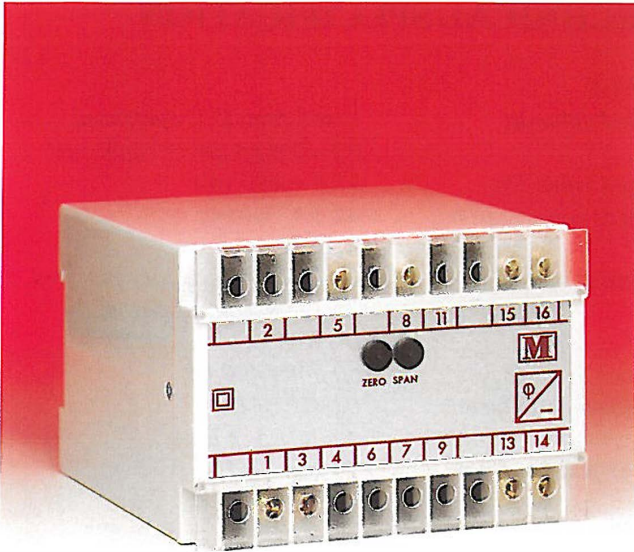


PHASE ANGLE



TECHNICAL SPECIFICATION

INPUT

Rated value I_n	1 or 5 Amp C.T. connected 0.5-10 Amp direct connected
Rated value U_n	57.8 < 600 volt
Power consumption	<1 VA voltage (aux powered) <2.5 VA voltage (self powered) <0.2 VA current

Working range	15-125% U_n auxiliary powered 75-125% U_n self powered 10-150% I_n
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Measuring range	$\pm 45 / \pm 60 / \pm 90 / \pm 180^\circ$ M100 PA1 $\pm 45 / 60^\circ$ M100-PA2 $\pm 90 / \pm 180^\circ$ M100-PA3
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Rated Frequency	50 / 60 / 400 Hz
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Frequency influence	0.005 % / Hz
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Overload continuous	$4 \times I_n \ 1.5 \times U_n$
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Overload for 1 sec.	$50 \times I_n \ 2 \times U_n$
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ACCURACY	± 1 Degree
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OUTPUT

Rated value mA	0-1/5/10/20 & 4-20mA
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Rated Value Volts	0-5 / 10 & 1-5 V
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ADJUSTMENT

Zero	$\pm 2\%$
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Span	$\pm 10\%$
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AUXILIARY

A.C. Voltage	115 / 230 / 400 V ($\pm 25\%$ / 45-65 Hz / < 2VA)
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D.C. Voltage	24 / 48 / 110 V ($\pm 20\%$ galvanically isolated / <3W)
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WEIGHT & CASE SIZE	Approx. 0.6 kg. 100mm case
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SELECTION GUIDE

M100-PA1	Single phase 4 quadrants
M100-PA2	3 phase 3 or 4 wire balanced 2 quadrants
M100-PA3	3 phase 3 or 4 wire balanced 4 quadrants
M100-PV1	Single phase 4 quadrants phase angle between two voltages

TYPICAL APPLICATIONS

The M100-PA series of phase angle transducers measure the phase angle between current and voltage. They can be used on single and 3 phase 3 or 4 wire balanced systems. Ideal for optimising power factor correction.

The M100-PV1 measures the phase angle between two voltage supplies and provides a D.C. Output signal proportional to the phase angle between the voltages.

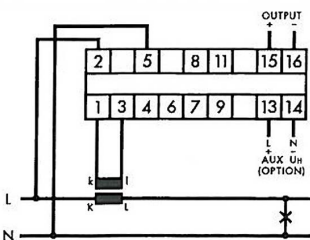
ORDERING INFORMATION

Product code	I/P	I_n	U_n	O/P	Range	Aux.	Freq.	Opt.
M100-PA2		5Amp	400V		$\pm 45^\circ$	120V	60Hz	

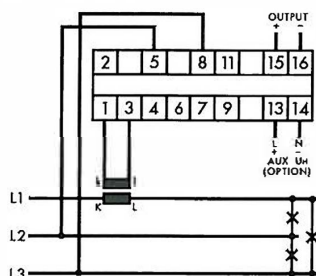
OPTIONS

1. Non standard inputs / outputs only as far as technically acceptable.
2. A.C. Auxiliary in range 57.7 to 450 volts
3. Calibration at nominal Hz 35....450Hz
4. Calibration at temperature other than 23°C

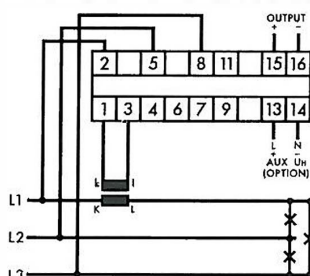
CONNECTION DIAGRAMS



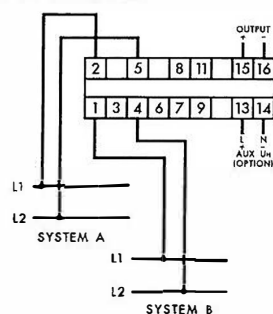
M100A1



M100PA2



M100PA3



M100PV1

GENERAL SPECIFICATIONS

ENVIRONMENTAL

Working temperature	0 to +60 deg C
Functional temperature	-25 to +70 deg C
Storage temperature	-55 to +85 deg C
Temperature coefficient	0.02% per deg C (100 ppm / °C)
Relative humidity	95% non condensing
Class of climate	HSE complying with DIN 40040 -3 complying with VDE/VDI 3540

INSULATION

Test voltage	4kV RMS 50Hz 1min. between Input / Case / Auxiliary
Impulse test	EMC 5kV transient complying with IEC 801 / EN55020
HF interference test	EHF 2.5kV 1MHz complying with IEC 255-4
Protection class	II complying with IEC 348 BS 4753 / DIN 57411 / VDE 0411

APPLIED STANDARDS

General	IEC 688 / BS 6253 / VDE/ VDI 2192
Safety	BS EN61010 DIN 57411 / VDE 0411 ANSI C37
Surge withstand	IEC 801 / EN 55020 ANSI C37-90a
Radio screening	RFI degree N complies with VDE 0875

ACCURACY

Class	± 0.2 % complying with IEC 688
Calibration temperature	23°C
Temperature coefficient	0.01% / °C (100 ppm / °C)
Stability	0.05 % per annum non cumulative
Warm up time	<15 min

OUTPUT

Rated value	See individual product pages	
Load resistance mA	1mA	<15 kOhm
(Unless otherwise stated)	5mA	<3 kOhm
	10mA	<1.5 kOhm
	20mA	< 0.75kOhm
	4-20mA	< 0.75kOhm
Load resistance volts	1, 5 & 10 volts	>1 kOhm
(M100-VA1, VA3 only)	1, 5 & 10 volts	> 50kOhm
Load influence	<0.1 %	
Ripple	<0.5% peak-peak at full load	
Response time	<200 msec for 0-99 % at full load	
Overload	<2 x rated value at full load	
No load voltage	<27 V	

ENCLOSURE

Fixing	Snap on to DIN rail 35 x 7.5 mm complies with DIN-EN 50022 BS 5584
Mounting	Any position
Enclosure Code	Case IP 50 / terminals IP 30 Complies with IEC 529 BS 5490 DIN 40050

APPROVALS

U.L. Approval	File No E157034
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CASE DIMENSIONS

All Dimensions in mm

