star" time during which the "star" contacts remain closed. After expiry of the "star" time the "star" contacts open. This is followed by a pause of 100mSec and the "delta" contacts then close. Removal of supply after timing has been completed and the "delta" relay contacts will de-energise, if removal of supply is before timing has been completed remaining time will be cancelled.





SPECIFICATIONS

Timing:

Relay outputs:

Output contacts: UNI-20 2 x SPC0 16Amps/250V AC1
UNI 40 2 x DPC0 8Amps/250V AC1

Max breaking capacity: UNI-2Q 4000VA UNI-4Q 2000VA

UNI-4Q 2000VA Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

Supply voltage:

Supply voltage: 12-250VACDC
Max power consumption: 5VA / 2.8W
Insulation: 2.5KV 50Hz impulse

General:

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage temperature: -20°C to $+65^{\circ}\text{C}$

CE marked: Yes

In accordance with: EN61000-6-1: 2007

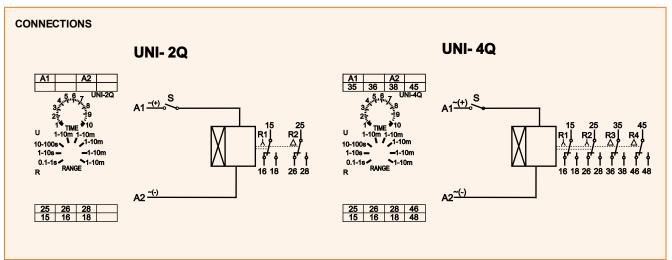
EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

TIME RANGES

Position 1: 0.1 - 1 sec Position 3: 10 - 100 secs Position 2: 1 - 10 secs Position 4: 1 - 10 mins



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DIN RAIL 8 & 11 PIN PLUG IN, DEDICATED VOLTAGE, SINGLE TIME RANGE, STAR DELTA TIMERS PRODUCT

TYPES: YR2Q, 8R2Q, 11R2Q

FEATURES

- Din rail & plug in versions
- Separate contact output for star
- Separate contact output for delta
- Single coil voltages 12VDC to 415VAC
- Single adjustable time ranges
- With dwell time
- LED indication
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8 & 11 pin plug in star delta timers, dedicated coil voltage and dedicated adjustable time range. The timers have two independent contact outputs, one designed as Star and one as Delta. The timers are with a single adjustable time range and feature a red LED to indicate completion of the "Star" time. All terminal details along with the CE mark is clearly marked on the sides of the housing.

On connection of the supply voltage the "Star" contact remains closed and timing immediately commences, after the expiry of the set delay time the "Star" contact opens. There then follows a dwell time of 100mSec (on request 30mSec) and the separate "Delta" contact then closes. On loss of the supply voltage during timing, the elapsed time is immediately cancelled and after timing the "Delta" contact will open.



Timing:

Repeat accuracy:

±1% of set value constant ambient: across temp range: +3% 0 to +30%Setting accuracy:

Time ranges: 0.3 to 30 sec or 1 to 100 sec

Dwell time: 100mSec standard (30mSec on request)

Reset time:

during timing: 100mSec after timing: 100mSec

Relay outputs:

Star 1NC, Delta 1NO YR2Q: 8R2Q & 11R2Q 2 x SPCO Output contacts: 5Amps/250V AC1 Max switching voltage: 250VAC, 30VDC

Mechanical life: 20 Million ops 50K ops at max rated load Electrical life:

Supply voltage:

±15% Supply voltage tolerance: 50/60Hz Frequency: Max power consumption: 11VA

General:

-20°C to +65°C Operating temperature: Storage temperature: -20°C to +65°C

CE marked: Yes

EN61000-6-1: 2007 In accordance with: FN61000-6-3: 2007

EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

TYPE TIME RANGE (specify) YR2Q (Din rail) 0.3 to 30 sec **8R2Q** (8 pin plug in) 1 to 100 sec 11R2Q(11 pin plug in)

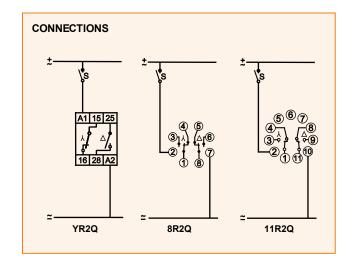
COIL VOLTAGE 12V DC 24V AC/DC 48V AC/DC

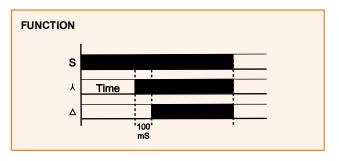
110V AC 230V AC 400V AC 415V AC





GROUP





DWELL TIME

30mSec optional

(If not requested 100mSec will be supplied)

PRODUCT GROUP

MULTI VOLTAGE, DUTY CHANGEOVER RELAY, RANGE SELECTABLE

TYPES: UNI-1B (spco) & UNI-4B (4pco)



- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- **Unique product**
- SPCO & unique 4PCO versions
- Multi voltage 12-250VACDC
- Range selectable
- 10 second proving function
- Daily, weekly, fortnightly, monthly changeover
- **Dual LED indication**
- **CE** marked

DESCRIPTION & MODE OF OPERATION

An attractive modern designed "duty changeover relay" in a din rail mounted modular style housing of 1.5 modules width (27mm). A selector switch is provided to select one of four different fixed time ranges from 1 day to 1 month, (there is also a 10 second "circuit proving" setting). This is an ideal simple product to achieve a daily, weekly, fortnightly or monthly duty changeover on pumps, fans and similar equipment especially in the HVAC and pumping industry. A green supply on LED is featured along with a red LED to indicate relay output status. All terminal details and the function information along with the CE mark is clearly marked on the sides of the housing.

TIMING FUNCTION

Initiated by supply on terminals A1 & A2. Timing commences to energise relay contacts (pause first) and then times to de-energise relay contacts. This cycle continues so long as the supply is connected. The time period on both energisation and de-energisation (T1 & T2) are both fixed. If the supply is removed at any point within the cycle any remaining time will be cancelled and if the relay contacts are energised they will de-energise.





SPECIFICATIONS

Timing:

Time ranges (fixed): 1 day, 7 days, 14 days, 30 days

Proving function (fixed): 10 sec

Repeat accuracy: $\pm 0.5\%$ of set value Reset time: Max 100mSec

Relay outputs:

UNI-1B 16Amps/250V AC1 Output contacts:

UNI-4B 8Amps/250V AC1 UNI-1B 4000VA

Max breaking capacity: UNI-4B 2000VA

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

Supply voltage:

12-250VACDC Supply voltage: Max consumption:

5mA

2.5KV 50Hz impulse Insulation:

General:

Operating temperature: -20°C to +65°C Storage temperature: -20°C to +65°C Max cable size: 2.5mm

CE marked: Yes

EN61000-6-1: 2007 In accordance with: EN61000-6-3: 2007

EN61010-1: 2002

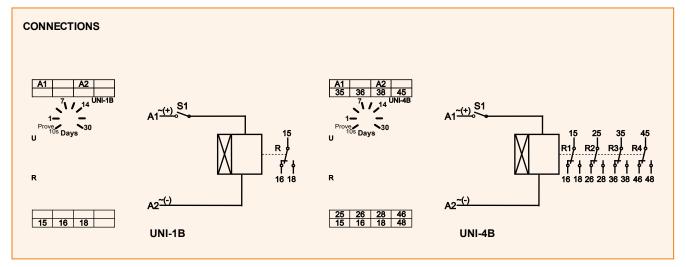
Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0

TIME RANGES

Position 1: 10 secs fixed Position 4: 14 days fixed Position 2: 1 day fixed Position 5: 30 days fixed

Position 3: 7 days fixed



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DIN RAIL 8 & 11 PIN PLUG IN, DEDICATED VOLTAGE, FIXED OR ADJUSTABLE CYCLE TIME, FLASHER GROUP RELAYS

YRDB(F), 8RDB(F), 11RDB(F) (spco) TYPES:

8R2DB(F), 11R2DB(F) (dpco)



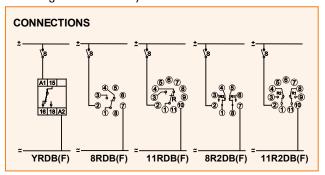
30

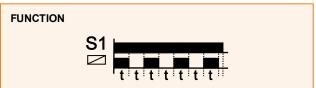
- Din rail & plug in versions
- **SPCO & DPCO versions**
- Simple & economic
- Ideal for OEM applications
- Single coil voltages 12VDC to 400VAC
- Fixed or adjustable cycle times
- **LED** indication
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8 & 11 pin plug in SPCO with a DPCO option on plug in units dedicated flasher relays, with dedicated coil voltages. The flashers are available as a standard fixed 1 sec On and 1 sec Off cycle ("DB" version) or with an adjustable cycle time, a set cycle time equates to "50% On & 50% Off". The relays can also on request, subject to a minimum quantity of 10 pieces, be factory set with any fixed cycle time, thus ensuring absolutely no operator interference. The timers feature a red LED to indicate relay output status. All terminal details with the CE mark is clearly marked on the sides of the housing.

On connection of the supply voltage the relay contact/s immediately energise (pulse start) and remain energised for 50% of the cycle time, followed by a de-energisation for the next 50% of the cycle time. If the supply voltage is removed at any point, any remaining elapsed time is cancelled and if the relay contact/s are energised they will de-energise immediately.





SPECIFICATIONS

Timina:

Repeat accuracy:

constant ambient: $\pm 0.5\%$ of set value +3%

across temp range:

Setting accuracy: 0 to +30% (F versions)

Reset time:

during timing: 100mSec after timing: 50mSec

Relay outputs:

SPC0 units 5Amps/250V AC1 Output contacts: DPC0 units 8Amps/250V AC1

250VAC, 30VDC

Max switching voltage: Mechanical life: 20 Million ops

Flectrical life: 50K ops at max rated load

Supply voltage:

+15%Supply voltage tolerance: 50/60Hz

Frequency: Max power consumption: 10VA

General:

Operating temperature: -20°C to +65°C Storage temperature: -20°C to +65°C

CE marked:

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

<u>TYPE</u>	TIME RANGE (F if requ	COIL VOLTAGE		
YRDB (Din rail SPCO)	0.1 to 1 sec	3 to 300 sec	12V DC	
8RDB (8 pin plug in SPCO)	0.3 to 3 sec	0.1 to 10 mins	24V AC/DC	
11RDB (11 pin plug in SPCO)	0.6 to 10 sec	0.2 to 20 mins	48V AC/DC	
8R2DB (8 pin plug in DPCO)	0.3 to 30 sec	0.3 to 30 mins	110V AC	
11R2DB (11 pin plug in DPCO)	0.6 to 60 sec 1 to 100 sec	0.6 to 60 mins 1 to 100 mins	230V AC 400V AC	

If an adjustable version is required, enter suffix "F" into the order code and then the adjustable time range required, if time set to 10 sec this will equate to a cycle of: 5 sec On & 5 sec Off.

If suffix "F" is not entered a standard fixed "DB" version will be supplied with a 2 second cycle: 1 sec On & 1 sec Off.

On request other factory fixed cycles can be supplied enter suffix "P" after "DB" then specify exact fixed cycle time required.

PRODUCT **GROUP**

FLASHERS & DUTY CHANGEOVER RELAYS

DIN RAIL 8 & 11 PIN PLUG IN SOLID STATE ELECTRONIC FLASHERS

TYPES: YSDB, 8SDB, 11SDB (Triac output AC circuits) YSDFPT, 8SDFPT, 11SDFPT (Transitor output DC circuits)

FEATURES

- Din rail & plug in versions
- Triac & Transitor output versions
- Triac version connects in series with the load
- Transitor version three wire PNP
- Simple & economic
- Simple & economic, ideal for OEM applications
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8 & 11 pin plug in solid state output electronic flashers, available in either Triac output for AC circuits, or as a Transistor output for DC circuits. These devices are most suitable for applications where there is a prolonged flash rate and relay wear is of a concern. All terminal details with the CE mark is clearly marked on the sides of the housing.

The AC Triac version is a "pause start" and of a fixed 1 sec cycle (0.5 sec Off & 0.5 sec On). The DC Transistor version is also a "pause start" and is available with a choice of adjustable cycle times. A set cycle time equates to 50% of the time as On and 50% of the time as Off. If the supply voltage is removed at any point, any remaining elapsed time is cancelled and if the output is On it will immediately switch to Off.

SPECIFICATIONS

AC Triac output:

20-260V AC Supply voltage: Max output rating: 1Amp at 20°C Derating with temp rise: 10mA/1°C Min operating current: 10mA Start: Pause first LED indication: Nο

1 sec cycle fixed Timing:

DC Transistor output:

12 or 24V DC Supply voltage: Supply voltage tolerance: $\pm 15\%$ 1Amp at 20°C Max output rating: Min operating current: 3mA Pause first Start:

LED indication:

Choice of adjustable settings Timina:

General:

-20°C to +65°C Operating temperature: -20°C to +65°C Storage temperature:

CE marked:

EN61000-6-1: 2007 In accordance with:

EN61000-6-3: 2007 FN61010-1: 2002

Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0

ORDERING INFORMATION

DC TRANSISTOR OUTPUT

TYPE CYCLE RANGE SUPPLY VOLTAGE YSDFPT (Din rail) 0.1 to 1 sec 3 to 300 sec 12V DC 8SDFPT (8 pin plug in) 0.3 to 3 sec 0.1 to 10 mins **24V DC** 11SDFPT (11 pin plug in) 0.6 to 10 sec 0.2 to 20 mins 0.3 to 30 sec 0.3 to 30 mins 0.6 to 60 sec 0.6 to 60 mins 1 to 100 mins 1 to 100 sec

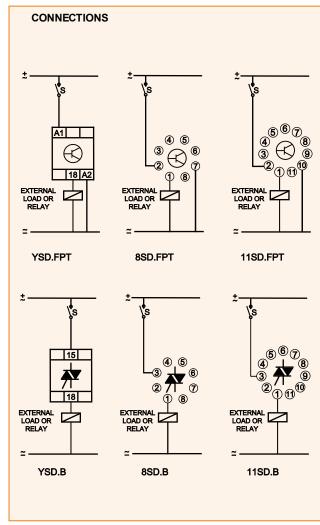
ACTRIAC OUTPUT

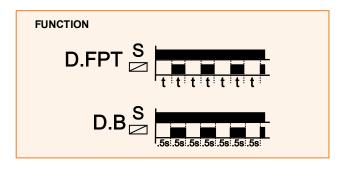
CYCLE RANGE TYPE YSDB(Din rail) Non applicable

8SDB (8 pin plug in) 11SDB (11 pin plug in)

SUPPLY VOLTAGE (Universal 20-260VAC)







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MULTI VOLTAGE, MULTI TIME RANGE, ASYMMETRICAL CYCLIC TIMERS

TYPES: UNI-1D (spco) & UNI-4D (4pco)



- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- **SPCO** version
- **Unique 4PCO version**
- Multi voltage 12-250VACDC
- T1 & T2 both multi time range 1 sec to 100 days
- Selectable "pulse first" or "pause first"
- **Dual LED indication**
- CE marked

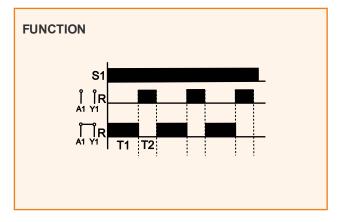
DESCRIPTION & MODE OF OPERATION

An attractive modern designed asymmetrical cyclic timer in a din rail mounted modular style housing 1.5 modules width (27mm). The timer features the facility of double deck terminals thus enabling the timer to be available also in a unique 4PCO version. A selector switch is provided to select eight different time ranges from 1 sec to 100 days independently on both T1 & T2, fine time selection on a selected range is then achieved via the two percentage potentiometers. The timer can be selected to be "pulse first" via an external link fitted between terminals A1 and Y1, leaving the link open results in "pause first". A green supply on LED is featured along with a red LED to indicate relay output status. All terminal details and the function information along with the CE mark is clearly marked on the sides of the housing.

TIMING FUNCTION

Asymmetrical cyclic (pause first) - initiated by supply on terminals A1 & A2 and the volt free link between terminals A1 & Y1 left open. Timing commences to energise relav contacts and then times to de-energise relay contacts. This cycle continues so long as the supply is connected. The time period on both energisation and de-energisation (T1 & T2) are independently selectable. If the supply is removed at any point within the cycle any remaining time will be cancelled and if the relay contacts are energised they will de-energise.

Asymmetrical cyclic (pulse first) - exactly the same as above, but a volt free link needs to be fitted externally across terminals A1 & Y1. On the connection of the supply to terminals A1 & A2 the relay contacts immediately energise and then time to de-energise.





PRODUCT GROUP

SPECIFICATIONS

Timing:

1 sec to 100 days (T1 & T2) Time ranges: $\pm 0.5\%$ of set value Repeat accuracy: Max 100mSec Reset time:

Relay outputs:

UNI-1D 16Amps/250V AC1 Output contacts:

UNI-4D 8Amps/250V AC1

UNI-1D 4000VA Max breaking capacity:

UNI-4D 2000VA

Mechanical life: 30 Million ons

Electrical life: 200K ops at max rated load

Supply voltage:

Supply voltage: 12-250VACDC Max power consumption: 5VA / 2.8W Insulation: 2.5KV 50Hz impulse

General:

-20°C to +65°C Operating temperature: Storage temperature: -20°C to +65°C

Max cable size: 2.5mm

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007 EN61010-1: 2002

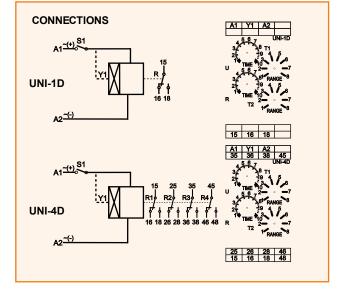
CE marked:

Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0

TIME RANGES

Position 1: 1 - 10 secs Position 5: 1 - 10 hrs Position 2 10 - 100 secs Position 6: 10 - 100 hrs Position 3: 1 - 10 mins Position:7 1 - 10 days Positon 4: 10 - 100 mins Position 8: 10 - 100 days



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DIN RAIL 8 & 11 PIN PLUG IN DEDICATED VOLTAGE, **MULTI TIME RANGE, ASYMMETRICAL CYCLIC TIMERS**

TYPES: YRD, 8RD, 11RD (spco) & 11R2D (dpco)



FEATURES

- Din rail & pin plug in versions
- SPCO & DPCO versions
- Single coil voltages 12VDC to 230VAC
- Selectable "pulse first" or "pause first"
- T1 & T2 both multi time range 1 sec to 100 days
- **Dual colour LED indication**
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Asymmetrical cyclic output timers available as either din rail mounted or 8 & 11 pin plug in with a DPCO output version also as an 11 pin. Two selector switches are provided to select one of eight different time ranges from 1 sec to 100 days independently for both T1 & T2, fine time adjustment on a selected range is then achieved via the two percentage potentiometers. The plug in version the time can be selected to be "pulse first" or "pause first" via an external wired link between pins 5 & 6. This is an option available on the din rail version but has to be specified when ordering. The timers feature a bi-colour LED to indicate output relay status, green when timing red when energised. All terminal details along with the CE mark is clearly marked on the sides of the housing.

Pause first (Standard din rail version YRD) - initiated by the connection of the supply voltage and the link between pins 5 & 6 left open. Timing commences to energise relay contacts and then times to de-energise relay contacts. This cycle continues so long as the supply is connected. The time period for both energisation and de-energisation (T1 & T2) are independently selectable. If the supply is removed at any point within the cycle any remaining time will be cancelled and if the relay contacts are energised they will de-energise.

Pulse first (Inverted din rail version YRD I) - exactly as above but the link between pin 5 & 6 needs to be closed. On connection of the supply voltage the relay contacts immediately energise and then time to de-energise.

SPECIFICATIONS

Timing:

1 sec to 100 days (T1 & T2) Time ranges: Repeat accuracy: $\pm 0.5\%$ of set value Reset time: Max 100mSec Via a wired link Closed Pulse first: Via a wired link Open Pause first:

Relay outputs:

SPC0 units 10Amps/250V AC1 Output contacts: DPC0 units 8Amps/250V AC1

250VAC, 30VDC Max switching voltage: Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

Supply voltage:

Supply voltage tolerance: 50/60Hz Frequency: Max power consumption: 7VA

2.5KV 50Hz impulse Insulation:

General:

Operating temperature: -20°C to +65°C -20° C to $+65^{\circ}$ C Storage temperature:

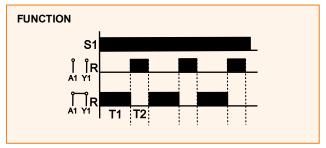
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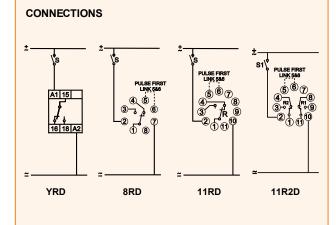
In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0





TIME RANGES

Position 1: 1 - 10 secs Position 5: 1 - 10 hrs Position 2 10 - 100 secs Position 6: 10 - 100 hrs 1 - 10 days Position 3: 1 - 10 mins Position:7 10 - 100 mins 10 - 100 days Positon 4: Position 8:

ORDERING INFORMATION

TYPE COIL VOLTAGE YRD (Din rail SPCO) 12V DC YRD I (Din rail SPCO Inverted O/P) 24V AC/DC 8RD (8 pin plug in SPCO) 48V AC/DC 11RD (11 pin plug in SPCO) 110V AC 11R2D (11 pin plug in DPCO) 230V AC

TIME RANGES

Position 1: 1 - 10 secs Position 5: 1 - 10 hrs Position 2 10 - 100 secs Position 6: 10 - 100 days 1 - 10 days 1 - 10 mins Position:7 Position 3: Positon 4: 10 - 100 mins Position 8: 10 - 100 days

On request at extra cost this unit is available as a single cycle version (SC).

ASYMMETRICAL CYCLIC TIMERS & ENGINE STARTER RELAY

ENGINE START ATTEMPT & ALARM RELAY

TYPE: 11R2ES

FEATURES

- 11 pin plug in
- Selectable number of start attempts 1-8
- Start time adjustable 3-30 secs
- Recovery time adjustable 6-60 secs
- Supply voltage 9-30VDC
- LED indication
- Separate start relay output
- Separate alarm relay output



An 11 pin plug in engine start attempt relay for use in starting combustion engines connected to generators. The number of start attempts is selected by the middle selector switch 1-8. The start time is set by the top potentiometer between 3-30 secs and the recovery time by the bottom potentiometer between 6-60 secs.

When the auxiliary supply (9-30VDC) is first applied (+2 & -10) the "Start" relay energises immediately for the "Start" time. After expiration of the "Start" time the relay de-energises for the "Recovery" time. This cycle continues for 1-8 times as set by the number on the "Attempts" switch. If the engine starts the power supply to terminals 2 & 10 should be thus wired so that it is interrupted. The "Alarm" relay will energise after the last start attempt thus an "engine fail to start alarm", this status will remain until the auxiliary supply is removed.

SPECIFICATIONS

Supply & time:

 Supply voltage:
 9-30VDC

 Power consumption:
 0.6W

 Number start attempts:
 1-8

 Start time:
 3-30 secs

 Recovery time:
 6-60 secs

 Reset time:
 50mSec

<u>General:</u>

Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C
Max cable size: -4mm

Viax cable size: 4mr CF marked: Yes

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61010-1: 2002

Repeat accuracy: $\pm 0.5\%$

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

Output:

 Output:
 Relay 2 x SPC0

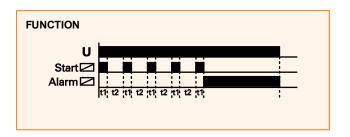
 Rated:
 10A/250VAC AC1

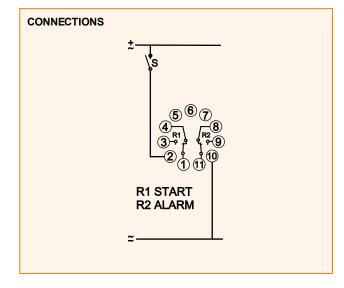
 Mechanical life:
 30 Million ops

 Electrical life:
 200K at 10A/250VAC









GROUP

DIN RAIL 8 & 11 PIN PLUG IN DEDICATED VOLTAGE. MAINS RESTORATION "BROWN OUT" RELAYS PRODUCT

TYPES: LYRAPTU, L8RAPTU, L11RAPTU (spco) & L8R2APTU, L11R2APTU (dpco)



- Din rail & plug in versions
- **SPCO & DPCO versions**
- Relay resets when voltage dips below 80% of Un
- Fast response 20mSec detects 1 cycle loss of supply
- Super fast response version 1mSec also available
- Monitors is its own supply
- **Bi-colour LED indication**
- Ideal for water authority applications
- **CE** marked

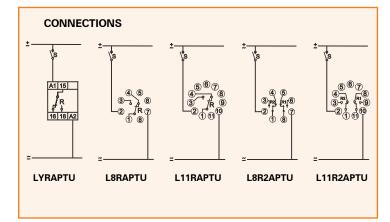


Din rail mounted or 8 & 11 pin plug in SPCO and DPCO "mains restoration auto restart relays". The voltage and supply sensing built into these units are designed to sense voltage dips and momentary loss of supply referred to as "Brown Outs". This phenomena is a particular threat in the water industry and regularly occurs at remote pumping locations, especially during electrical storms. Left unchecked, a supply dip can "lock out" all or part of a control system, causing system malfunctions over a wide area necessitating engineers' site visits, just to reset and restart a control system. By monitoring the supply these tried and proven Foxtam units will provide the "auto restart" signal to reset and restart the control system without the need for a site visit. For added convenience DPCO units are also available with the extra contact used as say a telemetry output to notify an operations centre that an incident has occurred.

These relays are designed to operate in such a way that they reset as quick, if not quicker, than standard contactor and relay coils.

On the application of the supply voltage the relay will energise after a fixed delay of 100mSec. Should the supply then be lost for 1 cycle (20mSec)* and/or dip below 80% of the nominal supply voltage, the relay will de-energise and will energise again after 100mSec when the supply voltage is restored.

*1mSec version also available on request.





SPECIFICATIONS

Timing:

Repeat accuracy: constant ambient:

±0.5% +3%

across temp range: Response time:

Better than 20mSec

Better than 1mSec option on request

Supply voltage:

Supply voltage tolerance:

-20% to +15%

Frequency:

50/60Hz or DC

Max power consumption: 10VA

Relay outputs:

5Amps/250V AC1

Output contacts: Max switching voltage: Mechanical life:

250VAC, 250VDC 20 Million ops

Electrical life:

50K ops at max rated load

General:

-20°C to +65°C

Operating temperature: Storage temperature:

-20°C to +65°C

Yes

CE marked:

EN61000-6-1: 2007

FN61000-6-3: 2007

In accordance with:

EN61010-1: 2002 RoHS compliant: Yes

Housing material:

Polycarbonate, auto extinguishable

according to UL94VO

ORDERING INFORMATION

COIL VOLTAGE **TYPE** LYRAPTU (Din rail SPCO) 12VDC L8RAPTU (8 pin plug in SPCO) 24V DC L11RAPTU (11 pin plug in SPCO) 48V DC L8R2APTU (8 pin plug in DPCO) L11R2APTU (11 pin plug in DPCO) 24V AC 48V AC 230V AC

1mSec (Request if required super fast reset)

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DIN RAIL 8 & 11 PIN PLUG IN DEDICATED VOLTAGE, SINGLE TIME RANGE, MAINS RESTORATION "BROWN OUT" TIMERS

TYPES:

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LYRAFTU, L8RAFTU, L11RAFTU (spco) L8R2AFTU, L11R2AFTU (dpco)

LYRHFTU, L8RHFTU, L11RHFTU (spco) L8R2HFTU, L11R2HFTU (dpco)

LYRQFTU, L8RQFTU, L11RQFTU (spco) L8R2QFTU, L11R2QFTU (dpco)



- Din rail & plug in versions
- SPCO & DPCO versions
- Timer resets when voltage dips below 80% of Un
- Fast response 20mSec detects 1 cycle loss of supply
- Super fast response version 1mSec also available
- Monitors the supply which is its own supply
- Three function options: delay on, pulse, delayed pulse
- Bi-colour LED indication
- Ideal for water authority applications
- CE marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8 & 11 pin plug in SPCO and DPCO "mains restoration auto restart timers". The voltage and supply sensing built into these units are designed to sense voltage dips and momentary loss of supply referred to as "Brown Outs". This phenomena is a particular threat in the water industry and regularly occurs at remote pumping locations, especially during electrical storms. Left unchecked, a supply dip can "lock out" all or part of a control system, causing system malfunctions over a wide area necessitating engineers' site visits, just to reset and restart a control system. By monitoring the supply these tried and proven Foxtam units will provide the "auto restart" signal to reset and restart the control system without the need for a site visit. For added convenience DPCO units are also available with the extra contact used as say a telemetry output to notify an operations centre that an incident has occurred.

These timers are designed and operate in such a way that they reset as quick, if not quicker, than standard contactor and relay coils. They are offered in a choice of three functions:

Delay On "A" function - on the application of the supply voltage the relay will energise after the set time delay. Should the supply then be lost for 1 cycle (20mSec)* and/or dip below 80% of the nominal supply voltage, the relay will de-energise and will commence timing again when the supply voltage is restored.

Pulse "H" function - on the application of the supply voltage the relay will energise for the set delay time and then deenergise. The timer will then remain de-energised until reset by switching off normally, or by the loss of the supply for 1 cycle (20mSec)* and/or dip below 80% of the nominal supply voltage. The relay will again energise for the set delay time on restoration of a healthy supply voltage.

Delayed Pulse "Q" function - on the application of the supply voltage the relay will after the set delay time pulse on for a fixed time of 300mSec. Should the supply be lost for 1 cycle (20mSec)* and/or dip below 80% of the nominal supply voltage the timer will be reset and after restoration of the supply the timer will commence another set delay time after which the relay will energise for 300mSec.

*1mSec version also available on request.

SPECIFICATIONS

Timing:

Repeat accuracy:

constant ambient: $\pm 0.5\%$ of set value

across temp range: $\pm 3\%$ Setting accuracy: 0 to +30%Response time: Better than 20mSec

Better than 1mSec option on request

Supply voltage:

Supply voltage tolerance: -20% to +15% Frequency: 50/60Hz
Max power consumption: 10VA

Relay outputs:

Output contacts: "Q & A" SPCO units 5Amps/250V AC1

"H" SPC0 units 10Amps/250V AC1 All DPC0 units 8Amps/250V AC1

Max switching voltage: 250VAC, 250VDC Mechanical life: 20 Million ops

Electrical life: 50K ops at max rated load

General:

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage temperature: -20°C to $+65^{\circ}\text{C}$

CE marked: Yes

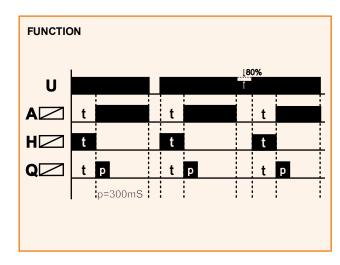
In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

PRODUCT GROUP A



ORDERING INFORMATION

DELAY ON

TYPE TIME RANGE (specify) **COIL VOLTAGE** OPTION LYRAFTU (Din rail SPCO) 3 to 300 sec 12V DC 0.1 to 1 sec 1mSec L8RAFTU (8 pin plug in SPCO) 0.1 to 3 sec 0.1 to 10 mins 24V DC (Request if required super fast reset) 0.2 to 20 mins L11RAFTU (11 pin plug in SPCO) 0.1 to 10 sec 48V DC L8R2AFTU (8 pin plug in DPCO) 0.3 to 30 sec 0.3 to 30 mins 24V AC 0.6 to 60 mins L11R2AFTU (11 pin plug in DPCO) 0.6 to 60 sec 48V AC 1 to 100 sec 1 to 100 mins 110V AC

230V AC

<u>INTERVAL</u>

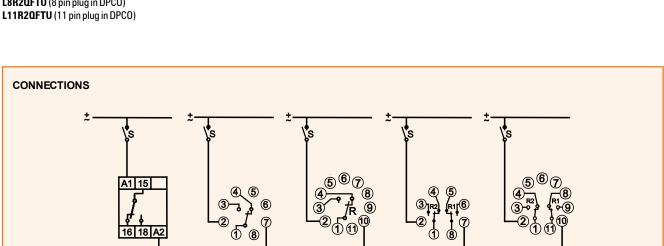
TYPE

LYRHFTU (Din rail SPCO)
L8RHFTU (8 pin plug in SPCO)
L11RHFTU (11 pin plug in SPCO)
L8R2HFTU (8 pin plug in DPCO)
L11R2HFTU (11 pin plug in DPCO)

DELAYED PULSE

TYPE

LYROFTU (Din rail SPCO)
L8ROFTU (8 pin plug in SPCO)
L11ROFTU (11 pin plug in SPCO)
L8R2OFTU (8 pin plug in DPCO)
L11R2OFTU (11 pin plug in DPCO)



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L8R2_FTU

L11R2_FTU

L11R_FTU

L8R_FTU

LYR_FTU

MIMIDLAND JAY MAINS RESTORATION "BROWN OUT" TIMERS

TYPES: GBPxxxx (spco)

FEATURES

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- Din rail mounted
- Timer resets when voltage dips below 80%* of Un
- Ultra fast response 1mSec reset time (also 5mSec reset)
- Monitors the supply which is its own supply
- Three function options: delay on, pulse, delayed pulse
- **Bi-colour LED indication**
- Ideal for water authority applications
- **CE** marked

DESCRIPTION & MODE OF OPERATION

Din rail mounted SPCO "mains restoration auto restart timers". The voltage and supply sensing built into these units are designed to sense voltage dips and momentary loss of supply referred to as "Brown Outs". This phenomena is a particular threat in the water industry and regularly occurs at remote pumping locations, especially during electrical storms. Left unchecked, a supply dip can "lock out" all or part of a control system, causing system malfunctions over a wide area necessitating engineer's site visits, just to reset and restart a control system. By monitoring the supply these tried and proven units will provide the "auto restart" signal to reset and restart the control system without the need for a site visit.

These timers are designed and operate in such a way that they reset far quicker (1mSec), than standard contactor and relay coils. They are offered in a choice of three functions:

Delay On "function 4" – on the application of the supply voltage the relay will energise after the set time delay. Should the supply be momentarily lost or dip below 80%* of the nominal supply voltage, the relay will de-energise and will commence timing again when the supply voltage is restored within 85%* or better of the nominal supply.

Pulse "function 5" – on the application of the supply voltage the relay will energise for the set delay time and then de-energise. The timer will then remain de-energised until reset by switching off normally, or by a momentary loss of the supply or dip below 80%* of the nominal supply voltage. The relay will again energise for the set delay time on restoration of a supply voltage within 85%* or better of the nominal supply.

Delayed Pulse "function 6" – on the application of the supply voltage the relay will after the set delay time pulse on for a fixed time of 500mSec. Should a momentary loss of the supply occur, or dips below 80%* of the nominal supply voltage the timer will be reset and on restoration of a supply voltage within 85%* or better of the nominal supply, the timer will commence with another set delay time after which the relay will energise for 500mSec.

*5mSec response time version - the voltage dip level is 70% of Un and the reset level is 80%



SPECIFICATIONS

Timing:

Repeat accuracy:

constant ambient: $\pm 0.5\%$ of set value

across temp range: $\pm 3\%$

0 to +30%Setting accuracy:

1mSec (also 5mSec version available) Response time:

Supply voltage:

Supply volts tolerance: + 15% 4VA Power consumption: 80% of Un Trip level: Reset level: 85% of Un

Relay output:

Output contact:

8 Amps/250V AC1 Contact rating: Max switching voltage: 250VAC, 250VDC 20 Million ops Mechanical life:

Electrical life: 50K ops at max rated load

Isolation voltage: 2KV AC for 1 min

General

TYPE

GRP

Green LED: Supply healthy Red LED: Supply fault or

Unit timing -20°C to +65°C Operating temp:

TIME RANGE

CE marked: Yes

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

2 1-10 sec
3 3-30 sec
4 6-60 sec
5 12-120 sec
6 18-180 sec
7 1-10 mins
8 3-30 mins

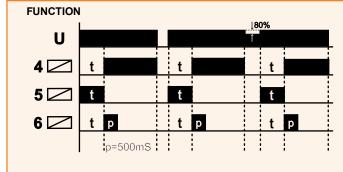
9 6-60 mins

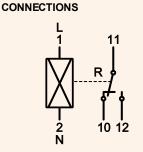
1	0.3-3 sec	4	Delay on	37	24VDC
2	1-10 sec	5	Pulse	41	48VDC
3	3-30 sec	6	Delayed pulse	07	24VAC
4	6-60 sec			11	48VAC
5	12-120 sec	1	Delay on (5mS)	01	110VAC
6	18-180 sec	2	Pulse (5mS)	50	230VAC
7	1-10 mins	3	Delayed pulse		
Q	2 20 mins		(EmC)		

FUNCTION

Example: GBP1401: 0.3-3Sec, Delay on, 110VAC, 1mS reset

VOLTAGE







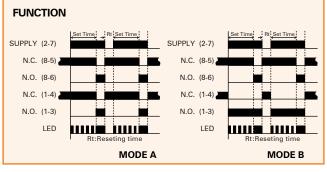
DIN 48 FRONT PANEL MOUNTED ANALOGUE SETTING PROCESS TIMER

TYPE: AH5N

- FEATURES
- Multi voltage 24-240VAC/DC
- Multi time range 1 sec to 600 hrs
- Dual function
- LED indication

DESCRIPTION & MODE OF OPERATION

A Din standard 48mm front panel mounted electronic timer. The **AH5N** is multi time range from 1sec to 600 hours, time range setting is facilitated by removing the large front plastic potentiometer time setting knob and using the two small thumbwheel switches at the bottom of the scale plate the range can be set. The timer is also multi voltage 24-240VAC/DC. The **AH5N** has 2 x SPCO contacts both rated at 5 Amps. The **AH5N** can be used for either delay on or delay off applications, depending on what side the output contacts are wired. A mode switch (mode A or B), mode A will facilitate two timed contacts and mode B one timed and one instant contact. The **AH5N** is ideal for many process control applications where the set time needs to be easily adjusted by an operator.









SPECIFICATIONS

Dimensions: 48H x 48W x 84D

Selectable time ranges: 1sec, 10 secs, 1 min, 10 mins,

1 hr, 10 hrs, 60 hrs, 600 hrs

Timing accuracy: $\leq \pm 1\%$ Reset time: 200mSec max
Supply voltage: 24-240V AC/DC
Power consumption: 2VA

Power consumption: 2VA Contact output: 2 x SPC0

Contact ratings: 5 Amps / 250V AC1
Mechanical life: 5M ops

Operating temp: -10°C to +55°C

CE marked: Yes

ORDERING INFORMATION

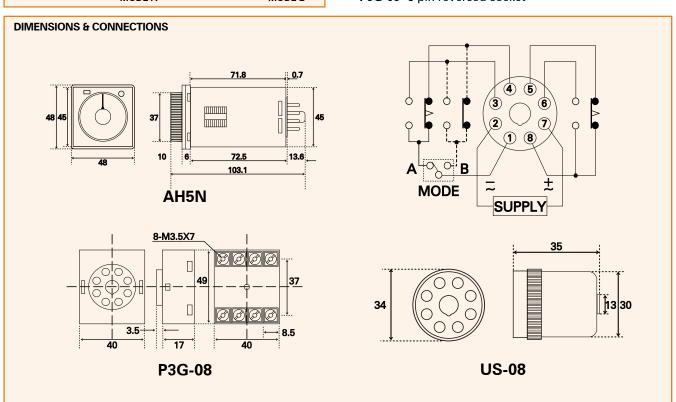
TYPE AH5N

US-08 8 pin in line gland **P3G-08** 8 pin reversed socket

CONNECTIONS

The AH4CN-RG has a standard octal 8 pin terminal arrangement and cab be fitted if desired into a standard 8 pin socket. However for front of panel mounting, we can offer two neat wiring solutions:-

US-08 8 pin in-line socket gland **P3G-08** 8 pin reversed socket



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DIN 48 FRONT PANEL MOUNTED DIGITAL PROCESS

TIMER

TYPE: AH4CN-RG

FEATURES

- Multi voltage 12-48VAC/DC version
- Multi voltage 100-240VAC/DC version
- Very accurate time setting
- Multi time range 0.01 Secs to 9990 hours
- Timing hold input & reset input facility

DESCRIPTION & MODE OF OPERATION

A Din standard 48mm front panel mounted digital electronic timer. The AH4CN-RG is multi time range from 0.01sec to 9990 hours, the time setting along with the time range is set via thumbwheel switches on the front of the timer, facilitating the setting of very accurate and precise times. The timer is multi voltage, a low voltage version 12-48VAC/DC and a high voltage version 100-240VAC/DC. The AH4CN-RG has a SPCO output contact rated at 5 Amps. The AH4CN-RG can be used for either delay on or delay off applications, depending on what side the output contact is wired. On application of the supply voltage to terminals 2 & 7 the three digit LED display will illuminate and start to count. On reaching the set time, as per the thumbwheel switches, the relay contact will switch. Featured also is a "GATE" input across terminals 1 & 4, when this is made this will hold the time, when broken the timing will recommence from where it left off. The "RESET" input across terminals 1 & 3 will, if made, resets the timer and display back to zero, when 1 & 3 is then opened timing will commence afresh from zero. Once timing has completed and the relay has switched, resetting can be either by removal of the supply voltage from terminals 2 & 7 or by the "RESET" facility as described above. The AH4CN-RG is an ideal timer for process control applications where the set time needs to be easily and very accurately set by an operator. Unlike other timers, operators will have a visual indication of the timing period as it times up via the LED display. Applications requiring a process to be interrupted, but a memory of the "elapsed time so far" will find the "GATE" input very useful.





PRODUCT Group

SPECIFICATIONS

Dimensions: 48H x 48W x 84D

Selectable time ranges: 9.99 secs, 99.9 secs, 999 secs,

99.9 mins, 999 mins, 99.9 hrs,

999 hrs, 9990 hrs Timing accuracy: $\leq \pm 0.03\%$

Reset time: 100mSec max Supply voltage: 12-48VAC/DC or 100-240VAC/DC

Supply voltage: 12-48VAC/ Power consumption: 2VA

Contact output: SPC0

Contact ratings: 5 Amps / 250V AC1

Mechanical life: 5M opsOperating temp: $-10^{\circ}\text{C to } +55^{\circ}\text{C}$

CE marked: Yes

ORDERING INFORMATION

TYPE

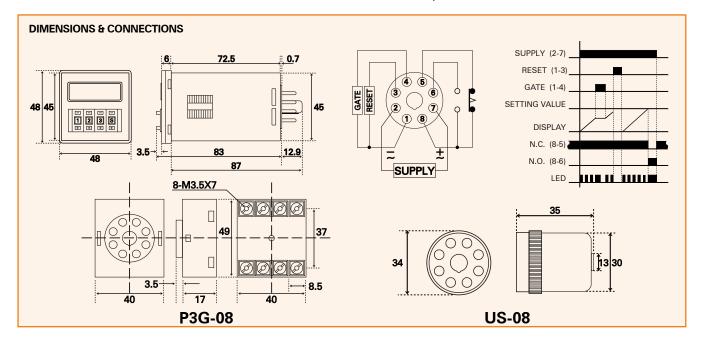
AH4CN-RG / 12-48VACDC **AH4CN-RG** / 100-240VACDC

US-08 8 pin in line socket gland **P3G-08** 8 pin reversed socket

CONNECTIONS

The AH4CN-RG has a standard octal 8 pin terminal arrangement and cab be fitted if desired into a standard 8 pin socket. However for front of panel mounting, we can offer two neat wiring solutions:-

US-08 8 pin in-line socket gland **P3G-08** 8 pin reversed socket



MECHANICAL EXTENSION TIMERS

MECHANICAL PLANT EXTENSION "OVERRIDE" TIMERS

TYPES: 134/5m, 134/15m, 134/60m, 134/120m

(SPCO) 136.2/6hr, 136.2/12hr, 136.2/24hr (SPCO)

136.2.1/6hr, 136.2.1/12hr, 136.2.1/24hr (2NO)



FEATURES

- No supply voltage required
- Clockwork spring driven
- Easy screw fixing
- Rugged construction
- Ideal for BMS override applications

DESCRIPTION

Mechanical plant extension timers, also known as "override timers" or "caretaker timers". Totally mechanically driven by a clockwork spring, therefore no auxiliary supply is required. The moment the setting knob is turned passed zero to the set time required, the output contact/s switch, the timer will then start running back to zero. When zero is reached the output contact/s will switch back. If after the initial time has been set, it is required that the set time, or remaining time needs to be lengthened, shortened or cancelled back to zero, the knob can be turned without harming the mechanical mechanism. The timers benefit from 16 Amp / 250V contacts and is easily fitted to the front of a control panel via screw fixings.

APPLICATIONS

This simple but rugged timer is an ideal override unit for HVAC systems. For example, "caretaker" override to a BMS system in schools, public buildings etc. Also ideal for simple process control applications, including bakery equipment, oven controls and mixing systems.

SPECIFICATIONS

Spring clockwork Movement:

Type 134/ 5, 15, 60, 120 mins Run down times:

Type 136.2/6, 12, 24 hours Type 136.2.1/6, 12, 24 hours

Fixing: Via two screws 3.5 x 8mm Output: Type 134 SPCO

Type 136.2 SPCO Type 136.2.1 2NO

Contact rating: 16 Amps / 250V

Via 6.3 x 0.8mm fast on terminals Connections:

Operating temp: -10°C to +70°C

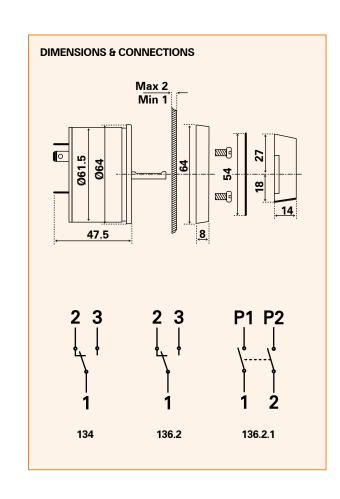
CE marked:

ORDERING INFORMATION

<u>TYPE</u>	TIME RANGE	<u>OUTPUT</u>
134	5m, 15m, 60m, 120m	SPCO
136.2	6hr, 12hr, 24hr	SPCO
136.2.1	6hr, 12hr, 24hr	2N0

^{*}Specify time range





ELECTRO MECHANICAL TIME SWITCHES

TYPES: ALPHA QRD, UNO QRD (Daily) ALPHA QRS, UNO QRS (Weekly)



FEATURES

42

- Din rail, front panel or surface mounting
- With battery reserve
- Daily types, 15 min captive tappets
- Weekly types, 2 hours captive tappets
- Wide choice of supply voltages

DESCRIPTION

Electro mechanical peg type time clocks. The ALPHA range is suitable for Din rail mounting, front panel mounting or surface mounting, when front panel mounted the front bezel size is a standard Din 72mm (panel cut out 68mm square). The UNO range is a slimline 17.5mm wide (single module) Din rail mounted unit. Both the ALPHA and UNO are available either as a daily time clock or weekly time clock. On the daily time clocks each setting peg equals 15 mins and on weekly time clocks each setting peg equals 2 hours. Both the ALPHA and UNO time clocks feature captive time setting pegs, an override switch designated ON / OFF / AUTO. The ALPHA range has a SPCO output, whilst the UNO range is a 1NO contact, in both types the contact rating is 16 Amps / 250V with a quartz movement and a battery reserve. A wide choice of both AC and DC supply voltages are available.

SPECIFICATIONS

Supply voltages: 12, 24, 110, 230VAC 50-60Hz

12, 24, 48VDC

Battery reserve: ALPHA ≥100 hours

 $UN0 \ge 150 \ hours$

Manual override: ON / OFF / AUTO
Output: ALPHA SPCO

UNO 1NO

Contact rating: 16 Amps / 250V AC1

Connections: Front panel: $6.3 \times 0.8 \text{mm}$ fast on

Din rail or surface: 4mm screw Operating temp: -10°C to $+50^{\circ}\text{C}$

Emarked: Vee

CE marked: Yes

TYPE

ORDERING INFORMATION

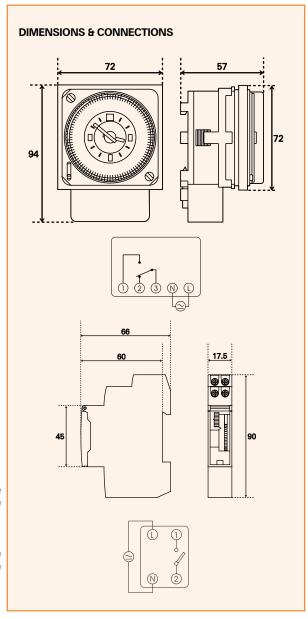
SUPPLY VOLTAGE

ALPHA QRD	12VAC, 24VAC, 110VAC, 230VAC*
ALPHA QRD	12VDC, 24VDC, 48VDC*
ALPHA QRS	12VAC, 24VAC, 110VAC, 230VAC*
ALPHA QRS	12VDC, 24VDC, 48VDC*
UNO QRD	12VAC, 24VAC, 110VAC, 230VAC*
UNO QRD	12VDC, 24VDC, 48VDC*
UNO QRS	12VAC, 24VAC, 110VAC, 230VAC*
UNO QRS	12VDC, 24VDC, 48VDC*

Daily with 100 hour reserve Daily with 100 hour reserve Weekly with 100 hour reserve Weekly with 100 hour reserve

Daily with 150 hour reserve Daily with 150 hour reserve Weekly with 150 hour reserve Weekly with 150 hour reserve





^{*}Specify supply voltage

RODUCT GROUP

DIGITAL TIME SWITCHES

DIGITAL TIME SWITCHES

TYPES: SC28.11PRO, SC28.21PRO SC28.13PRO, SC28.23PRO

SC44.11PRO, SC44.21PRO

(Din rail mounting) (Din rail mounting ASTRO) (Front panel mounting)



- Din rail or panel mounting
- Single channel or double channel
- Daily & weekly programmable
- With 6 year battery reserve
- 46 switching instructions (60 ASTRO versions)
- Block programming on days (equals 1 instruction)
- Minimum switching interval 1 min
- Pulse function minimum switching 1 Sec
- SPCO or DPCO output contacts rated 16 Amps
- Holiday function by date
- Fully automatic summertime function
- Manual override function, permanently ON or OFF
- Automatic sorting of switching times on readout

DESCRIPTION

Digital time clocks in either single or double channel, Din rail mounted or front panel mounted. The Din rail mounted units are 2 modules wide 35mm, whilst the front panel mounted units have a front bezel size of 72mm fitting into a 68mm square cut out. All types facilitate very accurate to the minute and if the pulse function is used, to the second switching accuracy. 46 switching instructions are possible, but via using block programming on days, a common instruction on more than one day counts as only one instruction. Manual permanent ON or OFF is possible along with by date holiday override periods. Summertime adjustment by location in the world can also be programmed. All programmed in instructions are supported by a 6 year battery back up. A wide choice of both AC and DC supply voltages are available.

ASTRO versions, available in Din rail either as a single or double channel, by telling the ASTRO time switches via programming a city code or longitude and latitude the in built ASTRO look up table tells the clock the DUSK and DAWN times accordingly at the programmed location. The primary application for ASTRO time switches is the automatic control of lighting systems, so that systems automatically advance and retard with the lengthening and shortening of days in accordance with the lunar cycle. If required offset times can be programmed and applied to both the DUSK and DAWN times. Further switching can be programmed also between the DUSK and DAWN times. ASTRO time switches do not feature the pulse function and are only available with a 230VAC supply voltage.

ORDERING INFORMATION

TYPE	SUPPLY VOLTAGE	
SC28.11PRO SC28.21PRO SC44.11PRO SC44.21PRO SC28.13PRO SC28.23PRO	12VAC/DC, 24VACDC, 110VAC, 230VAC* 12VAC/DC, 24VACDC, 110VAC, 230VAC* 12VAC/DC, 24VACDC, 110VAC, 230VAC* 12VAC/DC, 24VACDC, 110VAC, 230VAC* 230VAC 230VAC	Din rail 1 channel Din rail 2 channel Front panel 1 channel Front panel 2 channel Din rail 1 channel (ASTRO Din rail 2 channel (ASTRO

Also available in Din rail mounting format are yearly programmable time clocks up to 4 channels, please contact our sales office for further information.





SPECIFICATIONS

Supply voltages: 12VAC/DC, 24VAC/DC

110, 230VAC 50-60Hz ASTRO versions 230VAC only

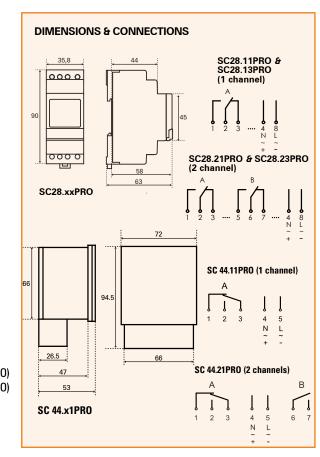
Power consumption: Approx 1.5VA Battery reserve: ~6 years Instructions: 46

60 ASTRO versions

Minimum switching: 1 min

Pulse function: 1sec to 59m59sec (not on ASTRO versions)

CE marked: Yes



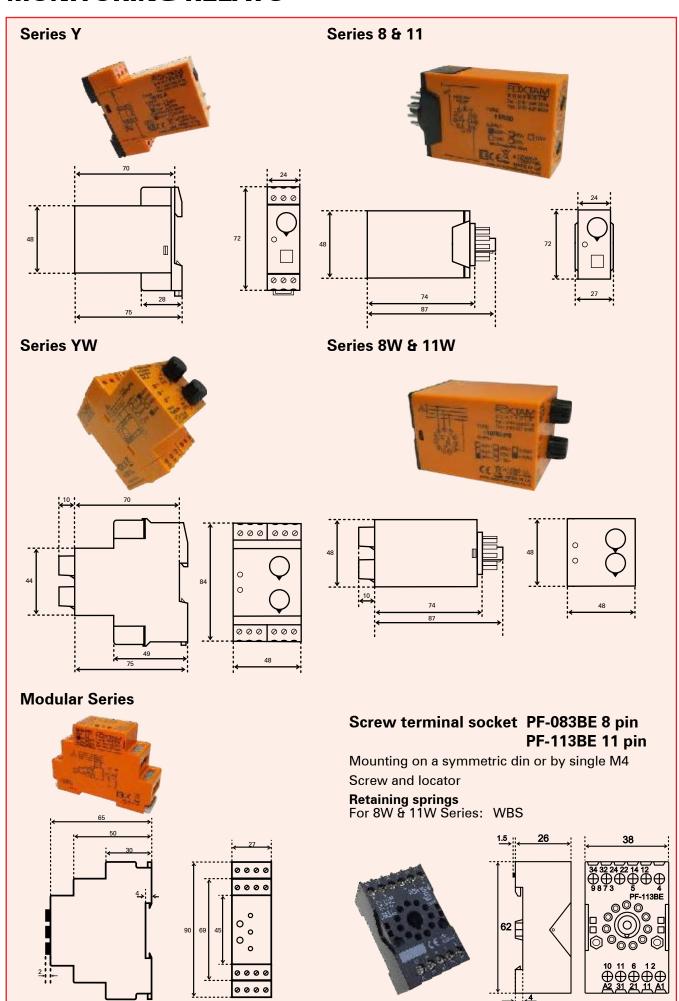
Tel: 0161 626 5316 / 01276 25858 www.foxtamcontrols.co.uk

SENSING CONTROL & MONITORING RELAYS

PAGES	P/No.	DESCRIPTION
46	MOD-P & MOD-PN	Din rail SPCO & DPCO, 3 wire & 4 wire phase failure & sequence relays
47	BXP	Midland Jay Din rail voltage monitoring relays
48	8/11/YWRP	8, 11 pin & Din rail SPCO & DPCO, 3 wire & 4 wire phase failure &
49	YWRUP & YWRUPS	sequence relays Din rail SPCO & DPCO phase failure & sequence relays with adjustable voltage monitoring
50	YWRKPTU(S)	Din rail SPCO & DPCO phase failure & sequence relays with adjustable voltage monitoring and delay on tripping timer, true delay off
51	YWR2AKPTU(S)	Din rail DPCO phase failure & sequence relays with adjustable voltage monitoring and delay on tripping timer, true delay off & delay on reinstatement timer
52 to 54	BAE, BAP, BBE, BBP BCE, BDE, BDP, BMP BPP, BQE, BQP, BRP BWP	Midland Jay single & three phase monitoring relays for heavy industrial & electrically noisy applications featuring phase imbalance & asymmetry control
55	BFP	Midland Jay Din rail frequency monitoring relay
56 to 59	MOD-TC-2 & YWRTC YWR2TC7	Din rail SPCO & DPCO thermistor relays
	8/11/YRTC	
60	YWR2TR7	Din rail DPCO PT100 temperature monitoring relay
61	11WRSTC 11WRSTCT	11 pin plug in 2 x SPCO combined pump seal leak and thermistor monitoring relay
62 & 63	YWRPTC4 & MOD-PTC	Din rail 2 x SPCO combined phase failure, sequence & thermistor relay
64	YRTCA	Lift room temperature relay
65	FOX.CS-200	"CT" style current proving switch
66 & 67	YRI-41 & MOD-I	Current proving switches
68 to 75	YWRI, YWRI.H, 11WRIA, 11WRID	Current sensing relays
76 & 77	CLA	Midland Jay current sensing relays
78 & 79	YWRI/EF	AC Earth leakage relays & core balance CT's
80 & 81	YWRI.DEF	DC Earth leakage relay & DC Earth leakage CT
82	Yxxx4-20i	Adjustable 4-20mA output signal generator
83	8/11/YRTP	4-20mA out of range trip Amp relay
84	11/YWRIT	1(4)-20mA adjustable trip Amps
85	YWRU2T/10VDC	0.1-10VDC adjustable dual setpoint relay
86	YxxA0-10D	Adjustable 0-10VDC output BMS power supply
87 & 88	11/YWRU	AC/DC voltage monitoring relays
89	YWROUV, YWR2OUV YWROUV2	Self powered AC voltage over & under control relays
90	8/11/YWRTU	Self powered DC voltage control relays
91 & 92	8/11/YWRW & MOD-W-1	Conductive probe level control relays
93	YWRWS	Pump seal leak or water leak detection relay
94	MOD-SAP-1	PNP signal amplifier
95-97	8/11RVL, YWRVL	Underspeed or pulse continuity "Watchdog" relays



DIMENSIONS FOR SENSING, CONTROL & MONITORING RELAYS



THREE PHASE MONITORING RELAYS

PHASE FAILURE & SEQUENCE RELAYS

TYPES: MOD-P-1 (3 wire spco) & MOD-PN-1 (4 wire spco) MOD-P-2 (3 wire dpco) & MOD-PN-2 (4 wire dpco)



FEATURES

- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- SPCO & DPCO versions
- Available 3 wire or 4 wire
- Self powered
- Transformer technology
- Dual LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

An attractive modern designed range of combined phase failure and sequence relays in a din rail mounted modular style housing of 1.5 modules width (27mm). Utilising transformer technology the units are available in either 3 wire or 4 wire versions, the 4 wire version also trips on loss of the Neutral. Both types are available with either a SPCO or DPCO output. On power up with all three phases present (plus the Neutral if applicable) and in the correct sequence the output relay/s will energise, the green and red LED's also illuminate. On loss of a phase, (or Neutral 4 wire versions), drop in voltage below Umin levels, or incorrect phase sequencing the output relay/s after a fixed time delay of 0.5 secs will drop out and the red LED will be extinguished. A green supply on LED only illuminated means that there is a supply to the unit but there is a supply fault of phase loss, under volts, or sequence. All terminal details and information along with the CE mark is clearly marked on the sides of the housing.

SPECIFICATIONS

Supply & Measuring

Nominal supply: 400V - 415V L-L (3wire) 230V - 240V L-N (4 wire) Nominal Umin (fixed): 80% on all 3 phases

Nominal Umin (fixed): 80% on all 3 phases 60% on 1 phase drop Delay on tripping: 0.5sec fixed

Max power consumption: <3VA Insulation: 2.5KV 50Hz impulse

Relay outputs:

Output contacts: SPC0 16Amps/250V AC1
DPC0 8Amps/250V AC1
Max breaking capacity: SPC0 4000VA

DPCO 2000VA
Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

<u>General:</u>

 $\begin{array}{lll} \mbox{Operating temperature:} & -20^{\circ}\mbox{C to} + 65^{\circ}\mbox{C} \\ \mbox{Storage temperature:} & -20^{\circ}\mbox{C to} + 65^{\circ}\mbox{C} \\ \mbox{Max cable size:} & 2.5\mbox{mm} \\ \mbox{CE marked:} & \mbox{Yes} \\ \end{array}$

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

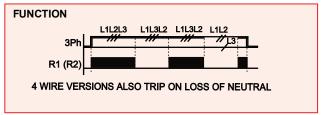
Housing material: Polycarbonate, Auto extinguishable

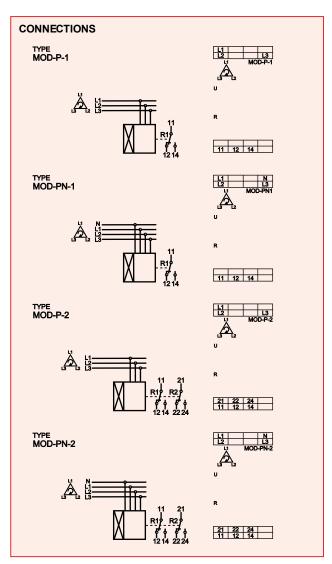
to UL 94 V-0

ORDERING INFORMATION

COIL VOLTAGE	SYSTEM
3x 400V-415V	3 Wire
3x 400V-415V	4 Wire
3x 400V-415V	3 Wire
3x 400V-415V	4 Wire
	3x 400V-415V 3x 400V-415V 3x 400V-415V







On request the units can be supplied without sequence monitoring by inserting (-S) after the part number ie, MOD-P-2(-S)

PRODUCT GROUP

MMIDLAND JAY SINGLE PHASE & THREE PHASE SUPPLY

MONITORING RELAYS

TYPES: BXP xx0x

FEATURES

- Din rail mounted Modular housing
- Monitors phase failure & Neutral loss
- Optional phase sequence detection
- Optional phase imbalance detection
- Calibrated voltage scale on adjustable units
- Single phase & three phase 3 wire or 4 wire units
- Adjustable time delay on tripping 0.5-10 secs
- **Dual LED indication**

DESCRIPTION & MODE OF OPERATION

A range of Din rail mounted Modular voltage supply monitoring relays available in either single phase or three phase configuration and if three phase a choice of 3 wire or 4 wire. Monitoring phase loss and if applicable Neutral loss, along with under voltage.

Single phase units have a nominal supply of 240VAC and three phase units 415VAC. All units are available either with a fixed under voltage trip level or an adjustable trip level. Fixed tripping levels are 170V for single phase units and 300V for three phase units. If adjustable it is on a calibrated voltage scale of 170-250V for a single phase unit and 300-440V for a three phase unit.

On three phase units both 3 wire or 4 wire phase sequence can be specified as an option.

On three phase 4 wire units phase imbalance and Neutral shift can be specified as an option. Phase imbalance is based on voltage amplitude of the phases and is fixed at 15% of imbalance.

All units have an adjustable delay on tripping timer of 0.5-10 secs (not True Delay Off), to ride through short term voltage dips, short term phase loss and if optionally specified phase sequence and phase imbalance errors.

Two LED's are provided. The green LED illuminates to indicate power is on the unit. The red LED illuminates to indicate the output relay/s is energised. The output relay/s energises when the monitored supply is healthy, that is; all phases and if applicable the Neutral present, if applicable in the correct sequence, the voltage level is within parameters and if applicable within balance.

Standard output contact configuration is SPCO as an option 2NO contacts is available (on request as a special 1NO & 1NC is also possible).

ORDERING INFORMATION

Type Configuration & Version

200 Single phase adjustable U/V 0 No option

210 Single phase fixed U/V

300 3P3W adjustable U/V

310 3P3W fixed U/V

400 3P4W adjustable U/V 410 3P4W fixed U/V

Options

Phase sequence

2 Phase imbalance + Neutral shift *

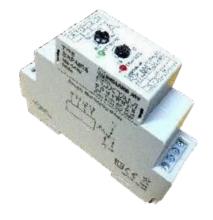
3 Phase sequence & phase imbalance + Neutral shift *

4 2NO output contacts

5 2NO output contacts & phase sequence

2NO output contacts & phase imbalance + Neutral shift *

7 2NO output contacts, phase sequence & phase imbalance + Neutral shift *



SPECIFICATIONS

Single Phase units

Nominal voltage: 240VAC L-N 170-265VAC Voltage range: Adjustable U/V setpoint: 170-250VAC Fixed units U/V setpoint: 170VAC Hysteresis: 2% fixed Repeat accuracy: < 1%

Three Phase units

Nominal voltage: 415VAC L-L 300-460VAC Voltage range: Adjustable U/V setpoint: 300-440VAC Fixed units setpoint: 300VAC Hysteresis: 2% fixed Repeat accuracy: < 1%

Phase imbalance + Neutral shift option

Neutral shift: Fixed 10% of nominal phase amplitude Fixed 15% of nominal phase amplitude Phase imbalance: Note: Only possible on 4 wire units

Relay outputs

SPCO 8 Amps / 250VAC AC1 Rating: 2NO 5 Amps / 250VAC AC1

1NO & 1NC Special request: Max switching voltage: 250VAC, 250VDC Mechanical life: 20 Million ops

Electrical life: 50K ops at max rated load

Isolation voltage: 2KV AC for 1 min

<u>General</u> 2KV for 1 min Isolation: Power consumption: < 12VA

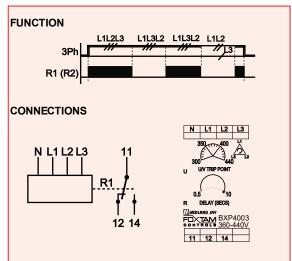
Trip delay time: Adjustable 0.5 to 10 secs

Operating temp: -40° C to $+65^{\circ}$ C

CF marked: Yes

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0



^{*} Phase imbalance + Neutral shift only available on three phase 4 wire units

PHASE FAILURE & SEQUENCE RELAYS

TYPES: YWRP, 11WRP, 8WRP (spco) YWR2P, 11WR2P (dpco)

FEATURES

48

- Din rail or plug in
- Available SPCO or DPCO output
- Available 3 wire or 4 wire
- Self powered
- Transformer technology

DESCRIPTION & MODE OF OPERATION

Combined phase failure and sequence relays, available in either a din rail or 8/11 pin plug housing. The output is SPCO with an option of DPCO on either the din rail or 11 pin version. Utilising transformer technology the units are available in either 3 or 4 wire versions, the 4 wire version tripping on loss of the Neutral. On power up with all three phases present (plus the Neutral if applicable) and in the correct sequence the output relay will energise, the green and red LEDs also illuminate. On loss of a phase, (or Neutral 4 wire versions), drop in voltage below Umin levels, or incorrect phase sequencing the output relay/s after a fixed time delay of 0.5 secs will drop out and the red LED will be extinguished. A green supply on LED only illuminated means that there is a supply to the unit but there is a supply fault or either a combination of; phase loss, under volts or sequence error. All terminal details and information along with the CE mark is clearly marked on the sides of the housing.

SPECIFICATIONS

Supply & Measuring:

3 x 110V AC, 3 x 220V AC Nominal supply:

> 3 x 380V AC, 3 x 400V AC 3 x 415V AC, 3 x 440V AC

Tolerance: +15%3 or 4 wire option System:

Frequency: 50/60Hz Nominal Umin (fixed): 80% on all 3 phases

60% on 1 phase drop

Delay on tripping: 0.5sec fixed (wrong sequence)

50mSec (phase loss)

Max power consumption: <3VA

Insulation: 2.5KV 50Hz impulse

Relay outputs:

SPC0 10Amps/250V AC1 Output contacts: DPC08Amps/250VAC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General: -20°C to +65°C Operating temperature:

Storage temperature: -20°C to +65°C Max cable size: 4mm

CF marked Yes

EN61000-6-1: 2007 In accordance with:

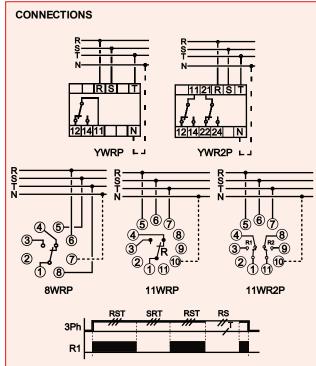
EN61000-6-3: 2007 EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0



PRODUCT



ORDERING INFORMATION

TYPE	VOLTAGE	SYSTEM
YWRP(Din railSPCO)	3x110V	3W(3 wire)
8WRP(8 pinSPCO)	3x220V	4W(4 wire)
11WRP(11 pinSPCO)	3x380V	
YWR2P(Din railDPCO)	3x400V	
11WR2P(11 pinDPCO)	3x415V	
•	3x440V*	
	SPECIAL**	

^{* 440}V only possible as a 3 wire version

OPTION

On 3 wire variants as a no cost option a separate AC auxiliary supply can be specified. This gives the possibility of additional "control circuit" voltage monitoring. If this is lost or is not present, the unit will de-energise or not energise as applicable. 24VAC, 48VAC, 110VAC.

^{**}Available on request special high voltage versions i.e 690V L-L. (Separate auxiliary supply required).

PHASE FAILURE RELAYS WITH OVER & UNDER VOLTAGE CONTROL, WITH OPTIONAL SEQUENCE, TIME DELAYS

PRODUCT GROUP

TYPES: YWRUPxx, 11WRUPxx, 8WRUPxx (spco)
YWR2UPxx (dpco)

FEATURES

- Din rail mounted
- Available SPCO or DPCO output
- Available 3 wire or 4 wire
- Adjustable over & under voltage control
- Specify with or without phase sequence
- Optional adjustable time delay
- Self powered
- LED fault indication
- Transformer technology

DESCRIPTION & MODE OF OPERATION

Phase failure relays with independent over and under voltage control, with the option of additional sequence control. Available in either a din rail or 8 & 11 pin plug in housing SPCO with a DPCO option in the din rail housing. All units can be specified as 3 wire or 4 wire. As an option in the din rail housing an adjustable time delay can be specified (not true delay off), which is effective against voltage control, phase sequence (if applicable), but not phase loss or Neutral loss on 4 wire versions (loss of L3 only would produce a time delay). The units are transformers based and thus will ignore transients and harmonic distortions.

The output relay is energised when all three phases are connected and in sequence (if applicable) and within the set voltage limits. The output relay/s will de-energise if one or more voltages between phases are under the value of the minimum set level or above the value of the maximum set level, less any set time delay (if applicable). The units will also de-energise on loss of a phase or incorrect sequence (if applicable). Separate red LED indicators indicate over and under voltage conditions. If both are illuminated this indicates a phase sequence error (if applicable). A green LED indicates output relay status.

ORDERING INFORMATION

<u>TYPE</u>	SEQUENCE	TIME DELAY	VOLTAGE	SYSTEM
YWRUP (Din rail SPCO)	*S	**T 0.1-10sec	3 x 110V	3W (3 wire)
8WRUP (8 pin SPCO)		**T 0.2-20sec	3 x 220V	4W (4 wire)
11WRUP(11 pin SPCO)		**T 0.3-30sec	3 x 380V	
YWR2UP (Din rail DPCO)			3 x 400V	
			3x 415V	
			3 x 440V**	*
			SPECIAL **	·**

OPTION

On 3 wire variants as a no cost option a separate AC auxiliary supply can be specified 24VAC, 48VAC, 110VAC. This gives the possibility of additional "control circuit" voltage monitoring. If this is lost or is not present, the unit will de-energise or not energise as applicable.

- * Insert S if sequence is required
- ** Insert Txxx if an adjustable time delay is required (din rail versions only)
- *** 440V only available as a 3 wire version
- **** Available on request special high voltage versions i.e 690V L-L. (Separate auxiliary supply required).

SPECIFICATIONS

Supply & Measuring

Nominal supply: 3 x 110V AC, 3 x 220V AC 3 x 380V AC, 3 x 400V AC 3 x 415V AC, 3 x 440V AC

Permanent tolerance: $\pm 15\%$ System: 3 or 4 wire option Frequency: 50/60Hz

Umin adjustable: 0-30% of nominal (phase to phase)
Umax adjustable: 0-20% of nominal (phase to phase)

Hysteresis: Fixed 3%

Delay on tripping: Optional 0.1-10sec, 0.2-20sec, 0.3-30sec

Otherwise fixed at 100mSec

SPC0 10Amps/250V AC1

Repeat accuracy: +2% of set values

Max power consumption: <3VA

Insulation:
Relay outputs:

Output contacts:

2.5KV 50Hz impulse

DPC0 8Amps/250V AC1
Max breaking capacity: SPC0 4000VA

DPC0 2000VA
Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General:

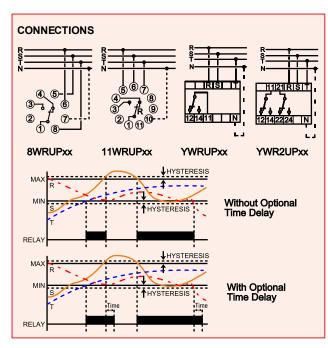
 $\begin{array}{lll} \mbox{Operating temperature:} & -20^{\circ}\mbox{C to} + 65^{\circ}\mbox{C} \\ \mbox{Storage temperature:} & -20^{\circ}\mbox{C to} + 65^{\circ}\mbox{C} \\ \mbox{Max cable size:} & 4mm \\ \mbox{CE marked} & \mbox{Yes} \\ \end{array}$

CE marked Yes In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0



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PHASE FAILURE RELAYS WITH UNDER VOLTAGE **CONTROL & TRUE DELAY OFF ON TRIPPING** TIME DELAY, WITH OPTIONAL PHASE SEQUENCE CONTROL

PRODUCT **GROUP**

TYPES: YWRKPTUxx (spco) & YWR2KPTUxx (dpco)

FEATURES

50

- Din rail mounted
- Available SPCO or DPCO output
- Available 3 wire or 4 wire
- Adjustable under voltage control
- Optional phase sequence
- Adjustable true delay off time delay
- Self powered
- **LED** indication

DESCRIPTION & MODE OF OPERATION

Phase failure relays with adjustable under voltage control, with the option of additional sequence control. Available in a din rail housing with a SPCO or DPCO output option. Both units can be specified as 3 wire or 4 wire and are self powered (no separate auxiliary supply is required). A range of nominal L-L input voltages can be specified from 110V L-L to 440V L-L, an under voltage setpoint can be set adjustable 5-25% of the specified nominal. The units will also trip on phase sequence (if specified), phase loss and on 4 wire units deviation of the Neutral. All tripping eventualities are subject to a delay, the delay being True Delay Off, adjustable 0.1-10secs as standard. If you loose everything you will still benefit from the delay timer, unlike many other types of phase failure relays. This makes these units ideal for mains to generator changeover systems where short supply interruptions are best ignored, thus eliminating false engine starts.

On the initial connection of the monitored supply the green LED will illuminate. On the supply being within the set levels, in the correct sequence (if applicable) and the Neutral connected on 4 wire units, the output relay will energise and the red LED will illuminate. On a phase loss, sequence error (if applicable), or under voltage situation after the set time delay the output relay will de-energise and the red LED will extinguish. However, note on a low voltage scenario the red LED will extinguish before the relay output have timed out and de-energised. If in a timing situation the fault condition corrects itself, any remaining delay time will be cancelled and the output relay will remain energised.

ORDERING INFORMATION

TYPE SEQUENCE YWRKPTU (Din rail SPCO) *S YWR2KPTU (Din rail DPCO)	TIME DELAY **T 0.1-10sec **T 0.2-20sec **T 0.3-30sec	VOLTAGE 3 x 110V 3 x 220V 3 x 380V	SYSTEM 3W (3 wire) 4W (4 wire)
	**T0.3-30sec	3 x 380V 3 x 400V 3 x 415V	

^{*} Insert S if sequence is required

By nature a true delay off timer uses different relay technology, by the means of a magnetically latching mechanism. However, if subjected to undue physical shock, for example "in transit" the contacts maybe on initial connection be in the incorrect state. If this is the case this can be easily rectified by the connection and removal of the auxiliary supply voltage. Thus allowing the contacts to time out and return to the correct state.



Supply & Measuring

Nominal supply: 3 x 110V AC, 3 x 220V AC

3 x 380V AC, 3 x 400V AC

3 x 415V AC

Permanent tolerance: +15%

System: 3 or 4 wire option

Frequency: 50/60Hz

Umin adjustable: 5-25% of nominal (phase to phase)

Hysteresis: Fixed 2%

Delay on tripping: True delay off adjustable 0.1-10sec (standard)

1-100sec, 0.1-10min (on request)

300mSec required to fully charge true delay off Min on time:

timing capacitor

Max power consumption: <2VA

2.5KV 50Hz impulse Insulation:

Relay outputs:

SPC0 10Amps/250V AC1 Output contacts: DPC0 8Amps/250V AC1

SPC0 4000VA

Max breaking capacity: **DPCO 2000VA**

30 Million ons

Mechanical life:

Electrical life: 200K ops at max rated load

General:

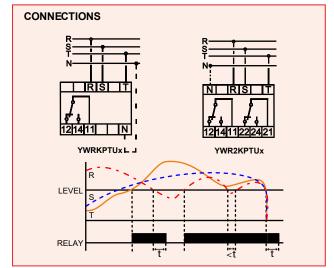
-20°C to +65°C Operating temperature: Storage temperature: -20°C to +65°C Max cable size: 4mm

CE marked Yes EN61000-6-1: 2007 In accordance with:

EN61000-6-3: 2007 EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0



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^{**} Insert Txxx for the required time delay

GROUP

D

PHASE FAILURE RELAYS WITH UNDER VOLTAGE **CONTROL & TRUE DELAY OFF ON TRIPPING TIME** DELAY, DELAY ON REINSTATEMENT TIMER, WITH PRODUCT

OPTIONAL PHASE SEQUENCE CONTROL

TYPES: YWR2AKPTUx (dpco)

- **FEATURES**
- Din rail mounted
- **DPCO** output
- Available 3 wire or 4 wire
- Adjustable under voltage control
- Adjustable hysteresis
- **Optional phase sequence**
- Adjustable true delay off time delay
- Adjustable delay on reinstatement timer
- Self powered
- **LED** indication
- Transformer technology

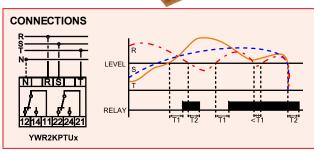
DESCRIPTION & MODE OF OPERATION

Phase failure relays with adjustable under voltage control and hysteresis, with the option of additional sequence control. In a din rail housing and DPCO output, can be specified as 3 wire or 4 wire and is self powered (no separate auxiliary supply is required). A range of nominal L-L input voltages can be specified from 110V L-L to 440V L-L, an under voltage setpoint can be set adjustable 5-25% of the specified nominal and a return hysteresis adjustable 5-50% of the setpoint. For example, if a 400V unit is set with an under voltage control of 10%, the unit will trip (deenergise) at 360V, if the hysteresis is set at 50%, the return point equates to +50% of the under voltage control, i.e. +50% of 40V = 20V, therefore the unit will re-energise at 380V. The units will also trip on phase sequence (if specified), phase loss and on 4 wire units deviation of the Neutral, All tripping eventualities are subject to a delay. the delay being True Delay Off, adjustable 0.1-10secs as standard. If you loose everything you will still benefit from the delay timer, unlike many other types of phase failure relays. This makes these units ideal for mains to generator changeover systems where short supply interruptions are best ignored, thus eliminating false engine starts, further enhanced with a generator "run down" period on the return of a healthy supply.

On the initial connection of the monitored supply the green LED will illuminate. On the supply being within the set levels, in the correct sequence (if applicable) and the Neutral connected on 4 wire units, the output relay will energise and the red LED will illuminate, after the reinstatement time has elapsed. On a phase loss, sequence error (if applicable), or under voltage situation after the set time delay the output relay will de-energise and the red LED will extinguish. However, note on a low voltage scenario the red LED will extinguish before the relay output have timed out and de-energised. If in a timing situation the fault condition corrects itself, any remaining delay time will be cancelled and the output relay will remain energised.

ORDERING INFORMATION

TYPE	SEQUENCE	VOLTAGE	SYSTEM
YWR2AKPTU (Din rail SPCO)	*S	3 x 110V	3W (3 wire)
		3 x 220V	4W (4 wire)
		3 x 380V	
		3 x 400V	
		3 x 415V	
* Insert S if sequence is required		3 x 440V**	



SPECIFICATIONS

Supply & Measuring

Nominal supply: 3 x 110V AC, 3 x 220V AC

3 x 380V AC, 3 x 400V AC 3 x 415V AC, 3 x 440V AC

Permanent tolerance: +15%

3 or 4 wire option** System:

50/60Hz Frequency:

Umin adjustable: 5-25% of nominal (phase to phase)

Hysteresis adjustable: 5-50% of Umin

300mSec required to fully charge true delay off Min on time:

timing capacitor

Delay on reinstatement: Adjustable 0.3-30mins after return of a healthy

> supply <6VA

Max power consumption: 2.5KV 50Hz impulse Insulation:

Relay outputs:

Output contacts: DPC0 10Amps/250V AC1 Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General:

Operating temperature: -20°C to +65°C Storage temperature: -20°C to +65°C Max cable size: 4mm

CF marked

EN61000-6-1: 2007 In accordance with: EN61000-6-3: 2007

EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

By nature a true delay off timer uses different relay technology, by the means of a magnetically latching However, if subjected to undue mechanism. physical shock, for example "in transit" the contacts maybe on initial connection be in the incorrect state. If this is the case this can be easily rectified by the connection and removal of the auxiliary supply voltage. Thus allowing the contacts to time out and return to the correct state.

OPTION

On 3 wire variants as a no cost option a separate AC auxiliary supply can be specified. This gives the possibility of additional "control circuit" voltage monitoring. If this is lost or is not present, the unit will de-energise or not energise as applicable. 24VAC, 48VAC, 110VAC

** 440V only available as a 3 wire version Tel: 0161 626 5316 / 01276 25858

MMIDLAND JAY SINGLE & THREE PHASE VOLTAGE SUPPLY **MONITORING RELAYS FOR HEAVY INDUSTRIAL & ELECTRICALLY NOISY APPLICATIONS FEATURING** PHASE IMBALANCE & ASYMMETRY CONTROL

TYPES: BAE, BAP, BBE, BBP, BCE, BDE, BDP, BMP, BPP, BQE, **BQP. BRP. BWP**

FEATURES

- Din rail mounted & surface mounting housings
- Monitors phase failure & Neutral loss
- Optional phase sequence detection
- Optional phase imbalance detection
- Calibrated voltage scale on adjustable units
- Single phase & three phase 3 wire or 4 wire units
- Adjustable time delay on tripping 0.5-30 secs (most True Delay Off)
- **Dual LED indication**



A range of Din rail mounted and surface mounted enclosures, voltage supply monitoring relays for particularly harsh industrial applications and electrically noisy environments.

Construction of most three phase units are based around an internally fitted transformer, not only does this transformer coupled with active filters facilitate a high degree of protection from harmonics and supply irregularities but also enables units to monitor Phase Imbalance and Asymmetry Control as all phases are referenced to the Star point.

These monitoring devices offer protection both from monitoring accuracy and product survival against the following supply phenomenon:-

Harmonic voltage distortion by large non-linear loads such as; soft starts under starting, large variable speed drives and a large number of computers. These effects are exaggerated under weak supply conditions. All product types except for products with prefix BDE are particularly suited for such conditions.

Notching (momentary supply loss / negative transient), caused by large thyristor controlled three phase rectifiers found in DC drives, current source inverters, again the effects are exaggerated under weak supply conditions. Product types with prefix BCE, BMP, BQE, BQP, BAE, BAP, BBP, BWP and **BBE** are particularly suited for such conditions.

Spikes, caused by switching transients and electrical storms disturbances, supplies in remote locations are particularly prone. Product types with prefix BCE, BMP, BQE and BQP are particularly suited for such conditions.



Nominal voltage: Voltage range: Adjustable U/V setpoint: 170-265VAC 170-250VAC 170VAC Fixed units U/V setpoint: Adjustable* Hysteresis: Répeat accuracy: < 1%

Three Phase units Nominal voltage: 415VAC L-L*** Voltage range: Adjustable U/V setpoint: 300-460VAC 300-440VAC Fixed units setpoint: 300VAC Adjustable* Hysteresis:

Repeat accuracy: Adj. 15% of nominal phase amplitude** Fixed 15%, 25%, 35%, 40% of nominal Phase imbalance:

phase amplitude**

Relay outputs See table Rating: General 2KV for 1 min Isolation: Power consumption: < 12VA

Adjustable 0.5 to 30 secs Trip delay time:

Operating temp: -40° C to $+65^{\circ}$ C CE marked:

*Most units, please request individual data sheets for specific details, please call for assistance.

**Depending on exact model type, see ordering information and selection table.

***Other system voltages are available, please call for assistance



PRODUCT **GROUP**

ORDERING INFORMATION & SELECTION TABLE



Туре	Phase Imbalance	Under Voltage	Over Voltage	Phase Sequence	Time Delay	Supply Type	Supply Voltage	Supply Hz	Output	Output Rating	Enclosure **
BAE 0203	5-15%	25%	-	Yes	0.5s	3 phase	415V	50	DPCO	3A / 415V	3
BAE 0503	5-15%	25%	_	Yes	0.5-30s*	3 phase	415V	50	DPCO	1A / 415V	3
BAE 0703	5-15%	5-50%	_	Yes	0.5-30s*	3 phase	415V	50	DPCO	1A / 415V	3
BAE 3203	5-15%	25%	_	Yes	0.5s	3 phase	415V	50	DPCO	3A / 415V	4
BAE 3503	5-15%	25%	_	Yes	0.5-30s*	3 phase	415V	50	DPCO	1A / 415V	4
BAE 3703	5-15 <i>%</i>	5-50%	-	Yes	0.5-30s*	3 phase	415V 415V	50 50	DPCO	1A / 415V	4
DAE 3703	5-1576	3-30 %	-	162	0.0-308"	з рнаѕе	4137	50	DFCO	IA / 415V	4
BAP 1203	15%	25%	-	Yes	0.5s	3 phase	415V	50	SPCO	3A / 230V	1
BAP 1403	5-15%	25%	-	Yes	0.5s	3 phase	415V	50	SPCO	3A / 230V	1
BAP 1603	15%	25%	-	Yes	0.5s	3 phase	415V	50	DPCO	3A / 230V	1
BAP 1703	5-15%	25%	-	Yes	0.5s	3 phase	415V	50	DPCO	3A / 230V	1
BAP 1903	5-15%	5-25%	_	Yes	0.5s	3 phase	415V	50	DPCO	3A / 230V	1
BAP 2703	5-15%	5-50%	-	Yes	0.5-30s*	3 phase	415V	50	DPCO	3A / 230V	2
BBE 0703	5-15%	5-50%	12%	Yes	0.5-30s*	3 phase	415V	50	DPCO	1A / 415V	3
		/									
BBP 1203	15%	25%	12%	Yes	0.5s	3 phase	415V	50	SPCO	3A / 230V	1
BBP 1403	5-15%	25%	12%	Yes	0.5s	3 phase	415V	50	SPCO	3A / 230V	1
BBP 1603	15%	25%	12%	Yes	0.5s	3 phase	415V	50	DPCO	3A / 230V	1
BBP 1703	5-15%	25%	12%	Yes	0.5s	3 phase	415V	50	DPCO	3A / 230V	1
BBP 2703	5-15%	5-50%	12%	Yes	0.5-30s*	3 phase	415V	50	DPCO	3A / 230V	2
BCE 3103		2-30%		No	0.5s	3 phase	415V	40-70	DPCO	1A / 415V	3
BCE 3603	_	2-30 %	-	Yes	0.5s 0.5s	3 phase	415V 415V	50	DPCO	1A / 415V	3
DOE 0000		2 00 /0		100	0.00	•	1101	- 00	5, 55	17 17 110 1	- ŭ
BDP 1403	35%	25%	-	Yes	0.5s	3 phase	415V	50	SPCO	1A / 415V	1
BDP 1603	35%	25%	-	Yes	0.5s	3 phase	415V	50	DPCO	3A / 230V	1
BDP 2403	25%	25%	_	Yes	0.5s	3 phase	415V	50	SPCO	3A / 230V	1
BDP 2603	25%	25%	-	Yes	0.5s	3 phase	415V	50	DPCO	3A / 230V	1
BDE 0403	35%	25%	-	Yes	0.5s	3 phase	415V	50	SPCO	1A / 415V	3
BMP 1903	_	5-30%	5-20%	Yes	0.5-30s*	3 phase	415V	50	2xDPCO	3A / 230V	2
BMP 2003	_	5-30 % 5-30%	5-20 % 5-20 %	No	0.5-30s*	3 phase	415V 415V	40-70	2xDPCO	3A / 230V	2
	-					-				1	
BMP 2103	-	5-30%	5-20%	No	0.5s	3 phase	415V	40-70	DPCO	3A / 230V	2
BMP 2203	-	5-30%	5-20%	Yes	0.5s	3 phase	415V	50	DPCO	3A / 230V	2
BMP 2303	-	5-30%	5-20%	Yes	0.5-30s*	3 phase	415V	50	DPCO	3A / 230V	2
BMP 2403	-	5-30%	5-20%	No	0.5-30s*	3 phase	415V	40-70	DPCO	3A / 230V	2
BMP 2503	-	5-30%	5-20%	Yes	0.5s	3 phase	415V	50	2xDPCO	3A / 230V	2
BMP 2603	-	5-30%	5-20%	No	0.5s	3 phase	415V	40-70	2xDPCO	3A / 230V	2
BQE 0702	_	15%	_	_	0.5-30s*	1 phase	240V	50	DPCO	3A / 230V	3
BQE 3702	-	15%	-	-	0.5-30s*	1 phase	240V	50	DPCO	3A / 230V	4
DOD 1100			0.200/		0 F c	1 mbs	2401/	E0	CDCC	24 / 2201/	1
BQP 1102	-	-	0-30%	-	0.5s	1 phase	240V	50	SPCO	3A / 230V	1
BQP 1202	-	0-30%	-	-	0.5s	1 phase	240V	50	SPCO	3A / 230V	1
BQP 1402	-	0-30%	-	-	0.5s	1 phase	240V	50	DPCO	3A / 230V	1
BQP 1502	-	-	0-30%	-	0.5s	1 phase	240V	50	DPCO	3A / 230V	1
BRP 0103	40%	40%	_	Yes	0.5s	3 phase	415V	50	SPCO	1A / 415V	1
BRP 1103	40%	40%	-	Yes	0.5s	3 phase	415V	50	DPCO	1A / 415V	1
BWP 0103	-	3-20%	3-15%	No	0.5-30s	4 wire	415V	50	SPCO	3A / 230V	1

NOTES

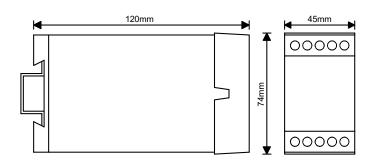
*True Delay Off

Special voltages and frequencies in many of the above products are available on request, please call for assistance.

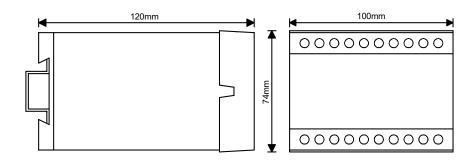
Individual data sheets specifically on each of the above detailed variations are available, please call for assistance.

^{**}Please see page 54 for enclosure dimensions

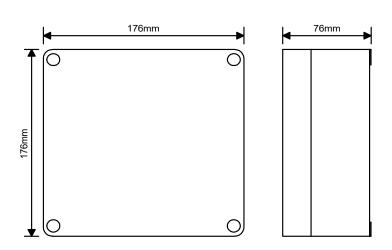
■ ENCLOSURE TYPE: 1



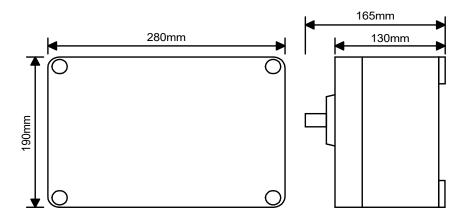
■ ENCLOSURE TYPE: 2



■ ENCLOSURE TYPE: 3



■ ENCLOSURE TYPE: 4



Tel: 0161 626 5316 / 01276 25858

PRODUCT GROUP

FREQUENCY MONITORING RELAYS

MMIDLAND JAY FREQUENCY MONITORING RELAYS

TYPES: BFP



FEATURES

- Din Rail Mounted
- Monitors mains frequency deviation
- Available as nominal 50Hz, 60Hz & 400Hz
- Wide choice of nominal supply options
- Output DPCO
- Dual LED indication

DESCRIPTION

Din rail mounted frequency monitoring relays available in a choice of nominal frequencies of 50Hz, 60Hz and 400Hz on a wide choice of supply voltages either referenced L-N or L-L (L-L units only require the connection of two phases). The frequency relays are in effect self-powered and do not require a separate auxiliary supply.

Providing the monitored supply frequency is between the lower and upper (fixed*) limits the output relay will energise, indicated via a green LED. If the frequency deviates outside these limits the output relay will de-energise, indicated via a red LED. The unit resets automatically when the frequency returns to within the limits.

*The limits are fixed:-

50Hz (47.5Hz to 52.5Hz) 60Hz (57Hz to 63Hz) 400Hz (380-420Hz)

SPECIFICATIONS

Supply Voltage: 110VAC, 230VAC, 415VAC, 440VAC

Other voltages on request

Frequency: 50Hz, 60Hz, 400Hz

Other nominal frequencies on request 50Hz (47.5Hz), 60Hz (57Hz), 400Hz (380Hz) 50Hz (52.5Hz), 60Hz (63Hz), 400Hz (420Hz)

 Stability:
 < 1%</td>

 Response time:
 0.5 secs

 Output:
 DPCO

 Rating:
 3 Amps / 250V

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

 $\begin{array}{ll} \mbox{Isolation:} & \mbox{2KVA for 1 min} \\ \mbox{Power consumption:} & \mbox{< 5VA} \\ \mbox{Temperature range:} & \mbox{-15}^{\circ}\mbox{C to } + 60^{\circ}\mbox{C} \\ \end{array}$

ORDERING INFORMATION

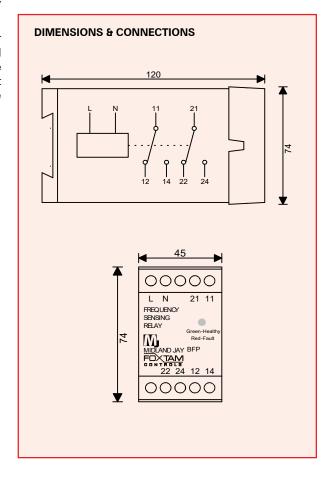
Type	Voltage**	Frequency**
BFP	110VAC	50Hz
	230VAC	60Hz
	415VAC	400Hz
	440VAC	Special Hz
	Special VAC	•

**Specify

Lower limit:

Upper limit:





THERMISTOR MONITORING RELAY

TYPE: MOD-TC-2 (dpco)



- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- **■** DPCO output
- Tri voltage 24VACDC, 110VAC, 230VAC
- Selectable manual or auto reset
- Tri LED status indication
- CE marked



An attractive modern designed thermistor relay in a din rail mounted modular style housing of 1.5 modules width (27mm). The units are supply voltage selectable via the connection of different terminals. On the connection of the supply voltage the two LED's illuminate green and the output relay will energise. Should the PTC sensor embedded within the motor windings resistance rise above 3.3 KOhms due to a rise in motor temperature the output relay will de-energise and one of the LED's will illuminate orange. Once tripped the motor temperature would have to cool sufficiently for the resistance to drop below 1.8 KOhms to allow the output relay to re-energise again. The fixed tripping and reset values are industry recognised acceptable values.

Should the input resistance short circuit or go low below 30 Ohms this will be regarded as a fault and will be indicated by one green and one red LED, the output relay will be de-energised. Likewise, should the sensor go open circuit this will be infinity resistance and therefore high which will be indicated by one green and one orange LED, the output relay will be de-energised.

Via terminals Y1 & Y2 a volt free link can be placed thus causing the unit to have a latched function. Once tripped and the input resistance has fallen back below 1.8 KOhms the unit will need to be reset. This can be done by opening the link between Y1 & Y2 manual reset, resetting can also be achieved by removing the supply voltage. Leaving Y1 & Y2 open will result in auto resetting.

All terminal details and information along with the CE mark is clearly marked on the sides of the housing.



SPECIFICATIONS

Supply & Measuring

Supply voltage: A1 to A2 (230VAC) A1 to A3 (110VAC)

A1 to A4 (24VAC) A1 to A4 + (24VDC)

Max power consumption: 11VA

Insulation: 2.5KV 50Hz impulse

Sensor voltage: Max 2.5VDC (open circuit 12VDC)

Trip level: 3.3 KOhms
Reset level: 1.8 KOhms
Min cold sensor: 30 Ohms

Accuracy

Repeat accuracy: <0.5%

Temperature dependance: <0.1% per 1°C

LED indication

1 green & 1 orange LED:

2 green LED's: Healthy & relay energised

1 green & 1 red LED: Short circuited thermistor or low resistance

<30 Ohms, relay de-energised Open circuit thermistor or high resistance >3.3 KOhms, relay de-energised

Relay output

Output contacts: DPC0 8Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C
Max cable size: 4mm

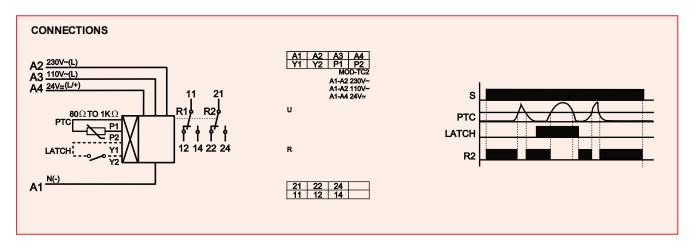
CE marked Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to ÚL 94 V-0



PRODUCT

GROUP

THERMISTOR MONITORING RELAY

TYPES: YWRTC (spco) YWR2TC (dpco)

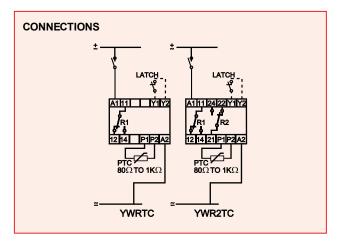
FEATURES

- Din rail mounted
- Available SPCO or DPCO output
- Selectable manual or auto reset
- Optional test & reset buttons
- **Optional Klixon versions**
- **Dual LED indication**
- Isolation via transformer

DESCRIPTION & MODE OF OPERATION

Thermistor monitoring relays, in a din rail housing available as SPCO or DPCO. The relays will monitor a series circuit of up to 6 thermistors having a total "healthy" resistance not exceeding 1500 Ohms, the output relay/s will be energised indicated also by a red LED. Should overheating occur the individual resistance of a thermistor will rapidly rise above 3.3 KOhms at which point the normally energised relay/s will de-energise, accompanied by the red LED extinguishing. In non latched mode (the link between terminals Y1 & Y2 left open) the relay/s will re-energise when the circuit resistance drops below 1.8 KOhms. In latch mode (the link between terminals Y1 & Y2) the unit can be reset when this closed link is opened, provided the circuit resistance is below 1.8 KOhms. In the event of a short circuit or auxiliary supply loss the unit will de-energise.

As an option the units can be specified with built in reset or test push buttons, or if desired, both. Also available is a Klixon switch input option. However, short circuit protection is omitted on versions for use with Klixon switches.



ORDERING INFORMATION

TYPE	KLIXON	OPTIONS
YWRTC (Din rail SPCO)	*T	**4
YWR2TC (Din rail DPCO)		**5
		**6

- * Insert T if Klixon version is required
- ** Insert 4 if Test & Reset buttons are required
- ** Insert 5 if Reset button is required
- ** Insert 6 if Test button is required
- *** No isolation on DC versions



SPECIFICATIONS

Supply & Measuring

 $\pm 15\%$ Nominal supply tolerance: Isolation AC versions: Via transformer Isolation DC versions: None

 $3.3 \, \text{KOhms} \pm 5\%$ Operating level: 1.8 K0hms ± 10% Reset level:

Max cold resistance of detection circuit: 1500 Ohms

Max No. of PTC sensors:

2.5V DC max Sensor voltage: Short circuit detection: $30 \text{ Ohms } \pm 20\%$

Operation delay on thermistor operation:

0.5 sec

Relay output

Output contacts: SPC0 10Amps/250V AC1

DPC0 8Amps/250V AC1

Mechanical life: Electrical life:

30 Million ops 200K ops at max rated load

General

-20°C to +65°C

Storage temperature: -20°C to +65°C Max cable size:

4mm

CE marked

Yes

In accordance with:

Operating temperature:

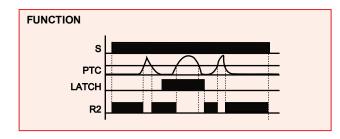
FN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material

Polycarbonate, Auto extinguishable

to UI 94 V-0



COIL VOI	TAGE
4401/40	

***48VDC	230VAC	440VAC
***24VDC	110VAC	415VAC
***12VDC	48VAC	400VAC
***12VDC	24VAC	380VAC

Tel: 0161 626 5316 / 01276 25858 www.foxtamcontrols.co.uk THERMISTOR MONITORING RELAY WITH BUILT IN "NO VOLT SAFE LATCH" PLUS MANUAL &

REMOTE RESET

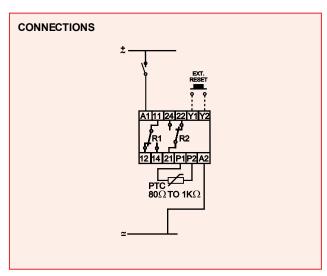
TYPE: YWR2TC7 (dpco)

- FEATURES
- Din rail mounted
- DPCO output
- Manual reset
- Remains latched on loss of supply after fault
- Option Klixon version
- Dual LED indication
- Isolation via transformer

DESCRIPTION & MODE OF OPERATION

Thermistor monitoring relay, din rail mounted and DPCO output. The relay will monitor a series circuit of up to 6 thermistors having a total "healthy" resistance not exceeding 1500 Ohms, the output relay will be energised indicated also by a red LED. Should overheating occur the individual resistance of a thermistor will rapidly rise above 3.3 KOhms at which point the normally energised relay will de-energise, accompanied by the red LED extinguishing, at which point the relay will be "latched off". In this latched condition the YWR2TC7 will not reset when the thermistor cools down and will not be reset by removing and re-applying the auxiliary supply. In order to reset the YWR2TC7 the auxiliary supply must be on, the thermistors cold, then the front reset button can be operated or the remote reset input activated to reenergise the relay. In normal "no fault" operation the relay will energise on the connection of the auxiliary supply. Newly installed units may need to be initially reset on commissioning, transit shock can cause the relay to latch over

Also available is a Klixon switch input option, short circuit protection is omitted on versions for use with Klixon switches



ORDERING INFORMATION

TYPE	KLIXON *T	COIL VOLTAGE		
YWR2TC7		440VAC	230VAC	**48VDC
		415VAC	110VAC	**24VDC
		400VAC	48VAC	**12VDC
		380VAC	24VAC	

^{*} Insert T if Klixon version is required



SPECIFICATIONS

Supply & Measuring

Max cold resistance of detection circuit: 1500 0hms
Max No. of PTC sensors: 6
Sensor voltage: 2.5V DC max

Short circuit detection: $30 \text{ Ohms} \pm 20\%$ Operation delay on

thermistor operation: 0.5 sec

Relay output
Output contacts: DPCO 8Amps/250V AC1

Mechanical life: 30 Million ops
Electrical life: 200K ops at max rated load

General

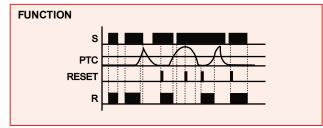
Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C
Max cable size: 4mm
CF marked Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0



^{**} No isolation on DC versions

PRODUCT GROUP

THERMISTOR MONITORING RELAYS (Economical Version)

TYPES: YRTC (spno) 8RTC, 11RTC (spco)



- Din rail or 11 pin plug in
- Single pole output
- Optional Klixon versions
- Dual LED indication
- Economical version no latch or test

DESCRIPTION & MODE OF OPERATION

Thermistor monitoring relays, available in either a din rail or 8 & 11 pin plug in housing SPCO (N/O in the din rail housing). The relays will monitor a series circuit of up to 6 thermistors having a total "healthy" resistance not exceeding 1500 Ohms, the output relay will be energised indicated also by a red LED. Should overheating occur the individual resistance of a thermistor will rapidly rise above 3.3 KOhms at which point the normally energised relay will de-energise, accompanied by the red LED extinguishing. In the event of a short circuit or auxiliary supply loss the unit will de-energise.

As an option the units can be specified with a Klixon switch input option. However, short circuit protection is omitted on versions for use with Klixon switches.

SPECIFICATIONS

Supply & Measuring

Max cold resistance of

detection circuit: 1500 Ohms

Max No. of PTC sensors: 6

Sensor voltage: 2.5V DC max Short circuit detection: $30 \text{ Ohms} \pm 20\%$

Operation delay on

thermistor operation: 0.5 sec

Relay output

Output contacts: SPCO 10Amps/250V AC1 (Din rail version SPNO)

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

<u>General</u>

 $\begin{array}{ll} \mbox{Operating temperature:} & -20\mbox{°C to} + 65\mbox{°C} \\ \mbox{Storage temperature:} & -20\mbox{°C to} + 65\mbox{°C} \\ \mbox{Max cable size:} & 4\mbox{mm} \end{array}$

CE marked Yes

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

 TYPE
 KLIXON
 COIL VOLTAGE

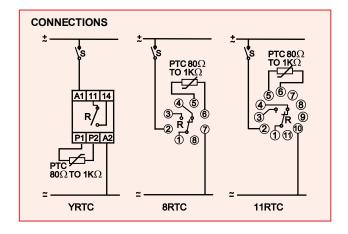
 YRTC (Din rail SPNO)
 *T
 230VAC

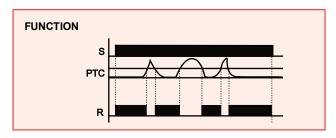
 8RTC (8 pin SPCO)
 110VAC

 11RTC (11 pin SPCO)
 48VAC/DC

 24VAC/DC
 24VAC/DC







^{*} Insert T if Klixon version is required

PT100 TEMPERATURE RELAY WITH BUILT IN "NO VOLT SAFE LATCH" PLUS MANUAL & REMOTE PRODUCT

RESET

TYPE: YWR2TR7 (dpco)

- FEATURES
- Din rail mounted
- DPCO output
- Adjustable range 0°C to 200°C
- Manual reset
- Remains latched on loss of supply after fault
- Dual LED indication
- Isolation via transformer

DESCRIPTION & MODE OF OPERATION

PT100 temperature relay, din rail mounted and DPCO output. The adjustable temperature sensing relay YWR2TR7 will monitor a PT100 sensing probe (preferably 3 wire, but 2 wire possible if terminals P2 & PC are linked together). The adjustable range is 0°C to 200°C the output relay will be energised when below the set level, indicated also by a red LED. When the sensed temperature exceeds the set level the relay will be de-energised accompanied by the red LED extinguishing, at which point the relay will be "latched off". In this latched condition the YWR2TR7 will not reset on a failing temperature and will not be reset by removing and re-applying the auxiliary supply. In order to reset the YWR2TR7 the auxiliary supply must be on, the PT100 cold, then the front reset button can be operated or the remote reset input activated to re-energise the relay. In normal "no fault" operation the relay will energise on the connection of the auxiliary supply. Newly installed units may need to be initially reset on commissioning, transit shock can cause the relay to latch over.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: ±15% Isolation AC versions: Via transformer Isolation DC versions: None PT100 sensor: 3 wire preferred

If 2 wire terminals P2 & PC must be linked

Operating level: 0°C to 200°C adjustable

Operation delay on

Thermistor operation: 0.5 sec

Relay output

Output contacts: DPC0 8Amps/250V AC1
Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

<u>General</u>

 Operating temperature:
 -20°C to +65°C

 Storage temperature:
 -20°C to +65°C

 Max cable size:
 4mm

 CE marked:
 Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

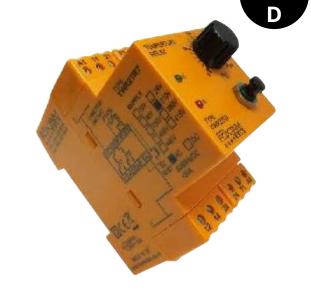
Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

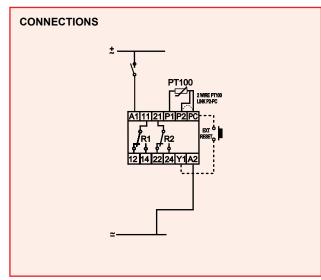
ORDERING INFORMATION

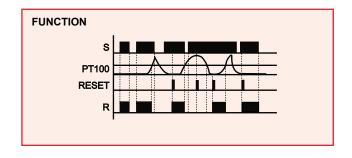
TYPE	COIL VOLTAG	<u>iE</u>	
YWR2TR7	440VAC	230VAC	*48VDC
	415VAC	110VAC	*24VDC
	400VAC	48VAC	*12VDC
	380//۷	241/40	

^{*} No isolation on DC versions



GROUP





D

PUMP SEAL LEAK MONITOR RELAY / WATER LEAK **DETECTION RELAY & THERMISTOR / KLIXON** PRODUCT **MONITORING RELAY GROUP**

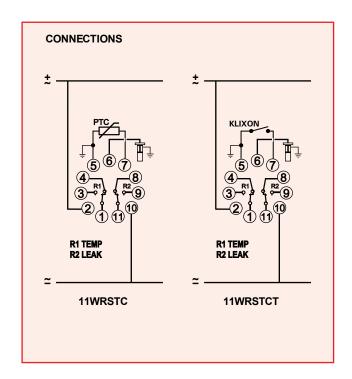
TYPES: 11WRSTC (PTC, 2xSPCO), 11WRSTCT (KLIXON, 2xSPCO)

FEATURES

- 11 Pin plug in
- Thermistor & Klixon versions available
- Detection of water contamination of oil
- Detection of water leaks from pipes in buildings
- Isolated probe supply
- **LED** indication

DESCRIPTION & MODE OF OPERATION

11 pin plug relay for the monitoring and alarming in applications such as water contamination of the oil within submersible pumps. Working on the conductive probe principle. In a situation healthy condition the output relay is energised, when the presence of water is detected, i.e. in the case of a pump, the seal fails and the oil becomes contaminated the resistance drops. If the resistance falls below the set level output relay will de-energise and the red LED will extinguish. A green LED indicates the connection of the auxiliary supply. Such pumps often have embedded thermistors within the motor winding this relay will also monitor a series circuit of up to 6 thermistors having a total "healthy" resistance not exceeding 1500 Ohms, the output relay will be energised indicated also by a red LED. Should overheating occur the individual resistance of a thermistor will rapidly rise above 3.3 KOhms at which point the normally energised relay/s will de-energise, accompanied by the red LED extinguishing. The relay will re-energise when the circuit resistance drops below 1.8 KOhms. in the event of a short circuit or auxiliary supply loss the unit will de-energise.





SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: Isolation: Via transformer Probe supply: 12VDC Max probe current: 2mA Power consumption: 3VA Sensitivity fixed: 4.7K0hms 100 mSec on make Response time: $3.3 \, \text{KOhms} \pm 5\%$ Operating level: $1.8 \text{ KOhms} \pm 10\%$ Reset level:

Max cold resistance of 1500 Ohms detection circuit: Max No. of PTC sensors: 2.5V DC max Sensor voltage: **Relay output**

SPC0 10Amps/250V AC1 Output contacts: DPC0 8Amps/250V AC1

Mechanical life: 30 Million ops Electrical life: 200K ops at max rated load

General

Operating temperature: -20°C to +65°C Storage temperature: -20°C to +65°C Max cable size: 4mm CE marked

In accordance with: EN61000-6-1: 2007

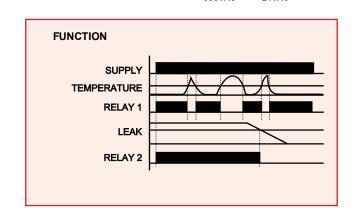
EN61000-6-3: 2007 FN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

NOMINAL VOLTAGE TYPE 11WRSTC (PTC, 2x SPCO) 440VAC 230VAC 11WRSTCT (KLIXON, 2x SPCO) 415VAC 110VAC 48VAC 400VAC 380VAC 24VAC



Tel: 0161 626 5316 / 01276 25858 www.foxtamcontrols.co.uk **COMBINED PHASE FAILURE, SEQUENCE &** THERMISTOR RELAY

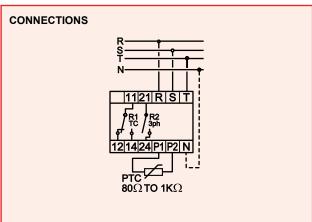
TYPE: YWRPTC4 (spco + 1no)

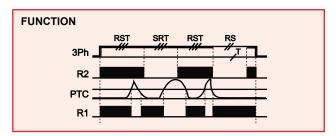
- FEATURES
- Din rail mounted
- Monitors loss of phase
- Monitors phase sequence
- Monitors up to 6 thermistors
- Klixon version available
- Separate outputs for phase & thermistor circuits
- **Separate LED indication**
- Available 3 or 4 wire
- Transformer technology
- Ideal lift industry product

DESCRIPTION & MODE OF OPERATION

Din rail mounted combined phase failure, sequence thermistor relay (Klixon version also available). Available in either 3 or 4 wire and self powered, with separate output contacts and LED indication for phase faults and thermistor faults.

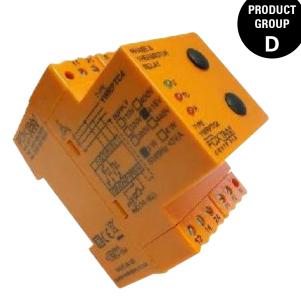
Both contacts energise when all is healthy, the phase relay R2 will de-energise when a phase sequence error is detected or a phase is lost (and in a 4 wire version also the Neutral). The thermistor circuit relay R1 will de-energise on detection of either a short circuit or overheat (resistance below 30 Ohms or above 3.3 KOhms). Both relays are slightly delayed (delay fixed) to avoid nuisance tripping. The LED indicators will diagnose the circuit problems, a healthy situation results in all the LEDs being illuminated.





ORDERING INFORMATION

TYPE	KLIXON	VOLTAGE	SYSTEM
YWRPTC4	*T	3 x 110V	3W (3 wire)
		3 x 220V	4W (4 wire)
		3 x 380V	
		3 x 400V	
		3 x 415V	
* Insert T if Klixon ** Only available	version is required as 3 wire	3 x 440V**	



SPECIFICATIONS

Supply & Measuring

3 x 110V AC, 3 x 220V AC Nominal supply:

3 x 380V AC, 3 x 400V AC 3 x 415V AC, 3 x 440V AC

Permanent tolerance: $\pm 15\%$

System: 3 or 4 wire option Frequency:

50/60Hz

Nominal Umin (fixed): 80% on all 3 phases

60% on 1 phase drop $3.3 \text{ KOhm} \pm 5\%$

Thermistor operating: Thermistor reset: $1.8 \, \text{KOhm} \pm 10\%$ Max cold resistance: 1500 Ohms Short circuit detection: $30 \, \text{Ohms} \pm 20\%$

Max No. Of PTC sensors:

Sensor voltage: 2.5V DC max

Isolation: Via transformer & opto isolator

Max power consumption: <6VA

2.5KV 50Hz impulse Insulation:

Relay outputs:

SPC0 + 1NO 8 Amps/250V AC1 Output contacts:

Delay phase sequence: 0.5sec (fixed) 50mSec (fixed) Delay phase loss: Delay thermistor fault: 0.5sec (fixed) Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General:

Operating temperature: -20°C to +65°C Storage temperature: -20°C to +65°C

Max cable size: 4mm CF marked: Yes

EN61000-6-1: 2007 In accordance with:

EN61000-6-3: 2007 EN61010-1: 2002

Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0

On 3 wire variants as a not cost option a separate AC auxiliary supply can be specified. This gives the possibility of additional "control circuit" voltage monitoring. If this is lost or is not present, the unit will de-energise or not energise as applicable.

24VAC, 48VAC, 110VAC

COMBINED PHASE FAILURE, SEQUENCE & THERMISTOR RELAY

MOD-PTC (2 x no) TYPE:

FEATURES

- Din rail mounted
- Modern modular design
- Monitors loss of phase & phase sequence
- Monitors up to 6 thermistors
- Klixon version available
- Separate outputs for phase & thermistor circuits
- **Separate LED indication**
- Available 3 or 4 wire
- Self powered
- Transformer technology
- Ideal lift industry product

DESCRIPTION & MODE OF OPERATION

Din rail mounted combined phase failure, sequence and thermistor relay (Klixon version also available). Available in either 3 or 4 wire and self powered, with separate normally open contacts and LED indication for phase faults and thermistor faults.

Both contacts energise when all is healthy, the phase relay R2 will de-energise when a phase sequence error is detected or a phase is lost (and in a 4 wire version also the Neutral). The thermistor circuit relay R1 will de-energise on detection of either a short circuit or overheat (resistance below 30 Ohms or above 3.3 KOhms). Both relays are slightly delayed (delay fixed) to avoid nuisance tripping. The LED indicators will diagnose the circuit problems, a healthy situation results in all the LEDs being illuminated.

SPECIFICATIONS

Supply & Measuring

3 x 110V AC, 3 x 220V AC Nominal supply: 3 x 380V AC, 3 x 400V AC

+15% Permanent tolerance: System: 3 or 4 wire option 50/60Hz Frequency:

Nominal Umin (fixed): 80% on all 3 phases 60% on 1 phase drop

 $3.3 \text{ KOhm} \pm 5\%$ Thermistor operating: $1.8 \, \text{KOhm} \pm 10\%$ Thermistor reset: 1500 Ohms Max cold resistance: Short circuit detection: 30.0 hms + 20%

Max No. Of PTC sensors:

2.5V DC max Sensor voltage:

Isolation: Via transformer & opto isolator

< 6VA Max power consumption:

Insulation: 2.5KV 50Hz impulse

Relay outputs:

2 x NO 5Amps/250V AC1 Output contacts:

Delay phase sequence: 0.5sec (fixed) Delay phase loss: 50mSec (fixed) Delay thermistor fault: 0.5sec (fixed) Mechanical life: 30 Million ops

Flectrical life: 100K ops at max rated load

General:

-20°C to +65°C Operating temperature: -20°C to +65°C Storage temperature: Max cable size: 2.5mm CF marked: Yes

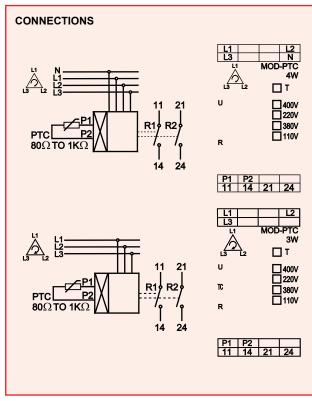
EN61000-6-1: 2007 In accordance with:

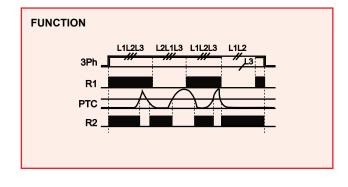
EN61000-6-3: 2007 FN61010-1: 2002

Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0







ORDERING INFORMATION

VOLTAGE TYPE KLIXON SYSTEM **MOD-PTC** 3 x 110V 3 x 220V 3 x 380V 3 x 400V

* Insert T if Klixon version is required

3W (3 wire) 4W (4 wire)

LIFT ROOM TEMPERATURE RELAY

TYPE: YRTCA

FEATURES

- Din rail mounted
- Dual LED indication
- Supplied complete with panel mounted sensor
- Ideal lift industry product
- Meets regulation EN81-1 traction lifts
- Meets regulation EN81-2 hydraulic lifts

DESCRIPTION & MODE OF OPERATION

A din rail mounted temperature sensing relay supplied complete with a panel mounted temperature sensor. The unit is designed to facilitate compliance with The Lift Directive regulations EN81-1 Traction Lifts and EN81-2 Hydraulic Lifts. These regulations require that the lift room temperature is monitored between +5°C to +40°C and an alarm be triggered if the temperature rises or falls outside these limits.

A permanent auxiliary supply is required on to terminals A1 and A2. The 22.5mm panel mounted sensor needs to be connected to terminals P1 and P2. When the room temperature is between the two fixed set points, the output contact will be made between terminals 11 and 14 after a fixed time delay of 10 seconds. On deviation from these fixed set points, the output contact will open. Also the contact will open on loss of the auxiliary supply, thus making the unit fail safe. A green LED indicates that the auxiliary supply is present, a red LED indicates that the output contact is closed and thus the temperature is within specification.

SPECIFICATIONS

Supply & Measuring

 Supply voltage tolerance:
 +/- 15%

 Temperature range fixed:
 +5 C to +40°C

 Accuracy:
 +/- 1°C

 Time delay fixed:
 10 Sec

 Output contact:
 1 NO

 Max power rating:
 2200VA/30W

 Max power rating:
 2200VA/30W

 Max current:
 10A AC/1A DC

 Mechanical life:
 > 30 million ops

Electrical life: 200 000 ops @ 2200VA resistive

Max duty: 600 ops/hour

General:

Sensor: 22.5mm front panel mounted

CE marked: Yes

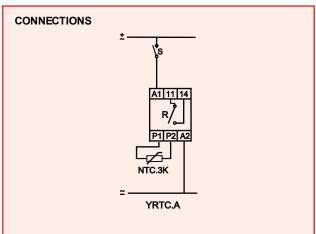
In accordance with: EN61000-6-1: 2007

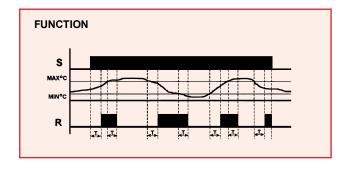
EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0







ORDERING INFORMATION

TYPE VOLTAGE

YRTCA / 5 - 40°C 230VAC, 110VAC, 48VACDC, 24VACDC

Above units supplied complete with panel mounted sensor

Spare sensors available/No. NTC3K

It is possible for applications within the HVAC industry to manufacture bespoke temperature ranges of the above units, please contact our sales office for further assistance.

CT" STYLE CURRENT PROVING SWITCH

"CT STYLE" CURRENT PROVING SWITCH

TYPE: FOX.CS-200

- **FEATURES**
- Din rail mounted
- Foot mounted option available on request
- Compact
- Sensing range 2-200 Amps adjustable
- Self powered from flowing current
- No separate auxiliary supply required
- **Dual LED indication**
- Normally open output switch
- **CE** marked
- **RoHS** compliant

DESCRIPTION & MODE OF OPERATION

A compact Din rail or foot mounted "CT" style AC current proving switch, the sensing range (set point) being adjustable 2-200 Amps. On current flowing of at least 1 Amp the power LED will be illuminated, on current flowing in excess of the adjustable set point the status LED will be illuminated denoting the Normally Open output is closed. On current falling below the set point less a nominal 2% hysteresis the output will open and the status LED will extinguish and the power LED will illuminate, if the current has fallen to zero both the power and status LED's will extinguish.

The FOX.CS-200 current switch is self powered yet benefits from a volt free output Normally Open switch. The maximum switching capability is 30VAC/DC 0.5 Amps.

It is also possible for low current sensing, to pass the conductor to be measured multiple times through the CT (referred to as turns). For example; 2 turns will give a sensing range of 1-100 Amps, 4 turns a sensing range of 0.5-50 Amps.





PRODUCT

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IDEAL FOR HVAC MARKET FOR SMALL FAN & PUMP FAILURE MONITORING!

SPECIFICATIONS

Measuring

Sensing range: 2-200 Amps Hysteresis: <2% fixed Power I FD:

Yes, 1 Amp & above

Output

30V AC/DC Max switching voltage: Max switching current: 0.5 Amps

Output type: Bi-directional solid state N/O Status LED: Yes, current above set point

General

Rated system voltage: Max 720V continuous Insulation: Max 3KV for 1min Frequency range: 50-60Hz

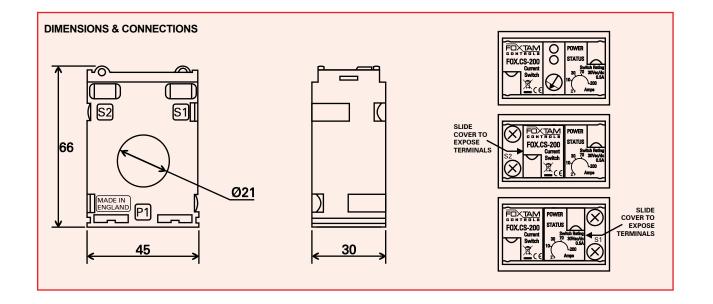
-30°C to +65°C Ambient temperature range:

CF marked:

IEC185, BS7626, BSED 60044-1 Compliance:

IEC 60044-1

RoHS compliant: Yes



Tel: 0161 626 5316 / 01276 25858 www.foxtamcontrols.co.uk

IN LINE CURRENT PROVING SWITCH

TYPE: YRI-41

FEATURES

- Din rail mounted 22.5mm wide
- Powered from own monitored voltage
- No separate auxiliary supply required
- SPCO relay output rated 8 Amps
- 5 adjustable versions from 1mA to 10Amps
- 4mm terminals
- Dual LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

The YRI-41 is a direct connected current proving switch available in five different adjustable ranges, 1mA-100mA, 10mA-1A, 30mA-3A, 50mA-5A, 100mA-10A. External current transformers cannot be used with the YRI-41. The current is monitored on its own supply hence a separate auxiliary supply is not required.

Note, the monitored load and the supply voltage must be from the same source and of the same voltage potential, please note carefully the circuit diagram.

On connection of the supply/load the green LED illuminates, should the load exceed the adjustable set point the SPCO relay output will energise and the red LED will illuminate. Should the load then fall below the set level, less than a nominal 1% hysteresis the output relay will de-energise and the red LED will be extinguished.

SPECIFICATIONS

Supply & Measuring:

Measurement ranges: 1mA-100mA, 10mA-1A, 30mA-3A,

50mA-5A, 100mA-10A

Max over current: 100mA version / 250mA for 1 sec

1A version/2A for 1sec 3A version/5A for 1sec 5A version/8A for 1sec 10A version/15A for 1sec

Hysteresis: Nominal 1% fixed Repeat accuracy: $<\pm 1\%$

Repeat accuracy: $<\pm 1\%$ Power consumption: 5VA

Relay outputs:

 Output:
 Relay SPCO

 Rated:
 8A/250VAC AC1

 Mechanical life:
 30 Million ops

 Electrical life:
 200K at 8A/250VAC

<u>General:</u>

 $\begin{array}{ll} \text{Operating temperature:} & -20^{\circ}\text{C to} + 65^{\circ}\text{C} \\ \text{Storage temperature:} & -20^{\circ}\text{C to} + 65^{\circ}\text{C} \\ \text{Max cable size:} & 4\text{mm} \\ \text{CE marked} & \text{Yes} \\ \end{array}$

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

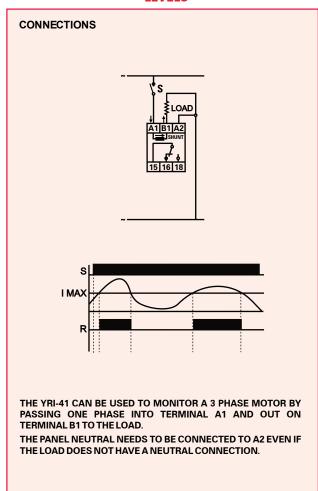


PRODUCT

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IDEAL FOR HVAC MARKET FOR SMALL FAN & PUMP FAILURE MONITORING!

MONITORS DOWN TO mA LEVELS



ORDERING INFORMATION

TYPE

YRI-41/1mA-100mA YRI-41/10mA-1A YRI-41/30mA-3A YRI-41/50mA-5A

YRI-41/100mA-10A

As standard units are supplied for a 230VAC potential. On request other potentials are available.

On request other current ranges also available for OEM applications. On request 8 & 11 pin plug in versions available

IN LINE CURRENT PROVING SWITCH

TYPE: MOD-I (spco)

FEATURES

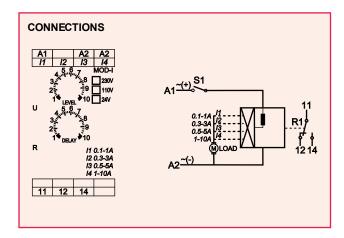
- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- SPCO output
- Adjustable delay to energise time delay 1-10 secs
- No separate auxiliary supply required
- Four selectable ranges 0.1-1A, 0.3-3A, 0.5-5A, 1-10A
- LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

"With delay to energise on a rising current". The output relay delays to energise for up to 10 secs when the monitored current rises above the set level as selected by the front potentiometer. It will de-energise when the current falls below the set level less a fixed hysteresis of 1% against the set level. De-energisation will also occur if the auxiliary supply is lost.

The MOD-I can be used to monitor a 3 phase motor by passing one phase into terminal A1 and out on the relevant I.. terminal to the load. The panel Neutral needs to be connected to terminal A2 even if the load does not have a Neutral connection. All terminal details and information along with the CE mark is clearly marked on the sides of the housing.

Single range versions of the above product are available product type YRI-41 see **page 66**.







SPECIFICATIONS

Supply & Measuring

Supply voltage: 220-240VAC Max power consumption: 5VA

Insulation: 2.5Kv 50Hz impulse Measurement ranges: 0.1-1A (terminal 1)

0.3-3A (terminal 2) 0.5-5A (terminal 3) 1-10A (terminal 4) 1A version / 2A for 1 sec

Max over current: 1A version / 2A for 1sec 3A version / 5A for 1sec

3A version / 5A for 1 sec 5A version / 8A for 1 sec 10A version / 15A for 1 sec Nominal 1% fixed

 $\begin{array}{lll} \mbox{Hysteresis:} & \mbox{Nominal 1\% f} \\ \mbox{Repeat accuracy:} & \mbox{<} \pm 1\% \\ \mbox{Delay time:} & \mbox{1-10 secs} \end{array}$

Relay outputs:

Output contacts: SPC0 16Amps/250V AC1

Max breaking capacity: 4000VA
Mechanical life: 30 Million ops
Electrical life: 200K at 16A/250VAC

General:

Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C
Max cable size: 2.5mm

CE marked Yes

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61000-6-3: 2003 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

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CURRENT CONTROL RELAYS WITH INITIAL START UP DELAY & DELAY ON TRIPPING TIMERS

TYPES: YWRI, YWRI/I (spco) YWRI.CT5, YWRI/I.CT5 (spco)



- Din rail mounted
- SPCO output
- Three selectable input ranges 5mA to 10 Amps
- Dedicated 5 Amp "CT" input version
- Selectable for both AC or DC current
- Selectable manual or auto reset
- Initial start up adjustable time delay 0.1-10 secs
- Adjustable delay on rising current 0.1-10 secs
- Adjustable delay on falling current 0.1-10 secs
- Dual LED indication

SUMMARY OF UNITS

YWRI - Din rail current sensing relay, selectable via a wired link for either AC or DC current.

YWRI/I - Din rail "inverse" acting current sensing relay, selectable via a wired link for either AC or DC current.

MODE OF OPERATION

YWRI

"Auto Reset" without latching mode. This mode is determined by terminals Y1 & Y2 left open. The output relay is energised when the monitored current rises above the selected set level, set via the front potentiometer. The output relay will de-energise when the current falls back below the level selected less the set hysteresis adjustable 5 to 50%, set via a second potentiometer. For example set level at 4Amps, hysteresis at 30% will result in energisation at 4Amps and de-energisation at 2.8 Amps. If the auxiliary supply is lost at any time the relay will also de-energise.

"Manual Reset" without latching mode. This mode is determined by a wired link between terminals Y1 & Y2. The output energises when the monitored current rises above the level selected via the front potentiometer. Once energised the relay will remain latched even if the monitored current falls below the set level less any selected hysteresis. Resetting is achieved by opening the link between terminals Y1 & Y2 or by removing the auxiliary supply. If whilst resetting the monitored current is still above the set level a reset will not be achieved. It is normally preferable in the latching mode to have the adjustable hysteresis set at minimum.

YWRI/I

"Auto Reset" without latching. This version is only available as an "auto reset" device and the output relay acts in an "inverse" way, i.e. the output relay is normally energised and de-energises when the monitored current rises above the level selected via the front potentiometer. It will re-energise when the monitored current falls below the set level less the set hysteresis adjustable 5 to 50%, set via a second potentiometer. It should be noted that on first connection of the auxiliary supply the relay will energise for 0.1 secs (i.e. current below the set level), whilst the scanning circuit is determining the level of current being measured. This time can be extended up to 10 secs via the adjustable "start up delay" thus allowing a longer stabilisation period.

Adjustable Time Delays

The YWRI and YWRI/I current relays have 3 independently adjustable 0.1-10 secs time delays. Initial start up delay timer, activated by the connection of the auxiliary supply, therefore if a control circuit is going to be permanently live this time delay will only ever be active once, a delay on rising current when the monitored current rises above the set level as selected by the front potentiometer and a delay on falling current, when the monitored current falls below the set level plus the hysteresis.

OTHER APPLICATION NOTES

Selection of AC or DC Current

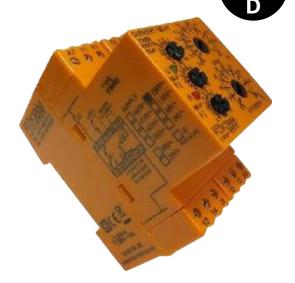
Din rail mounted units can be selected for either AC or DC current monitoring via a wired link between terminals B1 & IK. B1 & IK linked = DC current. B1 & IK open = AC current.

Use of Current Transformers

The three current ranges are determined by wiring to different terminals. For monitoring currents above 10Amps AC a current transformer is required. On applications requiring a current transformer with a 5 Amp secondary use the YWRI.CT5 or YWRI/I.CT5 dedicated current transformer input units. A range of 1 Amp secondary CT's are available from our CT section page 156 to 164.

DC Auxiliary Supply Versions

DC auxiliary supply versions are as standard non isolated. For these versions the supply and the measured current must be isolated from each other and must not exceed 50V DC. On request at extra cost isolated versions can be manufactured utilising internally a DC to DC converter.



GROUP

PRODUCT

GROUP

CURRENT PROVING SWITCHES AND CURRENT MONITORING RELAYS

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: ±15% Isolation AC versions: Via transformer Isolation DC versions: No as standard or:-

Yes via optional internal DC to DC converter

Power consumption:

Ajustable 5 to 50% of le Hysteresis: Repeat accuracy: $\pm\,2\%$ at constant ambient ±5% across temperature range

Response time: 100 mSec on make 200 mSec on break

5-100mA (max overload 5A for less than 1 sec) Input ranges selectable:

50mA-1A (max overload 17A for less than 1 sec)

0.5-10A (max overload 55A for less than 1 sec) 100mA range 1 0hm Input impedances:

1A range 0.1 0hm 10A range 0.01 0hm

Relay output

Output contacts: SPC0 10Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

 -20° C to $+65^{\circ}$ C Operating temperature: -20°C to +65°C Storage temperature: Max cable size: 4mm CE marked:

EN61000-6-1: 2007 In accordance with:

> EN61000-6-3: 2007 EN61010-1: 2002

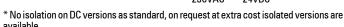
Housing material: Polycarbonate, Auto extinguishable

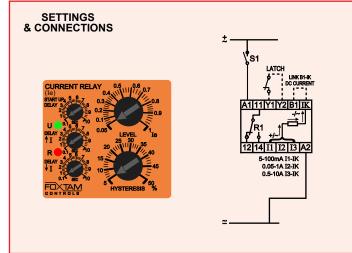
to UL 94 V-0

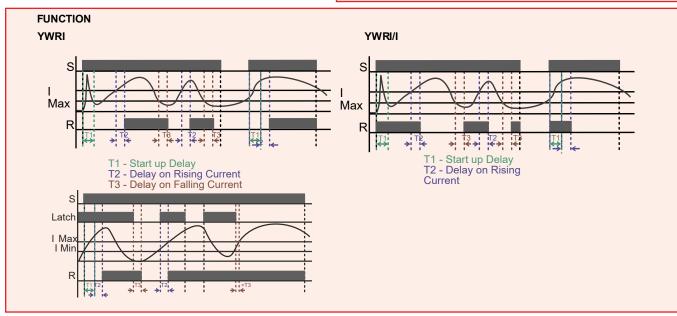
ORDERING INFORMATION

COIL VOLTAGE YWRI (Din rail AC or DC current) 440VAC 110VAC YWRI/I (Din rail "inverse" AC or DC current) 415VAC 48VAC 400VAC 24VAC

380VAC *48VDC *24VDC 230VAC







TYPES: YWRI.CT5, YWRI/I.CT5 (spco)

As an option the YWRI current control relay is available with a dedicated 5 Amp input designed to work in conjunction with any C.T. with a 5 Amp secondary. The YWRI.CT5 has the same mode of operation as the standard versions.

ORDERING INFORMATION

TYPE	COIL VOLTAGE	110\/A0
YWRI.CT5 (Din rail AC current)	440VAC	110VAC
YWRI/I.CT5 (Din rail "inverse" AC current)	415VAC	48VAC
	400VAC	24VAC
	380VAC	*48VDC
	230VAC	*24VDC

* No isolation on DC versions as standard, on request at extra cost isolated versions are available.

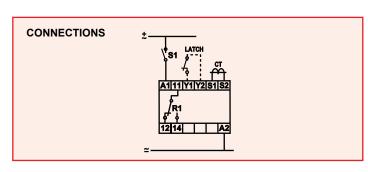
SPECIFICATIONS

Supply & Measuring

0.25-5A (max overload 25A for less than 1 sec) Input range:

Input impedances: 0.022 Ohm.

All other specification is the same as the standard YWRI.



CURRENT CONTROL RELAYS WITH OUTPUT RELAY INITIALLY ENERGISED START UP PULSE &

DELAY ON TRIPPING

TYPES: YWRI.H (spco) YWRI.H.CT5 (spco)



70

- Din rail mounted
- SPCO output
- Three selectable input ranges 5mA to 10 Amps
- Dedicated 5 Amp "CT" input version
- Selectable for both AC or DC current
- Selectable manual or auto reset
- Adjustable initial start up pulse 0.1-10 secs
- Adjustable delay on rising current 0.1-10 secs
- Adjustable delay on falling current 0.1-10 secs
- Dual LED indication
- SUMMARY OF UNITS

YWRI.H - Din rail current sensing relay, selectable via a wired link for either AC or DC current.

MODE OF OPERATION

YWRI.H

"Auto Reset" without latching mode. This mode is determined by terminals Y1 & Y2 left open. The output relay is energised when the monitored current rises above the selected set level, set via the front potentiometer. The output relay will de-energise when the current falls back below the level selected less the set hysteresis adjustable 5 to 50%, set via a second potentiometer. For example set level at 4Amps, hysteresis at 30% will result in energisation at 4Amps and de-energisation at 2.8Amps. If the auxiliary supply is lost at any time the relay will also de-energise.

"Manual Reset" without latching mode. This mode is determined by a wired link between terminals Y1 & Y2. The output energises when the monitored current rises above the level selected via the front potentiometer. Once energised the relay will remain latched even if the monitored current falls below the set level less any selected hysteresis. Resetting is achieved by opening the link between terminals Y1 & Y2 or by removing the auxiliary supply. If whilst resetting the monitored current is still above the set level a reset will not be achieved. It is normally preferable in the latching mode to have the adjustable hysteresis set at minimum.

Adjustable Time Delays

The YWRI.H current relays have 3 independently adjustable 0.1-10 Secs time delays. Initial start up adjustable pulse timer, activated by the connection of the auxiliary supply, if the current is below the set level after the time has elapsed the relay will de-energise, if it is above the set level the relay will stay energised. If a control circuit is going to be permanently live this time delay will only ever be active once, a delay on rising current when the monitored current rises above the set level as selected by the front potentiometer and a delay on falling current, when the monitored current falls below the set level plus the hysteresis.

OTHER APPLICATION NOTES

Selection of AC or DC Current

Din rail mounted units can be selected for either AC or DC current monitoring via a wired link between terminals B1 & IK. B1 & IK linked = DC current. B1 & IK open = AC current.

Use of Current Transformers

The three current ranges are determined by wiring to different terminals. For monitoring currents above 10Amps AC a current transformer is required. On applications requiring a current transformer with a 5Amp secondary use the YWRI.H.CT5 dedicated current transformer input units. A range of 1 Amp secondary CT's are available from our CT section page 156 to 164.

DC Auxiliary Supply Versions

DC auxiliary supply versions are as standard non isolated. For these versions the supply and the measured current must be isolated from each other and must not exceed 50V DC. On request at extra cost isolated versions can be manufactured utilising internally a DC to DC converter.



PRODUCT

PRODUCT

GROUP

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: ±15% Isolation AC versions: Via transformer Isolation DC versions: No as standard or:-

Yes via optional internal DC to DC converter

Power consumption:

Hysteresis: Adjustable 5 to 50% of le Repeat accuracy: $\pm\,2\%$ at constant ambient ±5% across temperature range

Response time: 100 mSec on make 200 mSec on break

Input ranges selectable:

5-100mA (max overload 5A for less than 1 sec) 50mA-1A (max overload 17A for less than 1 sec) 0.5-10A (max overload 55A for less than 1 sec)

100mA range 10hm Input impedances:

1A range 0.1 0hm 10A range 0.01 0hm

Relay output

Output contacts: SPC0 10Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

-20°C to +65°C Operating temperature: -20°C to +65°C Storage temperature: Max cable size: 4mm CE marked:

EN61000-6-1: 2007 In accordance with:

> EN61000-6-3: 2007 EN61010-1: 2002

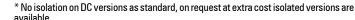
Polycarbonate, Auto extinguishable Housing material:

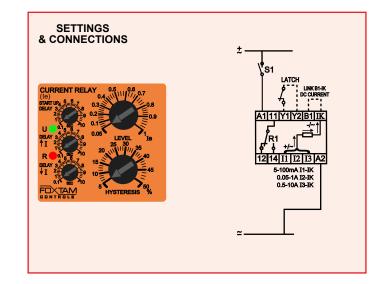
to UL 94 V-0

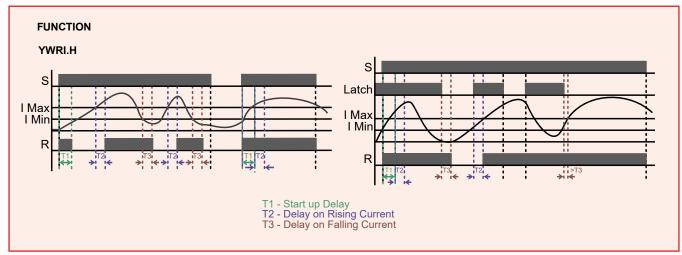
ORDERING INFORMATION

COIL VOLTAGE YWRI. H (Din rail AC or DC current) 440VAC 110VAC 415VAC 48VAC 400VAC

24VAC 380VAC *48VDC *24VDC 230VAC







TYPES: YWRI.H.CT5, YWRI/I.H.CT5 (spco) ■ ORDERING INFORMATION

As an option the YWRI.H current control relay is available with a dedicated 5 Amp input designed to work in conjunction with any C.T. with a 5 Amp secondary. The YWRI.H.CT5 has the same mode of operation as the standard versions.

SPECIFICATIONS

Supply & Measuring

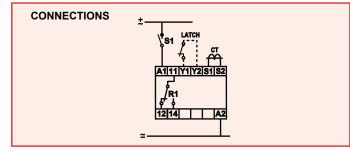
0.25-5A (max overload 25A for less than 1 sec) Input range:

Input impedances: 0.022 Ohm.

All other specification is the same as the standard YWRI.H.

TYPF COIL VOLTAGE YWRI.H.CT5 (Din rail AC current) 440VAC 110VAC 415VAC 48VAC 400VAC 24VAC 380VAC *48VDC 230VAC *24VDC

* No isolation on DC versions as standard, on request at extra cost isolated versions are available.



11 PIN PLUG IN CURRENT CONTROL RELAYS WITH INITIAL START UP DELAY

TYPES: 11WRIA, 11WRID 11WRIA/I, 11WRID/I,(spco)



GROUP



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- 11 pin plug in
- SPCO output
- Three selectable input ranges 5mA to 10 Amps
- Available for both AC or DC current
- Selectable manual or auto reset
- Initial start up adjustable time delay 0.1-10 secs



SUMMARY OF UNITS

- **Dual LED indication 11 WRIA** 11 pin plug in current sensing relay AC current only.
- 11WRID 11 pin plug in current sensing relay DC current only.
- 11WRIA/I Din rail "inverse" acting current sensing relay AC current only.
- 11WRID/I Din rail "inverse" acting current sensing relay DC current only.

MODE OF OPERATION

11WRIA, 11WRID

"Auto Reset" without latching mode. This mode is determined by terminals pins 9 & 11 left open. The output relay is energised when the monitored current rises above the selected set level, set via the front potentiometer. The output relay will de-energise when the current falls back below the level selected less the set hysteresis adjustable 5 to 50%, set via a second potentiometer. For example set level at 4 Amps, hysteresis at 30% will result in energisation at 4 Amps and de-energisation at 2.8Amps. If the auxiliary supply is lost at any time the relay will also de-energise.

"Manual Reset" without latching mode. This mode is determined by a wired link between terminals pins 9 & 11. The output energises when the monitored current rises above the level selected via the front potentiometer. Once energised the relay will remain latched even if the monitored current falls below the set level less any selected hysteresis. Resetting is achieved by opening the link between terminals pins 9 & 11 or by removing the auxiliary supply. If whilst resetting the monitored current is still above the set level a reset will not be achieved. It is normally preferable in the latching mode to have the adjustable hysteresis set at minimum.

11WRIA/I, 11WRID/I

"Auto Reset" without latching. This version is only possible as an "auto reset" device and the output relay acts in an "inverse" way, i.e. the output relay is normally energised and de-energises when the monitored current rises above the level selected via the front potentiometer. It will re-energise when the monitored current falls below the set level less the set hysteresis adjustable 5 to 50%, set via a second potentiometer. It should be noted that on first connection of the auxiliary supply the relay will energise for 0.1 secs (i.e. current below the set level), whilst the scanning circuit is determining the level of current being measured. This time can be extended up to 10 secs via the adjustable "start up delay" thus allowing a longer stablization period.

OTHER APPLICATION NOTES

Use of Current Transformers

The three current ranges are determined by wiring to different terminals. For monitoring currents above 10Amps AC a current transformer is required. It is recommended that preferably a 1Amp secondary current transformer is used and connected to the 50mA to 1Amp input range, thus giving 100% resolution. A range of 1 Amp secondary CT's are available from our CT section page 156 to 164.

Adjustable Initial Start Up Time Delay

The current relays have an adjustable 0.1-10 sec initial start up delay timer, activated by the connection of the auxiliary supply, therefore if a control circuit is going to be permanently live the time delay will only ever be active once. In this scenario it may be preferable to use the versions **11WRIx5x** on pages 74 & 75, these versions have a time delay that activates every time a monitored current exceeds or falls below the set levels.

DC Auxiliary Supply Versions

DC auxiliary supply versions are as standard non isolated. For these versions the supply and the measured current must be isolated from each other and must not exceed 50V DC. On request at extra cost isolated versions can be manufactured utilising internally a DC to DC converter.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: ±15%
Isolation AC versions: Via transformer
Isolation DC versions: No as standard or:-

Yes via optional internal DC to DC converter

Power consumption: 3VA max

 $\begin{array}{ll} \text{Hysteresis:} & \text{Adjustable 5 to 50\% of le} \\ \text{Repeat accuracy:} & \pm 2\% \text{ at constant ambient} \\ & \pm 5\% \text{ across temperature range} \end{array}$

Response time: 100 mSec on make 200 mSec on break

Input ranges selectable: 5-100mA (max overload 5A for less than 1 sec)

5-100mA (max overload 5A for less than 1 sec)

50mA-1A (max overload 17A for less than 1 sec)

0.5-10A (max overload 55A for less than 1 sec)

Input impedances: 100mA range 1 0hm 1A range 0.1 0hm

10A range 0.01 0hm

Relay output

Output contacts: SPCO 10Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage temperature: -20°C to $+65^{\circ}\text{C}$ CE marked: Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

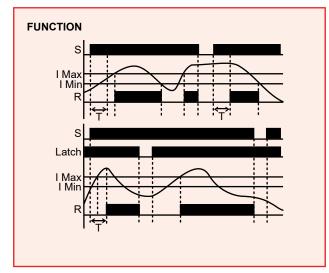
ORDERING INFORMATION

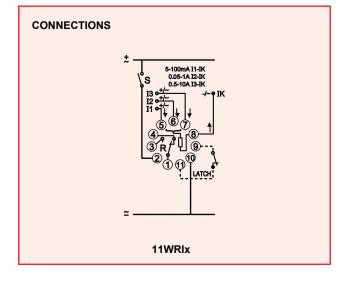
TYPE COIL VOLTAGE 11WRIA (11 pin AC current) 440VAC 110VAC 11WRID (11 pin DC current) 415VAC 480VAC 24VAC 11WRIA/I (11 pin AC current inverse output) 400VAC 11WRID/I (11 pin DC current inverse output) 380VAC *48VDC 230VAC *24VDC

 * No isolation on DC versions as standard, on request at extra cost isolated versions

are available







11 PIN PLUG IN CURRENT CONTROL RELAYS WITH TRIPPING TIME DELAYS

TYPES: 11WRIA5A, 11WRID5A (over current relays) 11WRIA5C, 11WRID5C (under current relays)

FEATURES

- 11 pin plug in
- SPCO output
- Three selectable input ranges 5mA to 10 Amps
- Available for both AC or DC current
- Selectable manual or auto reset
- Adjustable time delay on tripping 0.1-10 secs
- Dual LED indication



11WRIA5 - 11 pin plug in current sensing relay AC current only. **11WRID5** - 11 pin plug in current sensing relay DC current only.

Suffix A - With delay to energise on a rising current. **Suffix C** - With delay to de-energise on a falling current.

MODE OF OPERATION

11WRIA5A, 11WRID5A

"With delay to energise on a rising current". The output relay delays to energise for up to 10 secs when the monitored current rises above the set level as selected by the front potentiometer. It will de-energise when the current falls below the set level less any hysteresis adjustable 5 to 50% against the set level. De-energisation will also occur if the auxiliary supply is lost. The units can be set to be either "manual" or "auto" reset (latched or non latched), achieved by a link or no link between terminals or pins 9 & 11. For "manual" reset (latched) a link is required, when reaching the set level plus the set time delay the relay will latch and the link will need to be opened or the auxiliary supply removed to achieve a reset. Reset it only possible if the monitored current has fallen below the set level minus the set hysteresis.

11WRIA5C, 11WRID5C

"With delay to de-energise on a falling current". The output relay will energise when the monitored current reaches the set level as set via the potentiometer. The output relay will de-energise up to 10 secs after the monitored current has fallen and remains below the set hysteresis, adjustable 5 to 50% of the set current level. Should the auxiliary supply be lost the output relay will also de-energise. Whilst the latch circuit is fitted to the units on the 5C versions it cannot be utilised and therefore link pin 9 & 11 should be left open.

OTHER APPLICATION NOTES

Use of Current Transformers

The three current ranges are determined by wiring to different terminals. For monitoring currents above 10Amps AC a current transformer is required. It is recommended that preferably a 1Amp secondary current transformer is used and connected to the 50mA to 1Amp input range, thus giving 100% resolution. A range of 1Amp secondary CT's are available from our CT section pages 156 to 164.

Adjustable Time Delay on Tripping

The current relays have an adjustable 0.1-10 sec delay on tripping timer which activates every time the set level is exceeded, or falls below the set level, as the case may be. This feature is extremely useful on applications where the control circuit is always live.

DC Auxiliary Supply Versions

DC auxiliary supply versions are as standard non isolated. For these versions the supply and the measured current must be isolated from each other and must not exceed 50V DC. On request at extra cost isolated versions can be manufactured utilising internally a DC to DC converter.



GROUP

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: ±15% Isolation AC versions: Via transformer Isolation DC versions: No as standard or:-

Yes via optional internal DC to DC converter

Power consumption: 3VA max

Hysteresis: Ajustable 5 to 50% of le
Repeat accuracy: ± 2% at constant ambient

 $\pm 5\%$ across temperature range

Response time: 5A version adjustable 0.1-10secs on make

5A version 200mSec on break 5C version 100mSec on make 5C version 0.1-10secs on break

Input ranges selectable: 5-100mA (max overload 5A for less than 1 sec)

50mA-1A (max overload 17A for less than 1 sec) 0.5-10A (max overload 55A for less than 1 sec)

Input impedances: 100mA range 1 0hm 1A range 0.1 0hm

10A range 0.01 0hm

Relay output

Output contacts: SPC0 10Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

 $\begin{array}{lll} \mbox{Operating temperature:} & -20^{\circ}\mbox{C to } +65^{\circ}\mbox{C} \\ \mbox{Storage temperature:} & -20^{\circ}\mbox{C to } +65^{\circ}\mbox{C} \\ \mbox{Max cable size:} & 4mm \\ \mbox{CE marked} & \mbox{Yes} \\ \end{array}$

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

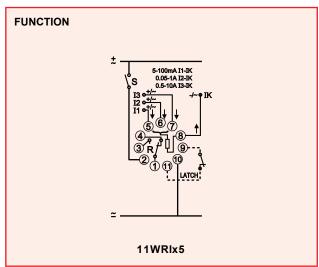
Housing material Polycarbonate, Auto extinguishable

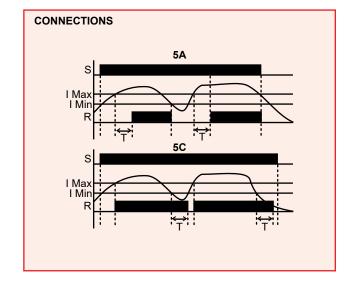
to UL 94 V-0

ORDERING INFORMATION

COIL VOLTAGE **TYPE** 11WRIA5A (11 pin AC rising current) 110VAC 440VAC 11WRID5A (11 pin DC rising current) 415VAC 48VAC 400VAC 11WRIA5C (11 pin AC falling current) 24VAC 11WRID5C (11 pin DC falling current) 380VAC *48VDC 230VAC *24VDC







^{*} No isolation on DC versions as standard, on request at extra cost isolated versions are available.

MMIDLAND JAY AC CURRENT LEVEL MONITORING RELAYS

TYPES: CLA 1xxx, CLA 2xxx, CLA 3xxx, CLA 4xxx (spco)



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- Din rail mounted Modular housing
- Under current monitoring
- Over current monitoring
- Over & under current monitoring
- Choice of 1 Amp, 2 Amps, 5 Amps monitoring ranges
- Calibrated current control scales on settings
- Three LED's for indication

DESCRIPTION & MODE OF OPERATION

A range of Din rail mounted Modular housing AC current level monitoring relays, available either as under current monitoring, over current monitoring or combined under and over current monitoring. Available in four mode of operation configurations as follows:-

CLA 1 – Under current monitoring, setpoint adjustable between 10-100% of nominal In, with an adjustable delay on tripping timer 1-10 secs. Providing the monitored current level is above the set under current trip level the output relay will energise and the green "Healthy" LED will illuminate. If the current falls below the set trip level the unit will start timing, this will be indicated by the yellow "Timing" LED. If the monitored current does not recover before the set time period has elapsed the output relay will de-energise and the red "Fault" LED will illuminate. The unit will reset automatically when the current level returns to normal.

CLA 2 – Under and over current monitoring, both setpoints individually adjustable between 10-100% of nominal In, without an adjustable delay on tripping timer. Providing the monitored current level is above the set under current trip level and below the set over current trip level the output relay will energise and the green "Healthy" LED will illuminate. If the current level deviates outside these limits the output relay will de-energise and the corresponding "U/C" or "O/C" red "Fault" LED will illuminate. The unit will reset automatically when the current level returns to normal.

CLA 3 – Over current monitoring, setpoint adjustable between 10-100% of nominal In, with an adjustable delay on tripping timer 1-10 secs. Providing the monitored current level is below the set over current trip level the output relay will be deenergise and the green "Healthy" LED will be illuminated. If the current rises above the set trip level the unit will start timing, this will be indicated by the yellow "Timing" LED. If the monitored current remains above the trip level for the full set time period then the output relay will energise and the red "Fault" LED will illuminate. The unit will reset automatically when the current level returns to normal.

CLA 4 – Over current monitoring, setpoint adjustable between 10-100% of nominal In, with an adjustable 1-10 secs "Initial Start Up Delay Timer". The "Initial Start Up Delay Timer" prevents the unit from tripping for a timed period from application of the coil voltage, indicated by the yellow "Timing" LED. After the timed period has elapsed and providing the current has by then fallen to less than the set over current trip level the green "Healthy" LED will illuminate. If the monitored current subsequently rises above the set over current trip level the output relay will energise immediately (≤100mSec) and the red "Fault" LED will illuminate. The unit will reset automatically when the current level returns to normal.

All four configurations are available with a choice of three current input ranges 0.1-1 Amps, 0.2-2 Amps and 0.5-5 Amps, above 5 amps an external current transformer is required with either a 1 Amp or 5 Amp secondary matched to a 1 Amp or 5 Amp relay as appropriate. A range of 1 Amp & 5 Amp secondary CT's can be found from our CT section pages 156 to 164.

The setpoint(s) potentiometers are current calibrated to allow accurate setting of the trip level/s. Isolation of the monitored current is provided by an internal current transformer.



GROUP

SPECIFICATIONS

Current monitoring

Ranges: 1 Amp, 2 Amps, 5 Amps
Overload ratings: 100% of In continuous
150% of In for 30 seconds

250% of In for 5 seconds

U/C trip level: Adjustable 10-100% of In O/C trip level: Adjustable 10-100% of In Hysteresis: Fixed + 4% of trip level

General

LED indication:

Isolation: Via internal CT

2KV for 1 min Green "Healthy" Yellow "Timing"

Red "Fault"

CE marked: Yes

Timing

Delay timer: 1-10 secs (not CLA 2 versions)

Response time: <100 mSec

Coil voltages

Coil voltages: 24VDC +/- 15%

24VAC, 110VAC, 230VAC +/- 15%

Power consumption: 8V
Contact output

Type: SPC0

Rating: 8 Amps / 250VAC AC1

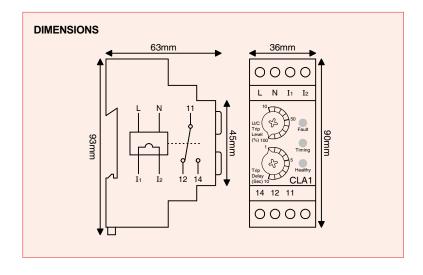
Mechanical life: 30 Million ops



ORDERING INFORMATION

TYPE CONFIGURATION **CURRENT RANGE COIL SUPPLY** CLA 1 Under Current with timer 1 0.1-1 Amp **37** 24VDC 2 Under & Over Current without timer 2 0.2-2 Amps **07** 24VAC **01** 110VAC 3 Over Current with timer **5** 0.5-5 Amps 4 Over Current with timer * **50** 230VAC

^{*}The timer on the CLA 4 acts as an initial start up delay timer and only prevents tripping on the initial application of the coil supply, thereafter the trip is within 100mSec.



EARTH FAULT RELAY

TYPE: YWRI/EF

FEATURES

3 earth fault primary ranges 5-100mA, 50mA-1A, 0.5-10A

■ Fixed hysteresis at 5% (other values on request)

Latching facility (manual or auto reset)

Test input

Adjustable time delay on tripping 0.1-10sec

■ LED for output relay status & supply healthy

SPCO output rated 10Amps

DESCRIPTION & MODE OF OPERATION

Din rail mounted current sensing relay dedicated for earth fault monitoring in conjunction with a core balance CT. The YWRI/EF has three adjustable earth fault input ranges selectable via terminal tapings 5-100mA, 0.05-1A, 0.5-10A. On connection of the auxiliary supply the green LED illuminates. Exceeding the set earth fault level and after the adjustable tripping time has elapsed, the output relay energises and the red LED illuminates. The YWRI/EF has a fixed hysteresis of 5% of the set value, should the earth fault level fall below the set value less 5%, the output relay will de-energise and the red LED will extinguish (auto reset). However, should the optional latch facility be utilised between terminals Y1 and Y2 via a remote NC contact, the NC contact has to be opened or the auxiliary supply removed to reset the unit (manual reset). The YWIR/EF via terminals Y2 and B1 also has a remote test input operated by a NO contact.

SPECIFICATIONS

Auxiliary supply: 400VAC, 230VAC, 110VAC, 48VAC, 24VAC

48VDC, 24VDC +/-15% (50/60Hz) Via transformer

Isolation: Via transfo **Power consumption:** Max 3VA

Earth fault ranges: 5-100mA, 50mA-1A, 0.5-10A Input impedance: 100mA range 1 K0hm 1A range 100 0hms

10A range 10 Ohms

Hysteresis: Fixed at 5% of set value (other values on request)

Tripping delay: Adjustable 0.1-10secs (-0% + 30%)

Repeat accuracy: $\pm 2\%$ at constant ambient, to VDE0435 $\pm 5\%$

Operating temperature: $-10^{\circ}\text{C to} + 65^{\circ}\text{C}$

Response time: 100mSec on make, 200mSec on break
Output relay: Max power 2200VA, 30W DC

Max power 2200VA, 30W DC 250VACDC @ 10A AC, 1A DC

Mechanical life: 30 Million ops/max 600 ops/hr Electrical life: 200 000 at 2200VA (resistive)

Max cable size: 4mm CE marked Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

NOTE

The YWRI/EF and its associated CT's are designed to monitor insulation break down.

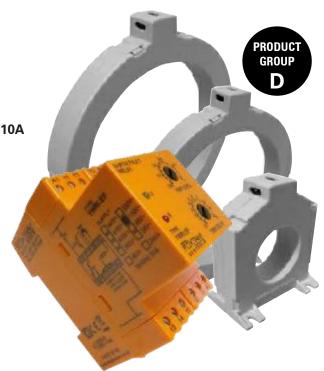
IT MUST NOT BE USED AS THE MAIN SAFEGUARD FOR LIFE PROTECTION

ORDERING INFORMATION

TYPE AUXILIARY SUPPLY OPTIONS

YWRI/EF 400VAC, 230VAC, 110VAC, 48VAC, 24VAC, 48VDC, 24VDC

A core balance CT from the four options listed on the right of this page must be used with this product, do not use any other type of CT or manufacturer of CT's Tel: $0161\ 626\ 5316\ /\ 01276\ 25858$



■ CORE BALANCE CURRENT TRANSFORMER

A core balance current transformer must be used with our earth fault relay type YWRI/EF and must be selected from the options below. One core balance current transformer is required per YWRI/EF, all conductors must pass through the CT. Core balance CTs are not sensitive to polarity either on the primary or secondary. However, the primary conductors must all pass in the same direction together.

SPECIFICATIONS

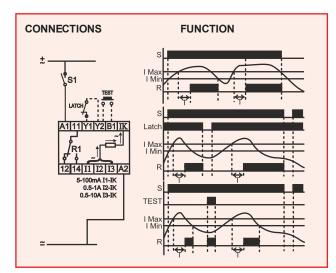
Conforms to: IEC44-1, IEC185, BS7676

Rated system voltage: 720VAC Insulation: 3KV Frequency range: 50/60Hz Max secondary cable size: 2.5mm

Internal dimensions: 290W x 70H (mm)

External dimensions: 350W x 220H (mm)
Including feet 425W (mm)

	EARTH FAULT SUITABILITY			DIMENSIONS mm				
P/No.	5-100mA	50mA-1A	0.5A-10A	Int Dia	Height	Width	Depth	Depth Inc Feet
CTB35	√.	√,	√,	35	74	64	20	40
CTB70	√.	√,	√,	70	117	105	20	40
CTB120	✓	✓	√,	120	172	160	20	40
CTB210			✓	211	271	271	25	75



EARTH FAULT RELAY

TYPE: YWRI/EF 30 AMPS

FEATURES

- Earth fault range 1.5 to 30Amps
- Fixed hysteresis at 5% (other values on request)
- Latching facility (manual or auto reset)
- Test input
- Adjustable time delay on tripping 0.1-10sec
- LED for output relay status & supply healthy
- SPCO output rated 10Amps

DESCRIPTION & MODE OF OPERATION

Din rail mounted current sensing relay dedicated for earth fault monitoring in conjunction with a core balance CT. The YWRI/EF 30Amps has an adjustable earth fault range of 1.5-30Amps.

On connection of the auxiliary supply the green LED illuminates. Exceeding the set earth fault level and after the adjustable tripping time has elapsed, the output relay energises and the red LED illuminates. The YWRI/EF has a fixed hysteresis of 5% of the set value, should the earth fault level fall below the set value less 5%, the output relay will de-energise and the red LED will extinguish (auto reset). However, should the optional latch facility be utilised between terminals Y1 and Y2 via a remote NC contact, the NC contact has to be opened or the auxiliary supply removed to reset the unit (manual reset). The YWIR/EF 30Amps via terminals Y2 and B1 also has a remote test input operated by a NO contact.

SPECIFICATIONS

Auxiliary supply: 400VAC, 230VAC, 110VAC, 48VAC, 24VAC

48VDC, 24VDC

Supply tolerance: +/-15%
Isolation: Via transformer
Power consumption: Max 3VA
Earth fault range: 1.5-30A
Input impedance: 30 0 hms

Hysteresis: Fixed at 5% of set value (other values on request)

Tripping delay: Adjustable 0.1-10secs

Repeat accuracy: $\pm 2\%$ at constant ambient, to VDE0435 $\pm 5\%$

Operating temperature: -10° C to $+65^{\circ}$ C

Response time: 100mSec on make, 200mSec on break
Output relay: Max power 2200VA, 30W DC

250VACDC @ 10A AC, 1A DC

Mechanical life:30 Million ops / max 600 ops/hrElectrical life:200 000 at 2200VA (resistive)

Max cable size: 4mm CE marked Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

NOTE

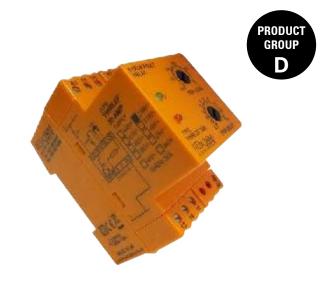
The YWRI/EF 30Amps and its associated CT is designed to monitor insulation break down.

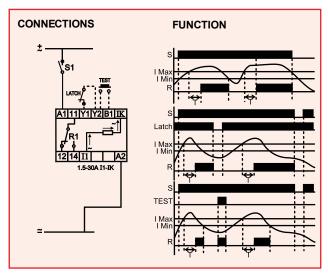
IT MUST NOT BE USED AS THE MAIN SAFEGUARD FOR LIFE PROTECTION

ORDERING INFORMATION

TYPE AUXILIARY SUPPLY OPTIONS

YWRI/EF 30 Amps 400VAC, 230VAC, 110VAC, 48VAC, 24VAC, 48VDC, 24VDC





CORE BALANCE CURRENT TRANSFORMER

The K1021 (with an ID of 290x70mm) core balance current transformer must be used with the earth fault relay type YWRI/EF 30 Amps. One core balance current transformer is required per YWRI/EF, all conductors must pass through the CT. Core balance CTs are not sensitive to polarity either on the primary or secondary. However, the primary conductors must all pass in the same direction together.

SPECIFICATIONS

Conforms to: IEC44-1, IEC185, BS7676

Rated system voltage: 720VAC Insulation: 3KV Frequency range: 50/60Hz Max secondary cable size: 2.5mm

Internal dimensions: 290W x 70H (mm)
External dimensions: 350W x 220H (mm)
Including feet 425W (mm)



The above core balance CT, type K1021 must be used with the YWRIEF/30 Amps, do not use any other CT or manufacturer of CT's.

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DC EARTH FAULT RELAY COMPLETE WITH DC EARTH FAULT CT

TYPE: YWRI.DEF



- Range switchable between 1-20mA & 10-200mA
- Auxiliary supply voltages between 9VDC & 1200VDC / 24VAC & 480VAC
- Fixed hysteresis at 2% (other values on request)
- Latching facility (manual or auto reset)
- Test input
- Time delay 'On' & 'Off' individually adjustable
- LED indication for output relay status & supply healthy
- LED indication for fault direction (ie, positive or negative leg)
- SPCO output rated 10Amps



PRODUCT GROUP

DESCRIPTION & MODE OF OPERATION

A Din rail mounted current sensing relay dedicated for DC earth fault monitoring, such as insulation deterioration on a DC system. The unit is supplied complete with a dedicated DC Earth Fault CT type FOX21.CTD, this allows the relay to have two switchable earth fault ranges of 1-20mA and 10-200mA. The unit is fitted with four LED's to aid status diagnosis:-

Green LED = Auxiliary supply voltage healthy

Red LED = Output relay energised

Top Amber LED = Positive leg earth fault

Bottom Amber LED = Negative leg earth fault

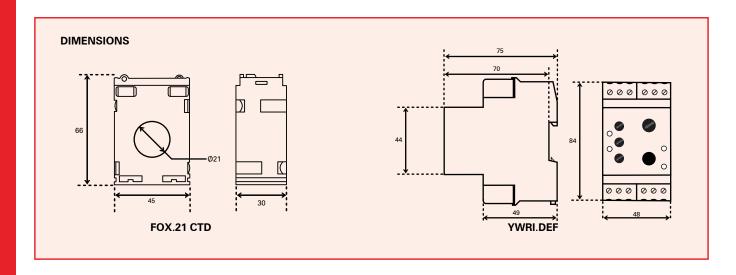
Both Amber LED's = Open circuit or short circuit between CT & relay (also if Test function is used)

The amber earth fault LED's will start to illuminate at either 1mA or 10mA (depending on which range has been set), but the output relay will not de-energise until the setpoint has been reached, plus any delay "ON" time set, which is adjustable 0.1-10secs. The output relay is fail safe, ie energised when healthy, de-energises on earth fault.

After tripping on an earth fault and the fault level starts to fall below the setpoint it has to fall for a further 2% (hysteresis) plus any delay "OFF" time set before the output relay energises again. This is "AUTO RESET". However, should the optional latch facility be utilised via a NC link between terminals Y1 & Y2 the NC link will need to be opened or the auxiliary supply removed to facilitate a reset, providing the fault is below the setpoint level plus hysteresis, "MANUAL RESET".

The relay is also fitted with a relay Test input between terminals Y3 & Y4 via a NO input.

For correct operation when using the **FOX.21CTD** both the positive and negative conductors need to pass through the CT from P1 to P2 (load on P2 side), to ensure accurate amber LED indication. It is also possible to position the CT on just the earth leg in which case P2 is the Earth side, when used in this configuration on an earth fault, only the positive fault amber LED will illuminate. In both the above scenarios correct connection between the CT and relay with respect to terminals S1 & S2 is also important to ensure accurate indication.



PRODUCT

GROUP

D

SPECIFICATIONS

Auxiliary supply: 9-36VDC, 18-75VDC, 85-370VDC /

85-265VAC, 210-1200VDC (via separate DC to DC converter type

YW1000D24D)

24VAC, 110VAC, 230VAC, 415VAC,

440VAC, 480VAC

Power consumption: Max 3W

Earth Fault ranges: 1-20mA / 10-200mA switchable
Hysteresis: Fixed at 2% of set value (other values

on request)

Tripping delay "0N": Adjustable 0.1-10sec
Tripping delay "0FF": Adjustable 0.1-10sec
Repeat accuracy: ±2% at constant ambient

FOX.21CTD internal dia: 21mm

Max distance between

CT and relay: 100 metres (200 metre loop in total)

Recommended cable: 1.5mm tri rated Operating temperature: -20° C to $+65^{\circ}$ C

Output relay: Max power 2200VA, 30W DC

250VACDC @ 10 Amps AC1, 1 Amp DC1

Mechanical Life: 30 Million ops

Electrical life: 200K at 2200VA (resistive)

Max cable size: 4mm
CE marked: Yes
RoHS compliant: Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing Material: Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

P/No AUXILIARY SUPPLY OPTIONS
YWRI.DEF 9-36VDC

9-36VDC 18-75VDC

85-370VDC/85-265VAC

210-1200VDC (Via separate DC-DC converter type YW1000D24D), page 134

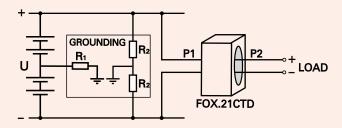
24VAC 110VAC 230VAC 415VAC 440VAC 480VAC

FOX.21CTD Supplied with relay as a kit.

NOTE

The YWRI.DEF and its associated CT are designed to monitor insulation breakdown. It must not be used as a safeguard for life protection.

GROUNDING INFORMATION



If the battery is not grounded at the centre point grounding resistors are required. Use either solution R_1 if possible or the solution with $2 \times R_2$.

Calculations for grounding resistors

$$\begin{split} &R_1*=\text{MAX}\ \frac{U}{4\ x\ \text{l set}} \ \text{Ohm} \\ &\text{Size of resistor W**}=\text{Min 0.4}\ \frac{U}{R_1} \text{Watt} \end{split}$$

 $R_2^* = MAX \quad U \quad Ohm$

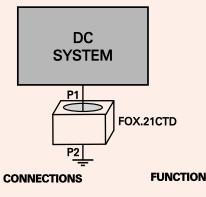
 $2 \times I_{set}$ Size of resistor W** = Min 1.6 \underline{U}^2 Watt

* The calculation of the resistor is based on a safety factor of 2 corresponding to a detection of a short circuit form one pole to ground to half battery voltage. A resistor selected according to the maximum resistor value as calculated above will limit the leak current to 2 times I_{set} in the case of a direct short to ground.

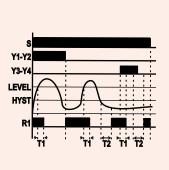
If it is a branched circuit with distributed "acceptable" leaks, it is recommended to use a lower value resistor.

** The calculation of the resistor size is based on a safety factor of 1.6, corresponding to an acceptable increase of battery voltage of 26%.

DC SYSTEMS WITH A SINGLE EARTH







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4-20mA OUTPUT SIGNAL GENERATOR

ADJUSTABLE 4-20mA OUTPUT SIGNAL GENERATOR

TYPES: Y24D4-20i, Y24A4-20i, Y110A4-20i, Y230A4-20i



FEATURES

- Din Rail Mounted
- Separate Input & Output LED Indication
- Input Voltage 24VDC, 24VAC, 110VAC, 230VAC
- Output 4-20mA Adjustable
- CE Marked
- RoHS Compliant

DESCRIPTION

A conveniently packaged Din rail mounted AC or DC voltage input to an adjustable 4-20mA output module. Designed for process control systems with "HAND / OFF / AUTO" applications. For example, when in "HAND" a signal anywhere between 4mA and 20mA needs to be forced into instrumentation equipment rather than a default 20mA signal. The product is also useful for system testing and commissioning applications.

The product can be specified with either a 24VDC, 24VAC, 110VAC or 230VAC supply voltage. In the case of 24VDC isolation between the supply voltage and the output is via an internal DC to DC converter. With an AC supply voltage isolation is via an internal transformer.

The output signal is an adjustable 4-20mA via a front mounted potentiometer. A healthy supply voltage is indicated via an illuminated green LED and a healthy output via an illuminated red LED.



Input Supply

Nominal Input: 24VDC, 24VAC, 110VAC, 230VAC

 Output:
 4-20mA

 Max Output Load:
 750 0hms

 Supply Healthy:
 Via Green LED

 Output Healthy:
 Via Red LED

 Output Voltage Regulation:
 <0.5%</td>

General

Material Housing:

 $\begin{array}{lll} \mbox{Operating Temperature:} & -20\mbox{°C to } +65\mbox{°C} \\ \mbox{Storage Temperature:} & -20\mbox{°C to } +65\mbox{°C} \\ \mbox{Humidity:} & 95\mbox{Rel H max} \\ \mbox{Isolation Voltage I/P-O/P:} & 1500V \mbox{ for 1 min} \\ \end{array}$

CE Marked: Yes

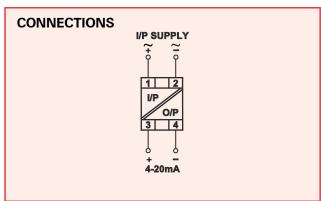
Standards Applied: EN60950-1 EN6100-6-3 EN61010-1

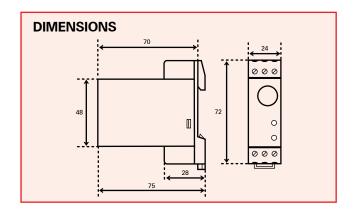
Polycarbonate

Auto extinguishable to UL 94V-0

RoHS Compliant: Yes







ORDERING INFORMATION

TYPE	INPUT VOLTAGE	ADJUSTABLE OUTPUT
Y24D4-20i	24VDC	4-20mA
Y24A4-20i	24VAC	4-20mA
Y110A4-20i	110VAC	4-20mA
Y230A4-20i	230VAC	4-20mA

PRODUCT GROUP

4-20mA OUT OF RANGE TRIP AMP RELAY

4-20mA OUT OF RANGE TRIP AMP RELAY

TYPES: YRTP (spno) 8RTP,11RTP (spco)

FEATURES

- Din rail & plug in version
- Single pole output
- Transformer isolation
- Adjustable time delay 0.1-60sec
- Supply on LED
- Relay Status LED
- CE marked

DESCRIPTION & MODE OF OPERATION

A monitoring relay designed to monitor the integrity of a 4-20mA signal rather than control a process, applications include safeguarding a system against potentially faulty transmitters or transducers where the output could on fault rise above 20mA or fall below 4mA but not reaching zero. Available in either a din rail or 8 & 11 pin plug in housing with a SPCO output (SPNO in the din rail version). The output relay will be energized when the monitored signal is between 4 & 20mA. The output relay will de-energise after an adjustable time delay up to 60 seconds if the monitored signal should fall below 3.5mA or rise above 20.5mA. There is a fixed hysteresis of 0.5mA therefore if the monitored signal falls back within the 4-20mA band the output relay will re-energise. If the auxiliary supply to the relay is lost at any time the output relay if energised will de-energise immediately.

SPECIFICATIONS

Supply & Measuring

Supply voltage: Dedicated voltage units 24VAC,

110VAC, 230VĂC

Supply tolerance: ±15%
Isolation AC versions: Via transformer
Power consumption: 3VA max
Hysteresis: Fixed 0.5mA

Repeat accuracy: $\pm 2\%$ at constant ambient $\pm 5\%$ across temperature range

Response time: 10mSec on make

Adjustable up to 60 Sec on break

Input range: 4-20mA adjustable
Max over current: x10 Continuous
Input impedance: 1 ohm

Relay output

Output contacts: SPCO 8Amps/250V AC1

(Din rail SPNO, Plug in SPCO)

Max breaking capacity: 2000VA
Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

 $\begin{array}{ll} \mbox{Operating temperature:} & -20^{\circ}\mbox{C to} + 65^{\circ}\mbox{C} \\ \mbox{Storage temperature:} & -20^{\circ}\mbox{C to} + 65^{\circ}\mbox{C} \\ \end{array}$

Max cable size: 4mm CE marked: Yes

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61010-1: 2002

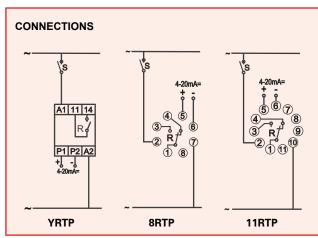
Housing material: Polycarbonate, Auto extinguishable

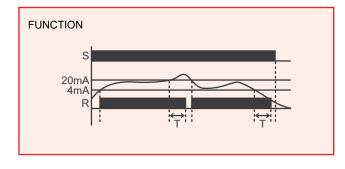
to UL 94 V-0

ORDERING INFORMATION

TYPE COIL VOLTAGE
YRTP (Din rail) 230VAC, 110VAC, 24VAC
8RTP (8 pin plug in)
11RTP (11 pin plug in)







1(4)-20mA DC ADJUSTABLE TRIP AMPS

TYPES: YWRIT, 11WRIT (spco) YWRI2T (2 x spco)

FEATURES

- Din rail or 11 pin plug in
- Single setpoint or dual setpoint values
- Selectable manual or auto reset
- Low input impedance
- Dual LED indication

SUMMARY OF UNITS

YWRIT - Din rail 1-20mA adjustable single setpoint trip amp.

11WRIT - 11 pin plug in 1-20mA adjustable single setpoint trip amp.

YWRI2T - Din rail 1-20mA two adjustable setpoint trip amp 2 x SPCO outputs "Low" & "High".



YWRIT, 11WRIT

"Auto Reset" without latching mode. This mode is determined by terminals Y1 & Y2 or pins 9 & 11 left open. The output relay is energised when the monitored circuit rises above the level selected via the front potentiometer. The output relay will de-energise when the current falls back below the level selected less the set hysteresis adjustable 5 to 50%, set via a second potentiometer. If the auxiliary supply is lost at any time the relay will also deenergise.

"Manual Reset" latching mode. This mode is determined by a wired link between terminals Y1 & Y2 or pins 9 & 11. The output energises when the monitored circuit rises above the level selected by the front potentiometer. Once energised the relay will remain latched even if the monitored current falls below the set level less any selected hysteresis. Resetting is achieved by opening the link between terminals Y1 & Y2 or pins 9 & 11 or by removing the auxiliary supply. If whilst resetting the monitored current is still above the set level a reset will not be achieved. It is normally preferable in the latching mode to have the adjustable hysteresis set at minimum.

YWRI2T

Two setpoint trip amp. Providing two separately controllable trip levels. With R1 selected as the "High" level and R2 as the "Low" level. When the monitored signal current rises above R2 set level R2 relay will energise. If the current continues to rise above R1 set level, relay R1 will energise. Conversely as the monitored current falls R1 will de-energise, if the fall continues R2 will de-energise. The unit has a built in fixed hysteresis of 2% at each setpoint to avoid relay "chatter". The YWRI2T does not have a latched option and is therefore "auto" reset on both relays.

OTHER APPLICATION NOTES

Adjustable Time Delays

The trip amps YWRIT & 11WRIT have 3 separately adjustable 0.1-10 sec delays, A startup delay activated by the connection of the auxiliary supply, therefore if a control circuit is going to be permanently live the time delay will only ever be active once, A delay on rising current and a delay on falling. The YWRI2T does not have any time delays.

DC Auxiliary Supply Versions

DC auxiliary supply versions are as standard non isolated. For these versions the supply and the measured current must be isolated from each other and must not exceed 50V DC. On request at extra cost isolated versions can be manufactured utilising internally a DC to DC converter.



SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: ±15%
Isolation AC versions: Via transformer
Isolation DC versions: No as standard or:-

Yes via optional internal DC to DC converter

Power consumption: 3VA max

Hysteresis: Ajustable 5 to 50% of le YWRI2T fixed at 2%

Repeat accuracy: $\pm 2\%$ at constant ambient $\pm 5\%$ across temperature range

Response time: 100 mSec on make 200mSec on break

Input range: 1-20mA adjustable
Max over current: 1Amp (max 1 sec)
Input impedance: 10 0 hms

Time delays: 0.1-10 secs separately adjustable

YWRI2T no delay

Relay output

Output contacts: SPCO 10Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C

Max cable size: 4mm CE marked Yes

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61010-1: 2002

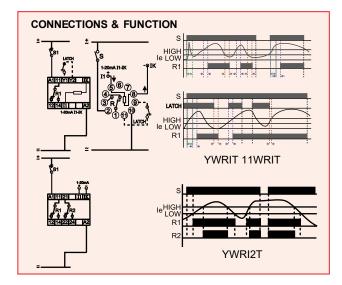
Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

TYPE	COIL VOLTAGE		
YWRIT (din rail SPCO)	440VAC	230VAC	*48VDC
11WRIT (11 pin SPCO)	415VAC	110VAC	*24VDC
YWRI2T (din rail 2 x SPCO)	400VAC	48VAC	
	2001/40	241/40	

* No isolation on DC versions as standard, on request at extra cost isolated versions are available



(4)-20mA & 0-10VDC TRIP AMPS / RELAYS

0.1-10V DC ADJUSTABLE DUAL SETPOINT RELAY

TYPE: YWRU2T/10VDC (2 x spco)

FEATURES

- Din rail mounted
- **Dual setpoint (two stage)**
- Ideal HVAC & BMS prduct
- **Dual LED indication**

MODE OF OPERATION

Dual setpoint 0.1-10V DC relay. Providing two separately controllable trip levels. With R1 selected as the "High" level and R2 as the "Low" level. When the monitored signal voltage rises above R2 set level R2 relay will energise. If the voltage continues to rise above R1 set level, relay R1 will energise. Conversely as the monitored voltage falls R1 will de-energise, if the fall continues R2 will de-energise. The unit has a built in fixed hysteresis of 2% at each setpoint to avoid relay "chatter". The YWRU2T does not have a latched option and is therefore "auto" reset on both relays.

OTHER APPLICATION NOTES

DC Auxiliary Supply Versions

DC auxiliary supply versions are as standard non isolated. For these versions the supply and the measured current must be isolated from each other and must not exceed 50V DC. On request at extra cost isolated versions can be manufactured utilising internally a DC to DC converter.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: Isolation AC versions: Via transformer Isolation DC versions: No as standard or:-

Yes via optional internal DC to DC converter

Power consumption: 3VA max Hysteresis: Fixed at 2%

±2% at constant ambient Repeat accuracy:

±5% across temperature range 100 mSec on make Response time:

200mSec on break 0.1-10V DC adjustable Input range: 15V DC permanently Max over voltage: Input impedance: 10 KOhms

Relay output

Output contacts: SPC0 10Amps/250V AC1

Mechanical life: 30 Million ops

Flectrical life: 200K ops at max rated load

General

 -20° C to $+65^{\circ}$ C Operating temperature: -20° C to $+65^{\circ}$ C Storage temperature: Max cable size: 4mm

CF marked

EN61000-6-1: 2007 EN61000-6-3: 2007 In accordance with:

EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

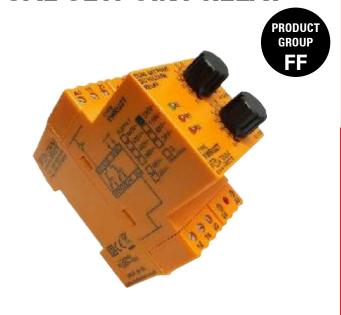
ORDERING INFORMATION

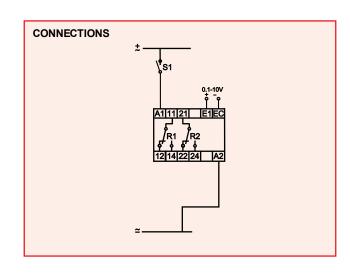
COIL VOLTAGE

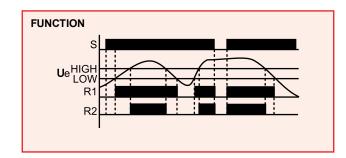
YWRU2T/10VDC (Din rail 2 x SPCO) 440VAC 230VAC *48VDC 415VAC 110VAC *24VDC

> 400VAC 48VAC 380VAC 24VAC

* No isolation on DC versions as standard, on request at extra cost isolated versions are available







AC TO ADJUSTABLE 0-10VDC OUTPUT BMS POWER SUPPLY

TYPES: Y24A0-10D, Y110A0-10D, Y230A0-10D

FEATURES

86

- Din Rail Mounted
- Separate Input & Output LED Indication
- Input Voltage 24VAC, 110VAC, 230VAC
- Output 0-10VDC Adjustable
- CE Marked
- RoHS Compliant

DESCRIPTION

A conveniently packaged Din rail mounted AC voltage to an adjustable 0-10VDC output module. Designed specifically for "HAND / OFF / AUTO" applications for BMS controller inputs, when in "HAND" a DC voltage needs to be forced into BMS input cards, but not necessarily a full 10VDC signal is required. This product can be specified with either a 24VAC, 110VAC or 230VAC primary voltage, the output voltage is an adjustable 0-10VDC via a front mounted potentiometer. A healthy AC input voltage is signalled by an illuminated green LED, and the output voltage is indicated by an increasing in intensity illuminated red LED starting at 1VDC (below 1VDC the output will be present, but without LED indication). product is not designed to power "control circuits", it is only for driving into BMS input cards, max 10mA @ 10VDC.



Input Supply

Nominal Input: 24VAC, 110VAC, 230VAC

Output Voltage Range:

Min Impedance:

Max Impedance:

Max Output Load:

AC Supply Healthy:

DC Output Healthy:

Via Red LED

Variable Intensity 1-10VDC

Output Voltage Regulation: $\leq 0.5\%$

General

Operating Temperature: -20°C to +65°C
Storage Temperature: -20°C to +65°C
Humidity: 95% Rel H max
Isolation Voltage I/P-0/P: 1500VDC for 1 Min

 CE Marked:
 Yes

 Standards Applied:
 EN60950-1

 EN6100-6-3
 EN61010-1

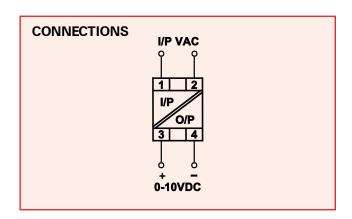
 Material Housing:
 Polycarbonate

sing: Polycarbonate
Auto extinguishable to UL 94V-0

RoHS Compliant: Yes



GROUP



ORDERING INFORMATION

<u>TYPE</u>	INPUT VOLTAGE	OUTPUT VOLTAGE
Y24A0-10D	24VAC	0-10VDC
Y110A0-10D	110VAC	0-10VDC
Y230A0-10D	230VAC	0-10VDC

PRODUCT GROUP

VOLTAGE CONTROL RELAYS, WITH SEPARATE AUXILIARY SUPPLY

TYPE: YWRU, 11WRU (spco)

- FEATURES
- Din rail or 11 pin plug in
- Suitable for both AC & DC voltage control
- Selectable auto or maual reset
- Three selectable control ranges from: 0.1 to 400VDC 0.1 to 283VAC
- Special high voltage versions 700VDC, 1000VDC, 1500VDC
- **Dual LED indication**

DESCRIPTION & MODE OF OPERATION

Voltage control relays suitable for both AC and DC voltage control, available in both din rail and 11 pin plug in. The standard units have three selectable via terminal taps voltage ranges from 0.1 to 400VDC (0.1 to 283VAC). Also available only in the din rail housing are dedicated range "high voltage" control units which are most suitable for "railway traction voltage" monitoring.

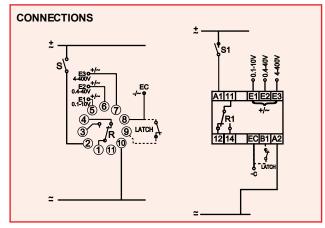
"Auto Reset" without latching mode. This mode is determined by EC & B1 or pin 9 & 11 left open. The output relay is energised when the monitored voltage rises above the level selected via the front potentiometer. The output relay will de-energise when the voltage falls back below the level selected less the set hysteresis adjustable 5 to 50% set via a second potentiometer. If the separate auxiliary supply is lost at any time the relay will also de-energise.

"Manual Reset" latching mode. This mode is determined by a wired link between terminals EC & B1 or pins 9 & 11. The output relay energises when the monitored voltage rises above the level selected via the front potentiometer. Once energised the output relay will remain latched even if the monitored voltage falls below the set level less any selected hysteresis. Resetting is achieved by opening the link between terminals EC & B1 or pins 9 & 11 or by removing the auxiliary supply. If whilst resetting the monitored voltage is still above the set level a reset will not be achieved. It is normally preferable in the latching mode to have the adjustable hysteresis set at minimum.

OTHER APPLICATION NOTES

DC Auxiliary Supply Versions

DC auxiliary supply versions are as standard non isolated. For these versions the supply and the measured current must be isolated from each other and must not exceed 50V DC. On request at extra cost isolated versions can be manufactured utilising internally a DC to DC converter.



SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: Isolation AC versions: Via transformer Isolation DC versions: No as standard or:-

Yes via optional internal DC to DC converter

Power consumption: 3VA max

Adjustable 5-50% of Ue Hysteresis: $\pm 2\%$ at constant ambient Repeat accuracy: ±5% across temperature range

Response time: 100 mSec on make 200mSec on break

Relay output

SPC0 10Amps/250V AC1 Output contacts: Mechanical life: 30 Million ops 200K ops at max rated load

Electrical life:

General Operating temperature: -20° C to $+65^{\circ}$ C -20°C to $+65^{\circ}\text{C}$ Storage temperature: Max cable size: 4mm

CF marked Yes In accordance with: EN61000-6-3: 2007

EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

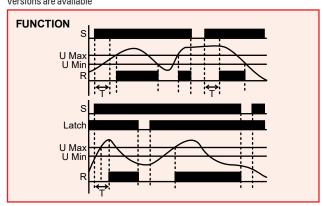
to UL 94 V-0

Control ran	ge Ue	Input I	Permanent	Peak
DC Volts A	C Volts	Resistance	Over Volts	Volts (10mSec)
0.1 to 10V 0.	1 to 7.07V	10 KOhms	15VDC	20VDC
0.4 to 40V 0.	3 to 28.3V	40 KOhms	150VDC	250VDC
4 to 400V 2.	9 to 283V	400 KOhms	500VDC	1500VDC
7-700V 5	to 495V	710 KOhms	1000VDC	2100VDC
10-1000V 7	to 707V	1.01 M0hms	1750VDC	3500VDC
15-1500V 11	to 1060V	1.51 M0hms	1750VDC	3500VDC

ORDERING INFORMATION

<u>TYPE</u>	COIL VOLTA	AGE	
YWRU (Din rail)	440VAC	230VAC	*48VDC
11WRU (11 pin plug in)	415VAC	110VAC	*24VDC
YWRU/700V (Din rail)	400VAC	48VAC	
YWRU/1000V (Din rail)	380VAC	24VAC	
YWRU/1500V (Din rail)			

* No isolation on DC versions as standard, on request at extra cost isolated versions are available



VOLTAGE CONTROL RELAYS, WITH SEPARATE AUXILIARY SUPPLY, WITH DELAY ON TRIPPING

TYPE: YWRU.T10 (spco)

- FEATURES
- Din rail mounted
- Suitable for both AC & DC voltage control
- Separately adjusted delay on energise & de-energise
- Selectable auto or manual reset
- Three selectable control ranges from:0.1 to 400VDC0.1 to 283VAC
- Special high voltage versions 700VDC, 1000VDC, 1500VDC
- Dual LED indication

■ DESCRIPTION & MODE OF OPERATION

Voltage control relays suitable for both AC and DC voltage control, available for din rail mounting. The standard units have three selectable via terminal taps voltage ranges from 0.1 to 400VDC (0.1 to 283VAC). Also available are dedicated range "high voltage" control units which are most suitable for "railway traction voltage" monitoring. "Auto Reset" without latching mode. This mode is determined by EC & B1 left open. The output relay is energised when the monitored voltage rises above the level selected via the front potentiometer. The output relay will de-energise when the voltage falls back below the level selected less the set hysteresis adjustable 5 to 50% set via a second potentiometer. If the separate auxiliary supply is lost at any time the relay will also de-energise.

"Manual Reset" latching mode. This mode is determined by a wired link between terminals EC & B1. The output relay energises when the monitored voltage rises above the level selected via the front potentiometer. Once energised the output relay will remain latched even if the monitored voltage falls below the set level less any selected hysteresis. Resetting is achieved by opening the link between terminals EC & B1 or by removing the auxiliary supply. If whilst resetting the monitored voltage is still above the set level a reset will not be achieved. It is normally preferable in the latching mode to have the adjustable hysteresis and time set at minimum.

Adjustable Time Delays - The YWRU.T10 voltage relays have 2 independently adjustable 0.1-10 secs time delays. There is a delay on rising voltage when the monitored voltage rises above the set level as selected by the front potentiometer and a delay on falling voltage, when the monitored voltage falls below the set level plus the hysteresis.

OTHER APPLICATION NOTES

DC Auxiliary Supply Versions - DC auxiliary supply versions are as standard non isolated. For these versions the supply and the measured current must be isolated from each other and must not exceed 50V DC. On request at extra cost isolated versions can be manufactured utilising internally a DC to DC converter.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: ±15%
Isolation AC versions: Via transformer
Isolation DC versions: No as standard or:-

Yes via optional internal DC to DC converter

PRODUCT Group

Power consumption: 3VA max

Hysteresis: Adjustable 5-50% of Ue
Repeat accuracy: ±2% at constant ambient
±5% across temperature range

Response time: 0.1-10 Sec on make 0.1-10 Sec on break

Relay output

Output contacts: SPCO 10Amps/250V AC1 Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

Operating temperature: $-20^{\circ}\text{C to} + 65^{\circ}\text{C}$ Storage temperature: $-20^{\circ}\text{C to} + 65^{\circ}\text{C}$

Max cable size: 4mm CE marked Yes

In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007

EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

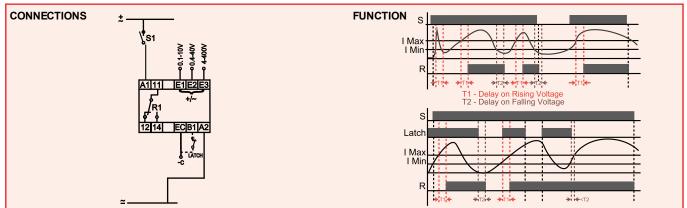
to UL 94 V-0

Control	range Ue	Input	Permanent	Peak
DC Volts	AC Volts	Resistance	Over Volts	Volts (10mSec)
0.1 to 10V	0.1 to 7.07V	10 KOhms	15VDC	20VDC
0.4 to 40V	0.3 to 28.3V	40 KOhms	150VDC	250VDC
4 to 400V	2.9 to 283V	400 KOhms	500VDC	1500VDC
7-700V	5 to 495V	710 KOhms	1000VDC	2100VDC
10-1000V	7 to 707V	1.01 M0hms	1750VDC	3500VDC
15-1500V	11 to 1060V	1.51 M0hms	1750VDC	3500VDC

ORDERING INFORMATION

<u>TYPE</u>	COIL VOLTA	<u>age</u>	
YWRU.T10 (Din rail)	440VAC	230VAC	*48VDC
YWRU.T10/700V (Din rail)	415VAC	110VAC	*24VDC
YWRU.T10/1000V (Din rail)	400VAC	48VAC	
YWRU.T10/1500V (Din rail)	380VAC	24VAC	

^{*} No isolation on DC versions as standard, on request at extra cost isolated versions are available



PRODUCT Group

SELF POWERED AC VOLTAGE OVER & UNDER CONTROL RELAYS

TYPES: YWROUV (spco), YWR2OUV (dpco)
YWROUV2 (1 x spco over & 1 x spco under)



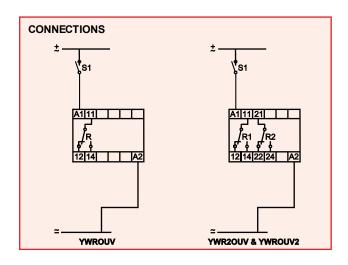
- Din rail mounted
- Self powered no separate auxiliary supply required
- AC over & under voltage control
- Optional adjustable time delay
- Nominal voltages 24VAC to 440VAC
- Multi LED indication

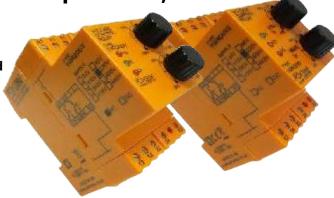
DESCRIPTION & MODE OF OPERATION

Din rail mounted AC self powered voltage control relays (no separate auxiliary supply required) for the combined monitoring of both over and under voltage levels. Available only in a din rail package with nominal voltages from 24VAC to 440VAC, an option adjustable time delay 0.1 to 10 secs "T" can be specified as a delay on tripping timer, (not possible on the YWROUV2).

YWROUV & YWR2OUV - SPCO and DPCO output devices respectively, with separate over and under voltage control levels set via potentiometers +20% and -30% against the nominal voltage. The output relay will be energised when the voltage is within the set points. Deviation above or below the setpoints will cause the output relay to denergise, plus any optional time delay set. Total loss of supply will cause an immediate de-energisation. On the voltage returning to with the set levels +2% fixed hysteresis the output relay will re-energise. A green LED illuminated indicates a supply is present and a red LED illuminated indicates the output relay is in an energised state

YWROUV2 - As above but with a separate relay output for over voltage and a separate relay output for under voltage, in a healthy state both relays are energised. R1 is designated as the over voltage relay and will de-energise if an over voltage level is reached. R2 is designated as the under voltage relay and will de-energise if an under voltage level is reached. The unit featured three LED indicators, green for a supply voltage present and individual red LED's for R1 and R2, a de-energisation will cause the respective LED to extinguish.





SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: -35% & +25% (for 1 hour max)

Independent adjustable

set levels: -30% & +20% Isolation: Via transformer Power consumption: 3VA max Hysteresis: Fixed 2%

Repeat accuracy: $\pm 2\%$ at constant ambient $\pm 5\%$ across temperature range

Delay on tripping: 100 mSec on make

0.1-10sec adjustable optional (not YWR0UV2)

Relay output

Output contacts: SPC0 & 2 x SPC0 10Amps/250V AC1

DPC08Amps/250VAC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

 $\begin{array}{ll} \text{Operating temperature:} & -20^{\circ}\text{C to} + 65^{\circ}\text{C} \\ \text{Storage temperature:} & -20^{\circ}\text{C to} + 65^{\circ}\text{C} \\ \text{Max cable size:} & 4\text{mm} \end{array}$

CE marked Yes

In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007

EN61010-1: 2002

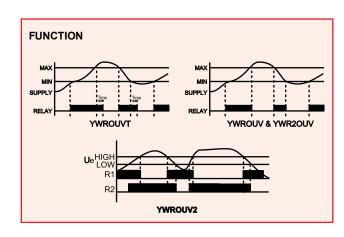
Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

TYPE	TIME DELAY	NOMINAL	VOLTAGE
YWROUV (Din rail SPCO)	T*	440VAC	110VAC
YWR20UV (Din rail DPCO)		415VAC	48VAC
YWROUV2 (Din rail 2 x SPCO)		400VAC	24VAC
		230VAC	

 $^{^*}$ Insert T if an adjustable 0.1-10sec time delay is required (not available on type YWROUV2).



SELF POWERED DC VOLTAGE CONTROL RELAYS

TYPES: YWRTU, 8WRTU, 11WRTU (spco) YWR2TU, 8WR2TU, 11WR2TU (dpco)



■ FEATURES

90

- Din rail or plug in
- Available SPCO or DPCO output
- Self powered
- Nominal voltages 12VDC to 48VDC
- Ideal battery level monitoring relay
- LED indication

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8/11 pin plug in DC self powered voltage control relays (no separate auxiliary supply required), available both SPCO and DPCO output. The output relay energises when the voltage rises above the set level controlled via a potentiometer adjustable -20% to +30% of the nominal voltage. The output relay will then de-energise when the voltage falls below the set level less a hysteresis adjustable via a second potentiometer 5 to 25% of the set level. If the total supply is lost denergisation will also occur. A green LED indicates a voltage is present and a red LED indicates that the output relay is energised.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: -20% & +35% (for 1 hour max)
Adjustable set level: -20% to +30% of supply
Power consumption: 12VDC/2 Watts

24VDC/2 Watts 48VDC/4 Watts Adjustable 5-25%

Repeat accuracy: ±2% at constant ambient ±5% across temperature range
Delay on tripping: 100 mSec on make & break

Relay output

Hysteresis:

Output contacts: SPC0 10Amps/250V AC1
DPC0 8Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

TYPE

Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C
Max cable size: 4mm

CE marked Yes

In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007

EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

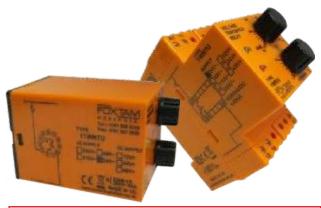
ORDERING INFORMATION

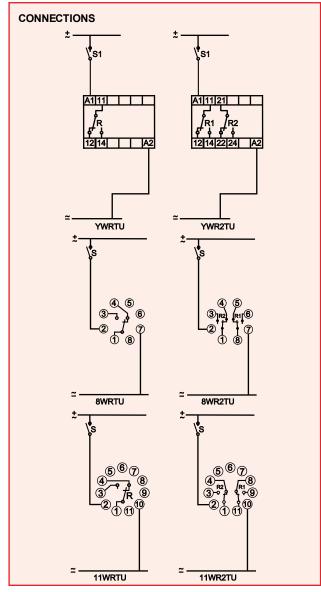
YWRTU (Din rail SPCO) 8WRTU (8 pin SPCO) 11WRTU (11 pin SPCO) YWR2TU (Din rail DPCO) 8WR2TU (8 pin DPCO)

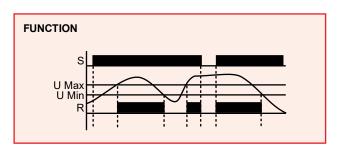
11WR2TU (11 pin DPCO)

NOMINAL VOLTAGE

12VDC 24VDC 48VDC







PRODUCT

GROUP

CONDUCTIVE PROBE LEVEL CONTROL RELAYS

TYPES: YWRW, 11WRW, 8WRW, 8WRWO (spco)

YWR2W, 11WR2W (dpco)



- Din rail or plug in
- Available SPCO or DPCO output
- Control & automatic regulation of liquid levels
- Selectable "pump up" or "pump down"
- Adjustable sensitivity
- Isolated AC probe supply
- LED indication
- Special Japanese standard pin out version

DESCRIPTION & MODE OF OPERATION

Din rail mounted or 8/11 pin plug in conductive probe level control relays for the control of maximum and/or minimum levels of conductive liquids.

Regulation of two levels "pump down" mode -The relay is energised when the high level probe is reached and deenergises when the level falls below the low level probe.

Regulation of two levels "pump up" mode -The relay is de-energised when the high level probe is reached and energises when the level falls below the low level probe.

Regulation of one level "pump down" mode selected - Connect the maximum and common terminals together. In this case a single probe only is used and the relay energises when the probe is immersed. Or in "pump up" mode the relay operation is reversed.

Prove relay test feature/override (Din rail versions only)-With probes connected the front selector switches can be used to control the relay providing a permanent "ON" or permanent "OFF".

OTHER APPLICATION NOTES

- On conductive vessels and tanks the chassis can be used as the "Common" electrode. If the vessel is non conductive a third probe is required as the "Common".
- Probe cables up to a maximum of 100m need not be screened, above 100m screened cable is recommended. However, in any event it is not advisable to run the probe cables with power cables. When screened cable is used, the screen and the common should be connected together.
- 3. DC auxiliary supply units are available but not recommended as the probe supply is DC non isolated. DC on the probes runs a consequential risk of a possible electrolysis reaction, especially in solutions with a high mineral or contaminant contact. Whilst AC probes have a self cleaning effect.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: $\pm 15\%$ Isolation AC versions: Via transformer

Isolation level: 2KV AC between contacts, probes & supply

Isolation DC versions: No

Probe supply: 20V AC (AC supply versions)

12VDC (DC supply versions)

Max probe current: 2mA Power consumption: 3VA

Sensitivity range: Adjustable 4.7 to 100 KOhms
Response time: 100 mSec on make



Relay output

Output contacts: Mechanical life:

SPC0 10Amps/250V AC1

30 Million ops

Electrical life: 200K ops at max rated load

General

Operating temperature: $-20^{\circ}\text{C to } +65^{\circ}\text{C}$ Storage temperature: $-20^{\circ}\text{C to } +65^{\circ}\text{C}$ Max cable size: 4mm

CE marked Yes

In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007

EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

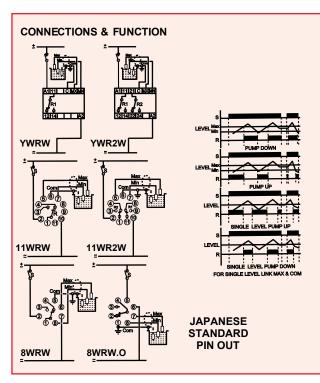
<u>TYPE</u>	<u>COIL VOLTAGE</u>			
YWRW (Din rail SPCO)	440VAC	230VAC	*12VDC	
11WRW (11 pin SPCO)	415VAC	110VAC	*24VDC	
8WRW (8 pin SPCO)	400VAC	48VAC	*48VDC	
8WRW0 (8 pin SPCO)	380VAC	24VAC		
10100001 (D) (DD000)				

YWR2W (Din rail DPCO) 11WR2W (11 pin DPCO)

8WRWO has the Japanese standard pin out arrangement.

On request factory set sensitivity and mode of operation can be manufactured. Enter "F" after part number and specify exact requirements.

* DC auxiliary supply units are possible but the probe supply is an unisolated 12VDC with a consequential risk of a possible electrolysis reaction, especially in solutions with a high mineral or contaminant content.



CONDUCTIVE PROBE LEVEL CONTROL RELAY

TYPES: MOD-W-1 (spco)

FEATURES

- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- SPCO output
- Transformer technology
- Adjustable sensitivity 2-100 KOhms
- Adjustable time delay 1-10sec
- Selectable pump up or pump down
- Relay proving feature
- LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

An attractive modern designed conductive probe type level control relay in a din rail mounted modular style housing of 1.5 modules width (27mm). The MOD-W-1 is a transformer based conductive probe level control relay and is hence available in dedicated AC voltages only. The sensitivity is potentiometer adjustable 2-100 Kohms, also a potentiometer is fitted to adjust a delay on tripping timer 0.1-10 secs, useful to delay threshold tripping due to fluid movement in tanks. An eight way function switch is provided (designated A to H) to switch between "pump up" and "pump down" modes along with a relay proving function "permanent on" or "permanent off", the switch will also determine how the adjustable time delay will function. The function positions are as follows:-

A: Pump up, delay on energisation & de-energisation

B: Pump down, delay on energisation & de-energisation

C: Pump up, delay on energisation

D: Pump down, delay on energisation

E: Pump up, delay on de-energisation

F: Pump down, delay on de-energisation

G: Relay proving, permanent on

H: Relay proving, permanent off

Regulation of two levels - pump down mode: The relay energises when the high level probe is reached and deenergises when the level falls below the low level probe.

Regulation of two levels - pump up mode: The relay deenergises when the high level probe is reached and energises when the level falls below the low level probe.

Regulation of one level - pump down mode selected: Connect the maximum and the common terminals together. In this case a single probe only is used and the relay operates when the probe is immersed.

Note: Selection of pump up mode reverses the relay.

Relay proving feature: The front selector switch can be used to "prove" the relay either permanently ON or permanently OFF.

Common probe: A common reference is always required, if the vessel or tank is conductive the chassis of the tank or vessel will suffice. If the tank or vessel is not conductive a third probe is required to act as the common reference.

ORDERING INFORMATION

TYPE COIL VOLTAGE

MOD-W1(Din rail SPCO) 230VAC 110VAC 24VAC

*24VD0

* DC auxiliary supply units are possible but the probe supply is an unisolated 5VDC with a consequential risk of a possible electrolysis reaction, especially in solutions with a high mineral or contaminant content.



SPECIFICATIONS

Supply & Measuring

Supply voltage:

Dedicated voltage units 24VAC, 110VAC, 230VAC

24VDC (unisolated) (±15%)

Max power consumption: 3VA

Insulation: 2.5KV 50Hz impulse
Sensitivity range: Adjustable 2-100 KOhms
Delay on tripping: Adjustable 1-10secs
Probe supply: 20VAC *5VDC on DC Version

Max probe current: 2mA

Relay output

General

Output contacts: SPC0 8Amps/250V AC1

Max breaking capacity:
Mechanical life:

30 Million ops 200K ops at max rated load

Electrical life:

Operating temperature:

-20°C to +65°C -20°C to +65°C

2000VA

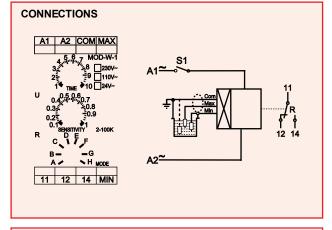
Storage temperature: -20°C to Max cable size: 2.5mm CF marked Yes

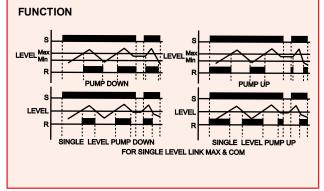
In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0





PUMP SEAL LEAK MONITOR RELAY / WATER LEAK

DETECTION RELAY

TYPES: YWRWS (spco) YWR2WS (dpco)

- **FEATURES**
- Din rail mounted
- **Available SPCO or DPCO output**
- **Detection of water contamination of oil**
- Detection of water leaks from pipes in buildings
- Adjustable sensitivity
- Isolated probe supply
- **LED** indication

DESCRIPTION & MODE OF OPERATION

Din rail mounted units for the monitoring and alarming in applications where the presence of water is a problem. Such applications include water contamination of the oil within submersible pumps or water leak detection from pipes within buildings. Working on the conductive probe principle and with an adjustable sensitivity. In a situation healthy condition the output relay is energised, when the presence of water is detected, i.e. in the case of a pump, the seal fails and the oil becomes contaminated the resistance drops. If the resistance falls below the set level as set via the front potentiometer the output relay will deenergise and the red LED will extinguish. A green LED indicates the connection of the auxiliary supply.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: Isolation: Via transformer 12VDC Probe supply: Max probe current: 2mA Power consumption: 3VA

Sensitivity range: Adjustable 4.7 to 100 KOhms

100 mSec on make Response time:

Relay output

SPC0 10Amps/250V AC1 Output contacts: DPCO 8Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

 -20° C to $+65^{\circ}$ C Operating temperature: Storage temperature: -20° C to $+65^{\circ}$ C Max cable size: 4mm

CE marked: Yes

In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61010-1: 2002

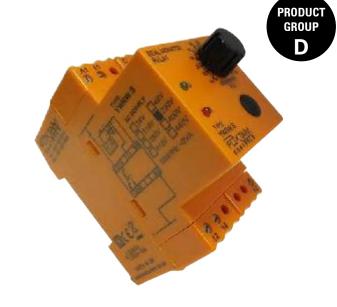
Polycarbonate, Auto extinguishable Housing material:

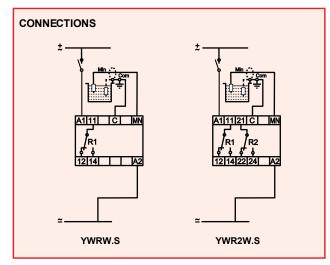
to UL 94 V-0

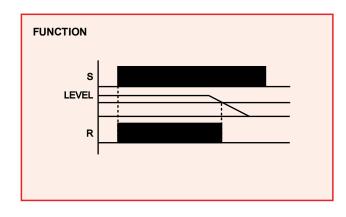
ORDERING INFORMATION

COIL VOLTAGE TYPE YWRWS (Din rail SPCO) 440VAC

230VAC YWR2WS (Din rail DPCO) 415VAC 110VAC 400VAC 48VAC 380VAC 24VAC







DIN RAIL MODULAR PNP SIGNAL AMPLIFIER

TYPES: MOD-SAP-1 (spco)

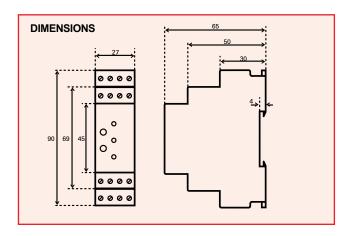
FEATURES

- Din rail mounted
- Modern modular design
- Width 27mm (1.5 module)
- SPCO output
- Multi voltage 24VAC/DC, 110VAC, 230VAC
- Dual LED indication
- RoHS Compliant
- CE marked

PRODUCT GROUP E

DESCRIPTION & MODE OF OPERATION

An attractive modern design in a din rail mounted modular style housing of 1.5 module width (27mm). The relay features large double deck terminals suitable for up to 2.5mm² cable. A green supply on LED is featured along with a red LED to indicate relay output status. The relay has a 24VDC output to supply the PNP senor. When a high output from sensor is connected to the input the relay will energise and the red LED is illuminated. As soon as the input is removed the relay will de-energise and the red LED will extinguish.



SPECIFICATIONS

Relay outputs:

Output contacts: 8Amps/250V AC1
Max breaking capacity: 2000VA
Mechanical life: 10 Million ops

Electrical life: 500K ops at max rated load

Supply voltage:

Supply voltage: 24V AC/DC, 110VAC or 230VAC

Supply tolerance: -15% to +10% Max power consumption: 40mA

Sensor Input:

Sensor type: PNP
Sensor Supply: 24VDC
Max input time: Continuous
Min On time: 300mS
Min Off time: 300mS

General:

Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C
Max cable size: 2.5mm²

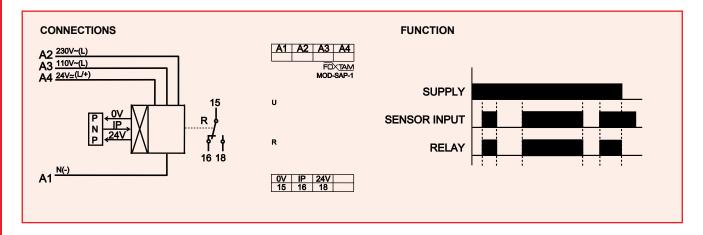
CE marked: Yes
In accordance with: EN610

EN61000-3-2, EN61000-4-2, EN61000-4-3 EN61000-4-4, EN61000-4-5, EN61000-4-11

CISPR 14.1

Housing Material: Polycarbonate, Auto extinguishable

to UL 94 V-0



UNDERSPEED OR PULSE CONTINUITY

"WATCHDOG" RELAY

TYPES: 11RVL, 8RVL (spco) 11RVLMP (spco)



- 8 & 11 pin plug in
- SPCO output
- Detects machine underspeed, stopping, jamming
- Suitable as a watchdog relay with PLC's
- Choice of NAMUR, PNP or clean contact inputs
- Available auto or manual reset
- LED indication

DESCRIPTION & MODE OF OPERATION

Simple 8 & 11 pin plug in underspeed relays suitable for all kinds of machinery to detect loss of speed and pulse continuity. These units are useful where an output contact is required to alarm on jamming, loss of speed due to blunt cutting tools or as a "stationary" contact to allow the release of machine guards. Applications also include being used as "watchdog" relays.

The units are normally energised and are "time based" a pulse resets the time delay, if a pulse is not seen within the time range set on the front of the unit the output relay deenergises and latches out. The input circuit on the underspeed relay is looking for a change in state of input. To reset the unit the coil voltage needs to be removed for approximately 100mSec then reconnected (as an option suffix M1 can be added to the order code giving an auto reset device).

On initial connection and reconnection of the coil voltage the unit will energise for approximately 8 seconds irrespective of the rate of pulses inputting the device, this is in order to allow a stationery machine/system to run up to normal speed. Note, if M1 auto reset option is specified the 8 second run up time is not applicable, care is therefore cautioned in the choice of application that this option is specified to avoid relay chatter.

The relay will de-energise in the event of a coil supply voltage failure, failure of the sensor, breakage of the cable between sensor and the unit, hence the underspeed monitor is fail safe.

11RVL, **8RVL** - The input is achieved from either a NAMUR proximity switch or from a clean contact.

11RVLMP - The input is achieved from either a NAMUR proximity switch, PNP sensor or from a clean contact. The 11RVLMP also benefits from a reset input by momentarily closing link S2 between pins 2 & 8. Note that the 8 second run up time will not be applicable and is only achieved by the connection and reconnection of the coil voltage.

OTHER APPLICATION NOTES

The choice of sensor depends on the speed of the equipment and the time between impulses. To determine the controlling time it is necessary to calculate the time between two impulses at normal speed. This time will be:-

 $T = \underline{60}$ V = Speed in RPMn.V n = Number of teeth

ORDERING INFORMATION

COIL VOLTAGE TYPE TIME RANGE (specify S, M or L) 8RVL (8 pin SPCO) M (0.5 sec to 21 mins) L (15 sec to 640 mins) \$ (0.06 to 160 secs) 230VAC 11RVL (11 pin SPCO) 110VAC 0.06 to 0.6 sec0.5 to 5 sec 15 to 150 sec 11RVLMP (11 pin SPCO) 2 to 20 sec 1 to 10 mins 48V AC/DC 0.25 to 2.5 sec 24V AC/DC 2 to 20 sec 16 to 160 sec 8 to 80 mins 12VDC 16 to 160 sec 2 to 21 mins 64 to 640 mins





For higher speeds one impulse per revolution would be sufficient, but for very low speeds it may be necessary to have a higher number of impulses per revolution in order to achieve a reasonable operating time. It should also be noted that at maximum speed the number of impulses received must be less than 18000 per minute (300Hz). Therefore, the maximum number of impulses per revolution is:-

 $n.max = \underline{18000}$ V.max

The proximity sensor (NAMUR and PNP) is not isolated from the coil voltage.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: $\pm 15\%$ Max Power Consumption: 4VA

Repeat accuracy: $\pm 0.5\%$ at constant ambient

±3% across temperature range

Reset time: 100 mSec on make Inhibit time on switch on: 7 to 8 seconds

Input signal: NAMUR proximity switch, PNP sensor (max 20mA)

Normally open contact (8VDC, 8mA)

Max operating speed: 300Hz (18,000 RPM)

Min impulse: 1mSec Min time between impulses: 1mSec

Timing: Selected by 4 sub time ranges

Specify range S, M or L

Special: 12 hour & 24 hour units also available

Relay output

Output contacts: SPC0 10Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

Operating temperature: $-20^{\circ}\text{C to} + 65^{\circ}\text{C}$ Storage temperature: $-20^{\circ}\text{C to} + 65^{\circ}\text{C}$

CE marked: Yes

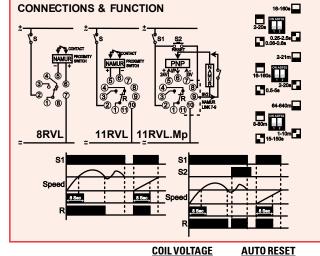
In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007

EN61010-1: 2002

Housing material:

Polycarbonate, Auto extinguishable

to UL 94 V-0



^{*} Also available are dedicated 12 hour and 24 hour versions, as supplied to detect jamming and loss of flow on rotating arm sewage beds.

^{**} Insert M1 if auto reset is required, standard unit once switched requires the removal and reconnection of the coil voltage to achieve a reset.

UNDERSPEED OR PULSE CONTINUITY "WATCHDOG" RELAY

TYPE: YWRVL (spco)

- **FEATURES**
- Din rail mounted
- **SPCO** output

96

- Detection of machine underspeed, stopping, jamming
- Suitable as a watchdog relay with PLC's
- Choice of NAMUR, PNP or clean contact inputs
- Transformer isolation from sensor input circuit
- Available auto or manual reset
- **LED** indication

DESCRIPTION & MODE OF OPERATION

Din rail mounted underspeed relays suitable for all kinds of machinery to detect loss of speed and pulse continuity. These units are useful when an output contact is required to alarm on jamming, loss of speed due to blunt cutting tools or as a "stationary" contact to allow the release of machine guards. Applications also include being used as "watchdog" relays.

The units are normally energised and are "time based" a pulse resets the time delay, if a pulse is not seen within the time range set on the front of the unit the output relay de-energises and latches out. The input circuit on the underspeed relay is looking for a change in state of input. To reset the unit the coil voltage needs to be removed for approximately 100mSec then reconnected (as an option suffix M1 can be added to the order code giving an auto reset device).

On initial connection and reconnection of the coil voltage the unit will energise for approximately 8 seconds irrespective of the rate of pulses inputting the device, this is in order to allow a stationery machine/system to run up to normal speed. Note, if M1 auto reset option is specified the 8 second run up time is not applicable, care is therefore cautioned in the choice of application that this option is specified to avoid relay chatter.

The input is achieved from either a NAMUR proximity switch, PNP sensor or from a clean contact. The YWRVL also benefits from a reset input by momentarily closing link S2 between terminals Z1 & Z2 note that the 8 second run up time will not be applicable and is only achieved by the connection and reconnection of the coil voltage, again care is therefore cautioned in the choice of application of this feature to avoid relay chatter. The relay will de-energise in the event of a coil voltage failure, failure of the sensor, breakage of the cable between sensor and the unit, hence the underspeed monitor is fail safe.

OTHER APPLICATION NOTES

The choice of sensor depends on the speed of the equipment and the time between impulses. To determine the controlling time it is necessary to calculate the time between two impulses at normal speed. This time will be:-

T = 60V = Speed in RPM n = Number of teeth n.V

ORDERING INFORMATION

TIME RANGE (specify S, M or L) TYPE YWRVL (Din rail SPCO)

M (0.5 sec to 21 mins) \$ (0.06 to 160 secs) 0.06 to 0.6 sec 0.5 to 5 sec 0.25 to 2.5 sec 2 to 20 sec 16 to 160 sec 2 to 20 sec 16 to 160 sec 2 to 21 mins

For higher speeds one impulse per revolution would be sufficient, but for very low speeds it may be necessary to have a higher number of impulses per revolution in order to achieve a reasonable operating time. It should also be noted that at maximum speed the number of impulses received must be less than 18000 per minute (300Hz). Therefore, the maximum number of impulses per revolution is:-

PRODUCT **GROUP**

n.max = 18000

Vmax

The proximity sensor (NAMUR and PNP) is isolated from the coil voltage by means of a transformer. On DC coil voltage versions there is no isolation.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: +15% 4VA Max Power Consumption:

Repeat accuracy: $\pm 0.5\%$ at constant ambient

±3% across temperature range

Reset time: 100 mSec on make Inhibit time on switch on: 7 to 8 seconds

NAMUR proximity switch, PNP sensor (max 20mA) Input signal:

Normally open contact (8VDC, 8mA)

300Hz (18,000 RPM) Max operating speed:

Min impulse: 1mSec Min time between impulses: 1mSec

Timing: Selected by 4 sub time ranges Specify range S, M or L

12 hour & 24 hour units also available Special:

Relay output

SPC0 10Amps/250V AC1 Output contacts:

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

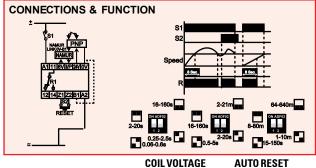
-20°C to +65°C Operating temperature: Storage temperature: -20°C to +65°C Max cable size: 4mm

CE marked: In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007

EN61010-1: 2002

Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0



L (15 sec to 640 mins) 440VAC 15 to 150 sec 415VAC 400VAC 1 to 10 mins 380VAC 8 to 80 mins 64 to 640 mins 230VAC 110VAC 48VAC 24VAC

AUTO RESET

^{*} Also available are dedicated 12 hour and 24 hour versions, as supplied to detect jamming and loss of flow on rotating arm sewage beds.

^{**} Insert M1 if auto reset is required, standard unit once switched requires the removal and reconnection of the coil voltage to achieve a reset.

PRODUCT **GROUP**

UNDERSPEED OR PULSE CONTINUITY

"WATCHDOG" RELAY

TYPES: YWRVL4 (spco)

- FEATURES
- Din rail mounted
- **SPCO** output
- Detection of machine underspeed, stopping, jamming
- Suitable as a watchdog relay with PLC's
- Choice of NAMUR, PNP or clean contact inputs
- Transformer isolation from sensor input circuit
- Auto reset
- Without start up time delay

DESCRIPTION & MODE OF OPERATION

Din rail mounted underspeed relays suitable for all kinds of machinery to detect loss of speed and pulse continuity. These units are useful when an output contact is required to alarm on jamming, loss of speed due to blunt cutting tools or as a "stationary" contact to allow the release of machine guards. Applications also include being used as "watchdog" relays.

The input is achieved from either a NAMUR proximity switch, PNP sensor or from a clean contact. Unlike the unit type YWRVL the YWRVL4 does not energise for approximately 8 seconds on the initial connection of the coil voltage, but will energise when the first leading edge of an input is seen. Thereon the operation is "time based" an input will reset the time delay, if an input is not seen within the set time the output relay will de-energise but not latch. Therefore the unit will re-energise if a new leading edge of an input is seen. Removal of the coil voltage, failure of the sensor, or a breakage in the cable between the unit and the PLC or sensor will also cause the output relay to de-energise if in an energised state. Hence the underspeed monitor is fail safe.

OTHER APPLICATION NOTES

The choice of sensor depends on the speed of the equipment and the time between impulses. To determine the controlling time it is necessary to calculate the time between two impulses at normal speed. This time will be:-

V = Speed in RPMT = 60n = Number of teeth n.V

For higher speeds one impulse per revolution would be sufficient, but for very low speeds it may be necessary to have a higher number of impulses per revolution in order to achieve a reasonable operating time. It should also be noted that at maximum speed the number of impulses received must be less than 18000 per minute (300Hz). Therefore, the maximum number of impulses per revolution is:-

n.max = 18000Vmax

The proximity sensor (NAMUR and PNP) is isolated from the coil voltage by means of a transformer. On DC coil voltage versions there is no isolation.

ORDERING INFORMATION

TIME RANGE (specify S, M or L) **COIL VOLTAGE TYPE** YWRVL4 (Din rail SPCO) \$ (0.06 to 160 secs) 440VAC M (0.5 sec to 21 mins) L (15 sec to 640 mins) 0.06 to 0.6 sec 0.5 to 5 sec 15 to 150 sec 415VAC 400VAC 2 to 20 sec 0.25 to 2.5 sec 1 to 10 mins 2 to 20 sec 16 to 160 sec 8 to 80 mins 380VAC 16 to 160 sec 64 to 640 mins 230VAC 2 to 21 mins 110VAC * Also available are dedicated 12 hour and 24 hour versions, as supplied to detect jamming and loss of flow on rotating 48VAC 24VAC sewage beds

 * On DC auxiliary supply versions the proximity sensor (NAMUR and PNP) is not isolated from the coil voltage.

SPECIFICATIONS

Nominal supply tolerance: $\pm 15\%$ Max Power Consumption: 11VA

Supply & Measuring

Repeat accuracy: $\pm 0.5\%$ at constant ambient ±3% across temperature range

Reset time: 100 mSec on make

NAMUR proximity switch, PNP sensor (max 20mA) Input signal:

Normally open contact (8VDC, 8mA)

300Hz (18,000 RPM) Max operating speed:

Min impulse: 1mSec Min time between impulses: 1mSec

Selected by 4 sub time ranges Timina:

Specify range S, M or L

Special: 12 hour & 24 hour units also available

Relay output

Output contacts: SPC0 10Amps/250V AC1

Mechanical life: 30 Million ops

Flectrical life: 200K ops at max rated load

General

Operating temperature: -20°C to +65°C -20°C to +65°C Storage temperature:

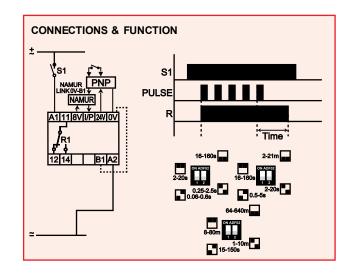
CF marked: Yes

In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007

EN61010-1: 2002

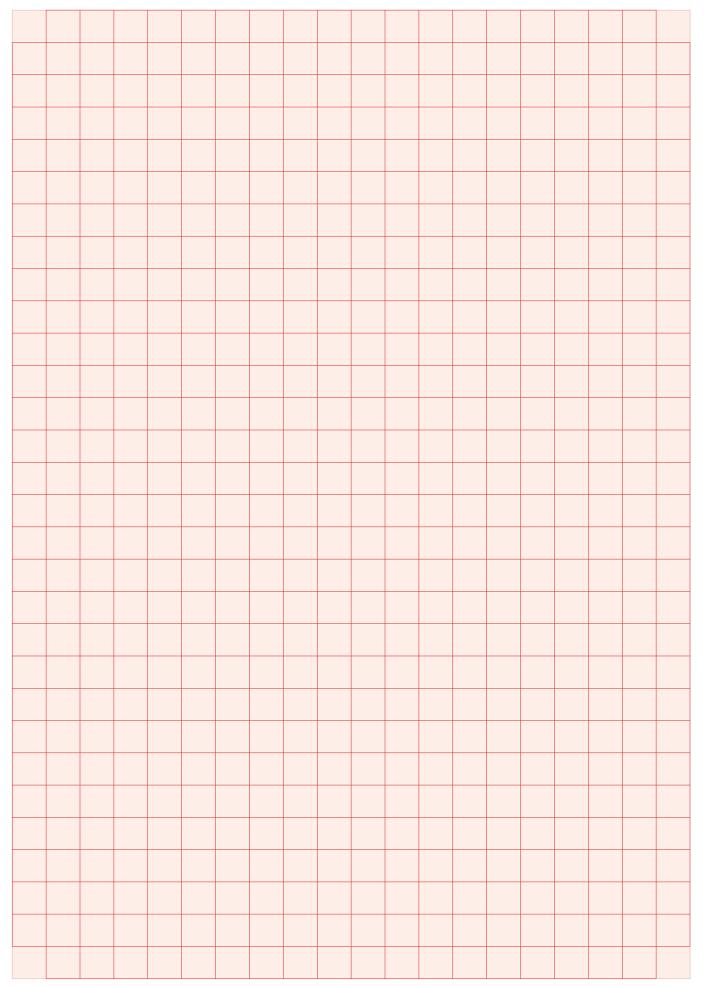
Housing material: Polycarbonate, Auto extinguishable

to UI 94 V-0



48VDC 24VDC





PLUG IN RELAYS & SOCKETS, MODULAR POWER RELAYS & LATCHING RELAYS, FLEETING CONTACT RELAYS

<u>PAGES</u>	P/No.	<u>DESCRIPTION</u>
100	FRP3145	Foxtam 14 pin 4PCO relays
101	FRP3125	Foxtam 8 pin DPCO relays (14 pin style)
102	TRP3145 & TRP3140	Iskra 14 pin 4PCO relays
103	TRP3125 & TRP3120	Iskra 8 pin DPCO relays (14 pin style)
104	TRP6825 & TRP6820	Iskra 8 pin DPCO relays (octal style)
104	TRP6935 & TRP6930	Iskra 11 pin 3PCO relays
105		14 pin, 8 pin, 11 pin relay sockets
106	41F-1Z-C2	Terminal style 6mm wide SPCO interface relay modules
107	HF115FH	SPCO low coil consumption SPCO, BMS interface relays & socket
108	HF115F1 & HF115F2	SPCO & DPCO miniature interface relays & sockets
109	HF115FP	DPCO miniature interface relay with test, flag & LED, plus sockets
110	UNI-1R & UNI-3R	Modular Din rail SPCO & 3PCO, 16 Amp power relays
111	UNI-1LR & UNI-2LR	Modular Din rail SPCO & DPCO latching relays
112	UNI-4LRS	Modular Din rail 4 x SPNO latching, sequence & memory relay
113	8/11/YRX	8, 11 pin & Din rail SPCO & DPCO fleeting contact relay



FOXTAM 14 PIN 4PCO, 5 AMP RATED RELAYS

TYPE: FRP3145/VOLTS

FEATURES

- LED indication
- Flag indication
- Test button

100

- Locking facility
- DC coils with integral diode protection
- CE marked

DESCRIPTION & MODE OF OPERATION

A high quality range of CE marked standard pin out 4PCO 14 pin plug in relays, nominally rated at 5Amps/250VAC AC1. The relays benefit from every customer required option as standard, namely both mechanical and electrical indication via a mechanical flag and a high intensity LED. DC coil relays also have included within the relay a protection diode fitted across the coil as standard.

The relays can be manually tested by a momentary action push button, a lever can then be twisted to give a locking facility. Contact material is silver. To differentiate between AC and DC coils in the same installation the push button is coloured red for AC coils and blue for DC coils. Available coil voltages are 24VDC, 24VAC, 110VAC and 230VAC. Clearly marked on the relay case are the connection details and the CE mark.

IMPORTANT NOTE

With regards coil connection on DC coil relays which have both a protection diode and LED fitted as standard, coil polarity matters (+A1, 13) (-A2, 14).

COIL DATA

Coil rated voltage	Coil resistance at 20°C	
Un(V)DC/AC	DC Rn(Ω) ± 10%	
24 110 230	650	160 3400 13600

Drop out voltage DC 10% min Pull in voltage DC 80% max Drop out voltage AC 30% min Pull in voltage AC 80% max

CONTACT DATA

Rated current: 5A 250VAC AC1/30VDC
Max. operating voltage: 250VAC, 110 VDC
Max. Switching power: 600VA, 150W

Max. operating duty: 360 operat./h at max_rated load 18000 operat./h at min. load

Mechanical life: 107 operations (no load operations)

 Mechanical life:
 10⁷ operations (no load operation)

 Electrical life:
 10⁵ operat. at max rated resistive load

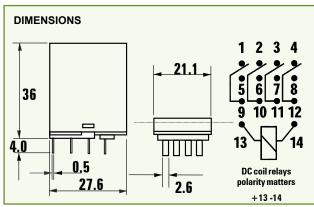
ORDERING INFORMATION

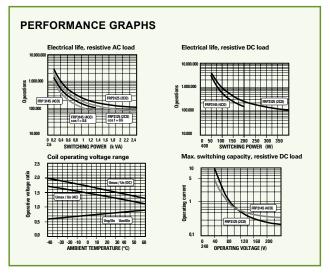
TYPE COIL VOLTAGE

FRP3145 24VDC, 24VAC, 110VAC, 230VAC

Sockets see page 105 for full details.







■ GENERAL DATA

Rated Power Pull In Max: Max Coil Temperature:

Test voltage(1min.) contact-coil:

Contact-contact:
Between-contact 4CO:
Operate time at Un:

Release time:

Insulation resistance (500VDC):

Vibration resistance (10-55Hz):

Shock endurance:

Mounting position: Relay weight: DC1.1W; AC 2VA

155°C

 $\geq 2kV_{\text{ms}}.50\text{Hz}$

 $\geq 1 kV_{ms'}$ 50Hz

 $\geq 1 kV_{ms}$, 50Hz

≤25 ms

 \leq 25 ms

100 MΩ

Amplitude width 1.5mm

1000 m/S² Min -25°C to + 55°C

As desired 35g

FOXTAM 8 PIN DPCO, 10 AMP RATED RELAYS

FRP3125/VOLTS TYPE:

FEATURES

- **LED** indication
- Flag indication
- **Test button**
- Locking facility
- DC coils with integral diode protection
- **CE** marked

DESCRIPTION & MODE OF OPERATION

A high quality range of CE marked standard pin out DPCO 8 pin plug in relays, in the "14 pin style", nominally rated at 10Amps/250VAC AC1. The relays benefit from every customer required option as standard, namely both mechanical and electrical indication via a mechanical flag and a high intensity LED. DC coil relays also have included within the relay a protection diode fitted across the coil as standard.

The relays can be manually tested by a momentary action push button, a lever can then be twisted to give a locking facility. Contact material is silver. To differentiate between AC and DC coils in the same installation the push button is coloured red for AC coils and blue for DC coils. Available coil voltages are 24VDC, 24VAC, 110VAC and 230VAC. Clearly marked on the relay case are the connection details and the CE mark.

IMPORTANT NOTE

With regards coil connection on DC coil relays which have both a protection diode and LED fitted as standard, coil polarity matters (+A1, 13) (-A2, 14).

COIL DATA

Coil rated voltage	Coil resist 20°	
Un(V)DC/AC	DC AC $Rn(\Omega) \pm 10\%$	
24 110 230	650	160 3400 13600

Drop out voltage DC 10% min Pull in voltage DC 80% max Drop out voltage AC 30% min Pull in voltage AC 80% max

CONTACT DATA

Contact form: FRP3125 (DPC0) **Contact material:** AgSnO₂

10A 250VAC AC1/30VDC **Rated current:** Max. allowable voltage: 250VAC, 110 VDC Max. switching power: 1200VA, 300W

Max. operating duty: 360 operat./h at max rated load 18000 operat./h at min. load Mechanical life:

10⁷ operations (no load operation) **Electrical life:** 105 operat. at max rated resistive load

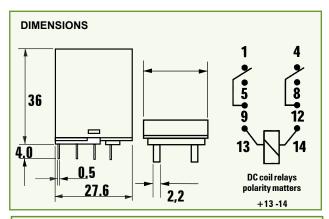
ORDERING INFORMATION

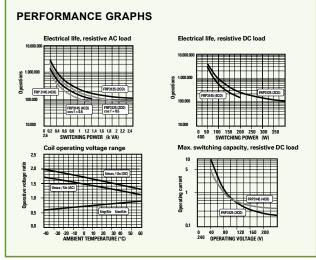
TYPE COIL VOLTAGE

FRP3125 24VDC, 24VAC, 110VAC, 230VAC

PYF-08AE Socket for FRP3125 Relay Sockets see page 105 for full details.







GENERAL DATA

Rated Power Pull In Max: Max Coil Temperature: Test voltage (1min.) contact-coil:

Contact-contact:

Between-contact DPCO: Operate time at Un:

Release time: Insulation resistance (500VDC):

Vibration resistance (10-55Hz):

Shock endurance:

Ambient temperature for operating:

Mounting position: Relay weight:

DC1.1W: AC 2VA 155°C

 $\geq\!2kV_{_{ms'}}50Hz$

 $\geq 1 kV_{rms'}$ 50Hz $\geq 1kV_{rms'}$ 50Hz

≤25 ms

≤ 25 ms 100 $M\Omega$

Amplitude width 1.5mm 1000 m/S2 Min -25° C to $+55^{\circ}$ C

As desired 35g

ISKRA14 PIN 4PCO, 5 AMP RATED RELAYS

TYPES: TRP3145/AC VOLTS, TRP3140/DC VOLTS

FEATURES

- LED indication
- Flag indication
- Test button
- Locking facility
- DC coils with integral diode protection
- Optional gold flashed contacts
- CE marked
- VDE approved
- UL & CSA approved

DESCRIPTION & MODE OF OPERATION

A high quality range of CE marked standard pin out 4PCO 14 pin plug in relays, nominally rated at 5 Amps/250VAC AC1. The relays benefit from every customer required option as standard, namely both mechanical and electrical indication via a mechanical flag and a high intensity LED. DC coil relays also have included within the relay a protection diode fitted across the coil as standard. The relays can be manually tested by a momentary action push button, a lever can then be twisted to give a locking facility. Standard contact material is silver but on request the relays are available with gold flashed contacts for long term assurance of low level signal switching (suffix part number GF). To differentiate between AC and DC coils in the same installation the push button is coloured red for AC coils and blue for DC coils. Coil voltages available are from 6VDC to 220VDC and 6VAC to 230VAC. Clearly marked on the relay case are the connection details and the CE mark.

IMPORTANT NOTE

With regards coil connection on DC coil relays which have both a protection diode and LED fitted as standard, coil polarity matters (+A1, 13) (-A2, 14).

COIL DATA

Coil rated voltage	coil resis	etance at °C	Oper	ative voltage at 20°C	range
Un(V)DC/AC	DC $\operatorname{Rn}(\Omega)$	± 10% AC	Operate Uop≥ (V)	Umax DC ≥ (V)	Umax AC ≥ (V)
6	40	12	4.8	9.6	8.3
12	160	49	9.6	19.2	16.7
24	650	192	19.2	38.7	33.5
48	2600	785	38.4	77.5	66.9
60	4000	1240	48	96	83
110	13500	3880	88	176	153
220	53000	17400	176	350	306
230	58000	18200	184	366	320

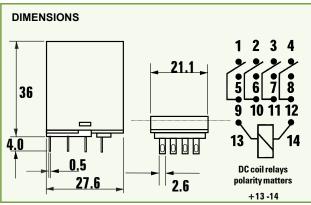
GENERAL DATA

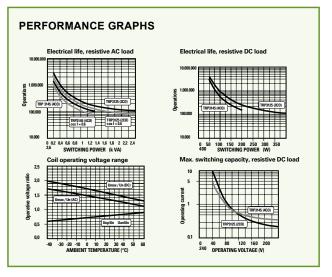
Rated Power Pull In: DC1W; AC 1.2VA DC 0.6W; AC 0.7VA Rated Power in Operation: Max Coil Temperature: 155°C Test voltage (1 min.) contact-coil: $\geq 2kV_{rms'} 50Hz$ Contact-contact: $\geq 1 \text{kV}_{\text{rms}'} 50 \text{Hz}$ Between-contact 4CO: $\geq 1kV_{rms'}50Hz$ Operate time at Un: ≤ 15 ms Release time: ≤ 14 ms Bounce time: ≤ 5 ms Insulation resistance (500VDC): > 10 M Ω Vibration resistance (10-50Hz): 3 gn Shock resistance (11 ms) functional: 20 gn Shock resistance (11 ms) destructive: 100 gn -25°C to + 60°C Ambient temperature for operating: Ambient temperature for storage: -40°C to + 85°C Protection degree: IP 50, IEC 529 Mounting position: As desired

35g



PRODUCT





CONTACT DATA

Contact form: TRP314x(4PC0)
Contact material: AgCd010*
Rated current: 5A

Max. switch-on current
(4 s, 10% duty cycle): 10A

Max. operating voltage: 250VAC, VDC

Max. switching power: 1250VA 200W

Min switching load: 6VDC, 100mA

Contact resistance: ≤100,mW

Max. operating1200 operat./h at rated load (4 CO)Frequency:30000 operat./h at min. loadMechanical life: $> 2 \times 10^7 \text{ operations}$

Electrical life: see graphs

*GOLD FLASHED CONTACTS AVAILABLE ON REQUEST

ORDERING INFORMATION

TYPE COIL VOLTAGE

TRP3145 6VAC, 12VAC, 24VAC, 48VAC, 60VAC, 110VAC, 230VAC TRP3140 6VDC, 12VDC, 24VDC, 48VDC, 60VDC, 110VDC, 220VDC ADD SUFFIX "GF" AFTER PART NUMBER FOR GOLD FLASHED

CONTACTS

Sockets see page 105 for full details.

Tel: 0161 626 5316 / 01276 25858

Relay weight:

PRODUCT

ISKRA 8 PIN DPCO, 10 AMP RATED RELAYS

TYPES: TRP3125/AC VOLTS, TRP3120/DC VOLTS

FEATURES

- LED indication
- Flag indication
- Test button
- Locking facility
- DC coils with integral diode protection
- Optional gold flashed contacts
- CE marked
- VDE approved
- UL & CSA approved

DESCRIPTION & MODE OF OPERATION

A high quality range of CE marked DPCO 8 pin plug in relays in the "14 pin style", nominally rated at 10 Amps/250VAC. The relays benefit from every customer required option as standard, namely both mechanical and electrical indication via a mechanical flag and a high intensity LED. DC coil relays also have included within the relay a protection diode fitted across the coil as standard. The relays can be manually tested by a momentary action push button, the same push button can be pulled outwards to give a locking facility. Standard contact material is silver but on request the relays are available with gold flashed contacts for long term assurance of low level signal switching (suffix part number GF). To differentiate between AC and DC coils in the same installation the push button is coloured red for AC coils and blue for DC coils. Coil voltages available are from 6VDC to 220VDC and 6VAC to 230VAC. Clearly marked on the relay case are the connection details, approvals and the CE mark.

■ IMPORTANT NOTE

With regards coil connection on DC coil relays which have both a protection diode and LED fitted as standard, coil polarity matters (+A1, 13) (-A2, 14).

COIL DATA

Coil rated voltage	coil resis 20		Opera	ative voltage at 20°C	range
Un(V)DC/AC	DC Rn(Ω)	AC ± 10%	Operate Uop≥ (V)	Umax DC ≥ (V)	Umax AC ≥ (V)
6	40	12	4.8	9.6	8.3
12	160	49	9.6	19.2	16.7
24	650	192	19.2	38.7	33.5
48	2600	785	38.4	77.5	66.9
60	4000	1240	48	96	83
110	13500	3880	88	176	153
220	53000	17400	176	350	306
230	58000	18200	184	366	320

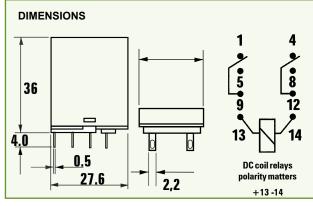
GENERAL DATA

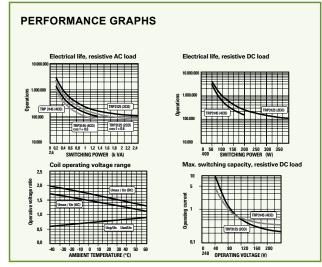
Relay weight:

DC1W; AC1.2VA Rated Power Pull In: DC 0.6W: AC 0.7VA Rated Power in Operation: Max Coil Temperature: 155°C $\geq 2kV_{rms'}$ 50Hz Test voltage (1 min.) contact-coil: $\geq 1 \text{kV}_{\text{rms}^{\text{l}}} 50 \text{Hz}$ Contact-contact: Between-contact DPCO: $\geq 1kV_{rms'}50Hz$ Operate time at Un: ≤ 15 ms Release time: ≤ 14 ms Bounce time: < 5 ms $> 10^3 M \Omega$ Insulation resistance (500VDC): Vibration resistance (10-50Hz): 3 gn Shock resistance (11 ms) functional: 20 gn Shock resistance (11 ms) destructive: 100 gn Ambient temperature for operating: -25°C to + 60°C -40° C to $+85^{\circ}$ C Ambient temperature for storage: IP 50, IEC 529 Protection degree: Mounting position: As desired

35g







CONTACT DATA

Contact form: TRP312x(DPC0)
Contact material: AgCd010*
Rated current: 10A

Max. switch-on current

(4 s, 10% duty cycle): 20A

 Max. operating voltage:
 250VAC, VDC

 Max. switching power:
 2500VA 400W

 Min switching load:
 6VDC, 100mA

 Contact resistance:
 ≤100,mW

 Max. operating
 1200 operat./h at rated load (DPCO)

 Frequency:
 30000 operat./h at min. load

 Mechanical life:
 > 2 x 10⁷ operations

Electrical life: see graphs
*GOLD FLASHED CONTACTS AVAILABLE ON REQUEST

ORDERING INFORMATION

TYPE COIL VOLTAGE

TRP3125 6VAC, 12VAC, 24VAC, 48VAC, 60VAC, 110VAC, 230VAC
TRP3120 6VDC, 12VDC, 24VDC, 48VDC, 60VDC, 110VDC, 220VDC
ADD SUFFIX "GF" AFTER PART NUMBER FOR GOLD FLASHED

CONTACTS

Sockets see page 105 for full details.

ISKRA 8 PIN DPCO & 11 PIN 3PCO, 10 AMP RATED RELAYS

TYPES: TRP6825/AC VOLTS, TRP6820/DC VOLTS (dpco) TRP6935/AC VOLTS, TRP6930/DC VOLTS (3pco)

- FEATURES
- LED indication
- Flag indication
- Test button

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- DC coils with integral diode protection
- Optional gold flashed contacts
- CE marked
- VDE & SEMKO approved
- UL & CSA approved

DESCRIPTION & MODE OF OPERATION

A high quality range of CE marked traditional pin out 8 pin DPCO and 11 pin 3PCO plug in relays, nominally rated at 10 Amps/250VAC. The relays benefit from every customer required option as standard, namely both mechanical and electrical indication via a mechanical flag and a high intensity LED. DC coil relays also have included within the relay a protection diode fitted across the coil as standard. The relays can be manually tested by a momentary action push button. Coil voltages available are from 6VDC to 220VDC and 6VAC to 230VAC. Clearly marked on the relay case are the connection details, approvals and the CE mark.

IMPORTANT NOTE

With regards coil connection on DC coil relays which have both a protection diode and LED fitted as standard, coil polarity matters (+A1, 13) (-A2, 14).

COIL DATA

Coil rated voltage	coil resist		Opera	ative voltage at 20°C	range
Un(V)DC/AC	DC Rn(Ω) ⊣	AC -/- 10%	Operate Uop < (V)	Umax DC < (V)	Umax AC < (V)
6	28	5.7	4.8	9.0	9.5
12	110	25	9.6	18	19
24	440	100	19.2	36	38
48	1740	400	38.4	73	76
60	2750	630	48	91	95
110	9000	2000	88	168	174
220	39000	8800	184	351	365

CONTACT DATA

AgCdO10 **Contact material:** Rated current: 10A Max make current: 20A 250VAC/DC Max operating voltage: Max switching power: 2500VA 400W Min switching load: 6V 100mA Contact resistance: <100 m0hm Max operating frequency: 1000 ops/hr at rated

load, 36000 ops/hr at min load

Mechanical life: >100 Million ops

ORDERING INFORMATION

TYPE COIL VOLTAGE

8 PIN DPCO

TRP6825 6VAC, 12VAC, 24VAC, 48VAC, 60VAC, 110VAC, 230VAC 6VDC, 12VDC, 24VDC, 48VDC, 60VDC, 110VDC, 220VDC

<u>11 PIN 3PCO</u>

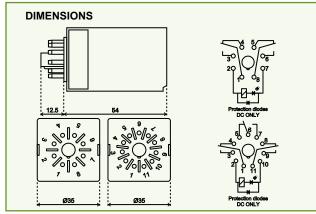
TRP6935 6VAC, 12VAC, 24VAC, 48VAC, 60VAC, 110VAC, 230VAC
TRP6930 6VDC, 12VDC, 24VDC, 48VDC, 60VDC, 110VDC, 220VDC
ADD SUFFIX "GF" AFTER PART NUMBER FOR GOLD FLASHED

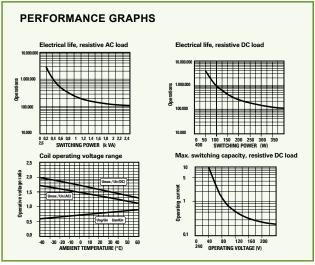
CONTACTS

Socket see page 105 for full details.



PRODUCT Group





■ GENERAL DATA

Rated Power Pull In: Rated Power in Operation: Operate voltage: Release voltage:

Max coil temperature:

Test voltage (1min) contact coil:

Contact contact: Between contact sets: Operate time:

Release time: Bounce time:

Vibration resistance (10-55Hz): Shock resistance (11ms) functional: Shock resistance (11ms) destructive: Ambient temperature for operating: Ambient temperature for storage:

Protection degree: Mounting position: Relay weight: DC 0.8W: AC 1.2VA Uop < 80% Un Ure > 10% Un (DC), Ure>15% Un (AC) 155°C >2KVrms 50Hz >1KVrms 50Hz >2KVrms 50Hz <15ms <15ms <5ms 3an 10an 100an -25°C to +40°C -40° C to $+80^{\circ}$ C IP50, IEC529 As desired

DC1W; AC 2VA

Tel: 0161 626 5316 / 01276 25858

85q

RELAY SOCKETS FOR 14 PIN FRP3145 & TRP314x 4PCO RELAYS

TYPES: PYF-14AEW, PYF-14BE, PYF-14BE/3

PYF-14AEW

Our most popular 14 pin socket, complete with a fixed marker tab and a screwdriver release tab. An optional wire retaining clip is also available, part number MHO.

PYF-14BE & PYF-14BE/3

"High sided" 14 pin sockets with tunnel clamps. A triple deck version, the PYF-14BE/3 allows segregation of voltages, coil terminals being on one side with two A2 terminals. All changeover terminals on the opposite side. Both socket types have a removable marker tab and screwdriver release tab. Retaining clips are also available for both versions, part number MS35



PYF-14AEW

R

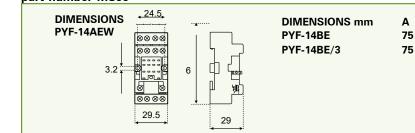
27

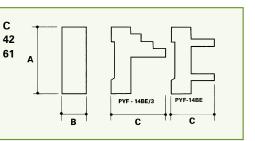
27

PYF-14BE

PYF-14BE/3

GROUP



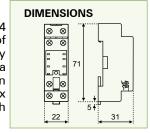


RELAY SOCKETS FOR 8 PIN FRP3125 & TRP312x DPCO RELAYS

TYPE: PYF-08AE

DESCRIPTION

The FRP3125 & TRP312x relays can be utilised with the 14 pin socket, the two outer sets of terminals are used and of course the coil terminals. However, a dedicated 8 pin relay socket is available type PYF-08AE, this socket also has a higher current rating and is thus more desirable when switching the higher currents that the FRP3125 & TRP312x relays can switch. Retaining clips are supplied with each socket



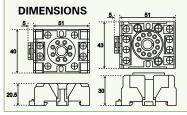


DIN RAIL MOUNTED SOCKETS FOR 8 & 11 PIN RELAYS

TYPES: CS083N (8 PIN) & CS113N (11 PIN)

DESCRIPTION

Compact square black sockets, with protected terminals types CS083N & CS113N. The sockets have a screwdriver release tab and have captive clamps for ease of cable insertion. Up to 2 x 2.5mm cables can be accepted. The sockets are suitable for fork, ferule and ring terminal ends.



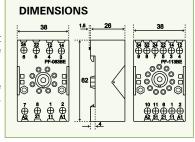


DIN RAIL MOUNTED SOCKETS FOR 8 & 11 PIN RELAYS

TYPES: PF-083BE (8 PIN) & PF-113BE (11 PIN)

DESCRIPTION

Fully protected sockets with coil and common terminals at one end and the change overs pairs at the other end side by side, thus enabling very easy wiring changes and corrections. The terminals are rising style tunnel clamps, up to 2 x 2.5mm cables can be accepted. The sockets also have a white marking area. An optional wire retaining clip is also available, part number MR28800





www.foxtamcontrols.co.uk

SPCO WAFER STYLE 6mm WIDE INTERFACE RELAY

MODULES

TYPE: 41F-1Z-C2-xxx

FEATURES

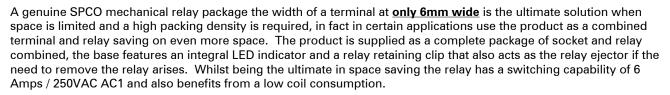
106

■ Supplied as a complete made up package of relay & socket

One part number for simplicity in ordering

- Only 6mm wide
- With built in LED indication as standard
- Built in relay removal ejector clip
- SPCO contact rated 6 Amps / 250VAC AC1
- AC & DC coil voltages
- Low coil consumption

RELAY DESCRIPTION



A dedicated 9VDC relay module is available for use in the BMS sector where 0-10VDC signals are used and a digital output is required. With a pull in voltage of 7.5VDC and a release voltage of 4VDC, along with a low power consumption of circa 160mW (including the LED), this makes these modules an attractive alternative as a "BMS SRMV" relay.

The socket element is more than a socket, it is an electronic device dropping a voltage over a range and also providing a LED indicator. The socket is an equal component in the assembly as the relay. For example, a 240VAC supply does not utilise a 240VAC coil relay, a 60VDC relay is used. This is why this product is only sold as a complete made up assembly.

An optional 20 way jumper bar comb is available to common up negatives or 0V's, also available as an accessory is a strip of 16 marker tags.

Also of note, is that 12V, 24V and 48V coils can be either AC or DC, same relay.

SPECIFICATIONS

Contact type: SPC0

Contact rating: 6 Amps / 250VAC AC1

Contact material: AgNi
Operate time: 8mSec max
Release time: 4mSec max

Electrical life: 30000 ops (at full load)
Mechanical life: 10 000000 ops
Insulation resistance: 1000 MOhms

Insulation:Coil to contacts: 4KVAC 1 min

 Open contacts:
 1 KVAC 1 min

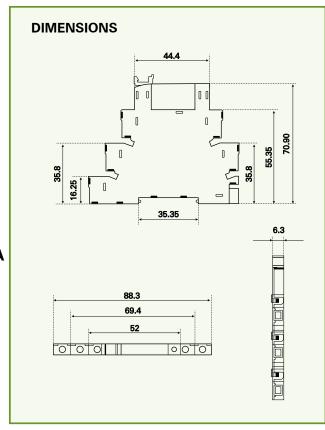
 Ambient temperature:
 $-40^{\circ}\text{C to} + 55^{\circ}\text{C}$

 CE marked:
 Yes

CE marked: Yes
VDE approved & marked: Yes
UL approved & marked: Yes

ORDERING INFORMATION & COIL DATA

P/No.	COIL CONSUMPTION *		
41F-1Z-C2-9VDC	17.8mA		
41F-1Z-C2-12VACDC	16mA		
41F-1Z-C2-24VACDC	12mA		
41F-1Z-C2-48VACDC	6.9mA		
41F-1Z-C2-125VAC	5mA		
41F-1Z-C2-240VAC	4mA		
	±10%		
	20 way jumper comb		
41F-TAG Strip	Strip of marker tags		



PRODUCT Group

PRODUCT GROUP

SPCO MINIATURE LOW COIL CONSUMPTION BMS INTERFACE RELAY

TYPE: HF115FH (spco 10Amp)

- FEATURES
- Miniature SPCO BMS interface relay
- Low coil consumption
- 12VDC version compatible with 10VDC BMS signals
- Fully sealed
- Strong pins for socket insertion
- UL & VDE approval
- DC coil voltages only

RELAY DESCRIPTION

Miniature interface relays available as SPCO and only with DC coils. The **HF115FH** is a special sensitive coil version of the HF115F1, the **HF115FH** has a much higher coil resistance and hence a lower coil consumption of 250mW. This makes the **HF115FH** relay ideally suited for converting BMS and PLC, 0-10VDC analogue signals to digital inputs when there is only limited power behind the signal. In particular the **HF115FH** is fully compatible with the 0-10VDC output from **"Trend Building Management Systems"**, the 12VDC coil relay will pull in at 9VDC.

Other applications include using the 24VDC coil version for converting transistor outputs to digital (often only limited power is available). Or when utilising a power supply and overall power consumption has to be kept within limits.

SPECIFICATIONS

Contact type: SPC0

Contact rating: 10A/250VAC AC1 **Max switching voltage:** 440VAC / 125VDC

Max switching power: 2500VA **Coil consumption:** 250mW AqSnO2 **Contact material:** 15mSec max Operate time: Release time: 8mSec max Mechanical life: 10000000 ops **Electrical life:** 100000 ops (full load) Insulation resistance: 1000 M0hms

Insulation:-

 Coil to contacts:
 5KVAC 1 min

 Open contacts:
 1KVAC 1 min

 Ambient temperature:
 -40°C to +85°C

VDE approved: Yes
UL approved & marked: Yes

DIMENSIONS 29 15.7 3.8 T

COIL DATA

COIL VOLTAGE	PULL IN VOLTAGE	RELEASE VOLTAGE	COIL CONSUMPTION*	COIL OHMS*
12VDC	9VDC	1.2VDC	20.8mA	576
24VDC	18VDC	2.4VDC	10.4mA	2304
			*+/-10%	*+/-10%

ORDERING INFORMATION

P/No.

HF115FH / 12VDC HF115FH / 24VDC

Other DC coil voltages available on request

■ DIN RAIL MOUNTED SOCKET FOR HF115FH RELAY

Fully finger protected miniature interface relay base with rising tunnel style clamps. The **PI-35BE** is the SPCO socket for the **HF115FH** relay. An optional marker tab (one supplied with each base) maybe fitted in up to four different positions. Available as an option is an ejector style retaining clip.

P/No.

PI-35BE Standard SPCO 5 pin base

TR Spare marker tab
MS16 Ejector clip



SPCO & DPCO MINIATURE INTERFACE RELAYS

TYPES: HF115F1 (spco 12 Amp)
HF115F2 (dpco 8 Amp)

- FEATURES
- Miniature SPCO & DPCO plug in interface relays
 - Fully sealed

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- Strong pins for socket insertion
- Low profile
- UL & VDE approval
- AC & DC coil voltages

RELAY DESCRIPTION

Miniature interface relays available either as SPCO or DPCO suitable for PCB mounting or for plugging into standard 15mm wide Din rail mounted interface relay bases. The relays are compact in construction being of low profile and fully sealed. The PCB pins are strong and are therefore hard to bend when inserted into a socket. Small in size but the switching capacity is large, the SPCO is rated at 12 Amps / 250VAC AC1 and the DPCO version is rated at 8 Amps / 250VAC AC1. For ease of identifying AC circuits against DC circuits in a control panel, AC coil relays are white and DC coil relays are black.



Contact type: SPCO & DPCO

Contact rating: 12A/250VAC AC1 & 8A/250VAC AC1

Max switching voltage: 440VAC / 125VDC

Max switching power: 3000VA & 2000VA

Contact material: AgSn02
Operate time: 15mSec max
Release time: 8mSec max
Mechanical life AC: 1000000 ops
Mechanical life DC: 10000000 ops
Electrical life AC: 50000 ops (full load)
Electrical life DC: 100000 ops (full load)

Insulation resistance: 1000M0hms

Insulation:-

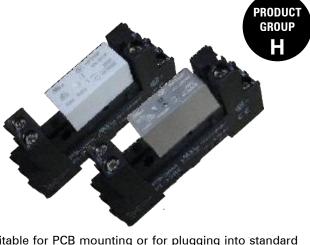
Coil to contacts: 5KVAC 1 min Open contacts: 1KVAC 1 min Between contact sets: 2.5kVAC 1 min

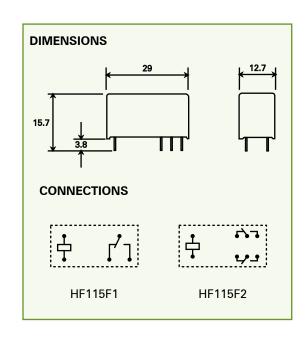
Ambient temperature: -40° C to $+70^{\circ}$ C (DC $+85^{\circ}$ C)

VDE approved: Yes UL approved & marked: Yes

COIL DATA

COIL VOLTAGE	PULL IN VOLTAGE	RELEASE VOLTAGE	COIL CONSUMPTION*	COIL OHMS*
5VDC	3.5VDC	0.5VDC	80.6mA	62
6VDC	4.2	0.6VDC	66.6mA	90
12VDC	8.4VDC	1.2VDC	33.3mA	360
24VDC	16.8VDC	2.4VDC	16.6mA	1440
48VDC	33.6VDC	4.8VDC	8.3mA	5760
60VDC	42VDC	6.3VDC	8mA	7500
110VDC	77VDC	11VDC	4.4mA	25200
24VAC	18VAC	3.6VAC	31.6mA	350
110VAC	86.3VAC	17.3VAC	6.6mA	8100
230VAC	172.5VAC	34.5VAC	3.2mA	3250
			*+/-10%	*+/-10%





ORDERING INFORMATION

P/No.

HF115F1 / Volts SPCO 12 Amps **HF115F2 / Volts** DPCO 8 Amps

PI-35BE Standard SPCO 5 pin base
PI-50BE Standard DPCO 8 pin base
PI-50BE/3 Triple deck DPCO 8 pin base

TR Spare marker tab
MS16 Ejector clip

Width of Bases 15.7mm



PI-50BE

PI-50BE/3

■ DIN RAIL MOUNTED SOCKETS FOR HF115F1 & HF115F2 RELAYS

PI-35BE

Fully finger protected miniature interface relay bases with rising tunnel style clamps. The **PI-35BE** is the SPCO socket for the **HF115F1** relay. Whilst both the **PI-50BE** and **PI-50BE/3** are DPCO sockets for the **HF115F2** relay, the **PI-50BE/3** is a "triple deck" base with the coil connections on one side of the base and all the changeover contacts on the other side, thus achieving voltage segregation. An optional marker tab (one supplied with each base) maybe fitted in up to four different positions. Available as an option is an ejector style retaining clip.

PRODUCT GROUP

POWER RELAYS, LATCHING RELAYS, SEQUENCING RELAYS FLEETING CONTACT RELAYS, PLUG IN RELAYS

DPCO MINIATURE INTERFACE RELAY WITH BUILT IN TEST BUTTON, FLAG INDICATOR & LED INDICATION

TYPE: HF115FP (dpco 8 Amp)

FEATURES

- Miniature DPCO plug in interface relay
- With built in test & locking button
- With built in flag indicator
- With built in LED indicator
- DPCO contacts rated 8 Amps / 250VAC AC1
- AC & DC coil voltages

RELAY DESCRIPTION

Miniature interface relays suitable for PCB mounting or for plugging into standard 15mm wide Din rail mounted interface relay bases. Whilst being miniature in size they also as standard benefit from user friendly features such as an **integral test and locking facility, built in mechanical flag indication and a LED indicator**, these features are usually associated with larger relays. Current switching capability is 8 Amps / 250VAC AC1

SPECIFICATIONS

Contact type: DPC0

Contact rating: 8 Amps / 250VAC AC1

Max switching voltage: 440VAC
Max switching power: 2000VA
Contact material: AgNi

Coil power pull in: DC 0.4W AC 0.75VA

(excludes LED)

 Operate time:
 15mSec max

 Release time:
 8mSec max

 Mechanical life:
 5000000 ops

 Insulation resistance:
 1000MOhms

Insulation:-

 Coil to contacts:
 5KVAC 1 min

 Open contacts:
 1KVAC 1 min

 Between contact sets:
 2.5kVAC 1 min

 Ambient temperature:
 -40°C to +70°C

VDE approved: Yes UL approved & marked: Yes

DIMENSIONS 29 ± 0.5 13 ± 0.5 14 ± 0.5 15 ± 0.5 15 ± 0.5 16 ± 0.5 17 ± 0.5 18 ±

ORDERING INFORMATION & COIL DATA

P/No	COIL VOLTAGE	PULL IN VOLTAGE	RELEASE VOLTAGE	COIL CONSUMPTION*	COIL OHMS*
HF115FP/12VDC	12VDC	8.4VDC	1.2VDC	33.3mA	360
HF115FP/24VDC	24VDC	16.8VDC	2.4VDC	16.6mA	1440
HF115FP/24VAC	24VAC	18VAC	3.6VAC	31.6mA	350
HF115FP/110VAC	110VAC	86.3VAC	17.3VAC	6.6mA	8100
HF115FP/230VAC	230VAC	172.5VAC	34.5VAC	3.2mA	3250
				*+/-10%	*+/-10%

DIN RAIL MOUNTED SOCKETS FOR HF115FP RELAY

Fully finger protected 8 pin miniature interface relay bases. Both the **PI-50BE** and **PI-50BE/3** have rising tunnel style clamps. The **PI-50BE/3** is a "triple deck" base with the coil connections on one side of the base and all the changeover contacts on the other side, thus achieving voltage segregation. An optional marker tab (one supplied with each base) maybe fitted in up to four different positions. Also available as an option is an ejector style retaining clip.

P/No.

PI-50BE Standard DPCO 8 pin base PI-50BE/3 Triple deck DPCO 8 pin base

TR Spare marker tab MS25 Ejector clip





Width of Bases 15.7mm

PI-50BE

PI-50BE/3

TYPES: UNI-1R (spco) & UNI-3R (3pco)



FEATURES

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- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- SPCO & 3PCO versions
- 16 Amp AC1 rated
- Tri voltage 24VACDC, 110VAC, 230VAC
- **Dual LED indication**
- **CE** marked



An attractive modern designed 16 Amp AC1 power relay in a din rail mounted modular style housing of 1.5 modules width (27mm). The relay features the facility of double deck terminals thus enabling the relay to be available also in both SPCO and 3PCO versions. Coil voltage is determined via the connection to different terminals. LEDs are fitted to indicate relay output status. All terminal details and information along with the CE mark is clearly marked on the sides of the housing.

Note: Whilst the UNI-3R is 3PCO it is not suitable for switching three phases.

SPECIFICATIONS

Supply Voltage

Coil Voltage: A1 to A2 (230VAC)

A1 to A3 (110VAC) A1 to A4 (24VAC) A1- to A4+ (24VDC)

5VA/2.8W Max power consumption: 2.5KV 50Hz impulse Insulation:

Relay outputs:

Output contacts: 16Amps/250V AC1

4000VA Max breaking capacity: **Energisation time:** <50mSec Reset time: <50mSec Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General:

Operating temperature: -20°C to $+65^{\circ}\text{C}$ -20°C to +65°C Storage temperature: Max cable size: 2.5mm CE marked Yes

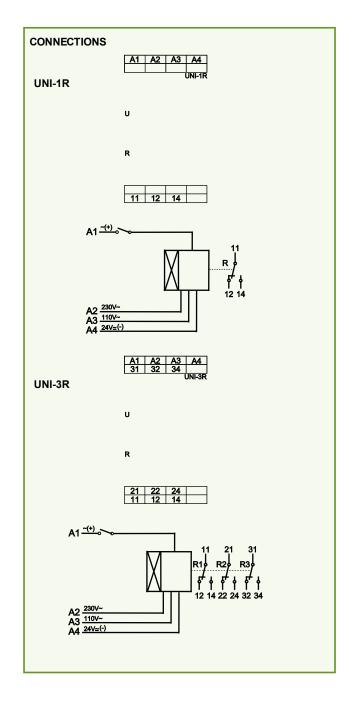
In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0





PRODUCT Group

POWER RELAYS, LATCHING RELAYS, SEQUENCING RELAYS FLEETING CONTACT RELAYS, PLUG IN RELAYS

ELECTRONIC LATCHING RELAYS

TYPES: UNI-1LR (spco) & UNI-2LR (dpco)

FEATURES

- Din rail mounted
- Modern modular design
- Width 27mm (1.5 modules)
- SPCO & DPCO versions
- 16 Amp AC1 rated
- Multi voltage 12-250VACDC
- Dual LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

An attractive modern designed 16 Amp AC1 latching relay in a din rail mounted modular style housing of 1.5 modules width (27mm). The relay features the facility of double deck terminals thus enabling the timer to be available also in both SPCO and DPCO versions. The latching function is commanded via three different trigger inputs (see operation description below). A green supply on LED is featured along with a red LED to indicate relay output status. All terminal details and information along with the CE mark is clearly marked on the sides of the housing.

FUNCTION

A permanent supply is required at all times on terminals A1 & A2, however this is not the controlling factor. The controlling factor is a trigger command from terminal A1 onto terminals Y1, Y2 or Y3. On an input being made from A1 to Y1 the relay contacts will immediately energise, on a new trigger input from A1 to Y1 the contacts will immediately de-energise. Alternatively a trigger input can be made from A1 to Y2 this just being an energisation command (ON), or A1 to Y3 a deenergisation command (OFF).

SPECIFICATIONS

Supply Voltage

Coil Voltage: 12-250VACDC
Max power consumption: 5VA / 2.8W
Insulation: 2.5KV 50Hz impulse

Trigger inputs (Y1, Y2 & Y3):

Max consumption: 5mA
Min input time: 25mSec
Max time input: Continuous
A1 to Y1: 0n/Off (toggle action)

A1 to Y2: On

A1 to Y2: On A1 to Y3: Off

Relay outputs:

Output contacts: 16Amps/250V AC1
Max breaking capacity: 4000VA
Reset time: Max 100mSec
Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General:

Operating temperature: -20°C to +65°C
Storage temperature: -20°C to +65°C
Max cable size: 2.5mm

Approvals VDE0110 (Group C) & VDE0435

CE marked Yes

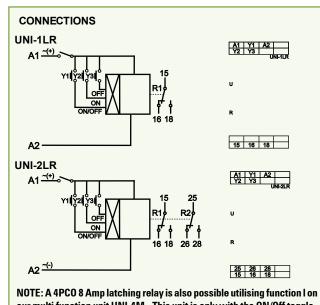
In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

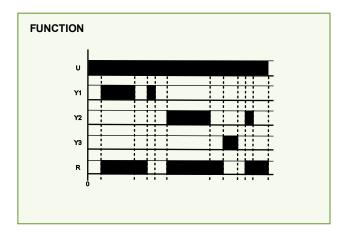
Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0





NOTE: A 4PCO 8 Amp latching relay is also possible utilising function I on our multi function unit UNI-4M. This unit is only with the ON/Off toggle input. And if you require a plug in unit see page 8.



The command contacts should be isolated from other circuits and must only be connected to the same supply as the coil voltage to the relays.

PROGRAMMABLE LATCHING, SEQUENCE &

MEMORY RELAY

FEATURES

112

- Din rail modular design
- Tri voltage 24VAC/DC, 110VAC, 230VAC

TYPES: UNI-4LRS (4 x spno)

- 4 programmable relay outputs
- Programmable for 6 sequencing/latching functions
- Selectable memory function
- Dual LED indication

DESCRIPTION & MODE OF OPERATION

A din rail mounted tri voltage modular latching / sequence relay with a selectable memory option. Outputs are four individual single pole normally open contacts. The unit is programmed via three front selector switches. Switch 1 determines the number of relays in play, switch 2 the function of the latching / sequencing of the relays, switch 3 selects if the memory function is required.

The unit requires a permanent supply to the coil and operation is then achieved by using up to three volt free trigger commands from A1 onto terminals **FWD**, **BCK** or **RESET**. The unit reacts to the leading edge of a trigger input only. If required the trigger input can then be held continuously, if then a leading edge is then seen on any of the other inputs the unit will operate accordingly. A trigger to **FWD** will cause the unit to switch the relays in a forward manner, whilst a trigger to **BCK** will cause the unit to step back a position. A **RESET** trigger will cause the unit to reset back to the first (start) position.

Two LED's indicate the units operation, a green LED to indicate the connection of a supply voltage. The red LED will predominantly be not illuminated however, every 2 seconds it will blink quickly the number of relays energised.

SWITCH 1 - RELAYS

Determines the number of relays to be in operation

A:	0, 1	One relay, minimum relays on = 0
B:	0, 1, 2	Two relays, minimum relays on $= 0$
C:	1, 2	Two relays, minimum relays on $= 1$
D:	0, 1, 2, 3	Three relays, minimum relays on $= 0$
E:	1, 2, 3	Three relays, minimum relays on = 1
F:	0, 1, 2, 3, 4	Four relays, minimum relays on $= 0$
G:	1, 2, 3, 4	Four relays, minimum relays on $= 1$
Н٠	All relays perm	nanently off

H: All relays permanently off

SWITCH 2 - FUNCTION

Selects the relay operation pattern

1:	Repeat sequential	i.e.	1 -	2 -	3 -	4 -	1 -	2 -	3 -	4	
2:	Cycle sequential	i.e.	1 -	2 -	3 -	4 -	3 -	2 -	1 -	2	
^	1.1 14 44 44 4			^	_					4	

3: Limit sequential i.e. 1 - 2 - 3 - 4 - 4 - 4 - 4 - 4 -

 4: Repeat add
 i.e. 1 - 162 - 18263 - 1826384 - 1 - 182 - 18283 -

 5: Cycle add
 i.e. 1 - 162 - 18263 - 1826384 - 18283 - 182 -

 6: Limit add
 i.e. 1 - 182 - 18283 - 1828384 - 1828384 - 1828384 - 1828384 -

* If relay position A, B, D or F is selected then "0" (no relay energised), also is applicable to any of the above functions settings, i.e. the first (start) position is "0".

* The above functions depict a forward stepping only, if a BCK input is made the unit will move back a position.

SWITCH 3 - MEMORY (circa 1 month)

ON: On power up the unit will return to the last output state before power was lost

OFF: Will power up on minimum relays set at the beginning of the set pattern, i.e. relay switch set to "E" relay 1 will only energise, set to "A" no relays will be energised.



Supply Voltage

Nominal supply: A1 to A2 (230VAC)

A1 to A3 (110VAC) A1 to A4 (24 AC/DC)

Permanent tolerance: $\pm 15\%$ Power consumption: <5VA

Insulation: 2.5KV 50Hz impulse

Trigger inputs:

Min input time: 25mSec
Max input time: Continuous

Relay outputs:

Output contacts: 4 x SPNO 5Amps/250V AC1

Mechanical life: 15 Million ops

Electrical life: 100K ops at max rated load

General:

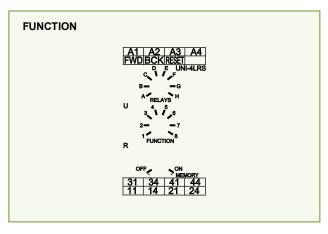
 $\begin{array}{lll} \mbox{Operating temperature:} & -20^{\circ}\mbox{C to } +65^{\circ}\mbox{C} \\ \mbox{Storage temperature:} & -20^{\circ}\mbox{C to } +65^{\circ}\mbox{C} \\ \mbox{Max cable size:} & 2.5\mbox{mm} \\ \mbox{CE marked:} & \mbox{Yes} \\ \end{array}$

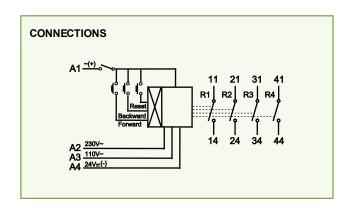
In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0





POWER RELAYS, LATCHING RELAYS, SEQUENCING RELAYS FLEETING CONTACT RELAYS, PLUG IN RELAYS

FLEETING CONTACT RELAY

TYPES: YRX, 11RX, 8RX (spco) 11R2X, 8R2X (dpco)

FEATURES

- Din rail or 11 pin plug in
- SPCO & DPCO versions
- Pulses on "supply on" and/or "supply off"
- Fixed 0.5sec timing
- LED indication
- CE marked

DESCRIPTION & MODE OF OPERATION

Simple din rail mounted or 8 & 11 pin plug in fleeting contact relays, available SPCO and with a DPCO option on the 8 & 11 pin plug in units. The units have four selectable modes of operation changed via a dip switch on the top of the relay, the time of the fleeting contact is always fixed at 0.5 secs. The four modes of operation are:

- 1. Pulse on connection of coil supply
- 2. Pulse on removal of coil supply
- 3. Pulse on both connection and removal of coil supply
- 4. Unit disabled

Ideal applications for fleeting contact relays include the resetting of circuits and systems on initial "power up" or "power down".

SPECIFICATIONS

Supply & measuring

 $\begin{array}{lll} \text{Supply voltage tolerance:} & \pm 15\% \\ \text{Frequency:} & 50/60\text{Hz} \\ \text{Max power consumption:} & 3\text{VA} \end{array}$

Timing:

Timing: Fixed at $0.5 \sec \pm 20\%$

Min supply on time: 1sec Reset time: 2secs

Relay outputs:

Output contacts: SPCO units 10Amps/250V AC1
DPCO units 8Amps/250VAC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General:

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage temperature: -20°C to $+65^{\circ}\text{C}$ Max cable size: 4mm

CE marked: Yes

In accordance with: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

 TYPE
 COILVOLTAGE

 YRX(Din rail SPCO)
 230V AC

 8RX(18 pin SPCO)
 110V AC

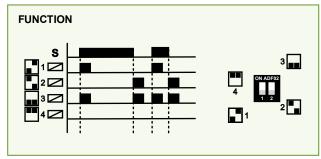
 11RX(11 pin SPCO)
 48V AC/DC

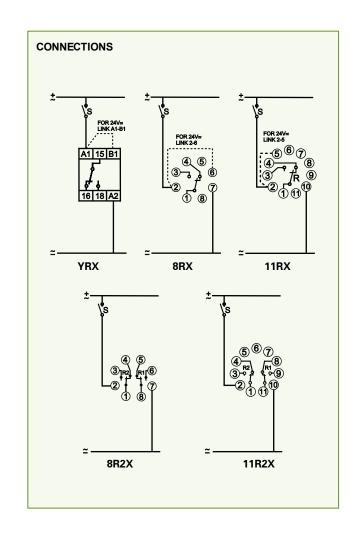
 8R2X(8 pin DPCO)
 24V AC/DC

11R2X(11 pin DPCO) 230V AC & 24V AC/DC* 110V AC & 24V AC/DC* 48V AC/DC & 24V AC/DC*

48V AC/



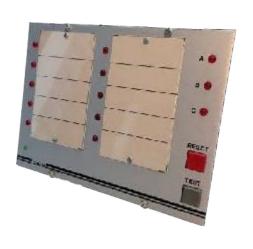


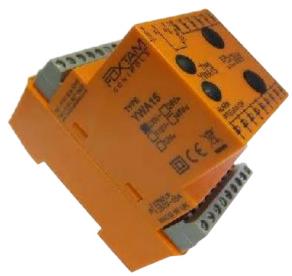


*SPCO versions only

PANEL LAMP TEST MODULES ALARM INTEGRATORS PANEL, MOUNTED AUDIBLES

PAGES	P/No.	DESCRIPTION
115	YWAD	Din rail 11 way filament & neon lamp test module
116	YWACD	Din rail 8 way LED lamp test module
117	YWRICD, YWA9 YWA15, 11WA8	11 pin & Din rail alarm integrators, 8 ways to 15 ways
118	YWA5	Din rail 5 way repeating alarm integrator
119	YWA10	Din rail 10 way, twin output mutable and repeatable alarm relay
120	SC01, SX01, SY01 SC03, SP03	Panel mounted audibles
121	FC-xxx	Indicator & alarm annunciator panels











FILAMENT & NEON LAMP TEST MODULE

TYPES: YWAD

FEATURES

- Din rail mounted
- 11 ways, expandable
- **High performance**
- **Cost effective**

DESCRIPTION & MODE OF OPERATION

The limited service life of filament signal lamps often necessitates regular testing, as the indication of a defective lamp may not be immediately recognised.

The YWAD lamp test module is a din rail mounted 11 way lamp test module, the extra input terminal "C" is the lamp test input. For more than 11 ways a number of units can be linked together via the "C" input terminal.

The lamp test module uses very high voltage tolerant components, such as avalanche diodes. Avalanche diodes are especially suitable for withstanding high voltages.

IMPORTANT NOTES

The YWAD is essentially a diode based device and can be used in both AC and DC applications. However, when used in AC applications the YWAD when activated will pass only a half cycle. This will result with the lamps being approx. 60% bright when the lamps are tested. Whilst this is satisfactory for filament lamps it is usually not sufficient for LED type lamps. For LED lamps use product type YWACD on page 116.

SPECIFICATIONS

Max permitted voltage: Max advised working voltage: 600V Max current per way: 1Amp

Max instantaneous current: 20Amps for 10mSec

Max inverse current: 50uA

Operating temperature: -20°C to +65°C In accordance with: EN61000-6-1: 2007 EN61000-6-3: 2007

EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

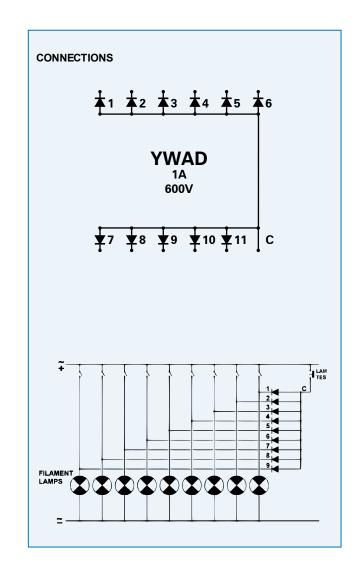
CONNECTION DETAILS

Terminals 1-11: Test Outputs Terminal C: Test Input

ORDERING INFORMATION

YWAD





LED LAMP TEST MODULE

TYPES: YWACD



FEATURES

- Din rail mounted 48mm wide
- Dedicated voltage (full potential passed to LEDs)

116

- Each way fully isolated
- No back feeds
- Saves time on panel wiring
- **CE** marked



The YWACD is an 8 way lamp test module designed for use with modern LED based indicator lamps. Filament lamp test modules utilise diodes and only allow a half cycle to pass which invariably is not sufficient to strike a LED. The new YWACD is constructed in a manner that allows the full potential to pass, gives full isolation per lamp circuit and at the same time gives full back feed protection. The YWACD is designed to save on wiring time where "lamp test" is called for in specifications and cable congestion on crowded doors.

SPECIFICATIONS

No. of ways:

Voltages: 12V, 24V, 110V, 230V (specify AC or DC)

Voltage tolerance: ±20% Power consumption: 2VA / 2W Max current per way: 1Amp Max cable size: 2.5mm -20°C to +65°C Operating temp:

CE marked:

EN61000-6-1: 2007 EN61000-6-3: 2007 In accordance with:

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

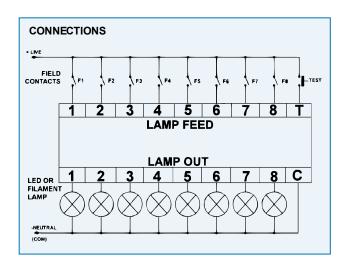
ORDERING INFORMATION

TYPE VOLTAGE

YWACD 12VDC, 24VDC, 110VDC, 220VDC

12VAC, 24VAC, 110VAC, 230VAC OTHER VOLTAGES ON REQUEST





GROUP

ALARM INTEGRATORS

TYPES: YWRICD 8 INPUTS, YWA9 9 INPUTS, YWA15 15 INPUTS 11WA8 8 INPUTS (11 pin plug in) PRODUCT

FEATURES

- Din rail mounted & 11 pin plug in versions
- Choice of input ways
- High performance

DESCRIPTION & MODE OF OPERATION

Often in the design of a control system the requirement to provide a "common" alarm signal to say drive an audible alarm or signal a BMS system is required.

Alarm integrators are single modules available in a number of input ways. The integral electronics ensures that each input is electrically isolated from each other, thus preventing feedback from occurring between inputs. This construction enables a single unit to effectively monitor many different circuits and/or sensors and provide a common alarm output. Indicator lamps may also be connected to each input to show and display the alarm source. To increase the number of alarm ways units can be linked together to facilitate this, the alarm output contacts will require to be wired out in parallel from each unit.

The alarm output is a volt free relay output. The YWRICD is a 1C/O output, whilst the YWA9, YWA15 11WA8 are 1N/O output.

The alarm integrators are available in various input voltages. However, a mix of input voltages on one unit is not possible and in all cases the input signals must be derived from the same source, with AC versions also derived from the same phase.

The alarm integrators use very high voltage tolerant components, such as avalanche diodes. Avalanche diodes are especially suitable for withstanding high voltages.

SPECIFICATIONS

Voltage tolerance: -20°C to +65°C

Operating temperature:

Outward contact

YWRICD & 11WA8: 10Amps/250VAC 1Amp/50VDC YWA9 & YWA15: 5Amps/250VAC

Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0

CONNECTION DETAILS

YWA9 & YWA15:

Alarm signal inputs Terminals (1-9), (1-15):

(for DC +V signals required) Terminal N: Common Neutral or with DC 0V Terminals AA: Normally open alarm contact

YWRICD:

Terminals 1-8: Alarm signal inputs

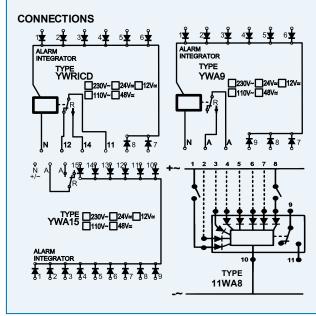
(for DC + V signals required) Terminal A2: Common Neutral or with DC 0V Common of C/O relay output Terminal 11: Terminal 12: Closed of C/O relay output Terminal 14: Open of C/O relay output

11WA8:

Pins 1-8: Alarm signal inputs

(for DC + V signals required) Pin 10: Common neutral or with DC OV Pins 9 & 11: Normally open alarm contact





ORDERING INFORMATION

TYPE YWRICD/Volts: YWA9/Volts: YWA15/Volts: 11WA8/Volts:

Voltages:

DESCRIPTION

8 inputs 1 C/O output 9 inputs 1 N/O output 15 inputs 1 N/O output 8 inputs 1 N/O output 12VACDC, 24VACDC, 48VACDC, 110VAC, 230VAC

REPEATING ALARM INTEGRATORS

TYPES: YWA5

FEATURES

- Din rail mounted
- 5 input ways
- Mutable

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- High performance
- An economical solution

DESCRIPTION & MODE OF OPERATION

Often in the design of a control system the requirement to provide a "common" alarm signal to say drive an audible alarm or signal a BMS system is required. However, it is sometimes required that after an alarm input signal is received the output relay is cancelled, thus say silencing an audible even if the alarm input is still present. The YWA5 achieves this function.

The YWA5 is available in various input voltages. However, a mix of input voltages on one unit is not possible and in all cases the input signals must be derived from the same source, with AC versions also derived from the same phase.

The integral electronics ensures that each input is electrically isolated from each other, thus preventing feedback from occurring between inputs. The YWA5 use very high voltage tolerant components, such as avalanche diodes. Avalanche diodes are especially suitable for withstanding high voltages.

MODE OF OPERATION IN BRIEF

YWA5, any input in the output relay energises. The output relay can then be reset via a pulse to the cancel terminal "C", even if the original input(s) is still present. Another input in and the relay will energise again - and so on. Removal of all inputs before reset via cancel will cause the relay to reset. The cancel signal on terminal "C" must be the same voltage as the input signals. Do not maintain the cancel signal for any longer than is necessary or new alarms may not become apparent, in no event should a "maintained contact" input be used.

SPECIFICATIONS

 $\begin{array}{lll} \mbox{Voltage tolerance:} & \pm 15\% \\ \mbox{Operating temperature:} & -20^{\circ}\mbox{C to } +65^{\circ}\mbox{C} \\ \mbox{Outward contact:} & 5\mbox{Amps/250VAC} \\ \end{array}$

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

CONNECTION DETAILS

Terminal N: Common Neutral or with DC 0V

Terminal C: Cancel input

(for DC + V signal required)

Terminals AA: Normally open alarm contact, closes on alarm,

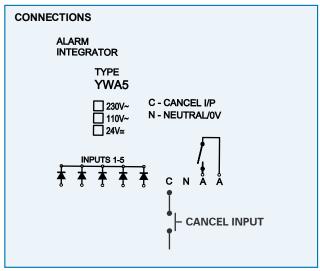
opens on reset

ORDERING INFORMATION

TYPE VOLTAGES

YWA5 24VACDC, 110VAC, 230VAC





GROUP

10 INPUT, TWIN OUTPUT, MUTABLE & REPEATABLE ALARM MODULE

TYPES: YWA10

FEATURES

- Din rail mounted
- 10 input ways
- Twin outputs
- Mutable & repeatable
- High performance
- Compact size

DESCRIPTION & MODE OF OPERATION

Often in the design of a control system the requirement to provide a "common" alarm signal to say drive an audible alarm or signal a BMS system is required. However, it is sometimes required that after an alarm input signal is received the output relay is cancelled, thus say silencing an audible even if the alarm input is still present, but also with an alarm contact still to remain to give silent indication. The YWA10 achieves this function.

The YWA10 is only available in 24VACDC input voltage. In all cases the input signals must be derived from the same source, with AC versions also derived from the same phase.

The integral electronics ensures that each input is electrically isolated from each other, thus preventing feedback from occurring between inputs.

MODE OF OPERATION IN BRIEF

YWA10, any input in then two separate output relays energise. One output relay (AA) can then be reset via a pulse to the cancel terminal "C", even if the original input(s) is still present, the second relay (BB) will always remain energised so long as an alarm input is present. Another input in and the cancelled relay will energise again - and so on.

SPECIFICATIONS

Voltage tolerance: $\pm 15\%$

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Outward contact: 5Amps/250VAC

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0

CONNECTION DETAILS

Terminal N: Common Neutral or with DC 0V

Terminal C: Cancel input

(for DC +V signal required)

Terminals AA: Normally open alarm contact, closes on alarm,

opens on reset

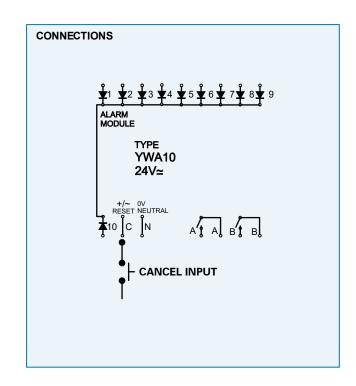
Terminals BB: Normally open alarm contact, closes on alarm

Terminals 1-10: Alarm signal inputs (for DC +V signals required)

ORDERING INFORMATION

TYPE VOLTAGE 24VACDC





PANEL MOUNTED AUDIBLES

FOXTAM PANEL MOUNTED AUDIBLES

TYPES: SC01-428, SX01-428, SY01-115 SC03-115, SC03-250, SP03-250

FEATURES

- Solid state
- No moving parts
- No RF noise or electrical interference
- Ideal for hostile environments

DESCRIPTION

Sonartones are panel mounted audible alarms, inexpensive and rugged that cannot be ignored. They produce a penetrating sound, with a volume of between 80-95dB this can be varied by adjusting the supply voltage. Both continuous and pulsating tone units are available in a wide range of AC and DC supply voltages. Connections are via a pair of 0.8 x 6.3mm male push on terminals, also tapped with fitted screws. Note: dedicated DC voltage audible's are polarity sensitive and will not operate if the DC voltage is applied in reverse direction, damage is also likely to occur.

SPECIFICATIONS

Operating temperature: -30° C to $+60^{\circ}$ C

Humidity: 95%RH/40°C max (for 100 hours)

Voltage tolerance: +15% Max Life test continuous: 300 hours

Life test intermittent: 1 min on, 5 min off duty cycle 1000 times

Intensity: 80-95dB at 1 meter
Housing material: Self-extinguishing nylon

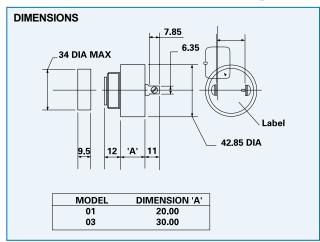
MOUNTING

Mounting is via the rear of the panel with a maximum panel thickness of 6.3mm a clearance hole size of 29mm diameter is required.

ORDERING INFORMATION

P/No	Voltage	<u>Tone</u>	Case size
SC01-428	4-28VDC	Continuous	01
SX01-428	4-28VAC/DC	Continuous	01
SY01-428	4-28VAC/DC	Pulsating	01
SC03-115	30-120VAC/DC	Continuous	03
SC03-250	50-250VAC	Continuous	03
SP03-250	50-250VAC	Pulsating	01





INDICATOR & ALARM ANNUNCIATOR PANELS

INDICATOR & ALARM ANNUNCIATOR PANELS



- FC-I10
- 10 way indicator panel
- Choice of LED colours
- With built in lamp test button
- 24VAC/DC supply voltage



- FC-D10
- 10 way alarm / indicator panel
- Single selectable relay output
- Each input selectable to R1 or just indicate
- Adjustable time delay
- Choice of LED colours
- With built in lamp test button
- 24VAC/DC supply voltage



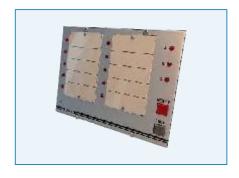
FC-DK10

- 10 way alarm / indicator panel
- Dual selectable relay output
- Each input selectable to R1, R2 or just indicate
- Adjustable time delay
- Choice of LED colours
- With built in lamp test button
- 24VAC/DC supply voltage



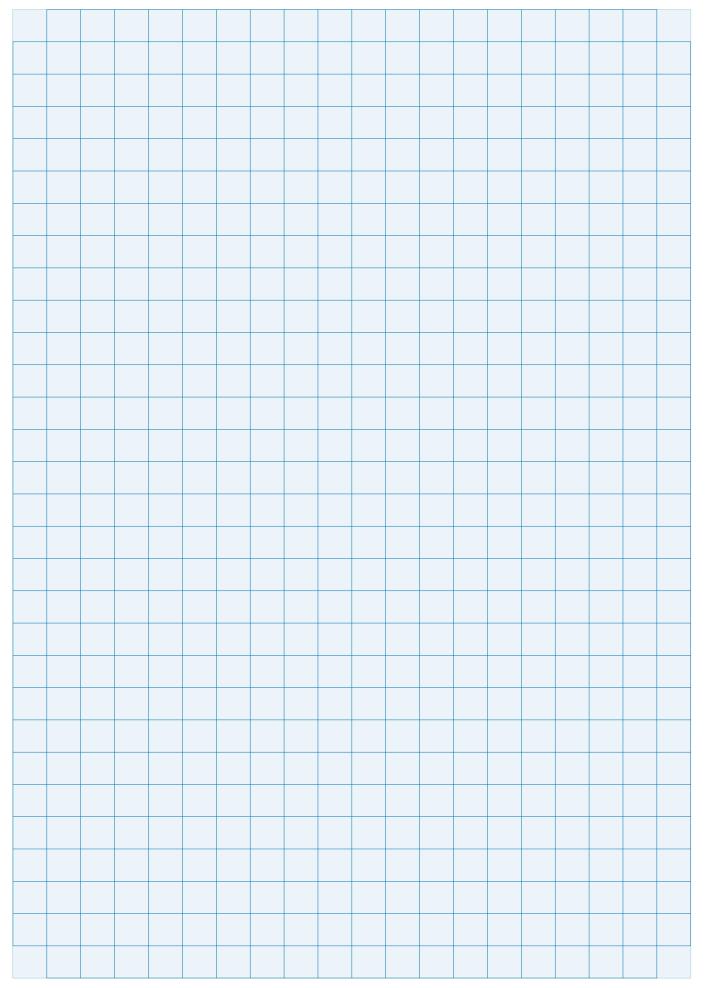
■ FC-LKM10 & FC-LKS10

- 10 way fully mutable & repeatable alarm annunciator panel
- 10 way expandable panels (FC-LKS10)
- Each input selectable to R1, R2, R3 or just indicate
- Adjustable time delay
- Each output selectable to be "NO" or "NC"
- Each input selectable to be latched or non latched
- Choice of LED colours
- With built in lamp test & reset button
- 24VAC/DC supply voltage



PLEASE CONTACT SALES OFFICE FOR FULL TECHNICAL DETAILS





DC POWER SUPPLIES DC TO DC CONVERTERS VOLTAGE TRANSFORMERS

PAGES	P/No.	DESCRIPTION
126 127 to 132 133 & 134		Din rail Modular 12VDC & 24VDC power supplies Din rail adjustable 0-10VDC output BMS power supply Din rail 10VDC, 12VDC & 24VDC power supplies Din rail DC to DC converters
135 136 & 137	FOX.TXM FOX.TX	Din rail Modular 230VAC/24VAC secondary voltage transformers Open metal frame voltage transformers

















FOXTAM DIN RAIL MOUNTED MODULAR SWITCH

MODE POWER SUPPLIES

TYPE: FOX.PSU-1 xxx/xx

FEATURES

124

Din rail mounted modular construction

Switch mode technology & regulated class 2

12VDC output from 1 amp to 5 Amps

24VDC output from 0.5 amps to 2.5 Amps

■ 100-240VAC universal voltage primary

Short circuit protection

Electronic overload protection

CE marked

TECHNICAL SPECIFICATIONS

INPUT

Primary voltage: 100-240VAC +/-10%

Frequency: 47-63Hz

<u>OUTPUT</u>

Indication: Via green LED (not 1 module units)
Adjustment: 12-14VDC & 24-28VDC (not 1 module units)

Regulation: +/-3% across 0-100% of load Temp range: $0-50^{\circ}\mathrm{C}$ full load possible

60°C possible but at -30% reduced load

Continuous use:

STANDARDS

Safety standards: EN60950-2006/95/ECC 89/336 EMC standards: EN55022/B – EN55024

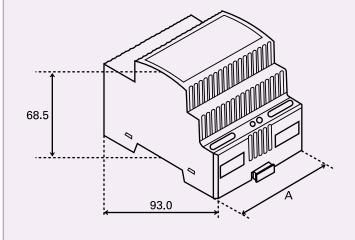
Insulation: Class II
CE marked: Yes



PRODUCT GROUP



CASE DIMENSIONS



Example illustrated is 3 modules width, the profile is the same for all case sizes but the widths vary as follows:

1 Module width: A=17.5mm

2 Modules width: A=35.0mm

3 Modules width: A=52.5mm

4 Modules width: A=70.0mm

MODULAR POWER SUPPLIES

FOX.PSU-1 012/12VDC FOX.PSU-1 012/24VDC

- FEATURES
- Output 12VDC / 1 Amp Output 24VDC / 0.5 Amp
- Only 1 module width (17.5mm)
- Primary voltage 100-240VAC universal

FOX.PSU-1 024/12VDC FOX.PSU-1 024/24VDC

- FEATURES
- Output 12VDC adjustable 12-14VDC / 2 Amps Output 24VDC adjustable 24-28VDC / 1 Amps
- 2 modules width (35mm)
- Primary voltage 100-240VAC universal
- LED indication for output healthy



- FEATURES
- Output 24VDC adjustable 24-28VDC / 1.25 Amps
- 3 modules width (53.5mm)
- Primary voltage 100-240VAC universal
- LED indication for output healthy

FOX.PSU-1 060/12VDC FOX.PSU-1 060/24VDC

- FEATURES
- Output 12VDC adjustable 12-14VDC / 5 Amps
 Output 24VDC adjustable 24-28VDC / 2.5 Amps
- 4 modules width (70mm)
- Primary voltage 100-240VAC universal
- LED indication for output healthy











AC TO ADJUSTABLE 0-10VDC OUTPUT BMS POWER SUPPLY

TYPES: Y24A0-10D, Y110A0-10D, Y230A0-10D

FEATURES

126

- Din Rail Mounted
- Separate Input & Output LED Indication
- Input Voltage 24VAC, 110VAC, 230VAC
- Output 0-10VDC Adjustable
- CE Marked
- RoHS Compliant

DESCRIPTION

A conveniently packaged Din rail mounted AC voltage to an adjustable 0-10VDC output module. Designed specifically for "HAND / OFF / AUTO" applications for BMS controller inputs, when in "HAND" a DC voltage needs to be forced into BMS input cards, but not necessarily a full 10VDC signal is required. This product can be specified with either a 24VAC, 110VAC or 230VAC primary voltage, the output voltage is an adjustable 0-10VDC via a front mounted potentiometer. A healthy AC input voltage is signalled by an illuminated green LED, and the output voltage is indicated by an increasing in intensity illuminated red LED starting at 1VDC (below 1VDC the output will be present, but without LED indication). Note this product is not designed to power "control circuits", it is only for driving into BMS input cards, max 10mA @ 10VDC.



Input Supply

Nominal Input: 24VAC, 110VAC, 230VAC

Output Voltage Range: 0-10VDC
Min Impedance: 1K Ohm
Max Impedance: Infinity Ohms
Max Output Load: 10mA
AC Supply Healthy: Via Green LED
DC Output Healthy: Via Red LED

Variable Intensity 1-10VDC

Output Voltage Regulation: $\leq 0.5\%$

General

 $\begin{array}{lll} \mbox{Operating Temperature:} & -20\mbox{°C to } +65\mbox{°C} \\ \mbox{Storage Temperature:} & -20\mbox{°C to } +65\mbox{°C} \\ \mbox{Humidity:} & 95\mbox{% Rel H max} \\ \mbox{Isolation Voltage I/P-O/P:} & 1500VDC \mbox{ for 1 Min} \\ \end{array}$

CE Marked: Yes
Standards Applied: EN60950-1
EN6100-6-3
EN6100-1

Material Housing: Polycarbonate

RoHS Compliant: Yes

Yes EN60950-1 EN6100-6-3 EN61010-1 Polycarbonate Auto extinguishable to UL 94V-0 Yes IFORMATION

DIMENSIONS

CONNECTIONS

ORDERING INFORMATION

 Type
 Input Voltage
 Output Voltage

 Y24A0-10D
 24VAC
 0-10VDC

 Y110A0-10D
 110VAC
 0-10VDC

 Y230A0-10D
 230VAC
 0-10VDC



O/F

PRODUCT GROUP

PRODUCT Group

POWER SUPPLIES

FOXTAM SWITCH MODE POWER SUPPLIES

TYPE: FOX.PSU-2 xxx/xxx

- FEATURES
- DIN RAIL MOUNTED
- VERY COMPACT
- HIGH QUALITY
- 26-34 YEARS MTBF
- 10VDC, 12VDC & 24VDC OUTPUTS
- OUTPUTS FROM 1.04 AMPS TO 20.8 AMPS
- DUAL PRIMARY VOLTAGE 110 / 240VAC
- ADJUSTABLE OUTPUTS +/- 10%
- **BUILT IN SHORT CIRCUIT PROTECTION WITH AUTO RESET**

DESCRIPTION

A range of din rail mounted switch mode power supplies in either 10VDC, 12VDC or 24VDC output voltage, that is also adjustable by +/-10%. The FOX.PSU-2 range of power supplies are of very high quality with a MTBF figure (Mean Time Between Failure) of between 26 and 34 years. The power supplies feature built in short circuit and overload protection with auto reset. The smaller output power supplies have a universal primary voltage of between 100-240VAC, whilst the larger output units are selectable via a switch 115V or 240VAC.

■ TECHNICAL SPECIFICATIONS

Input

Primary voltage: 100-240VAC universal (25W & 50W)

100-120VAC & 200-240VAC switchable (100W, 150W, 300W & 500W versions)

Frequency: 47-63Hz Tolerance: -15% to +10%

Output

Indication: Via green LED

Voltage adjustment: Via potentiometer +/-10%
Voltage tolerance: +/-1% max with 0-100% load
Voltage linearity: +/-1% max with 0-100% load
Load influence: +/-1& max with 0-100% load

Start up time: Max 3 secs
Off time: Max 13 mSec
Short circuit protect: Yes, with auto reset

Ripple 10VDC, 12VDC: 25W/120mV, 50W/100mV, 150W/120mV

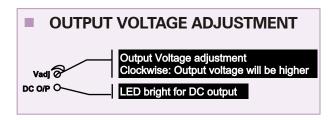
Ripple 24VDC: 25W / 150mV, all others 240mV

<u>General</u>

 $\begin{array}{ll} \mbox{Operating temperature:} & -15\mbox{°C to} + 50\mbox{°C} \\ \mbox{Storage temperature:} & -20\mbox{°C to} + 80\mbox{°C} \\ \mbox{Humidity:} & 5-95\mbox{°RH} \\ \end{array}$

Dielectric strength: 2KV for 1 min, between input, output & housing Terminals: Screw terminals max 2 x 2.5mm cable

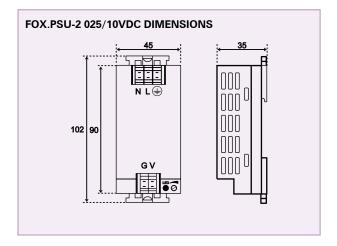
CE Marked: Yes
Continual use: Yes

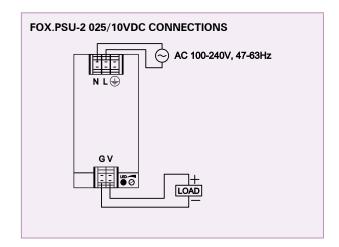




- FEATURES
- Output 10VDC / 2.5 Amps
- Primary voltage 100-240VAC universal
- Adjustable output +/-10%
- LED indication



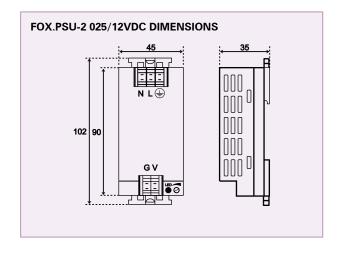


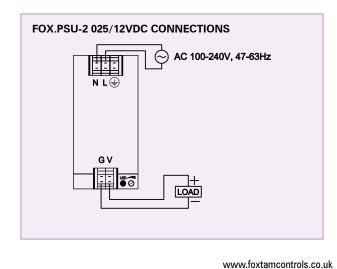


FOX.PSU-2 025/12VDC

- FEATURES
- Output 12VDC / 2.08 Amps
- Primary voltage 100-240VAC universal
- Adjustable output +/-10%
- LED Indication



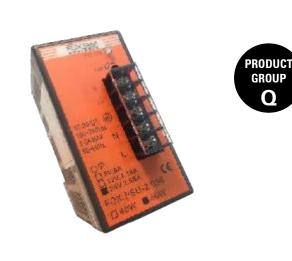


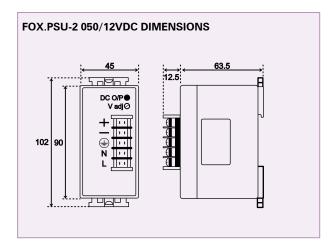


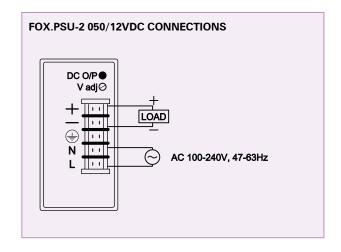
POWER SUPPLIES

FOX.PSU-2 050/12VDC

- FEATURES
- Output 12VDC / 4.2 Amps
- Primary voltage 100-240VAC universal
- Adjustable output +/-10%
- Protected terminals
- LED indication



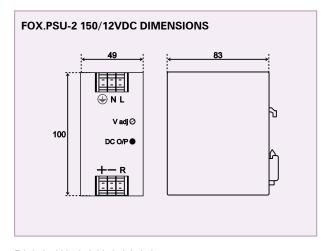


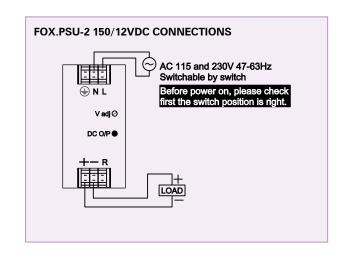


FOX.PSU-2 150/12VDC

- FEATURES
- Output 12VDC / 12.5 Amps
- Primary voltage 100-120VAC & 200-240VAC switchable
- Adjustable output +/-10%
- LED indication

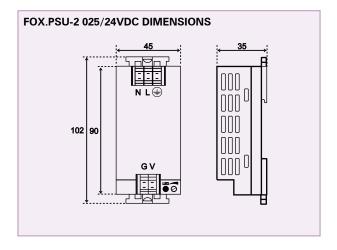


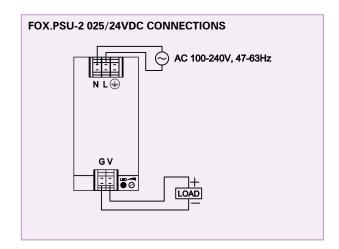




- FEATURES
- Output 24VDC / 1.04 Amps
- Primary voltage 100-240VAC universal
- Adjustable output +/-10%
- LED indication



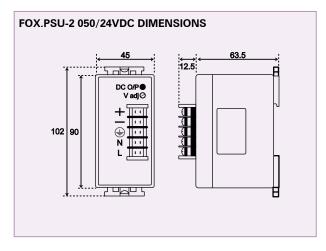


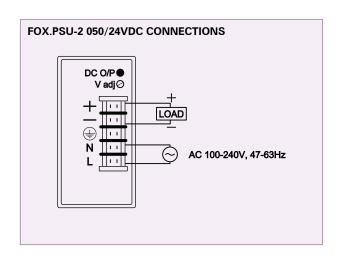


FOX.PSU-2 050/24VDC

- FEATURES
- Output 24VDC / 2.1 Amps
- Primary voltage 100-240VDC universal
- Adjustable output +/-10%
- Protected terminals
- LED indication







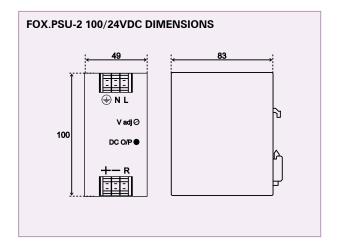
OWER SUPPLI

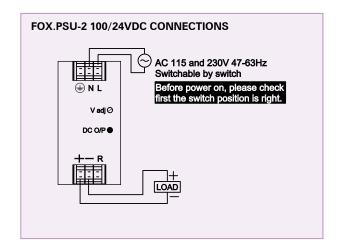
FOX.PSU-2 100/24VDC

- FEATURES
- Output 24VDC / 4.2 Amps
- Primary voltage 100-120VAC & 200-240VAC switchable
- Adjustable output +/-10%
- Protected terminals
- LED indication





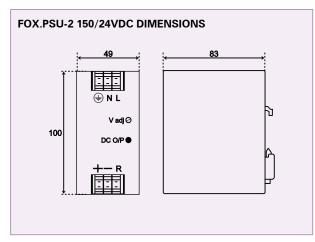


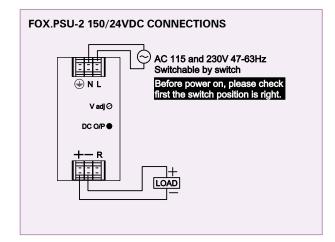


FOX.PSU-2 150/24VDC

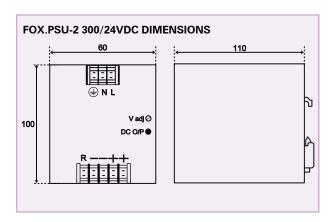
- FEATURES
- Output 24VDC / 6.25 Amps
- Primary voltage 100-120VAC & 200-240VAC switchable
- Adjustable output +/-10%
- LED indication







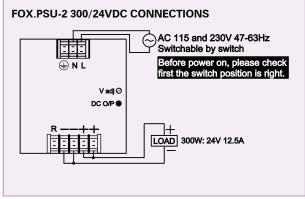
- **FEATURES**
- Output 24VDC / 12.5 Amps
- Primary voltage 100-120VAC & 200-240VAC switchable
- Adjustable output +/-10%
- Built in cooling fan
- Protected terminals
- LED indication





PRODUCT

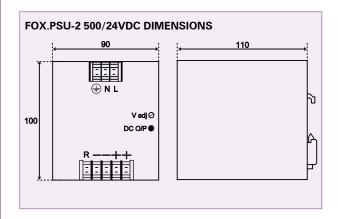
GROUP

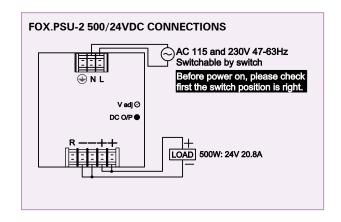


FOX.PSU-2 500/24VDC

- FEATURES
- Output 24VDC / 20.8 Amps
- Primary voltage 100-120VAC & 200-240VAC switchable
- Adjustable output
- Built in cooling fan
- Protected terminals
- LED indication







DIN RAIL, DC TO DC CONVERTERS

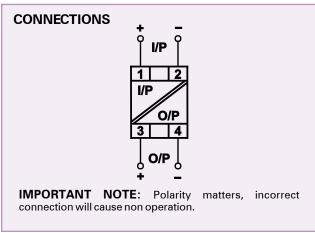
TYPES: Y24D5D, Y24D12D, Y24D24D, Y48D5D, Y48D12D, Y48D24D.

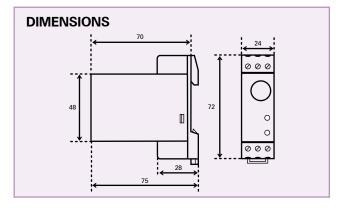
FEATURES

- Din rail mounted
- Input supply healthy LED indication
- Output supply healthy LED indication
- Indefinite short-circuit protection
- I/O Isolation 1500VDC
- Wide input voltage range 9-36VDC & 18-75 VDC
- Outputs 5VDC, 12VDC, 24VDC
- 6 Watt outputs

DESCRIPTION

Din rial mounted DC/DC converters with a wide ranging input supply. High efficiency operation and low output noise. These DC/DC converters feature separate LED indication for healthy input & output supplies. All terminal details along with CE mark is clearly marked on the side of the housing.





ORDERING INFORMATION

<u>Type</u>	Input Voltage	Output Voltage
Y24D5D	9-36VDC	5VDC
Y24D12D	9-36VDC	12VDC
Y24D24D	9-36VDC	24VDC
Y48D5D	18-75VDC	5VDC
Y48D12D	18-75VDC	12VDC
Y48D24D	18-75VDC	24VDC



SPECIFICATIONS

Input Supply

Nominal Input: 24VDC or 48VDC
Input Voltage Range: 9-36VDC or 18-75VDC
Input Current at No Load: 24V Input, 20mA Typ.
48V Input, 10mA Typ.
Input Current at Full Load: 24V Input, 300mA Typ.
48V Input, 150mA Typ.

Surge Voltage: 24V Input, 50V Max 48V Input, 100V Max

Reverse Voltage Protection: 1A MAX

Output Supply

Ripple % Noise

Output Voltage/Current: 5VDC/1.2A 12VDC/500mA

24VDC/250mA

Output Power: 6 Watt Voltage Accuracy: $\pm 2\%$

Regulation: Vin Min to Vin Max 0.5% Load variation 0-100% 1.2%

<60mV PK-PK Typ.

Temperature Coefficient: $\pm 0.02\%/K$

Output Current Limitation: >150% of lout, Constant Current
Short Circuit Protection: Continuous (Automatic Recovery)

Max Capacitive Load: 5V Output 470uF 12V Output 100uF 24V Output 47uF

General

Operating Temperature: -20°C to $+65^{\circ}\text{C}$ Storage Temperature: -20°C to $+65^{\circ}\text{C}$

Load De rating: 5V Output 2.5%/K above 60°C 12V, 24V Output 3.3%/K above 70°C

Humidity: 95% Rel H max

Reliability, Calculated MTBF

 (MIL-HDBK-217F at +25°C):
 >800,000 h

 Isolation Voltage I/P-0/P (60sec):
 1500VDC

 Isolation capacitance:
 1,000pF Typ.

 Isolation Resistance:
 >1,000M 0hm

Switching Frequency: 300kHz typ (Pulse Frequency Modulation)

CE Marked: Yes

Standards Applied: EN 55022 Class A IEC/EN60950-1

IEC/EN60950-1 EN6100-6-3 EN61010-1 Polycarbonate

Material Housing: Polycarbonate

Auto extinguishable to UL 94V-0

Environmental Compliance: RoHS 2011/65/EU

DIN RAIL, DC TO DC CONVERTERS

TYPES: YW300D5D, YW300D12D, YW300D24D YW1000D5D, YW1000D12D, YW1000D24D



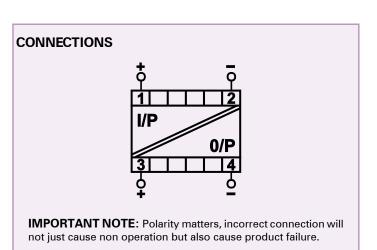
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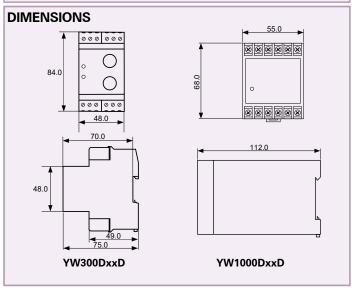
FEATURES

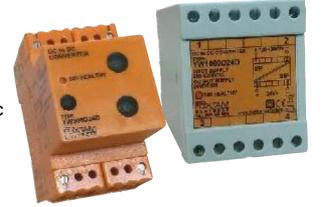
- Din rail mounted
- **Output supply healthy LED indication**
- Indefinite short circuit protection
- I/O isolation 4000VDC
- Wide input voltage range 85-370VDC & 210-1200VDC
- Outputs 5VDC, 12VDC, 24VDC
- 5 Watts or 15 Watts output
- **CE** marked
- **RoHS** compliant

DESCRIPTION

Conveniently packaged range of Din rail mounted DC/DC converters with wide ranging input supplies. High efficiency operation with low output noise. These DC/DC converters feature LED indication for healthy output supply. All terminal details along with CE mark is clearly marked on the side of the housing.







SPECIFICATIONS

<u>Input</u>	300VDC	1000VDC
Nominal voltage inputs:	300VDC	1000VDC
Input voltage ranges:	85-370VDC	210-1200VDC
Input power no load:	<200mW	<40mW
Efficiency:	79%	82%

Output **300VDC** 1000VDC 5VDC/3A Output voltages & currents: 5VDC/1Amps

12VDC/410mA 12VDC/1.25A 24VDC/208mA 24VDC/0.625A 15 Watts 5 Watts Output power:

Voltage output accuracy: + 2%0.5% Regulation:

Ripple: <100mV peak to peak

Max overload:

Short circuit protection: Indefinite (automatic recovery)

General

-25°C to +50°C Operating Temperature: Storage Temperature: -40° C to $+65^{\circ}$ C Max 95% RH Humidity: 3.75%/°C Output load de-rating:

MTBF:

>215,000 hours @ 25°C Isolation input to output: 4000VDC for 1 min

CE marked:

Housing material:

Poly carbonate Auto extinguish UL94V-0

Environmental Compliance: RoHS

ORDERING INFORMATION

Type	Input Voltage	Output Voltage
YW300D5D	85-370VDC	5VDC
YW300D12D	85-370VDC	12VDC
YW300D24D	85-370VDC	24VDC
YW1000D5D	210-1200VDC	5VDC
YW1000D12D	210-1200VDC	12VDC
YW1000D24D	210-1200VDC	24VDC

RODUCT GROUP

MODULAR VOLTAGE TRANSFORMERS

FOXTAM DIN RAIL MOUNTED MODULAR TRANSFORMERS

TYPE: FOX.TXM xxxx/xx

FEATURES

- Din rail mounted modular construction
- 230VAC 50/60Hz primary
- 24VAC secondary
- 10VA to 75VA
- Built in secondary PTC or fuse protection

TECHNICAL SPECIFICATIONS

<u>INPUT</u>

Primary voltage: 230VAC +/-10% Frequency: 47-63Hz OUTPUT

Voltage: 24VAC

Temperature range: -10°C to $+40^{\circ}\text{C}$ (10VA unit up to $+50^{\circ}\text{C}$)

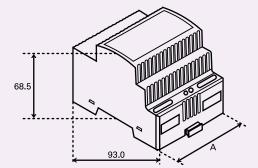
Continuous use: Yes

STANDARDS

Safety standards: EN61558-2006/95/ECC 89/336 EMC standards: EN55022/B – EN55024

Insulation: Class II CE marked: Yes

CASE DIMENSIONS



Example illustrated is 3 modules width, the profile is the same for all case sizes but the widths vary as follows:

2 Modules width: A=35.0mm 3 Modules width: A=52.5mm 5 Modules width: A=87.5mm 6 Modules width: A=105mm 8 Modules width: A=140mm

FOX.TXM 0010/24VAC

- FEATURES
- 230VAC PRIMARY
- 10VA / 24VAC SECONDARY
- 2 MODULES WIDTH (35mm)
- BUILT IN SECONDARY PTC PROTECTION

FOX-TXM 0020/24VAC

- FEATURES
- 230VAC PRIMARY
- 20VA / 24VAC SECONDARY
- 3 MODULES WIDTH (52.5mm)
- BUILT IN SECONDARY PTC PROTECTION

FOX-TXM 0035/24VAC

- FEATURES
- 230VAC PRIMARY
- 35VA / 24VAC SECONDARY
- 5 MODULES WIDTH (87.5mm)
- **BUILT IN SECONDARY REMOVABLE FUSE PROTECTION**

Other Modular 24VAC Transformers

FOX.TXM 0050/24VAC 50VA output, 6 modules width FOX.TXM 0063/24VAC 63VA output, 8 modules width FOX.TXM 0075/24VAC 75VA output, 8 modules width

■ FEATURES ■ Primary volta

- Primary voltage multi tap 0-230/240-400-415-440V
- Multi tap secondaries 0-12-24V / 0-55-110V / 0-115-230V
- VA sizes from 30VA to 3200VA
- Double wound isolating
- With primary winding earth screen
- Earth terminal
- Non welded construction means cool operation
- CE marked



PRODUCT Group

DESCRIPTION

Quality double wound isolating transformers for general "Control Panel" applications, giving excellent on load and off load performance and stability. Benefiting from a multi tap primary 0-230/240-400-415-440V with no confusing terminal links required, likewise the secondary taps are also without requiring links. Available with a choice of secondary voltages 0-12-24V / 0-55-110V or 0-115-230V. The construction in of a non-welded style, which is preferable to ensure cool operation both on and off load. The transformers also benefit from a primary Earth screen as a safeguard in the event of a catastrophic short circuit in the primary, thus ensuring any potential is routed to Earth rather than to the secondary. An optional Din rail mounting adaptor is available for the 30VA, 50VA, 100VA and 160VA transformers sizes, (one adaptor fits all). It is important to note, when sizing a transformer that the lower secondary voltage tap will be at half the specified VA rating. Example, a 100VA / 24VAC transformer will give you 50VA at 12VAC.

SPECIFICATIONS

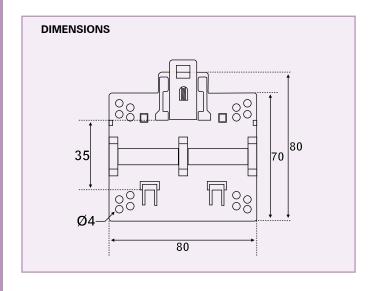
According to: EN61558-2-4/2-6
CE Marked: Yes
Terminals: IP20
Copper: Class F/H
Lamination Loss: 1.5W/Kg
Thermic Class: Class F
Protection Class: Class 1

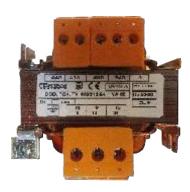
Insulation: 4KV between windings 2KV between windings &

chassis Earth
Yes
Frequency: 50/60Hz
Continuously Rated: Yes

FOX.TX.D-CLIP

Optional DIN Rail Mounting Clip suitable for 30VA, 50VA, 100VA & 160VA secondary transformers.







PRODUCT GROUP

FOXTAM CONTROL PANEL TRANSFORMERS

Dimensions							
Type-1 (0-12-24V)	A	В	С	D	E	F	G
FOX.TX 0030	77	_ 77	75	37	53	4	6
FOX.TX 0050	77	76	80	42	53	4	6
FOX.TX 0100	86	84	80	37	70	4	10
FOX.TX 0160	86	84	89	47	70	4	10
FOX.TX 0200	97	92	98	48	80	4	12
FOX.TX 0320	123	110	95	59	99	12	14
FOX.TX 0400	122	113	98	64	99	12	14
FOX.TX 0500	122	111	108	74	100	12	14
FOX.TX 0630	154	149	120	77	125	8	17
FOX.TX 0800	150	154	158	116	125	8	18
FOX.TX 1000	150	149	138	113	124	8	24
FOX.TX 1600	198	224	180	108	169	13	12
FOX.TX 2000	198	258	211	127	169	19	12
FOX.TX 2500	198	260	245	145	169	19	12
FOX.TX 3200	242	278	240	112	210	16	22
Type-2 (0-115-230V)	Α	В	С	D	E	F	G
FOX.TX 0030	77	77	75	37	53	4	6
FOX.TX 0050	77	76	80	42	53	4	6
FOX.TX 0100	86	84	80	37	70	4	10
FOX.TX 0160	86	84	89	47	70	4	10
FOX.TX 0200	97	92	91	51	80	4	12
FOX.TX 0320	121	110	88	60	110	6	14
FOX.TX 0400	121	110	95	64	100	7	14
FOX.TX 0500	120	118	114	75	100	6	14
FOX.TX 0630	150	133	112	75	126	8	19
FOX.TX 0800	150	135	128	85	125	8	18
FOX.TX 1000	150	139	168	113	124	8	24
FOX.TX 1600	198	198	150	112	169	16	13
FOX.TX 2000	198	198	180	130	168	14	12
FOX.TX 2500	198	198	199	146	168	14	12
FOX.TX 3200	241	240	200	116	200	20	33
Type-3 (0-55-110V)	Α	В	С	D	E	F	G
FOX.TX 0030	77	77	75	37	53	4	6
FOX.TX 0050	77	76	80	42	53	4	6
FOX.TX 0100	86	84	80	37	70	4	10
FOX.TX 0160	86	84	89	47	70	4	10
FOX.TX 0200	97	92	91	51	80	4	12
FOX.TX 0320	120	111	94	58	100	7	14
FOX.TX 0400	120	118	108	64	100	6	14
FOX.TX 0500	120	130	118	74	100	7	14
FOX.TX 0630	150	138	128	74	125	8	24
FOX.TX 0800	150	154	158	116	135	8	19
FOX.TX 1000	150	139	168	113	124	8	24
FOX.TX 1600	198	198	155	112	169	14	12
FOX.TX 2000	198	198	180	130	168	14	12
FOX.TX 2500	198	200	197	145	169	19	22
FOX.TX 3200	240	240	200	112	200	20	33
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MCB's, RCBO's & FUSE HOLDERS



PAGES	P/No.	DESCRIPTION
140 & 141	TSC & TSD	Single, double & triple pole type C & D, 10KA MCB's
142	KZS 2M	Two pole type C, RCBO's
142	S1L, S3L, G1L, G3L	
143	VLC10, VLC14,	Din rail mounted fuse holders
	VLC22	













MINIATURE CIRCUIT BREAKERS, MCB's ETIMAT 10KA

TYPES: TSC & TSD

FEATURES

140

- Available as 1, 2 or 3 pole
- Types 'C' and 'D'
- CE Marked
- RoHS compliant

DESCRIPTION

ETIMAT 10 MCB's are produced according to the latest international standards EN60898 IEC60898 and IEC60947-2. These MCB's are for protection and control of circuits against overloads and short circuits in commercial and industrial applications.

CHARACTERISTIC C

Characteristic C is recommended for industrial applications where higher starting effects are expected e.g. transformers, motors and lighting installations. Thermal release at 1.13 to 1.45 x ln. Magnetic breaking release at 5 to 10 x ln.

CHARACTERISTIC D

Characteristic D is recommended for heavy industrial applications where very high starting effects are expected, e.g. Motors starting under load. Thermal release 1.13 to 1.45 x ln. Magnetic breaking release 10 to 20 ln.

SPECIFICATIONS

Voltage Ue: 230/400V

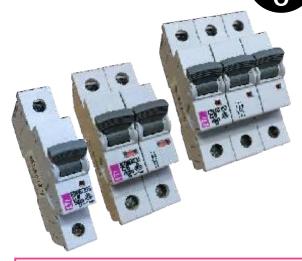
60V DC per pole 50/60Hz

Frequency: 50/60Hz
Poles: 1, 2 and 3 poles

Breaking capacity: 10KA

Electrical Life: >20 000 operations
Mechanical Life: >1 000 000 operations

Terminal Sizes: All 25mm²



PRODUCT Group

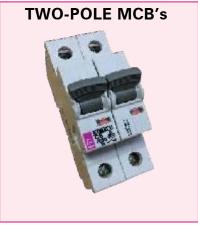


PRODUCT GROUP

ETIMAT 10KA MINIATURE CIRCUIT BREAKERS

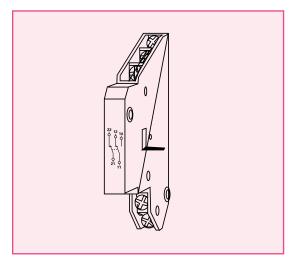
ORDERING INFORMATION







Order Code	Current Rating	Breaking Capacity	Order Code	Current Rating	Breaking Capacity	Order Code	Current Rating	Breaking Capacity	
C - CI	HARACT	ERISTIC	C - CHARACTERISTIC			C - CHARACTERISTIC			
TSC-101	1	10kA	TSC-201	1	10kA	TS C-301	1	10kA	
TSC-102	2	10kA	TSC-202	2	10kA	TSC-302	2	10kA	
TSC-104	4	10kA	TSC-204	4	10kA	TSC-304	4	10kA	
TSC-106	6	10kA	TSC-206	6	10kA	TSC-306	6	10kA	
TSC-110	10	10kA	TSC-210	10	10kA	TSC-310	10	10kA	
TSC-116	16	10kA	TSC-216	16	10kA	TSC-316	16	10kA	
TSC-120	20	10kA	TSC-220	20	10kA	TSC-320	20	10kA	
TSC-125	25	10kA	TSC-225	25	10kA	TSC-325	25	10kA	
TSC-132	32	10kA	TSC-232	32	10kA	TSC-332	32	10kA	
TSC-140	40	10kA	TSC-240	40	10kA	TSC-340	40	10kA	
TSC-150	50	10kA	TSC-250	50	10kA	TS C-350	50	10kA	
TSC-163	63	10kA	TSC-263	63	10kA	TSC-363	63	10kA	
D - C	HARACT	ERISTIC	D - CI	I A R A C T	ERISTIC	D - CH	ARACTE	RISTIC	
TSD-101	1	10kA	TSD-201	1	10kA	TSD-301	1	10kA	
TSD-102	2	10kA	TSD-202	2	10kA	TSD-302	2	10kA	
TSD-104	4	10kA	TSD-204	4	10kA	TSD-304	4	10kA	
TSD-106	6	10kA	TSD-206	6	10kA	TSD-306	6	10kA	
TSD-110	10	10kA	TSD-210	10	10kA	TSD-310	10	10kA	
TSD-116	16	10kA	TSD-216	16	10kA	TSD-316	16	10kA	
TSD-120	20	10kA	TSD-220	20	10kA	TSD-320	20	10kA	
TSD-125	25	10kA	TSD-225	25	10kA	TSD-325	25	10kA	
TSD-132	32	10kA	TSD-232	32	10kA	TSD-332	32	10kA	
TSD-140	40	10kA	TSD-240	40	10kA	TSD-340	40	10kA	



ADD ON AUXILIARY CONTACT BLOCK FOR MCB's

PS ETIMAT is an auxiliary switch used for remote signalling of the MCB to which it is fixed.

SPECIFICATIONS

Contacts: Max. 6 Amps at 230V AC or

1 Amp at 110V DC

Contacts: 1NO & 1NC

Width: ½ module (9mm)

ORDERING INFORMATION

TYPE: PS ETIMAT

MCB's, RCBO's, FUSE HOLDERS

142

RCBO's COMBINED MCB/RCD TWO POLE

TYPES: KZS 2M xxx

DESCRIPTION

Providing the combined advantage of protection against earth leakage faults with short-circuit protection.

SPECIFICATIONS

 Max voltage:
 230V

 Breaking capacity:
 10KA

 Tripping curve:
 C

 Sensitivity:
 30mAmps.

 Ambient temperature:
 -25°C to +40°C

 Width:
 36mm

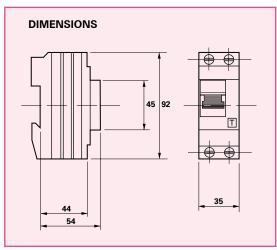
 Standard:
 EN61009

ORDERING INFORMATION

Туре	Rated Current Amps	Characteristics			
KZS 2M 6C	6	С			
KZS 2M 10C	10	С			
KZS 2M 16C	16	С			
KZS 2M 20C	20	С			
KZS 2M 25C	25	С			
KZS 2M 32C	32	С			
KZS 2M 40C	40	С			

KZS 2M... replaces old P/No. TCU...





CONNECTING BUSBAR

TYPE	LENGTH mm	MODULES	AREA mm ²				
SIN	GLE PHA	SE PIN	TYPE				
S1L 1000/16	1000	56	16				
THREE PHASE PIN TYPE							
S3L 1000/16	1000	56	16				
SINGLE PHASE FORK TYP							
G1L 1000/16	1000	56	16				
THR	E FORK	TYPE					
G3L 1000/16	1000	56	16				

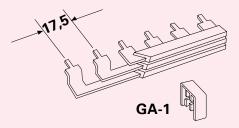
Maximum permanent current on above bus-bars 80 Amps

END PROTECTOR FOR THREE-PHASE BAR

GA-1 End protector

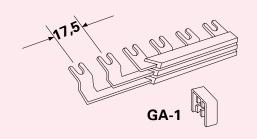
Pin Type

1, 2 & 3 phase solid copper conductors with pin attachments for connection of NORM modular components e.g. MCB's and RCD's.



Fork Type

1, 2 & 3 phase solid copper conductors with fork attachments for connection of NORM modular components e.g. MCB's and RCD's.



MCB's, RCBO's, FUSE HOLDERS

DIN RAIL MOUNTED FUSE HOLDERS

TYPES: VLC10 (10x38mm) max 32Amp VLC14 (14x51mm) max 50Amp

VLC22 (22x58mm) max 100Amp



DESCRIPTION

- 1, 2 & 3 Pole
- Type: VLC10 for fuse links 10x38mm, max operational current 32 Amps @ 690VAC Rated making & breaking capacity: 75 Amps.
- Type: VLC14 for fuse links 14x51mm, max operational current 50 Amps @ 690VAC Rated making & breaking capacity: 150 Amps.
- Type: VLC22 for fuse links 22x58mm, max operational current 100 Amps @ 690VAC Rated making & breaking capacity: 150 Amps.

STANDARDS

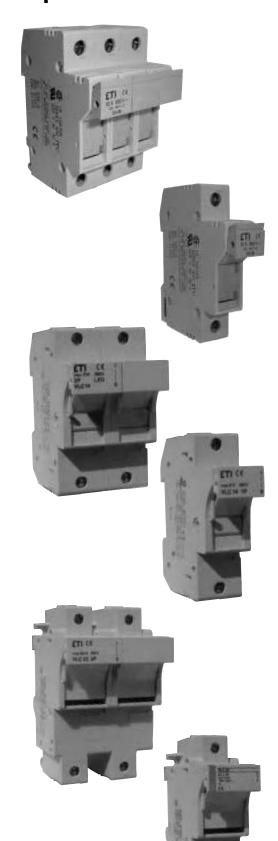
- IEC 60947-1
- IEC 60947-3

ADVANTAGES

- Materials resistant to high temperatures
- Silvered contact parts
- Low own heating
- Fixing to standard din rail of 35mm (EN50022)
- 25mm terminals VLC10
- 35mm terminals VLC14
- 50mm terminals VLC22
- VLC10 & VLC14 UL, CSA approved
- CE marked
- Possibility of sealing in switched ON condition

ORDERING INFORMATION

TYPE	DESCRIPTION	WIDTH x HEIGHT
VI C10 1P	1 pole	17.5 x 81mm
VLC10 11 VLC10 2P	2 pole	35 x 81mm
VLC10 3P	3 pole	52.5 x 81mm
VLC14 1P	1 pole	27 x 94mm
VLC14 2P VLC14 3P	2 pole 3 pole	54 x 94mm 81 x 94mm
	·	2 2
VLC22 1P	1 pole	35.5 x 120mm
VLC22 2P	2 pole	71 x 120mm
VLC22 3P	3 pole	107 x 120mm



HOUR RUN COUNTERS & OPERATION COUNTERS



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PAGES	P/No.	DESCRIPTION
145	632.2 & 630.2	Din 48mm hour run counter & bezels
146	920	Din 48mm combined hour run counter & operations counter
	661.6 & 666.6	Din rail mounted hour run counters
147	250.2 & 260.2	36x24mm hour run counter
	252.2 & 262.2	48x24mm hour run counter
	604.2 & 609.2	54x29mm hour run counter
148	610.11 & 617.11	54x29mm resettable hour run counter
	200.4 & 208	24x24mm miniature hour run counter
149	656	32x15mm miniature hour run counter
	R572 & R577	Din 72mm glass cased hour run counter
	R596 & R597	Din 96mm glass cased hour run counter
150	587.10.2 & 587.2	56mm Dia. DC quartz automotive style hour run counters
151	170 & 171	36x24mm operation counters, with & without reset
	180 & 181	53x28mm operation counters, with & without reset
	663.6 & 668.6	Din rail mounted operations counter
152	670.6 & 672.6	Din rail mounted digital hour counter, operation counter & combined hours &
		operation counter
153	3800, 3810	48x24mm digital hour counters & operation counters, with & without reset
	3801, 3811	Din 48mm digital hour counters & operation counters, with & without reset













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PRODUCT

GROUP

ELECTROMECHANICAL HOUR RUN COUNTERS DIN 48mm HOUR COUNTER

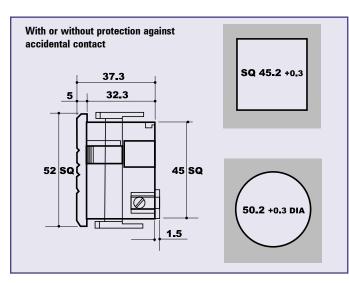
TYPES: 632.2/AC VOLTS & 630.2/DC VOLTS



- Standard IP65 front
- Optional IP65 gasket
- **Optional 55mm bezel**
- **Optional 72mm bezel**
- Ratchet fixing clamp
- IP20 screw terminals
- **Black front**
- Operation indication

DESCRIPTION

Din standard 48mm seven digit black faced hour run counter, front panel sealed as standard to IP65 with additional optional IP65 panel sealing gasket. Screw terminations to IP20, suitable for square or round hole fixing. Optional 55mm and 72mm bezels available.







BAUSER[®]

STANDARD SPECIFICATIONS

Counting range: 99999.99h

AC Voltages: 12, 24, 48, 110, 230, 400V (\pm 10%)

Frequency: 50Hz or 60Hz (specify) DC Voltages: 2-20V, 10-80V, 80-220V **Current:** AC 10mA, DC 0.5-27mA **Protection Class:** IP65 front, IP20 terminals

Temp range: -20°C to +70°C

CE marked: Yes

Terminations: Protected screw

OPTIONS ON REQUEST

(special P/No's & prices may apply)

- Grey faced
- 52mm square front
- 58mm diameter round front
- 6.3 x 0.8mm push on terminations
- IP00 terminations
- Dual 50/60Hz AC versions
- Metal fixing clamp
- **Customer logos**
- UL, CSA, VDE approval and marked

ORDERING INFORMATION

632.2 / **AC Volts**: 12, 24, 48, 110, 230, 400VAC 50Hz or 60Hz

630.2 / DC Volts: 2-20VDC, 10-80VDC, 80-220VDC

55mm bezel 72mm bezel

IP65 48x48mm gasket

DIN 48mm COMBINED HOUR & OPERATION COUNTER

TYPE: 920



■ IP65 front

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- Optional IP65 panel gasket
- Optional 55mm bezel
- Combined hours & operations
- Optional 72mm bezel
- Screw terminals
- Ratchet fixing clamp
- Black front
- Operation indication
- One set of input connections

DESCRIPTION

Din 48mm seven digit combined hour run counter and operations counter. Front panel sealed as standard to IP65 with an additional optional IP65 panel sealing gasket. Suitable for square or round hole fixing, with optional 55mm or 72mm bezels. Connection is via one pair of terminals only, on connection and disconnection of the supply voltage the operation counter increments one count. On a continued supply voltage being present the hour counter continues to increment.

ORDERING INFORMATION

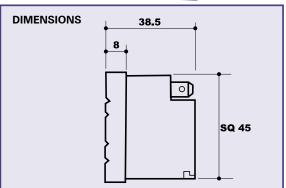
920 / AC Volts 110, 230VAC (Specify 50Hz or 60Hz)
920 / DC Volts 24VDC
55mm bezel
72mm bezel

IP65 48x48mm gasket









STANDARD SPECIFICATIONS

Counting range: 99999.99h

DC Voltages: 24 (\pm 10%)

Current: AC 3-8mA, DC 7-13mA

Protection class: IP65 front, IP00 terminals

Temp range: -10°C to 50°C
CE marked: Yes
Terminations: Screw

DIN RAIL HOUR COUNTER

TYPES: 661.6/AC VOLTS 666.6/DC VOLTS

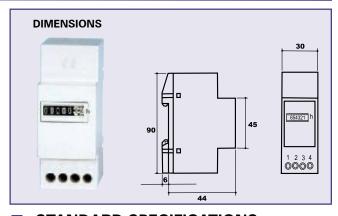
- FEATURES
- Din rail mounted
- Modular construction
- Seven digits
- Colour grey RAL7035

DESCRIPTION

Din rail mounted grey modular type hour counter, suitable for mounting within consumer units. Width 36mm (2 modules), height 60mm. These counters benefit from an excellent specification regarding shock and vibration resistance.

ORDERING INFORMATION

666.1 / AC Volts 12, 24, 48, 110, 230, 400VAC (Specify 50Hz/60Hz) **666.6 / DC Volts** 12-24VDC



STANDARD SPECIFICATIONS

 Counting range:
 99999.99h

 AC Voltages:
 12, 24, 48, 110, 230, 400VAC

 Frequency:
 50Hz or 60Hz (specify)

 DC Voltages:
 12-24VDC (±10%)

 Current:
 AC 5-15mA, DC 5-15mA

 Protection class:
 IP65

Temp range: -10°C to +70°C

 Vibration resist:
 1g (10-500Hz), to EN60068-2-34

 Shock resit:
 30g (18mSec), to EN60068-2-27

Tel: 0161 626 5316 / 01276 25858

RECTANGULAR HOUR COUNTERS

TYPES: 250.2/AC VOLTS & 260.2/DC VOLTS (36x24mm) 252.2/AC VOLTS & 262.2/DC VOLTS (48x24mm)

604.2/AC VOLTS & 609.2/DC VOLTS (54x29mm)







- Standard IP65 front
- **Optional IP65 gasket**
- Ratchet fixing clamp
- Screw terminals
- **Black front**
- Seven digits

DESCRIPTION

Rectangular seven digit hour counters either in front bezel sizes of 36x24mm, 48x24mm or 54x29mm. Front sealed as standard to IP65 with additional optional IP65 panel sealing gasket. Supplied as standard with screw terminals but with the option of 6.3x0.8mm push on terminals.

STANDARD SPECIFICATIONS

99999.99h **Counting range:**

12, 24, 110, 230, 400V ($\pm 10\%$) **AC Voltages:**

50Hz or 60Hz (specify) Frequency:

DC Voltages: 12-24VDC, 10-50VDC, 50-120VDC

AC 8mA, DC 5-15mA **Current: Protection Class:** IP65 front, IP00 terminals

-30°C to +70°C, Temp range: CE marked: Yes

Terminations: Screw

OPTIONS ON REQUEST

(special P/No's & prices may apply)

- 6.3x0.8mm push on terminations
- Dual 50/60Hz AC versions
- 100Hz versions
- **Customer logos**
- Type 604 & 609 flying lead cable termination
- UL, CSA, VDE marked

ORDERING INFORMATION

250.2 / AC Volts 12, 24, 110, 230VAC (Specify 50Hz or 60Hz)

252.2 / AC Volts 12, 24, 110, 230VAC (Specify 50Hz or 60Hz)

604.2 / AC Volts 12, 24, 110, 230, 400VAC (Specify 50Hz or 60Hz)

260.2 / DC Volts 12-24VDC 262.2 / DC Volts 12-24VDC

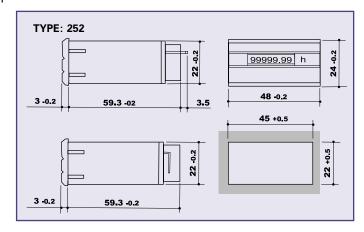
609.2 / DC Volts 10-50VDC, 50-120VDC

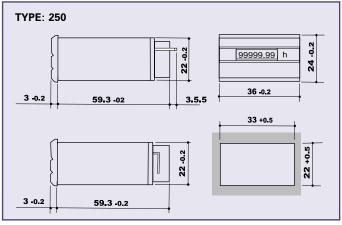
IP65 36x24mm gasket IP65 48x24mm gasket IP65 54x29mm gasket

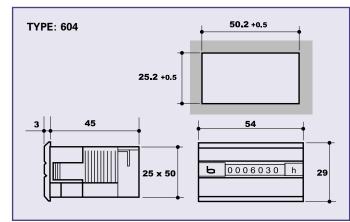












Tel: 0161 626 5316 / 01276 25858 www.foxtamcontrols.co.uk HOUR RUN COUNTERS & OPERATION COUNTERS

HOUR RUN COUNTERS & OPERATION COUNTERS

TYPES: 610.11/AC VOLTS 617.11/DC VOLTS

■ FEATURES

- Black front
- Metal fixing clamp
- Pushbutton reset
- Bezel size 54x29mm
- Flying lead termination
- Six digits

DESCRIPTION

Resetable rectangular 54x29mm six digit black faced hour run counter. Reset is via manual front bezel pushbutton. Termination is via cable flying leads 500mm in length. A robust metal fixing clamp is standard with this resetable hour run counter.

STANDARD SPECIFICATIONS

Counting range: 9999.99h

 AC Voltages:
 12, 24, 110, 230V (\pm 10%)

 Frequency:
 50Hz or 60Hz (specify)

 DC Voltages:
 12-24VDC, 36, 80, 110V (\pm 15%)

Current: AC 2VA, DC 7.5-30mA

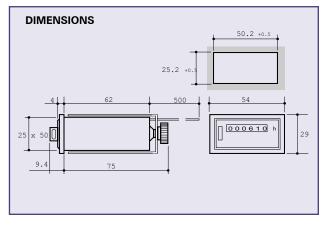
Protection Class: IP41 front
Temp range: -20°C to +70°C

CE marked: Yes

Terminations: Flying leads 500mm







ORDERING INFORMATION

610.11 / **AC Volts** 12, 24, 110, 230VAC (specify 50Hz or 60Hz)

617.11 / DC Volts 12-24, 36, 80, 110VDC

MINIATURE 24mm HOUR COUNTER

TYPES: 200.4/AC VOLTS 208/DC VOLTS

FEATURES

- Miniature size, only 24mm square
- **22.3mm DIA. cutout**
- Five digits
- Grey housing
- Push on terminations
- CE marked

DESCRIPTION

Miniature 24mm square five digit hour counter available in both DC and AC voltages including 230VAC. Supplied in a grey housing with a metal spring retaining clip. Termination is via push on terminals 6.3x0.8mm.

STANDARD SPECIFICATIONS

Counting range: 9999.9h

AC Voltages: 12-24, 36-60, 60-140, 230VAC ($\pm 10\%$)

Frequency: 50Hz or 60Hz (specify)

DC Voltages: 10-27VDC

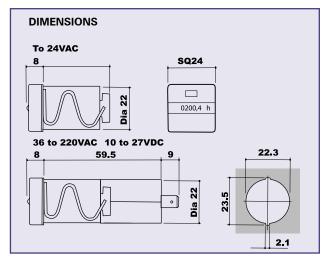
Current: AC 8mA, DC 7.5-39mA

Protection Class: IP54 front
Temp range: -30°C to +80°C

CE marked: Yes

Terminations: Push on 6.3x0.8mm





ORDERING INFORMATION

200.4 / AC Volts 12-24, 36-30, 60-140, 240VAC

(specify 50Hz or 60Hz)

208/ DC Volts 10-27VDC

HOUR RUN COUNTERS & OPERATION COUNTERS

DC MINIATURE HOUR RUN COUNTER

TYPE: 656/DC VOLTS

- FEATURES
- Front bezel size 32x15mm
- Panel or PCB mounting
- IP65 front
- DC voltages only
- Count interrupt input
- Seven digit

DESCRIPTION

Miniature seven digit hour run counter with a front bezel size of only 32x15mm, only available in DC voltages. The 656 counter is suitable for front panel mounting or PCB mounting. A useful feature is a third input terminal which is designated as a count interrupt.

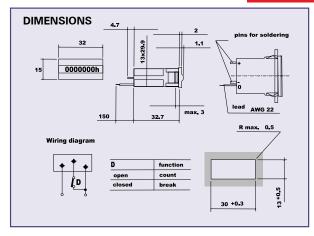
STANDARD SPECIFICATIONS

Counting range:99999.99hDC voltage:4.5-35VDCCurrent:2-4.4mAProtection class:IP65 frontTemp range: -10°C to $+60^{\circ}\text{C}$ Terminations:Solder pins





BAUSER°



ORDERING INFORMATION

656 / 4.5 - 35VDC

DIN 72mm & 96mm GLASS CASED HOUR COUNTERS

TYPES: R572/AC VOLTS & R577/DC VOLTS (DIN 72mm) R596/AC VOLTS & R597/DC VOLTS (DIN 96mm)

FEATURES

- DIN 72mm or DIN 96mm
- Instrument case style
- Seven digits
- Optional reset versions
- Metal fixing clamp
- With operation indication

DESCRIPTION

Glass cased Din 72mm and Din 96mm seven digit hour run counters. These hour counters compliment and match Din standard analogue meters. The counters are supplied complete with a metal fixing bracket and push on terminations 6.3x0.8mm

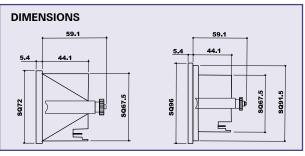
STANDARD SPECIFICATIONS

Counting range: 99999.99h

CE marked: Yes

Terminations: Push on 6.3x0.8mm





OPTIONS ON REQUEST

(special P/No's & prices may apply)

- Resetable
- UL approval
- Non reflecting glass

ORDERING INFORMATION

R572/AC Volts 24, 110, 230, 400VAC

(Specify 50Hz or 60Hz)

R577/DC Volts 10-50VDC, 110VDC **R596/AC Volts** 24, 110, 230, 400VAC

(Specify 50Hz or 60Hz)

R597/DC Volts 10-50VDC, 110VDC

Tel: 0161 626 5316 / 01276 25858

DC QUARTZ 56mm DIA. FRONT BEZEL HOUR COUNTERS

TYPES: 587.10.2/DC VOLTS (Black plastic front bezel ring) 587.2/DC VOLTS (Black metal front bezel ring)

FEATURES

■ IP65 front

150

- 56mm DIA. bezel size
- Mounting hole DIA. 52mm
- Seven digits
- Push on terminations
- 10-80VDC standard one unit
- Operation indication
- Damping rings available

DESCRIPTION

DC quartz operated hour run counters, 56mm diameter front bezel size. These hour counters are particularly suited to "automotive" applications, the front bezel and mounting dimensions complimenting other automotive style instrumentation such as temperature and oil pressure gauges. Versions suitable for 60mm diameter hole mounting are available on request along with optional 72mm diameter hole mounting versions complete with rubber damping rings for high vibration and impact applications such as heavy plant machinery and railway locomotives.



Counting range: 99999.99h

DC Voltages: 2-20V, 10-80V, 80-220V

Current: 0.5-27mA

Protection class: IP65 front, IP00 terminals

Temp range: $-40^{\circ}\text{C to } +80^{\circ}\text{C}$

CE marked: Yes

Terminations: Push on 6.3x0.8mm

OPTIONS ON REQUEST

(special P/N0's & prices may apply)

- Sweep hand min. indication
- 60mm diameter hole mounting (64mm front bezel size)
- Rubber damping rings (72mm diameter hole mounting)
- Chromed metal front bezel rings
- Screw terminal connection
- Customer logos

ORDERING INFORMATION

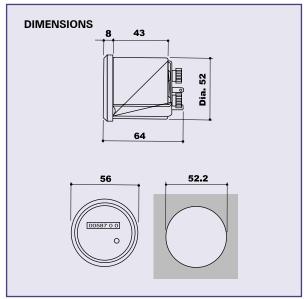
587.10.2 / DC Volts 2-20V, 10-80V*, 80-220VDC **587.2 / DC Volts** 2-20V, 10-80V*, 80-220VDC

* Standard unit



PRODUCT

GROUP



HOUR RUN COUNTERS & OPERATION COUNTERS

RECTANGULAR OPERATION COUNTERS

TYPES: 170 36x24mm & 180 53x28mm (Without reset) 171 36x24mm & 181 53x28mm (With reset)



BAUSER

FEATURES

- Choice of bezel sizes
- Simple but durable
- CE marked
- With & without reset
- Economical
- AC & DC voltages

DESCRIPTION

Simple electromechanical operation counters, available in a choice of two front bezel sizes 36x4mm or 53x28mm. The counters are available with or without reset. On resetable versions the reset is via a front manual pushbutton.

STANDARD SPECIFICATIONS

Counting range: 999999 ops

99999 ops (type171)

 AC Voltage:
 $230V (\pm 10\%)$

 Frequency:
 50/60Hz (same unit)

 DC Voltage:
 $24V (\pm 10\%)$

Current: AC 6.5-3mA, DC 21mA

Protection class: IP50 (171 & 181)

IP52 (170 & 180)

Max count speed: 10 pulses per Sec

 Min pulse length:
 50mSec.

 Min pulse/break:
 50/50mSec

 Durability:
 >50 000 000 ops

 Temp range:
 -10°C to +50°C

CE marked: Yes

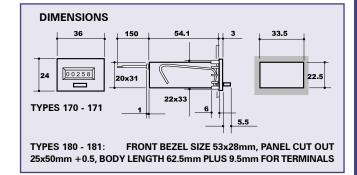
Terminations: Flying leads 150mm, (170 & 171)

1.6mm push on's, with crimps supplied

(180 & 181)

010101115





ORDERING INFORMATION

170/AC Volts 230VAC

170/DC Volts 24VDC (Other DC voltages on request)

171/AC Volts 230VAC

171/DC Volts 24VDC (Other DC voltages on request)

180/AC Volts 230VAC

180/DC Volts 24VDC (Other DC voltages on request)

181/AC Volts 230VAC

181/DC Volts 24VDC (Other DC voltages on request)

DIN RAIL MOUNTED OPERATIONS COUNTER

TYPES: 663.6/AC VOLTS & 668.6/DC VOLTS

FEATURES

- Din rail mounted
- Modular construction
- Seven digits

STANDARD SPECIFICATIONS

Counting range: 9999999 ops

AC Voltages: 24, 48, 110, 230, 400VAC (\pm 10%)

Frequency: 50/60Hz

DC Voltages: 12-24VDC (other voltages on request)

Current: AC 5-15mA, DC 5-15mA

Protection class: IP65

Temp range: $-10^{\circ}\text{C to } +70^{\circ}\text{C}$

 Vibration resist:
 1g (10-500Hz), to EN60068-2-34

 shock resist:
 30g (18mSec), to EN60068-2-27

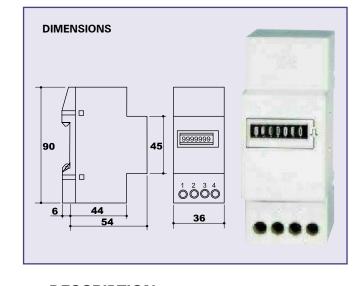
Max count speed: 10 pulses per Sec.

CE marked: Yes

ORDERING INFORMATION

663.6/AC Volts 24, 48, 110, 230, 400VAC

668.6/DC Volts 12-24VDC (Other DC voltages on request)



DESCRIPTION

Din rail mounted modular construction grey operation counter, suitable for mounting within consumer units width 36mm (2 modules) and height 60mm. These operation counters benefit from an excellent shock and vibration resistance specification.

DIN RAIL MOUNTED DIGITAL HOUR & PULSE COUNTERS

TYPES: 670.6.*.1 (Hour counter)

670.6.*.2 (Pulse counter)

672.6.*.1.*.2 (Combined hour counter & pulse counter)



■ FEATURES

152

- DIN rail mounted
- Hour counters
- Pulse counters
- Combined hour counter & pulse counter
- IP65 sealed (without reset button)
- Universal supply 12-150VDC & 24-240VAC
- Very low power consumption
- High shock & vibration resistance
- Seven digits, 5mm high
- High visibility LCD display
- IP20 screw terminals
- Data EEprom stored (25 years)

DESCRIPTION

Din rail seven digit digital hour counters and pulse counters with the option of a combined hour and pulse counter. These counters benefit from the latest ASIC technology which affords ultra low power consumption. The counters have a universal supply voltage of 12-150VDC and 24- 240VAC. It is possible to specify the counters with or without reset, if a reset is required this can be either by a remote electrical input, or combined with a sunken manual pushbutton. The combined unit is only resetable via the manual sunken pushbutton, this can be specified on one or both of the registers.

STANDARD SPECIFICATIONS

Counting range: 999999.9h

9999999 ops

Supply volts: 12-150VDC & 24-240VAC (universal $\pm 10\%$)

Frequency: 50/60Hz
Current: 100uA to 3mA
Count speed: Max 10Hz

 Pulse length:
 Min 5mSec (count & reset)

 Vibration resist:
 1g (10-500Hz), to EN60068-2-34

 Shock resist:
 30g (18mSec), to EN60068-2-27

 Protection class:
 IP65 without reset, IP40 with reset

Temp range: $-10^{\circ}\text{C to } +70^{\circ}\text{C}$

CE marked: Yes

Terminations: IP20 protected screw

ORDERING INFORMATION

670.6.*.1/12-150VDC & 24-240VAC (Hour counter) 670.6.*.2/12-150VDC & 24-240VAC (Pulse counter)

* Insert "1" without reset. Insert "2" with electrical reset. Insert "3" with manual and electrical reset.

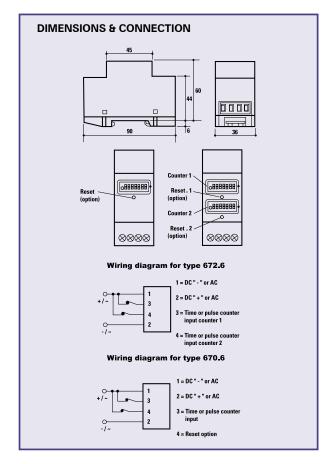
672.6.*.1.*.2 / 12-150VDC & 24-240VAC (Combined counter)

* Insert "1" without reset. Insert "2" with manual reset. (First insertion is for the hour counter. The second insertion is for the pulse counter. It is possible to have reset on just one counter or on both counters).





BAUSER[®]



HOUR RUN COUNTERS & OPERATION COUNTERS

DIGITAL HOUR & PULSE COUNTERS TYPE 38XX

3800 (Hour counter 48x24mm) TYPES: 3801 (Hour counter 48x48mm) 3810 (Pulse counter 48x24mm)



FEATURES

- Choice of bezel size
- IP65 sealed fronts (without front reset)
- IP54 sealed fronts (with front reset)
- **Optional IP65 gaskets**
- Choice of reset options
- Seven digits, 7mm high
- High shock & vibration resistance
- High visibility LCD display
- Screw terminal connection
- Supplied with retaining clip

DESCRIPTION

The 38XX series of seven digit counters are available in both hour or pulse counters and feature 7mm high digits. A choice of 48x24mm or 48x48mm front bezel sizes are available. All types are available with or without reset, if reset is required a choice can be made between a front manual reset button combined with a remote electrical reset input, or with the remote electrical reset only.

STANDARD SPECIFICATIONS

gagag agh **Counting range:**

9999999 ops

7 digits, 7mm high

24VAC/DC, 110-240VAC (±10%) **Supply voltages:**

12-24VDC, 24-48VDC (±25%)

Frequency: 50/60Hz **Current:** 2-15mA

Count speed: Max 10Hz, AC or AC/DC units

Max 30Hz, DC units

Protection class: IP65 front, (without front reset)

IP54 front, (with front reset)

Temp range: -30°C to +70°C

Vibration resist: 20g to SAEJ1378

1g (10-500Hz), to EN60068-2-34

Shock resist: 55g to SAEJ1378

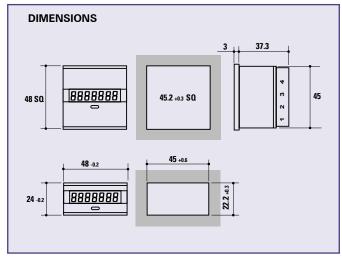
30g (18mSec), to EN60068-2-27

CE, UL Approvals:

Terminations: Screw

CONNECTION 4 = DC " + " or AC Pin 1 + 4 = voltage supply3 = Reset 3 2 = time or pulse counter input 2 1 = DC ' - ' (GND) or AC





OPTIONS ON REQUEST

(special P/No's & prices apply)

- Round glass cased units, front bezel size 56mm diameter
- Push on terminals 6.3x0.8mm
 - Variation of decimal point, hour counters only
- Prescaler and multiplier options on pulse counters
- Higher Hz input speeds on pulse counters

ORDERING INFORMATION

Hour Counter:-

3800.*.1.0.1.2 / 12-24VDC, 24-48VDC, 24VAC/DC, 110-240VAC 3801.*.1.0.1.2 / 12-24VDC, 24-48VDC, 24VAC/DC, 110-240VAC **Pulse Counter:-**

3810.*.1.**.0.2 / 12-24VDC, 24-48VDC, 24VAC/DC, 110-240VAC 3811.*.1.**.0.2 / 12-24VDC, 24-48VDC, 24VAC/DC, 110-240VAC

- * Insert "1" for without reset. Insert "2" for with electrical reset. Insert "3" for with electrical and manual reset.
- ** Insert "1" for DC voltages pulse counters. Insert "7" for AC/DC and AC voltages pulse counters

IP65 48x24mm gasket IP65 48x48mm gasket

MOULDED CASE CURRENT TRANSFORMERS, SWITCH OUTPUT CT, SUMMATION CT's, SPLIT CORE CT'S, DC CURRENT CT's, CT's WITH ANALOGUE OUTPUTS & CT's WITH MODBUS OUTPUTS

P/No.	DESCRIPTION
OULDED CASE	CURRENT TRANSFORMERS (PAGES 155 to 168)
FOX.CS-200	"CT" style current proving switch
FOX.WP	Primary wound moulded case CT
FOX21	Width 45mm, aperture 21mm Dia.
FOX30.1	Width 50mm, aperture 30x10mm or 20x20mm, 24mm Dia.
FOX40.1	Width 60mm, aperture 40x10mm or 30x20mm, 28mm Dia.
FOX50.1	Width 70mm, aperture 50x10mm or 40x30mm, 41mm Dia.
FOX60.15	Width 85mm, aperture 60x15mm or 50x30mm, 45mm Dia.
FOX60.3	Width 90mm, aperture 60x30mm
FOX80.1	Width 100mm, aperture 80x10mm or 60x30mm, 60mm Dia.
FOX100.3	Width 135mm, aperture 100x30mm or 80x50mm, 85mm Dia.
FOX100.55	Width 129mm, aperture 100x55mm
FOX84.34	Frame size 132x96mm, aperture 84x34mm
	Frame size 148x98mm, aperture 105x38mm
	Frame size 178x98mm, aperture 127x38mm
	Frame size 178x125mm, aperture 127x54mm
	Three phase triple CT, width 75mm, pitch centres 24mm
	Three phase triple CT, width 105mm, pitch centres 35mm
	Three phase triple CT, width 140mm, pitch centres 45mm
	Din rail mounted 2 ways to 9 ways summation CT's
	Split core CT's
	Split core CT's
	Split core CT
YW4	Four way current transducer kit
KDD10 KDD22	MDC ministure onlit core CT/o
	MBS miniature split core CT's
KBR44 CS-6 & SC-6	Solid core & split core AC "CT" style current transducers
KBR44 CS-6 & SC-6	·
KBR44 CS-6 & SC-6 LDED CASE CU	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES
KBR44 CS-6 & SC-6	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES Primary wound moulded case CT
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia.
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia.
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK318.3	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia.
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.3	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia.
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.3 ASK412.4	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia.
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK318.3 ASK412.4 ASK412.4	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia.
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK318.3 ASK412.4 ASK412.4 ASK41.4 ASK61.4	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia.
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.3 ASK41.4 ASK41.4 ASK61.4 ASK63.4	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia.
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.4 ASK41.4 ASK41.4 ASK61.4 ASK63.4 ASK105.6	Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia. Width 129mm, aperture 100x55mm
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.3 ASK41.4 ASK41.4 ASK61.4 ASK61.4 ASK63.4 ASK105.6 ASK105.6N	Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia. Width 129mm, aperture 100x55mm Width 129mm, aperture 100x55mm Width 129mm, aperture 100x55mm
KBR44 CS-6 & SC-6 WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.3 ASK41.4 ASK61.4 ASK61.4 ASK603.4 ASK105.6 ASK105.6 ASK105.6N	Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia. Width 129mm, aperture 100x55mm Width 129mm, aperture 100x55mm Width 120mm, aperture 80x10mm or 60x30mm or 2x60x10mm, 55mm Dia.
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.3 ASK41.4 ASK61.4 ASK61.4 ASK63.4 ASK105.6 ASK105.6N ASK81.4 ASK101.4	Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia. Width 129mm, aperture 100x55mm Width 129mm, aperture 80x10mm or 60x30mm or 2x60x10mm, 55mm Dia. Width 120mm, aperture 80x10mm or 60x30mm or 2x60x10mm, 55mm Dia. Width 130mm, aperture 100x10mm or 2x80x10mm, 70mm Dia.
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK412.4 ASK41.4 ASK412.4 ASK61.4 ASK61.4 ASK61.4 ASK61.4 ASK61.4 ASK61.4 ASK105.6 ASK105.6 ASK105.6 ASK105.6N ASK81.4 ASK101.4 Information	Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x12mm or 2x30x5mm, 32mm Dia. Width 70mm, aperture 63x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia. Width 129mm, aperture 100x55mm Width 129mm, aperture 80x10mm or 60x30mm or 2x60x10mm, 55mm Dia. Width 120mm, aperture 80x10mm or 60x30mm or 2x60x10mm, 55mm Dia. Width 130mm, aperture 100x10mm or 2x80x10mm, 70mm Dia. How far can a CT be sited from your instrumentation?
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK41.3 ASK412.4 ASK41.4 ASK61.4 ASK61.4 ASK60.6 ASK105.6 ASK105.6 ASK105.6 ASK105.6 ASK105.6 ASK105.6 ASK105.6 ASK105.6 ASK105.6 ASK105.6 ASK105.6 ASK105.6 ASK105.6	Solid core & split core AC "CT" style current transducers RRENT TRANSFORMERS WITH PLUG IN TRANSDUCER MODULES (PAGES Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia. Width 129mm, aperture 100x55mm Width 129mm, aperture 100x55mm Width 120mm, aperture 80x10mm or 60x30mm or 2x60x10mm, 55mm Dia. Width 130mm, aperture 100x10mm or 2x80x10mm, 70mm Dia. How far can a CT be sited from your instrumentation? Split core 333mVAC secondary CT's
KBR44 CS-6 & SC-6 LDED CASE CU WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.4 ASK41.4 ASK41.4 ASK61.4 ASK61.4 ASK105.6 ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N	Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia. Width 129mm, aperture 100x55mm Width 129mm, aperture 80x10mm or 60x30mm or 2x60x10mm, 55mm Dia. Width 130mm, aperture 80x10mm or 2x80x10mm, 70mm Dia. How far can a CT be sited from your instrumentation? Split core 333mVAC secondary CT's Rogowski coil 333mVAC secondary CT's
KBR44 CS-6 & SC-6 WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.4 ASK41.4 ASK61.4 ASK61.4 ASK105.6 ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N	Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia. Width 129mm, aperture 100x55mm Width 129mm, aperture 80x10mm or 60x30mm or 2x60x10mm, 55mm Dia. Width 130mm, aperture 80x10mm or 60x30mm, 70mm Dia. How far can a CT be sited from your instrumentation? Split core 333mVAC secondary CT's Rogowski coil 333mVAC secondary CT's
KBR44 CS-6 & SC-6 WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.3 ASK41.4 ASK61.4 ASK61.4 ASK61.4 ASK105.6 ASK105.6 ASK105.6N ASK105.6N ASK105.6N ASK101.4 Information SCL, SCT ROPE FOX.DCCT CCT31.3 &	Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia. Width 129mm, aperture 100x55mm Width 129mm, aperture 80x10mm or 60x30mm or 2x60x10mm, 55mm Dia. Width 130mm, aperture 80x10mm or 2x80x10mm, 70mm Dia. How far can a CT be sited from your instrumentation? Split core 333mVAC secondary CT's Rogowski coil 333mVAC secondary CT's
KBR44 CS-6 & SC-6 WSK40 ASR22.3 ASK31.3 ASK318.3 ASK41.4 ASK41.4 ASK61.4 ASK61.4 ASK105.6 ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N ASK105.6N	Primary wound moulded case CT Width 60mm, aperture 22.5mm Dia. Width 60mm, aperture 30x10mm, 26mm Dia. Width 60mm, aperture 31x18mm, 26mm Dia. Width 60mm, aperture 40x12mm or 32x18mm, 26mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x12mm or 30x15mm, 30.5mm Dia. Width 70mm, aperture 40x10mm or 2x30x5mm, 32mm Dia. Width 95mm, aperture 63x10mm or 2x50x10mm, 44mm Dia. Width 95mm, aperture 60x30mm or 50x40mm, 44mm Dia. Width 129mm, aperture 100x55mm Width 129mm, aperture 80x10mm or 60x30mm or 2x60x10mm, 55mm Dia. Width 130mm, aperture 80x10mm or 60x30mm, 70mm Dia. How far can a CT be sited from your instrumentation? Split core 333mVAC secondary CT's Rogowski coil 333mVAC secondary CT's
	FOX.CS-200 FOX.WP FOX21 FOX30.1 FOX40.1 FOX50.1 FOX60.3 FOX100.3 FOX100.55 FOX100.55 FOX127.38 FOX127.38 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX127.54 FOX105 FOX140 FOX.SC23 & FOX.SC23 & FOX.SC312 & FOX.SC40 YW4

PRODUCT

GROUP

FOXATM CURRENT TRANSFORMERS

"CT STYLE" CURRENT PROVING SWITCH

TYPE: FOX.CS-200

FEATURES

- Din rail mounted
- Foot mounted option available on request
- Compact
- Sensing range 2-200 Amps adjustable
- Self powered from flowing current
- No separate auxiliary supply required
- **Dual LED indication**
- Normally open output switch
- **CE** marked
- **RoHS** compliant

DESCRIPTION & MODE OF OPERATION

A compact Din rail or foot mounted "CT" style AC current proving switch, the sensing range (set point) being adjustable 2-200 Amps. On current flowing of at least 1 Amp the power LED will be illuminated, on current flowing in excess of the adjustable set point the status LED will be illuminated denoting the Normally Open output is closed. On current falling below the set point less a nominal 2% hysteresis the output will open and the status LED will extinguish and the power LED will illuminate, if the current has fallen to zero both the power and status LED's will extinguish.

The FOX.CS-200 current switch is self powered yet benefits from a volt free output Normally Open switch. The maximum switching capability is 30VAC/DC 0.5 Amps.

It is also possible for low current sensing, to pass the conductor to be measured multiple times through the CT (referred to as turns). For example; 2 turns will give a sensing range of 1-100 Amps, 4 turns a sensing range of 0.5-50 Amps.





IDEAL FOR HVAC MARKET FOR SMALL FAN & PUMP FAILURE MONITORING!

SPECIFICATIONS

Measuring

Sensing range: 2-200 Amps Hysteresis: < 2% fixed

Power LED: Yes, 1 Amp & above

Output

30V AC/DC Max switching voltage: Max switching current: 0.5 Amps

Output type: Bi-directional solid state N/O Status LED: Yes, current above set point

General

Rated system voltage: Max 720V continuous Max 3KV for 1min Insulation:

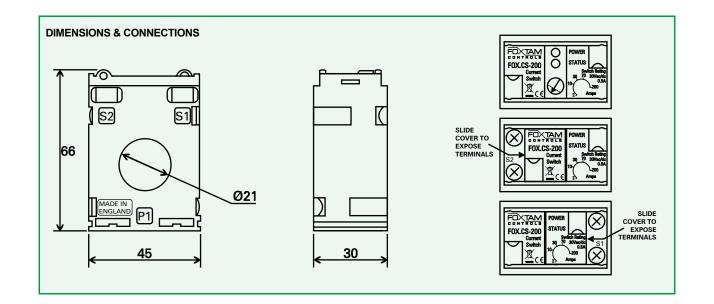
50-60Hz Frequency range: -30°C to +85°C Ambient temperature range:

CF marked:

IEC185, BS7626, BSED 60044-1 Compliance:

IEC 60044-1

RoHS compliant: Yes



FOXTAM RANGE OF CURRENT TRANSFORMERS

FEATURES

- Moulded case
- Primary wound versions
- Bus-bar versions
- Din rail mounted versions
- Summation CT's
- Split coreCT's
- Triple three phase CT's
- Sliding sealable terminal covers
- P1 & P2 primary designation within moulding
- S1 & S2 secondary designation within moulding
- 1 Amp & 5 Amp secondaries
- Class 1 as standard (Class 0.5 & 0.2 on request)

SPECIFICATIONS

Compliance: IEC185, BS7626, BSED 60044-1, IEC 60044-1

CE marked: Ye

Rated system voltage: Max 720V continuous Insulation: Max 3KV for 1 min

Frequency range: 50-60Hz (400Hz on requested)

Ambient temperature range: -30°C to 85°C (Triple Three Phase & Split Core CT's max 80°C)

Continuos current: 1.2 x rated current **Material:** Polycarbonate UL94V-0



FOX.WP

Moulded case Primary Wound current transformers for primary currents from 1 Amp to 40 Amps. With built in terminal covers and M6 terminals for the primary current connection.

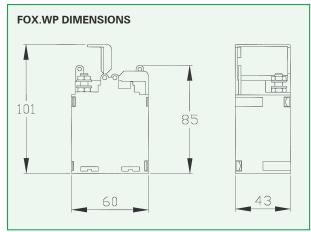
FEATURES

- Din rail or foot mounted
- Built in hinged sealable terminal covers
- Transformer width 60mm
- Primary ranges from 1 Amp to 40 Amps
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X.WP 1/1	1	5
F0X.WP 1/5	1	5
FOX.WP 5/5	1	5
FOX.WP 10/5	1	5
FOX.WP 15/5	1	5
FOX.WP 20/5	1	5
FOX.WP 25/5	1	5
F0X.WP 30/5	1	5
FOX.WP 40/5	1	5

All of the above ratios are available as Class 0.5 to special order, please consult our sales office.





FOXTAM CURRENT TRANSFORMERS

FOX21

Moulded case compact "our smallest current transformer", for primary currents from 50 Amps to 300 Amps. With built in sliding sealable terminal covers.

FEATURES

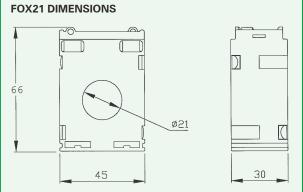
- Din rail or foot mounted
- Built in sliding sealable terminal covers
- Transformer width 45mm
- Max conductor size 21mm dia.
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X21 50/5	1	1
F0X21 60/5	1	1.5
F0X21 80/5	1	1.5
F0X21 100/5	1	2.5
F0X21 150/5	1	2.5
F0X21 200/5	1	2.5
F0X21 250/5	1	2.5
F0X21 300/5	1	2.5

Some of the above ratios are available as Class 0.5 to special order, please consult our sales office.







FOX30.1

Moulded case compact current transformers, for primary currents from 100 Amps to 600 Amps. With built in sliding sealable terminal covers.

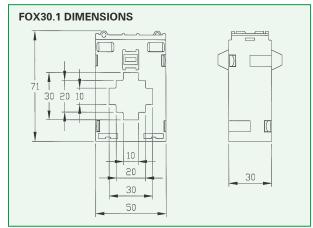
FEATURES

- Din rail, bus-bar or foot mounted
- Built in sliding sealable terminal covers
- Transformer width 50mm
- Max conductor size 24mm dia.
- Max bus-bar size 30x10mm or 20x20mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X30.1 100/5	1	2.5
F0X30.1 150/5	1	2.5
F0X30.1 200/5	1	2.5
F0X30.1 250/5	1	2.5
F0X30.1 300/5	1	2.5
F0X30.1 400/5	1	5
F0X30.1 500/5	1	5
F0X30.1 600/5	1	5

All of the above ratios are available as Class 0.5 to special order, please consult our sales office.





FOX40.1

Moulded case current transformers, for primary currents from 100 Amps to 800 Amps. With built in sliding sealable terminal covers.

FEATURES

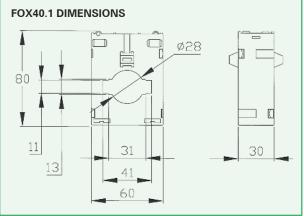
- Bus-bar or foot mounted
- Built in sliding sealable terminal covers
- Transformer width 60mm
- Max conductor size 28mm dia.
- Max bus-bar size 40x10mm or 30x20mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X40.1 100/5	1	2.5
F0X40.1 150/5	1	2.5
F0X40.1 200/5	1	2.5
F0X40.1 250/5	1	2.5
F0X40.1 300/5	1	2.5
F0X40.1 400/5	1	5
FOX40.1 500/5	1	5
F0X40.1 600/5	1	5
F0X40.1 800/5	1	10

All of the above ratios are available as Class 0.5 to special order, please consult our sales office.







FOX50.1

Moulded case current transformers, for primary currents from 250 Amps to 1200 Amps. With built in sliding sealable terminal covers.

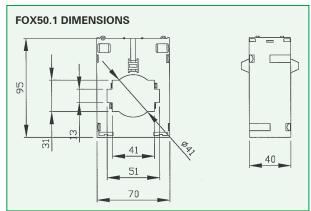
FEATURES

- Bus-bar or foot mounted
- Built in sliding sealable terminal covers
- Transformer width 70mm
- Max conductor size 41mm dia.
- Max bus-bar size 50x10mm or 40x30mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X50.1 250/5	1	2.5
FOX50.1 300/5	1	2.5
FOX50.1 400/5	1	5
FOX50.1 500/5	1	5
FOX50.1 600/5	1	5
FOX50.1 800/5	1	10
F0X50.1 1000/5	1	15
F0X50.1 1200/5	1	15

All of the above ratios are available as Class 0.5 to special order, please consult our sales office.





FOX60.15

Moulded case current transformers, for primary currents from 400 Amps to 1600 Amps. With built in sliding sealable terminal covers.

FEATURES

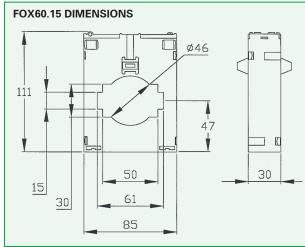
- Bus-bar or foot mounted
- Built in sliding sealable terminal covers
- Transformer width 85mm
- Max conductor size 46mm dia.
- Max bus-bar size 60x15mm or 50x30mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
FOX60.15 400/5	1	5
FOX60.15 500/5	1	5
FOX60.15 600/5	1	5
FOX60.15 800/5	1	10
F0X60.15 1000/5	1	15
F0X60.15 1200/5	1	15
F0X60.15 1500/5	1	15
F0X60.15 1600/5	1	15

All of the above ratios are available as Class 0.5 and Class 0.2 to special order, please consult our sales office.







FOX60.3

Moulded case current transformers, for primary currents from 400 Amps to 2000 Amps. With built in sliding sealable terminal covers.

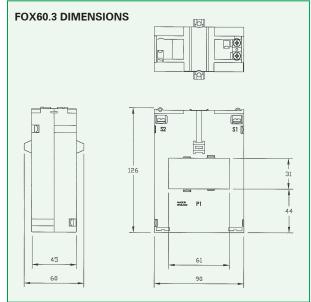
FEATURES

- Bus-bar or foot mounted
- Built in sliding sealable terminal covers
- Transformer width 90mm
- Max bus-bar size 60x30mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X60.3 400/5	1	5
FOX60.3 500/5	1	5
FOX60.3 600/5	1	5
F0X60.3 800/5	1	10
F0X60.3 1000/5	1	10
F0X60.3 1200/5	1	10
F0X60.3 1500/5	1	15
F0X60.3 1600/5	1	15
F0X60.3 2000/5	1	15

All of the above ratios are available as Class 0.5 and Class 0.2 to special order, please consult our sales office.





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FOX80.1

Moulded case current transformers, for primary currents from 400 Amps to 2000 Amps. With built in sliding sealable terminal covers.

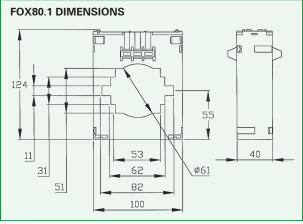
FEATURES

- Bus-bar or foot mounted
- Built in sliding sealable terminal covers
- Transformer width 100mm
- Max conductor size 61mm dia.
- Max bus-bar size 80x10mm or 60x30mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X80.1 400/5	1	5
F0X80.1 500/5	1	5
FOX80.1 600/5	1	5
F0X80.1 800/5	1	10
F0X80.1 1000/5	1	10
F0X80.1 1200/5	1	10
F0X80.1 1500/5	1	15
F0X80.1 1600/5	1	15
F0X80.1 2000/5	1	15

All of the above ratios are available as Class 0.5 and Class 0.2 to special order, please consult our sales office.





FOX100.3

Moulded case current transformers, for primary currents from 400 Amps to 4000 Amps. With built in sliding sealable terminal covers.

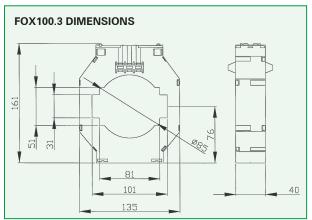
FEATURES

- Bus-bar or foot mounted
- Built in sliding sealable terminal covers
- Transformer width 135mm
- Max conductor size 85mm dia.
- Max bus-bar size 100x30mm or 80x50mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X100.3 400/5	1	2.5
F0X100.3 500/5	1	2.5
FOX100.3 600/5	1	5
F0X100.3 800/5	1	5
F0X100.3 1000/5	1	10
F0X100.3 1200/5	1	10
F0X100.3 1500/5	1	15
FOX100.3 1600/5	1	15
F0X100.3 2000/5	1	15
FOX100.3 2500/5	1	15
F0X100.3 3000/5	1	15
FOX100.3 4000/5	1	15

All of the above ratios are available as Class 0.5 and Class 0.2 to special order, please consult our sales office.





FOX100.55

Moulded case current transformers, for primary currents from 600 Amps to 4000 Amps. With built in sliding sealable terminal covers.

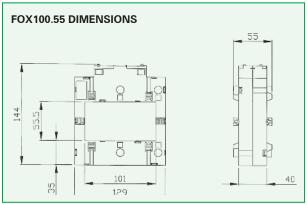
FEATURES

- Bus-bar or foot mounted
- Built in sliding sealable terminal covers
- Transformer width 129mm
- Max bus-bar size 100x55mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X100.55 600/5	1	10
F0X100.55 800/5	1	15
F0X100.55 1000/5	1	15
F0X100.55 1200/5	1	15
F0X100.55 1500/5	1	15
F0X100.55 1600/5	1	15
F0X100.55 2000/5	1	15
F0X100.55 2500/5	1	15
F0X100.55 3000/5	1	15
F0X100.55 4000/5	1	15

All of the above ratios are available as Class 0.5 and Class 0.2 to special order, please consult our sales office.





FOX84.34

Moulded case rectangular current transformers, for mounting on vertical bus-bars with primary currents from 400 Amps to 2500 Amps. With built in sliding sealable terminal covers.

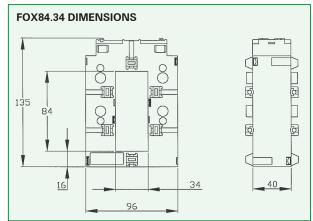
FEATURES

- Bus-bar mounted
- Built in sliding sealable terminal covers
- Transformer size 135x96mm
- Max bus-bar size 84x34mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X84.34 400/5	1	5
F0X84.34 500/5	1	5
FOX84.34 600/5	1	5
F0X84.34 800/5	1	10
F0X84.34 1000/5	1	10
F0X84.34 1200/5	1	10
F0X84.34 1500/5	1	10
FOX84.34 1600/5	1	10
F0X84.34 2000/5	1	10
F0X84.34 2500/5	1	10

All of the above ratios are available as Class 0.5 and Class 0.2 to special order, please consult our sales office.





FOX105.38

Moulded case rectangular current transformers, for mounting on vertical bus-bars with primary currents from 800 Amps to 4000 Amps. With built in sliding sealable terminal covers.

FEATURES

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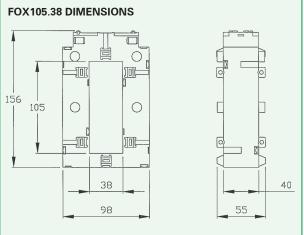
- Bus-bar mounted
- Built in sliding sealable terminal covers
- Transformer size 156x98mm
- Max bus-bar size 105x38mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X105.38 800/5	1	15
F0X105.38 1000/5	1	15
F0X105.38 1200/5	1	15
F0X105.38 1500/5	1	15
F0X105.38 1600/5	1	15
F0X105.38 2000/5	1	15
F0X105.38 2500/5	1	15
F0X105.38 3000/5	1	15
F0X105.38 4000/5	1	15

All of the above ratios are available as Class 0.5 and Class 0.2 to special order, please consult our sales office.







FOX127.38

Moulded case rectangular current transformers, for mounting on vertical bus-bars with primary currents from 800 Amps to 5000 Amps. With built in sliding sealable terminal covers.

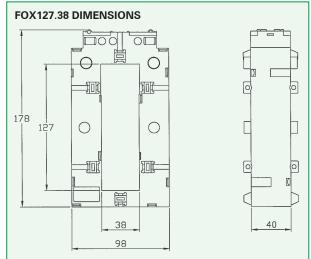
FEATURES

- Bus-bar mounted
- Built in sliding sealable terminal covers
- Transformer size 178x98mm
- Max bus-bar size 127x38mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X127.38 800/5	1	15
F0X127.38 1000/5	1	15
F0X127.38 1200/5	1	15
F0X127.38 1500/5	1	15
FOX127.38 1600/5	1	15
F0X127.38 2000/5	1	15
F0X127.38 2500/5	1	15
F0X127.38 3000/5	1	15
FOX127.38 4000/5	1	15
F0X127.38 5000/5	1	15

All of the above ratios are available as Class 0.5 and Class 0.2 to special order, please consult our sales office.





FOX127.54

Moulded case rectangular current transformers, for mounting on vertical bus-bars with primary currents from 3000 Amps to 6000 Amps. With built in sliding sealable terminal covers.

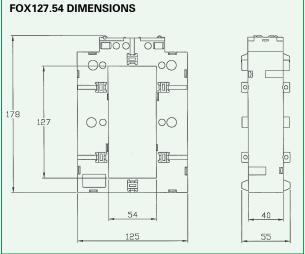
FEATURES

- Bus-bar mounted
- Built in sliding sealable terminal covers
- Transformer size 178x125mm
- Max bus-bar size 127x54mm
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X127.54 3000/5	1	15
F0X127.54 4000/5	1	15
F0X127.54 5000/5	1	15
FOX127.54 6000/5	1	15

All of the above ratios are available as Class 0.5 and Class 0.2 to special order, please consult our sales office.





FOX75

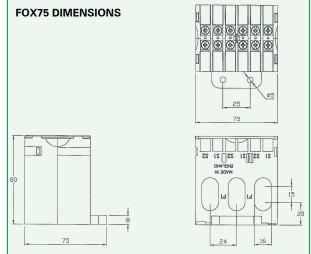
Moulded case "triple" current transformer with apertures on 25mm centres, giving an overall width of 75mm allowing installation directly on top of moulded case circuit breakers.

FEATURES

- Foot mounted
- With terminal cover
- Transformer width 75mm
- Max cable size 15mm dia.
- Max bus-bar size 15mm width
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X75 60/5	1	1
F0X75 80/5	1	1.5
F0X75 100/5	1	1.5
F0X75 150/5	1	2.5





FOX105

Moulded case "triple" current transformer with apertures on 35mm centres, giving an overall width of 105mm allowing installation directly on top of moulded case circuit breakers.

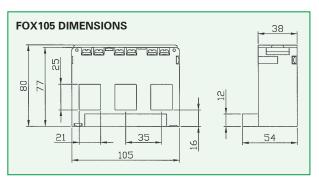
FEATURES

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- Foot mounted
- With terminal cover
- Transformer width 105mm
- Max cable size 21mm dia.
- Max bus-bar size 21mm width
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
FOX105 100/5	1	1.5
F0X105 150/5	1	2.5
F0X105 200/5	1	2.5
F0X105 250/5	1	2.5





FOX140

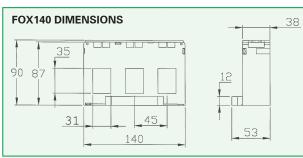
Moulded case "triple" current transformers with apertures on 45mm centres, giving an overall width of 140mm allowing installation directly on top of moulded case circuit breakers.

FEATURES

- Foot mounted
- With terminal cover
- Transformer width 140mm
- MAx cable size 31mm dia.
- Max bus-bar size 31mm width
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
F0X140 250/5	1	2.5
F0X140 300/5	1	2.5
F0X140 400/5	1	2.5
F0X140 500/5	1	2.5
FOX140 600/5	1	2.5





PRODUCT

GROUP

SUMMATION CURRENT TRANSFORMERS

FOX.SUM

- FEATURES
- Din rail mounted
- Protected terminals
- Up to 9 primary inputs
- 1 Amp or 5 Amp secondaries

DESCRIPTION

Din rail mounted summation current transformers enable the summing of several independent loads on different supplies.

An example: Three 3 phase supplies to be read

by one KWh meter.
Supply 1: 200 Amps

Supply 1: 200 Amps Supply 2: 800 Amps Supply 3: 1000 Amps



Required for each supply are three main CT's of the above primary currents, one for each phase L1/L2/L3. Also required will be three, 3 input summation CT's, each of the summation CT's must be designated to a phase. The secondaries from the L1 phase main CT's should be fed to the inputs of the L1 designated summation CT, likewise the same applies for L2 and L3 phases. The secondary output from the summation CT's will then equal the sum of the three primary currents:-

200/5 + 800/5 + 1000/5 = 2000/5

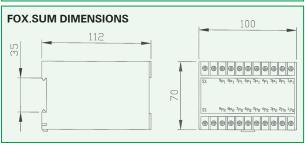
The meter being used must therefore be calibrated for 2000/5.

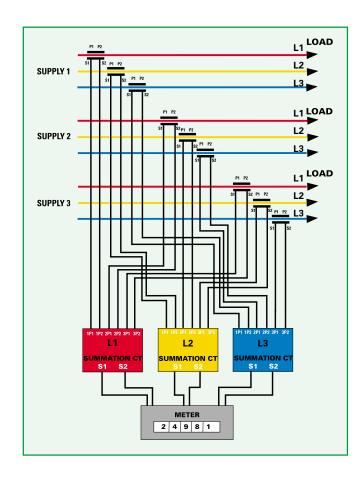
The above example of summation CT's have unbalanced ratio inputs and therefore have to be manufactured to order. Balance ratio input summation CT's are usually ex-stock.

Summation CT's can also be used for subtraction purposes by reversing the polarity of the inputs. It is also possible to summate a mixture of single phase and three phase supplies.

Please consult our sales office for application assistance.

P/No.		CLASS	VA
FOX.SUM2	1+1=1	1	5
FOX.SUM2	5+5=5	1	5
FOX.SUM3	1+1+1=1	1	5
FOX.SUM3	5+5+5=5	1	5
FOX.SUM4	1+1+1+1=1	1	5
FOX.SUM4	5+5+5+5=5	1	5
FOX.SUM5	1+1+1+1+1=1	1	5
FOX.SUM5	5+5+5+5+5=5	1	5
FOX.SUM6	1+1+1+1+1+1=1	1	5
FOX.SUM6	5+5+5+5+5+5=5	1	5
FOX.SUM7	1+1+1+1+1+1+1=1	1	5
FOX.SUM7	5+5+5+5+5+5=5	1	5
FOX.SUM8	1+1+1+1+1+1+1=1	1	5
FOX.SUM8	5+5+5+5+5+5+5=5	1	5
FOX.SUM9	1+1+1+1+1+1+1+1=1	1	5
FOX.SUM9	5+5+5+5+5+5+5+5=5	1	5





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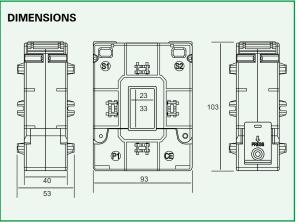
FOX.SC23

- FEATURES
- Protected terminals
- Integral cable / bus-bar pinch screws
- Primaries from 100 Amps to 400 Amps
- Max aperture size 23x33mm
- Max overall dimensions 93x103mm
- Class 1 (class 0.5 on request, some ratios)
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
	_	
FOX.SC23 100/5	1	1.5
FOX.SC23 150/5	1	1.75
FOX.SC23 200/5	1	2.5
FOX.SC23 250/5	1	3.75
FOX.SC23 300/5	1	5
FOX.SC23 400/5	1	6.25

1 Amp secondaries available to special order, along with class 0.5 on some ratios, please consult our sales office.





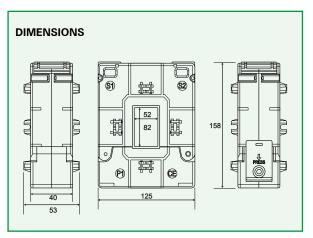
FOX.SC58

- FEATURES
- Protected terminals
- Integral cable / bus-bar pinch screws
- Primaries from 250 Amps to 1000 Amps
- Max aperture size 82x52mm
- Max overall dimensions 125x158mm
- Class 1 (class 0.5 on request)
- 1 Amp or 5 Amp Secondaries

P/No.	CLASS	VA
FOX.SC58 250/5 FOX.SC58 300/5	1	2.5 3.75
FOX.SC58 400/5	1	3.75
FOX.SC58 500/5 FOX.SC58 600/5	1 1	5 7.5
FOX.SC58 800/5 FOX.SC58 1000/5	1 1	10 15
·		

1 Amp secondaries available to special order, along with class 0.5 on some ratios, please consult our sales office.



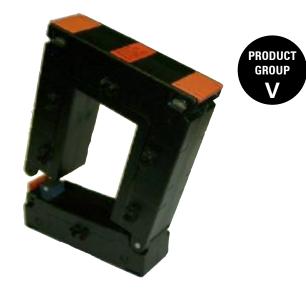


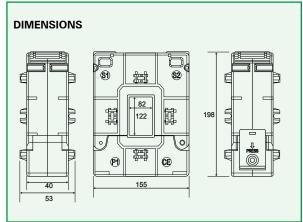
FOX.SC812

- FEATURES
- Protected terminals
- Integral cable / bus-bar pinch screws
- Primaries from 250 Amps to 3000 Amps
- Max aperture size 82x122mm
- Max overall dimensions 155x198mm
- Class 1 (class 0.5 on request)
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
FOX.SC812 250/5	1	2.5
FOX.SC812 300/5	1 1	3.75
FOX.SC812 400/5	1	3.75
FOX.SC812 500/5	1	5
FOX.SC812 600/5	1	7.5
FOX.SC812 800/5	1	10
FOX.SC812 1000/5	1	15
FOX.SC812 1200/5	1	30
FOX.SC812 1500/5	1	45
FOX.SC812 1600/5	1	45
FOX.SC812 2000/5	1	45
FOC.SC812 2500/5	1	45
FOX.SC812 3000/5	1	45







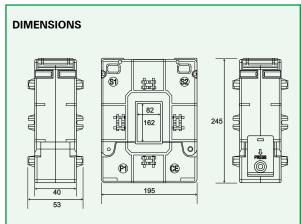
FOX.SC816

- FEATURES
- Protected terminals
- Integral cable / bus-bar pinch screws
- Primaries from 1000 Amps to 5000 Amps
- Max aperture size 82x162mm
- Max overall dimensions 195x245mm
- Class 1 (class 0.5 on request)
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
FOX.SC816 1000/5	1	20
FOX.SC816 1200/5	1	20
FOX.SC816 1500/5	1	30
FOX.SC816 1600/5	1	30
FOX.SC816 2000/5	1	30
FOX.SC816 2500/5	1	30
FOX.SC816 3000/5	1	45
FOX.SC816 4000/5	1	45
FOX.SC816 5000/5	1	45

1 Amp secondaries available to special order, along with class 0.5 on some ratios, please consult our sales office.





Tel: 0161 626 5316 / 01276 25858

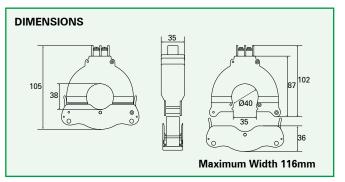
FOXTAM SPLIT CORE CURRENT TRANSFORMERS

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- FEATURES
- Protected terminals
- Max cable size 40mm dia.
- Primaries from 100 Amps to 800 Amps
- Max overall dimensions 116x105mm
- Class 1 (only)
- 1 Amp or 5 Amp secondaries

P/No.	CLASS	VA
FOX.SC40 100/5	1	1
FOX.SC40 150/5	1	1.5
FOX.SC40 200/5	1	2.5
FOX.SC40 250/5	1	2.5
FOX.SC40 300/5	1	2.5
FOX.SC40 400/5	1	5
FOX.SC40 500/5	1	5
FOX.SC40 600/5	1	5
FOX.SC40 800/5	1	5





FOUR WAY AC CURRENT TRANSDUCER 4 x 0.1-50 AMPS INPUTS TO 4 x 0-5VDC OR 0-10VDC OUTPUTS

TYPES: YW4/0-5VDC, YW4/0-10VDC

- FEATURES
- Din rail mounted
- Supplied complete with four split core CT's
- Primary current range 0.1-50Amps
- Choice of 4x 0-5VDC or 0-10VDC outputs
- Ideal retrofit solution for monitoring output ways on PDU's

PRODUCT GROUP GG

DESCRIPTION & MODE OF OPERATION

A din rail mounted four way AC current transducer. Accepting up to four inputs from the miniature split core current transformers supplied as a "kit" with the unit and giving four isolated analogue voltage signal outputs, either 0-5V DC or 0-10V DC. The maximum primary current possible is 50Amps which is compatible with the 10mm ID of the split core CT. The YW4 has individual pairs of terminals for the CT inputs, whilst the output channels share a common 0V rail. The YW4 requires a separate AC or DC supply voltage with isolation offered via an internal transformer or DC to DC converter.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: ±15% Frequency: 50/60Hz Max power consumption: 3VA

Input x 4: 0.1-50Amps via split core CT

Input impedance per channel: 10 Ohms Output x 4: 0-5VDC or 0-10VDC

Supply to input & output: Via internal transformer or DC to DC converter

Input to output: Via external CT Output channel to channel: Common OV rail

<u>General</u>

In accordance with: EN61000-6-3: 2007 EN61010-1: 2002

Housing material: Polycarbonate, Auto extinguishable

to UL 94 V-0 Tel: 0161 626 5316 / 01276 25858

CT Specifications

Primary current range: 0.1 to 50Amps
Secondary current: 0-16.6mA
Accuracy class: Class 1

Max input current: 100Amps continuous
Max circuit voltage: 600V AC (insulated cable)
Frequency: 10Hz to 5KHz

Frequency: 10Hz to 5KHz Internal diameter: 10mm
External dimensions (mm): 26W x 23D x 48H

ORDERING INFORMATION

TYPE	SUPPLY VOL		
YW4 /0-5V DC	440VAC	230VAC	48VDC
YW4/0-10V DC	415VAC	110VAC	24VDC
	400VAC	48VAC	12VDC
	380VAC	24VAC	

Spare CT's available separately, P/No. F-50A

PRODUCT **GROUP**

MB5

18, 32 & 44mm ID SPLIT CORE CURRENT TRANSFORMERS & TRANSDUCERS

TYPES: KBR18, KBR32 & KBR44

FEATURES

- 18mm, 32mm & 44mm internal diameter
- Integral ratchet style cable clamp
- "Click shut" closing action
- **Primary currents 50 Amps to 1000 Amps**
- **Accuracy Class 1**
- 5 Amp, 1 Amp, 4-20mA secondaries
- Supplied with 2.5m of flying leads

DESCRIPTION

A very compact split core device available as a current transformer or a current sensor, ideal for retro fitting in tight for space, existing installations. Secondary outputs available are:-

5 Amp (certain ratios)

- 1 Amp (certain ratios).
- 4-20mA loop powered 24VDC.

These devices feature an integral ratchet style cable fixing clamps, an easy "click shut" closing action and are supplied with 2.5m of 0.75mm colour coded flying leads.

SPECIFICATIONS

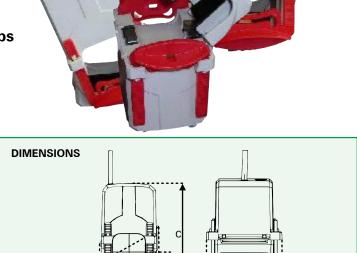
Continuous over current: 1.2 x ln Max short time current: 60 x In 1sec 720V 50-60Hz Max system voltage: Isolation test voltage: 3KV 50Hz 1min

Isolation class:

 -5°C to $+50^{\circ}\text{C}$ Ambient temperature: Standards: DIN EN60044/1

VDE 0414/1

CE marked: Yes



PART No	Α	В	С	D	E	F
KBR18	41.6	23	64.5	18.5	55	67.3
KBR32	59.2	28.5	96.4	32.5	75	89.2
KBR44	72.2	34.5	120.6	44	85	98.1

ORDERING INFORMATION

P/No.	INTERNAL DIAMETER	OUTPUT	VA	
KBR18 200/1	18mm	1 Amp	1	
KBR18 250/1	18mm	1 Amp	1.5	
KBR32 300/5 KBR32 400/5 KBR32 500/5 KBR32 600/5 KBR32 300/1 KBR32 400/1 KBR32 500/1 KBR32 600/1	32mm 32mm 32mm 32mm 32mm 32mm 32mm 32mm	5 Amp 5 Amp 5 Amp 5 Amp 1 Amp 1 Amp 1 Amp 1 Amp	2.5 5 5 5 5 5 5	
KBR32 100/4-20mA	32mm	4-20mA	N/A	
KBR32 150/4-20mA	32mm	4-20mA	N/A	
KBR32 200/4-20mA	32mm	4-20mA	N/A	
KBR32 250/4-20mA	32mm	4-20mA	N/A	
KBR32 300/4-20mA	32mm	4-20mA	N/A	
KBR32 400/4-20mA	32mm	4-20mA	N/A	
KBR32 500/4-20mA	32mm	4-20mA	N/A	
KBR32 500/4-20mA	32mm	4-20mA	N/A	

P/No.	INTERNAL DIAMETER	OUTPUT	VA
KBR44 250/5 KBR44 300/5 KBR44 400/5 KBR44 500/5 KBR44 600/5 KBR44 800/5 KBR44 1000/5	44mm 44mm 4mm 44mm 44mm 44mm 44mm	5 Amp 5 Amp 5 Amp 5 Amp 5 Amp 5 Amp 5 Amp	1.5 2.5 5 5 5 5 5
KBR44 250/1 KBR44 300/1 KBR44 400/1 KBR44 500/1 KBR44 600/1 KBR44 800/1 KBR44 1000/1	44mm 44mm 44mm 44mm 44mm 44mm 44mm	1 Amp 1 Amp 1 Amp 1 Amp 1 Amp 1 Amp 1 Amp	2.5 2.5 5 5 5 5
KBR44 250/4-20mA KBR44 300/4-20mA KBR44 400/4-20mA KBR44 500/4-20mA KBR44 600/4-20mA KBR44 800/4-20mA KBR44 1000/4-20mA	44mm 44mm 44mm 44mm 44mm 44mm 44mm	4-20mA 4-20mA 4-20mA 4-20mA 4-20mA 4-20mA 4-20mA	N/A N/A N/A N/A N/A N/A

AC "CT" STYLE CURRENT TRANSDUCERS

TYPES: CS-6xxx (Solid core) SC-6xxx (Split core)



FEATURES

CT style

170

- Moulded case insulation to 600VAC
- Solid core & split core versions
- Din rail mounted
- Self powered 0-5VDC & 0-10VDC outputs
- Loop powered 4-20mA output

DESCRIPTION

The CS-6xx & SC-xx range of AC current transducers look like standard current transformers and are used as such. The range is available in standard ring type, or for retro fit projects in split core. Either way both types are Din rail mountable, moulded case and insulated up to 600VAC.

Some of the transducers are dedicated primary ranges, whilst others have selectable primary ranges, selectable via a slider switch or jumpers, like traditional CT's primary turns can be made to reduce the ratio. Three output options are available, either a 0-5VDC or 0-10VDC output which is self powered. The 4-20mA version is a loop powered output and therefore requires a nominal 24VDC external source to power the loop.

The 675 types are designed to measure complex and distorted wave forms being a TRMS device, they are also ideal for current measurement on the output side of VFD's.

SPECIFICATIONS

Response Time: Types 650 & 651 (200mSec)

Types 652 (250mSec) Types 675 (500mSec)

Class 2 (Class 1 on request)

Accuracy: 0-5VDC Output: Self powered

Load 1 MOhm typical

0-10VDC Output: Self powered

Load 1MOhm typical 4-20mA Output: 15-30VDC loop powered

Max load 600 Ohms (@24VDC)

Temp Range: -15°C to +60°C

Types 675 (-15°C to +50°C)

Humidity: 5-90% RH

CS Dimensions: Aperture 20.3mm Dia. Body 66W x 67H x 25mmD

SC Dimensions: Aperture 20.3mm Dia.

Body 67W x 69H x 24mmD

ABS/PC, UL94V-0 Enclosure: Approvals: cULus listed

CE Marked: Yes

ORDERING INFORMATION

P/No.	Primary Range Amps	Max Cont. A	Hz Range	Output
CS-650-R1 & SC-650-R1	0-10A / 0-20A / 0-50A*	100 Amps	45-65Hz	0-5VDC
CS-650-R2 & SC-650-R2	0-50A / 0-100A / 0-150A*	150 Amps	45-65Hz	0-5VDC
CS-650-200 & SC-650-200	0-200 A	200 Amps	45-65Hz	0-5VDC
CS-651-R1	0-10A / 0-20A / 0-50A*	100 Amps	45-65Hz	0-10VDC
SC-651-R1	0-20A / 0-40A /0-60A*	100 Amps	45-65Hz	0-10VDC
SC-651-R2	0-50A / 0-100A / 0-150A*	150 Amps	45-65Hz	0-10VDC
CS-651-100	0-100 A	150 Amps	45-65Hz	0-10VDC
CS-651-200 & SC-651-200	0-200 A	225 Amps	45-65Hz	0-10VDC
CS-652-R1	0-10A / 0-20A / 0-50A*	100 Amps	45-65Hz	4-20mA
SC-652-R1	0-20A / 0-40A / 0-60A*	100 Amps	45-65Hz	4-20mA
CS-652-R2 & SC-652-R2	0-50A 0-100A / 0-150A*	150 Amps	45-65Hz	4-20mA
CS-652-200 & SC-652-200	0-200 A	250 Amps	45-65Hz	4-20mA
CS-675-2 & SC-675-2	0-2A	10 Amps	20-400Hz	4-20mA
CS-675-5 & SC-675-5	0-5A	15 Amps	20-400Hz	4-20mA
CS-675-R1 & SC-675-R1	0-10A / 0-20A / 0-50A**	100 Amps***	20-400Hz	4-20mA
CS-675-R2 & SC-675-R2	0-50A / 0-100A / 0-150A**	150 Amps****	20-400Hz	4-20mA
CS-675-200 & SC-675-200	0-200A	250 Amps*****	20-400Hz	4-20mA

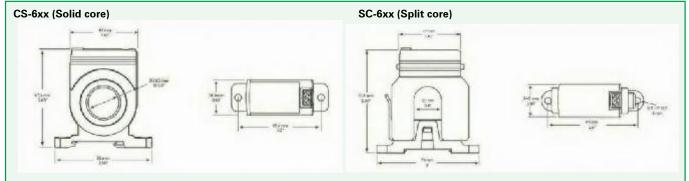
CS = Solid Core SC = Split Core

*Range switch selectable **Range jumper selectable

***On the split core variant the max continuous current is x3 of the range selected

****On the split core variant the max continuous current is x2 of the range selected

****On the split core variant the max continuous current is 300 Amps



Tel: 0161 626 5316 / 01276 25858

MBS CURRENT TRANSFORMERS & PLUG IN TRANSDUCER MODULES

MBS RANGE OF CURRENT TRANSFORMERS

FEATURES

- Moulded case
- Primary wound versions
- Bus-bar versions
- Many types can be din rail mounted
- All fixings & if applicable din rail clip supplied
- Snap shut hinged secondary terminal covers
- Insulated ends to bus-bar clamping screws
- P1>P2 (K>L) primary designation within moulding
- S1 S2 (k l) secondary designation within moulding
- 1 Amp & 5 Amp secondaries
- Other class accuracies & VA ratings on request

SPECIFICATION

Compliance: DIN VDE 0414/1, DIN 42600, IEC 185, VBG 4

CE marked: Yes

Construction: Self extinguishing to UL94VO black polycarbonate,

casing ultrasonically welded

Rated Hz: 50-60Hz, other frequencies on request up to 400Hz

Insulation: Class E, up to 720V
Tropicalised versions: On request

GREAT IDEA!! PLUG IN TRANSDUCERS MODULES





PRODUCT Group

NMC - UNIQUE PLUG IN TRANSDUCER OPTION

DESCRIPTION

Do you ultimately need an analogue signal for your current measurement? The MBS range of CT's feature a plug in transducer module option.

Just twist off the secondary terminal covers and remove the secondary terminal screws. Screw in the brass transformer to module connecting studs and plug in the NMC transducer module.

Each NMC transducer block will give two different isolated analogue outputs. Also the secondary of the current transformer is repeated, if this repeat facility is not required the supplied shorting link must be left in situ. It is possible to generate 0-20mA and 0-10VDC without any auxiliary supply (self powered module version). Please note that the self powered versions can only be used on current transformers with an output of at least 2.5VA, if a 4-20mA signal is required in all cases an auxiliary supply is required, 24VDC, 110VAC or 230VAC.

NMC MODULE SPECIFICATIONS

<u>INPUT</u>

Current: 1Amp or 5Amp

Power consumption: <1VA, self powered versions >2.5VA
Overload capacity: 1.2x In continuously, 8x In <40secs

<u>OUTPUT</u>

Signal I: 0-20mA or 4-20mA

Max external resistance: 500 ohms
Current limit on overload: <34mA
Signal V: 0-10VDC
External resistance: >10 Kohms
Voltage limit on overload: 18VDC

GENERAL

DC auxiliary supply: $24VDC \pm 15\%$

AC auxiliary supply: 110VAC, $230VAC \pm 10\%$, 50-60Hz

Response time: <500 mSec General accuracy: Class 0.5

Accuracy range: 1-120% In powered, 15-120% self powered

Isolation: 4KV

GENERAL INSTALLATION NOTES

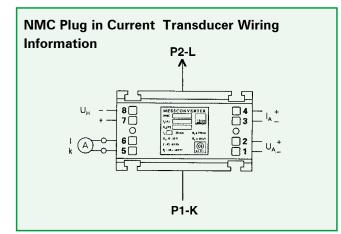
- . Remove red CT secondary covers by twisting them, some gentle force is required.
- Remove the secondary screws on the P2 (L) side of the CT, pull out the brass studs from the rear of the transducer / relay module and screw into the holes left by the secondary screws.
- 3. Clip transducer module on to the top of the CT.
- If the 1Amp / 5Amp CT output is not required the link for shorting should be left in situ across terminals 5 & 6.

NMC NOTES

- On connection of the auxiliary supply the two green LED's should illuminate.
- Note, the self powered transducer version is only possible to use if the CT being used generates at least 2.5VA. The self powered version current output is 0-20mA instead of 4-20mA.

Terminal No.	Designation
1	Negative 0-10VDC output
2	Positive 0-10VDC output
3	Negative 0-20mA / 4-20mA output
4	Positive 0-20mA /4-20mA output
5	S1 (k) 1Amp /5Amp output *
6	S2 (I) 1Amp / 5Amp output *
7	+ / L auxiliary supply *
8	- / N auxiliary supply *

* Depending on version ordered



Tel: 0161 626 5316 / 01276 25858

MOULDED CASE PRIMARY WOUND CT - WITH UNIQUE TRANSDUCER OPTION

TYPE: WSK40

- FEATURES
- Din rail mounted or foot mounted
- Snap fit terminal covers
- Transformer width 70mm
- Primary ranges from 1 Amp to 30 Amps
- 1 Amp or 5 Amp secondaries

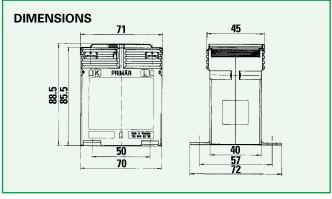
PRIMARY CURRENT	1	5	10	15	20	25	30
VA	5	5	5	5	5	5	5
CLASS	1	1	1	1	1	1	1

NMC PLUG IN TRANSDUCERS

P/No	CT SECONDARY	AUX Supply	OUTPUT
NMC012-37213	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC022-37013	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC212-39233	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC222-39033	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC312-36233	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC322-36033	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC412-76233	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC422-76033	5A	110VAC	4-20mA & 0-10VDC & 5A







All WSK40 models available with 1 Amp or 5 Amp secondaries. Above ratios available as Class 0.5 to special order, please consult sales office for information.

Spare Din rail mounting clips available P/No. 55012

MOULDED CASE CT - WITH UNIQUE TRANSDUCER OPTION

TYPE: ASR22.3

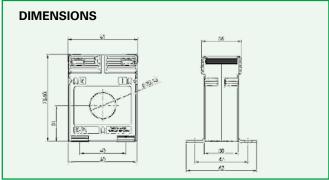
- FEATURES
- Din rail mounted or foot mounted
- Snap fit secondary terminal covers
- Transformer width 60mm
- Max conductor size 22.5mm dia.
- Primary ranges from 40 Amps to 600 Amps
- 1 Amp or 5 Amp secondaries

PRIMARY CURRENT	40	50	60	80	100	150	200	250	300	400	500	600
VA	1	1	1	2.5	3.75	5	5	10	10	10	10	10
CLASS	3	1	1	1	1	1	1	1	1	1	1	1

NMC PLUG IN TRANSDUCERS

141110		111/11100	
P/No	CT Secondary	AUX Supply	OUTPUT
NMC011-37212	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC021-37012	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC211-39232	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC221-39032	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC311-36232	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC321-36032	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC411-76232	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC421-76032	5A	110VAC	4-20mA & 0-10VDC & 5A





All ASR22.3 models available with 1 Amp or 5 Amp secondaries. Above ratios available as Class 0.5 to special order, please consult sales office for information.

Spare Din rail mounting clips available P/No. 55012

PRODUCT Group

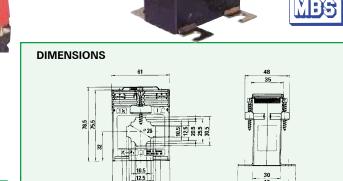
MOULDED CASE CT - WITH UNIQUE TRANSDUCER OPTION

TYPE: ASK31.3

- FEATURES
- Din rail, bus-bar or foot mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 60mm
- Max conductor size 26mm dia.
- Max bus-bar size 30x10mm
- Primary ranges from 50 Amps to 750 Amps
- 1 Amp or 5 Amp secondaries

NMC PLUG IN TRANSDUCERS

P/No	CT SECONDARY	AUX Supply	OUTPUT
NMC011-37212	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC021-37012	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC211-39232	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC221-39032	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC311-36232	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC321-36032	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC411-76232	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC421-76032	5A	110VAC	4-20mA & 0-10VDC & 5A



PRIMARY CURRENT	50	60	80	100	150	200	250	300	400	500	600	750
VA	1	1	2.5	2.5	2.5	5	5	5	10	10	10	10
CLASS	1	1	1	1	1	1	1	1	1	1	1	1

All ASK31.3 models available with 1 Amp or 5 Amp secondaries. Some of the above ratios available as Class 0.5 & Class 0.2 to special order, please consult sales office for information.

Spare Din rail mounting clips available P/No. 53011

MOULDED CASE CT - WITH UNIQUE TRANSDUCER OPTION

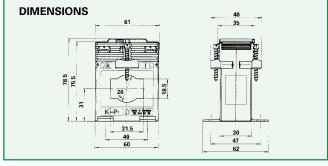
TYPE: ASK318.3

- FEATURES
- Din rail, bus-bar or foot mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 60mm
- Max conductor size 26mm dia.
- Max bus-bar size 31x18mm
- Primary ranges from 60 Amps to 600 Amps
- 1 Amp or 5 Amp secondaries

NMC PLUG IN TRANSDUCERS

P/No	CT SECONDARY	AUX Supply	OUTPUT
NMC011-37212	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC021-37012	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC211-39232	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC221-39032	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC311-36232	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC321-36032	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC411-76232	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC421-76032	5A	110VAC	4-20mA & 0-10VDC & 5A





PRIMARY CURRENT	60	80	100	150	200	250	300	400	500	600
VA	1	1.5	2.5	2.5	3.75	5	5	10	10	10
CLASS	1	1	1	1	1	1	1	1	1	1

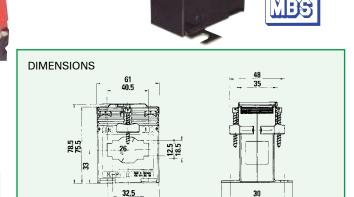
All ASK318.3 models available with 1 Amp or 5 Amp secondaries. Some of the above ratios available as Class 0.5 to special order, please consult sales office for information.

TYPE: ASK41.3

- FEATURES
- Din rail, bus-bar or foot mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 60mm
- Max conductor size 26mm dia.
- Max bus-bar size 40x12mm or 32x18mm
- Primary ranges from 100 Amps to 750 Amps
- 1 Amp or 5 Amp secondaries

NMC PLUG IN TRANSDUCERS

	LOG IIV	IIIAIIUD	JOE: 10
	СТ	AUX	
P/No	SECONDARY	SUPPLY	OUTPUT
NMC011-37212	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC021-37012	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC211-39232	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC221-39032	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC311-36232	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC321-36032	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC411-76232	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC421-76032	5A	110VAC	4-20mA & 0-10VDC & 5A



PRODUCT Group

W

PRIMARY CURRENT	100	150	200	250	300	400	500	600	750
VA	1.5	2.5	2.5	2.5	5	5	5	5	10
CLASS	1	1	1	1	1	1	1	1	1

All ASK41.3 models available up to 300 Amps with 1 Amp or 5 Amp secondaries, above 300 Amps 5 Amp secondary only.

Spare Din rail mounting clips available P/No. 53011

MOULDED CASE CT - WITH UNIQUE TRANSDUCER OPTION

TYPE: ASK412.4

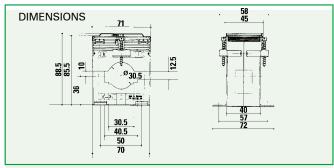
FEATURES

- Din rail, bus-bar or foot mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 70mm
- Max conductor size 30.5mm dia.
- Max bus-bar size 40x12mm or 30x15mm
- Primary ranges from 50 Amps to 800 Amps
- 1 Amp or 5 Amp secondaries

NMC PLUG IN TRANSDUCERS

P/No	CT Secondary	AUX Supply	OUTPUT
NMC013-37214	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC023-37014	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC213-39234	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC223-39034	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC313-36234	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC323-36034	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC413-76234	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC423-76034	5A	110VAC	4-20mA & 0-10VDC & 5A





PRIMARY CURRENT	50	60	80	100	150	200	250	300	400	500	600	800
VA	1.5	1.5	2.5	3.75	5	10	10	15	15	15	15	15
CLASS	1	1	1	1	1	1	1	1	1	1	1	1

All ASK412.4 models available with 1 Amp or 5 Amp secondaries. Some of the above ratios available as Class 0.5 to special order, please consult sales office for information.

Spare Din rail mounting clips available P/No. 55012

PRODUCT GROUP

XI:X

MOULDED CASE CT - WITH UNIQUE TRANSDUCER OPTION

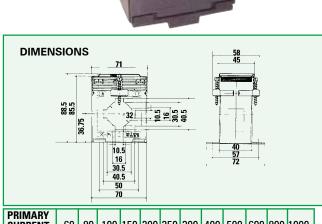
TYPE: ASK41.4

FEATURES

- Din rail, bus-bar or foot mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 70mm
- Max conductor size 32mm dia.
- Max bus-bar size 40x10mm or 2x 30x5mm
- Primary ranges from 50 Amps to 1000 Amps
- 1 Amp or 5 Amp secondaries

NMC PLUG IN TRANSDUCERS

			JULITU
P/No	CT SECONDARY	AUX Supply	OUTPUT
NMC013-37214	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC023-37014	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC213-39234	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC223-39034	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC313-36234	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC323-36034	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC413-76234	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC423-76034	5A	110VAC	4-20mA & 0-10VDC & 5A



PRIMARY CURRENT	60	80	100	150	200	250	300	400	500	600	800	1000
VA	1.5	2.5	3.75	5	10	10	15	15	15	15	15	15
CLASS	1	1	1	1	1	1	1	1	1	1	1	1

All ASK41.4 models available with 1 Amp or 5 Amp secondaries. Some of the above ratios available as Class 0.5 & Class 0.2 to special order, please consult sales office for information.

Spare Din rail mounting clips available P/No. 55012

MOULDED CASE CT - WITH UNIQUE TRANSDUCER OPTION

TYPE: ASK61.4

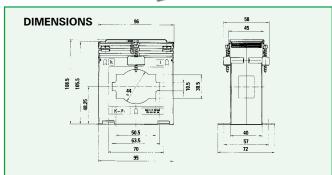
FEATURES

- Foot or bus-bar mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 95mm
- Max conductor size 44mm dia.
- Max bus-bar size 63x10mm or 2x 50x10mm
- Primary ranges from 200 Amps to 1600 Amps
- 1 Amp or 5 Amp secondaries

NMC PLUG IN TRANSDUCERS

P/No	CT Secondary	AUX Supply	OUTPUT
NMC014-37215	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC024-37015	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC214-39235	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC224-39035	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC314-36235	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC324-36035	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC414-76235	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC424-76035	5A	110VAC	4-20mA & 0-10VDC & 5A





PRIMARY CURRENT	200	250	300	400	500	600	800	1000	1200	1500	1600
VA	2.5	2.5	5	10	15	15	15	15	15	15	15
CLASS	1	1	1	1	1	1	1	1	1	1	1

All ASK61.4 models available with 1 Amp or 5 Amp secondaries. Above ratios available as Class 0.5 & Class 0.2 to special order, please consult sales office for information.

TYPE: ASK63.4

■ FEATURES

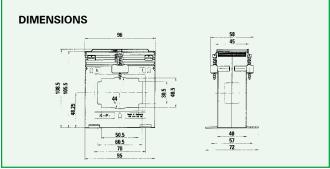
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- Foot or bus-bar mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 95mm
- Max conductor size 44mm dia.
- Max bus-bar size 60x30mm or 50x40mm
- Primary ranges from 300 Amps to 1600 Amps
- 1 Amp or 5 Amp secondaries

NMC PLUG IN TRANSDUCERS

P/No	CT Secondary	AUX Supply	OUTPUT
NMC014-37215	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC024-37015	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC214-39235	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC224-39035	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC314-36235	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC324-36035	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC414-76235	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC424-76035	5A	110VAC	4-20mA & 0-10VDC & 5A





PRIMARY CURRENT	300	400	500	600	800	1000	1200	1500
VA	2.5	5	10	15	15	15	15	15
CLASS	1	1	1	1	1	1	1	1

All ASK63.4 models available with 1 Amp or 5 Amp secondaries. Above ratios available as Class 0.5 & Class 0.2 to special order, please consult sales office for information.

MOULDED CASE CT - WITH UNIQUE TRANSDUCER OPTION

TYPE: ASK105.6

FEATURES

MBS CURRENT TRANSFORMERS & PLUG IN TRANSDUCER MODULES

- Foot or bus-bar mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 129mm
- Max bus-bar size 100x55mm
- Primary ranges from 600 Amps to 3000 Amps
- 1 Amp or 5 Amp secondaries

NMC PLUG IN TRANSDUCERS

P/No	CT Secondary	AUX Supply	OUTPUT
NMC014-37215	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC024-37015	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC214-39235	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC224-39035	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC314-36235	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC324-36035	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC414-76235	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC424-76035	5A	110VAC	4-20mA & 0-10VDC & 5A



DIMENSIONS		
	78 45 170 167 777.5 92 170 96 95 100.5 129	

PRIMARY CURRENT	600	800	1000	1200	1250	1500	1600	2000	2500	3000
VA	10	10	10	15	15	15	15	30	30	30
CLASS	1	1	1	1	1	1	1	1	1	1

All ASK105.6 models available with 1 Amp or 5 Amp secondaries. Above ratios available as Class 0.5 & Class 0.2 to special order, please consult sales office for information.

MOULDED CASE CT - WITH UNIQUE TRANSDUCER OPTION

TYPES: ASK105.6N

FEATURES

- Foot or bus-bar mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 129mm
- Max bus-bar size 100 x 55mm
- Primary ranges from 2500 Amps to 4000 Amps
- 1 Amp or 5 Amp secondaries

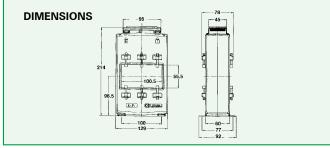
NMC PLUG IN TRANSDUCERS

P/No	CT Secondary	AUX Supply	OUTPUT
NMC014-37215	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC024-37015	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC214-39235	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC224-39035	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC314-36235	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC324-36035	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC414-76235	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC424-76035	5A	110VAC	4-20mA & 0-10VDC & 5A









PRIMARY CURRENT	2500	3000	4000
VA	30	30	30
CLASS	1	1	1

All ASK105.6N models available with 1 Amp or 5 Amp secondaries. Above ratios available as Class 0.5 to special order, please consult sales office for information.

MOULDED CASE CT - WITH UNIQUE TRANSDUCER OPTION

TYPES: ASK81.4

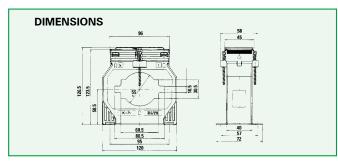
FEATURES

- Foot or bus-bar mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 120mm
- Max conductor size 55mm dia.
- Max bus-bar size 80x10mm or 60x 30 or 2 x60x10mm
- Primary ranges from 400 Amps to 2000 Amps
- 1 Amp or 5 Amp secondaries

NMC PLUG IN TRANSDUCERS

P/No	CT Secondary	AUX Supply	OUTPUT
NMC014-37215	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC024-37015	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC214-39235	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC224-39035	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC314-36235	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC324-36035	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC414-76235	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC424-76035	5A	110VAC	4-20mA & 0-10VDC & 5A





PRIMARY CURRENT	400	500	600	800	1000	1200	1500	1600	2000
VA	5	10	10	15	15	15	30	30	30
CLASS	1	1	1	1	1	1	1	1	1

All ASK81.4 models available with 1 Amp or 5 Amp secondaries. Above ratios available as Class 0.5 to special order, please consult sales office for information.

MOULDED CASE CT - WITH UNIQUE TRANSDUCER OPTION

TYPES: ASK101.4

FEATURES

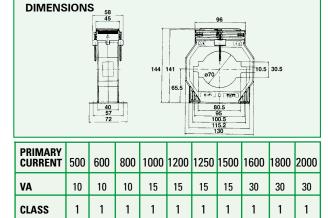
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- Foot mounted or bus-bar mounted
- Snap fit secondary terminal covers
- Insulated ends to bus-bar pinch screws
- Transformer width 130mm
- Max conductor size 70mm dia.
- Max bus-bar size 100x10mm or 2x 80x10mm
- Primary ranges from 500 Amps to 2000 Amps
- 1 Amp or 5 Amp secondaries

NMC PLUG IN TRANSDUCERS

P/No	CT Secondary	AUX Supply	OUTPUT
NMC014-37215	1A	Self powered	0-20mA & 0-10VDC & 1A
NMC024-37015	5A	Self powered	0-20mA & 0-10VDC & 5A
NMC214-39235	1A	24VDC	4-20mA & 0-10VDC & 1A
NMC224-39035	5A	24VDC	4-20mA & 0-10VDC & 5A
NMC314-36235	1A	230VAC	4-20mA & 0-10VDC & 1A
NMC324-36035	5A	230VAC	4-20mA & 0-10VDC & 5A
NMC414-76235	1A	110VAC	4-20mA & 0-10VDC & 1A
NMC424-76035	5A	110VAC	4-20mA & 0-10VDC & 5A





All ASK101.4 models available with 1 Amp or 5 Amp secondaries. Above ratios available as Class 0.5 to special order, please consult sales office for information.

HOW FAR AWAY CAN A CT BE SITED FROM YOUR INSTRUMENTATION?

Firstly, you have to allow double the distance, the return cabling has to be allowed for, therefore 15 mtrs is in fact 30 mtrs.

The formulae for calculating the VA required is $I^2 R = VA$

Where I is the secondary current of the CT.

Where **R** is the resistance, the resistance of the secondary of the CT cabling per metre, multiplied by the number of metres.

Typical resistance of tri rated cable per metre is as follows at an ambient temperature of 20°C. However, it is advised that the customer specifically checks with his own cable supplier as specifications will slightly vary.

TYPICAL TRI RATED CABLE IMPEDANCE

0.5mm	=	0.039	Ohms / mtr
0.75mm	=	0.026	Ohms / mtr
1.0mm	=	0.0195	Ohms / mtr
1.5mm	=	0.0133	Ohms / mtr
2.5mm	=	0.00798	Ohms / mtr
4.0mm	=	0.00495	Ohms / mtr
6.0mm	=	0.0033	Ohms / mtr
10 0mm	=	0.00191	Ohms / mtr

The input burden of the instrumentation equipment that the secondary of the CT is feeding into must also be allowed for. Typically with modern digital display metering this is very low approx. 0.1 to 0.2VA, whilst analogue meters can be as high as 1.5VA

An example calculation:-

A meter sited 6 metres away from the CT with a 5 Amp secondary, utilising 1.5mm secondary cabling. What VA output from the CT is required:-

52x (12 x 0.0133) + 0.2VA (the meter) = 4.19VA output required (Use a 5VA CT)

The VA required can be reduced by utilising 1 Amp secondary CT's because 5² becomes 1², therefore the VA required reduces by x25 or the distance achievable increases by x25 depending on how you view the application.

Increasing the secondary cable size will also increase the distance achievable.

Tel: 0161 626 5316 / 01276 25858

PRODUCT Group

SPLIT CORE 333mVAC SECONDARY CT's

TYPES: SCL, SCT, ROPE

- FEATURES
- Split core
- Rogowski "flexible rope" CT'S
- Ideal retro-fit solution
- Compact sizes
- Safe when open circuit
- Ideal for when CT's are sited a distance from the meter (VA burden is not relevant)
- Recommended for use with our CUBE & RAIL 333mV CT input energy meters



The **SCT** and **SCL** range of split core 333mVAC secondary current transformers are designed for fast and easy installation with no need to disconnect any loads. An internal precision resistor across the secondary winding of the CT provides a safe, low voltage output of 333mVAC with minimal current. Unlike conventional 5 Amp and 1 Amp secondary CT's, where the VA burden in the secondary circuit, against the VA that is available from the CT, has to be taken into consideration. Meaning how far away the CT from the meter can be maximally sited needs to be calculated. With 333mVAC secondary CT's this is not relevant. The **SCL** range is supplied with 1 metre of flying lead cable and the **SCT** range with 2 metres.

The **ROPE** range of "flexible" Rogowski Coil current transformers are supplied only in sets of 3 in either lengths of 461mm or 610mm. The set of three are supplied with a 5VDC nominal power supply with a 100-240VAC primary to excite the CT's. These CT's also have a 333mVAC secondary and are extremely flexible making them particularly suitable when CT's are required to be fitted retrospectively in awkward situations. They are supplied with 2 metres of captive cable.

Please note, should the CT secondary cabling need to be extended 250V rated Belden Cable (or equivalent) needs to be utilised.

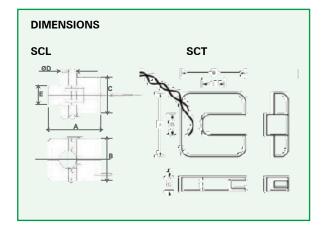
SPECIFICATIONS

0-333mVAC Secondary: Insulation: SCL: 300Vrms 50Hz - 60Hz Frequency range: SCT: 600Vrms Operating temp: SCL: -25° C to $+90^{\circ}$ C ± 1% Accuracy: SCT: -15°C to +60°C 120% In max: @ 0.51n Phase error: ROPE: -20°C to +70°C

ORDERING INFORMATION & TYPES

SCL & SCT (supplied individually)										
	Dimensions mm									
P/No	Α	A B C D E								
SCL8 5A	43	37	32	8	13					
SCT10 30A	25	42	15	10	10					
SCL16 50A	51	45	37	16	16					
SCT19 50A	51	53	17	19	19					
SCL16 100A	51	45	37	16	16					
SCT19 150A	51	53	17	19	19					
SCT32 400A	82.5	85	27	32	32					
SCT51 800A	121	127	32	51	51					

ROPE (supplied in s	ROPE (supplied in sets of 3 with power supply)						
P/No	Length						
ROPE 461 1000A	461mm						
ROPE 461 1500A	461mm						
ROPE 461 2000A	461mm						
ROPE 461 3000A	461mm						
ROPE 461 3500A	461mm						
ROPE 610 1000A	610mm						
ROPE 610 1500A	610mm						
ROPE 610 2000A	610mm						
ROPE 610 3000A	610mm						
ROPE 610 3500A	610mm						





Tel: 0161 626 5316 / 01276 25858 www.foxtamcontrols.co.uk

"CT STYLE" SPLIT CORE DC CURRENT

TRANSDUCERS

TYPES: FOX.DCCT

FEATURES

180

- Great alternative to DC shunts
- Particularly suitable for use on higher DC voltages
- Complete isolation between the output signal and the measured current
- Choice of analogue outputs
- Split core
- Class 1 accuracy

DESCRIPTION

A range of moulded case DC "CT" style split core transducers available in 15 housing sizes catering for DC currents from 50 Amps to 30000 Amps. The transducers are available with a choice of output options and require a DC auxiliary power supply, either single for uni-directional monitoring, or \pm for bi-directional current flow (import / export).

SPECIFICATION

 Accuracy:
 1% FS (Class 1)

 Temp drift:
 ≤ 500ppm / °C

 Linearity range:
 x 1.5 lmax

 Overload capability:
 x 5 lmax

 Response time:
 10uS

 Current consumption:
 ≤ 25mA

 Isolation:
 3KV

GROUP

Operation Temp: -10°C to +80°C
Fire retardancy: UL94-V0

ORDERING INFORMATION

P/NO	<u>HOUSING*</u>	PRIMARY CURRENT	<u>OUTPUT</u>	AUX SUPPLY
FOX.DCCT	C1 to C16	xxx Amp	0-5 VDC	+ 12VDC
			0-20mA	+ 15VDC
			4-20mA	+ 24VDC
				<u>+</u> 12VDC**
				+ 15VDC**

^{*} Specify

It is often the case when utilising this range of products that they are being used on higher potential DC systems and that the only voltage available is the higher DC potential. We therefore have a range of Din rail mounted DC to DC converters to facilitate the DC auxiliary supply voltage required for the above CT's. Our DC to DC converters can be found on pages 133 & 134

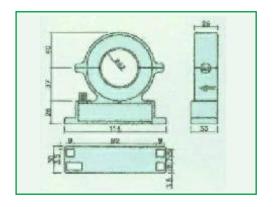
CONNECTION DIAGRAMS UNI-DIRECTIONAL MONITORING ---- 12V + Positive power supply TRANSDUCER -- No connection **POWER SLIPPLY** M Signal output **OUTPUT G** Ground ⊸ NV **BI-DIRECTIONAL MONITORING** ------- +12V + Positive power supply TRANSDUCER -- Negative power supply M Signal output OUTPUT POWER SUPPLY **G** Ground ----- 0V

^{**} Aux supply option for bi directional current flow applications (not 4-20mA output)

"CT STYLE" SPLIT CORE DC CURRENT TRANSDUCERS

HOUSING C1







PRIMARY RANGES:

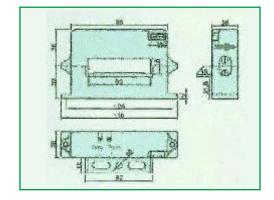
0-100 Amps to 0-1000 Amps

TERMINAL ARRANGEMENT:

Connector

HOUSING C2





PRIMARY RANGES:

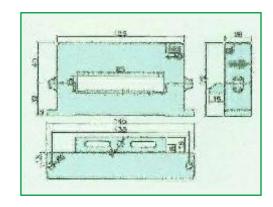
0-200 Amps to 0-1800 Amps

TERMINAL ARRANGEMENT:

Connector

HOUSING C3





PRIMARY RANGES:

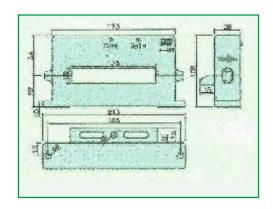
0-500 Amps to 0-2800 Amps

TERMINAL ARRANGEMENT:

Connector

HOUSING C4





PRIMARY RANGES:

0-300 Amps to 0-6000 Amps

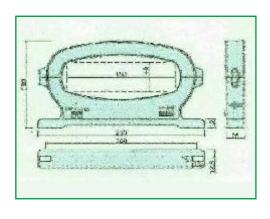
TERMINAL ARRANGEMENT:

Screw

HOUSING C5



Tel: 0161 626 5316 / 01276 25858



PRIMARY RANGES:

0-300 Amps to 0-6000 Amps

TERMINAL ARRANGEMENT:

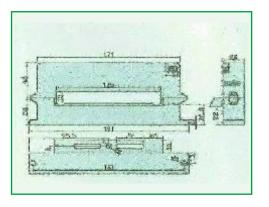
Screw

www.foxtamcontrols.co.uk

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HOUSING C6







PRIMARY RANGES:

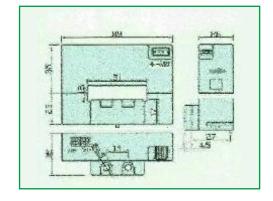
0-200 Amps to 0-5000 Amps

TERMINAL ARRANGEMENT:

Connector

HOUSING C7





PRIMARY RANGES:

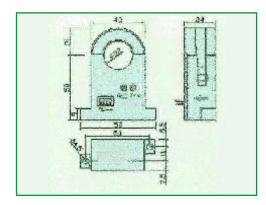
0-300 Amps to 0-1500 Amps

TERMINAL ARRANGEMENT:

Connector

HOUSING C8





PRIMARY RANGES:

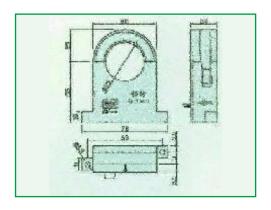
0-50 Amps to 0-1000 Amps

TERMINAL ARRANGEMENT:

Connector

HOUSING C9





PRIMARY RANGES:

0-50 Amps to 0-1000 Amps

TERMINAL ARRANGEMENT:

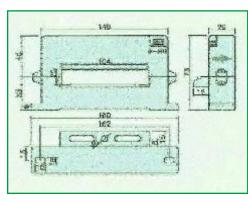
Connector

HOUSING C10

Tel: 0161 626 5316 / 01276 25858







PRIMARY RANGES:

0-500 Amps to 0-5000 Amps

TERMINAL ARRANGEMENT:

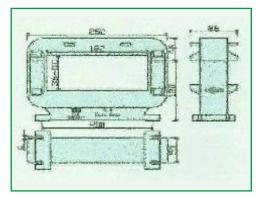
Connector

www.foxtamcontrols.co.uk

"CT STYLE" SPLIT CORE DC CURRENT TRANSDUCERS

HOUSING C11







PRIMARY RANGES:

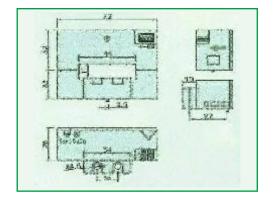
0-4000 Amps to 0-10000 Amps

TERMINAL ARRANGEMENT:

Screw

HOUSING C12





PRIMARY RANGES:

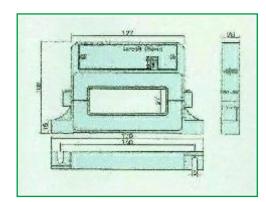
0-100 Amps to 0-1000 Amps

TERMINAL ARRANGEMENT:

Connector

HOUSING C13





PRIMARY RANGES:

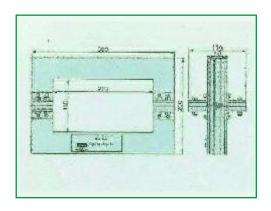
0-500 Amps to 0-2500 Amps

TERMINAL ARRANGEMENT:

Connector

HOUSING C14





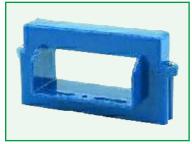
PRIMARY RANGES:

0-10000 Amps to 0-30000 Amps

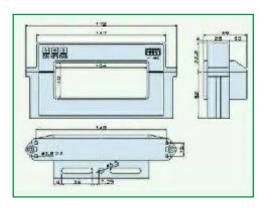
TERMINAL ARRANGEMENT:

Connector

HOUSING C16







PRIMARY RANGES:

0-500 Amps to 0-2500 Amps

TERMINAL ARRANGEMENT:

Connector

AC / DC "CT" STYLE CURRENT TRANSDUCERS

TYPES: CCT31.3 RMS / xxx CCT41.4 RMS / xxx



FEATURES

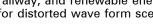
184

- Primary currents from 0-50 Amps to 0-750 Amps
- Universal AC 20Hz to 6KHz or DC measurement
- Output 4-20mA
- Class 1 accuracy
- **TRMS** measurement
- Foot mounted
- Two frame sizes
- Fast response time

DESCRIPTION

A range of moulded case high accuracy universal DC or AC "CT" style current transducers, any AC current measured can be on a frequency range of between 20Hz and 6KHz. As would be expected of a product of this type and specification the measurement technology is TRMS. The output requires a 24VDC auxiliary supply, generating a 4-20mA output proportional and linear to the primary range of the transducer. Measurement ranges of between 0-50 Amps and 0-750 Amps are available in two frame sizes.

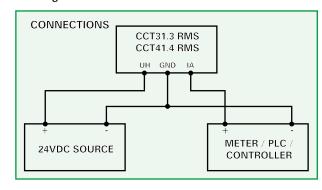
These products are particularly relevant with the growing prevalence of DC systems such as in the telecommunications, railway, and renewable energy sectors. Likewise the wide frequency range enables these products to be very suitable for distorted wave form scenarios, 400Hz systems and applications using VFD's.



SPECIFICATIONS

0-50 Amps to 0-750 Amps Measuring range: DC & 20Hz to 6KHz AC (universal) Frequency:

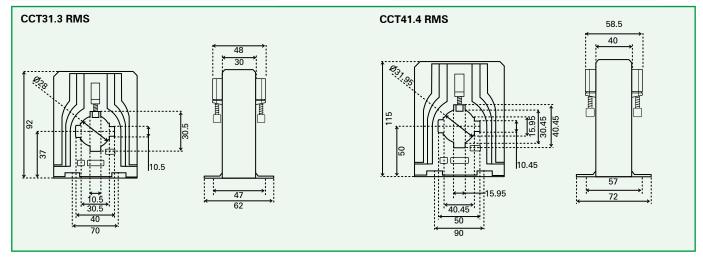
Output: 4-20mA **Auxiliary supply:** 24VDC +/-15% Max output load: <500 0hms Accuracy: Class 1 <200 mSec Response time: Insulation: 720V continuous Insulation test: 6KV 50Hz for 1 min. Max primary current: 1.2 x In continuous Operating temp: -25°C to +60°C **Terminals:** Quick release max 2.5mm



ORDERING INFORMATION

P/No.	PRIMARY CURRENT	OUTPUT
CCT31.3 RMS	50A 100 A 150 A 200 A 250 A 300 A	4-20mA 4-20mA 4-20mA 4-20mA 4-20mA 4-20mA

P/No.	PRIMARY CURRENT	OUTPUT
CCT41.4 RMS	150 A 200 A 250 A 300 A 400 A 500 A 750 A	4-20mA 4-20mA 4-20mA 4-20mA 4-20mA 4-20mA 4-20mA 4-20mA



 BB

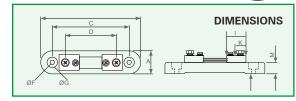
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DC SHUNTS (*60mV SECONDARY AS STANDARD)

TYPES: UA-SHT & NST

- TYPE A
- Primary current 10 Amps to 200 Amps
- Standard accuracy ± -1% (0.5% & 0.25% on request)
- Specify with model the secondary: 50mV, 60mV*, 75mV, 100mV





MODEL	Α	В	С	D	Е	F	G	Н	ı	J	K	L	M
UA-SHT-A-10A/20A/30A/40A/ 50A/60A/80A/100A/150A	31	136	110	73	20	6	12	17	32	13	21	5	17
UA-SHT-A-200A	31	136	110	67	20	6	12	17	29	15	-	-	17

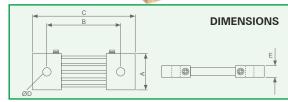
- NST-30
- Primary current 250 Amps to 600 Amps
- Standard accuracy ± -1% (0.5% & 0.25% on request)

MODEL	Α	В	С	D	Е
NST-30-250A	41	88	115	10	12
NST-30-300A	35	88	116	12.5	20
NST-30-400A	44	86	116	12.5	20
NST-30-500A	55	88	116	12.5	20
NST-30-600A	60	90	125	12.5	21

Specify with model the secondary:

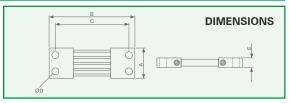
50mV, 60mV* 75mV, 100mV





- NST-40
- Primary current 800 Amps to 1500 Amps
- Standard accuracy ± -1% (0.5% & 0.25% on request)
- Specify with model the secondary: 50mV, 60mV*, 75mV, 100mV

MODEL	Α	В	С	D	E
NST-40-800A	70	125	90	12.5	20
NST-40-1000A	70	160	120	12.5	20
NST-40-1200A	85	160	120	12.5	20
NST-40-1500A	100	160	120	12.5	20

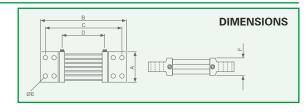


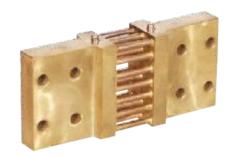


- NST-50
- Primary current 2000 Amps to 5000 Amps
- Standard accuracy ± -1% (0.5% & 0.25% on request)
- Specify with model the secondary:

50mV, 60mV*, 75mV, 100mV

MODEL	Α	В	С	D	Е	F
NST-50-2000A	103	230	205	55	12.5	50
NST-50-2500A	103	191	167	56	13.5	38
NST-50-3000A	103	280	238	65	15.0	64
NST-50-4000A	110	292	253	65	17.0	82
NST-50-5000A	128	315	271	65	17.0	106





AC / DC "CT" STYLE RS485 MODBUS SERIAL OUTPUT CURRENT TRANSMITTER

TYPES: QI-50-V-485 (50 Amps)

QI-300-V-485 (150 / 300 Amps Switchable)



FEATURES

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- Primary current 0-50 Amps
- Primary current 0-150 / 0-300 Amps switchable
- Universal AC 20Hz to 2KHz or DC measurement
- Output 0-10VDC & RS485 MODBUS
- Configurable for uni-polar or bi-polar operation (DC current only)
- Class 0.5 accuracy
- TRMS measurement
- Screw mounting or Din rail mounting
- Fast response time

DESCRIPTION

The QI-50-V-485 and QI-300-V-485 are moulded case high accuracy universal DC or AC current transducers / transformers galvanically isolated from the measuring circuit. The "CT's" are available as a 0-50 Amp fixed range unit, or a switchable, via dip-switch primary current range of either 0-150 Amps or 0-300 Amps and is equipped with both a 0-10VDC dampened output and RS485 MODBUS serial communications.

Also via the dip-switches you can select the CT for uni-polar measurement, or on a DC system bi-polar measurement is also an option (0-5-10VDC output), rather than a -10 to 0 to +10VDC output. The dip-switches also configure the Baudrate, the MODBUS address up to a maximum of 15 addresses.

Via the serial port and free software the span, zero and the MODBUS registers are easily configurable. With respect to the span and zero this can be configured freely within the primary current range and output scale. For example you could configure a 95 Amp to 175 Amp primary range with a 2.5-7.0VDC output.

The "CT" requires a supply voltage 12 to 30VDC and has an internal aperture size of 33mm Dia.

The principle of putting in primary turns on CT's to further reduce the primary scale also applies to these current transformers.

SPECIFICATIONS

 Supply voltage:
 12 to 30VDC

 Power consumption:
 Max 20mA

 Accuracy:
 Class 0.5

 Resolution:
 12 bit

 Temp coefficient:
 <200 ppm/°C</td>

 Operating temp:
 -15 to +65°C

Humidity: 10-90 %RH non condensing

Outputs: 0-10VDC

Response time: RS485 MODBUS serial
1 Sec on 0-10VDC output
30mSec on MODBUS output

Measurement: 0-50 Amps AC/DC

0-300 Amps AC TRMS 20-2000Hz (mono-polar)

0-300 Amps DC (bi-polar) 3KV on an uninsulated conductor 1KA continuous, 2KA pulse

Indication: Via yellow LED

Supply voltage connected - fixed illumination

Data communicating – flashing

Dip switch: 8 way
Terminals: 5 way

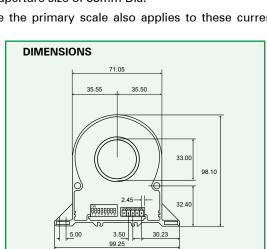
Isolation:

Overload:

Terminals: 5 way removable plug

Mounting: 5 crew or Din rail (via included clips)

CONNECTIONS



ORDERING INFORMATION

P/No's. QI-50-V-485 QI-300-V-485

AC/DC "CT" WITH MODBUS OUTPUT

AC / DC "CT" STYLE RS485 MODBUS RTU OUTPUT ENERGY METER



EED

TYPES: QI-POWER-485 50 Amps AC/DC, 800VAC or 1000VDC QI-POWER-485-LV 50 Amps AC/DC, 80VAC or 100VDC

FEATURES

- Primary current 0-50 Amps
- Voltage up to 800VAC or 1000VDC
- Voltage up to 80VAC or 100VDC (LV version)
- Universal AC 1-400Hz or DC measurement
- Output RS485 MODBUS RTU
- Measures Volts, Current, Watts, VAr, VA, Voltage Peak Current Peak, Hz, COS, KWh import, KWh export, THD
- Class 0.5 accuracy (voltage, current, active power)
- TRMS measurement
- Screw mounting or Din rail mounting
- Fast response time

DESCRIPTION

The QI-POWER-485 and QI-POWER-485-LV are moulded case high accuracy "CT" style universal DC or AC multi parameter energy meters and are galvanically isolated from the measuring circuit. The "CT's" have a primary current range of 0-50 Amps AC/DC and for voltage up to 800VAC or 1000VDC (LV version 80VAC or 100VDC).

The "CT's" are equipped with RS485 MODBUS RTU communications. Measuring parameters include Volts, Peak Volts, Current, Peak Current, Watts, VAr, VA, Hz, COS, KWh import, KWh export & THD.

Via the RS485 the "CT's" are fully configurable with the aid of free software supplied, for example response / filtering times can be configured, along with minimum current and power thresholds (below these values the device cuts off and the measured value is zero. The Baudrate is selected via dip-switches.

The "CT's" require a supply voltage of 9 to 30VDC and has an internal aperture size of 15mm Dia.

The principle of putting in primary turns on CT's to reduce the primary current range also applies to these current transformers.

SPECIFICATIONS

Supply voltage: 9 to 30VDC **Power consumption:** < 1.3 W

Accuracy: @ 25°C up to 200 Hz

Class 0.5 (I, V, W) Frequency +/-0.1Hz

Resolution: 12 bit

Temp coefficient: <200 ppm/°C
Operating temp: -15 to +65°C
Humidity: 10-90 %RHt

 Output:
 RS485 MODBUS RTU

 Baudrate:
 1200....115200 Baud

 Sampling rate:
 11K samples per second

 Input impedance:
 1M Ohm +/-1%

 Mounting:
 Screw or Din rail

Dip switch: 2 way

Max measurement range: 50 Amps AC/DC

800VAC or 1000VDC

80VAC or 100VDC (LV version)
ange: 1-400Hz

AC frequency range: 1-400Hz
Measuring parameters: Volts, Peak Volts, Current,

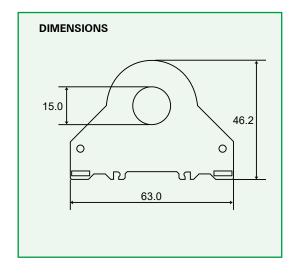
Peak Current, Watts, VAr, VA,

Hz, COS, KWh import & export, THD min & max each reading 3KV current measurement 4KV voltage measurement

On an uninsulated conductor Indication: Via yellow LED

Supply voltage present - steady Data communicating – flashing

Terminals: 4 way & 2 way removable plug



DIP SWITCH TABLE

Dip switch settings	1	2
All setting from EEPROM	0	0
Set Address 1 -Baud 9600	1	0
Set Address 1 -Baud 38400	1	1

ORDERING INFORMATION

P/No. QI-POWER-485

QI-POWER-485-LV (Low Voltage version)

Tel: 0161 626 5316 / 01276 25858

Isolation:

AC / DC "CT" STYLE RS485 MODBUS RTU OUTPUT ENERGY METER



TYPES: QI-POWER-485-300 QI-POWER-485-300-LV 300 Amps/800VAC or 400 Amps/1000VDC 300 Amps/80VAC or 400 Amps/100VDC

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FEATURES

- Primary current 0-300 Amps AC or 400 Amps DC
- Voltage up to 800VAC or 1000VDC
- Voltage up to 80VAC or 100VDC (LV version)
- Universal AC 1-400Hz or DC measurement
- Output RS485 MODBUS RTU with over 200 registers
- Measures Volts, Current, Watts, VAr, VA, Voltage Peak Current Peak, Hz, COS, KWh import, KWh export, THD
- Class 0.5 accuracy (voltage, current, active power)
- TRMS measurement
- Screw mounting or Din rail mounting
- Fast response time



The QI-POWER-485-300 and QI-POWER-485-300-LV are moulded case high accuracy "CT" style universal DC or AC multi parameter energy meters and are galvanically isolated from the measuring circuit. The "CT's" have a primary current range of 0-300 Amps AC or 0-400 Amps DC and for voltage up to 800VAC or 1000VDC (LV version 80VAC or 100VDC).

The "CT's" are equipped with RS485 MODBUS RTU communications. Measuring parameters include Volts, Peak Volts, Current, Peak Current, Watts, VAr, VA, Hz, COS, KWh import, KWh export & THD.

Via the RS485 the "CT's" are fully configurable with the aid of free software supplied, for example response / filtering times can be configured, along with minimum current and power thresholds (below these values the device cuts off and the measured value is zero. The Baudrate is selected via dip-switches.

The "CT's" require a supply voltage of 9 to 30VDC and has an internal aperture size of 33mm Dia.

The principle of putting in primary turns on CT's to reduce the primary current range also applies to these current transformers.

SPECIFICATIONS

Supply voltage: 9 to 30VDC **Power consumption**: <1.3 W

Accuracy: @ 25°C up to 200 Hz

Class 0.5 (I, V, W) Frequency +/-0.1Hz

Resolution: 12 bit

Temp coefficient: <200 ppm/°C
Operating temp: -15 to +65°C
Humidity: 10-90 %RHt

Output: RS485 MODBUS RTU
Baudrate: 1200....115200 Baud
Sampling rate: 11K samples per second

Input impedance: 1M Ohm +/-1%
Mounting: Screw or Din rail

Dip switch: 2 way

Max measurement range: 300Amps AC or 400 Amps DC

800VAC or 1000VDC

80VAC or 100VDC (LV version)

AC frequency range: 1-400Hz

Measuring parameters: Volts, Peak Volts, Current,

Peak Current, Watts, VAr, VA, Hz, COS, KWh import & export, THD min & max each reading 3KV current measurement

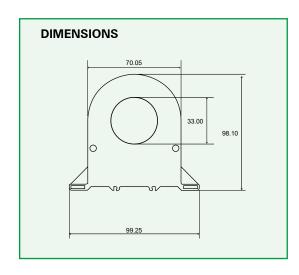
4KV voltage measurement On an uninsulated conductor

Indication: Via yellow LED

Supply voltage present - steady

Data communicating – flashing

Terminals: 4 way & 2 way removable plug



DIP SWITCH TABLE

Dip switch settings	1	2
All setting from EEPROM	0	0
Set Address 1 -Baud 9600	1	0
Set Address 1 -Baud 38400	1	1

ORDERING INFORMATION

P/No. QI-POWER-485-300

QI-POWER-485-300-LV (Low Voltage

version)

Tel: 0161 626 5316 / 01276 25858

Isolation:

QI MODBUS REGISTER TABLE & DIP SWITCH TABLE

REGISTER NAME	COMMENT	REGISTER TYPE	R/ W	DEFAULT VALUE	RANGE	MODBUS ADDRESS
Machine_ID	ID machine	Unsigned 16 bits	R	16		40001
FW_VERSION	Firmware Release	Unsigned 16 bits	R			40002
addr	MODBUS ADDRESS	Unsigned 16 bits	R/W	1	1250	40003
Delay	Answer Delay	Unsigned 16 bits	R/W	1	11000	40004
Baudrate	Baudrate 0=1200 / 1=2400 2=48000 / 3=9600 4=19200 / 5=38400 6=57600 / 7=115200	Unsigned 16 bits	R/W	1	17	40005
parity	Type of parity 0=8,N,1 1=8, O, 1(ODD) 2=8, E, 1(EVEN)	Unsigned 16 bits	R/W	0	02	40006
In_start	Start Input	Floating 32 bits	R/W	0		40007 (LO) 40008 (HI)
In-Stop	Stop Input	Floating 32 bits	R/W	300 AC/DC		40009 (LO) 40010 (HI)
Out_start_V	Start Output (mV)	Unsigned 16 bits	R/W	0	1 10000	40011
Out_stop_V	Stop Output (mV)	Unsigned 16 bits	R/W	10000	0 10000	40012
flit1	n∘ of samples for mobile average (1=100ms)	Unsigned 16 bits	R/W	1	132	40013
flit	Second level filter for ripple problems on AC measurement	Unsigned 16 bits	R/W	4096	1000 20000	40014
Cutoff	Cutoff value (A)	Unsigned 16 bits	R/W	1500		40029
RMS_A	RMS Current Value	Floating 32 bits	R			40037 (LO) 40038 (HI)
status	Status Register bit 0=1: Error flash setting bit 1=1: Errorflashcalibration bit 2=1: Over Range bit 3=1: Under Range	Unsigned 16 bits	R			40048
RMS_100	RMS Value of Current (A x 100)	Signed 16 bits	R			40050
RMS_sw	RMS Current Value @ swapped	Floating 32 bits	R			40051 (HI) 40052 (LO)
Ah	Ah counting (resettable)	Floating 32 bits	R/W			40053 (LO) 40054 (HI)
A_MAX	Max current value/100 (resettable)	Signed 16 bits	R/W			40055
A_min	min current value/100 (resettable)	Signed 16 bits	R/W			40056
Data High	Calibration Data (yy,mm)	Unsigned 16 bits	R			40057
Data Medium	Calibration Data (day, hour)	Unsigned 16 bits	R			40058
Data Low	Calibration Data (min, sec)	Unsigned 16 bits	R			40059



DISCRIPTION	1	2	3	4	5	6	7	8
All setting from EEPROM	0	0	0	0				
ADD= 1	0	0	0	1				
ADD= 2	0	0	1	0				
ADD= 15	1	1	1	1				
2400 BAUDRATE					0	0		
9600 BAUDRATE					0	1		
38400 BAUDRATE					1	0		
57800 BAUDRATE					1	1		
MONOPOLAR (TRMS)							0	
BIPOLAR (MEAN VALUE)							1	
300 A AC/DC								0
150 A AC/DC								1

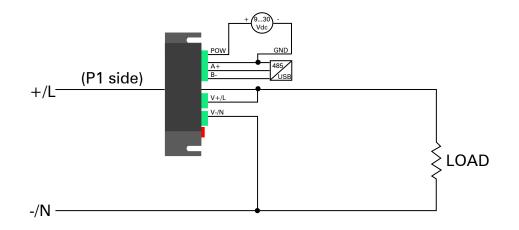
Dip-Switch Settings

Example: if you want to set the measured range from 0...300 A AC/DC to 0... 150A AC/DC, switch ON the dip-switch n°8 and switch ON also one of the first four dip-switches (if you don't do that it will continue to take the EEPROM setting).

If you want to change from uni-polar (default) to bi-polar function by dip-switch, switch ON the dip n°7 and switch ON also one of the first dip-switches (if you don't do that it will continue to take the EEPROM setting).

Any changes made by the dip-switches it is required to switch off the power supply. It's a safety condition in order to prevent any damage to the device.

CONNECTION DIAGRAM FOR QI-POWER-xxx



SOFTWARE DOWNLOADS

To enable programming, setup and configuration the following two free software downloads are available from www.qeed.it (section products/download software). **Java required**.

Software Download

tware Download Product Typ

FACILE-QI-50-V-485 FOR QI-50-V-485 & QI-300-V-485 FACILE-QI-POWER-485 For all QI-POWER-xxx variants

STANDARDS

EN61000-6-4/2006 + A1 2011; EN64000-6-2/2005; EN61010-1/2010 EN55022: 2010-12; EN55024: 2010-11; EN61000 6 4/2006 + A1 2011;

EN61000-6-4/2006 + A1 2011; EN64000-6-2/2005 ; EN61010-1/2010

CE Marked and UL pending on (some types)

190

ANALOGUE METERS, DIGITAL METERS, KWh & MULTI DISPLAY METERS

PAGES	P/No.	DESCRIPTION
192	AU318E	Ammeter selector switch
	V308E	Voltmeter selector switch
193 to 195		Din 48/72/96mm analogue meters
196 & 197	CS3S	Din 48x24mm, 4 digit, display only digital panel meters
198 & 199	CS3	Din 48x24mm, 5 digit, digital panel meters with output options
200 & 201	CM2	Din 96x48mm, 4 digit, display only digital panel meters
202 & 203	CSS-40/41/50	Din 96x48mm, 4, 4½, 5 digit digital panel meters with thumbwheel
		selectable relay output setpoints
204 to 207	CS1/CS2	Din 96x48mm, 5 digit, digital panel meters with output options
208	CST-321M	Din 96x48mm, 3½ digit, six channel temperature meter
209	CS2-TM	Din 96x48mm, DC Ampere hour meter with output options
210 & 211	VAW	Din 96x48mm, DC multi display energy meter with output options
212 & 213	MW-5	Din 96x48mm, 4½ digit, Wattmeter with output options
	MQ-5	Din 96x48mm, 4½ digit, VAr meter with output options
	MPF-5	Din 96x48mm, 4½ digit, Power Factor meter with output options
215	CUBE 300	Din 96mm, KW & KWh meter
216 & 217	CUBE 350	Din 96mm, single line display multi display energy meter
218 & 219	CUBE 400	Din 96mm, three line display multi display energy meter
220 & 221	MULTICUBE 950	Din 96mm, three line display, multi channel input, multi display
		energy meter
222 & 223	RAIL 350	Din rail mounted, multi display energy meters



DESCRIPTION

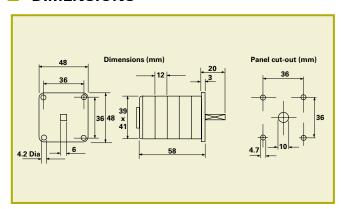
Two rotary selector switches for switching of ammeters (4 positions) and voltmeters (7 positions)

APPLICATION

192

Suitable for panel builders requiring a panel mounted switch for switching meters between phase currents or line & phase voltages.

DIMENSIONS





PRODUCT GROUP

SPECIFICATIONS

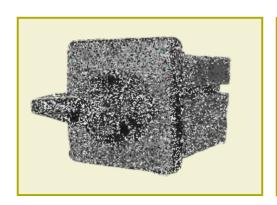
Rated current: BS EN 60947-3 10 A (AC22)
Rated voltage: BS EN 60947-3 500 V AC
IP rating: Front - IP 40, Back - IP 2X

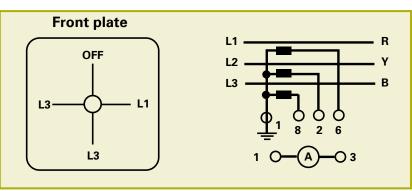
Max cable size: 4mm²

Temperature range: $-20^{\circ}\text{C to } +40^{\circ}\text{C}$

CE Marked: Yes

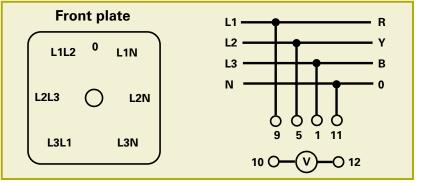
TYPE: AU318E AMMETER SELECTOR SWITCH





TYPE: V308E VOLTMETER SELECTOR SWITCH





Tel: 0161 626 5316 / 01276 25858 www.foxtamcontrols.co.uk

PRODUCT

GROUP

FOXTAM DIN 48, 72, 96mm ANALOGUE METERS

GENERAL INTRODUCTION

The Foxtam Controls range of Din standard analogue meters are available as 48mm, 72mm and 96mm. The moving iron ammeters are fitted with the British standard x6 overload scale. However

x5, x2 and no overload options are also readily available. The range, as standard, are supplied with 90° movements, 240° movements are also available to order. Please contact the sales office for assistance.

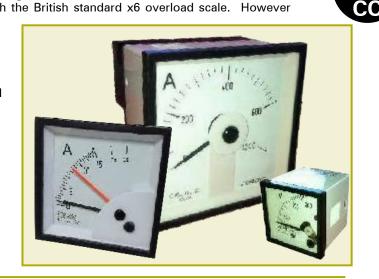
The majority of meters are supplied with terminal covers as standard.

TECHNICAL SPECIFICATIONS

Standards:DIN43700, IEC51 and BS89Sizes:Din 48mm, 72mm and 96mmTypes:AC Moving Iron & DC Moving Coil

Protection: IP52 (IP65 on request)
Insulation: 2kV for 1min

Temperature: Operating -25° C to $+40^{\circ}$ C **Construction:** Pivot and jewel movement



MOVING IRON AC AMMETERS

Types: D48SD, D72SD, D96SD

Accuracy: Class 1.5

Burden: 1A & 5A movements 0.7VA, 6A to 30A 1.2VA, 40A and

above 2.4VA

Ranges: 0.5/1/1.5/2/2.5/4/5/6/10/15/20/25/30/40/50/60/80/100Amps

(D48SD only up to 40A) 1A & 5A movements also used

as CT input i.e. D72SD/CT5 Scaled: 0-100A x6

Overscales: British standard x6. On request x2, x5 or no overscale



MOVING IRON AC VOLTMETERS

Types: D48SD, D72SD, D96SD

Accuracy: Class 1.5 Burden: Max 6VA

Ranges: 150/300/500VAC (others on request)



FREQUENCY METERS

Types: D48HZ, D72HZ, D96HZ

Accuracy: Class 1 Burden: 6mA

Ranges: 45-55Hz, 45-65Hz, 55-65Hz, 360-440Hz

(45-65Hz standard range) Supply voltage must be specified 110/240/380/400/415/440V



MOVING COIL DC AMMETERS

Types: D48MC, D72MC, D96MC

Accuracy: Class 1.5

Burden: 80mV to 150mV volt drop depending on input current **Ranges:** Any input between 50 to 800uA and 1 to 800mA

Also 1/1.5/2/2.5/4/5/6/10/15/20/25/30/40/50A

(D48MC only up to 30A) Dedicated 4-20mA version

Scales: Special scales made as requested



DIN 48, 72, 96mm ANALOGUE METERS

MOVING COIL DC VOLTMETERS

Types: D48MC, D72MC, D96MC

Accuracy: Class 1.5 Burden: Approx 1mA

Ranges: 50mV to 1000V specify range required

**D48MC up to 800V

Shunt input ranges available as standard i.e. 60mV

Scales: Special scales made as required





POWER FACTOR METER

Types: D96PF (Self contained)

Accuracy: Class 1.5

Burden: Current inputs 0.5VA, voltage inputs 2VA Inputs: Current via 1Amp or 5Amp CT input

Voltage direct 63VAC to 500VAC

System: 3P3W Balanced

Ranges: CAP 0.5 to 1 to IND 0.5



WATT METERS

Types: D96WA Accuracy: Class 1.5

Burden: Current inputs 0.5VA, voltage inputs 2VA Inputs: Current via 1Amp or 5Amp CT input

Voltage direct 63VAC to 500VAC

Systems: Single phase, 3P3W Balanced, 3P4W Balanced

3P3W Unbalanced, 3P4W Unbalanced



ANALOGUE METER OPTIONS

- Extra adjustable red pointer
- Coloured segments on scale
- Polycarbonate fronts
- External potentiometer adjustment (DC only)
- AC rectified movements
- Rubber terminal boots

- Red line on scale
- Tropical finish and sealed to IP65
- Heavily damped movements
- Centre zero movements (DC only)
- Terminal covers
- Special scales

PANEL CUT OUTS

Din 48mm: 45x45mm Din 72mm: 68x68mm Din 96mm: 92x92mm

PHASE SEQUENCE INDICATORS

Foxtam Controls Phase Sequence Indicators (P.S.I) are suitable for a range of applications to indicate both the presence of all three phases and the correct sequence of those phases.

Incorrect phase connection will often cause serious damage to the motors of compressors, pumps, gen-sets, heating and ventilation equipment. Mobile generators, remote installations and shore to ship supplies are most vulnerable to such hazards and are, therefore, ideal applications for the Foxtam range.

The absence of a phase is indicated by a neon to identify the missing phase. The presence of all three phases in the correct sequence is indicated by the white neon. Incorrect phase sequence is indicated by a red neon.

MODELS

FE48PSI 48mm square FE72PSI 72mm square FE96PSI 96mm square

TECHNICAL DATA

Ratings: Voltage 180 - 500V Frequency 50/60Hz

Burden: 3VA maximum



■ FULLY IP65 SEALED DIN 72mm & 96mm ANALOGUE METERS, AS REQUIRED FOR WATER AUTHORITY MCC'S



FEATURES

- 72mm Ammeters & Voltmeters
- 96mm Ammeters & Voltmeters
- Fully front IP65 sealed
- Supplied with IP65 panel gasket
- Supplied with terminal cover
- Ammeters with ARP (Adjustable Red Pointer)
- Adjusters sealed with O-Rings
- Everything supplied as a kit

IP65 Sealed Glass Window O-Ring Seals

DESCRIPTION

Din 72mm & 96mm analogue meters that are genuinely IP65 sealed, both from the front and also sealed to the panel via a gasket. The front seal is achieved by sealing the glass into the plastic bezel, whilst the adjusters for the adjustable red pointer, along with the zero adjuster are fitted into the glass with o-ring seals.

Ammeters are stocked in Din 72mm (Din 96mm on request) direct connected 2 Amps, 3 Amps, 4 Amps, 5 Amps, 8 Amps, 10 Amps, 15 Amps, 20 Amps and 25 Amps. Also stocked are 5 Amps movement meters driven from a 5 Amp secondary current transformer (1 Amp secondary on request) and a corresponding scale will be fitted to match the current transformers primary. All ammeters have x6 overload movements and are fitted with the adjustable red pointer as standard. (On Request these can be supplied without)

Voltmeters are stocked in both Din 72mm and 96mm 0-500VAC. As standard they are not supplied with the adjustable red pointer option. (ARP available on request if required).

All meters are supplied as a kit which includes the IP65 panel gasket and a terminal cover.

ORDERING INFORMATION

TYPE	INPUT	RANG	ES	RED POINTER	
D72/IP65	*CT1A	0.5A	4A	15A	** ARP
D96/IP65	*CT5A	1A	5A	20A	
	DR	1.5A	6A	25A	
	0-500V	2A	8A	30A	
		3A	10A	40A	
* C:	!				

* Specify current input range



DIN 72mm & 96mm GLASS CASED HOUR COUNTERS

TYPES: R572/AC VOLTS & R5 77/DC VOLTS (DIN 72mm) R596/AC VOLTS & R5 97/DC VOLTS (DIN 96mm)



FEATURES

- DIN 72mm or DIN 96mm
- Instrument case style
- Seven digits
- Optional reset versions
- Metal fixing clamp
- With operation indication

DESCRIPTION

Glass cased Din 72mm and Din 96mm seven digit hour run counters. These hour counters compliment and match Din standard analogue meters. The counters are supplied complete with a metal fixing bracket and push on terminations 6.3x0.8mm. Please see our Hour Counter section, page 149 for full specifications and ordering information.



^{**} Insert ARP if Adjustable Red Pointer is required

DIN 48x24mm 4 DIGIT, DIGITAL PANEL METER,

DISPLAY ONLY

TYPE: CS3S

FEATURES

196

- Measuring DCA, DCV, ACA, ACV & PT100 inputs
- **Optional TRMS versions**
- **Analogue signal inputs**
- High accuracy, stability & resolution
- Wide range of AC & DC auxiliary supplies
- Special scaling
- **CE** marked



Programming & set up buttons can be specified with "Visible Buttons" on the front panel or "Discrete Buttons" behind the front screen. If not specified. meter will be supplied with "Discrete Buttons"

DESCRIPTION & MODE OF OPERATION

Din 48x24mm 4 digit microprocessor based digital panel meters, available with a wide choice of both AC and DC voltage or current inputs including standard and non standard analogue signal inputs. PT100 temperature inputs can also be specified. The meters are can be programmed by four tactile switches that can be specified to be accessed directly on the front panel or specified as discrete, where the buttons are hidden behind the front screen. These meters are display only meters and have no outputs, for meters Din 48x24mm with outputs please see meter type CS3 on pages 198 &199

SPECIFICATIONS

Measuring accuracy (VAD): $\leq \pm 0.1\%$ FS ± 1 digit Measuring accuracy (VAA): $\leq \pm 0.2\%$ FS ± 1 digit Measuring accuracy (VAAT): $\leq \pm 0.2\%$ FS ± 1 digit Measuring accuracy (TR): $\leq \pm 0.1\%$ FS ± 1 digit \leq 100 PPM/°C Temperature effect: Sampling rate: 15 cycles / sec Response time: ≤ 100mSec (standard) Can be altered in set up

Display: 4 x red LED's Display range: -1999 to +9999

Decimal point: At any point or not at all Maximum over range: Voltage x1.2 rated voltage continuous Current x1.2 rated current continuous

Aux. Supply: 5VDC (4.5-9VDC), 12VDC (9-18VDC), 24VDC (18-36VDC), 48VDC (36-72VDC) ADH 85-264VAC & 100-300VDC

Power consumption: AC: ≤1.5VA DC: ≤1W

0-60°C Operating temperature: **Operating humidity:** 20-95% RH

Dielectric strength: 2KV for 1 min, between input & aux. > 100M0hms @ 500VDC between input & aux

Insulation resistance: EMC: EN55011:2002 & EN 61326:2003

EN61010-1:2010 Low voltage directive: **Dimensions mm:** 48(W) x 24(H) x 78(D) Panel cut out mm: 45(W) x 22.5(H) ABS (UL 94V-0) Case material: Terminals: Screw max 2mm²

FEATURES

The following functions can be set up at the time of ordering, or programmed if required at a later date:

AvG to increase or decrease the response time, factory default 100mSec

dF iLT to increase filtering on noisy supplies possibly to be utilised in conjunction with AvG.

LoCUt to ignore induced readings at zero from leaky circuits or noise pick up, but not at the detriment of a real reading. For example if LoCUt value of 5 set, any reading of 5 or below is ignored, but when reading is genuinely say 100 the meter reads 100 and not 95

AoLS low scale point when scaling say to other engineering values, can be set from -1999 to +9999 the meter has the facility to also fine adjust

AoHS high scale point when scaling say to other engineering values, can be set from -1999 to +9999 the meter has the facility to also fine adjust

Further details and assistance on the above set up features are available from our sales office.

MEASUREMENT

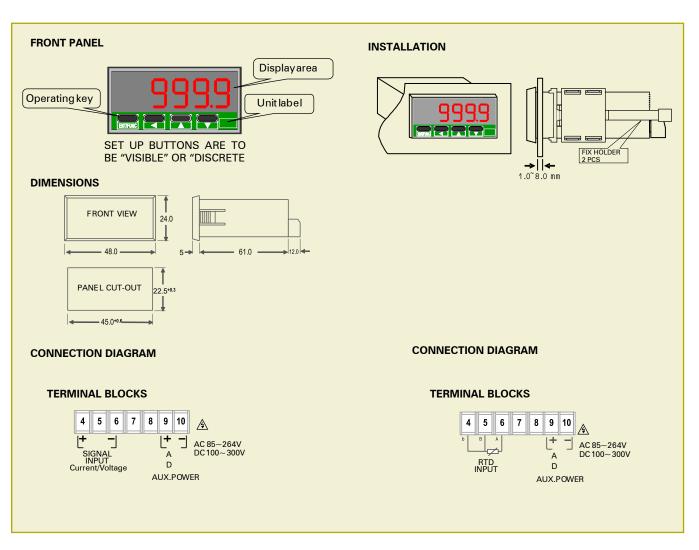
	VOLTAGE NPUT RANGE INPUT RESISTANCE		RRENT INPUT RESISTANCE	TEMPERATURE INPUT RANGE INPUT RESISTANCE		
INFOT NAINGE	INFOT RESISTANCE	INPUT RANGE	INPUT RESISTANCE	INFOI NAINGE	INPUT RESISTANCE	
0-199.9mV 0-1.999V 0-19.99V 0-199.9V 0-300V 0-50mV 0-60mV 0-100mV 0-1V 0-5V	≥ 5M Ohms ≥ 1M Ohms ≥ 1M Ohms ≥ 1M Ohms ≥ 1M Ohms ≥ 2M Ohms ≥ 5M Ohms ≥ 5M Ohms ≥ 5M Ohms ≥ 1M Ohms ≥ 1M Ohms ≥ 1M Ohms	0-1.999uA 0-1.999mA 0-19.99mA 0-199.9mA 0-1.999A 0-1A 0-1mA 0-10mA 0-20mA 4-20mA	≤ 1K Ohms ≤ 100 Ohms ≤ 10 Ohms ≤ 1 Ohm ≤ 0.05 Ohms ≤ 0.1 Ohms ≤ 100 Ohms ≤ 250 Ohms ≤ 250 Ohms ≤ 250 Ohms	PT100 PT1000	≥ 1M Ohms ≥ 1M Ohms	

ORDERING INFORMATION (The meter will be scaled exactly to your requirements, please specify any special scaling required and any scaling to other engineering units)

	INPUT TYPE	INPUT RANGE V	INPUT RANGE A	PT100/PT1000 INPUT RANGE	AUX. SUPPLY
CS3S-	VAD (VDC or ADC) VAA (VAC or AAC) VAT (TRMS) TR1 (PT100) TR2 (PT1000)	0-199.9mV 0-1.999V 0-19.99V 0-300V 0-50mV 0-60mV 0-100mV 0-1V 0-5V 0-10V 1-5V 2-10V Special specify	0-1.999uA 0-1.999mA 0-19.99mA 0-199.9mA 0-1.999A 0-1A 0-1mA 0-10mA 0-20mA 4-20mA Special specify	-199.9-800.0°C* -199.9-600.0°C** Special specify *TR1 **TR2	5VDC (4.5-9VDC) 12VDC (9-18VDC) 24VDC (18-36VDC) 48VDC (36-72VDC) ADH 85-264VAC 100-300VDC



Please also specify if front programming / set up buttons are to be "Visible" or "Discrete"



DIN 48x24mm DIGITAL MICROPROCESSOR METER WITH RELAY OUTPUTS, ANALOGUE SIGNAL

OUTPUT, RS485

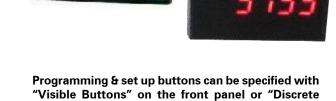
TYPE: CS3

FEATURES

198

- DCA & DCV analogue signal inputs
- Potentiometer & resistance inputs
- High accuracy, stability & resolution
- Choice of relay, analogue signal or RS485 outputs
- Digital inputs for hold & de-latch functions
- Excitation supply available
- CE marked

DESCRIPTION



Buttons" behind the front screen. If not specified,

meter will be supplied with "Discrete Buttons"

GROUP DD

Miniature Din 48x24mm 5 digit panel meters, available with a wide choice of DC analogue voltage and current signal inputs, along with potentiometer and resistance inputs. These meters can be specified with one or two relay outputs, plus if required an analogue output or RS485 MODBUS RTU. An excitation supply of 24VDC max 30mA is featured as standard on the CS3-PR version. These meters utilise the latest microprocessor technology in both the setting and operation of the meter.

SPECIFICATIONS

General

 $\begin{tabular}{lll} \mbox{Measuring accuracy:} & \leq \pm 0.04\% \ \mbox{FS} \pm 1 \ \mbox{digit} \\ \mbox{Sampling rate:} & 15 \ \mbox{cycles/Sec} \\ \mbox{Response time:} & \leq 100 \mbox{mSec} \\ \mbox{Display:} & 10 \mbox{mm high LED's} \\ \mbox{Display range:} & -19999 \ \mbox{to} + 29999 \\ \mbox{Decimal point:} & \mbox{At any point or not at all} \\ \end{tabular}$

Over range indication: "ovFL" displayed when input is over

120% of input range

Under range indication: "-ovFL" displayed when input is under

-20% of input range
Power supply: 20-90V AC/DC
85-264V AC/DC

Power consumption: 4.5VA

Excitation supply: 24VDC / 30mA max (CS3-PR only)

Dielectric strength: AC 1.5KV for 1 min between input,

output/s, power & case

Protection: IP54

OPTIONAL RELAY OUTPUT

Relay programmable: Low/Low/Low/High/High/Low-High

Latching: Optional please specify

Number of setpoints: 1 or 2

Energisation functions: Start delay/Energisation & De-energisation delay/Energisation latching/Hysteresis

Time delay programmable: 0-9 mins 59.9 secs
Hysteresis programmable: 0-5000 counts

Relay contacts: 2 x NO: 1A/230VAC, 3A/115VAC

OPTIONAL ANALOGUE OUTPUT

Accuracy: $\leq \pm \%$ of FSRipple: $\leq \pm \%$ of FS

Response time: $\leq 100 \text{ mSec } (10-90\% \text{ of input})$

Output capability: Voltage 1000 0hm
Current into 600 0hm max

OPTIONAL RS485 COMMUNICATIONS

Protocol: MODBUS RTU

Baud rate programmable: 1200/2400/4800/9600/19200/38400

Data bits: 8 bit programmable

Parity programmable: Even, odd or none (with 1 or 2 stop bit)

Address programmable: 1-255 programmable
Distance: 1200 Metres
Terminal resistor: 150 0hm at last unit

ORDERING INFORMATION (The meter will be scaled and set exactly to your requirements)

	INPUT TYPE	INPUT RANGE	OUTPUT 1	OUTPUT 2	AUX. POWER
CS3	PR (Analogue signal) PM (Potentiometer) RS (Resistance)	Insert input range from lists below any custom signal is also generally possible.	None 1 Relay* 2 Relays*	None 0-5VDC 1-5VDC 0-10VDC 0-10mA 0-20mA 4-20mA Specify RS485	20-90V AC/DC 85-264V AC/DC

INPUT RANGES ANALOGUE SIGNALS POTENTIOMETER RESISTANCE 0-5VDC 0-50 to 2K Ohm (3 wire) 0-200 Ohm (2 wire) 1-5VDC 0-2K to 100K Ohm (3 wire) 0-2K Ohm (2 wire) 0-10VDC 0-20K Ohm (2 wire) 0-200K Ohm (2wire) 0-10mA Specify Specify 0-20mA 4-20mA

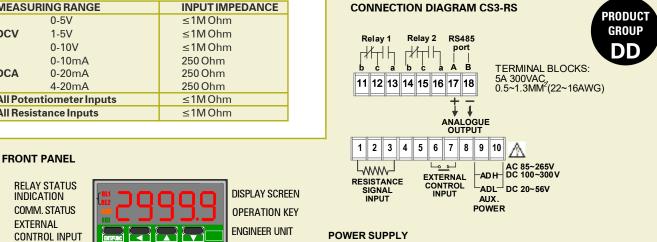
 Specify relay/s configuration/s and any delay times or hysteresis

Tel: 0161 626 5316 / 01276 25858

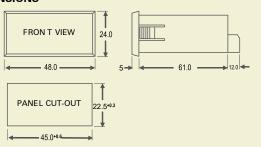
Specify

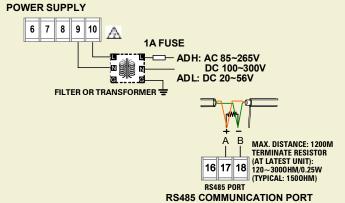
MEASUREMENT

MEASU	RING RANGE	INPUT IMPEDANCE
	0-5V	≤1M Ohm
DCV	1-5V	≤1M Ohm
	0-10V	≤1M Ohm
	0-10mA	250 Ohm
DCA	0-20mA	250 Ohm
	4-20mA	250 Ohm
All Pote	ntiometer Inputs	≤1M Ohm
All Resis	stance Inputs	≤1M Ohm

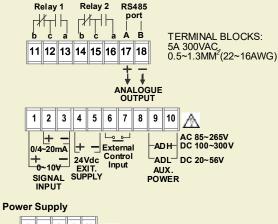


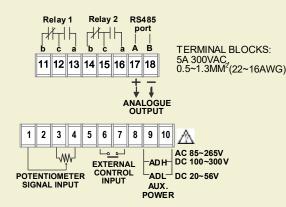




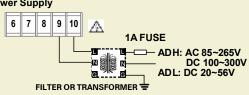


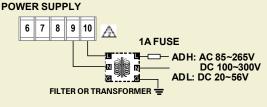




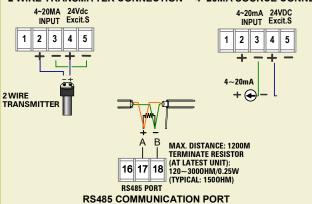


CONNECTION DIAGRAM CS3-PM











DIN 96x48mm 4 DIGIT DISPLAY ONLY MICROPROCESSOR METER AC & DC VOLTAGE & CURRENT, DC ANALOGUE SIGNALS, THERMOCOUPLE, PT100 & PT1000 INPUTS

TYPE: CM2

FEATURES

200

- Measuring DCA, DCV, ACA, ACV
- **Optional TRMS versions**
- Measuring DC analogue signals inputs
- Measuring thermocouple inputs
- Measuring PT100 & PT1000 inputs
- High accuracy, stability & resolution
- Optional excitation supply available
- Wide range of auxiliary supplies
- Special scaling
- **CE** marked



Programming & set up buttons can be specified with "Visible Buttons" on the front panel or "Discrete Buttons" behind the front screen. If not specified, meter will be supplied with "Discrete Buttons"

DESCRIPTION & MODE OF OPERATION

Din 96x48mm 4 digit panel meters, available with a wide choice of AC & DC voltage and current inputs, including DC analogue signal inputs, thermocouple inputs and PT100, PT1000 inputs. The meters are can be programmed by four tactile switches that can be specified to be accessed directly on the front panel or specified as discrete, where the buttons are hidden behind the front screen. These meters are display only meters and have no outputs, for meters with outputs please

All meters, in particular analogue input meters can be scaled to other engineering values, including negative to positive scaling and offset zero.

FEATURES

The following functions can be set up at the time of ordering, or programmed if required at a later date: AvG to increase or decrease the response time, factory default 100mSec

dF iLT to increase filtering on noisy supplies possibly to be utilised in conjunction with AvG.

LoCUt to ignore induced readings at zero from leaky circuits or noise pick up, but not at the detriment of a real reading. For example if LoCUt value of 5 set, any reading of 5 or below is ignored, but when reading is genuinely say 100 the meter reads 100 and not 95.

AoLS low scale point when scaling say to other engineering values, can be set from -1999 to +9999 the meter has the facility to also fine adjust.

AoHS high scale point when scaling say to other engineering values, can be set from -1999 to +9999 the meter has the facility to also fine adjust

Further details and assistance on the above set up features are available from our sales office.

SPECIFICATIONS

 \leq \pm 0.1% FS + 1 digit Measuring accuracy (PR): _____<u>< +</u>0.2% FS <u>+</u> 1 digit Measuring accuracy (TC): Measuring accuracy (TR): \leq \pm 0.2% FS \pm 1 digit

 \leq 100 PPM/ $^{\circ}$ C Temperature effect: 15 cycles / sec Sampling rate: Response time: ≤ 100mSec (standard) Can be altered in set up 4 x 20mm high red LED's Display: -1999 to +9999 Display range: Decimal point: At any point or not at all

Over range indication: "ouFL" when input is >110% of input range Under range indication: "-ouFL" when input is < LoSC value ADH: 85-264VAC & 100-300VDC Aux. Supply

ADL: 20-56VAC/DC Power consumption: AC: \leq 8VA DC: \leq 4W Back up memory:

0-60°C Operating temperature: Operating humidity: 20-95% RH

EMC:

Dielectric strength: 2KV for 1 min, between input & aux. Insulation resistance:

≥100M0hms @ 500VDC between input & aux

EN55011:2002 & EN 61326:2003

Low voltage directive: EN61010-1:2010 96(W) x 48(H) x 80(D) Dimensions mm: 92(W) x 45(H Panel cut out mm: ABS (UL 94V-0) Case material: Screw max 2mm² Terminals:

MEASUREMENT

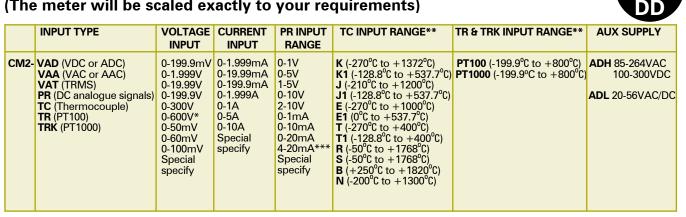
VOLTAGE	INPUT	VOLTAGE	INPUT	CURRENT	INPUT
INPUT RANGE	RESISTANCE	INPUT RANGE	RESISTANCE	INPUT RANGE	RESISTANCE
0-199.9mV 0-1.999V 0-19.99V 0-199.9V 0-300V 0-600V 0-50mV 0-60mV	> 5M Ohms > 1M Ohms > 1M Ohms > 1M Ohms > 2M Ohms > 3M Ohms > 5M Ohms > 5M Ohms > 5M Ohms	0-1V 0-5V 1-5V 0-10V* 0-10V 2-10V	> 1M Ohms > 1M Ohms > 1M Ohms > 1M Ohms* > 100K Ohms > 100K Ohms *Special request	0-1mA 0-10mA 0-20mA 4-20mA 0-1.999mA 0-19.99mA 0-1.999A 0-1A 0-5A	250 Ohms 250 Ohms 250 Ohms 250 Ohms 100 Ohms 1 Ohm 0.05 Ohms 0.1 Ohms 0.02 Ohms

PRODUCT

GROUP

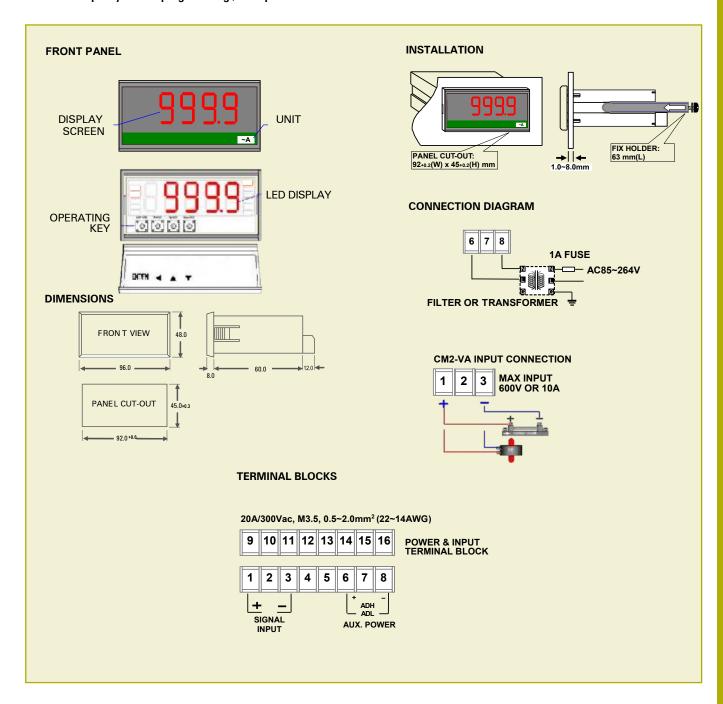
ORDERING INFORMATION

(The meter will be scaled exactly to your requirements)



^{*}For voltage inputs in excess of 600V, please use meter type CS1, see pages 204 to 207

Please also specify if front programming / set up buttons are to be "Visible" or "Discrete"



^{**}On TC, TR & TRK input meters, scaling can also be on request in 'F'

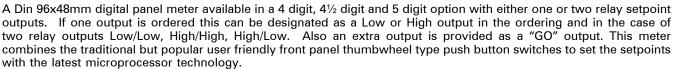
^{***}An optional (extra cost) 24VDC built in excitation voltage output can be specified, max 30mA

TYPES:

FEATURES

- Measuring DCA, DCV, ACA, ACV, Hz
- Process signal inputs
- High accuracy, stability and resolution
- Easily programmable via thumbwheel switches
- Three relay output possibilities
- Optional excitation supply available
- CE marked

DESCRIPTION



SPECIFICATIONS

Measuring accuracy (AC): 4 digit: \pm 0.1% FS \pm 1 digit 4 ½ digit & 5 digit: \pm 0.04% FS \pm 1 digit

 $\begin{tabular}{ll} \textbf{Measuring accuracy (other):} & 4 \ digit: \pm 0.04\% \ FS \pm 1 \ digit \\ & 4 \ \% \ digit: \pm 5 \ digit: \pm 0.02\% \ FS \pm 1 \ digit \\ \end{tabular}$

Sampling rate: Approx every 100mSec
Display: 14.2mm high red LEDs
Over-range indication: "OFL" displayed

 Under-range indication:
 "-OFL" displayed

 Relays output:
 SPDT: 115V/3A, 230V/2A AC1

 Optional excitation supply:
 DC: 10V/35mA, 24V/25mA

 Power supply:
 115/230 VAC ± 15%, 50/60Hz

 12VDC, 24VDC, 48VDC

 $\begin{array}{lll} \textbf{Power consumption:} & 4.5 \text{VA} \\ \textbf{Operating temperature:} & 0.55 ^{\circ}\text{C} \\ \textbf{Operating relative humidity:} & 20-90 ^{\circ}\text{RH} \\ \textbf{Temperature coefficient:} & \leq 100 \text{ PM/}^{\circ}\text{C } (0.50 ^{\circ}\text{C}) \\ & \leq 50 \text{ PM/}^{\circ}\text{C } (23 \pm 3 ^{\circ}\text{C}) \\ \textbf{Storage temperature:} & -10 ^{\circ}\text{C to } +70 ^{\circ}\text{C} \\ \end{array}$

Dielectric strength: AC 2.0KV for 1 min between input,

output/s, power & case

Protection: IP54

Measurement

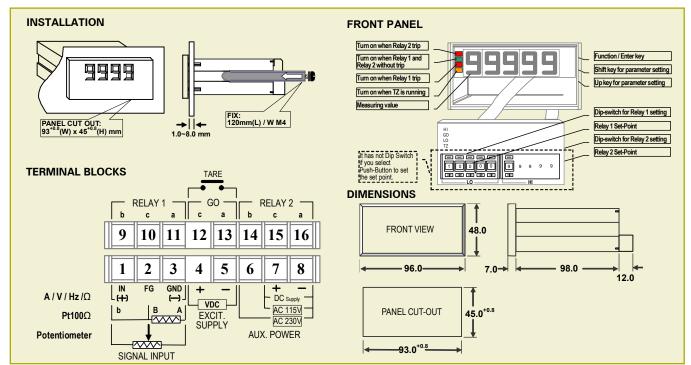
9 0

	MEASURING RANGE	INPUT IMPEDANCE
	999.9 / 999.99uA	1K Ohm
	9.999 / 9.9999mA	100 Ohm
CURRENT	9.99 / 99.999mA	10 Ohm
AC / DC	1.000 / 1.0000A	1 Ohm
	5.000 / 5.0000A	0.02 Ohm
	10.00 / 10.000A	0.01 Ohm
	99.99 / 99.999mV	≤5M Ohm
	999.9 / 999.99mV	≤1M Ohm
	9.999 / 9.9999V	≤1M Ohm
VOLTAGE	99.99 / 99.999V	≤1M Ohm
AC / DC	150.0 / 150.00V	≤1M Ohm
	300.0 / 300.00V	≤1M Ohm
	600.0 / 600.00V	≤1M Ohm
	1000/ 1000.0V	≤1M Ohm
All Frequence	cy Inputs	≤1M Ohm
All Potention	nmeter Inputs	≤1M Ohm
All Resistan	ce Inputs	≤1M Ohm
All PT100 In	puts	≤1M Ohm

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0 0 9

9 0 0 0



■ ORDERING INFORMATION (The meter will be scaled exactly to your requirements)



DISPLAY	INPUT TYPE	INPUT RANGE	RELAY OUTPUT	OPTIONAL EXCITATION	AUX. SUPPLY
CSS-40 (4 digit) CSS-41 (4 1/2 digit) CSS-50 (5 digit)	D (VDC or ADC) A (VAC or AAC) TR (TRMS) F (Frequency) T (Temperature) P (Potentionmeter) R (Resistance 2 wire)	Insert input range from lists below, any custom signal is also generally possible.	L (Low) H (High) LL (Low / Low) HH (High / High) HL (High / Low)	10VDC Exc 12VDC Exc 24VDC Exc Specify	115/230VAC 24VAC 12VDC 24VDC 48VDC Specify AC Specify DC

INPUT RANGES	S					
CURRENT	VOLTAGE	STRAIN GAUGE	FREQUENCY &	TYPE/LEVEL	POTENTIOMETER	PT100
0-100uA 0-1mA 0-10mA 0-20mA 4-20mA 0-100mA 0-1A 0-5A 0-10A Specify	0-50mV 0-60mV 0-100mV 0-1V 0-5V 1-5V 0-10V 2-10V 0-100V 0-150V 0-300V 0-600V 0-1000V -10 to +10VDC Specify	1.0mV/V 1.25mV/V 1.5mV/V 2.0mV/V 3.0mV/V 4.0mV/V 5.0mV/V 10.0mV/V 20.0mV/V Specify	0-10Hz 0-20Hz 0-50Hz 0-100Hz 0-200Hz 0-500Hz 0-1KHz 0-2KHz 0-5KHz 0-10KHz 0-30KHz Specify	Open collect Volt free contact 5V pulse 12V pulse 24V pulse 100-300VAC 300-600VAC Specify	50-10K Ohm 10K-100K Ohm Specify Resistor (2 wire) 0-100 Ohm 0-1K Ohm 0-10K Ohm Specify	-50 to 0°C -50 to +50°C -50 to +100°C -50 to +200°C 0 to 50°C 0 to 100°C 0 to 200°C 0 to 400°C 0 to 600°C -100 to + 100°

SCALING IF REQUIRED VIA CT's & VT's OR TO OTHER ENGINEERING UNITS

DIN 96x48mm 5 DIGIT MICROPROCESSOR METER WITH RELAY OUTPUTS, ANALOGUE SIGNAL

OUTPUT, RS485

TYPES: CS1, CS2

FEATURES

204

- Measuring DCA, DCV, ACA, ACV, Hz
- Analogue signal inputs
- Hz & pulse rate inputs
- Thermocouple & PT100 inputs
- Strain gauge inputs
- Potentiometer & resistance inputs
- High accuracy, stability & resolution
- Choice of relay, analogue signal or RS485 outputs
- Optional excitation supply available
- Special scaling
- CE marked

DESCRIPTION

Din 96x48mm 5 digit digital panel meters, available with a wide choice of both DC and AC inputs, along with many process inputs. The meter can be specified with a choice of one of three outputs, one relay (non adjustable from the front) can be specified as latched or non latched, an isolated analogue output or RS485 MODBUS RTU. The meter utilises the latest microprocessor technology in both the setting and operation of the meter.

SPECIFICATIONS

GENERAL

Measuring accuracy (VAA): $\leq \pm 0.1\%$ FS ± 1 digit Measuring accuracy (VAT): $\leq \pm 0.1\%$ FS ± 1 digit Measuring accuracy (VAD): $\leq \pm 0.04\%$ FS ± 1 digit Measuring accuracy (F): \leq ± 0.005% FS ± 1 digit $\leq \pm 0.04\%$ FS ± 1 digit Measuring accuracy (SG): Measuring accuracy (PM): $\leq \pm 0.04\%$ FS ± 1 digit Measuring accuracy (RS): \leq ±0.04% FS ±1digit Measuring accuracy (T): $PT100: \le \pm 0.1\% FS \pm 1 digit$ Thermocouple: $\leq \pm 0.2\%$ FS ± 1 digit

Measuring accuracy(RL): $\leq \pm 0.005\%$ FS ± 1 digitSampling rate:15 cycles / secResponse time: $\leq 100m$ SecDisplay:20mm high red LEDs

Display range: -19999 to 29999 (CS1-RL 0.0000 to 99999)

Decimal point: At any point or not at all

Over-range indication: "ovFL" displayed when input is over 120%

of input range

Under-range indication: "-ovFL" displayed when input is under -20%

of input range

Power supply: $115/230 \text{ VAC} \pm 15\%, 50/60 \text{Hz}$

20-90V AC/DC 85-264V AC/DC

 Power consumption:
 4.5 - 5VA

 Excitation max current:
 30mA

 Operating temperature:
 $0-60^{\circ}C$

 Operating relative humidity:
 20-95% RH

 Temperature coefficient:
 ≤ $100PPM / ^{\circ}C$

 Storage temperature:
 $-10^{\circ}C$ to $+70^{\circ}C$

Dielectric strength: AC 2.0KV for 1 min between input, output/s

power and case

Protection: IP54



Programming & set up buttons can be specified with "Visible Buttons" on the front panel or "Discrete Buttons" behind the front screen. If not specified, meter will be supplied with "Discrete Buttons"

OPTIONAL RELAY OUTPUT

Relay programmable: Low, High, Low (latched), High (latched)

Number of setpoints: 1

Energisation functions: Start delay / Energisation & de-energisation

delay/Energisation latching/Hysteresis

PRODUCT

Time delay adjustable: 0-9 mins 59.9 secs

Relay contact: SPDT 5A/230VAC, 10A/115VAC

OPTIONAL ANALOGUE OUTPUT

Response time: ≤100mSec (10-90% of input)

Output capability: ≥Voltage 1000 Ohm
Current into 600 Ohm max

OPTIONAL RS485 COMMUNICATIONS:

Protocol: MODBUS RTU

Baud rate programmable: 1200/2400/4800/9600/19200/38400

Data bits: 8 bits

Parity programmable: Even, odd or none (with 1 or 2 stop bit)

Address programmable: 1-255
Distance: 1200 Metres
Terminal resistor: 150 0 hm at last unit

MEASUREMENT

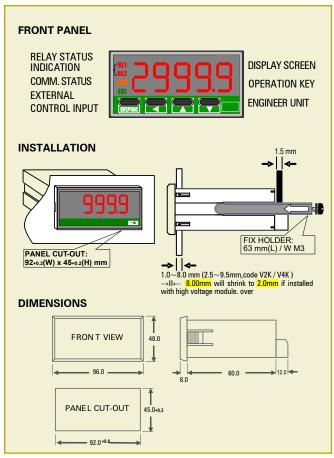
	MEASURING RANGE	INPUT IMPEDANCE			
	0-199.99uA	1K Ohm			
	0-1.9999mA	100 Ohm			
	0-19.999mA	10 Ohm			
	0-199.99mA	1 Ohm			
CURRENT	0-1.9999A	0.05 Ohm			
AC/DC	0-5A	0.02 Ohm			
	0-10A	0.01 Ohm			
	0-10mA	250 Ohm			
	0-20mA	250 Ohm			
	4-20mA	250 Ohm			
	0-50 to 100mV	≥5M 0hm			
	0-199.99mV	≥5M 0hm			
	0-1.9999V	≥1M 0hm			
VOLTAGE	0-19.999V	≥1M 0hm			
AC/DC	0-199.99V	≥1M 0hm			
	0-300V	≥2M 0hm			
	0-600V	≥2M 0hm			
	0-1000V	≥2M 0hm			
All Strain Gau	ige Inputs	≥1M 0hm			
All Resistanc	e Inputs	≥1M 0hm			
All Potentiom	eter Inputs	≥1M 0hm			
All Temperati	ure Inputs	≥1M Ohm			

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ORDERING INFORMATION (The meter will be scaled exactly to your requirements)

	INPUT TYPE	INPUT RANGE	ОИТРИТ	IF APPLICABLE EXCITATION	AUX. SUPPLY
CS1- CS2- The meter becomes CS2 prefixed, when multiple outputs are specified. CS1 meters are for single or no outputs.	VAD (VDC or ADC) VAA (VAC or AAC) VAT (TRMS) F (Frequency) SG (Temperature) PM (Potentionmeter) RS (Resistance 2 wire) T (Temperature) RL (Pulse frequency)	Insert input range from lists below, any custom signal is also generally possible.	Relay (Low) Relay (Low latched) Relay (High) Relay (High latched) 0-5VDC 1-5VDC 0-10VDC 2-10VDC 0-10mA 0-20mA 4-20mA Speficy RS485	10VDC Exc 12VDC Exc 24VDC Exc Specify	115/230VAC 20-90VAC/DC 85-264VAC/DC

INPUT RANGES				<u> </u>	
Current	Voltage	Strain Gauge	Frequency & Type/Level	Potentiometer	Temp T/C
0-199.99uA 0-1.9999mA 0-19.999mA 0-199.99mA 0-1.9999A 0-100mA 0-1A 0-5A 0-10A 0-10mA 0-20mA 4-10mA Specify	0-50mV 0-60mV 0-100mV 0-199.99mV 0-1.9999V 0-199.99V 0-300V 0-600V 0-1000V 0-2000V 0-4000V 0-5V 1-5V 0-10V 2-10V Specify	1.0mV/V 2.0mV/V 4.0mV/V 10.0mV/V 20.0mV/V 40.0mV/V Specify	0-01Hz - 50Hz 5V, 12V, 24V pulse 0-01Hz - 100KHz 5V, 12V, 24V pulse 0-01Hz - 140KHz 5V, 12V, 24V pulse 0-01Hz - 50Hz NPN 0-01Hz - 140KHz NPN 0-01Hz - 50Hz Volt free contact 0-01Hz - 140KHz 30-600VAC Specify	0-50 to 2K Ohm 0-2K to 100K Ohm Specify Resistor (2 wire) 0-200 Ohm 0-2K Ohm 0-20K Ohm 0-20K Ohm Specify	K 0-1200°C J 0-750°C E 0 to 1000°C T 0 to 400°C R 400-1600°C S 400-1600°C B 400-1800°C PT100 -50 to +199.99°C -150 to +800°C

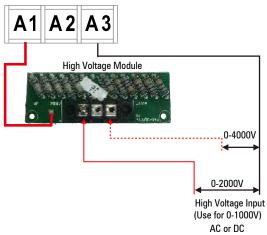


SEE PAGES 206 & 207 FOR CONNECTION DIAGRAMS

HIGH VOLTAGE MODULE

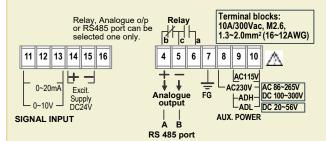
For input voltages of between 1000V & 4000V either AC or DC an external "High Voltage Module" PCB must be used. The module has two voltage taps of 0-2000V & 0-4000V



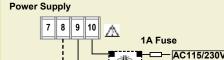


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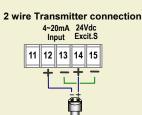
CS1-PR CONNECTION DIAGRAM

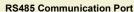


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

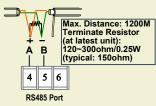


Filter or Transformer

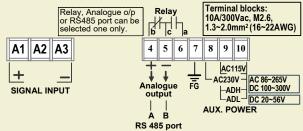




AC85~264V

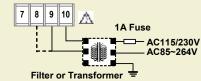


CS1-VA CONNECTION DIAGRAM

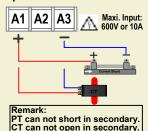


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

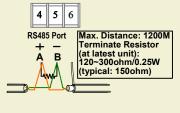




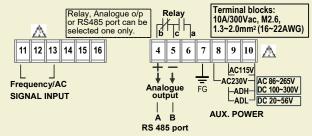




RS485 Communication Port

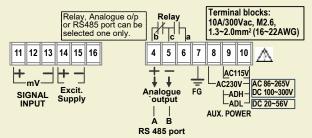


CS1-F CONNECTION DIAGRAM



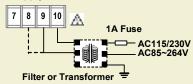
Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

CS1-SG CONNECTION DIAGRAM

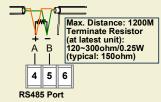


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

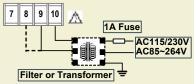
Power Supply



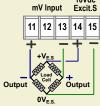
RS485 Communication Port



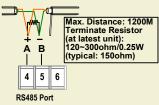
Power Supply



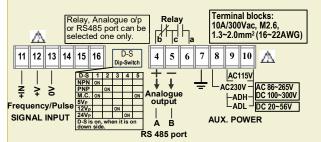
Load Cell connection 10Vdc mV Input Excit.S



RS485 Communication Port

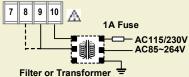


CS1-RL CONNECTION DIAGRAM

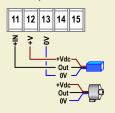


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.





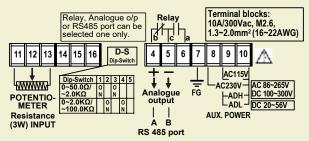
Sensor input connection



Pi	ease cha	nge the o	dip-swite	ch on r	ear
of	meter to	match ti	ne input	mode	and
les	/el				

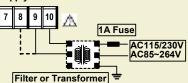
D-S	1	2	3	4	5					
NPN	ON									
PNP		ON								
Mech. Contact	ON				ON					
Voltage pulse 5V _P										
Voltage pulse 12V _P			ON							
Voltage pulse 24V _P				ON						
D-S is on when it is in down site										

CS1-PM CONNECTION DIAGRAM

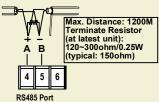


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

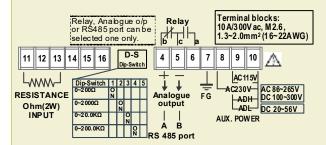
Power Supply



RS485 Communication Port

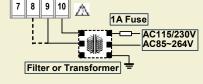


CS1-RS CONNECTION DIAGRAM

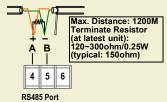


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

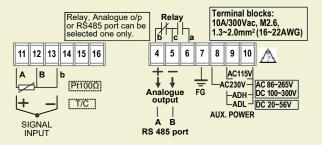




RS485 Communication Port

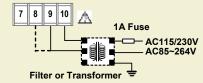


CS1-T CONNECTION DIAGRAM

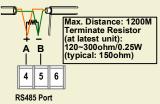


Please check the voltage of power supplied first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

Power Supply



RS485 Communication Port



DIN 96x48mm 3½ DIGIT SIX CHANNEL **TEMPERATURE METER**

TYPE: CST-321M

FEATURES

208

Measuring T/C: K,J,T,E,R RTD: PT100 Accuracy T/C: ±0.25%, RTD: ±0.1%

31/2 Digit display: 1999

Easy to wire, screw type terminal

DIN standard (96x48mm)

High stability & low cost

MEASUREMENT

MEASU	RING RANG	GE .	RESOLUTION	INPUT IMPEDANCE
	K	0 - 1200°C	1°C	≥1M 0hm
Thermo-	J	0 - 750°C	1°C	≥1M 0hm
Couple	T	0 - 400°C	1°C	≥1M 0hm
	Е	0 - 1000°C	1°C	≥1M 0hm
	R	400 - 1600°C	1°C	≥1M 0hm
R.T.D. PT100		-199.9 - 199.9°C	0.1°C	≥1M 0hm
11.1.0.	PT100	0 - 800°C	1°C	≥1M 0hm

SPECIFICATIONS

T/C: $\pm 0.25\%$ FS ± 1 digit Measuring: $RTD: \pm 0.1\% FS \pm 1 \text{ digit}$

Span adjustment: \leq 10% of FS Zero adjustment: ≤2% of FS Sampling time: About 3 cycles/sec.

Scan mode: Auto/Manual settable by front key

Auto scan time is adjustable 5-60 Secs.

Polarity display: When input is negative "-"

"1" display Over-range indication: **Operating temperature:** 0-60°C Operating relative humidity: 20-95% R.H. Temperature coefficient: ≤100 PPM/°C

≤50 PPM/°C (23 ±5°C)

Cold junction compensation: $25 \pm 10^{\circ}$ C, error $< 0.5^{\circ}$ C

-10 to $+70^{\circ}$ C Storage temperature:

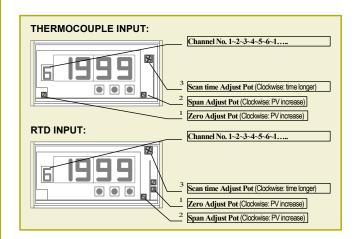
Power supply: AC 115/230V \pm 10%, 50/60Hz

DC 12/24/48 ±10% Power consumption: DC 3W. AC 4.5VA

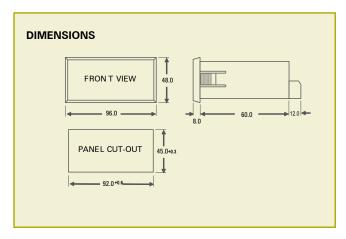
AC 2.0KV for 1 min. (Between power/input) Dielectric strength:

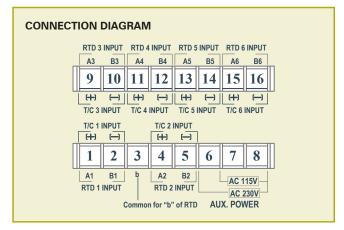
AC 3.0KV for 1 min. (Between terminal/case)

ADJUSTMENT



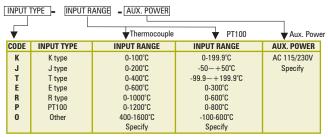






ORDERING INFORMATION

CST-321M



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PRODUCT

GROUP DD

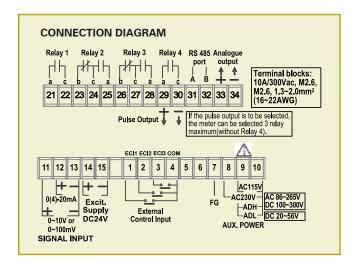
DIN 96x48mm DC AMPERE HOUR METER WITH RELAY **OUTPUTS, ANALOGUE OUTPUT, RS485**

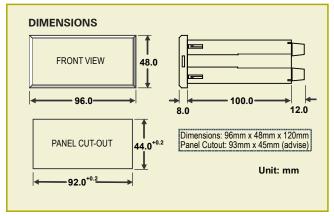
TYPE: CS2-TM

- Features
- Separate totalising display
- Separate batch count display
- 3 volt free control inputs
- Up to 4 relay outputs
- **CE** marked
- Ideal product for electroplating applications

DESCRIPTION

A Din 96x48mm DC Ampere Hour meter, taking a current reference from a DC shunt and integrating this reference against time to achieve an Ampere Hour or Ampere Minute reading. There are two display screens, the main ten digit screen is the totaliser display, the other screen is a "Batch" programmable setting. The meter can be specified with up to four relay outputs (2C/O and 2N/O) which can be assigned at the time of ordering for many functions to control say an electroplating system. As an option RS485 MODBUS is also available. Three volt free control inputs are featured as standard for functions such as Please discuss your exact requirements with our technical sales department.







SPECIFICATIONS

GENERAL

Accuracy: $\leq \pm 0.4\%$ of FS

DC current input: Via a 50mV, 60mV or 100mV shunt

Sampling rate: 15 cycles/Sec Response time: ≤100mSec Display: 7.1mm high LED's Top row 10 red digits Bottom row 6 red digits

Status LED's: 4 square LED's to indicate outputs Over-range indication: "ovFL" displayed when input is over

120% of input range

Under-range indication: "-ovFL" displayed when input is under

-20% of input range 5VA / 5W

Power consumption: 0-60⁰C Operating temperature: Operating relative humidity: 20-95% RH ≤50 PPM/ C Temperature coefficient: $-10^{0} \text{ C to } +70^{0} \text{C}$ Storage temperature:

AC 2.0KV for 1 min between input, Dielectric strength:

output/s, power & case

Optional please specify

IP54 Protection:

OPTIONAL RELAY OUTPUT

Latching:

Number of setpoints: Up to 4

Energisation functions: Start delay / Energisation

& de-energisation delay / Energisation

latching/Hysteresis

Time delay programmable: 0-9 mins 59.9 secs

Relays 1 & 4: 2xN0 1A/230VAC, Relay contacts: 3A/115VAC

Relays 2 & 3: 2xCO 1A/230VAC,

3A/115VAC

OPTIONAL RS485 COMMUNICATIONS:

Protocol: **MODBUS RTU**

1200/2400/4800/9600/19200/ Baud rate programmable:

38400

Data bits: 7 or 8 bit programmable

Parity programmable: Even, odd or none (with 1 or 2 stop bit)

Address programmable: 1-255 programmable Distance: 1200 Metres 150 Ohm at last unit Terminal resistor:



ORDERING INFORMATION (The meter will be scaled and set exactly to your requirements)

	INPUT	RELAY OUTPUT	ANALOGUE OUTPUT	RS485	AUX. POWER
CS2-TM	xxx/50mV	None	0-5VDC 0-10mA	None	115 / 230VAC
	xxx/60mV	2 Relays*	1-5VDC 0-20mA	Yes	20-90V ACDC
	xxx/100mV	3 Relays*	0-10VDC 4–20mA		85-264V ACDC
		4 Relays*	2-10VDC Specify		

Regarding the relays, specify your exact requirements of relay configuration at the time of ordering, along with any extra functions such as latching or time delays.

DIN 96x48mm DC MILTI DISPLAY POWER METER WITH RELAY OUTPUTS, ANALOGUE SIGNAL OUTPUTS, RS485

TYPE: VAW

FEATURES

210

- Multi display DC energy meter
- Displays DCV, DCA, KW, KWh, Hours Run
- High accuracy, stability & resolution
- Choice of multi relay, pulse, analogue signal or RS485 outputs
- Digital inputs for hold & de-latch functions
- Ideal for solar & wind energy systems
- CE marked

DESCRIPTION

A Din 96x48mm multi display DC power meter. Measuring, displaying and communicating DC voltage, current, instantaneous power (Watts/KW), import and export Wh/KWh along with hours run. The voltage, current and power parameters also have max and min value recording during power on. The meter has the possibility for specifying up to 4 relay outputs including pulse outputs. The relays can be determined as set points for any of the parameters either low or high. In addition an analogue output also can be requested which can be assigned to any of the instantaneous measured parameters.

to any of the instantaneous measured parameters. Lastly, along with all the above mentioned outputs, RS485 MODBUS RTU communications can also be specified. The VAW meter is particularly suitable for solar energy and wind energy systems, along with electroplating, battery and transport applications. A particular feature of this meter which is especially relevant in "green energy" applications, is that after a certain time of no operator interaction with the meter, the meter enters a "switch down" mode and reduces the power to the LED's, thus saving money.

the power to the LLD 3, thus saving money.

SPECIFICATIONS

GENERAL

Over-range indication:

Sampling rate: 15 cycles/Sec
Response time: ≤100mSec
Display: 7.1mm high LED's
Top row 10 red digits

Bottom row 6 green digits

Status LED's: 10 square LED's to indicate inputs and

outputs

Display pages: Page 1: Voltage (4 digits), Current (5 digits), Power

Page 2: Voltage (5 digits), Current (4 digits), Power Page 3: Power and Import Energy Page 4: Power and Export Energy

Page 5: Power and Hours Run "ovFL" displayed when input is over 120% of input range

Under-range indication: "-ovFL" displayed when input is under

Max voltage withstand:

-20% of input range x2 continuous x4 for 2 seconds

Max current withstand:

x3 continuous

x10 for 10 seconds

Power consumption: 5VA / 5W and in switch down mode

2VA / 2WOperating temperature: 0-60 °C
Operating relative humidity: 20-95% RH
Temperature coefficient: \leq 50 PM/ °C
Storage temperature: -10 °C to +70 °C

Storage temperature: -10°C to +70°C

Dielectric strength: AC 2.0KV for 1 min between input,

output/s, power & case

Protection: IP54



OPTIONAL RELAY OUTPUT

Relay programmable: Low or High
Latching: Optional please speci

Latching: Optional please specify Number of setpoints: Up to 4

Energisation functions: Start delay/Energisation & de-energisation delay/Energisation latching/Hysteresis

Time delay programmable: 0-9 mins 59.9 secs
Hysteresis programmable: 0-5000 counts

Relay contacts: Relays 1 & 4: 2xNO 1A/230VAC,

A/11EVAC

Relays 2 & 3: 2xC0 1A/230VAC, 3A/115VAC

OPTIONAL ANALOGUE OUTPUT

Response time: 100mSec (10-90% of input)
Output capability: Voltage 1000 0hm
Current into 600 0hm max

OPTIONAL RS485 COMMUNICATIONS:

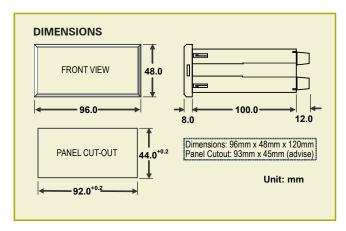
Protocol: MODBUS RTU

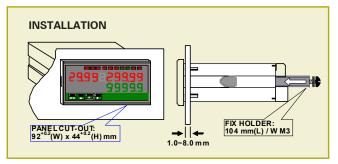
Baud rate programmable: 1200/2400/4800/9600/19200/38400

Data bits: 7 or 8 bit programmable

Parity programmable: Even, odd or none (with 1 or 2 stop bit)

Address programmable: 1-255 programmable
Distance: 1200 Metres
Terminal resistor: 150 0hm at last unit





SPECIFICATIONS CONT/...

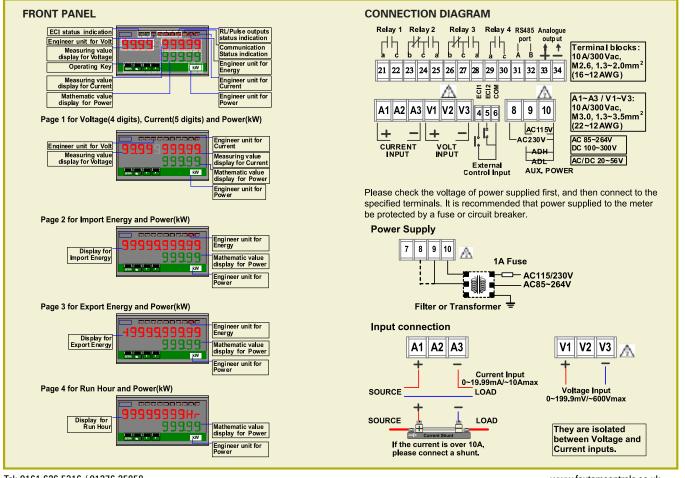
ACCURACY & RE	SOLUTION			
Parameter	Accuracy	Display Range	Decimal Point	
Voltage:	0.04% ±1 digit	-19999 to +99999	0.01mV to 1V	With regard to current & voltage a
Current:	0.04% ±1 digit	-19999 to +99999	0.01uA to 1A	decimal point can be requested at any
Power:	0.1% ±1 digit	$0 \text{ to } \pm 99999$	Auto ranges KW	point or not at all. Regarding power (KW)
Import Energy:	0.1% ±1 digit	0 to 999999999	0.0001 KWh	this is auto ranging only, depending on the
Export Energy:	0.1% ±1 digit	-1999999999 to 0	0.0001 KWh	multiplication between current and
Hours Run:	0.04% ±1 digit	0 to 99999999	1 Hour	voltage.
INPUT SIGNAL				
Voltage Input	Impedance	Current Input	Impedance	
0-50mV	≥5M 0hm	0-199.99uA	1K Ohm	The state of the s
0-60mV	≥5M 0hm	0-1.9999mA	100 Ohm	
0-100mV	≥5M 0hm	0-19.999mA	10 Ohm	
0-199.99mV	≥1M 0hm	0-199.99mA	1 0hm	77 500
0-1.9999V	≥1M 0hm	0-1A	0.25 Ohm	
0-19.999V	≥1M 0hm	0-5A	0.2 Ohm	4620
0-199.99V	≥1M 0hm	Above 5 Amps		
shunt required		·		

ORDERING INFORMATION (The meter will be scaled and set exactly to your requirements)

	CURRENT INPUT	VOLTAGE INPUT	OUTPUT 1	OUTPUT 2	OUTPUT 3	AUX. POWER
VAW	0-199.99uA 0-1.9999mA 0-19.99mA 0-199.99mA 0-1.9999A 0-5A xxx/50mV shunt xxx/60mV shunt xxx/100mV shunt lnput from transducer (Specify)	0-199.9mV 0-1.999V 0-19.99V 0-199.9V Specify	None 2 Relays* 4 Relays* 3 Relays + 1 Pulse*	None 0-5VDC** 1-5VDC** 0-10VDC** 0-10mA** 0-20mA** 4-20mA** Specify**	None RS485	115/230V AC 4.5-15V DC 20-56V AC/DC 85-264V AC/DC

^{*} Regarding the relays, specify the parameters they refer to, along with is it a "Low" or "High" trip, latched or non latched, any delay times or hysteresis required per relay. If a pulse output is requested specify pulse length required (100mSec typical) and pulse rate to the counts.

^{**} Specify to which measured parameter the analogue output is to be assigned to.



DIN 96x48mm 4½ DIGIT POWER METER WITH RELAY **OUTPUTS, ANALOGUE SIGNAL OUTPUT, RS485**

TYPES: MW-5 (WATT) MQ-5 (VAR) MPF-5 (COS)

FEATURES

212

- Single phase
- Three phase 3 wire & 4 wire balanced & unbalanced
- TRMS measurement
- High accuracy, stability & resolution
- Choice of relay, analogue signal or RS485 outputs
- Digital inputs for hold & de-latch functions
- **CE** marked

DESCRIPTION

Din 96x48mm digital single parameter power meters either as Watts, VAR or Power Factor. The meters can be specified for both single and three phase systems, 3 or 4 wire and are suitable for both balanced and unbalanced loads. The meters can be specified as a "display only" meter, or with a choice of one or two outputs. One relay or two relays that can be specified as latched or non latched, or an isolated analogue output with or without one relay output. Or with, or without RS485 MODBUS RTU which can also be with or without one relay output. The meter utilises the latest microprocessor technology in both the setting and operation of the meter.

SPECIFICATIONS

Current input:

Measuring accuracy: $\leq \pm 0.5\%$ FS ± 1 digit Waveform effect: \leq 0.2% FS at 30% distortion

Sampling rate: 15 cycles / sec Response time: 100mSec

System connection: 1P2W (1 CT required)

> 3P3W (2 CT's required), suitable for balanced or unbalanced loads 3P4W (3 CT's required), suitable for balanced or unbalanced loads

Display: 20mm high red LEDs Max 500VAC L-L or L-N Voltage input:

VT inputs specify between: 50V-1000KV

primary / 50-500V secondary 50/60Hz $\pm 3\%$ or 400Hz $\pm 3\%$ 1 Amp or 5 Amp direct

CT inputs specify CT ratio:1-10000 Amps primary / 1 Amp or 5 Amp secondary

Input burden voltage: ≤0.5VA per phase Input burden current: ≤0.1VA per phase

Over volts withstand: x2 continuously, x4 for 2 Secs

Over current withstand: x3 continuously, x10 for 10 Secs,(x50 for

1 Sec 5 Amp version) 115/230 VAC ±15%, 50/60Hz Power supply:

20-90V AC/DC 85-264V AC/DC 5VA

Power consumption: Operating temperature: 0-60°C Operating relative humidity: 20-95% RH ≤100PPM/°C Temperature coefficient: -10°C to +70°C Storage temperature:

AC 2.0KV for 1 min between input, output/s Dielectric strength:

power and case

Protection: IP54



OPTIONAL RELAY OUTPUT

Relay programmable: Low/Low-Low/High/High-High/Low-High

Latching: Optional please specify

Number of setpoints: 1 or 2

Start delay / Energisation & de-energisation **Energisation functions:**

delay/Energisation latching/Hysteresis

PRODUCT **GROUP**

Time delay programmable: 0-9 mins 59.9 secs Hysteresis programmable: 0-5000 counts

2 x NO: 1A/230VAC, 3A/115VAC Relay contact:

OPTIONAL ANALOGUE OUTPUT

Accuracy: $\leq \pm 0.1\%$ of FS Ripple: <+0.1% of FS

Response time: ≤100mSec (10-90% of input) ≤Voltage 1000 0hm **Output capability:** Current into 600 Ohm max

OPTIONAL RS485 COMMUNICATIONS:

Protocol: MODBUS RTU

Baud rate programmable: 1200/2400/4800/9600/19200/38400

Data bits: 8 bit programmable

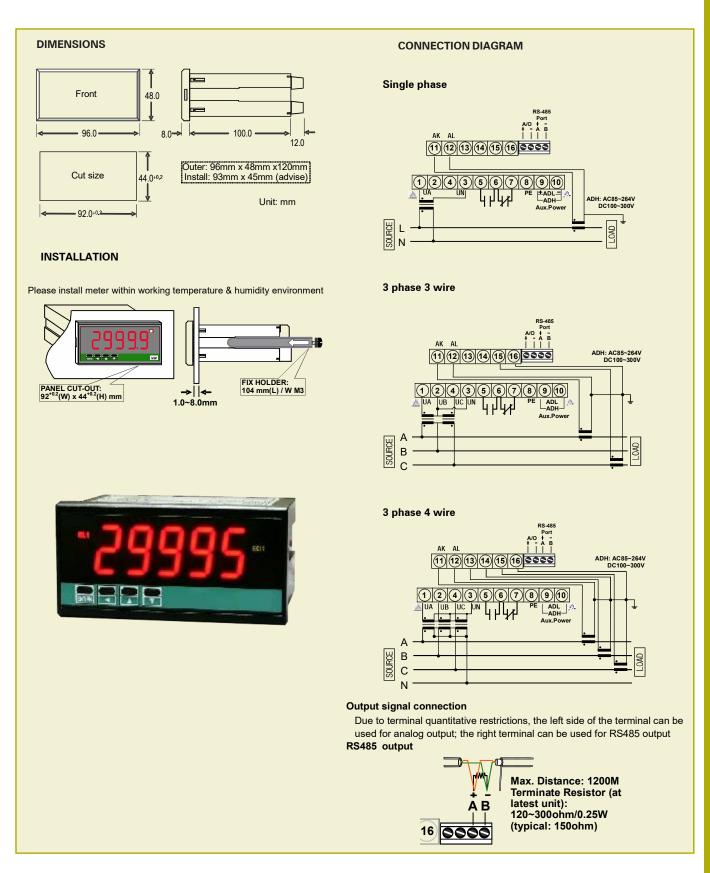
Parity programmable: Even, odd or none (with 1 or 2 stop bit)

Address programmable: 1-255 programmable Distance: 1200 Metres Terminal resistor: 150 ohm at last unit

ORDERING INFORMATION

METER	CONNECTION	VOLTAGE INPUT	VOLTAGE Hz	CURRENT INPUT	OUTPUT 1	OUTPUT 2	OUTPUT 3	AUX. POWER
MW-5 (WATTS) MQ-5 (VAR) MPF-5 (COS)	-12 (1P2W) -33 (3P3W) -34 (3P4W)	50-500V VT ratio	50Hz 60Hz 400Hz** Speficy	0-1 Amp 0-5 Amp CT ratio	None Relay	None 4-20mA 0-10V	None RS485	115/230VAC 85-264VACDC 20-90VACDC

* Specify relay configuration, delay times if required and any hysteresis



4									

PRODUCT Group

KWh & MULTI DISPLAY METERS

DIN 96mm KW & KWh METER

TYPE: CUBE 300

- FEATURES
- Panel mounting
- Suitable for 3 phase loads 3 wire or 4 wire
- Suitable for single phase loads
- Isolated pulse output as standard
- Class 1 accuracy
- IP54 standard



DESCRIPTION & MODE OF OPERATION

A Din 96mm digital KWh meter with an isolated volt free pulse output as standard for interfacing to external equipment such as BMS systems. The CUBE 300 is suitable for both three phase and single phase loads and if three phase both 3 wire or 4 wire balanced or unbalanced loads, inductive or resistive. The CUBE 300 benefits from fully isolated current inputs (internal current transformers are utilised). To aid commissioning the meter can also display instantaneous KW, which is displayed for 60 seconds before reverting back to KWh. The CUBE 300 is fully programmable to set up CT ratios and auto scales to Wh, KWh, MWh, depending on the CT ratio programmed. The CUBE 300 is able to accept a very wide voltage span input of 80-480V L-L or 46-277V L-N, thus enabling the CUBE 300 to be used on VT circuits such as 11KV/110V, therefore a VT ratio can also be programmed if required. Also, the pulse length and pulse value can also be programmed within "sensible" constraints.

SPECIFICATIONS

<u>Inputs</u>

System: 1 phase

3 phase, 3 wire or 4 wire Balanced or unbalanced

Voltage: 80-480V L-L / 46-277V L-N <u>+</u>0%

Current: Via external 5 Amp secondary CT's

Measuring range 0.2% to 120%

Frequency: 45-65Hz
Harmonics: Up to the 20th
Voltage burden: < 0.1VA per phase
Current burden: < 0.1VA per phase
Voltage overload: x4 for 1 hour
Current overload: x40 for 0.5 Sec max

Auxiliary supply

Standard: 230VAC 50/60Hz <u>+</u>15%

On request 110VAC

Load: 2VA max

Accuracy

KWh: Better than Class 1 KW: Better than Class 1

Pulse output

Function: 1 pulse per unit of energy

Scaling: Programmable between 1 & 1000

counts of KWh register

Pulse period: Programmable between 0.1-20Sec

Type: NO volt free

Rating: 100mA @ 100VAC/DC max

<u>General</u>

 $\begin{array}{lll} \mbox{Temperature:} & \mbox{Operating -}10\,^{\circ}\mbox{C to } +65\,^{\circ}\mbox{C} \\ \mbox{Humidity:} & \mbox{<}75\% \mbox{ non condensing} \\ \mbox{Protection:} & \mbox{IP54 standard, IP65 optional} \\ \mbox{Material:} & \mbox{Mablex to UL94-V-0, self ext.} \\ \end{array}$

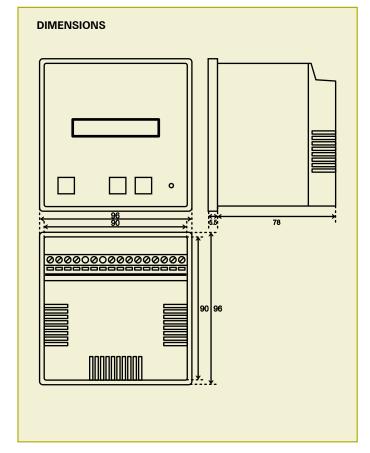
Dimensions: 96 x 96 x 83.5mm

ORDERING INFORMATION

TYPE OPTIONS*

CUBE 300 110VAC aux supply

*Specify



DIN 96mm SINGLE LINE DISPLAY, MULTI DISPLAY ENERGY METER

TYPE: CUBE 350

FEATURES

216

- Panel mounting
- Suitable for 3 phase loads 3 wire or 4 wire
- Suitable for single phase loads
- TRMS measurement to 30th Harmonic
- Isolated dual pulse outputs as standard
- Optional MODBUS RS485 output
- Current input via CT's 5 Amp, 1 Amp or 333mV
- Class 1 accuracy
- IP54 standard

DESCRIPTION & MODE OF OPERATION



GROUP

A Din 96mm single line display, multi display energy meter with dual isolated volt free pulse outputs as standard for KWh & KVArh for interfacing to external equipment such as BMS systems. The CUBE 350 can also be specified optionally with MODBUS RS485 whilst still retaining the pulse outputs, plus an additional harmonics option via MODBUS is also available. The CUBE 350 is suitable for both three phase and single phase loads and if three phase both 3 wire or 4 wire balanced or unbalanced loads, inductive or resistive. The CUBE 350 is fully programmable to set up CT ratios, the CT secondary can be specified at ordering as either conventional 5 Amp or 1 Amp, or as 333mVAC which are used in application scenarios where the CT's are sited a distance away from the meter and VA burden within the secondary cabling is an issue. The CUBE 350 auto scales to Wh, KWh, MWh etc, depending on the CT ratio programmed. The CUBE 350 is able to accept a very wide voltage input span of 80-480V L-L or 46-277V L-N, thus enabling the CUBE 350 to be used on VT circuits such as 11KV/110V, therefore a VT ratio can also be programmed if required. Optionally an additional Voltage Expander module can be ordered for system voltages from 480-690V L-L / 277-399 L-N +10%

SPECIFICATIONS

Inputs

System: 1 phase

3 phase, 3 wire or 4 wire Balanced or unbalanced

Voltage: $80-480V \text{ L-L} / 46-277V \text{ L-N } \pm 0\%$

Voltage expander: Optional 480-690V L-L / 277-399V L-N +10%

Current: Via external CT's

5 Amp, 1 Amp, 333mV

Measuring range 0.2% to 120%

Frequency: 5-65Hz

Harmonics: HD to 30th (with Harmonics option)

Individual to 15th (with Harmonics option)

Voltage burden: 0.1VA per phase
Current burden: 0.1VA per phase
Voltage overload: x4 for 1 hour
Current overload: x40 for 0.5 Sec max

Auxiliary supply

Standard: 230VAC 50/60Hz $\pm 15\%$

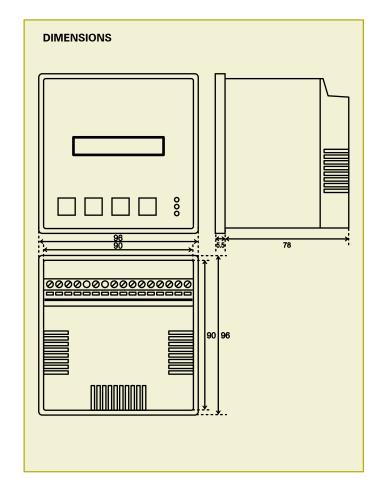
On request 24VDC, 110VAC

Load: VA / 5W max

General

Temperature: Operating -10 ° C to +55 ° C
Humidity: 75% non condensing
Material: Mablex to UL94-V-0, self ext.
Terminals: 4mm rising cage

Dimensions: 96 x 96 x 83.5mm (72mm behind panel)



ACCURACY

KWh: Class 1 per EN 62053-21

Class 0.5 per ANSI C12.20 Class 2 per EN 62053-23 Class 0.25 IEC 60688 Class 0.5 IEC 60688 Class 0.1 IEC 60688

 $+ 0.2^{\circ}$ Power Factor:

Neutral current: Class 0.5 IEC 60688

Pulse output

Amps & Volts:

KVArh:

KVAr:

KW & KVA:

Function: 1 pulse for KWh 1 pulse for KVArh

Scaling: Programmable between 1 & 100

counts of registers

Programmable between 0.1-20Sec Pulse periods: Type: 2 x NO volt free, optically isolated 100mA @ 70VDC/33VAC max Rating:

Isolation: 3.5KV for 1 min

DISPLAY PARAMETERS

	Per Phase	<u>Sum</u>
Volts, L-L & L-N	*	
Amps	*	
Power Factor	*	*
Import KWh		*
Import KVArh		*
KW	*	*
Hours Run (on load)		*
Additional parameters via modb	us	
Export KWh		*
Export KVArh		*
Ind & Cap KVArh		*
Peak Volts L-N	*	
Peak Amps	*	
Neutral Amps		*
KW, KVA, KVAr	*	*
KW, KVA, KVAr Demand		*
Peak KW, KVA, KVAr Demand		*
Avarage Volts & Peak	*	
Amp Demand & Peak	*	
Harmonics option via modbus		
% THD Volts & Amps	*	
Individual Harm. 2nd to 15th	*	



ORDERING INFORMATION

CURRENT

INPUT TYPE* **OPTIONS***

TYPE 230VAC aux supply (standard) **CUBE 350** 5 Amp

CUBE 350 / MODBUS 1 Amp 110VAC aux supply **CUBE 350 / MODBUS / HARMONICS** 333mV** 24VDC aux supply Dual pulse outputs on all meters as standard Voltage Expander

VOLTAGE EXPANDER

An optional Voltage Expander is available for the CUBE 350 range for high L-L system voltages between 480V - 690V





^{*}Specify

^{**}Please see page 179 for 333mV secondary CT's

DIN 96mm THREE LINE DISPLAY, MULTI DISPLAY

ENERGY METER

TYPE: CUBE 400

FEATURES

218

- Panel mounting
- Suitable for 3 phase loads 3 wire or 4 wire
- Suitable for single phase loads
- TRMS measurement to 30th Harmonic
- Isolated dual pulse outputs as standard
- Optional MODBUS RS485 output
- Optional IP Ethernet enabled, with built in Web pages
- Current input via CT's 5 Amp, 1 Amp or 333mV
- Class 1 accuracy
- IP54 standard

DESCRIPTION & MODE OF OPERATION

The CUBE 400 is a Din 96mm three line display, multi display energy meter suitable for both three phase and single phase loads and if three phase both 3 wire or 4 wire balanced or unbalanced loads, inductive or resistive. The CUBE 400 is fully programmable to set up CT ratios, the CT secondary can be specified at ordering as either conventional 5 Amp or 1 Amp, or as 333mVAC which are used in application scenarios where the CT's are sited a distance away from the meter and VA burden within the secondary cabling is an issue. The CUBE 400 auto scales to Wh, KWh, MWh etc, depending on the CT ratio programmed. The CUBE 400 is able to accept a very wide voltage input span of 80-480V L-L or 46-277V L-N, thus enabling the CUBE 400 to be used on VT circuits such as 11KV/110V, therefore a VT ratio can also be programmed if required. Optionally an additional Voltage Expander module can be ordered for system voltages from 480-690V L-L / 277-399 L-N +10%.

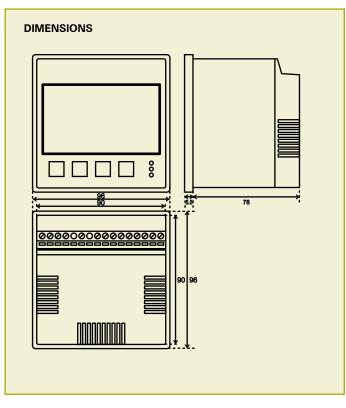


Pulse Outputs - All CUBE 400's have dual isolated volt free pulse outputs as standard for KWh & KVArh or KVAh selectable for interfacing to external equipment such as BMS systems.

MODBUS Communications - The CUBE 400 can also be specified optionally with MODBUS RS485 whilst still retaining the pulse outputs. Plus an additional Harmonics option, individual to the 15th and THD to the 30th via MODBUS is also available. IP Ethernet Option – With built in Web pages showing parameters of; Energy, Power, Volts, Amps, Power Factor and digital input/s and output/s set-up, with total logging of up to 60 parameters. Set up logging for FTP / HTTP / TFTP / SNMP for directly interfacing with energy management software and building control solutions. Additionally CUBE 400's with the IP Ethernet option comes with three scalable digital pulse inputs from say other utility meters, such as gas and water etc, which can also be read via the Web pages. Two digital alarm outputs are also provided along with the standard pulse outputs that all CUBE 400's have. Harmonics, individual to the 15th and THD to the 30th is a standard on IP Ethernet meters.

DISPLAY PARAMETERS

	Per Phase	<u>Sum</u>
Volts, L-L & L-N	*	
Amps	*	
Power Factor	*	*
Import KWh		*
Import KVAh		*
Import KVArh		*
Export KWh		*
Export KVArh		*
Hz		*
KW	*	*
Hours Run (on load)		*
Export KWh		*
Export KVArh		*
Peak Volts L-N	*	
Peak Amps	*	
Neutral Amps		*
KW, KVA, KVAr	*	*
KW, KVA, KVAr Demand		*
Peak KW, KVA, KVAr Demand	b	*
Avarage Volts & Peak	*	
Amp Demand & Peak	*	
ADDITIONAL PARAMETERS	S VIA MODB	US
Ind & Cap KVArh		*
And if Harmonics option spec	cified:-	
% THD Volts & Amps	*	
Individual Harm. 2nd to 15th	*	





PRODUCT Group

SPECIFICATIONS

<u>Inputs</u>

System: 1 phase

3 phase, 3 wire or 4 wire Balanced or unbalanced

Voltage: $80-480 \text{V L-L} / 46-277 \text{V L-N} + 0 \underline{\%}$

Voltage expander: Optional 480-690V L-L / 277-399V L-N +10%

Current: Via external CT's

5 Amp, 1 Amp, 333mV

Measuring range 0.2% to 120%

Frequency: 45-65Hz

Harmonics: THD to 30th (with Harmonics option)

Individual to 15th (with Harmonics option)

Voltage burden: < 0.1VA per phase
Current burden: < 0.1VA per phase
< 0.1VA per phase
Voltage overload: x4 for 1 hour
Current overload: x40 for 0.5 Sec max

Auxiliary supply

Standard: 230VAC 50/60Hz $\pm 15\%$

On request 24VDC, 110VAC

Load: 5VA / 5W max

General

Temperature: Operating - 10° C to $+55^{\circ}$ C Humidity: <75% non condensing Material: Mablex to UL94-V-0, self ext.

Terminals: 4mm rising cage Dimensions: $96 \times 96 \times 83.5$ mm

(72mm behind panel)

Accuracy

KWh: Class 1 per EN 62053-21

Class 0.5 per ANSI C12.20

KVArh: Class 2 per EN 62053-23 KW & KVA: Class 0.25 IEC 60688 KVAr: Class 0.5 IEC 60688 Amps & Volts: Class 0.1 IEC 60688

Power Factor: ± 0.2°

Neutral current: Class 0.5 IEC 60688

Pulse outputs

Function: 1 pulse for KWh

1 pulse for KVArh or KVAh

Scaling: Programmable between 1 & 100

counts of registers

Pulse periods: Programmable between 0.1-20Sec Type: 2 x NO volt free, optically isolated Rating: 100mA @ 70VDC/33VAC max

Isolation: 3.5KV for 1 min

IP ethernet optionDigital inputs: 3
Digital outputs: 2



ORDERING INFORMATION

CURRENT

 TYPE
 INPUT TYPE*
 OPTIONS*

 CUBE 400
 5 Amp
 230VAC aux supply (standard)

CUBE 400 5 Amp
CUBE 400 / MODBUS 1 Amp
CUBE 400 / MODBUS / HARMONICS 333mV**

CUBE 400 / IP

*Specify

VOLTAGE EXPANDER

An optional Voltage Expander is available for the CUBE 400 range for high L-L system voltages between 480V - 690V

110VAC aux supply

24VDC aux supply

Voltage Expander





^{**}Please see page 179 for 333mV secondary CT's

DIN 96mm THREE LINE DISPLAY, 3 METERS IN 1, MULTI DISPLAY ENERGY METER

TYPE: MULTICUBE 950



220

- Panel mounting
- Suitable for 1ph or 3ph loads, 3 wire or 4 wire
- Meters 3 x 3ph loads or 9 x 1ph loads, or in any combination
- TRMS measurement to 80th Harmonic
- 4 x isolated configurable pulse or alarm outputs
- Optional MODBUS RTU output
- Optional MBus output
- Current input via CT's 333mV (option for 5 Amp & 1 Amp CT's)
- Class 0.5 accuracy



The MULTICUBE 950 is a Din 96mm three line display, powerful and extremely cost effective "3 in 1" metering solution, monitoring 3×3 phase loads (3 wire or 4 wire) or, 9×1 phase loads or a combination of them, for example 2×3 phase loads and 3×1 phase loads.

Cost effectiveness per meter point is further enhanced by just one voltage and comms connection per MULTICUBE 950. Further time savings come from the "Plug & Play" RJ12 to RJ12 CT adaptors, included as part of the kit. Each three 333mV secondary CT kits are supplied with their secondary tails already terminated into the adaptor and the RJ12 cables do the rest. In the case of single phase loads three loads go to one adaptor.

Whilst the MULTICUBE 950 is built around our range of 333mVAC secondary split core current transformers, it is also possible to use the MULTICUBE 950 with 5 Amp and 1 Amp secondary CT's, either totally or in part. Should 5 Amp or 1 Amp secondary CT's be utilised a separate Din rail mounted adaptor needs to be purchased and the secondary of these CT's physically terminated and then the RJ12 connections are made.

The MULTICUBE 950 also features innovative "Auto CT Recognition", this avoids errors from programming the CT primaries incorrectly by automatically recognising the CT primaries for you. Additionally, "Auto CT Rotation" compensates for CT's installed the wrong way round. Plus "Auto CT Accuracy Compensation" guarantees the accuracy of your data, the meter will compensate for any phase angle errors in your CT's, giving peace of mind that data will not contain any hidden inaccuracies.

Further safeguards against error are provided by the RJ12 plugs that cannot be installed the wrong way round. This just leaves the possibility of installing the CT's on the wrong phases (CT's not in phase). Should this occur a warning on the meter's large backlit display comes up informing there is an error.

The very powerful MULTICUBE 950 also packs in demands and alarms as standard and fast communication options allow up to 20 reads every second. The fast MODBUS RTU option also provides aggregated "3 in 1" data and optional 100mSec reading updates. Also included is a MODBUS test facility to test the integrity of the MODBUS wiring.

The MULICUBE 950 auto scales to Wh, KWh, MWh etc, depending on the CT ratio programmed. The MULTICUBE 950 is able to accept a very wide voltage input span of 80-480V L-L or 46-277V L-N, thus enabling the CUBE 400 to be used on VT circuits such as 11KV/110V, therefore a VT ratio can also be programmed if required.









GROUP

DISPLAY PARAMETERS

	Der Dhase	C
	Per Phase	<u>Sum</u>
Volts, L-L & L-N	1-3	
Amps	1-9	
Power Factor	1-9	*
Import KWh	1-9	*
Import KVAh	1-9	*
Import KVArh	1-9	*
Export KWh	1-9	*
Export KVArh	1-9	*
Hz		*
Export KWh	1-9	*
Export KVArh	1-9	*
Peak Volts L-N	1-3	
Peak Amps	1-9	
Neutral Amps		*
KW, KVA, KVAr	1-9	*
KW, KVA, KVAr Demand	1-9	*
Peak KW, KVA, KVAr Dema	and 1-9	*
Avarage Volts & Peak	1-3	
Amp Demand & Peak	1-9	
ADDITIONAL DADARGET	DC VIA NAC	DDIIC

ADDITIONAL PARAMETERS VIA MODBUS

And if Harmonics option specified:-% THD Volts & Amps Individual Harm. 2nd to 63rd

SPECIFICATIONS

Inputs

System: 1 phase

3 phase, 3 wire or 4 wire Balanced or unbalanced

Voltage: 80-480V L-L / 46-277V L-N +20%

Current: Via external 333mv CT's

Option via adaptor for 5 Amp, 1 Amp Measuring range 0.2% to 120%

Frequency:

Harmonics: Input to 80th Harmonic

Individual measured to 63rd (option)

Voltage burden: < 0.1VA per phase Current burden: < 0.1VA per phase Voltage overload: x4 for 1 hour Current overload: x40 for 0.5 Sec max

Auxiliary supply

100-240VAC (45-65Hz) Standard:

Load: 4VA max

General

Operating -10 $^{\circ}$ C to +55 $^{\circ}$ C Temperature: Humidity: <75% non condensing Material: Mablex to UL94-V-0, self ext.

Terminals: 4mm rising cage 96 x 96 x 83.5mm Dimensions: (72mm behind panel) Accuracy

DIMENSIONS

Class 0.5 per EN 62053-22 KWh: Class 0.5 per ANSI C12.20

0000000000000000

Class 1 per EN 62053-23 KVArh: KW & KVA: Class 0.25 IEC 60688 Class 0.5 IEC 60688 KVAr. Amps & Volts: Class 0.1 IEC 60688

Power Factor: $\pm 0.2^{\circ}$

Neutral current: Class 0.5 IEC 60688

Pulse outputs

Function: 1 pulse for KWh, or programmable

for an Event Alarm

Programmable between 1 & 100 Scaling:

counts of registers

Programmable between 0.1-20Sec Pulse periods: $4 \times N0$ volt free, optically isolated Type: Rating: 100mA @ 70VDC/33VAC max

Isolation: 3.5KV for 1 min **Comminications modbus RTU** Baud: 4800-38400

Selectable NONE/ODD/EVEN Parity: ID's: Joint master & individual meters Speed: Up to 20 reads per second Instantaneous: Readings updated every second

Isolation: 3.5KV **Communications MBus**

1200-9600 Baud:

Joint master & individual meters ID's: Tables: Short / Long configurable

Isolation: 3.5KV

ORDERING INFORMATION

OPTIONS* TYPE MULTICUBE 950

MULTICUBE 950 / HARMONICS / MODBUS

MULTICUBE 950 / Mbus

MULTICUBE 950 / MODBUS

MULTICUBE 950 / HARMONICS / Mbus

230VAC aux supply (standard)

110VAC aux supply 24VDC aux supply 5 Amp adaptor 1 Amp adaptor

333mV SECONDARY CT KITS**

RJ12 to RJ12 CT leads, length 3M RJ12 to RJ12 CT leads, length 5M Set of 3 x SCL8 5A with adaptor Set of 3 x SCL10 30A with adaptor Set of 3 x SCL16 50A with adaptor Set of 3 x SCL19 50A with adaptor Set of 3 x SCL16 100A with adaptor Set of 3 x SCL19 150A with adaptor Set of 3 x SCL32 400A with adaptor Set of 3 x SCL51 800A with adaptor

^{*}Specify

^{**}Please see page 179 for 333mV secondary CT's

DIN RAIL MOUNTED MULTI DISPLAY ENERGY METER

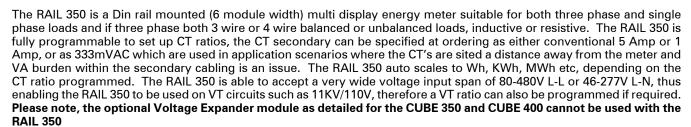
TYPE: RAIL 350

FEATURES

222

- Din rail mounted (6 modules width)
- Suitable for 3 phase loads 3 wire or 4 wire
- Suitable for single phase loads
- TRMS measurement to 30th Harmonic
- Isolated dual pulse outputs as standard
- Optional MODBUS RS485 output
- Optional IP Ethernet enabled, with built in Web pages
- Current input via CT's 5 Amp, 1 Amp or 333mV
- Class 1 accuracy

DESCRIPTION & MODE OF OPERATION



COMMUNICATIONS

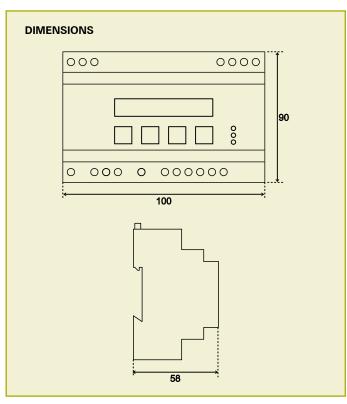
Pulse Outputs - All RAIL 350's have dual isolated volt free pulse outputs as standard for KWh & KVArh for interfacing to external equipment such as BMS systems.

MODBUS Communications - The RAIL 350 can also be specified optionally with MODBUS RS485 whilst still retaining the pulse outputs. Via the MODBUS communications comes Harmonics information, individual to the 15th and THD to the 30th.

IP Ethernet Option – With built in Web pages showing parameters of; Energy, Power, Volts, Amps, Power Factor and digital input/s and output/s set-up, with total logging of up to 60 parameters. Set up logging for TCP/IP protocols FTP / HTTP / TFTP / SNMP for directly interfacing with energy management software and building control solutions. Additionally RAIL 350's with the IP Ethernet option comes with three scalable digital pulse inputs from say other utility meters, such as gas and water etc, which can also be read via the Web pages. Two digital alarm outputs are also provided along with the standard pulse outputs that all RAIL 350's have. Harmonics, individual to the 15th and THD to the 30th is a standard on IP Ethernet meters

DISPLAY PARAMETERS

	<u>Per Phase</u>	<u>Sum</u>
Volts, L-L & L-N	*	
Amps	*	
Power Factor	*	*
Import KWh		*
Import KVArh		*
Export KWh		*
Export KVArh		*
Hz		*
KW	*	*
Hours Run (on load)		*
Additional parameters via modbu	IS	
Export KWh		*
Export KVArh		*
Ind & Cap KVArh		*
Peak Volts L-N	*	
Peak Amps	*	
Neutral Amps		*
KW, KVA, KVAr	*	*
KW, KVA, KVAr Demand		*
Peak KW, KVA, KVAr Demand		*
Average Volts & Peak	*	
Amp Demand & Peak	*	
And if Harmonics option specified:	-	
% THD Volts & Amps	*	
Individual Harm. 2nd to 15th	*	





PRODUCT

GROUP

Specifications

Inputs

System: 1 phase

3 phase, 3 wire or 4 wire Balanced or unbalanced

Voltage: 80-480V L-L / 46-277V L-N +0%

Current: Via external CT's

5 Amp, 1 Amp, 333mV

Measuring range 0.2% to 120%

Frequency: 45-65Hz

Harmonics: THD to 30th (with Harmonics option)

Individual to 15th (with Harmonics option)

Voltage burden: < 0.1VA per phase Current burden: < 0.1VA per phase Voltage overload: x4 for 1 hour Current overload: x40 for 0.5 Sec max

Auxiliary supply

Standard: 230VAC 50/60Hz <u>+</u> 15%

On request 24VDC, 110VAC

Load: 5VA / 5W max

<u>General</u>

Dimensions:

Temperature: Operating -10°C to +55°C Humidity: <75% non condensing Material: Noryl to UL94-V-0, self ext. Terminals: 4mm rising cage

106 x 90 x 58mm (Din rail modular, 6 modules width) Accuracy

KVArh:

KVAr:

KW & KVA:

KWh: Class 1 per EN 62053-21

Class 0.5 per ANSI C12.20 Class 2 per EN 62053-23 Class 0.25 IEC 60688 Class 0.5 IEC 60688

Amps & Volts: Class 0.1 IEC 60688 Power Factor: $\pm 0.2^{\circ}$

Neutral current: Class 0.5 IEC 60688

Pulse outputs

Function: 1 pulse for KWh

1 pulse for KVArh

Scaling: Programmable between 1 & 100

counts of registers

Pulse periods: Programmable between 0.1-20Sec Type: 2 x NO volt free, optically isolated Rating: 100mA @ 70VDC/33VAC max

Isolation: 3.5KV for 1 min

IP ethernet option
Digital inputs: 3
Digital outputs: 2



ORDERING INFORMATION

CURRENT

TYPE INPUT TYPE* OPTIONS*

RAIL 350 5 Amp 230VAC aux supply (standard)

 RAIL 350 / MODBUS
 1 Amp
 110VAC aux supply

 RAIL 350 / IP
 333mV**
 24VDC aux supply

^{*}Specify

^{**}Please see page 179 for 333mV secondary CT's

ELECTRICAL MEASUREMENT TRANSDUCERS

PAGES	P/No.	DESCRIPTION
225	MOD-U	Self powered AC voltage transducer
226	YW4	Four way AC current transducer kit
228	FOX.TR.AU	AC voltage transducers
229	FOX.TR.AI	AC current transducers
230 & 231	FOX.TR.W	Active power (Watts) transducers
232 & 233	FOX.TR.VAR	Reactive power (VAr) transducers
234 & 235	FOX.TR.W.VAR	Combined active & reactive power transducers
236	FOX.TR.COS	Power factor transducers
237	FOX.TR.HZ	Frequency transducers
238	FOX.TR.DI	DC current transducers
239	FOX.TR.DU	DC voltage transducers



PRODUCT GROUP

SELF POWERED AC VOLTAGE TRANSDUCER 0-300VAC INPUT, 0-10VDC OUTPUT

TYPE: MOD-U

- FEATURES
- Din Rail Mounted
- Self powered
- Isolated output
- Screw terminals
- CE Marked

DESCRIPTION AND MODE OF OPERATION

An attractive modern design AC voltage transducer in a din rail mounted modular style housing of 1.5 modules width (27mm). The MOD-U voltage transducer is designed to measure AC voltage in a single phase system. It will convert the AC signal to a DC voltage output that is directly proportional to the input signal. The MOD-U is a self powered device (i.e. no auxiliary required). The output from the MOD-U is an isolated 0-10VDC. It is required that at least 10% of Un ie 30VAC is present to obtain a reliable output.

SPECIFIC SPECIFICATIONS

Supply & Measuring

 Supply:
 0-300VAC

 Supply minimum:
 10%Un

 Supply maximum:
 120%Un

 Frequency:
 50-60Hz

 Max power consumption:
 3VA

Isolation

Supply to output: Via transformer 2.5KV 50Hz

Impulse

<u>Output</u>

Output Voltage; 0-10VDC
Max output Power: 0.1VA
Short circuit duration: Indefinite
Accuracy: 0.5%

General

 $\begin{array}{lll} \text{Storage temperature:} & -20^{\circ}\text{C to} + 65^{\circ}\text{C} \\ \text{Operating temperature:} & -20^{\circ}\text{C to} + 65^{\circ}\text{C} \\ \text{Max cable size:} & 2.5\text{mm Terminal} \end{array}$

max torque: 0.4Nm CE marked: Yes

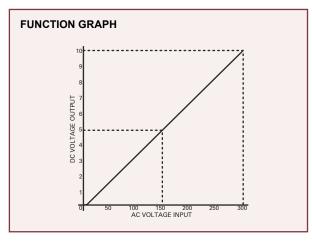
Standards applied: EN61000-6-1: 2007

EN61000-6-3: 2007 EN61010-1: 2002

Housing Material: Polycarbonate, Auto

extinguishable to UL 94 V-0

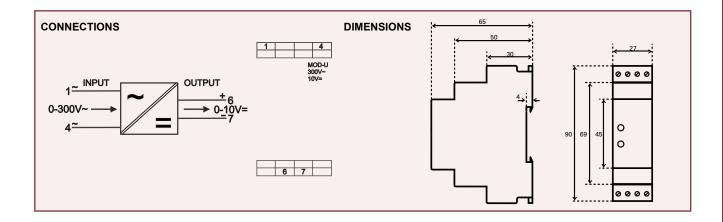
IP rating: IP50



ORDERING INFORMATION

 TYPE
 INPUT RANGE
 OUTPUT

 MOD-U
 0-300VAC
 0-10VDC



FOUR WAY AC CURRENT TRANSDUCER 4 x 0.1-50 AMPS INPUTS TO 4 x 0-5VDC OR 0-10VDC OUTPUTS



TYPES: YW4 / 0-5VDC YW4 / 0-10VDC

FEATURES

226

- Din rail mounted
- Supplied complete with four split core CT's
- Primary current range 0.1-50Amps
- Choice of 4x 0-5VDC or 0-10VDC outputs
- Ideal retrofit solution for monitoring output ways on PDU's

DESCRIPTION & MODE OF OPERATION

A din rail mounted four way AC current transducer. Accepting up to four inputs from the miniature split core current transformers supplied as a "kit" with the unit and giving four isolated analogue voltage signal outputs, either 0-5V DC or 0-10V DC. The maximum primary current possible is 50Amps which is compatible with the 10mm ID of the split core CT.

The YW4 has individual pairs of terminals for the CT inputs, whilst the output channels share a common 0V rail. The YW4 requires a separate AC or DC supply voltage with isolation offered via an internal transformer or DC to DC converter.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: +15% Frequency: 50/60Hz Max power consumption: 3VA

0.1-50Amps via split core CT Input x 4:

Input impedance per channel: 10 Ohms

0-5VDC or 0-10VDC Output x 4: Output impedance: >1 K0hms < 0.1% of full scale Gain error: Zero offset: < 0.1% of full scale

Isolation

Supply to input & output: Via internal transformer or DC to DC converter

Input to output: Via external CT Common OV rail Output channel to channel:

General

-20°C to +65°C Operating temperature: -20°C to +65°C Storage temperature: Max cable size: 2.5mm CF marked Yes

In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007,

EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

CT Specifications

Primary current range: 0.1 to 50Amps Secondary current: 0-16.6mA Accuracy class: Class 1

100Amps continuous Max input current: Max circuit voltage: 600V AC (insulated cable)

Frequency: 10Hz to 5KHz Internal diameter: 10mm External dimensions (mm): 26W x 23D x 48H

ORDERING INFORMATION

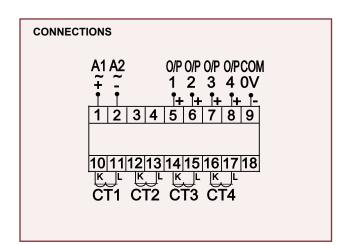
TYPE SUPPLY VOLTAGE YW4/0-5VDC 440VAC

230VAC 48VDC YW4/0-10VDC 415VAC 110VAC 24VDC 12VDC 400VAC 48VAC

380VAC 24VAC

Spare CT's available separately, P/No. F-50A

versions are available



To maintain Class 1 accuracy the total CT secondary cable input loop impedance per CT must not be greater than 0.1 Ohms. Therefore, care should be made to ensure the total loop distance is as short as possible, and/or the loop cable size diameter is as great as reasonably possible.



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ELECTRICAL MEASUREMENT TRANSDUCERS

FOXTAM ELECTRICAL MEASUREMENT TRANSDUCERS



GENERAL SPECIFICATIONS & DIMENSIONS

OUTPUT

Response time: <400mSec Warm up time: <15 mins

Output ripple: 1% peak full scale

Long term drift: +/- 0.25% per year non cumulative

Maximum load: 0-1mA 10 KOhm max

0-2.5mA 6 KOhm max 0-5mA 3 KOhm max 0-10mA 1.5 KOhm max

0-20mA & 4-20mA 750 Ohm max

Adjustment: Self powered voltage & current transducers have an adjustable span only

All other transducers have an adjustable zero & span

AUXILIARY SUPPLY

AC: 24 / 110 / 230 / 415V others on request

DC: 24 / 48 / 110V Tolerance: +/- 20%

Consumption: 4VA / W (combined Watt / VAr transducers 7VA / W)

■ EMC COMPLIANCE

Directive 89/36/EEC: Electrostatic discharge IEC801.2 (8KV)

Electromagnetic fields IEC801.3 level 3 Fast transient bursts IEC801.4 level 4

Surge withstand IEC255-5

ENCLOSURE

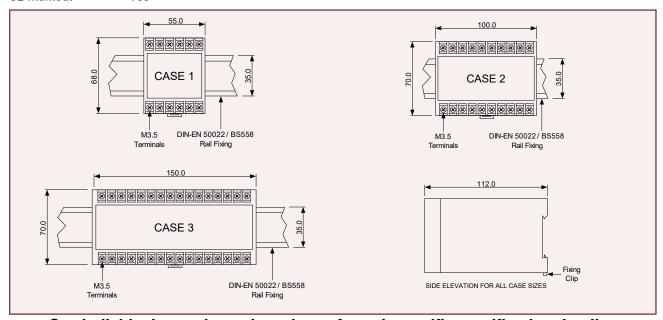
Material: Grey ABS plastic with finger proof terminal covers

Isolation: 4KV rms 50Hz for 1 min (to IEC414) between input / output / case / auxiliary supply

1KV DC / 600VAC between outputs on combined Watt / VAr transducers

Mounting: 35mm Din rail (DIN-EN 50022)

CE Marked: Yes



See individual transducer data sheets for unit specific specification details

AC VOLTAGE TRANSDUCERS

TYPE: FOX.TR.AU

DESCRIPTION

228





Foxtam AC voltage transducers can measure voltage either directly (max 600VAC) or via the secondary of a voltage transformer. The transducer converts the AC input voltage to an isolated analogue DC mA or DC voltage analogue signal output, directly proportional to the input. The 4KV isolated output signals can be utilised for many applications and can be fed into analogue meters, digital meters, PLC's or BMS systems.

Transducer types include:-

Self powered - The lower cost option where no auxiliary supply is required but at least 10% of the input range is required to start generating an accurate output. Self powered units can only give a zero based output, hence a 4-20mA output is not possible. Self powered units also have an enhanced burden on the input (circa 3VA).

Powered – An auxiliary supply is required, these transducers can be used accurately down to 0% of the input range. A wide choice of outputs are possible including 4-20mA.

Powered TRMS – As per the standard powered transducer but with enhanced measuring technology, typically used for the accurate measurement of distorted waveforms. TRMS versions are also suited for use on high frequency circuits between 40 to 500Hz.

SPECIFIC SPECIFICATIONS

Accuracy: Class 0.25

Input voltage: 0-50V...600VAC direct

VT ratio specify

Overload: 1.2 x Un continuous

1.5 x Un for 1 sec

Working range: 0-120% Un (powered units)

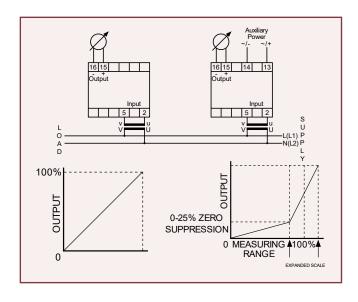
10-120% Un (self powered units)

Frequency: 50Hz or 60Hz 40-500Hz (TRMS units)

Input burdens: <0.2VA (powered units)

<3VA (self powered units)

Case size: 1



www.foxtamcontrols.co.uk

ORDERING INFORMATION

<u>TYPE</u>	INPUT RANGE	<u>OUTPUT</u>	AUX SUPPLY
FOX.TR.AU / Self powered	0-50600VAC direct*	0-1mA	24VAC
FOX.TR.AU / Powered	VT ratio	0-2.5mA	63VAC
FOX.TR.AU / Powered TRMS	Expandable input***	0-5mA	110VAC
	Suppressed zero input***	0-10mA	230VAC
		0-20mA	415VAC
		4-20mA**	24VDC
		0-1VDC	48VDC
		0-5VDC	110VDC
		0-10VDC	

^{*}Specify exact direct input range required, recommended standard ranges 0-150V, 0-300V, 0-500V

^{**}Not possible on self powered units

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PRODUCT

GROUP GC

ELECTRICAL MEASUREMENT TRANSDUCERS

AC CURRENT TRANSDUCERS

TYPE: FOX.TR.AI



Foxtam AC current transducers can measure current either directly (max 7.5 Amps) or via the secondary of a current transformer, either 0-1 Amp or 0-5 Amp. The transducer converts the AC input current to an isolated analogue DC mA or DC voltage analogue signal output, directly proportional to the input. The 4KV isolated output signals can be utilised for many applications and can be fed into analogue meters, digital meters, PLC's or BMS systems.

Transducer types include:-

Self powered - The lower cost option where no auxiliary supply is required but at least 10% of the input range is required to start generating an accurate output. Self powered units can only give a zero based output, hence a 4-20mA output is not possible. Self powered units also have an enhanced burden on the input (circa 3VA).

Powered – An auxiliary supply is required, these transducers can be used accurately down to 0% of the input range. A wide choice of outputs are possible including 4-20mA.

Powered TRMS - As per the standard powered transducer but with enhanced measuring technology, typically used for the accurate measurement of distorted waveforms. TRMS versions are also suited for use on high frequency circuits between 40 to 500Hz.

Powered Bi-polar - For use in bi-directional current flow applications such as import / export scenarios. The analogue output signal can be either mA (but not 4-20mA) or voltage and is also bi-polar for example -10VDC to 0 to +10VDC.

SPECIFIC SPECIFICATIONS

Class 0.25 Accuracy:

Input current: 0-0.7A...7.5A direct

0-1A or 0-5A CT input

Overload: 2 x In continuous

30 x In for 1 sec

Working range: 0-120% In (powered units)

10-120% In (self powered units)

Frequency: 50Hz or 60Hz, 40-500Hz (TRMS units)

Input burdens: < 0.3VA (powered units)

<3VA (self powered units)

Case size: 1 (Bi-polar units 2)

100% 100% OUTPUT IMPORT EXPORT MEASURING 100% RANGE

ALIX SLIPPI V

ORDERING INFORMATION

TYPE	INPUT RANGE
FOX.TR.AI / Self powered	0-0.77.5A direct*
FOX.TR.AI / Powered	0-1A CT
FOX.TR.AI / Powered TRMS	0-5A CT

FOX.TR.AI / Powered Bi-polar	

001701	AUX SUFFLI
0-1mA	24VAC
0-2.5mA	63VAC
0-5mA	110VAC
0-10mA	230VAC
0-20mA	415VAC
4-20mA**	24VDC
0-1VDC	48VDC
0-5VDC	110VDC
0-10VDC	
Bi-polar***	

***Bi-polar units will be +/- outputs (4-20mA not possible)

OLITPLIT

^{*}Specify exact direct input range required

^{**}Not possible on self powered units

ACTIVE POWER (WATTS) TRANSDUCERS

TYPE: FOX.TR.W

PRODUCT GROUP GG

DESCRIPTION

230

Foxtam active power (Watts) transducers can measure directly or via inputs from current transformers and/or voltage transformers. All active power transducers require a separate auxiliary supply. At the time of ordering the input details especially CT and VT input ratio details must be specified. Any specific scale range can also be determined, otherwise a sensible scale range from the input details supplied will be calculated. The 4KV isolated output signals are suitable for many applications, such as inputs to analogue and digital meters, PLC's or BMS

Transducer types include:-

FOX.TR.W.12 - Single phase, requiring a single current and voltage input.

FOX.TR.W.33B – Three phase, three wire balanced load, requiring current inputs from L1 & L3 and voltage inputs from L1 & L3. On request the unit can be configured current input L1 only and voltage inputs L1, L2 & L3 (the housing width will increase to case size 3).

FOX.TR.W.33U – Three phase, three wire unbalanced load, requiring current inputs from L1 & L2 and voltage inputs from L1, L2 & L3. On request the current input can be from L1 & L3.

FOX.TR.W.34B – Three phase, four wire balanced load, requiring a single current input from L1 and a voltage input from L1 along with the Neutral.

FOX.TR.W.34U – Three phase, four wire unbalanced load, requiring current and voltage inputs from L1, L2 & L3 plus the connection of the Neutral.

Any of the above active power transducers can be supplied as bi-directional (import / export) with a +/- analogue output or a 4-12-20mA output.

SPECIFIC SPECIFICATIONS

Accuracy:	Class 0.25
Input voltage:	0-50V600VAC direct

Current input:

VT ratio specify 0-0.7A...7.5A direct

CT ratio specify 1A or 5A

Overload: 1.2 x Un & 2 x In continuous

1.5 x Un & 30 x In for 1 sec

Working range: 0-120%
Frequency: 50Hz or 60 Hz
Input burdens: <0.2VA voltage input
<0.3VA current input

CASE SIZES

FOX.TR.W.12-Single phase:	2
FOX.TR.W.33B-3P3W Balanced:	2
(special configuration as detailed ab	ove): 3
FOX.TR.W.33U-3P3W Unbalanced:	3
FOX.TR.W.34B-3P4W Balanced:	2
FOX.TR.W.34U-3P4W Unbalanced:	3

ORDERING INFORMATION

TYPE	INPUT RANGE	<u>OUTPUT</u>	AUX SUPPLY
FOX.TR.W.12 / Single phase	0-50600VAC direct*	0-1mA	24VAC
FOX.TR.W.33B / 3P3W balanced	VT ratio*	0-2.5mA	63VAC
FOX.TR.W.33U / 3P3W unbalanced	Plus:-	0-5mA	110VAC
FOX.TR.W.34B / 3P4W balanced	0.7A7.5A direct*	0-10mA	230VAC
FOX.TR.W.34U / 3P4W unbalanced	CT ratio*	0-20mA	415VAC
		4-20mA	24VDC
		4-12-20mA**	48VDC
		0-1VDC	110VDC
		0-5VDC	
		0-10VDC	

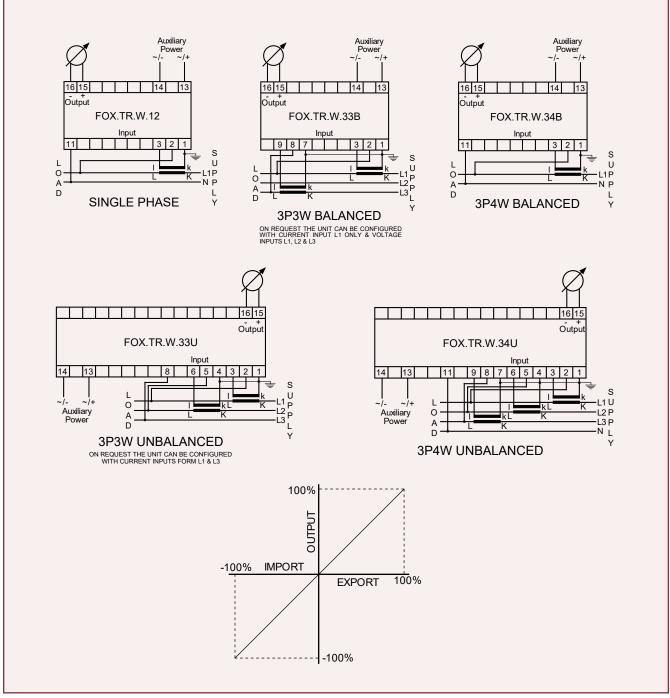
^{*}Specify exact direct input ranges required and/or CT & VT ratios

^{**}For bi-directional active power transducers (import / export versions), also \pm - output signals can be specified for example -10VDC to 0 to \pm 10VDC

ACTIVE POWER (WATTS) TRANSDUCERS







REACTIVE POWER (VAr) TRANSDUCERS

TYPE: FOX.TR.VAR



DESCRIPTION

232

Foxtam reactive power (VAr) transducers can measure directly or via inputs from current transformers and/or voltage transformers. All reactive power transducers require a separate auxiliary supply. At the time of ordering the input details especially CT and VT input ratio details must be specified. Any specific scale range can also be determined, otherwise a sensible scale range from the input details supplied will be calculated. The 4KV isolated output signals are suitable for many applications, such as inputs to analogue and digital meters, PLC's or BMS

Transducer types include:-

FOX.TR.VAR.12 - Single phase, requiring a single current and voltage input.

FOX.TR.VAR.33B – Three phase, three wire balanced load, requiring current inputs from L1 & L3 and voltage inputs from L1 & L3. On request the unit can be configured current input L1 only and voltage inputs L1, L2 & L3 (the housing width will increase to case size 3).

FOX.TR.VAR.33U – Three phase, three wire unbalanced load, requiring current inputs from L1 & L2 and voltage inputs from L1, L2 & L3. On request the current input can be from L1 & L3.

FOX.TR.VAR.34B – Three phase, four wire balanced load, requiring a single current input from L1 and a voltage input from L1 along with the Neutral.

FOX.TR.VAR.34U – Three phase, four wire unbalanced load, requiring current and voltage inputs from L1, L2 & L3 plus the connection of the Neutral.

Any of the above active power transducers can be supplied as bi-directional (import / export) with a +/- analogue output or a 4-12-20mA output.

SPECIFIC SPECIFICATIONS

Accuracy:	Class 0.25
-----------	------------

Input voltage: 0-50V...600VAC direct

VT ratio specify

Current input: 0-0.7A...7.5A direct

CT ratio specify 1A or 5A

Overload: 1.2 x Un & 2 x In continuous

1.5 x Un & 30 x In for 1 sec

Working range: 0-120%
Frequency: 50Hz or 60 Hz
Input burdens: <0.2VA voltage input
<0.3VA current input

CASE SIZES

FOX.TR.VAR.12-Single phase:	2
FOX.TR.VAR.33B-3P3W Balanced:	2
(special configuration as detailed above):	3
FOX.TR.VAR.33U-3P3W Unbalanced:	3
FOX.TR.VAR.34B-3P4W Balanced:	2
FOX.TR.VAR.34U-3P4W Unbalanced:	3

ORDERING INFORMATION

TYPE	INPUT RANGE	<u>OUTPUT</u>	AUX SUPPLY
FOX.TR.VAR.12 / Single phase	0-50600VAC direct*	0-1mA	24VAC
FOX.TR.VAR.33B / 3P3W balanced	VT ratio*	0-2.5mA	63VAC
FOX.TR.VAR.33U / 3P3W unbalanced	Plus:-	0-5mA	110VAC
FOX.TR.VAR.34B / 3P4W balanced	0.7A7.5A direct*	0-10mA	230VAC
FOX.TR.VAR.34U / 3P4W unbalanced	CT ratio*	0-20mA	415VAC
		4-20mA	24VDC
		4-12-20mA**	48VDC
		0-1VDC	110VDC
		0-5VDC	
		0-10VDC	

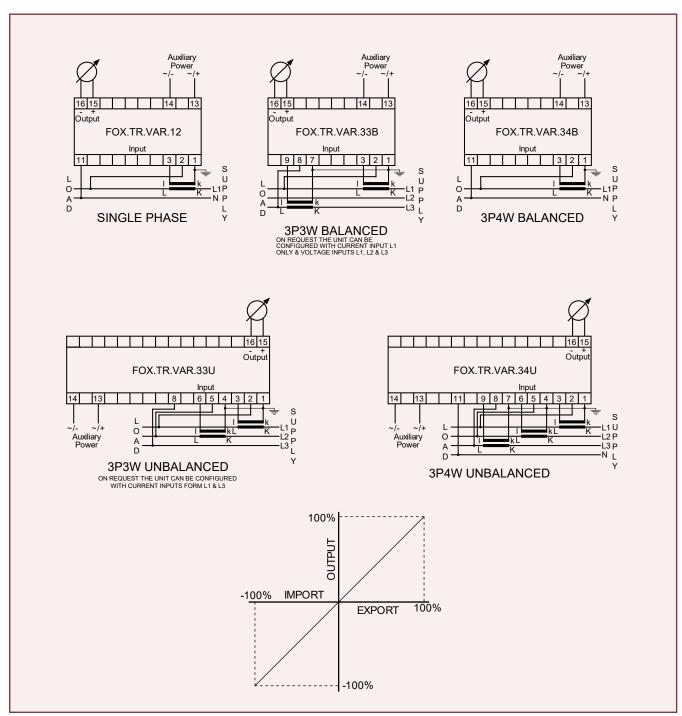
^{*}Specify exact direct input ranges required and/or CT & VT ratios

^{**}For bi-directional reactive power transducers (import / export versions), also +/- output signals can be specified for example -10VDC to 0 to +10VDC

REACTIVE POWER (VAr) TRANSDUCERS







COMBINED ACTIVE & REACTIVE POWER (WATTS & VAr) TRANSDUCERS

TYPE: FOX.TR.W.VAR

PRODUCT GROUP GG

DESCRIPTION

234

Foxtam combined active and reactive power (Watts & VAr) transducers can measure directly or via inputs from current transformers and/or voltage transformers. All combined active and reactive power transducers require a separate auxiliary supply. At the time of ordering the input details especially CT and VT input ratio details must be specified. Any specific scale range can also be determined, otherwise sensible scale ranges from the input details supplied will be calculated. The 4KV isolated output signals are suitable for many applications, such as inputs to analogue and digital meters, PLC's or BMS systems.

Transducer types include:-

FOX.TR.W.VAR.12 - Single phase, requiring a single current and voltage input.

FOX.TR.W.VAR.33B – Three phase, three wire balanced load, requiring current inputs from L1 & L3 and voltage inputs from L1 & L3. On request the unit can be configured current input L1 only and voltage inputs L1, L2 & L3.

FOX.TR.W.VAR.33U – Three phase, three wire unbalanced load, requiring current inputs from L1 & L2 and voltage inputs from L1, L2 & L3. On request the current input can be from L1 & L3.

FOX.TR.W.VAR.34B – Three phase, four wire balanced load, requiring a single current input from L1 and a voltage input from L1 along with the Neutral.

Any of the above transducers can be supplied as bi-directional (import / export) with a +/- analogue output or a 4-12-20mA output.

SPECIFIC SPECIFICATIONS

Accuracy:	Class 0.25
MUUUIUUY.	01033 0.23

Input voltage: 0-50V...600VAC direct

VT ratio specify

Current input: 0-0.7A...7.5A direct

or CT ratio specify 1A or 5A

Overload: 1.2 x Un & 2 x In continuous

1.5 x Un & 30 x In for 1 sec

Working range: 0-120%
Frequency: 50Hz or 60 Hz
Input burdens: <0.2VA voltage input

< 0.3VA current input

CASE SIZES

FOX.TR.W.VAR.12-Single phase:	3
FOX.TR.W.VAR.33B-3P3W Balanced:	3
(special configuration as detailed above):	3
FOX.TR.W.VAR.33U-3P3W Unbalanced:	3
FOX.TR.W.VAR.34B-3P4W Balanced:	3

ORDERING INFORMATION

TYPE	INPUT RANGE	<u>OUTPUT</u>	AUX SUPPLY
FOX.TR.W.VAR.12 / Single phase	0-50600VAC direct*	0-1mA	24VAC
FOX.TR.W.VAR.33B / 3P3W balanced	VT ratio*	0-2.5mA	63VAC
FOX.TR.W.VAR.33U / 3P3W unbalanced	Plus:-	0-5mA	110VAC
FOX.TR.W.VAR.34B / 3P4W balanced	0.7A7.5A direct*	0-10mA	230VAC
	CT ratio*	0-20mA	415VAC
		4-20mA	24VDC
		4-12-20mA**	48VDC
		0-1VDC	110VDC
		0-5VDC	
		0-10VDC	

^{*}Specify exact direct input ranges required and/or CT & VT ratios

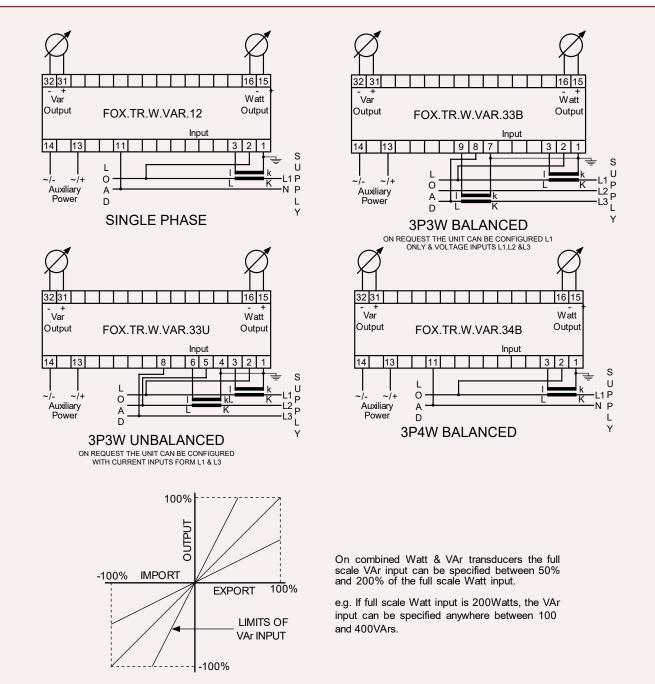
^{**}For bi-directional active and reactive power transducers (import / export versions), also \pm -output signals can be specified for example -10VDC to 0 to \pm 10VDC

^{***}Subject to technical viability it is possible to have a different output for both active and reactive power

PRODUCT GROUP

COMBINED ACTIVE & REACTIVE POWER (WATTS & VAr) TRANSDUCERS



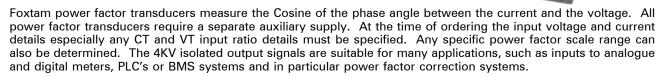


POWER FACTOR (COS) TRANSDUCERS

TYPE: FOX.TR.COS

DESCRIPTION

236



Transducer types include:-

FOX.TR.COS.12 - Single phase, requiring a single current and voltage input.

FOX.TR.COS.33B – Three phase, three wire balanced load, requiring a current input from L1 and voltage inputs from L2 & L3.

Any of the above power factor transducers can be supplied with a bi-polar output (+/-) or as an example 4-12-20mA output or 0-5-10VDC.

SPECIFIC SPECIFICATIONS

Accuracy: Class 0.5 (down to 10% of FS)

Input voltage: 0-50V...600VAC direct

VT ratio specify

Current input: 0-0.7A...7.5A direct

CT ratio specify 1A or 5A

Overload: 1.2 x Un & 2 x In continuous

1.5 x Un & 30 x In for 1 sec

Working range: 20-120% Un

5-120% In

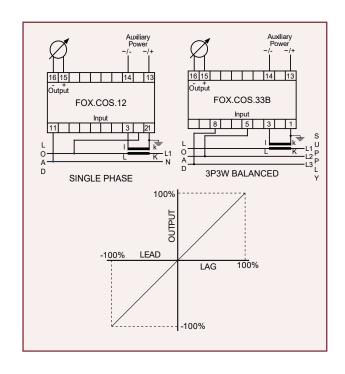
Frequency: 50Hz or 60 Hz

< 0.3VA current input

< 0.2VA voltage input

Case size: 2

Input burdens:



PRODUCT

GROUP

ORDERING INFORMATION

<u>TYPE</u>	<u>INPUTS</u>	COS RANGE	<u>OUTPUT</u>	<u>AUX SUPPLY</u>
FOX.TR.COS.12 / Single phase	0-50600VAC direct*	-0.5 to 1 to +0.5	+/-1mA	24VAC
FOX.TR.COS.33B / 3P3W balanced	VT ratio*	0 to 1 to 0	+/-2.5mA	63VAC
	Plus:-	Specify other	+/-5mA	110VAC
	0.7A7.5A direct*		+/-10mA	230VAC
	CT ratio*		+/-20mA	415VAC
			4-12-20mA**	24VDC
			+/-1VDC	48VDC
			+/-5VDC	110VDC
			+/-10VDC	

^{*}Specify exact direct input ranges required and/or CT & VT ratios and power factor scale range required

^{**}Also possible to have a signal output for example 0-5-10VDC output or similar, consult the sales office for technical viability.

ELECTRICAL MEASUREMENT TRANSDUCERS

FREQUENCY (Hz) TRANSDUCERS

TYPE: FOX.TR.HZ





DESCRIPTION

Foxtam frequency transducers measures "mains" frequency either directly or via a voltage transformer. The transducer converts the input signal to either a DC mA or DC voltage analogue signal output, directly proportional to the input. All frequency transducers are self powered and do not require a separate auxiliary supply. The 4KV isolated output signals can be utilised for many applications and can be fed into analogue meters, digital meters, PLC's or BMS systems.

Transducer types include:-

FOX.TR.HZ.U - Uni-polar output for example 4-20mA or 0-10VDC

FOX.TR.HZ.B - Bi-polar output for example 4-12-20mA or -10VDC to 0 to +10VDC

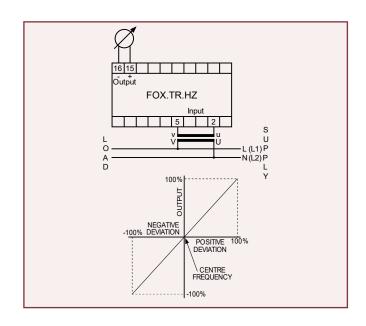
SPECIFIC SPECIFICATIONS

Accuracy: +/-1% of centre frequency

Input voltage: 50V...600VAC

Overload: 1.2 x Un continuous
1.5 x Un for 1 sec

Working range: 80-120% Un
Burden: <3VA
Case size: 2



ORDERING INFORMATION

<u>TYPE</u>	INPUT VOLTS	Hz RANGE	OUTPUT UNI	OUTPUT BI
FOX.TR.HZ.U / Uni-polar	110VAC	45-65Hz	0-1mA	+/-1mA
FOX.TR.HZ.B / Bi-polar	230VAC	49-51Hz	0-2.5mA	+/-2.5mA
	415VAC	48-52Hz	0-5mA	+/-5mA
	50600VAC*	47-53Hz	0-10mA	+/-10mA
		45-55Hz	0-20mA	+/-20mA
		59-61Hz	4-20mA	4-12-20mA**
		58-62Hz	0-1VDC	+/-1VDC
		57-63Hz	0-5VDC	+/-5VDC
		55-65Hz	0-10VDC	+/-10VDC
		390-410Hz		
		380-420Hz		
		370-430Hz		
		360-440Hz		

^{*}Specify exact voltage input +/-20%

^{**}Also possible on bi-polar units to have as an example 0-5-10VDC output

DC CURRENT TRANSDUCERS

TYPE: FOX.TR.DI





DESCRIPTION

238

Foxtam DC current transducers can measure DC current directly up to 10 Amps, above 10 Amps a shunt should be used in conjunction with a DC voltage transducer type FOX.TR.DU. The transducer converts the input signal to either a DC mA or DC voltage analogue signal output, directly proportional to the input. All DC current transducer require an auxiliary supply voltage. The 4KV isolated output signals can be utilised for many applications and can be fed into analogue meters, digital meters, PLC's or BMS systems.

Transducer types include:-

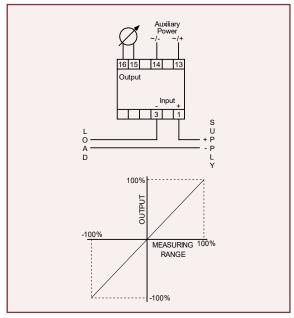
FOX.TR.DI.U - Uni-polar output for example 4-20mA or 0-10VDC.

FOX.TR.DI.B – Bi-polar transducers which are particularly applicable for renewable energy applications when charging and discharging batteries. Also for applications involving the control of DC motors when reversing polarity to control direction of motion, outputs for example can be 4-12-20mA or -10VDC to 0 to +10VDC.

SPECIFIC SPECIFICATIONS

Accuracy: Class 0.25
Input current: 0-1mA...10A direct
Overload: 2 x In continuous
30 x In for 1 sec

Working range: 0-120% In Input Burden: <0.3VA
Case size: 1



ORDERING INFORMATION

<u>TYPE</u>	INPUT RANGE	OUTPUT UNI	OUTPUT BI	AUX SUPPLY
FOX.TR.DI.U / Uni-polar	0-1mA10A direct*	0-1mA	+/-1mA	24VAC
FOX.TR.DI.B / Bi-polar		0-2.5mA	+/-2.5mA	63VAC
		0-5mA	+/-5mA	110VAC
		0-10mA	+/-10mA	230VAC
		0-20mA	+/-20mA	415VAC
		4-20mA	4-12-20mA**	24VDC
		0-1VDC	+/-1VDC	48VDC
		0-5VDC	+/-5VDC	110VDC
		0-10VDC	+/-10VDC	

^{*}Specify exact current input

^{**}Also possible on bi-polar units to have as an example 0-5-10VDC output

239

ELECTRICAL MEASUREMENT TRANSDUCERS

DC VOLTAGE TRANSDUCERS

TYPE: FOX.TR.DU





DESCRIPTION

Foxtam DC voltage transducers can measure DC voltages directly up to 1000VDC. Specific 0-50mV, 60mV, 75mV are available for use directly with DC current shunts. The transducer converts the input signal to either a DC mA or DC voltage analogue signal output, directly proportional to the input. All DC voltage transducer require an auxiliary supply voltage. The 4KV isolated output signals can be utilised for many applications and can be fed into analogue meters, digital meters, PLC's or BMS systems.

Transducer types include:-

FOX.TR.DU.U - Uni-polar output for example 4-20mA or 0-10VDC.

FOX.TR.DU.B – Bi-polar transducers which are particularly applicable for applications involving the control of DC motors when reversing polarity to control direction of motion, outputs for example can be -10VDC to 0 to +10VDC or 4-12-20mA.

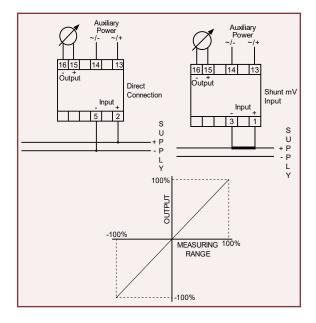
SPECIFIC SPECIFICATIONS

Accuracy: Class 0.25

Input voltage:0-20mV...1000V directOverload:1.2 x Un continuous

1.5 x Un for 1 sec

Working range: 0-120% In Input Burden: <0.2VA
Case size: 1



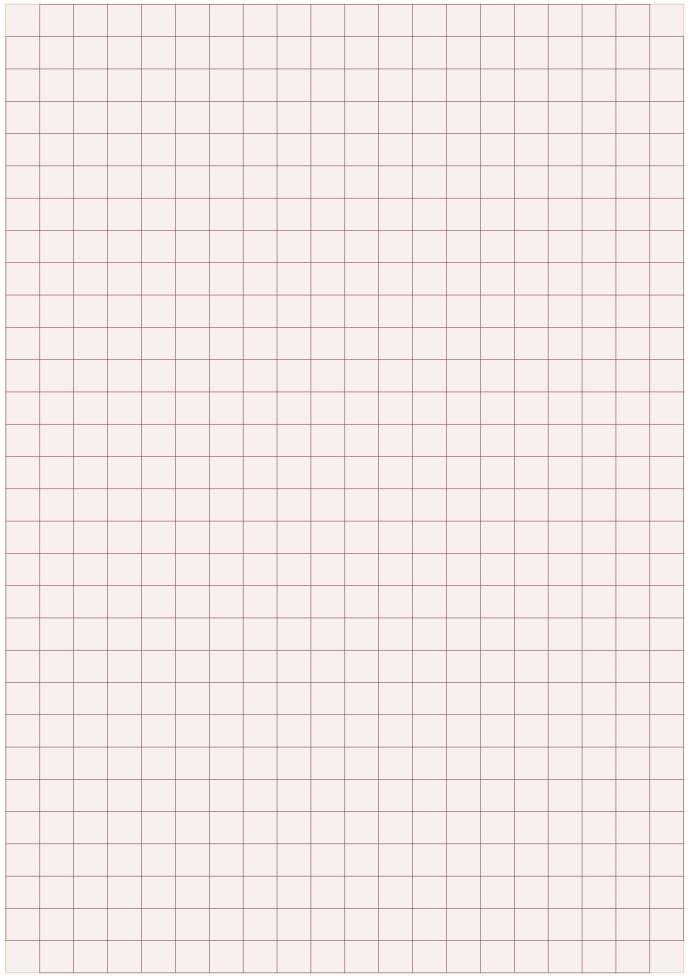
ORDERING INFORMATION

TYPE	INPUT RANGE	OUTPUT UNI	OUTPUT BI	AUX SUPPLY
FOX.TR.DU.U / Uni-polar	0-50mVDC	0-1mA	+/-1mA	24VAC
FOX.TR.DU.B / Bi-polar	0-60mVDC	0-2.5mA	+/-2.5mA	63VAC
	0-75mVDC	0-5mA	+/-5mA	110VAC
	0-20mV1000VDC*	0-10mA	+/-10mA	230VAC
		0-20mA	+/-20mA	415VAC
		4-20mA	4-12-20mA**	24VDC
		0-1VDC	+/-1VDC	48VDC
		0-5VDC	+/-5VDC	110VDC
		0-10VDC	+/-10VDC	

^{*}Specify exact voltage input, above 600VDC a price surcharge is applicable.

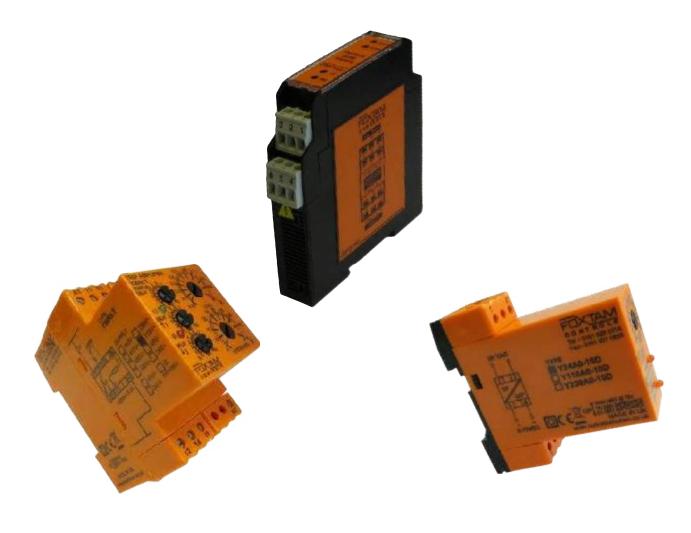
^{**}Also possible on bi-polar units to have as an example 0-5-10VDC output





ISOLATING SIGNAL CONDITIONERS & CONVERTERS, TRIP AMPS, ANALOGUE SIGNAL GENERATORS

PAGES	P/No.	DESCRIPTION
242 & 243	FOX.ISC	Single channel & dual channel output isolating signal conditioners and converters
	MATHSCON	Dual input, single output, "Maths" function isolating signal conditioners & converters
244	YxxA0-10D	Adjustable 0-10VDC output signal generator
245	Yxxx4-20i	Adjustable 4-20mA output signal generator
246	8/11/YRTP	4-20mA out of range trip Amp relay
247	11/YWRIT	1(4)-20mA adjustable trip Amps relay
248	YWRU2T/10VDC	0.1-10VDC adjustable dual setpoint relay



242

ISOLATING SIGNAL CONDITIONERS & CONVERTERS

TYPES: FOX.ISC-1-xxx Single input, single output FOX.ISC-2-xxx Single input, dual output

FEATURES

- 17.5mm width
- Single channel or dual channel outputs
- Analogue signal input selectable
- Analogue signal output selectable
- PT100 inputs
- Thermocouple inputs
- Resistance and potentiometer inputs
- LED indication
- Zero & span adjustment potentiometers

DESCRIPTION

A range of slim (17.5mm wide) isolating signal conditioners and converters. The standard "in stock" product features selectable via dip switches, analogue input and analogue output signal ranges. Available is a single analogue input unit with a single analogue output, also available is a single analogue input unit with dual isolated analogue outputs (both outputs can be set to be different to each other). All units require a separate auxiliary supply, either a low voltage version 20-56V AC/DC, or a high voltage version 85-265VAC / 100-300VDC.

LED's indicate that the auxiliary supply is present, plus the input signal is present (approx 5% of full input range), a third LED signals that the output is present (approx 5% of full output range), dual output units will have two output LED's.

We are happy to offer these units set up and calibrated to your requirements at time of ordering. However, customers are able to change input and output ranges by dip switch selection, this is via removing a side cover, switch information is detailed below. Removing the front cover which hinges up gives access to Span and Zero adjustment potentiometers for fine tuning the output(s). Units will be supplied unless otherwise requested at factory default of input 4-20mA and output 4-20mA. Changing the output or input via the dip switches will cause the calibration to drift this can be rectified by using the Span and Zero potentiometers.

SPECIFIC SPECIFICATIONS

 \leq +/-0.2% FS (\leq +/-0.1% FS option) Accuracy: Response time: <250 mSec (thermocouple inputs < 500mSec)</pre>

Output ripple: \leq +/-0.1% FS

Output span adjust: +/-10% via potentiometer Output zero adjust: +/-10% via potentiometer Input impedance: 0-20mA, 4-20mA 250 0hms

0-5V, 0-10V, 1-5V, 2-10V 1 MOhms

All other inputs 1 M0hms **Output impedance:** 0-20mA, 4-20mA 520 0hms 0-5VDC, 1-5VDC 500 Ohms

0-10VDC, 2-10VDC 1 KOhms Power consumption: DC 4W, AC 6VA

0-60°C Operating temp:

Operating humidity:

20-95% RH, non condensing

Temp coefficient: $\pm 100 \text{ PPM/}^{\circ}\text{C}$ Isolation: 2KV AC for 1 min

Between; aux supply / output(s) / input / case

Standards: IEC 61010 (category 3) EN55011:2002 EN61326:2003 EMC:

CE marked: Yes **Rosh compliant:** Yes



INPUT DIP SWITCH (ZC) SETTING					
INPUT	SW1	SW2	SW3	SW4	
0-5VDC	OFF	OFF	OFF	OFF	
0-10VDC	OFF	ON	OFF	OFF	
1-5VDC	OFF	OFF	ON	ON	
2-10VDC	OFF	ON	ON	ON	
0-20mA	ON	OFF	OFF	OFF	
4-20mA	ON	OFF	ON	ON	

OUTPUT DIP SWITCH (ZB & ZA) SETTING						
Ol	OUTPUT 1 (ZB) OUTPUT 2 (ZA)					
OUTPUT	SW1	SW2	SW3	SW4	SW5	SW6
0-5VDC	OFF	ON	ON	ON	OFF	ON
0-10VDC	OFF	ON	OFF	ON	OFF	ON
1-5VDC	ON	OFF	ON	ON	OFF	ON
2-10VDC	ON	OFF	OFF	ON	OFF	ON
0-20mA	OFF	ON	OFF	OFF	ON	OFF
4-20mA	ON	OFF	OFF	OFF	ON	OFF

MATHSCON

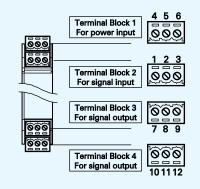
Available also, are dual input, single output "Maths" units, for say summating two input signals together, or subtracting one from another. The inputs and output do not need to be the same. The product is called a MATHSCON, please contact sales office for assistance with your exact requirements, the MATHSCON's are manufactured to order



PRODUCT

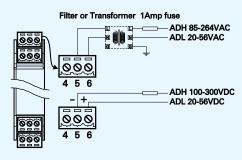
GROUP

94.0 94.0 Side View 17.5

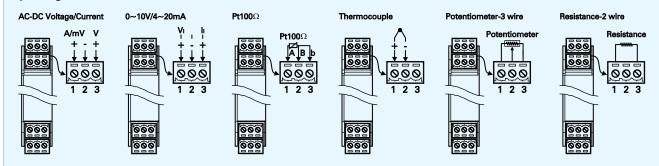


Auxiliary power connections - Terminal block 1

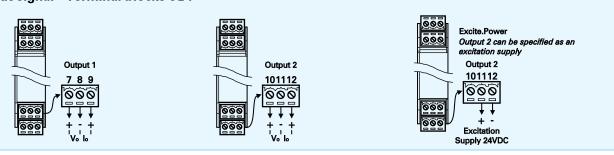
DIMENSIONS & CONNECTIONS



Input signal - Terminal block 2



Output signal - Terminal blocks 3&4



ORDERING INFORMATION

DESCRIPTION

FOX.ISC-1-ADL FOX.ISC-1-ADH FOX.ISC-2-ADL FOX.ISC-2-ADH	Selectable analogue single input, selectable analogue signal single output Selectable analogue single input, selectable analogue signal single output Selectable analogue single input, selectable analogue signal dual output Selectable analogue single input, selectable analogue signal dual output
FOX.ISC-1-Spec} FOX.ISC-2-spec}	Any standard or non standard analogue signal either input or output, or both } PT100 3 wire input (specify temp. range and output signal required) } K, J, E, T thermocouple input (specify temp. range and output signal required) } Resistance 2 wire (specify resistance range and output signal required) } Potentiometer 3 wire (specify resistance range and output signal required) }
OPTIONO	

AUXILIARY SUPPLY

20-56VAC/DC 85-265VAC / 100-300VDC 20-56VAC/DC 85-265VAC / 100-300VDC

All **Spec** units available with **ADL** or **ADH** auxiliary supply.

OPTIONS 24VDC EXCITATIO

P/No.

24VDC EXCITATION The FOX.ISC-2 is available on request with a 24VDC excitation supply output, if requested one of the analogue outputs is forsaken for this.

0.1% ACCURACY On request high accuracy units (not available in thermocouple input units)

244

ADJUSTABLE 0-10VDC OUTPUT SIGNAL GENERATOR

TYPES: Y24A0-10D, Y110A0-10D, Y230A0-10D



FEATURES

- Din Rail Mounted
- Separate Input & Output LED Indication
- Input Voltage 24VAC, 110VAC, 230VAC
- Output 0-10VDC Adjustable
- CE Marked
- RoHS Compliant

DESCRIPTION

A conveniently packaged Din rail mounted AC voltage to an adjustable 0-10VDC output module. Designed specifically for "HAND / OFF / AUTO" applications for BMS controller inputs, when in "HAND" a DC voltage needs to be forced into BMS input cards, but not necessarily a full 10VDC signal is required. This product can be specified with either a 24VAC, 110VAC or 230VAC primary voltage, the output voltage is an adjustable 0-10VDC via a front mounted potentiometer. A healthy AC input voltage is signalled by an illuminated green LED, and the output voltage is indicated by an increasing in intensity illuminated red LED starting at 1VDC (below 1VDC the output will be present, but without LED indication). Note this product is not designed to power "control circuits", it is only for driving into BMS input cards, max 10mA @ 10VDC.



Input Supply

Nominal Input: 24VAC, 110VAC, 230VAC

Output Voltage Range: 0-10VDC
Min Impedance: 1K Ohm
Max Impedance: Infinity Ohms
Max Output Load: 10mA
AC Supply Healthy: Via Green LED
DC Output Healthy: Via Red LED

Variable Intensity 1-10VDC

Output Voltage Regulation: $\leq 0.5\%$

General

 $\begin{array}{lll} \mbox{Operating Temperature:} & -40\mbox{°C to } 65\mbox{°C} \\ \mbox{Storage Temperature:} & -40\mbox{°C to } 65\mbox{°C} \\ \mbox{Humidity:} & 95\mbox{\% Rel H max} \\ \mbox{Isolation Voltage I/P-O/P:} & 1500\mbox{VDC for 1 Min} \\ \end{array}$

 CE Marked:
 Yes

 Standards Applied:
 EN60950-1

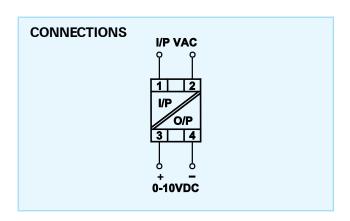
 EN6100-6-3
 EN61010-1

 Material Housing:
 Polycarbonate

Auto extinguishable to UL 94V-0

RoHS Compliant: Yes





ORDERING INFORMATION

Type	Input Voltage	Output Voltage
Y24A0-10D	24VAC	0-10VDC
Y110A0-10D	110VAC	0-10VDC
Y230A0-10D	230VAC	0-10VDC

In due course the above unit will also be available as a "remote potentiometer" version. Please contact the sales office for further information.

ADJUSTABLE 4-20mA OUTPUT SIGNAL GENERATOR

TYPES: Y24D4-20i, Y24A4-20i, Y110A4-20i, Y230A4-20i



FEATURES

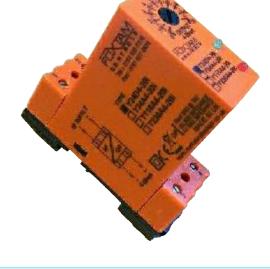
- Din Rail Mounted
- Separate Input & Output LED Indication
- Input Voltage 24VDC, 24VAC, 110VAC, 230VAC
- Output 4-20mA Adjustable
- CE Marked
- RoHS Compliant

DESCRIPTION

A conveniently packaged Din rail mounted AC or DC voltage input to an adjustable 4-20mA output module. Designed for process control systems with "HAND / OFF / AUTO" applications. For example, when in "HAND" a signal anywhere between 4mA and 20mA needs to be forced into instrumentation equipment rather than a default 20mA signal. The product is also useful for system testing and commissioning applications.

The product can be specified with either a 24VDC, 24VAC, 110VAC or 230VAC supply voltage. In the case of 24VDC isolation between the supply voltage and the output is via an internal DC to DC converter. With an AC supply voltage isolation is via an internal transformer.

The output signal is an adjustable 4-20mA via a front mounted potentiometer. A healthy supply voltage is indicated via an illuminated green LED and a healthy output via an illuminated red LED.



CONNECTIONS I/P SUPPLY TO THE SUPPLY O/P 3 | 4

SPECIFICATIONS

Input Supply

Nominal Input: 24VDC, 24VAC, 110VAC, 230VAC

 Output:
 4-20mA

 Max Output Load:
 750 0hms

 Supply Healthy:
 Via Green LED

 Output Healthy:
 Via Red LED

 Output Voltage Regulation:
 <0.5%</td>

General

Material Housing:

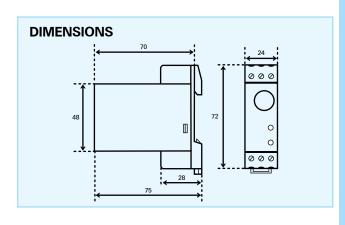
Operating Temperature: -40°C to 65 °C
Storage Temperature: -40°C to 65 °C
Humidity: 95%Rel H max
Isolation Voltage I/P-0/P: 1500V for 1 min

CE Marked: Yes
Standards Applied: EN60950-1
EN6100-6-3

EN61010-1 Polycarbonate

Auto extinguishable to UL 94V-0

RoHS Compliant: Yes



ORDERING INFORMATION

Type	Input Voltage	Adjustable Output
Y24D4-20i	24VDC	4-20mA
Y24A4-20i	24VAC	4-20mA
Y110A4-20i	110VAC	4-20mA
Y230A4-20i	230VAC	4-20mA

4-20mA OUT OF RANGE TRIP AMP RELAY

YRTP (spno) **TYPES:**

8RTP,11RTP (spco)

FEATURES

- Din rail & plug in version
- Single pole output
- **Transformer isolation**
- Adjustable time delay 0.1-60sec
- Supply on LED
- **Relay Status LED**
- **CE** marked

DESCRIPTION & MODE OF OPERATION

A monitoring relay designed to monitor the integrity of a 4-20mA signal rather than control a process, applications include safeguarding a system against potentially faulty transmitters or transducers where the output could on fault rise above 20mA or fall below 4mA but not reaching zero. Available in either a din rail or 8 & 11 pin plug in housing with a SPCO output (SPNO in the din rail version). The output relay will be energized when the monitored signal is between 4 & 20mA. The output relay will de-energise after an adjustable time delay up to 60 seconds if the monitored signal should fall below 3.5mA or rise above 20.5mA. There is a fixed hysteresis of 0.5mA therefore if the monitored signal falls back within the 4-20mA band the output relay will re-energise. If the auxiliary supply to the relay is lost at any time the output relay if energised will de-energise immediately.

SPECIFICATIONS

Supply & Measuring

Dedicated voltage units 24VAC, 110VAC, 230VAC Supply voltage:

±15% Supply tolerance: Isolation AC versions: Via transformer 3VA max Power consumption:

Hysteresis: Fixed 0.5mA

Repeat accuracy: $\pm 2\%$ at constant ambient ±5% across temperature range

Response time: 10mSec on make Adjustable up to 60 Sec on break

4-20mA adjustable Input range: x10 Continuous Max over current:

Input impedance: 1 ohm

Relay output

SPC0 8Amps/250V AC1 Output contacts: (Din rail SPNO, Plug in SPCO)

Max breaking capacity: 2000VA Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

-20°C to +60°C Operating temperature: -20° C to $+60^{\circ}$ C Storage temperature: Max cable size: 4mm CF marked: Yes

In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007

EN61010-1: 2002

Polycarbonate, Auto extinguishable Housing material:

to UL 94 V-0

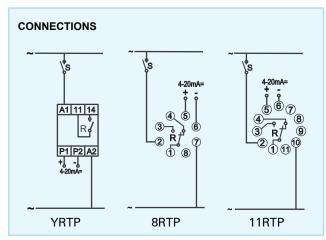
ORDERING INFORMATION

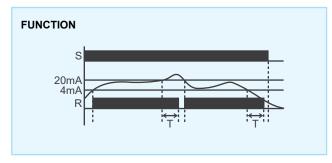
TYPE COIL VOLTAGE

YRTP (Din rail) 230VAC 110VAC 24VAC 8RTP (8 pin plug in)



PRODUCT





11RTP (11 pin plug in)

1(4)-20mA DC ADJUSTABLE TRIP AMPS

TYPES: YWRIT, 11WRIT (spco) YWRI2T (2 x spco)

FEATURES

- Din rail or 11 pin plug in
- Single setpoint or dual setpoint values
- Selectable manual or auto reset
- Low input impedance
- Dual LED indication

SUMMARY OF UNITS

YWRIT - Din rail 1-20mA adjustable single setpoint trip amp.

11WRIT - 11 pin plug in 1-20mA adjustable single setpoint trip amp.

YWRI2T - Din rail 1-20mA two adjustable setpoint trip amp 2 x SPCO outputs "Low" & "High".



YWRIT, 11WRIT

"Auto Reset" without latching mode. This mode is determined by terminals Y1 & Y2 or pins 9 & 11 left open. The output relay is energised when the monitored circuit rises above the level selected via the front potentiometer. The output relay will de-energise when the current falls back below the level selected less the set hysteresis adjustable 5 to 50%, set via a second potentiometer. If the auxiliary supply is lost at any time the relay will also deenergise.

"Manual Reset" latching mode. This mode is determined by a wired link between terminals Y1 & Y2 or pins 9 & 11. The output energises when the monitored circuit rises above the level selected by the front potentiometer. Once energised the relay will remain latched even if the monitored current falls below the set level less any selected hysteresis. Resetting is achieved by opening the link between terminals Y1 & Y2 or pins 9 & 11 or by removing the auxiliary supply. If whilst resetting the monitored current is still above the set level a reset will not be achieved. It is normally preferable in the latching mode to have the adjustable hysteresis set at minimum.

YWRI2T

Two setpoint trip amp. Providing two separately controllable trip levels. With R1 selected as the "High" level and R2 as the "Low" level. When the monitored signal current rises above R2 set level R2 relay will energise. If the current continues to rise above R1 set level, relay R1 will energise. Conversely as the monitored current falls R1 will de-energise, if the fall continues R2 will de-energise. The unit has a built in fixed hysteresis of 2% at each setpoint to avoid relay "chatter". The YWRI2T does not have a latched option and is therefore "auto" reset on both relays.

OTHER APPLICATION NOTES

Adjustable Time Delays

The trip amps YWRIT & 11WRIT have 3 separately adjustable 0.1-10 sec delays. A startup delay activated by the connection of the auxiliary supply, therefore if a control circuit is going to be permanently live the time delay will only ever be active once. A delay on rising current and a delay on falling. The YWRI2T does not have any time delays.

DC Auxiliary Supply Versions

DC auxiliary supply versions are as standard non isolated. For these versions the supply and the measured current must be isolated from each other and must not exceed 50V DC. On request at extra cost isolated versions can be manufactured utilising internally a DC to DC converter.



SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: ±15%
Isolation AC versions: Via transformer
Isolation DC versions: No as standard or:-

Yes via optional internal DC to DC converter

Power consumption: 3VA max

Hysteresis: Ajustable 5 to 50% of le YWRI2T fixed at 2%

Repeat accuracy: $\pm 2\%$ at constant ambient $\pm 5\%$ across temperature range

Response time: 100 mSec on make 200mSec on break Input range: 1-20mA adjustable

Input range: 1-20mA adjustable
Max over current: 1Amp (max 1 sec)
Input impedance: 10 0hms

Time delays: 0.1-10 secs separately adjustable

YWRI2T no delay

Relay output

Output contacts: SPCO 10Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

<u>General</u>

 $\begin{array}{ll} \text{Operating temperature:} & -20^{\circ}\text{C to} + 60^{\circ}\text{C} \\ \text{Storage temperature:} & -20^{\circ}\text{C to} + 60^{\circ}\text{C} \\ \text{Max cable size:} & 4\text{mm} \end{array}$

CE marked Yes
In accordance with: EN61000-6-1

In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007

EN61010-1: 2002

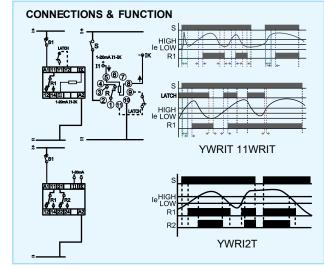
Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

ORDERING INFORMATION

TYPE	COIL VOLTAGE		
YWRIT (din rail SPCO)	440VAC	230VAC	*48VDC
11WRIT (11 pin SPCO)	415VAC	110VAC	*24VDC
YWRI2T (din rail 2 x SPCO)	400VAC	48VAC	
	380VAC	24VAC	

^{*} No isolation on DC versions as standard, on request at extra cost isolated versions are available



0.1-10V DC ADJUSTABLE DUAL SETPOINT RELAY

TYPE: YWRU2T/10VDC (2 x spco)

FEATURES

248

- Din rail mounted
- Dual setpoint (two stage)
- Ideal HVAC & BMS prduct
- Dual LED indication

MODE OF OPERATION

Dual setpoint 0.1-10V DC relay. Providing two separately controllable trip levels. With R1 selected as the "High" level and R2 as the "Low" level. When the monitored signal voltage rises above R2 set level R2 relay will energise. If the voltage continues to rise above R1 set level, relay R1 will energise. Conversely as the monitored voltage falls R1 will de-energise, if the fall continues R2 will de-energise. The unit has a built in fixed hysteresis of 2% at each setpoint to avoid relay "chatter". The YWRU2T does not have a latched option and is therefore "auto" reset on both relays.

OTHER APPLICATION NOTES

DC Auxiliary Supply Versions

DC auxiliary supply versions are as standard non isolated. For these versions the supply and the measured current must be isolated from each other and must not exceed 50V DC. On request at extra cost isolated versions can be manufactured utilising internally a DC to DC converter.

SPECIFICATIONS

Supply & Measuring

Nominal supply tolerance: ±15%
Isolation AC versions: Via transformer
Isolation DC versions: No as standard or:

Yes via optional internal DC to DC converter

Power consumption: 3VA max Hysteresis: Fixed at 2%

Repeat accuracy: $\pm 2\%$ at constant ambient $\pm 5\%$ across temperature range

Response time: 100 mSec on make 200mSec on break
Input range: 0.1-10V DC adjustable
Max over voltage: 15V DC permanently

Input impedance: 10 KOhms

Relay output

Output contacts: SPCO 10Amps/250V AC1

Mechanical life: 30 Million ops

Electrical life: 200K ops at max rated load

General

Operating temperature: -20°C to $+65^{\circ}\text{C}$ Storage temperature: -20°C to $+65^{\circ}\text{C}$ Max cable size: 4mm CF marked Yes

In accordance with: EN61000-6-1: 2007, EN61000-6-3: 2007

EN61010-1: 2002

Housing material Polycarbonate, Auto extinguishable

to UL 94 V-0

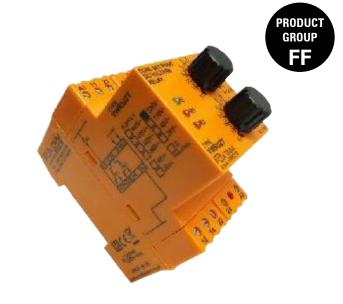
ORDERING INFORMATION

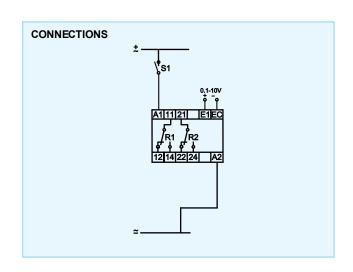
TYPE COIL VOLTAGE

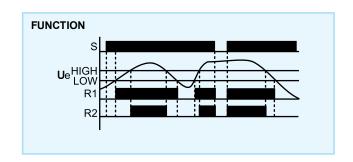
YWRU2T/10VDC (Din rail 2 x SPCO) 440VAC 230VAC *48VDC 415VAC 110VAC *24VDC

400VAC 48VAC 380VAC 24VAC

* No isolation on DC versions as standard, on request at extra cost isolated versions are available







LIGHTNING CURRENT & VOLTAGE SURGE ARRESTERS





PAGES	P/No.	DESCRIPTION
250-251	PROBLOC BR	Combined lightning & voltage surge arresters. Type 1 & 2
252	PROTEC C 40	Voltage surge arresters. Type 2
	PROTEC CR 40	
253	SAFETEC BR	1000VDC floating or Earthed system, combined lightning & voltage surge
	12.5/1000VDC Y PV TCG	arresters. Type 1 & 2
254	PROTEC DMDR 20/xxx	Voltage surge arresters for floating or Earth ed systems
255	PSC-2/xxx	Voltage surge arresters for "Floating" low current systems
256	SPH-2/30DC	Lightning & voltage surge arresters for "Floating" DC analogue signals
	SPH-4/30VDC	











COMBINED LIGHTNING & VOLTAGE SURGE ARRESTERS

PRODUCT GROUP

TYPE 1 & 2: Imax 100KA 8/20

limp 25KA per pole 10/350

TYPES: PROBLOC BR 50 (2+0), PROBLOC BR 75 (3+0),

PROBLOC BR 100 (4+0)



250

- Type 1 & 2 combined
- Protection level 8/20 100KA, 10/350 25KA per pole
- Available 2, 3 or 4 pole, wired in parallel
- With auxiliary contact
- Flag indication



Modular 2, 3 and 4 pole combined lightning 10/350 and voltage surge arrester 8/20 conforming to the latest IEC standards Class I & II (Type 1 & 2), to protect against the effects of direct lightning strikes and the resultant mains disturbance.

When selecting the nominal voltage required the voltage should be selected on the basis of L-N or L-Earth depending on the system. The standard version recommended for 380-550V L-L or 220-320V L-N systems is the 320V version. For 110V L-L systems use the 150V version, according to IEC-61643-11.

The units are suitable for AC single phase or three phase systems and are purchased either as 2, 3 or 4 pole units, thus a TP&N system requires a 4 pole unit (if a Neutral is present, it must be protected). Wiring is in parallel with discrimination fuses or a MCB fitted. For systems of \geq 250 Amps fuses 250 Amps gG are recommended. All units have a common Earth terminal that needs to be bonded down to Earth.

All units have a front mechanically driven flag indicator per pole, green for healthy and red for fault. All versions have a mechanically driven auxiliary C/O contact. In a healthy state the contact is made between terminals 11 & 12. In the event of the MOV's failing due to an intense or multiple surges the contact will change state to 11 & 14 (also indicated by the red flag). In this state protection has been lost, the unit will need replacing.

SPECIFICATIONS

Complies with: IEC 61643-11:2011 / EN61643-11:2012

Category: Class I & II / Type 1 & 2

Protection mode: L/N-Earth

Protection via: High energy MOV's (Metal Oxide Varistors)

Nominal discharge current 8/20: 25KA per pole Max discharge current 8/20: 100KA per pole Impulse current 10/350: 25KA per pole

Total impulse current 10/350: (4+0) L1 + L2 + L3 + N - E: 100KA (3+0) L1 + L2 + L3 - E: 75KA (2+0) L1 + N - E: 50KA

Specific energy: 156KJ / Ohm per pole

Response time: <25n Sec
Thermal protection: Yes
Back up fuse if mains >250 Amps: 250 Amps q

Terminal cross section: Max 35mm² solid cable / 25mm² stranded cable

Module size: 2 pole (4 modules, 72mm), 3 pole (6 modules, 108mm), 4 pole (8 modules, 144mm)

Auxiliary contact: Yes

Contact rating: 250VAC/0.5 Amps / 125VAC/3 Amps

 PROBLOC BR xxx/xxx
 150
 320

 Max AC continuous voltage L-N/L-E:
 150V
 320V

 Protection level:
 <0.7KV</td>
 <1.4KV</td>

ORDERING INFORMATION

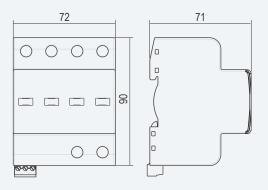
2 pole 3 pole 4 pole

PROBLOC BR 50/150 56.0573 PROBLOC BR 75/150 56.0583 PROBLOC BR 100/150 56.0593 PROBLOC BR 50/320 56.0577 PROBLOC BR 75/320 56.0587 PROBLOC BR 100/320 56.0597

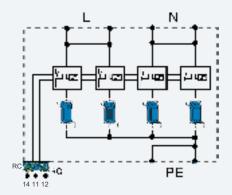
PROBLOC BR 50/150 PROBLOC BR 50/320



DIMENSIONS

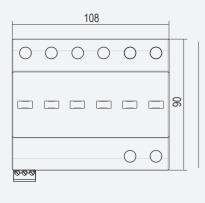


INTERNAL CONFIGURATION



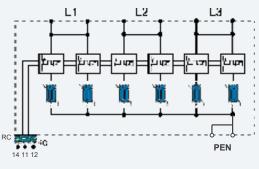
PROBLOC BR 75/150 PROBLOC BR 75/320

DIMENSIONS



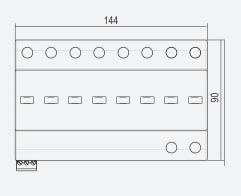
INTERNAL CONFIGURATION

71

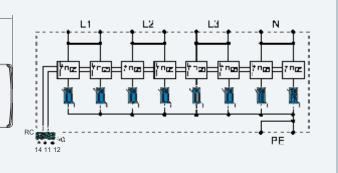


PROBLOC BR 100/150 PROBLOC BR 100/320

DIMENSIONS



INTERNAL CONFIGURATION



VOLTAGE SURGE ARRESTERS TYPE 2: Imax 40KA 8/20

TYPES: PROTEC C 40

PROTEC CR 40 (with auxiliary contact)



252 FEATURES

- Type 2
- Purchased per pole, wired in parallel
- Protection level 8/20 40KA
- Removable & replaceable MOV module
- Optional auxiliary contact
- Flag indication



DESCRIPTION & MODE OF OPERATION

Modular voltage surge arresters 8/20 conforming to the latest IEC standard Class II (Type 2), developed to protect against the effects of indirect lightning strikes and resultant induced voltages. Two choices of nominal voltage options are available.

When selecting the nominal voltage required the voltage should be selected on the basis of L-N or L-Earth depending on the system. The standard version recommended for 380-550V L-L or 220-320V L-N systems is the 320V version. For 110V L-L systems use the 150V version, according to IEC-61643-11.

The units are suitable for AC single phase or three phase and are "purchased per pole", thus a TP&N system requires 4 units (if a Neutral is present, it must be protected). Wiring is in parallel with discrimination fuses or a MCB fitted. For systems of \geq 125 Amps fuses 125 Amps gG are recommended. The secondary side of each pole needs to be bonded down to Earth.

All units have a front mechanically driven flag indicator, green for healthy and red for fault. Additionally "CR" versions also have a mechanically driven auxiliary C/O contact. In a healthy state the contact is made between terminals 11 & 12. In the event of the MOV's failing due to an intense or multiple surges the contact will change state to 11 & 14 (also indicated by the red flag). In this state protection has been lost, the unit will need replacing. A feature of the PROTEC units is that the MOV module is plug in and can be replaced without disconnecting the unit or isolating the system.

SPECIFICATIONS

Complies with: IEC 61643-11:2011 / EN61643-11:2012

Category: Class II / Type 2
Protection mode: L/N – Earth

Protection via: High energy MOV's (Metal Oxide Varistors)

Nominal discharge current:

Max discharge current:

Response time:

Thermal protection:

Back up fuse if mains >125 Amps:

20KA

40KA

225n Sec

Yes

Back up fuse if mains >125 Amps:

Back up fuse if mains > 125 Amps: 125 Amps gG
Short circuit withstand current: 25KA / 50Hz
Operating temperature range: -40°C to +85°C

Terminal cross section: Max 35mm² solid cable / 25mm² stranded cable

Module size: 1 (18mm)
Optional auxiliary contact: Yes, (CR version)

Contact rating: 250VAC/0.5 Amps / 125VAC/3 Amps

 PROTEC C(R) 40/xxx
 150
 320

 Max AC continuous voltage L-N/L-E:
 150V
 320V

 Protection level:
 <1.0KV</td>
 <1.5KV</td>

ORDERING INFORMATION

 TYPE (WITHOUT AUXILIARY CONTACT)
 TYPE (WITH AUXILIARY CONTACT)

 PROTEC C 40/150
 50.A064
 PROTEC CR 40/150
 50.A069

 PROTEC C 40/320
 50.A045
 PROTEC CR 40/320
 50.A046

DIMENSIONS & INTERNAL CONFIGURATION

18
72
121111
REPLACEMENT OF THE PROPERTY OF THE PROPERTY

SPARE MOV MODULES

150V 50.A074 320V 50.A049

IGHTENING CURRENT & VOLTAGE SURGE ARRESTERS

1000VDC FLOATING OR EARTHED SYSTEM, COMBINED LIGHTNING & VOLTAGE SURGE ARRESTER TYPE 1 & 2: Imax 40KA 8/20 & Imp 12.5KA per pole 10/350

TYPE: SAFETEC BR 12.5/1000VDC Y PV TCG

FEATURES

- Type 1 & 2 combined
- Protection level 8/20 40KA, 10/350 12.5KA per pole
- Wired in parallel
- Suitable for floating or Earthed DC systems
- Suitable for solar PV & railway applications
- No leakage current
- No fusing required
- With auxiliary contact
- Flag indication

DESCRIPTION & MODE OF OPERATION

Modular 2 pole combined lightning 10/350 and voltage surge arrester 8/20 conforming to the latest IEC / EN standards Class I & II (Type 1 & 2), to protect against the effects of lightning strikes and the resultant induced voltages.

The units are suitable for both DC floating or Earthed systems and are wired in parallel and the need of fusing is not required. Wiring of a floating system requires the Earth (PE terminals) to be bonded to Earth, for a negative Earthed system the negative terminal and PE terminals are both connected to the negative voltage rail, the opposite applies for a positively Earthed system.

The unit has a front mechanically driven flag indicator per pole, green for healthy and red for fault, plus a mechanically driven auxiliary C/O contact. In a healthy state the contact is made between terminals 11 & 12. In the event of the MOV's failing due to an intense or multiple surges the contact will change state to 11 & 14 (also indicated by the red flag). In this state protection has been lost, the unit will need replacing.

SPECIFICATIONS

Complies with: EN50539-11:2013
Category: Class I & II / Type 1 & 2

Protection via: High energy MOV's (Metal Oxide Varistors)

& GDT (Gas Discharge Tube)

Nominal discharge current 8/20: 12.5KA per pole Max discharge current 8/20: 40KA Impulse current 10/350: 12.5KA per pole Total impulse current 10/350: 25KA

Specific energy: 39KJ / Ohm per pole

Response time: < 25n Sec Thermal protection: Yes Short circuit withstand current: 0perating temperature range: < 40°C to +70°C

Terminal cross section: Max 35mm² solid cable / 25mm² stranded cable

Module size: 2 pole (4 modules, 72mm), 3 pole (6 modules, 108mm),

4 pole (8 modules, 144mm)

Auxiliary contact: Yes

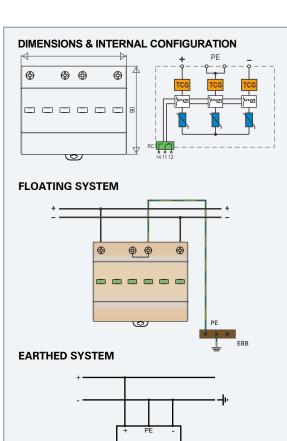
Contact rating: 250VAC/0.5 Amps / 125VAC/3 Amps

Max DC continuous voltage: 1000V Protection level: <4.6KV

ORDERING INFORMATION

TYPE

SAFETEC BR 12.5/1000VDC Y PV TCG 54.0583



Raycap

PRODUCT

GROUP

VOLTAGE SURGE ARRESTERS FOR DC FLOATING OR EARTHED POWER SUPPLIES & SYSTEMS

TYPE: PROTEC DMDR 20/xxx

FEATURES

Type 3

254

- Wired in parallel
- Suitable for floating or Earthed DC systems
- Suitable for power supply and telecommunication applications
- No fusing required
- Flag indication
- Remote contact

DESCRIPTION & MODE OF OPERATION

Modular voltage surge arrester 8/20 conforming to the latest IEC / EN standards Class III (Type 3), to protect against the effects of indirect lightning strikes and the resultant induced voltages.

The units are suitable for both DC floating or Earthed systems and are wired in parallel and the need of fusing is not required. These units are particularly suitable for DC power supply protection and telecommunication applications.

The unit has a front mechanically driven flag indicator per pole, green for healthy and red for fault, plus a mechanically driven auxiliary N/C contact. In a healthy state the contact is made, In the event of the MOV's failing due to an intense or multiple surges the contact will change state to open (also indicated by the red flag). In this state protection has been lost, the unit will need replacing.



Complies with: IEC61643-1:2005 / EN61643-11:2005

Category: Class III / Type 3

Protection via: High energy MOV's (Metal Oxide Varistors)

& GDT (Gas Discharge Tube)

Response time floating system: <25n Sec
Response time Earthed system: <100n Sec
Thermal protection: Yea

Thermal protection: Yes

Operating temperature range: -40°C to $+80^{\circ}\text{C}$ Terminal cross section: -60°C 6mm² stranded cable

Module size: 1 (18mm)
Remote contact: Yes

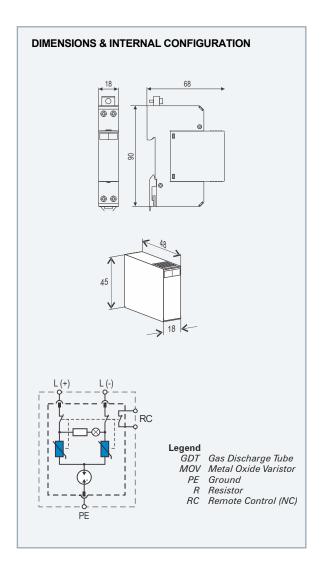
PROTEC DMDR 20/ 24V 48V 60V 120V Maximum continuous DC voltage: 34V 60V 75V 150V Nominal discharge current 8/20: 1.2KA 2.5KA 2.5KA 4.0KA Max discharge current 8/20: 4KA 6KA 6KA 10KA Protection level floating system: <180V <370V <400V <600V Protection level Earthed system: <550V <650V <700V <850V

ORDERING INFORMATION

Type		Spare Modules				
PROTEC DMDR 20/24V	510 783	24VDC	510 784			
PROTEC DMDR 20/48V	510 833	48VDC	510 836			
PROTEC DMDR 20/60V	510 834	60VDC	510 837			
PROTEC DMDR 20/120V	510 835	120VDC	510 838			



GROUP



GROUP

VOLTAGE SURGE ARRESTERS FOR "FLOATING" LOW CURRENT DC POWER SUPPLIES & SYSTEMS

Imax 20KA 8/20

TYPE: PSC-2/xxx

FEATURES

- Wired in series, maximum 4 Amps
- Suitable for floating DC systems
- Suitable for low power supply and telecommunication applications
- No fusing required
- Width only 12mm

DESCRIPTION & MODE OF OPERATION

These units are designed to protect small 12, 24 and 48VDC floating power supplies and systems and are wired in series, maximum system load 4 Amps. Protection is via MOV's, the plug in module facilitates the replacement of a failed MOV without the need to disconnect the system wiring and as it is in parallel across the system, failure or removal of the module does not interrupt the system voltage.

SPECIFICATIONS

Complies with: IEC / EN61643-21
Category: C1 / C2 / C3
Maximum in series current rating: 4 Amps
C2 Nominal discharge current 8/20: 10KA
Maximum discharge current 8/20: 20KA

Protection via: High energy MOV's (Metal Oxide Varistors)

Response time: <1n Sec
Thermal protection: Yes

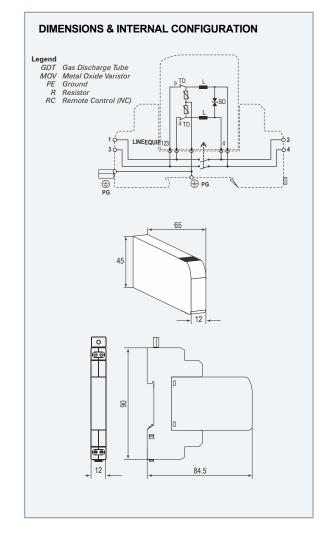
Operating temperature range: -40°C to +80°C
Terminal cross section: 4mm² stranded cable

 PSC-2/
 12V
 24V
 48V

 Maximum continuous DC voltage:
 15V
 28V
 52V

ORDERING INFORMATION

<u>Type</u>		<u>Spare Modules</u>
PSC-2/12VDC	7086.83	12VDC 7086.86
PSC-2/24VDC	7086.84	24VDC 7086.87
PSC-2/48VDC	7086.85	48VDC 7086.88



LIGHTNING & VOLTAGE SURGE ARRESTERS FOR "FLOATING" DC ANALOGUE SIGNALS:

Imax 20KA 8/20 & limp 5KA 10/350

TYPES: SPH-2/30VDC (single channel) SPH-4/30VDC (double channel)

FEATURES

256

- Wired in series, maximum 1 Amp
- Suitable for floating DC analogue signals & TTL levels
- 0-10VDC, 0-10mA, 0-20mA, 4-20mA etc.
- Suitable for PT100 applications
- Available single or double channel
- No fusing required
- Width only 12mm



These units are designed to protect all DC "floating" analogue signal lines both voltage and mA, including TTL levels and PT100 signals. The maximum potential of any signal line can be 30VDC, signal lines are wired in series, maximum current 1 Amp. Available as either single channel or double channel, in the case of a double channel each channel is isolated from each other. Protection is via Gas Discharge Tube technology and high speed silicon avalanche diodes. The plug in module facilitates the replacement of a failed GDT without the need to disconnect the system wiring and as it is in parallel across the system, failure or removal of the module does not interrupt the analogue signal lines.

SPECIFICATIONS

IEC / EN61643-21 Complies with: Category: D1 / C1 / C2 / C3 Maximum in series current rating: 1 Amp 30VDC Nominal max system voltage: 33VDC Absolute max system voltage: C2 Nominal discharge current 8/20:10KA Maximum discharge current 8/20: 20KA D1 impulse current 10/350: 5KA Response time Line - Line: <1n Sec Response time Line - Ground: < 100n Sec Serial impedance: Max 2 Ohms Operating temperature range: -40°C to +80°C Terminal cross section: 4mm² stranded cable

ORDERING INFORMATION

 Type
 Spare Modules

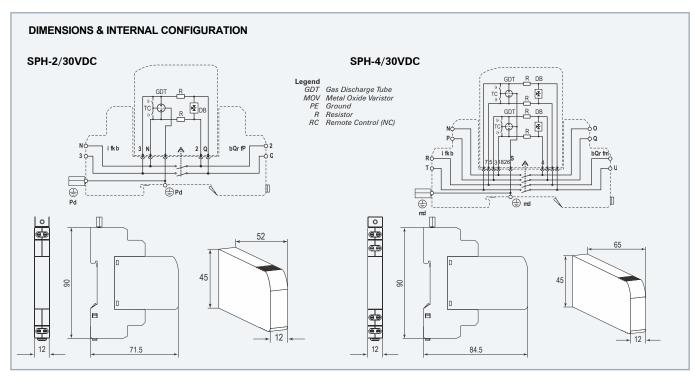
 SPH-2/30VDC (single channel)
 7082.84
 30VDC 7082.85

 SPH-4/30VDC (double channel)
 7082.82
 30VDC 7082.83

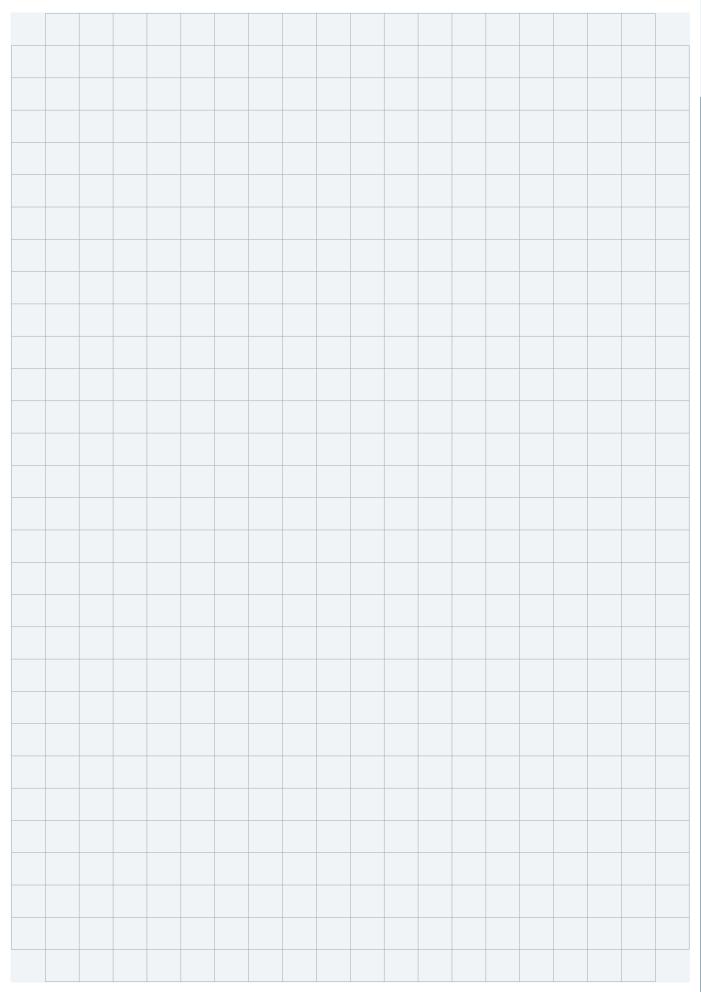
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GROUP

Raycap







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DESCRIPTION OF PRODUCT GROUPS

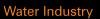
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- JJ Midland Jay Electronic Timers and Monitoring Relays
- KK Indicator and Alarm Annunciator Panels

M		LU								

Serving:-







Process Control



BMS



Transportation



HVAC



Energy



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