

## AC Line Transducer



- DA Current Transducer
- DV Voltage Transducer
- DW/DVA/DVAR Power Transducer
- DH Frequency Transducer
- DPF Power Factor Transducer



Avg/ True RMS



Aux. Supply



Long Term Stability



Galvanic Isolation



Mounting

Available In 0.25% Accuracy

Masibus manufactures high quality AC Line Transducers of various types to help you manage and conserve electricity. All electrical parameters such as Current, Voltage, Active Power, Reactive Power, Frequency and Power factor can be accurately measured. A corresponding linearized signal is then transmitted for various applications such as SCADA, S/S automation, remote indication etc. Output proportional to measured electrical parameter can be connected further to Controllers, Data-Loggers, PLC's, Analog / Digital Indicators, Recorders for display, analysis or control

AC Line transducer series offers an economical and accurate means of current & voltage measurement on systems where the waveform is a pure sine wave. Transducers are calibrated to true RMS value of the sine wave. They can also be used with distorted waveforms where high accuracy is not required.

AC line transducers are having its application to interface with RTUs. Masibus make transducers are also available with dual output option. It provides accuracy up to 0.25% FS with up to 2 KV isolation. Hardware calibration is done through trim-pot.

All transducers performs with exceptional accuracy, repeatability and reliability. In addition to being most accurate, our transducers are equally preferred by OEMs/ end users to other makes for their excellent stability over a long period of operation. This world class technology now comes to you at a very competitive price.

AC line transducers are available as current, voltage in 1 $\emptyset$  configuration whereas power, frequency & power factor in 1 $\emptyset$  / 3 $\emptyset$  configuration.

### Features

- High accuracy class 0.25%
- Confirms to IEC 60688
- AC Line transducers for all requirements
- Excellent long term stability
- Low burden
- Transient protected
- Good isolation & impulse resistance
- Minimum ripple at the output
- Fast response
- Full power factor range operation
- ABS DIN rail mounting
- Range Available : V / I / W / VAR / PF / F
- mA/mV/V output available
- Average / True RMS

### Applications

- Generating/Transmission Distribution stations
- Building management
- Load Dispatch center
- Power Equipment's OEMs
- HT/LT Panels
- Substation Automation
- SCADA
- Local and Central monitoring systems

# TECHNICAL SPECIFICATIONS: CURRENT/ VOLTAGE TRANSDUCER

| AC Current Transducers Specifications |   | AC Voltage Transducers Specifications |   |
|---------------------------------------|---|---------------------------------------|---|
| Input Signal                          | 0-5A, 0-1A, 0-2A  | Input Signal                          | 0-150V, 0-90V, 0-300V, 0-450V                                   |
| Configuration                         | Single phase  | Configuration                         | Single phase  |
| Output Signal                         | As per output table-1   | Output Signal                         | As per output table-1   |
| Calibration                           | Zero & Span of output can be adjusted by Trim pots at the front | Calibration                           | Zero & Span of output can be adjusted by Trim pots at the front |
| Load                                  | Refer Output Table-1  | Load                                  | Refer Output Table-1  |
| Output Accuracy                       | ±0.25% of full scale  | Output Accuracy                       | ±0.25% of full scale  |
| Output Ripple                         | <0.5% (< 75mV peak)   | Output Ripple                         | <0.5% (< 75mV peak)   |
| Response Time                         | Up to 90%: <250ms max ,<br>Up to 99%: <400ms max                | Response Time                         | Up to 90%: <250ms max ,<br>Up to 99%: <400ms max                |
| Temp. Effect                          | Less than ±0.01% per °C   | Temp. Effect                          | Less than ±0.01% per °C   |
| Isolation                             | 2.5KV AC for one minute   | Isolation                             | 2.5KV AC for one minute   |
| Impulse voltage tests                 | 5 kV, 1.2/50 uS as per IEC60688                                 | Impulse voltage tests                 | 5 kV, 1.2/50 uS as per IEC60688                                 |
| Insulation Resistance                 | Greater than 200MOhms   | Insulation Resistance                 | Greater than 200MOhms   |
| Input Burden                          | Input burden is 0.2 VA at full scale regardless of option       | Input Burden                          | Input burden is 0.6 VA at full scale regardless of option       |
| Weight                                | 400 gms   | Weight                                | 400 gms   |

| General specification  |  | Output Table-1          |                    |
|------------------------|--|-------------------------|--------------------|
| Operating Temperature  | 0 to 55°C  | <b>Range full Scale</b> | <b>Output load</b> |
| Humidity               | 40-90% RH (non condensing)   | 0 to 1mA                | 0-10,000 Ohms      |
| Terminations           | Metal Screw can accept up to 2.5 mm <sup>2</sup> wire                    | 0 to 3mA                | 0-3,300 Ohms       |
| Mounting               | DIN rail mounting  | 0 to 5mA                | 0-2,000 Ohms       |
| Case material          | ABS, with fireproofing finish  | 0 to 10mA               | 0-1,000 Ohms       |
| Dimension (in mm)      | 70H x 60W x 11.2D  | 4 to 20mA               | 0-750 Ohms         |
| Circuit boards         | Copper clad laminate FR-4 Grade epoxy glass                              | 0 to 1V                 | >180 Ohms          |
| Connection             | Power/ Input/ Output 1/ Output 2   | 0 to 5V                 | >500 Ohms          |
| Class index            | 0.5  | 0 to 10V                | >1000 Ohms         |
| Usage Group            | III (-10°C .....0°C .....45°C .....+55°C)                                | 1 to 5V                 | >500 Ohms          |
| Pollution Degree       | II   |                         |                    |
| Over voltage Category  | CAT I  |                         |                    |
| Compliance Voltage     | 18V Max  |                         |                    |
| Aux. Power Supply      | Universal : 90-270VAC,50/60Hz or 110-370VDC<br>DC: 24V DC, 48V DC [±10%] |                         |                    |
| Aux. Power Consumption | < 5.0VA For Dual Output /<br>< 4.0VA For Single Output                   |                         |                    |

## ORDERING CODE (CURRENT TRANSDUCER)

| Model     | Input    | Output    | Auxiliary Power Supply    | No. of output |
|-----------|----------|-----------|---------------------------|---------------|
| <b>DA</b> | <b>X</b> | <b>X</b>  | <b>X</b>                  | <b>X</b>      |
| 0         | 0-5A     | 0 0-1mA   | K1 24VDC                  | S Single      |
| 1         | 0-1A     | 1 0-3mA   | K2 48VDC                  | D Dual        |
| 2         | 0-2A     | 2 0-5mA   | KU 90-270VAC / 110-370VDC |               |
|           |          | 3 0-10mA  |                           |               |
|           |          | 4 4-20mA  |                           |               |
|           |          | 6 0-1V    |                           |               |
|           |          | 7 0-5V    |                           |               |
|           |          | 8 0-10V   |                           |               |
|           |          | 9 1-5V    |                           |               |
|           |          | S Special |                           |               |

## ORDERING CODE (VOLTAGE TRANSDUCER)

| Model     | Input    | Output    | Auxiliary Power Supply    | No. of output |
|-----------|----------|-----------|---------------------------|---------------|
| <b>DV</b> | <b>X</b> | <b>X</b>  | <b>X</b>                  | <b>X</b>      |
| 0         | 0-150V   | 0 0-1mA   | K1 24VDC                  | S Single      |
| 1         | 0-90V    | 1 0-3mA   | K2 48VDC                  | D Dual        |
| 2         | 0-300V   | 2 0-5mA   | KU 90-270VAC / 110-370VDC |               |
| 3         | 0-450V   | 3 0-10mA  |                           |               |
|           |          | 4 4-20mA  |                           |               |
|           |          | 6 0-1V    |                           |               |
|           |          | 7 0-5V    |                           |               |
|           |          | 8 0-10V   |                           |               |
|           |          | 9 1-5V    |                           |               |
|           |          | S Special |                           |               |

# TECHNICAL SPECIFICATIONS: POWER TRANSDUCER

| Technical Specifications     |   | Potential Table   |                    |                     |                 |                 |
|------------------------------|---|---|--------------------|---------------------|-----------------|-----------------|
| Type                         | Watt, VA, VAR   | <b>Nominal input</b>                                    | <b>100-120V</b>    | <b>63-69V</b>       | <b>208-240V</b> | <b>415-480V</b> |
| Configuration                | Three phase, 3 wire, 2 element<br>3 phase, 4 wire, 3 element  | Potential range with accuracy                           | 10-150V            | 10-90 V             | 20-300V         | 30-575 V        |
| Input Voltage                | 208 to 240 V, 63 to 69 V<br>100 to 120 V, 415 to 480 V  | Maximum burden at nominal input                         | 0.1 VA             | 0.1 VA              | 0.1 VA          | 0.1 VA          |
| Input Current                | 0 to 5 Amp<br>0 to 1 Amp  | Potential overload continuous                           | 180V               | 100V                | 350V            | 700V            |
| Accuracy                     | Watt:0.19% of Rdg/Cosφ ±0.01% of FS<br>VAR:0.19% of Rdg/sinφ ±0.01% of FS<br>VA:0.19% of Rdg ±0.01% of FS | <b>Current Table</b>                                    |                    |                     |                 |                 |
| Output                       | Refer Output Table  | <b>Input (0-5A)</b>                                     |                    | <b>Input (0-1A)</b> |                 |                 |
| Calibration                  | Hardware - through Trim Pot   | Over range with accuracy                                | 10A                | 2A                  |                 |                 |
| Stability                    | 0.2% per year   | Maximum burden  | 0.5 VA             | 0.5 VA              |                 |                 |
| Temperature Co-efficient     | ± 0.005% per °C   | Overload continuous                                     | 15A                | 3A                  |                 |                 |
| Operating frequency          | 50Hz/60Hz   | Overload 10 s/h   | 30A                | 6A                  |                 |                 |
| Isolation                    | 2 KV AC for one minute<br>Input/Output1/Output2/Power/case  | Overload 1 s/h  | 200A               | 100A                |                 |                 |
| Surge Withstand              | EN61000-4-5   | <b>Output Table</b>                                     |                    |                     |                 |                 |
| Insulation Resistance        | Greater than 200MOhms<br>Input/Output1/Output2/Power/Case.  | <b>Range full Scale</b>                                 | <b>Output load</b> |                     |                 |                 |
| Response Time                | Up to 90%: <250ms max ,<br>Up to 99%: <400ms max  | 0 to ±1 mA  | 0-10000 Ohms       |                     |                 |                 |
| Calibration                  | Zero & Span of output can be adjusted<br>by Trim pots at the front  | 0 to ±3 mA  | 0-3000 Ohms        |                     |                 |                 |
| Operating frequency          | Nominal ± 10%   | 0 to ±5 mA  | 0- 2000 Ohms       |                     |                 |                 |
|                              |   | 0 to ±10 mA   | 0- 1000 Ohms       |                     |                 |                 |
|                              |   | 4 to 20 mA Unidirectional                               | 0- 750 Ohms        |                     |                 |                 |
|                              |   | 0 to ±100 mV  | >20 Ohms           |                     |                 |                 |
|                              |   | 0 to ±1 V   | >200 Ohms          |                     |                 |                 |
|                              |   | 0 to ±5 V   | >1000 Ohms         |                     |                 |                 |
|                              |   | 0 to ±10 V  | >2000 Ohms         |                     |                 |                 |
|                              |   | 1 to 5 V  | >1000 Ohms         |                     |                 |                 |
|                              |   | <b>Standard Calibration of watts.VAR,VA per element</b> |                    |                     |                 |                 |
|                              |   | A\V   | 100-120V           | 208-240V            |                 |                 |
|                              |   | 0-5A  | 500                | 1000                |                 |                 |
|                              |   | 0-1A  | 100                | 200                 |                 |                 |
| <b>General specification</b> |   |   |                    |                     |                 |                 |
| Operating Temperature        | 0 to 55°C   |   |                    |                     |                 |                 |
| Humidity                     | 30-95% RH (non condensing)  |   |                    |                     |                 |                 |
| Terminations                 | Metal Screw can accept up to 2.5 mm <sup>2</sup> wire   |   |                    |                     |                 |                 |
| Mounting                     | DIN rail mounting   |   |                    |                     |                 |                 |
| Case material                | ABS, with fireproofing finish   |   |                    |                     |                 |                 |
| Dimension (in mm)            | 70H x 100W x 112D   |   |                    |                     |                 |                 |
| Circuit boards               | Copper cladded laminate FR-4 Grade epoxy glass  |   |                    |                     |                 |                 |
| Connection                   | Power/ Input/ Output 1/ Output 2  |   |                    |                     |                 |                 |
| Class index                  | 0,5   |   |                    |                     |                 |                 |
| Usage Group                  | III (-10°C .....0°C .....45°C .....+55°C)   |   |                    |                     |                 |                 |
| Pollution Degree             | I   |   |                    |                     |                 |                 |
| Over voltage Category        | CAT I   |   |                    |                     |                 |                 |
| Compliance Voltage           | 18V Max   |   |                    |                     |                 |                 |
| Aux. Power Supply            | Universal : 90-270VAC,50/60Hz or 110-370VDC<br>DC: 24V DC, 48V DC [±10%]                                  |   |                    |                     |                 |                 |
| Aux. Power Consumption       | < 6.0VA For Dual Output /<br>< 5.0VA For Single Output  |   |                    |                     |                 |                 |

## Ordering code

| Model      | Configuration | Input nominal Voltage | Input Current            | Output   | Auxiliary Power Supply | No. of output |          |   |              |    |                        |   |        |
|------------|---------------|-----------------------|--------------------------|----------|------------------------|---------------|----------|---|--------------|----|------------------------|---|--------|
| <b>X</b>   | <b>X</b>      | <b>X</b>              | <b>X</b>                 | <b>X</b> | <b>X</b>               | <b>X</b>      |          |   |              |    |                        |   |        |
| <b>DW</b>  | Watt          | 30                    | 3-element (3-ph, 4 wire) | 0        | 100 to 120 V           | 0             | 0 to 5 A | 0 | 0 to ±1 mA   | K1 | 24VDC                  | S | Single |
| <b>DVA</b> | VA            | 20                    | 2 element (3ph, 3 wire)  | 1        | 63 to 69 V             | 1             | 0 to 1 A | 1 | 0 to ±3 mA   | K2 | 48VDC                  | D | Dual   |
| <b>DR</b>  | VAR           |                       |                          | 2        | 208 to 240 V           |               |          | 2 | 0 to ±5 mA   | KU | 90-270VAC / 110-370VDC |   |        |
|            |               |                       |                          | 3        | 415 to 480 V           |               |          | 3 | 0 to ±10 mA  |    |                        |   |        |
|            |               |                       |                          | 4        |                        |               |          | 4 | 4 to 20 mA   |    |                        |   |        |
|            |               |                       |                          | 5        |                        |               |          | 5 | 0 to ±100 mV |    |                        |   |        |
|            |               |                       |                          | 6        |                        |               |          | 6 | 0 to ±1 V    |    |                        |   |        |
|            |               |                       |                          | 7        |                        |               |          | 7 | 0 to ±5 V    |    |                        |   |        |
|            |               |                       |                          | 8        |                        |               |          | 8 | 0 to ±10 V   |    |                        |   |        |
|            |               |                       |                          | 9        |                        |               |          | 9 | 1 to 5 V     |    |                        |   |        |
|            |               |                       |                          | X        |                        |               |          | X | Special      |    |                        |   |        |

**Note:** Configuration 30 - 3-element(3-ph, 4 wire) will have Input nominal Voltage 1- 63 to 69 or 2-208 to 240 V only  
Configuration 20 - 2-element(3-ph, 3 wire) will have Input nominal Voltage 0- 100 to 120 or 3-415 to 480 V only

## SPECIAL CALIBRATION INSTRUCTIONS

Please specify: 1. CT Ratio 2. PT Ratio 3. Desired Full Scale Calibration in kW, kVAR, kVA

# TECHNICAL SPECIFICATIONS: FREQUENCY & POWER FACTOR TRANSDUCER

| Frequency Transducer    |  | Power Factor Transducer |   |
|-------------------------|--|-------------------------|---|
| Accuracy                | 0.05% of Center Frequency  | Accuracy                | 0.25% of FS ( @25°C + 2 °C)                                     |
| Temp. Co-efficient      | 200ppm typical   | Temp. Co-efficient      | 200ppm typical  |
| Power factor range      | Any  | Power factor range      | Any,PF as selected by part no.                                  |
| Operating Voltage Range | -30% +25% of Nominal   | Output ripple peak      | <0.5% of full scale   |
| Burden                  | 1.5 VA(most options)   | Burden                  | Current :0.5 VA(most options)<br>Voltage:3.5 VA nominal         |
| Isolation               | 2 KV AC for one minute<br>Input/Output1/Output2/Power/case               | Isolation               | 2 KV AC for one minute<br>Input/Output1/Output2/Power/case      |
| Insulation Resistance   | Greater than 200MOhms<br>Input/Output1/Output2/Power/Case.               | Insulation Resistance   | Greater than 200MOhms<br>Input/Output1/Output2/Power/Case.      |
| Response Time           | Up to 90%: <250ms max ,<br>Up to 99%: <400ms max                         | Overload                | Current:3xF.S cont.,250 A for 1 s/hr.<br>Voltage:1.2 x F.S cont |
| Calibration             | Zero & Span of output can be adjusted<br>by Trim pots at the front       | Response Time           | Up to 90%: <250ms max ,<br>Up to 99%: <400ms max                |
| General specification   |  | Output Table            |   |
| Operating Temperature   | 0 to 55°C  | <b>Range full Scale</b> | <b>Output load</b>  |
| Humidity                | 30-95% RH (non condensing)   | 0 to 1 mA               | 0-10000 Ohms  |
| Terminations            | Metal Screw can accept up to 2.5 mm <sup>2</sup> wire                    | 0 to ±1 mA              | 0-10000 Ohms  |
| Mounting                | DIN rail mounting  | 0 to ±0.5 mA            | 0-20000 Ohms  |
| Case material           | ABS, with fireproofing finish  | 0 to ±50 mV             | >10 Ohms  |
| Dimension (in mm)       | 70H x 100W x 112D  | 0 to ±100 mV            | >20 Ohms  |
| Circuit boards          | Copper clad laminate FR-4 Grade epoxy glass                              | 0 to ±1 V               | >200 Ohms   |
| Connection              | Power/ Input/ Output 1/ Output 2   | 0 to ±10 V              | >2000 Ohms  |
| Class index             | [0.5]  | 1 to 5 V                | >1000 Ohms  |
| Usage Group             | III (-10°C .....0°C .....45°C .....+55°C)                                | 4 to 20 mA              | 0-750 Ohms  |
| Pollution Degree        | I  | 0 to ±10 mA             | 0-1000 Ohms   |
| Over voltage Category   | CAT I  |                         |   |
| Compliance Voltage      | 18V Max  |                         |   |
| Aux. Power Supply       | Universal : 90-270VAC,50/60Hz or 110-370VDC<br>DC: 24V DC, 48V DC [±10%] |                         |   |
| Aux. Power Consumption  | < 10.0 VA  |                         |   |

## ORDERING CODE (FREQUENCY TRANSDUCER)

| Model | Center frequency | Frequency Span |          | Nominal Input Voltage | Output         | Auxiliary Power Supply    | No of output |
|-------|------------------|----------------|----------|-----------------------|----------------|---------------------------|--------------|
|       |                  | (50/60Hz)      | (400 Hz) |                       |                |                           |              |
| DH    | X                | X              |          | X                     | X              | X                         | X            |
|       | 4 400 Hz         | 1 ± 1 Hz       | ± 10 Hz  | 0 120 VAC             | 0 0 to 1 mA    | K1 24VDC                  | S Single     |
|       | 5 50 Hz          | 2 ± 2 Hz       | ± 20 Hz  | 1 69 VAC              | 1 0 to ±1 mA   | K2 48VDC                  | D Dual       |
|       | 6 60 Hz          | 3 ± 3 Hz       | ± 30 Hz  | 2 240 VAC             | 2 0 to ±0.5 mA | KU 90-270VAC / 110-370VDC |              |
|       | X Special        | 4 ± 4 Hz       | ± 40 Hz  | X Special             | 3 0 to ±50 mV  |                           |              |
|       |                  | 5 ± 5 Hz       | ± 50 Hz  |                       | 4 0 to ±100 mV |                           |              |
|       |                  | 6 ± 6 Hz       | ± 60 Hz  |                       | 5 0 to ±1 V    |                           |              |
|       |                  | 7 ± 7 Hz       | ± 70 Hz  |                       | 6 0 to ±10 V   |                           |              |
|       |                  | 8 ± 8 Hz       | ± 80 Hz  |                       | 7 1 to 5 V     |                           |              |
|       |                  | 9 ± 9 Hz       | ± 90 Hz  |                       | 8 4 to 20 mA   |                           |              |
|       |                  | 0 ± 10 Hz      | ± 100 Hz |                       | 9 0 to ±10 mA  |                           |              |
|       |                  | X Special      | Special  |                       | X Special      |                           |              |

## ORDERING CODE (POWER FACTOR TRANSDUCER)

| Model | Nominal       |               | Power factor code | Output         | Auxiliary Power Supply    | No of output |
|-------|---------------|---------------|-------------------|----------------|---------------------------|--------------|
|       | Input Voltage | Input Current |                   |                |                           |              |
| DPF   | X             | X             | X                 | X              | X                         | X            |
|       | 0 120V        | 0 1-5A        | 0 ± 1.0           | 0 0 to 1 mA    | K1 24VDC                  | S Single     |
|       | 2 240V        | 1 0.2-1A      | 1 ± 0.7           | 1 0 to ±1 mA   | K2 48VDC                  | D Dual       |
|       | X Special     | X Special     | 2 ± 0.5           | 2 0 to ±0.5 mA | KU 90-270VAC / 110-370VDC |              |
|       |               |               | 3 ± 0.3           | 3 0 to ±50 mV  |                           |              |
|       |               |               | 4 ± 0.2           | 4 0 to ±100 mV |                           |              |
|       |               |               | X Special         | 5 0 to ±1 V    |                           |              |
|       |               |               |                   | 6 0 to ±10 V   |                           |              |
|       |               |               |                   | 7 1 to 5 V     |                           |              |
|       |               |               |                   | 8 4 to 20 mA   |                           |              |
|       |               |               |                   | 9 0 to ±10 mA  |                           |              |
|       |               |               |                   | X Special      |                           |              |

**Note:** When you select PF + 0.3, output 4 mA comes at PF -0.7, 12mA comes at PF 1 & 20 mA comes at PF +0.7  
When you select PF + 0.7, output 4 mA comes at PF -0.3, 12mA comes at PF 1 & 20 mA comes at PF +0.3