Eltime Controls Tel: +44 (0) 1621 859500 Fax: +44 (0) 1621 855335

Phase Angle Transducers

Models Available
EA12B Single Phase
EA33B 3 Phase Balanced
EA12V Voltage Synchronisation

Product Features
- Isolated DC mA or DC voltage output
- Accuracy class 0.25
- Adjustable 'span' and 'zero'
- DIN rail mounting enclosure
- 4kV rms 50Hz 1 minute test isolation between input / output / case / (auxiliary)
- Screw type terminals
- Fingerproof terminal cover included

Phase angle transducers measure the phase relationship between a current and a voltage or two voltages. The transducer converts the phase angle value to either a DC mA or DC voltage output which is directly proportional to the input signal.

These can be used for monitoring and optimising power factor correction systems. All phase angle transducers are available self powered or powered from a large choice of AC or DC auxiliary power options.

The 4kV isolated output signals can then be fed to analogue meters, digital meters, PLC's or building management systems.

For converting phase angle to a proportional DC mA or DC voltage output

Specification
Reference Standard:
- IEC 688, BS 6253, VDE/VDI 2191

Accuracy:
- Class 0.25 (±0.25% f.s. max. error down to 10% f.s.)

Input Voltage, *Un*:
- 0-50V to 0-550V direct connected
- or VT operated

Input Current, *In*:
- 0-0.7A to 0-7.5A direct connected
- 0-1A or 0-5A CT operated

Overload:
- 1.2 x *Un*, 2 x *In* continuous
- 1.5 x *Un*, 30 x *In* for 1 second

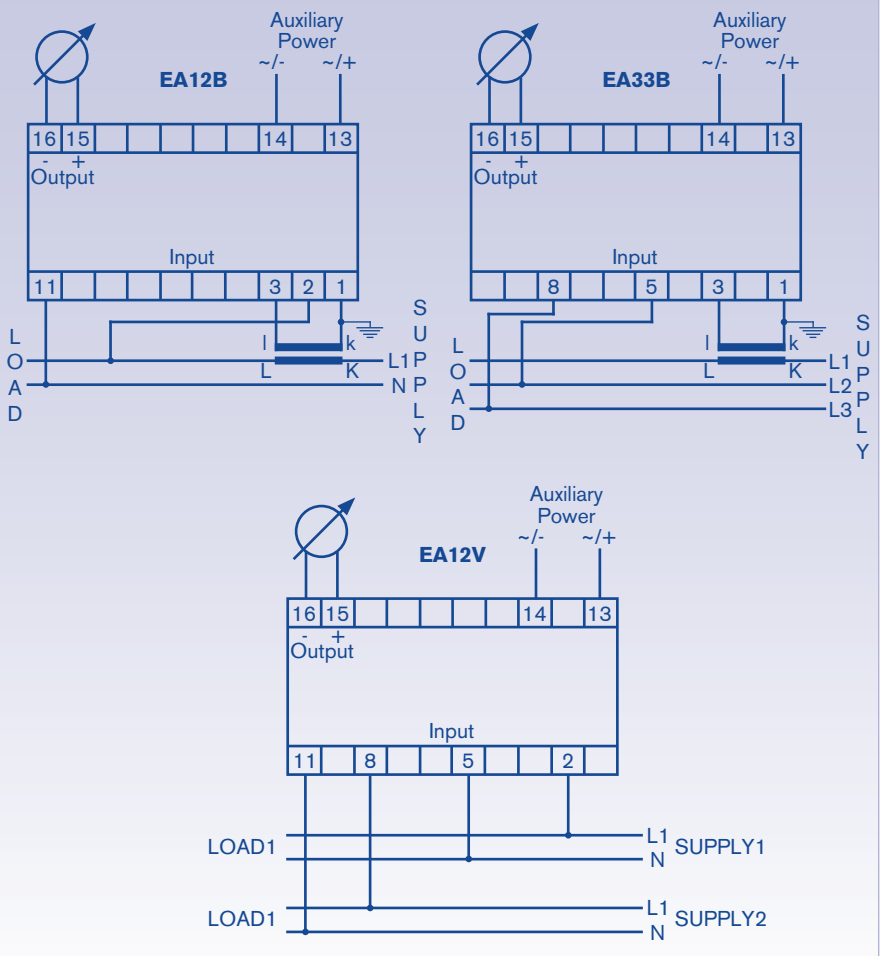
Working Range:
- 0 - 120%*Un* (auxiliary powered)
- 80 - 120%*Un* (self powered)
- 0 - 120%*In*

Frequency:
- 50 or 60Hz

Burden:
- Current circuit < 0.3VA
- Voltage circuit < 0.2VA (aux. powered)
- Voltage circuit < 3VA (self powered)

Weight:
- EA12B, EA33B, EA12V 700g

Connections



Ordering information

Model	Code	Description
	EA12B	Single Phase
	EA33B	3 Phase Balanced
	EA12V	Voltage Synchronisation

Input Phase Angle	Code	Description
	60	±60° (N/A for EA12V)
	90	±90° (N/A for EA12V)
	180	±180° (N/A for EA33B)

Input Voltage	Code	Description
	P1	110Vac
	P2	230Vac
	P3	415Vac
	PX	50 to 550Vac (specify)

Input Current	Code	Description
(N/A for EA12V)	C1	1 Amp
	C5	5 Amp
	CX	0.5 to 7.5 Amps direct (specify)

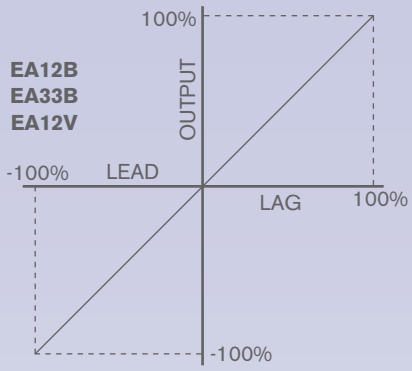
Auxiliary Power	Code	Description
	E0	Self Powered
	E1	110Vac (±20%)
	E2	230Vac (±20%)
	E3	415Vac (±20%)
	E4	63.5Vac (±20%)
	E5	24Vdc (±20%)
	E6	48Vdc (±20%)
	E7	110Vdc (±20%)
	E10	220Vdc (±20%)

Output	Code	Description
	X1	±1mA
	X2.5	±2.5mA
	X5	±5mA
	X10	±10mA
	X10B	0-5-10mA
	X20	±20mA
	XB	4-12-20mA
	XV	±Voltage (specify up to 15Vdc)

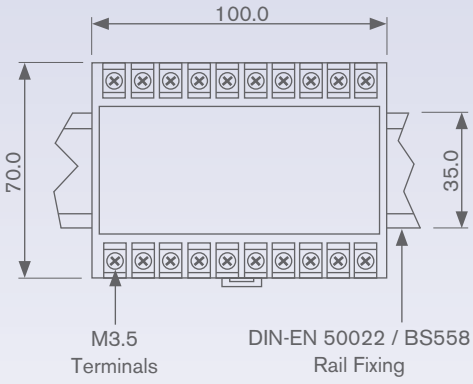
Input Frequency	Code	Description
	F50	50Hz
	F60	60Hz

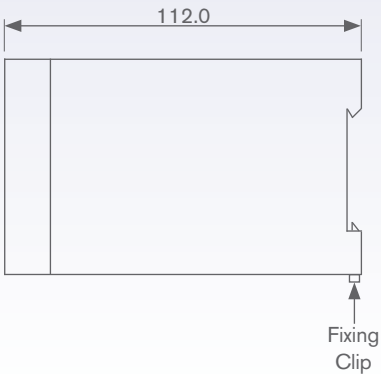
Example **EA33B - 60 - P1- C5 - E1 - XB - F50**

Function Graph



Dimensions





All dimensions in mm

General Specification

Output

Response Time:	< 400ms for 0-90% of input value
Warm Up Time:	< 15 minutes
Residual Output Ripple:	< 1% peak full scale
Long Term Drift:	±0.25% per year non-cumulative
Maximum Load:	1mA < 10kohm 2.5mA < 6kohm 5mA < 3kohm 10mA < 1.5kohm 20mA < 750ohm Voltage output >1kohm

Self powered voltage and current transducers have an adjustable span while all other units have an adjustable zero and span accessible from the front panel.

Auxiliary

AC:	110 / 230 / 415V (±20%) (others upon request)
DC:	24 / 48 / 110V (±20%)

Environmental

Operating Temperature:	-20°C to 65°C
Storage Temperature:	-40°C to 75°C
Variation With Temperature:	0.03%/°C (±0.5% maximum)
Relative Humidity:	0 - 95% non-condensing

Burden

Input Circuits:	See individual specifications
Auxiliary Power Supply:	7VA combined Watt/Var transducers (4VA all other transducers)

EMC Compliance

Directive 89/336/EEC:	Electrostatic discharge IEC801.2 (8kV) Electromagnetic fields IEC801.3 level 3 Fast transient bursts IEC801.4 level 4 Surge withstand IEC255-5

Enclosure

Enclosure:	Grey ABS plastic with finger proof terminal covers
Enclosure Code:	Case IP50, terminals IP10 to IEC529 and BS5490
Test Isolation:	4kV rms 50Hz 1min (to IEC 414) between input / output / case / AC auxiliary (2kV rms 50Hz 1 min for EK energy transducers) 1kVdc / 600Vac between Watt & Var outputs (EPQ units)
Continuous Operation Isolation:	800V rms 50Hz / 1kVdc between input / output / case / AC auxiliary 150Vdc output / DC auxiliary
Mounting:	35mm DIN rail (DIN-EN 50022)
Markings:	CE marked

Specification subject to change without notice.

Options

Non Standard Calibration

All transducers are supplied calibrated to standard input values as detailed in the individual specifications, however non-standard calibration input values can be specified (subject to technical viability).

Wide Output Adjust Switch on Power Transducers

All power transducers are available with a ten position switch accessible from the front panel which provides coarse adjustment of the output signal between 50% and 200% of the nominal.

Calibration Certificate

Calibration certificates traceable to national standards can be supplied on all transducers.

Conformal Coating

A conformal coating can be applied to the transducer circuitry during manufacture for transducers that will be operating in harsh environmental conditions.