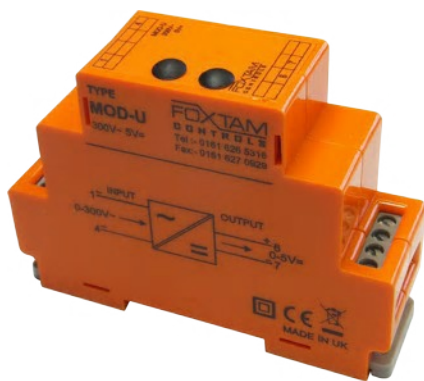


# ELECTRICAL MEASUREMENT TRANSDUCERS

| 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                       |



# SELF POWERED AC VOLTAGE TRANSDUCER 0-300VAC INPUT, 0-10VDC OUTPUT

PRODUCT  
GROUP  
**GG**

## 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  $U_n$  ie 30VAC is present to obtain a reliable output.

### SPECIFIC SPECIFICATIONS

#### Supply & Measuring

|                        |            |
|------------------------|------------|
| Supply:                | 0-300VAC   |
| Supply minimum:        | 10% $U_n$  |
| Supply maximum:        | 120% $U_n$ |
| Frequency:             | 50-60Hz    |
| Max power consumption: | 3VA        |

#### Isolation

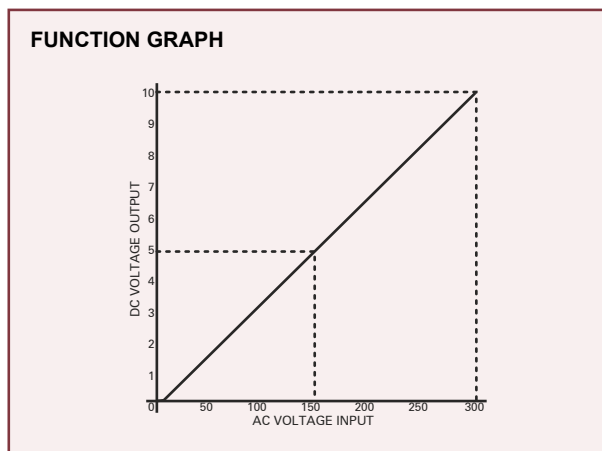
|                   |                                       |
|-------------------|---------------------------------------|
| Supply to output: | Via transformer 2.5KV 50Hz<br>Impulse |
|-------------------|---------------------------------------|

#### Output

|                         |            |
|-------------------------|------------|
| Output Voltage;         | 0-10VDC    |
| Max output Power:       | 0.1VA      |
| Short circuit duration: | Indefinite |
| Accuracy:               | 0.5%       |

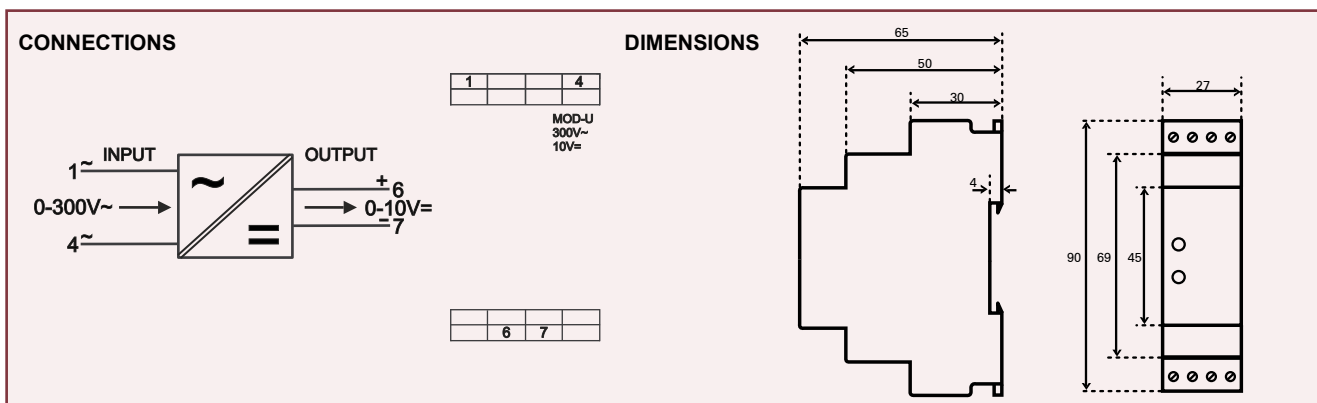
#### General

|                        |   |
|------------------------|---|
| Storage temperature:   | -20°C to +65°C  |
| Operating temperature: | -20°C to +65°C  |
| Max cable size:        | 2.5mm Terminal  |
| max torque:            | 0.4Nm   |
| CE marked:             | Yes   |
| Standards applied:     | EN61000-6-1: 2007<br>EN61000-6-3: 2007<br>EN61010-1: 2002 |
| Housing Material:      | Polycarbonate, Auto<br>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

- 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:  $\pm 15\%$
- 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
- Output impedance:  $> 1 \text{ KOhms}$
- Gain error:  $< 0.1\%$  of full scale
- 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
- Output channel to channel: Common 0V rail

#### 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: 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

#### 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
- Internal diameter: 10mm
- External dimensions (mm): 26W x 23D x 48H

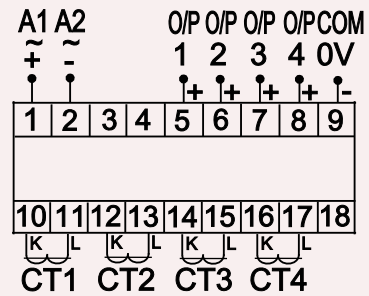
### ORDERING INFORMATION

| TYPE        | SUPPLY VOLTAGE |        |       |
|-------------|----------------|--------|-------|
| YW4/0-5VDC  | 440VAC         | 230VAC | 48VDC |
| YW4/0-10VDC | 415VAC         | 110VAC | 24VDC |
|             | 400VAC         | 48VAC  | 12VDC |
|             | 380VAC         | 24VAC  |       |

Spare CT's available separately, P/No. F-50A versions are available



### CONNECTIONS



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.

# FOXTAM ELECTRICAL MEASUREMENT TRANSDUCCERS



## 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

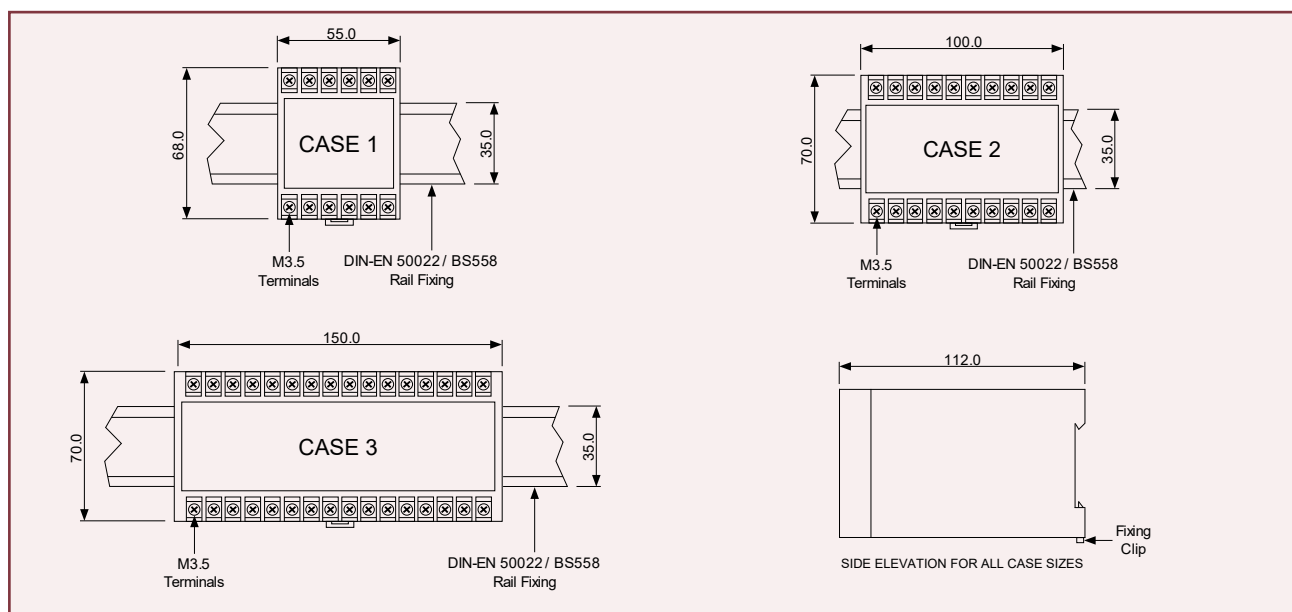
AC: 24 / 110 / 230 / 415V others on request  
 DC: 24 / 48 / 110V  
 Tolerance: +/- 20%  
 Consumption: 4VA / W (combined Watt / VAr transducers 7VA / W)

### ■ 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

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:-

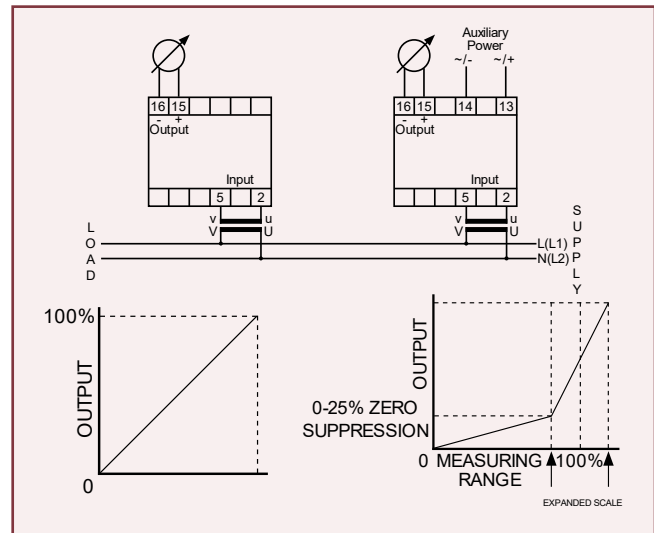
**Self powered** - The lower cost option where no auxiliary supply is required but at least 10% of the input range is required to start generating an accurate output. Self powered units can only give a zero based output, hence a 4-20mA output is not possible. Self powered units also have an enhanced 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

|                       |  |
|-----------------------|--|
| <b>Accuracy:</b>      | Class 0.25   |
| <b>Input voltage:</b> | 0-50V...600VAC direct<br>VT ratio specify                    |
| <b>Overload:</b>      | 1.2 x Un continuous<br>1.5 x Un for 1 sec                    |
| <b>Working range:</b> | 0-120% Un (powered units)<br>10-120% Un (self powered units) |
| <b>Frequency:</b>     | 50Hz or 60Hz 40-500Hz (TRMS units)                           |
| <b>Input burdens:</b> | <0.2VA (powered units)<br><3VA (self powered units)          |
| <b>Case size:</b>     | 1  |



## ORDERING INFORMATION

| <u>TYPE</u>              | <u>INPUT RANGE</u>       | <u>OUTPUT</u> | <u>AUX SUPPLY</u> |
|--------------------------|--------------------------|---------------|-------------------|
| FOX.TR.AU / Self powered | 0-50...600VAC 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

\*\*\*Suppressed zero and expandable input versions are possible on powered units ie, a +/- % deviation around a nominal point 184-230-276V giving for example say 0-5-10VDC or 4-12-20mA output. Consult office for advice

# AC CURRENT TRANSDUCERS

## TYPE: FOX.TR.AI



### DESCRIPTION

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).

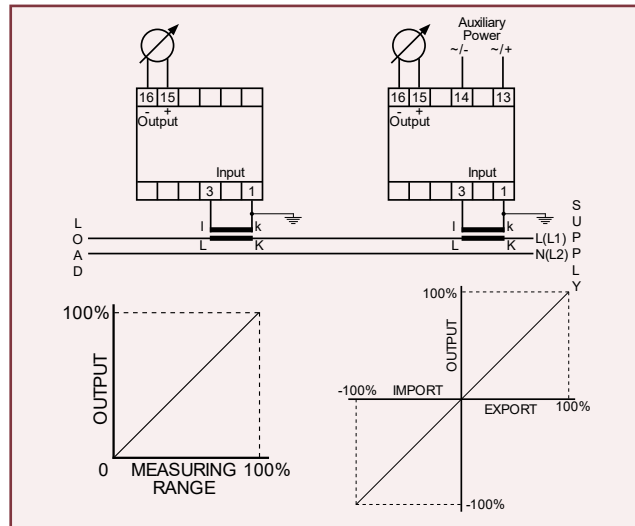
**Powered** - An auxiliary supply is required, these transducers can be used accurately down to 0% of the input range. A wide choice of outputs are possible including 4-20mA.

**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

|                       |  |
|-----------------------|--|
| <b>Accuracy:</b>      | Class 0.25   |
| <b>Input current:</b> | 0-0.7A...7.5A direct<br>0-1A or 0-5A CT input                |
| <b>Overload:</b>      | 2 x In continuous<br>30 x In for 1 sec                       |
| <b>Working range:</b> | 0-120% In (powered units)<br>10-120% In (self powered units) |
| <b>Frequency:</b>     | 50Hz or 60Hz, 40-500Hz (TRMS units)                          |
| <b>Input burdens:</b> | <0.3VA (powered units)<br><3VA (self powered units)          |
| <b>Case size:</b>     | 1 (Bi-polar units 2)   |



### ORDERING INFORMATION

| <u>TYPE</u>                  | <u>INPUT RANGE</u>   | <u>OUTPUT</u> | <u>AUX SUPPLY</u> |
|------------------------------|----------------------|---------------|-------------------|
| FOX.TR.AI / Self powered     | 0-0.7...7.5A direct* | 0-1mA         | 24VAC             |
| FOX.TR.AI / Powered          | 0-1A CT              | 0-2.5mA       | 63VAC             |
| FOX.TR.AI / Powered TRMS     | 0-5A CT              | 0-5mA         | 110VAC            |
| FOX.TR.AI / Powered Bi-polar |                      | 0-10mA        | 230VAC            |
|                              |                      | 0-20mA        | 415VAC            |
|                              |                      | 4-20mA**      | 24VDC             |
|                              |                      | 0-1VDC        | 48VDC             |
|                              |                      | 0-5VDC        | 110VDC            |
|                              |                      | 0-10VDC       |                   |
|                              |                      | Bi-polar***   |                   |

\*Specify exact direct input range required

\*\*Not possible on self powered units

\*\*\*Bi-polar units will be +/- outputs (4-20mA not possible)



# ACTIVE POWER (WATTS) TRANSDUCERS

TYPE: FOX.TR.W



## DESCRIPTION

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: | 0-50V...600VAC direct<br>VT ratio specify                    |
| Current input: | 0-0.7A...7.5A direct<br>CT ratio specify 1A or 5A            |
| Overload:      | 1.2 x Un & 2 x In continuous<br>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<br><0.3VA current input                 |

## CASE SIZES

|  |   |
|--|---|
| FOX.TR.W.12-Single phase:                  | 2 |
| FOX.TR.W.33B-3P3W Balanced:                | 2 |
| (special configuration as detailed above): | 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            | OUTPUT      | AUX SUPPLY |
|--------------------------------|------------------------|-------------|------------|
| FOX.TR.W.12 / Single phase     | 0-50....600VAC 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   | 0.7A....7.5A 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     |            |

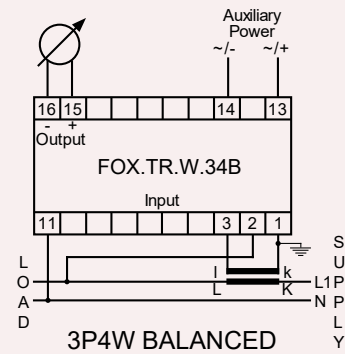
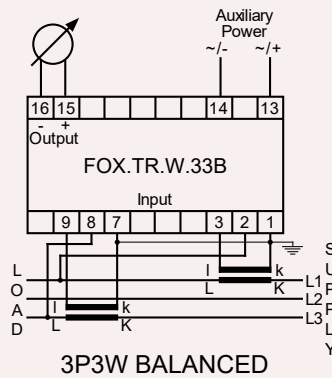
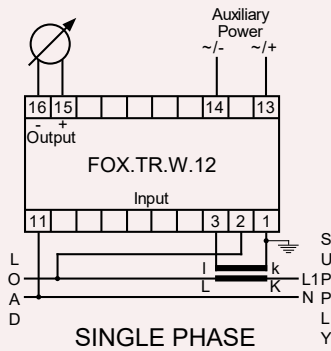
\*Specify exact direct input ranges required and/or CT & VT ratios

\*\*For bi-directional active power transducers (import / export versions), also +/- output signals can be specified for example -10VDC to 0 to +10VDC

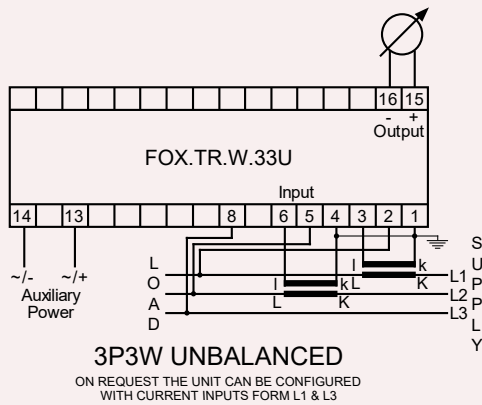
# ACTIVE POWER (WATTS) TRANSDUCERS

PRODUCT  
GROUP  
**GG**

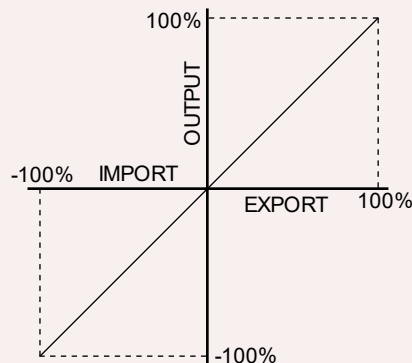
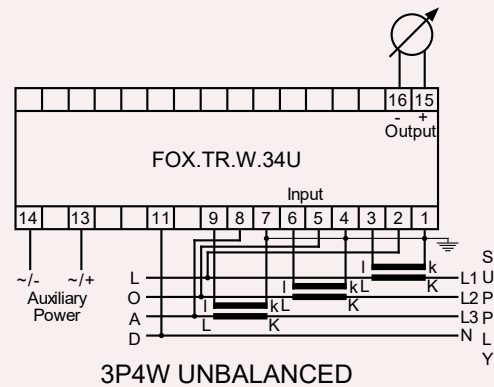
231



ON REQUEST THE UNIT CAN BE CONFIGURED WITH CURRENT INPUT L1 ONLY & VOLTAGE INPUTS L1, L2 & L3



ON REQUEST THE UNIT CAN BE CONFIGURED WITH CURRENT INPUTS FORM L1 & L3





# REACTIVE POWER (VAR) TRANSDUCERS

**TYPE: FOX.TR.VAR**



## DESCRIPTION

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

|                       |  |
|-----------------------|--|
| <b>Accuracy:</b>      | Class 0.25   |
| <b>Input voltage:</b> | 0-50V...600VAC direct<br>VT ratio specify                    |
| <b>Current input:</b> | 0-0.7A...7.5A direct<br>CT ratio specify 1A or 5A            |
| <b>Overload:</b>      | 1.2 x Un & 2 x In continuous<br>1.5 x Un & 30 x In for 1 sec |
| <b>Working range:</b> | 0-120%   |
| <b>Frequency:</b>     | 50Hz or 60 Hz  |
| <b>Input burdens:</b> | <0.2VA voltage input<br><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 |

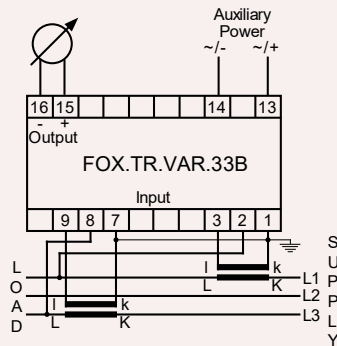
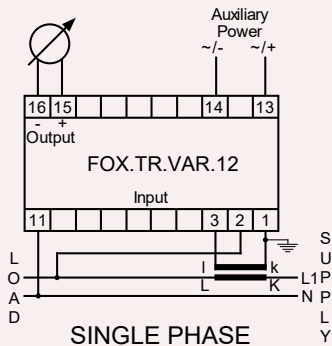
## ORDERING INFORMATION

| <u>TYPE</u>                      | <u>INPUT RANGE</u>     | <u>OUTPUT</u> | <u>AUX SUPPLY</u> |
|----------------------------------|------------------------|---------------|-------------------|
| FOX.TR.VAR.12 / Single phase     | 0-50....600VAC 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   | 0.7A....7.5A 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       |                   |

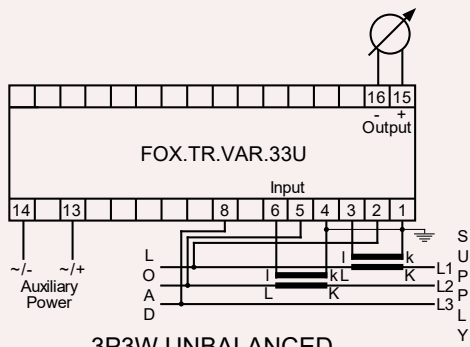
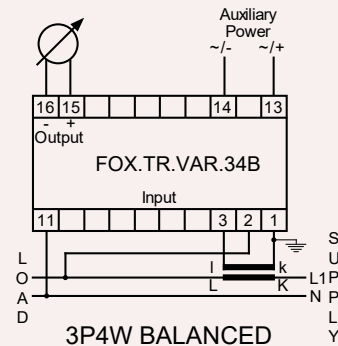
\*Specify exact direct input ranges required and/or CT & VT ratios

\*\*For bi-directional reactive power transducers (import / export versions), also +/- output signals can be specified for example -10VDC to 0 to +10VDC

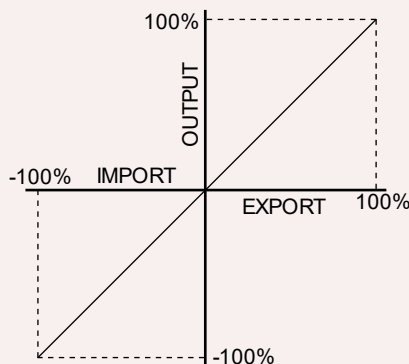
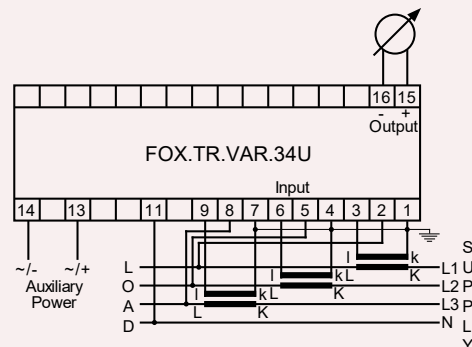
# REACTIVE POWER (VAR<sub>r</sub>) TRANSDUCERS



ON REQUEST THE UNIT CAN BE CONFIGURED WITH CURRENT INPUT L1 ONLY & VOLTAGE INPUTS L1, L2 & L3



ON REQUEST THE UNIT CAN BE CONFIGURED WITH CURRENT INPUTS FROM L1 & L3



# COMBINED ACTIVE & REACTIVE POWER (WATTS & VAR) TRANSDUCERS



## TYPE: FOX.TR.W.VAR

### DESCRIPTION

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

|                       |  |
|-----------------------|--|
| <b>Accuracy:</b>      | Class 0.25   |
| <b>Input voltage:</b> | 0-50V...600VAC direct<br>VT ratio specify                    |
| <b>Current input:</b> | 0-0.7A...7.5A direct<br>or CT ratio specify 1A or 5A         |
| <b>Overload:</b>      | 1.2 x Un & 2 x In continuous<br>1.5 x Un & 30 x In for 1 sec |
| <b>Working range:</b> | 0-120%   |
| <b>Frequency:</b>     | 50Hz or 60 Hz  |
| <b>Input burdens:</b> | <0.2VA voltage input<br><0.3VA current input                 |

### CASE SIZES

|   |   |
|---|---|
| FOX.TR.W.VAR.12-Single phase:   | 3 |
| FOX.TR.W.VAR.33B-3P3W Balanced:<br>(special configuration as detailed above): | 3 |
| FOX.TR.W.VAR.33U-3P3W Unbalanced:   | 3 |
| FOX.TR.W.VAR.34B-3P4W Balanced:   | 3 |

### ORDERING INFORMATION

| <u>TYPE</u>                        | <u>INPUT RANGE</u>     | <u>OUTPUT</u> | <u>AUX SUPPLY</u> |
|------------------------------------|------------------------|---------------|-------------------|
| FOX.TR.W.VAR.12 / Single phase     | 0-50....600VAC 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   | 0.7A....7.5A 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

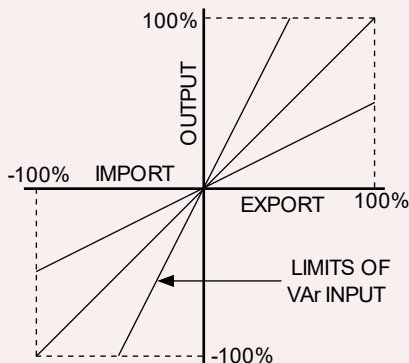
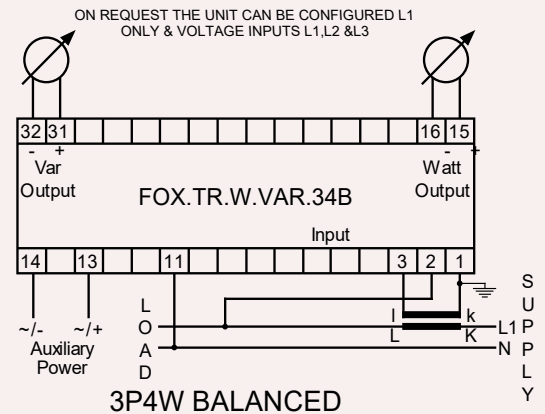
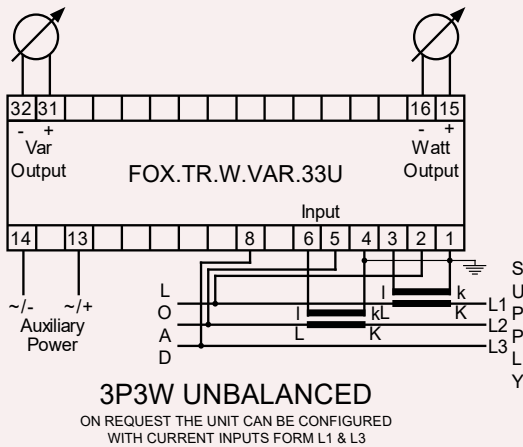
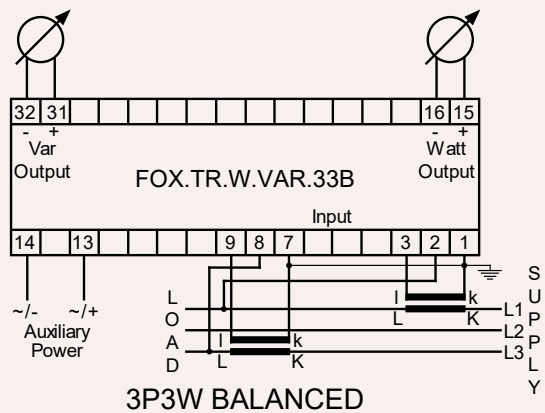
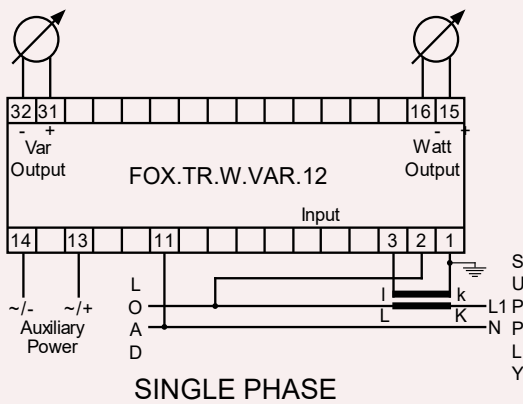
\*\*For bi-directional active and reactive power transducers (import / export versions), also +/- output signals can be specified for example -10VDC to 0 to +10VDC

\*\*\*Subject to technical viability it is possible to have a different output for both active and reactive power

# COMBINED ACTIVE & REACTIVE POWER (WATTS & VAR) TRANSDUCERS

PRODUCT GROUP  
**GG**

235



On combined Watt & VAR transducers the full scale VAR input can be specified between 50% and 200% of the full scale Watt input.

e.g. If full scale Watt input is 200Watts, the VAR input can be specified anywhere between 100 and 400Vars.

# POWER FACTOR (COS) TRANSDUCERS

## TYPE: FOX.TR.COS



### DESCRIPTION

Foxtam power factor transducers measure the Cosine of the phase angle between the current and the voltage. All power factor transducers require a separate auxiliary supply. At the time of ordering the input voltage and current details especially any CT and VT input ratio details must be specified. Any specific power factor scale range can also be determined. The 4KV isolated output signals are suitable for many applications, such as inputs to analogue and digital meters, PLC's or BMS systems and in particular power factor correction systems.

Transducer types include:-

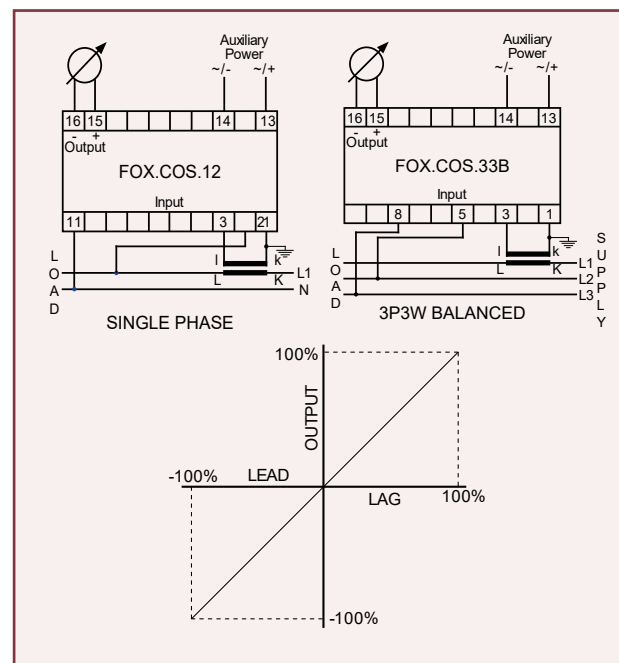
**FOX.TR.COS.12** – Single phase, requiring a single current and voltage input.

**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

|                       |  |
|-----------------------|--|
| <b>Accuracy:</b>      | Class 0.5 (down to 10% of FS)                                |
| <b>Input voltage:</b> | 0-50V...600VAC direct<br>VT ratio specify                    |
| <b>Current input:</b> | 0-0.7A...7.5A direct<br>CT ratio specify 1A or 5A            |
| <b>Overload:</b>      | 1.2 x Un & 2 x In continuous<br>1.5 x Un & 30 x In for 1 sec |
| <b>Working range:</b> | 20-120% Un<br>5-120% In                                      |
| <b>Frequency:</b>     | 50Hz or 60 Hz  |
| <b>Input burdens:</b> | <0.2VA voltage input<br><0.3VA current input                 |
| <b>Case size:</b>     | 2  |



### ORDERING INFORMATION

| TYPE                           | INPUTS                | COS RANGE         | OUTPUT      | AUX SUPPLY |
|--------------------------------|-----------------------|-------------------|-------------|------------|
| FOX.TR.COS.12 / Single phase   | 0-50...600VAC 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      |
|                                | <b>Plus:-</b>         | Specify other     | +/-5mA      | 110VAC     |
|                                | 0.7A....7.5A 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.

# 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.

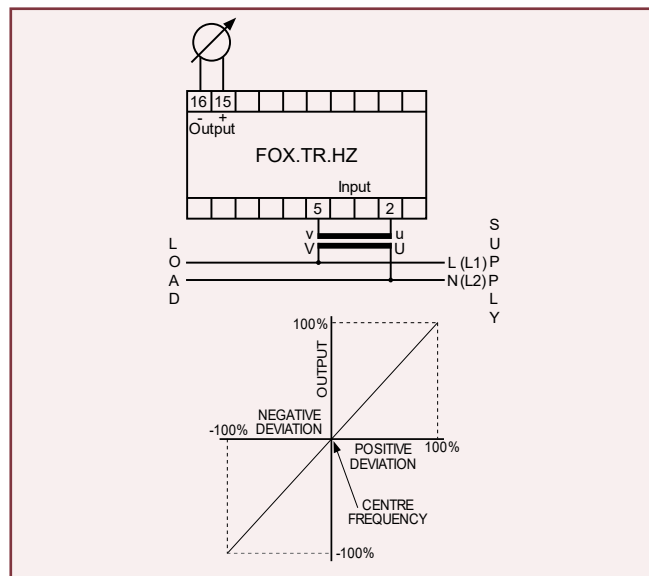
Transducer types include:-

**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<br>1.5 x Un for 1 sec |
| Working range: | 80-120% Un                                |
| Burden:        | <3VA                                      |
| Case size:     | 2   |



## ORDERING INFORMATION

| TYPE                    | 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      |
|                         | 50...600VAC* | 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

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.

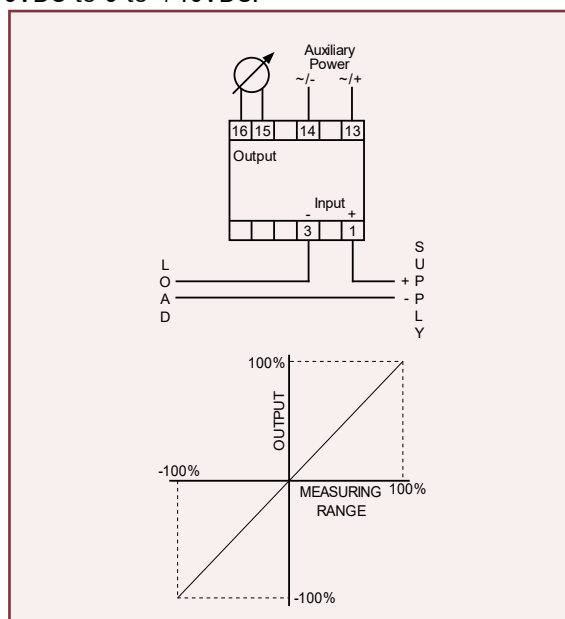
Transducer types include:-

**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

|                       |  |
|-----------------------|--|
| <b>Accuracy:</b>      | Class 0.25   |
| <b>Input current:</b> | 0-1mA...10A direct   |
| <b>Overload:</b>      | 2 x I <sub>n</sub> continuous<br>30 x I <sub>n</sub> for 1 sec |
| <b>Working range:</b> | 0-120% I <sub>n</sub>  |
| <b>Input Burden:</b>  | <0.3VA   |
| <b>Case size:</b>     | 1  |



### ORDERING INFORMATION

| <u>TYPE</u>             | <u>INPUT RANGE</u>   | <u>OUTPUT UNI</u> | <u>OUTPUT BI</u> | <u>AUX SUPPLY</u> |
|-------------------------|----------------------|-------------------|------------------|-------------------|
| FOX.TR.DI.U / Uni-polar | 0-1mA....10A 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

# 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.

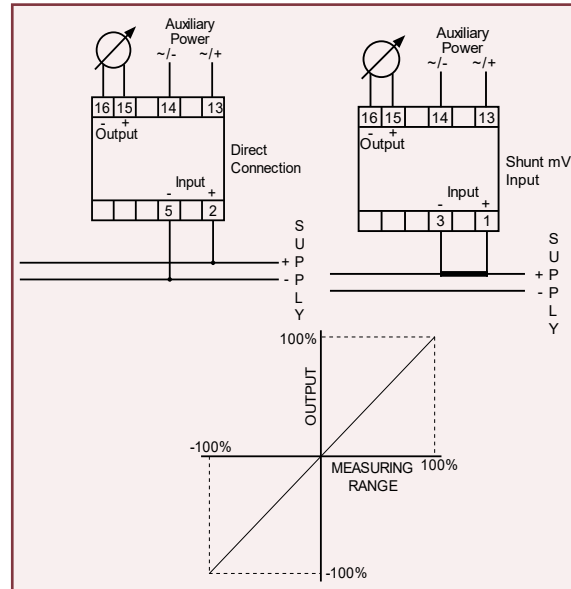
Transducer types include:-

**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

|                       |   |
|-----------------------|---|
| <b>Accuracy:</b>      | Class 0.25                                |
| <b>Input voltage:</b> | 0-20mV...1000V direct                     |
| <b>Overload:</b>      | 1.2 x Un continuous<br>1.5 x Un for 1 sec |
| <b>Working range:</b> | 0-120% In                                 |
| <b>Input Burden:</b>  | <0.2VA                                    |
| <b>Case size:</b>     | 1   |



### ORDERING INFORMATION

| <u>TYPE</u>             | <u>INPUT RANGE</u> | <u>OUTPUT UNI</u> | <u>OUTPUT BI</u> | <u>AUX SUPPLY</u> |
|-------------------------|--------------------|-------------------|------------------|-------------------|
| 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            |
|                         | 0-20mV...1000VDC*  | 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