

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 / Output
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
EMC	Emissions EN50081-2 Immunity EN50082-1

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 (Unless otherwise stated)	1mA <15 kOhm 5mA <3 kOhm 10mA <1.5 kOhm 20mA <0.75kOhm 4-20mA <0.75kOhm
Load resistance volts (M100-VA1,VA3 only)	1, 5 & 10 volts >1 kOhm 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

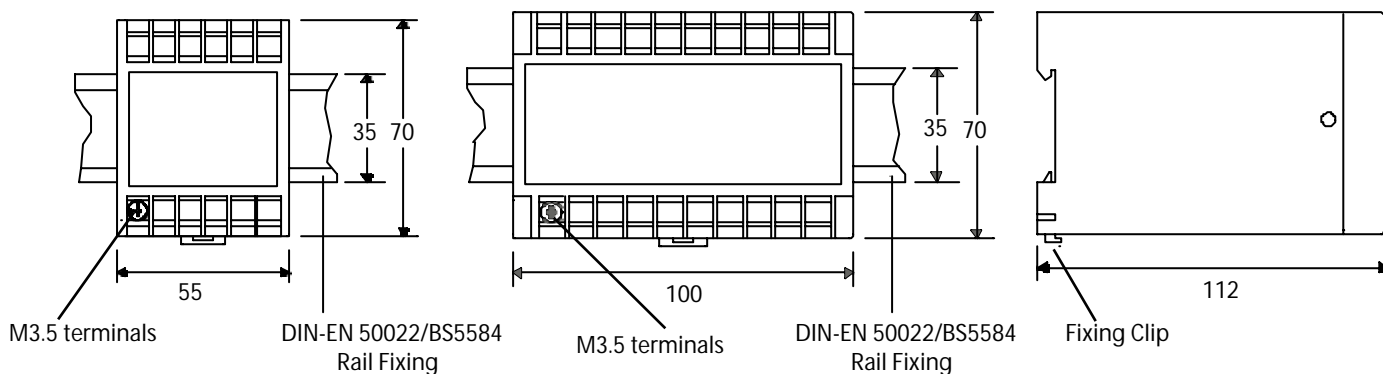
APPROVALS

cU.L. Approval

File No E157034

CASE DIMENSIONS

All Dimensions in mm



S.A.E.L.

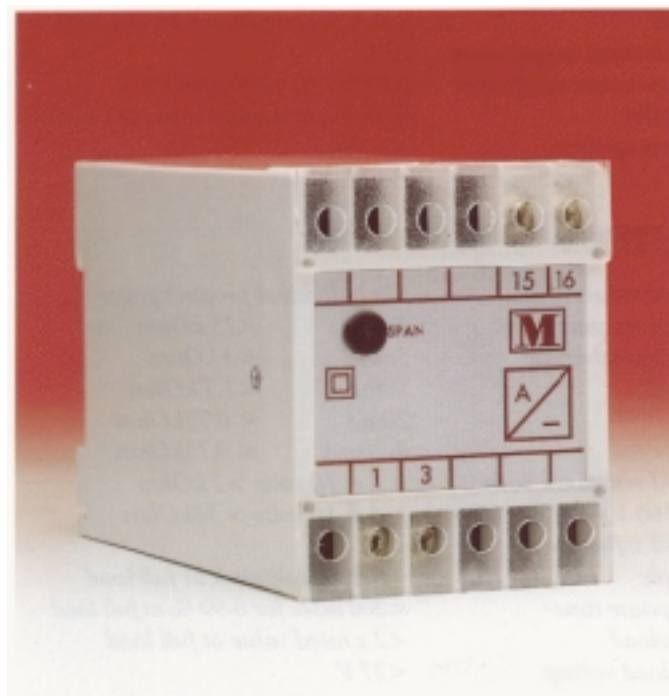
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STRUMENTAZIONE

APPARECCHIATURE

ELETRONICHE Via Romagna, 1/3 - 20090 Segrate (Milano) - Tel. +39 02 2139902
Fax +39 02 2135573 <http://www.saelsrl.com> E-mail: info@saelsrl.com

AC CURRENT



TECHNICAL SPECIFICATION

INPUT

Rated value In	1 or 5 Amp C.T. connected 0.5-10 Amp direct connected
Power consumption	<1 VA (AA1, AA3) <0.2 VA (AL1, AL3, AR1)
Working range	10-125% In (AA1, AA3) 0-125% In (AL1, AL3, AR1)
Rated Frequency	50 / 60 / 400 Hz
Frequency influence	0.005 % / Hz
Overload continuous	4 x In
Overload for 1 sec.	50 x In

OUTPUT

Rated value mA	0-1/5/10/20mA (AA1, AA3)
Rated value mA	0-1/5/10/20 & 4-20mA (AR1)
Rated value mA	4-20mA (AL1 AL3)
Rated value volts	0-5 / 10 V (AA1 AA3)
Rated value volts	0-5 / 10 & 1-5 V (AR1)
Rated value volts	1-5 V (AL1 AL3)

ADJUSTMENT

Zero	No adjustment (AA1 AA3)
Zero	± 2% (AR1, AL1 AL3)
Span	± 10% (AA1, AR1, AL1 AA3 AL3)

AUXILIARY

A.C. Voltage	115 / 230 / 400 V (± 25% / 45-65 Hz / < 2VA)
D.C. Voltage	24 / 48 / 110 V (± 20% / galvanically isolated / <3 W)
	Note M100-AA1 AA3 are self powered

WEIGHT & CASE

M100-AA1	Approx. 0.3 kg. 55mm case
M100-AL1,AR1	Approx. 0.4 kg. 55mm case
M100-AA3	Approx. 0.6 kg. 100mm case
M100-AL3	Approx. 0.7 kg. 100mm case

ORDERING INFORMATION

Product Code	Input	In	Output	Aux	Freq.	Options
M100-AL1	5A		4-20mA	230V	50Hz	

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

SELECTION GUIDE

M100-AA1	1 ph. self powered ave. sensing RMS calibrated
M100-AL1	1 ph. aux. powered ave. sensing RMS calibrated
M100-AR1	1 ph. aux powered true RMS sensing RMS cal.
M100-AA3	3 ph. self powered ave. sensing RMS calibrated
M100-AL3	3 ph. aux powered ave. sensing RMS calibrated

TYPICAL APPLICATIONS

The M100 series current transducers are designed to measure A.C. Current in single and 3 phase systems. They convert the A.C. signal to a D.C. Output that is directly proportional to the input signal.

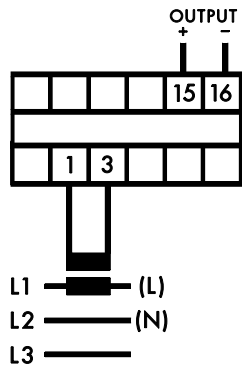
The M100-AA1 AA3 are self powered (i.e. no auxiliary required) average sensing RMS calibrated current transducers, mA and voltage outputs are available.

The M100-AL1 AL3 are average sensing RMS calibrated, live zero current transducers. Auxiliary is required to provide power, so that 4mA output signal is present, when the input is zero.

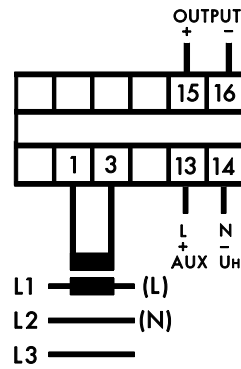
The M100-AR1 is true RMS sensing RMS calibrated allowing measurement of distorted waveforms of up to 9th harmonic with a crest factor of 5. The AR1 is typically used in current measurement where distorted waveform is common, such as thyristor drives

The above units are used to measure current in energy management systems, switchboards, generator and telemetry controls. Isolation of 4kV is provided between the input and output signal, allowing the output to be fed to conventional analogue meters, digital meters, PLC, and computer systems.

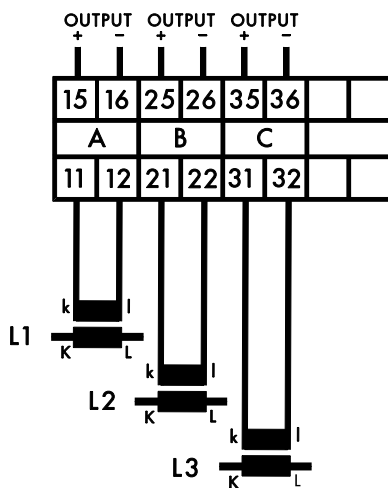
AC CURRENT CONNECTION DIAGRAMS



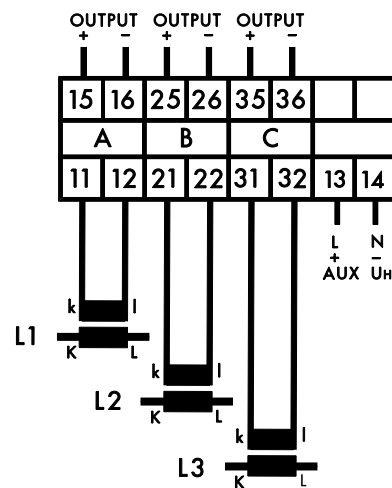
M100-AA1



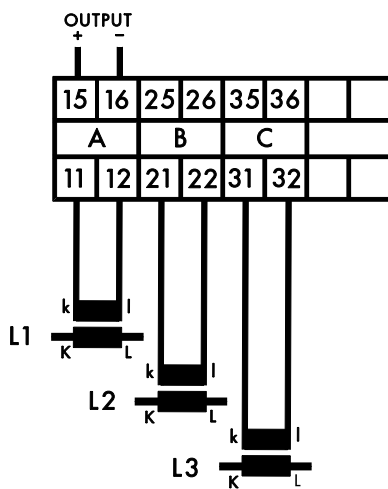
M100-AL1 / AX1 / AR1



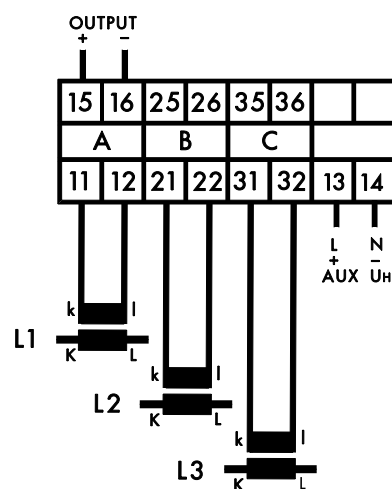
M100-AA3



M100-AL3 / AX3



M100-AAS



M100-ALS

SPECIAL AC CURRENT



SELECTION GUIDE

M100-AX1	1 ph. aux. powered ave. sensing RMS calibrated
M100-AX3	3 ph. aux powered ave. sensing RMS calibrated
M100-AAS	3 ph. summation self powered
M100-ALS	3 ph. summation auxiliary powered

TYPICAL APPLICATIONS

The M100-AX1 and AX3 are essentially the same as the M100-AA1 and AA3, but they have auxiliaries which allows the working range to be 0-125% rather than 10-125%. Used where the average sensing of current is required from 0-125% of the nominal current.

The M100-AAS and M100-ALS are A.C. Current summation transducers. Both can have up to 3 inputs of either 1, 5 or 10 amps. These inputs are summed by the transducer and one D.C. Output is provided, which is proportional to the sum of the inputs.

The M100-AAS is self powered with a range of 0-125%, the M100-ALS is auxiliary powered and provides a 4-20mA output with a working range of 0-125%.

Typical application is to measure the total current in a 3 phase system and display it via one meter. For example, if a 3 phase system has 3 current transformers 2500/5 then a moving coil meter could be connected to a M100-AAS scaled 0-7500. Note the C.T.s must all have the same ratio or the output from the transducer will not be the sum of the total current in the system.

TECHNICAL SPECIFICATION

INPUT

Rated value In	1 or 5 Amp C.T. connected 0.5-10 Amp direct connected
Power consumption	<0.2 VA (AX1, AX3 ALS) <1 VA (AAS)
Working range	0-125% In (AX1, AX3, ALS) 10-125% In (AAS)
Rated Frequency	50 / 60 / 400 Hz
Frequency influence	0.005 % / Hz
Overload continuous	4 x In
Overload for 1 sec.	50 x In

OUTPUT

Rated value mA	0-1/5/10/20mA (AX1,AX3,AAS)
Rated value mA	4-20mA (ALS)
Rated Value Volts	Not available on (AAS)
Rated Value Volts	1-5 V (ALS)
Rated Value Volts	0-5 / 10V (AX1,AX3)

ADJUSTMENT

Zero	No adjustment (AX1, AX3, AAS)
Zero	± 2% (ALS)
Span	± 10% (AX1, AX3, ALS)

AUXILIARY

A.C. Voltage	115 / 230 / 400 V (± 25% / 45-65 Hz / < 2VA)
D.C. Voltage	24 / 48 / 110 V (± 20% galvanically isolated / <3W) Note M100-AAS is self powered

WEIGHT & CASE SIZE

M100-AX1	Approx. 0.4 kg. 55mm case
M100-AAS	Approx. 0.6 kg. 100mm case
M100-ALS,AX3	Approx. 0.7 kg. 100mm case

ORDERING INFORMATION

Product Code	Input	In	Output	Aux	Freq.	Options
M100-ALS	3 x 5A	0-20mA	115V	50Hz	Cal.	40°C

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

AC VOLTAGE



SELECTION GUIDE

M100-VA1	1 ph. self powered ave. sensing RMS calibrated
M100-VL1	1 ph. aux powered ave. sensing RMS calibrated
M100-VR1	1 ph. aux powered true RMS sensing RMS cal.
M100-VA3	3 ph. self powered ave. sensing RMS calibrated
M100-VL3	3 ph. aux powered ave. sensing RMS calibrated

TYPICAL APPLICATIONS

The M100 series voltage transducers are designed to measure A.C. Voltage in single and 3 phase system. They convert the A.C. Signal to a D.C. Output that is directly proportional to the input signal.

The M100-VA1 VA3 are self powered (i.e. no auxiliary required) average sensing RMS calibrated voltage transducers, mA and voltage outputs are available.

The M100-VL1 VL3 are average sensing RMS calibrated, live zero voltage transducers. Auxiliary is required to provide power so that 4mA output signal is present when the input is zero.

The M100-VR1 is true RMS sensing RMS calibrated allowing measurement of distorted waveforms of up to 9th harmonic with a crest factor of 5. The VR1 is typically used in voltage measurement where distorted waveform is common such as thyristor drives.

The above units are used to measure voltage in energy management systems, switchboards, generator and telemetry controls. Isolation of 4kV is provided between the input and output signal, allowing the output to be fed to conventional analogue meters, digital meters, PLC, and computer systems.

TECHNICAL SPECIFICATION

INPUT

Rated value U_n	57.8 < 100 / 110 < 600 V
Power consumption	< 1.5 VA (VA1, VA3) < 1 VA (VL1, VL3, VR1)
Working range	15-125% U_n (VA1, VA3) 0-125% U_n (VL1, VL3, VR1)
Rated Frequency	50 / 60 / 400 Hz
Frequency influence	0.005 % / Hz
Overload continuous	1.5 x U_n
Overload for 1 sec.	4 x U_n (VL1 VL3 VR1) 2 x U_n (VA1 VA3)

OUTPUT

Rated value mA	0-1/5/10/20mA (VA1, VA3)
Rated value mA	1/5/10/20 & 4-20mA (VR1)
Rated value mA	4-20mA (VL1)
Rated Value volts	0-5 / 10 V (VA1, VA3)
Rated value volts	0-5 / 10 & 1-5 V (VR1)
Rated value volts	1-5 V (VL1 VL3)

ADJUSTMENT

Zero	No adjustment (VA1, VA3)
Zero	± 2% (VR1, VL1)
Span	± 10% (VA1, VA3, VR1, VL1, VL3)

AUXILIARY

A.C. Voltage	115 / 230 / 400 V (± 25% / 45-65Hz / < 2 VA)
D.C. Voltage	24 / 48 / 110 V (± 20% / galvanically isolated / < 3 W) Note M100-VA1 & VA3 are self powered.

WEIGHT & CASE SIZE

M100-VA1	Approx. 0.3 kg. 55mm case
M100-VL1, VR1	Approx. 0.4 kg. 55mm case
M100-VA3	Approx. 0.6 kg. 100mm case
M100-VL3	Approx. 0.7 kg. 100mm case

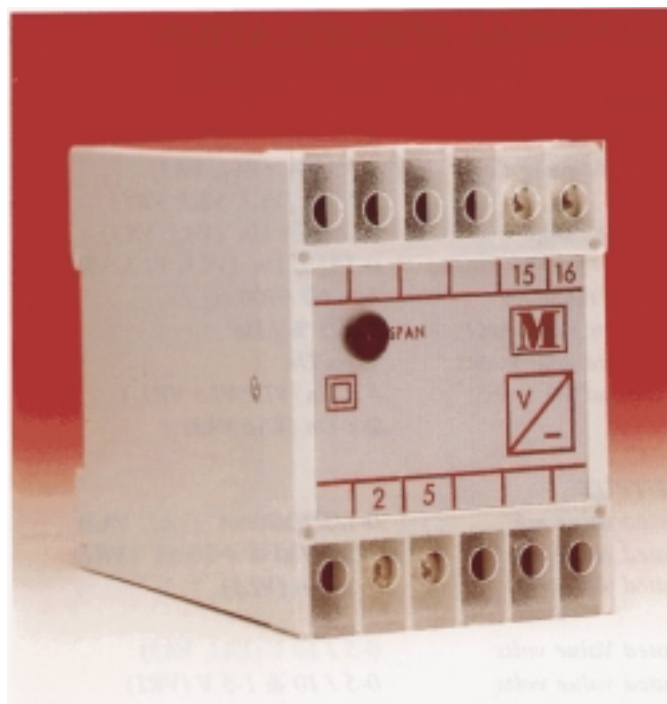
ORDERING INFORMATION

Product Code	Input	In	Output	Aux	Freq.	Options
M100-AL1	5A		4-20mA	230V	50Hz	

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

SPECIAL AC VOLTAGE



SELECTION GUIDE

<i>M100-VS1</i>	<i>Suppressed zero voltage auxiliary powered</i>
<i>M100-VX1</i>	<i>1 ph. aux. powered ave. sensing RMS calibrated</i>
<i>M100-VX3</i>	<i>3 ph. aux. powered ave. sensing RMS calibrated</i>

TYPICAL APPLICATIONS

The M100-VS1 is a self powered voltage transducer. The suppression allows the transducer to accurately measure a voltage system over a narrow band either side of a nominal voltage. The range can be between $\pm 10\%$ to $\pm 30\%$ which can be specified when ordering. Typical application is to display the voltage on an analogue meter with an expanded scale. This allows the user to read small changes in the voltage in a single or 3 phase system. The output could also be fed to a computer that could then control the voltage of the system, to ensure that it stays within the narrow band.

The M100-VX1 and VX3 are essentially the same as the M100-VA1 and VA3, but they have auxiliaries which allow the working range to be 0-125% rather than 10-125%. Used where the average sensing of voltage is required from 0 to 125% of the nominal voltage.

TECHNICAL SPECIFICATION

INPUT

<i>Rated value U_n</i>	<i>57.8 < 100 / 110 < 600 V</i>
<i>Power consumption</i>	<i>< 1 VA (VX1, VX3) < 1.5 VA (VS1)</i>
<i>Working range</i>	<i>0-125% U_n (VX1, VX3) 10-30% U_n (VS1)</i>
<i>Rated Frequency</i>	<i>50 / 60 / 400 Hz</i>
<i>Frequency influence</i>	<i>0.005 % / Hz</i>
<i>Overload continuous</i>	<i>1.5 x U_n</i>
<i>Overload for 1 sec.</i>	<i>2 x U_n</i>

OUTPUT

<i>Rated value mA</i>	<i>0-1 / 5 / 10 / 20mA (VX1, VX3)</i>
<i>Rated value mA</i>	<i>1/5/10/20 & 4-20mA (VS1)</i>
<i>Rated value volts</i>	<i>0-5 / 10 V (VX1, VX3)</i>
<i>Rated value volts</i>	<i>0-5 / 10 V & 1-5 V (VS1)</i>

ADJUSTMENT

<i>Zero</i>	<i>No adjustment (VX1, VX3)</i>
<i>Zero</i>	<i>$\pm 2\%$ (VS1)</i>
<i>Span</i>	<i>$\pm 10\%$ (VX1, VX3, VS1)</i>

AUXILIARY

<i>A.C. Voltage</i>	<i>115 / 230 / 400 V ($\pm 25\%$ / 45-65Hz / < 2 VA)</i>
<i>D.C. Voltage</i>	<i>24 / 48 / 110 V ($\pm 20\%$ galvanically isolated / < 3 W) Note M100-VS1 is self powered</i>

WEIGHT & CASE SIZE

<i>M100-VS1, VX1</i>	<i>Approx. 0.4 kg. 55mm case</i>
<i>M100-VX3</i>	<i>Approx. 0.7 kg. 100mm case</i>

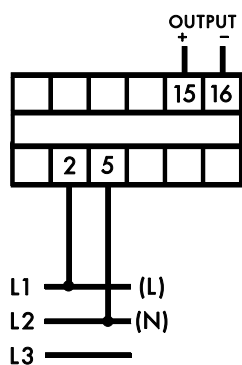
ORDERING INFORMATION

<i>Product Code</i>	<i>Input U_n</i>	<i>Output</i>	<i>Aux</i>	<i>Freq.</i>	<i>Option</i>
<i>M100-VS1</i>	<i>110V $\pm 15\%$</i>	<i>20mA</i>	<i>-</i>	<i>50Hz</i>	

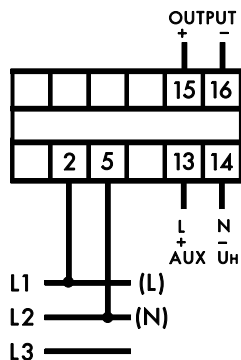
OPTIONS

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

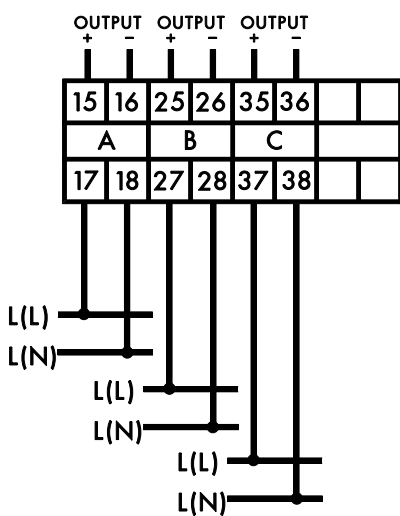
AC VOLTAGE CONNECTION DIAGRAMS



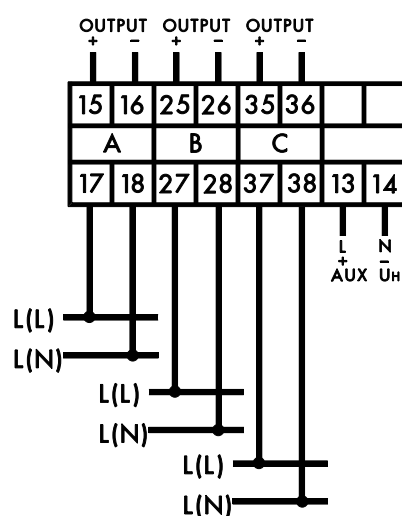
M100-VA1 / VS1



M100-VL1 / VR1 / VX1

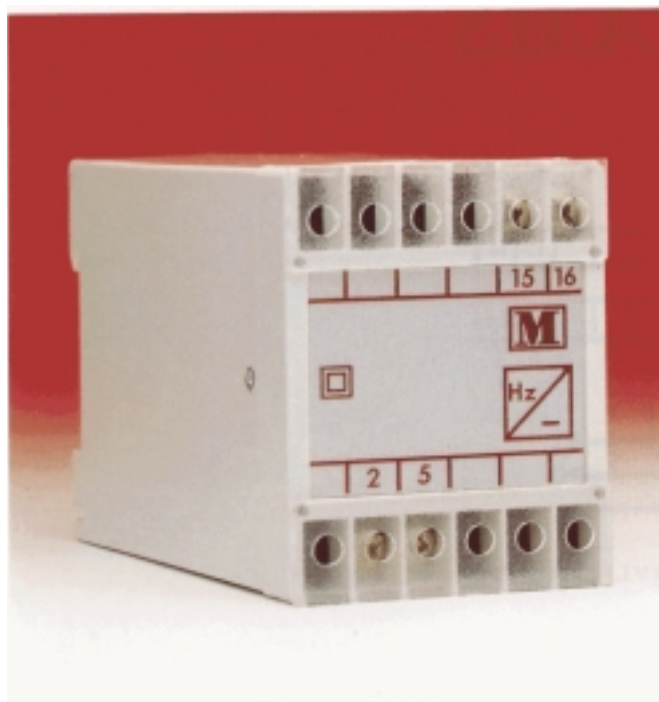


M100-VA3



M100-VL3 / VX3

FREQUENCY



TECHNICAL SPECIFICATION

INPUT

Rated value U_n 57.8 < 600V

Power consumption <1.5 VA (FA1)

<1 VA (FL1 FX1)

Working range 75-125% U_n (FA1)

15-125% U_n (FL1 FX1)

Measuring range 45-55 / 45-65 / 55-65
/ 360-440Hz

Overload continuous 1.5 x U_n

Overload for 1 sec. 2 x U_n

OUTPUT

Rated value mA 0-1 / 5 / 10 / 20mA (FA1 FX1)

Rated value mA 4-20mA (FL1)

Rated value volts 0-5 / 10 V (FA1 FX1)

Rated value volts 1-5 V (FL1)

ADJUSTMENT

Zero No adjustment

Span No adjustment

AUXILIARY

A.C. Voltage 115 / 230 / 400 V
($\pm 25\%$ / 45-65 Hz / < 2 VA)

D.C. Voltage 24 / 48 / 110 V ($\pm 20\%$ /
galvanically isolated / <3W)
Note M100-FA1 is self powered

WEIGHT & CASE SIZE Approx. 0.4kg. 55mm case

SELECTION GUIDE

M100-FA1 Self powered true zero outputs

M100-FL1 Auxiliary powered live zero outputs

M100-FX1 Auxiliary powered true zero outputs

TYPICAL APPLICATIONS

The M100 series of frequency transducers are designed to measure frequency in single and 3 phase systems. The A.C. Input is converted to a D.C. Output, that is directly proportional to the change in input frequency within a specified span.

The M100-FA1 is self powered. (No auxiliary required)

The working voltage range is 75-125% of the nominal voltage.

The M100-FL1 is auxiliary powered. The outputs are live zero either 4mA or 1 volt. The auxiliary enables the working voltage range to be 15-125%.

The M100-FX1 is essentially the same as the FA1 but an auxiliary is provided to enable the unit to have a working voltage range of 15-125%.

All types of the above frequency transducers are typically used to monitor and control frequency in such applications as 3 phase mains supplies, A.C. Generating sets and process control etc.

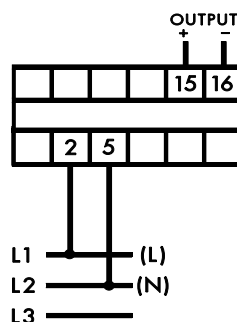
ORDERING INFORMATION

Product code Input Hz Output Aux Freq. Options
M100-FL1 45-55Hz 4-20mA 230V 50Hz

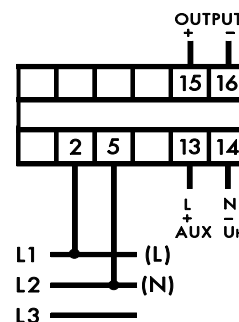
OPTIONS

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 temperature other than 23°C

CONNECTION DIAGRAMS

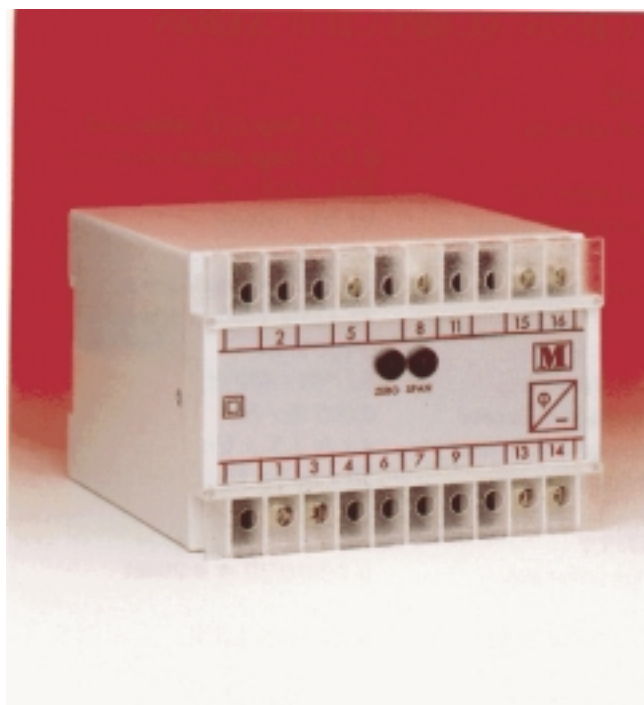


M100-FA1



M100-FL1 / FX1

PHASE ANGLE



SELECTION GUIDE

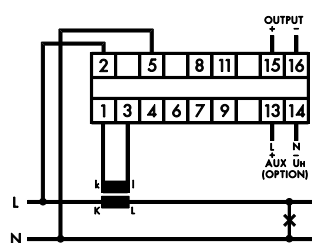
M100-PA1	Single phase 4 quadrants
M100-PA2	3 phase 3 or 4 wire balanced 2 quadrants
M100-PA3	3 phase 3 or 4 wire balanced 4 quadrants
M100-PV1	Single phase 4 quadrants phase angle between two voltages

TYPICAL APPLICATIONS

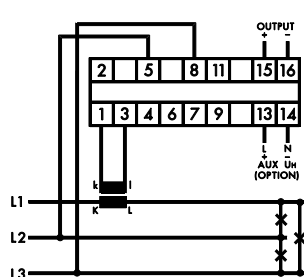
The M100-PA series of phase angle transducers measure the phase angle between current and voltage. They can be used on single and 3 phase 3 or 4 wire balanced systems. Ideal for optimising power factor correction.

The M100-PV2 measures the phase angle between two voltage supplies and provides a D.C. Output signal proportional to the phase angle between the voltages.

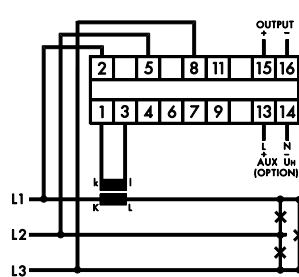
CONNECTION DIAGRAMS



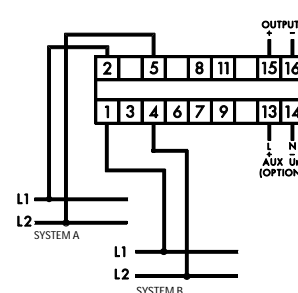
M100-PA1



M100-PA2



M100-PA3



M100-PV1

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
Measuring range	$\pm 45 / 60 / 90 / 180^\circ$ M100-PA1 $\pm 45 / 60^\circ$ M100-PA2 $\pm 90 / 180^\circ$ M100-PA3

Rated Frequency

Frequency influence

Overload continuous

Overload for 1 sec.

ACCURACY

OUTPUT

Rated value mA

Rated Value Volts

ADJUSTMENT

Zero

Span

AUXILIARY

A.C. Voltage

D.C. Voltage

WEIGHT & CASE SIZE

115 / 230 / 400 V ($\pm 25\%$ / 45-65 Hz / < 2VA)
24 / 48 / 110 V ($\pm 20\%$ galvanically isolated / < 3W)
Approx. 0.6 kg, 100mm case

ORDERING INFORMATION

Product code	I/P	In	Un	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

ACTIVE POWER



SELECTION GUIDE

M100-WA1	Single phase
M100-WA2	3 phase 3 wire balanced load
M100-WA3	3 phase 4 wire balanced load
M100-WA4	3 phase 3 wire unbalanced load
M100-WA5	3 phase 4 wire unbalanced load
M100-WA6	3 phase 3 wire balanced load externally connected reverse C.T.s
M100-WA7	3 phase 3 wire balanced load internally reversed C.T.s

TYPICAL APPLICATIONS

The M100-WA series measure active power in single, 3 phase 3 or 4 wire balanced and unbalanced systems. Using the time division multiplier circuit means that they can be used over a wide range of input waveforms. The D.C. Output signal is directly proportional to the instantaneous power being measured.

Typical applications include the measurement of power in switchboards, power stations, generating sets etc. The high isolation of 4kV as with all the M100 series, allows these watt transducers to be connected to a variety of measuring and control devices and systems, such as analogue meters, PLC, computers, data loggers, digital instruments and telemetry systems.

Both auxiliary powered and self powered versions of each type are available, it is recommended to use an auxiliary powered version if the system being measured has voltage variations in excess of $\pm 20\%$.

TECHNICAL SPECIFICATION

INPUT

Rated value In	1 or 5 Amp C.T. connected 0.5-10 Amp direct connected
Rated value Un	57.8 < 600 volt
Power consumption	<1 VA voltage <0.2 VA current
Working range	0-125% Un auxiliary powered 75-125% Un self powered 0-150% In
Rated Frequency	50 / 60 / 400 Hz
Frequency influence	0.005 % / Hz
Overload continuous	4 x In 1.5 x Un
Overload for 1 sec.	50 x In 2 x Un

OUTPUT

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

ADJUSTMENT

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

AUXILIARY

A.C. Voltage	115 / 230 / 400 V ($\pm 25\%$ / 45-65 Hz / < 2VA)
D.C. Voltage	24 / 48 / 110 V ($\pm 20\%$ / galvanically isolated / <3 W)

WEIGHT & CASE SIZE

M100-WA1,2,3,6,7	Approx. 0.6kg. 100mm case
M100-WA4,5	Approx. 0.8kg. 100mm case

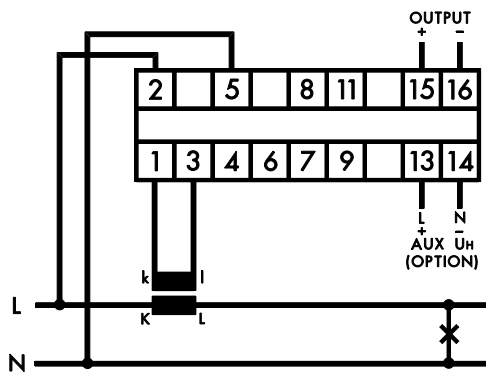
ORDERING INFORMATION

Product Code	I/P In	Un	O/P	Range	Aux Freq	Opt.
M100-WA5	800/5A	230v	0-20mA	600kW	230v	50Hz

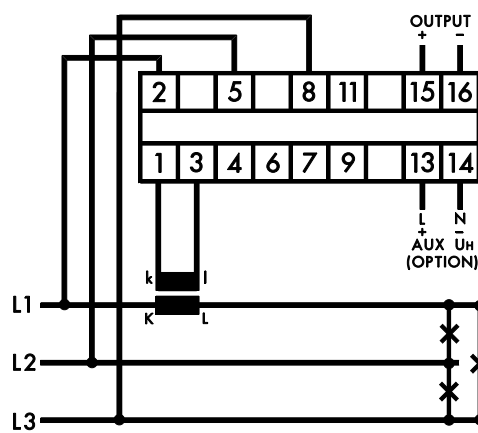
OPTIONS

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

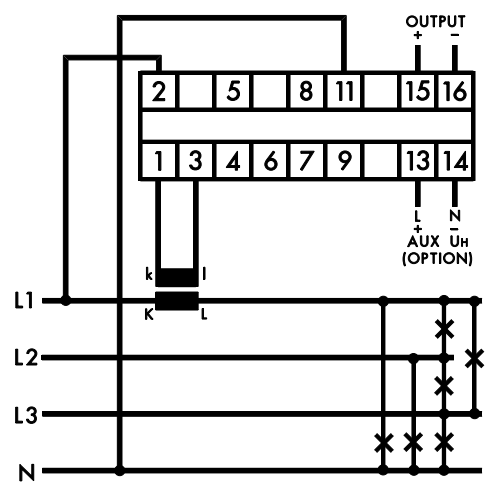
ACTIVE POWER CONNECTION DIAGRAMS



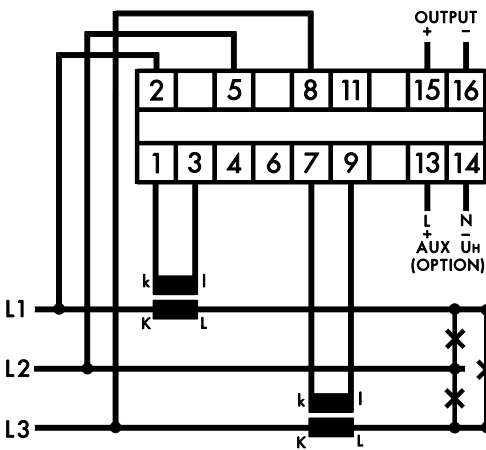
M100-WA1



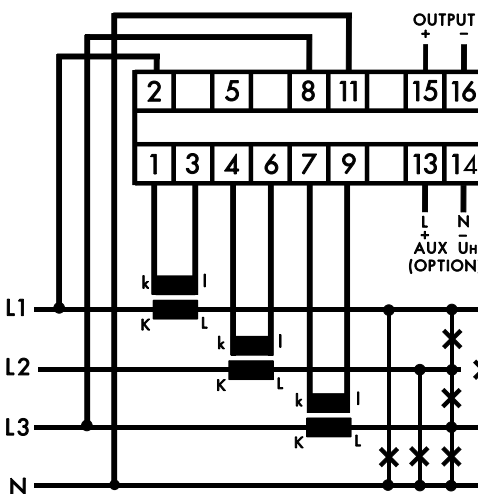
M100-WA2



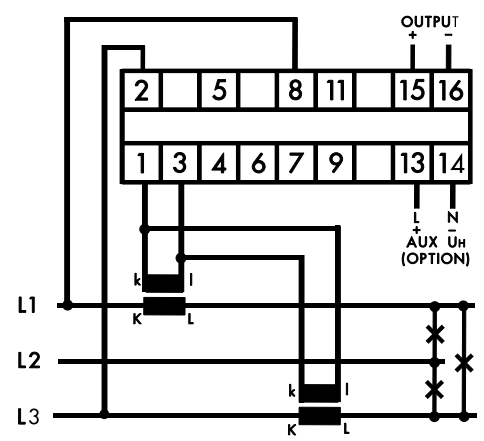
M100-WA3



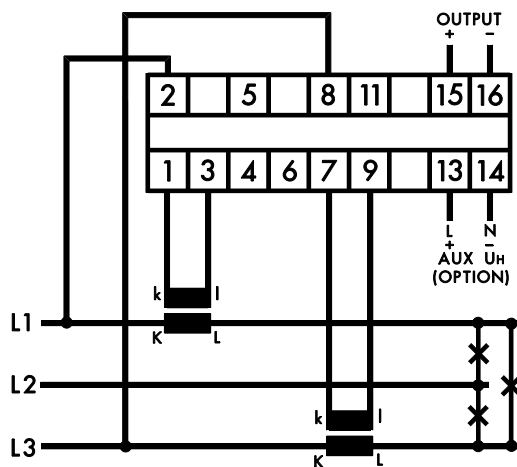
M100-WA4



M100-WA5

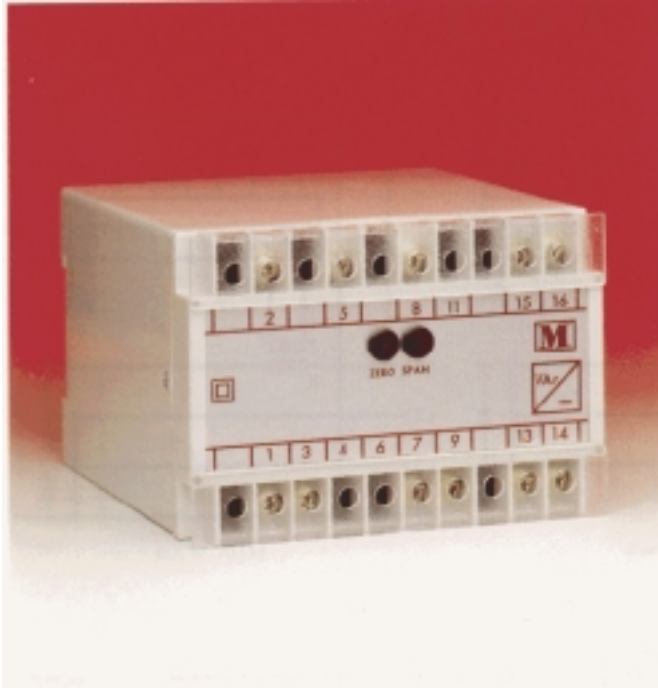


M100-WA6



M100-WA7

REACTIVE POWER



TECHNICAL SPECIFICATION

INPUT

Rated value In	1 or 5 Amp C.T. connected 0.5-10 Amp direct connected
Rated value Un	57.8 < 600 volt
Power consumption	<1 VA voltage <0.2 VA current
Working range	0-125% Un auxiliary powered 75-125% Un self powered 0-150% In
Rated Frequency	50 / 60 / 400 Hz
Overload continuous	4 x In 1.5 x Un
Overload for 1 sec.	50 x In 2 x Un

OUTPUT

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

ADJUSTMENT

Zero	± 2%
Span	± 10%

AUXILIARY

A.C. Voltage	115 / 230 / 400 V (± 25% / 45-65 Hz / < 2VA)
D.C. Voltage	24 / 48 / 110 V (± 20% / galvanically isolated / <3W)

WEIGHT & CASE SIZE

M100-XA1,2,3,6,7	Approx. 0.6kg. 100mm case
M100-XA4,5	Approx. 0.8kg 100mm case

SELECTION GUIDE

M100-XA1	Single phase
M100-XA2	3 phase 3 wire balanced load
M100-XA3	3 phase 4 wire balanced load
M100-XA4	3 phase 3 wire unbalanced load
M100-XA5	3 phase 4 wire unbalanced load
M100-XA6	3 phase 3 wire unbalanced load
M100-XA7	3 phase 3 wire balanced load internally reversed C.T.s

TYPICAL APPLICATIONS

The M100-XA series measure reactive power in single, 3 phase 3 or 4 wire balanced and unbalanced systems. Using the time division multiplier circuit means that they can be used over a wide range of input waveforms. The D.C. Output signal is directly proportional to the instantaneous reactive power being measured.

Typical applications include the measurement of reactive power in switchboards, power stations and generating sets etc. The high isolation of 4kV as with all the M100 series, allows these VAr transducers to be connected to a variety of measuring and control devices and systems, such as analogue meters, PLC, computers, data loggers, digital instruments and telemetry systems.

Both auxiliary powered and self powered versions of each type are available, it is recommended to use an auxiliary powered version if the system being measured has voltage variations in excess of ± 20%.

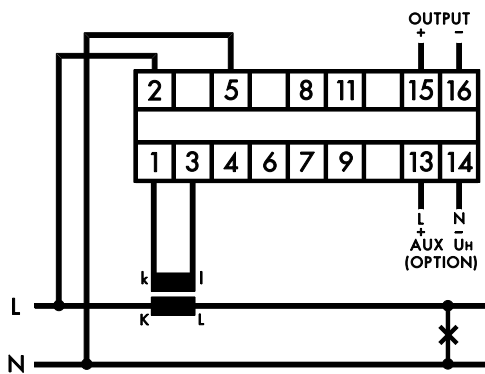
ORDERING INFORMATION

Product code	I/P	In	Un	O/P	Range	Aux.	Freq.	Opt.
M100-XA4	400/5	400	0-20mA	300kVAr	120	60Hz		

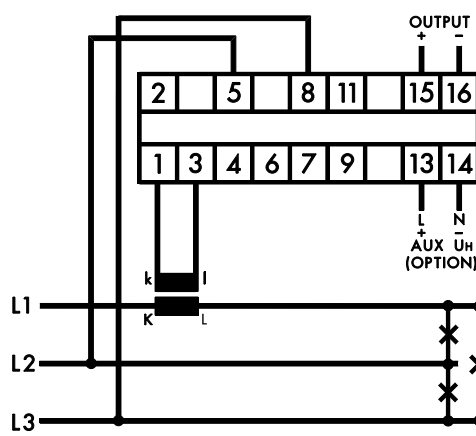
OPTIONS

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

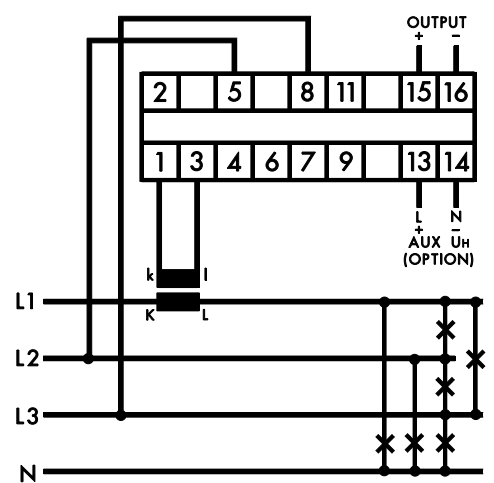
REACTIVE POWER CONNECTION DIAGRAMS



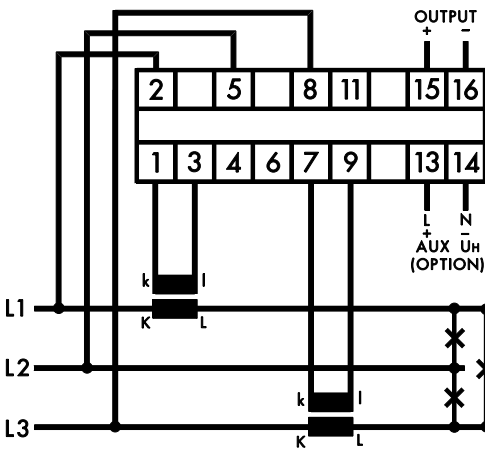
M100-XA1



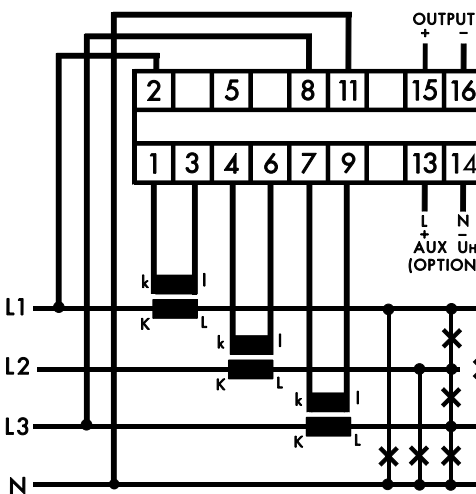
M100-XA2



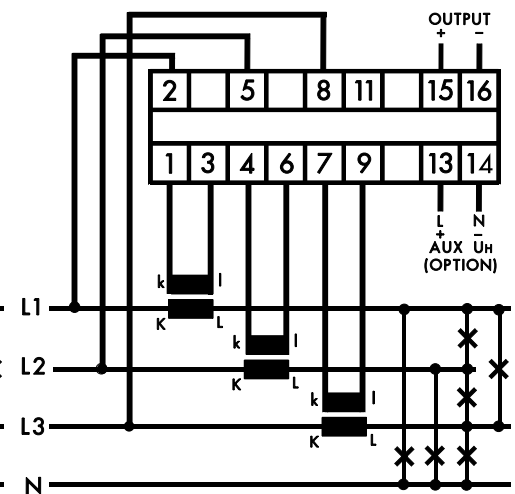
M100-XA3



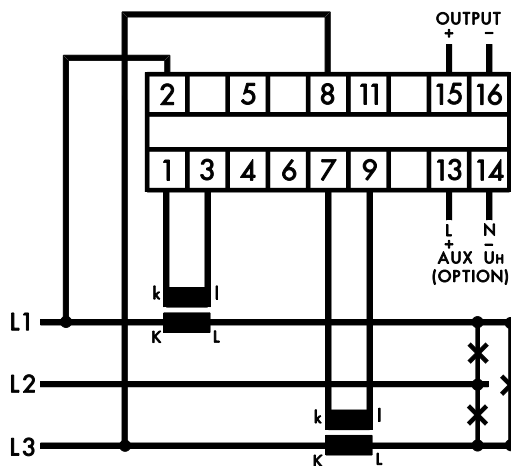
M100-XA4



M100-XA5



M100-XA6



M100-XA7

DC LINEAR INTEGRATOR



TECHNICAL SPECIFICATION

INPUT

Rated value I_n	0-1 / 5 / 10 / 20 & 4-20 mA
Voltage drop	20mV
Rated value U_n	0-20mV.....10V
Impedance	100 kOhm / V
Working range	0-125%
Overload continuous	1.5 x U_n 4 x I_n

OUTPUT

Contact	volt free closure
Pulse rate	100.....5000 pulse/hr
Pulse width	250 msec

RELAY

Voltage	50 V DC / 250 V AC
Rating	10W
Contact material	Ruthonium
Initial resistance	200 mOhm
Initial capacitance	0.4 pF
Electrical life	5 x 10 ⁶ (250 V DC / 10mA / resistance load)

Test voltage

coil to contacts 4kV

ADJUSTMENT

Zero	± 2%
Span	± 10%

AUXILIARY

A.C. Voltage	115 / 230 / 400 V (± 25% / 45-65Hz / <2 VA)
D.C. Voltage	24 / 48 / 110 V ± 20% galvanically isolated / < 3 W

WEIGHT & CASE SIZE Approx. 0.4 kg. 55mm case

SELECTION GUIDE

M100-DI1	Single relay output
M100-DI2	Double relay output

TYPICAL APPLICATIONS

The M100-DI1 is a linear integrator which accepts D.C. Inputs, and integrates the input with respect to time. An output is provided via a relay which gives a pulsed output, the frequency of which is directly proportional to the amplitude of the input signal.

One of the main uses of the M100-DI1 is the measurement of Watt and Kilowatt hour. This is achieved by feeding the output of a watt transducer (M100-WA series) into the M100-DI1. The input signal is integrated against time and the resulting output pulses from the relay are proportional to the kW.h being consumed. These pulses then can be fed to an electromechanical counter, digital counter or a computer, where the kW.h consumed can be stored. Another use is the measurement of Ampere hours.

The M100-DI2 is the same as M100-DI1 with the additional feature of having 2 relay outputs, this allows the user to feed one set of pulses to a counter on a switchboard whilst feeding the other set of pulses to a remote computer in a control room.

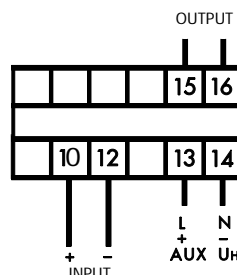
ORDERING INFORMATION

Product Code	Input I_n	Pulse Rate	Aux. Freq. Opt.
M100-DI1	10mA	100/hour	230V 50Hz

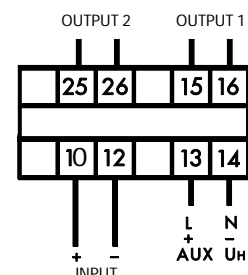
OPTIONS

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 temperature other than 23°C

CONNECTION DIAGRAMS



M100-DI1



M100-DI2

DC CURRENT OR VOLTAGE

4kV OR 1.5kV ISOLATION



TECHNICAL INFORMATION

INPUT

Rated value I_n	$\pm 0-1\text{mA} \dots 10\text{A}$ M100-DA1 / DA11
Voltage drop	20mV
Rated value U_n	$\pm 20\text{mV} \dots 11.9\text{V}$ M100-DV1 / DV11
Impedance	100 kOhm / volt
Rated value U_n	$\pm 12\text{V} \dots 600\text{V}$ M100-DV2 / DV21
Impedance	10 kOhm / volt
Working range	$\pm 125\% I_n$
Overload continuous	$4 \times I_n$ M100-DA1 (upto 20A max)
Overload continuous	$1.5 \times U_n$ M100-DV1 / DV2

OUTPUT

Rated value mA	0-1/5/10/20 & 4-20mA
Load resistance	12/2.4/1.2/0.6 kOhm
Rated value volts	0-5 / 10 & 1-5 V

ADJUSTMENT

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

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)
--------------	--

WEIGHT & CASE SIZE	Approx. 0.4 kg. 55mm case
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INSULATION

M100-DA1/DV1/DV2	4kV As shown in general specification see page 3.
M100-DA11/DV11/DV21	Test voltage 1.5kV RMS 50Hz 1 min between input / case / output, rest of specification as shown in general specification see page 3

SELECTION GUIDE

M100-DA1	DC current input 4kV isolation
M100-DV1	DC voltage 20 mV...11.9V input 4kV isolation
M100-DV2	DC voltage 12 V....600 V input 4kV isolation
M100-DA11	DC current input 1.5kV isolation
M100-DV11	DC voltage 20mV...11.9V input 1.5kV isolation
M100-DV21	DC voltage 12 V...600V input 1.5kV isolation

TYPICAL APPLICATIONS

These isolators isolate the DC input signal from the DC Output signal, which is directly proportional to the input signal. There are two levels of isolation offered, the M100-DA1 / DV1 / DV2 have 4kV isolation and the M100-DA11 / DV11 / DV21 have 1.5kV isolation. A wide range of both D.C. Current and voltage inputs are offered.

Typically these isolators can be used to prevent earth loops, which occur when a measuring source, that is earthed, is connected to a computer or data logger that is also earthed. Another common use is to provide isolation on the inputs to a PLC.

All of the above isolators have either A.C. or D.C. Auxiliaries which means they have an advantage over loop powered units, in that if for any reason the output lead should become disconnected, the input will not be saturated.

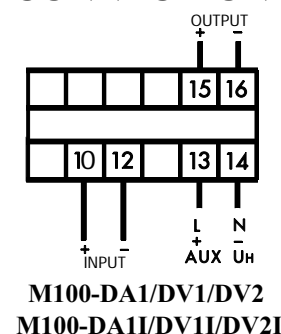
ORDERING INFORMATION

Product code	Input	In	Output	Aux	Freq.	Options
M100-DA11	1mA	4-20mA	230V	50Hz		

OPTIONS

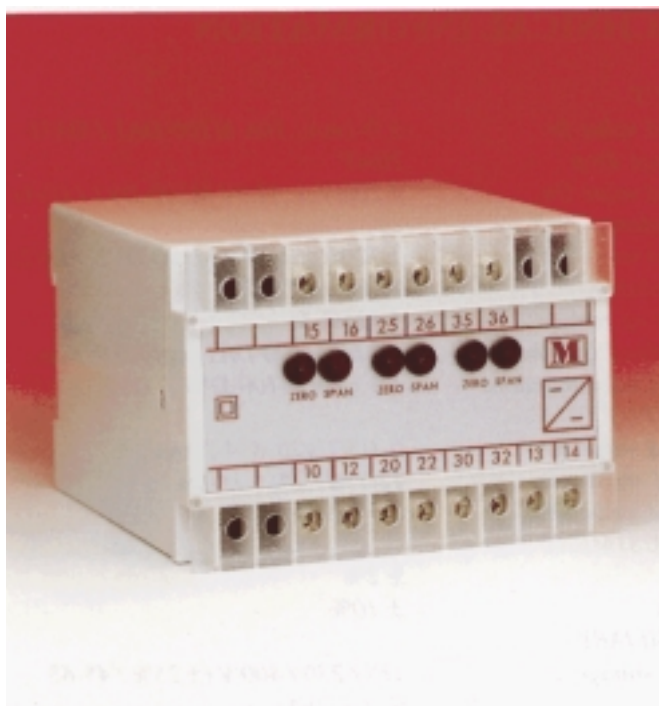
1. Non standard inputs / outputs only as far as technically acceptable.
2. A.C. Auxiliary in range 57.7 to 450 volts
3. Calibration at temperature other than 23°C

CONNECTION DIAGRAM



DC CURRENT OR VOLTAGE

1 INPUT 3 OUTPUTS



TECHNICAL SPECIFICATION

INPUT

Rated value I_n	$\pm 0-1 / 5 / 10 / 20$ & $4-20mA$
Voltage drop	$20mV$
Rated value U_n	$\pm 20mV.....10V$
Impedance	$100 k\Omega / volt$
Working range	$\pm 125\% I_n$
Overload continuous	$4 \times I_n$
Overload continuous	$1.5 \times U_n$

OUTPUT

Rated value mA	$0-1/5/10/20$ & $4-20mA$
Load resistance	$10/2/1/0.5 k\Omega$
Rated value volts	$0-5 / 10$ & $1-5 V$

ADJUSTMENT

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

AUXILIARY

A.C. Voltage	$115 / 230 / 400 V (\pm 25\% / 45-65 Hz / < 2VA)$
--------------	---

D.C. Voltage	$24 / 48 / 110 V (\pm 20\% / galvanically isolated / < 3W)$
--------------	---

WEIGHT & CASE SIZE	Approx. $0.4 kg$. $100mm$ case
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INSULATION

Test voltage	$1.5 kV$ between Input/ Output/Case $500 volt$ between each output
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SELECTION GUIDE

M100-DM3 One input three outputs

TYPICAL APPLICATIONS

The M100-DM3 takes 1 DC Input and provides 3 isolated outputs all directly proportional to the input. The outputs can all be of the same D.C. Value or can be different.

Typically this product is used to prevent earth loops between measuring devices. For example the M100-DM3 could have its input signal provided by a M100-WA4 watt transducer with $4-20mA$ output. The 3 outputs from the M100-DM3 could be as follows.

Output A = $4-20mA$ fed to a PLC.

Output B = $0-20mA$ fed to a analogue meter scaled in kW.

Output C = $1-5 volt$ fed to a chart recorder.

The isolation between the Input / Output / Case is $1.5kV$ and the isolation between each output is $500 volts$.

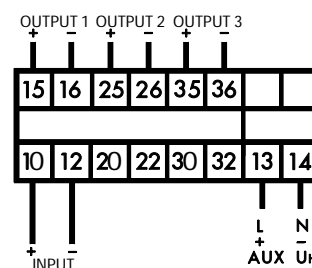
ORDERING INFORMATION

Product Code	Input	In	Output	Aux.	Freq.	Options
M100-DM3	$1mA$	A = $1mA$	$230V$	$50Hz$		B = $4-20mA$ C = $10V$

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 temperature other than $23^\circ C$

CONNECTION DIAGRAMS



M100-DM3

DC CURRENT SUMMATION



TECHNICAL SPECIFICATIONS

INPUT

Rated value I_n	$\pm 0-1\text{mA} \dots 20\text{mA}$
Voltage drop	20mV
Working range	$\pm 125\%$
Overload continuous	$4 \times I_n$
Overload continuous	$1.5 \times U_n$

OUTPUT

Rated value mA	$0-1/5/10/20$ & $4-20\text{mA}$
Load resistance	$12/2.4/1.2/0.6 \text{ k}\Omega$
Rated value volts	$0-5 / 10$ & $1-5 \text{ V}$

ADJUSTMENT

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

AUXILIARY

A.C. Voltage	$115 / 230 / 400 \text{ V} (\pm 25\% / 45-65 \text{ Hz} / < 2\text{VA})$
D.C. Voltage	$24 / 48 / 110 \text{ V} (\pm 20\% / \text{galvanically isolated} / < 3\text{W})$

WEIGHT & CASE SIZE Approx. 0.4 kg, 55mm case

SELECTION GUIDE

M100-DS1	DC current 1 input
M100-DS2	DC current 2 inputs
M100-DS3	DC current 3 inputs
M100-DS4	DC current 4 inputs

ORDERING INFORMATION

Product Code	Input	In	Output	Aux.	Freq.	Options
M100-DS1	1mA		4-20mA	230V	50Hz	

TYPICAL APPLICATIONS

The M100-DS series of summation transducer take up to four inputs and provide an output signal directly proportional to the sum of the inputs.

A typical application is the summation of total kW of four separate generating sets e.g. the four individual kW readings are provided by M100-WA4 transducers with 0-1mA output signals. The M100-DS4 summates the four 0-1mA signals and provides a single output signal that is directly proportional the sum of the total kW of all four generators.

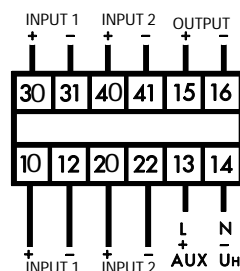
It is important to note the following when using summation transducers, to ensure the correct reading is obtained :-

The current and voltage ratios must be identical otherwise the subsequent summation will be meaningless.

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 temperature other than 23°C

CONNECTION DIAGRAMS



M100-DS2 / DS3 / DS4

REMOTE RESISTANCE



TECHNICAL SPECIFICATION

INPUT

Rated range	min. 100 ohms.... max. 50 kOhms
Sensor current	min. 20uA.... max. 10mA
Sensor voltage	1 Volt
Working range	0-100% R_N

OUTPUT

Rated value mA	1/5/10/20 & 4-20mA
Rated value volts	0-5 / 10 & 1-5 V

ADJUSTMENT

Zero	0-35%
Span	65-100%

AUXILIARY

A.C. Voltage	115 / 230 / 400 V ($\pm 25\%$ / 45-65 Hz / < 2VA)
D.C. Voltage	24 / 48 / 110 V ($\pm 20\%$ / galvanically isolated / < 3W)

WEIGHT & CASE SIZE Approx. 0.4 kg. 55mm case

NOTE

No isolation is provided between input and output

SELECTION GUIDE

M100-RPN Resistance measurement

TYPICAL APPLICATIONS

The M100-RPN is designed to measure the resistance of 3 wire potentiometers, where the resistance value is proportional to the position of the wiper of the potentiometer. The output value from the M100-RPN is directly proportional to the resistance value at the wiper.

A typical application is monitoring remote resistance of potentiometer used in manual valve control.

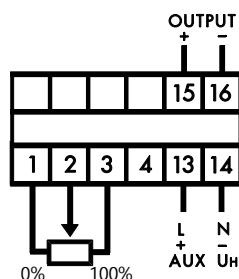
ORDERING INFORMATION

Product Code	Input	Output	Aux.	Freq.	Options
M100-RPN	2 kOhm	0-20mA	230V	50Hz	

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 temperature other than 23°C

CONNECTION DIAGRAM



M100-RPN

TAP POSITION



TECHNICAL SPECIFICATION

INPUT

Rated range	min. 100 ohms.... max. 20 kOhms
Sensor current	min. 50uA.... max. 10mA
Sensor voltage	<1 Volt
Working range	0-125% Rn

OUTPUT

Rated value mA	0-1/5/10/20 & 4-20mA
Rated value volts	0-5 / 10 & 1-5 V

ADJUSTMENT

Zero	±2%
Span	±10%

AUXILIARY

A.C. Voltage	115 / 230 / 400 V (± 25% / 45-65 Hz / < 2VA)
D.C. Voltage	24 / 48 / 110 V (± 20% / galvanically isolated / <3W)

WEIGHT & CASE SIZE Approx. 0.4 kg. 55 mm case

NOTE

No isolation is provided between input and output

SELECTION GUIDE

M100-TAP Resistance measurement

TYPICAL APPLICATIONS

The M100-TAP measures the value of resistance on tap position changers, typically used on high voltage transformers. Each position on the selector has an equal value of resistance so that as the tap position is increased or decreased the value of resistance increases or decrease respectively. The M100-TAP measure the value of this resistance and provides an output proportional to the value of the number of taps selected.

The M100-TAP can also be used to measure variable resistance 2 or 3 wire systems.

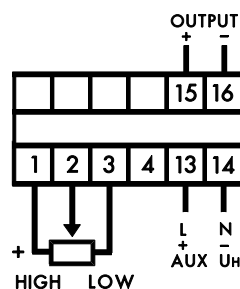
ORDERING INFORMATION

Product Code	No Taps	Output	Aux.	Freq.	Options
M100-TAP	10	5 mA	230V	50Hz	

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 temperature other than 23°C

CONNECTION DIAGRAM



M100-TAP

RTD TEMPERATURE



TECHNICAL SPECIFICATION

INPUT

2 or 3 wire input

Platinum Pt 100 Ohm RTD

min. span 20 Ohms ...max.

span 200 Ohms

Nickel Ni 120 Ohm RTD

min. span 24 Ohms....max.

span 240 Ohms

OUTPUT

Rated value mA

0-1/5/10/20 & 4-20mA

Rated value volts

0-5 / 10 & 1-5 V

ACCURACY

Class $\pm 0.5\%$

ADJUSTMENT

Zero

$\pm 2\%$

Span

$\pm 10\%$

AUXILIARY

A.C. Voltage

115 / 230 / 400 V ($\pm 25\%$ / 45-65 Hz / $< 2VA$)

D.C. Voltage

24 / 48 / 110 V ($\pm 20\%$ / galvanically isolated / $< 3W$)

WEIGHT & CASE SIZE

Approx. 0.3 kg. 55mm case

NOTE

No isolation is provided between input and output

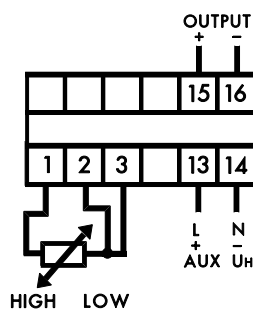
ORDERING INFORMATION

Product Code	RTD	Temp	O/p	Aux	Freq Options
M100-RTD	Pt 100	0-250°C	5 mA	230V	50Hz

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 temperature other than 23°C

CONNECTION DIAGRAM



M100-RTD

SELECTION GUIDE

M100-RTD RTD temperature measurement

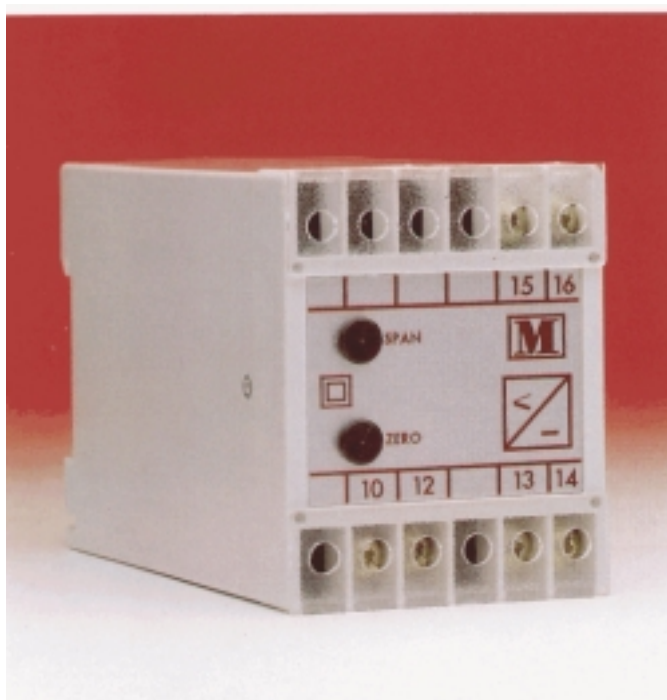
TYPICAL APPLICATIONS

The M100-RTD monitors the resistance of either 100 Ohm Platinum, or 120 Ohm Nickel. The RTDs resistance increase as the temperature rises, this resistance change is detected by the M100-RTD, which provides an output corresponding to the temperature being measured.

The temperature versus resistance values, are provided by the supplier of the RTD used.

RTD measurement of temperature is used in large transformers and large motors, to ensure winding temperatures do not rise to a level that would damage the winding.

THERMOCOUPLE TEMPERATURE



SELECTION GUIDE

M100-TJ1 Type J thermocouple
M100-TK1 Type K thermocouple

TYPICAL APPLICATIONS

The M100-TJ1 and TK1 measure the millivolt drop of J and K type thermocouples respectively.

Thermocouples are made from two dissimilar metals and as the temperature rises, the mV across the thermocouple increases. The millivolts developed corresponds to the change in temperature, thermocouple manufacturers provide tables showing temperature versus voltage drop.

The M100 TJ1 / TK1 measures this voltage change and converts it to an output signal that corresponds to the temperature being monitored. The output from the M100-TJ1/TK1 is not linearised

Thermocouple temperature measurement is used in a variety of applications, including monitoring of temperature of furnaces etc.

The M100 thermocouple transducer is provided with automatic cold junction temperature compensation over the range 0-50 °C. Also provided is thermocouple break protection should the thermocouple leads break, the output from the transducer will go to its maximum or minimum output value, depending on which option is chosen at time of ordering.

TECHNICAL SPECIFICATION

INPUT

Type J Fe/Const. Min. range 0-185°C (min. span 10mV)
Max range 0-870 °C (max. span 50mV)
Type K NiCr/NiAl Min. range 0-245 °C (min. span 10mV)
Max. range 0-1230 °C (max. span 50mV)

Impedance >10kOhm

Thermocouple Break protection

Upscale or down scale optional

Cold junction

compensation

Automatic over the range 0-50 °C

Overload

10 x input continuous

OUTPUT

Rated value mA 0-1/5/10/20 & 4-20mA

Load resistance 12/2.4/1.2/0.6 kOhm

Rated value volts 0-5 / 10 & 1-5 V

ADJUSTMENT

Zero ±2%

Span ±10%

AUXILIARY

A.C. Voltage 115 / 230 / 400 V (± 25% / 45-65 Hz / < 2VA)

D.C. Voltage 24 / 48 / 110 V (± 20% / galvanically isolated / <3W)

WEIGHT & CASE SIZE Approx. 0.4 kg. case 55mm

NOTE

No isolation is provided between input and output

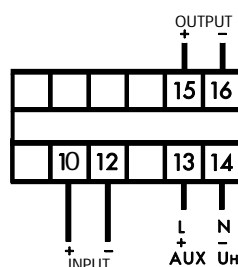
ORDERING INFORMATION

Product Code	Temp.	O/p.	Aux.	Freq.	Options
M100-TK1	0-500°C	1 mA	120V	60Hz	Up scale

OPTIONS

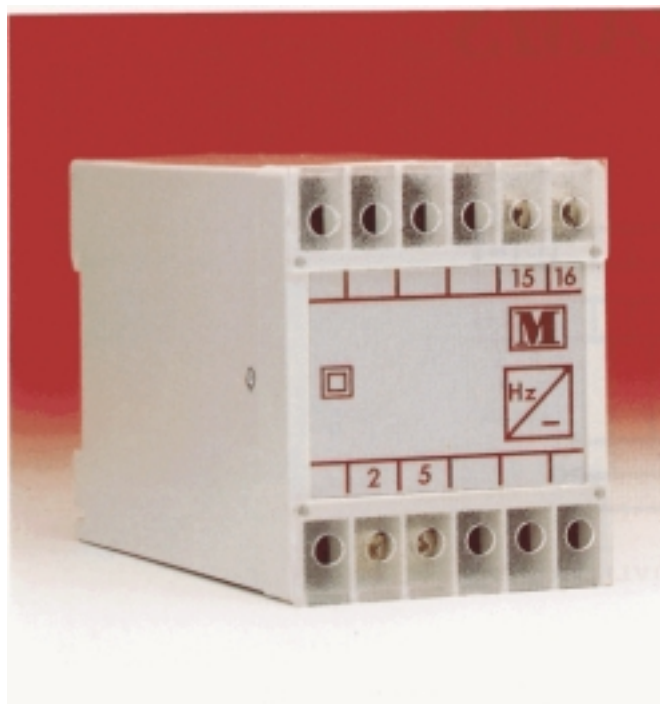
1. Non standard inputs / outputs only as far as technically acceptable.
2. A.C. Auxiliary in range 57.7 to 450 volts
3. Calibration at temperature other than 23°C
4. Up or down scale break protection

CONNECTION DIAGRAMS



M100-TJ1 / TK1

FREQUENCY TRANSDUCER



TECHNICAL INFORMATION

INPUT

Input range Hz 0-100Hz minimum span
voltage range 0- volts

Input range Hz 0-10kHz maximum span
Voltage range 0- volts

Working range $\pm 125\%$ Hz

Overload continuous $1.5 \times U_n$

OUTPUT

Rated value mA 0-1/5/10/20 & 4-20mA

Load resistance 12/2.4/1.2/0.6 kOhm

Rated value volts 0-5 / 10 & 1-5 V

ADJUSTMENT

Zero $\pm 2\%$

Span $\pm 10\%$

AUXILIARY

A.C. Voltage 115 / 230 / 400 V ($\pm 25\%$ / 45-65 Hz / $< 2VA$)

D.C. Voltage 24 / 48 / 110 V ($\pm 20\%$ / galvanically isolated / $< 3W$)

WEIGHT & CASE SIZE Approx. 0.4 kg. 55mm case

SELECTION GUIDE

M100-FE1 Frequency range 0-10kHz

TYPICAL APPLICATIONS

The M100-FE1 measure the frequency of the input signal and provides a DC output that is directly proportional to the input frequency.

The FE1 can accept frequency or pulse inputs over a wide range.

The frequency range is 0-10kHz, with the minimum span being 100Hz and maximum span 10kHz.

The M100-FE1 can be used in a wide variety of application such as speed measurement taking its input signal from a proximity sensor, flow measurement etc.

Isolation of 1.5kV is provided between the input and the output signal allowing the output to be fed to conventional analogue meters, digital meters, PLC and computer systems.

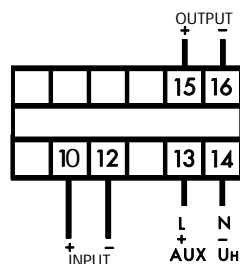
ORDERING INFORMATION

Product code	I/P Hz	I/P Un	Output	Aux	Freq.	Options
M100-FE1	600Hz	10V	4-20mA	230V	50Hz	

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 temperature other than 23°C

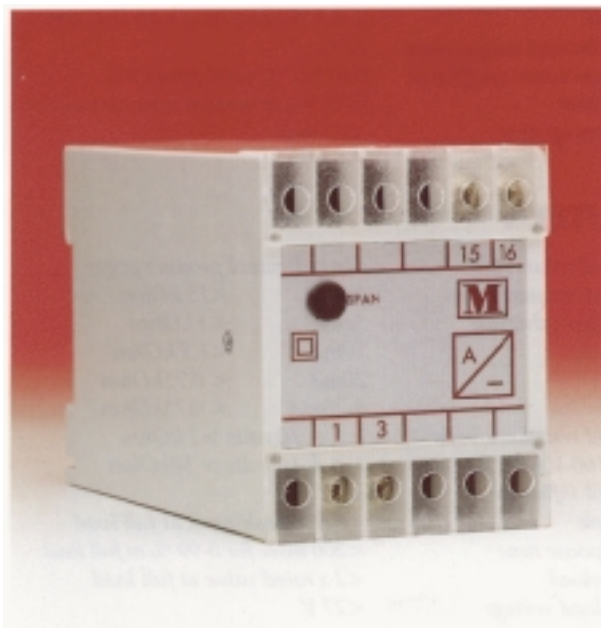
CONNECTION DIAGRAM



M100-FE1

2 WIRE TRANSMITTERS

AC CURRENT



SELECTION GUIDE

M700-AL1 2 Wire transmitter, ave. sensing, RMS calibrated.

TYPICAL APPLICATIONS

The M700 series are 2 wire transmitters.

The M700-AL1 converts the A.C. Input current signal to a 4-20mA D.C. Output. The output is directly proportional to the input signal.

2 Wire transmitters like the M700-AL1, obtain the power to operate from the 4-20mA output circuit to which they are connected, and therefore require no separate auxiliary supply. The M700-AL1 is average sensing RMS calibrated current transmitter.

2 Wire transmitters have an advantage over conventional auxiliary powered transducer, because no separate auxiliary is required, savings in the cost of providing a separate auxiliary supply and wiring are made.

The above units are used to measure current in energy management systems, switchboards, generator and telemetry controls. Isolation of 4kV is provided between the input and output signal, allowing the output to be fed to conventional analogue meters, digital meters, PLC, and computer systems.

ORDERING INFORMATION

Product Code	Input	In	Output	Options
M700-AL1	5A		4-20mA	

OPTIONS

1. Calibration at temperature other than 23°C

TECHNICAL SPECIFICATION

INPUT

Rated value In	1 or 5 Amp C.T. connected 0.5-10 Amp direct connected
Working range	10-125% In
Rated Frequency	40- 400 Hz
Frequency influence	0.005 % / Hz
Overload continuous	4 x In
Overload for 1 sec.	50 x In

Accuracy	0.2%
Linearity	<0.1%
Repeatability	± 0.05% of span
Common mode rejection	130dB
Input impedance	0.1 Ohm
Response time	<250mSec 0-90% at full load

OUTPUT

DC current	4-20mA
Drive voltage	24 volts (max. 35 volts)
DC volt drop	12 volts dc max.
Output load change effect	0.1% up to RL max.
Max. loop load (Ohms)	$\frac{V_{supply} - 12V}{0.02}$

ADJUSTMENT

Zero	± 1%
Span	± 10%

ISOLATION

Between input & output	4kV RMS 50Hz for 1 minute
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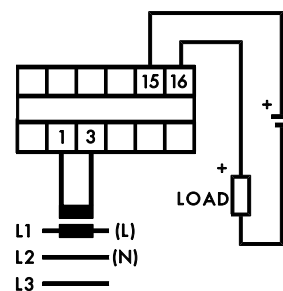
ENVIRONMENTAL

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

WEIGHT & CASE

M700-AL1	Approx. 0.2 kg. 55mm case
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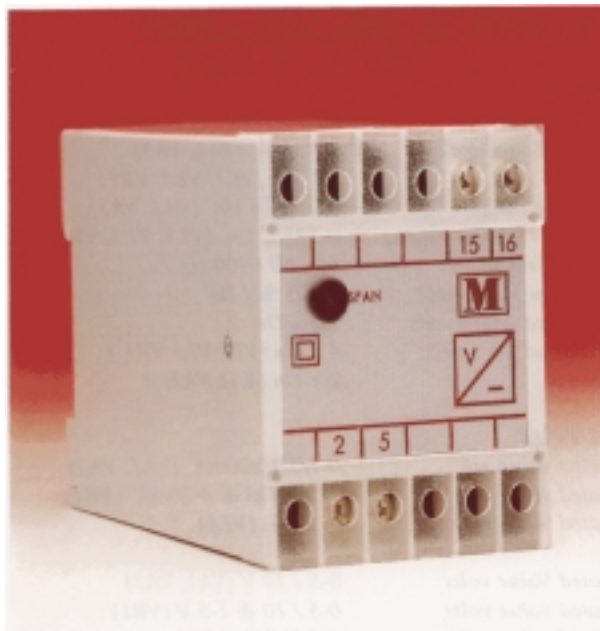
CONNECTION DIAGRAM



M700AL1

2 WIRE TRANSMITTERS

AC VOLTAGE



SELECTION GUIDE

M700-VL1 2 Wire transmitter, ave. sensing, RMS calibrated.

TYPICAL APPLICATIONS

The M700 series are 2 wire transmitters.

The M700-VL1 converts the a.c. input voltage signal to a 4-20mA d.c. Output. The output is directly proportional to the input signal.

2 Wire transmitters like the M700-VL1, obtain the power to operate from the 4-20mA output circuit to which they are connected, and therefore require no separate auxiliary supply. The M700-VL1 is average sensing RMS calibrated current transmitter.

2 Wire transmitters have an advantage over conventional auxiliary powered transducer, because no separate auxiliary is required, savings in the cost of providing a separate auxiliary supply and wiring are made.

The above units are used to measure voltage in energy management systems, switchboards, generator and telemetry controls. Isolation of 4kV is provided between the input and output signal, allowing the output to be fed to conventional analogue meters, digital meters, PLC, and computer systems.

ORDERING INFORMATION

Product Code	Input	In	Output	Options
M700-VL1	110V	4-20mA		

OPTIONS

1. Calibration at temperature other than 23°C

TECHNICAL SPECIFICATION

INPUT

Rated value U_n	0-600 Volts AC
Working range	10-125% I_n
Rated Frequency	40- 400 Hz
Frequency influence	0.005 % / Hz
Overload continuous	1.5 x U_n
Overload for 1 sec.	2 x U_n
Accuracy	0.2%
Linearity	<0.1%
Repeatability	± 0.05% of span
Common mode rejection	130dB
Input impedance	0.1 Ohm
Response time	<250mSec 0-90% at full load

OUTPUT

DC current	4-20mA
Drive voltage	24 volts (max. 35 volts)
DC volt drop	12 volts dc max.
Output load change effect	0.1% up to R_L max.
Max. loop load (Ohms)	$\frac{V_{supply} - 12V}{0.02}$

ADJUSTMENT

Zero	± 1%
Span	± 10%

ISOLATION

Between input & output	4kV RMS 50Hz for 1 minute
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ENVIRONMENTAL

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

WEIGHT & CASE

M700-VL1	Approx. 0.2 kg. 55mm case
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CONNECTION DIAGRAM

