

## **RM3-AV**

AC Volts Transmitter  
(True RMS)  
Operation and  
Instruction Manual



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## Introduction

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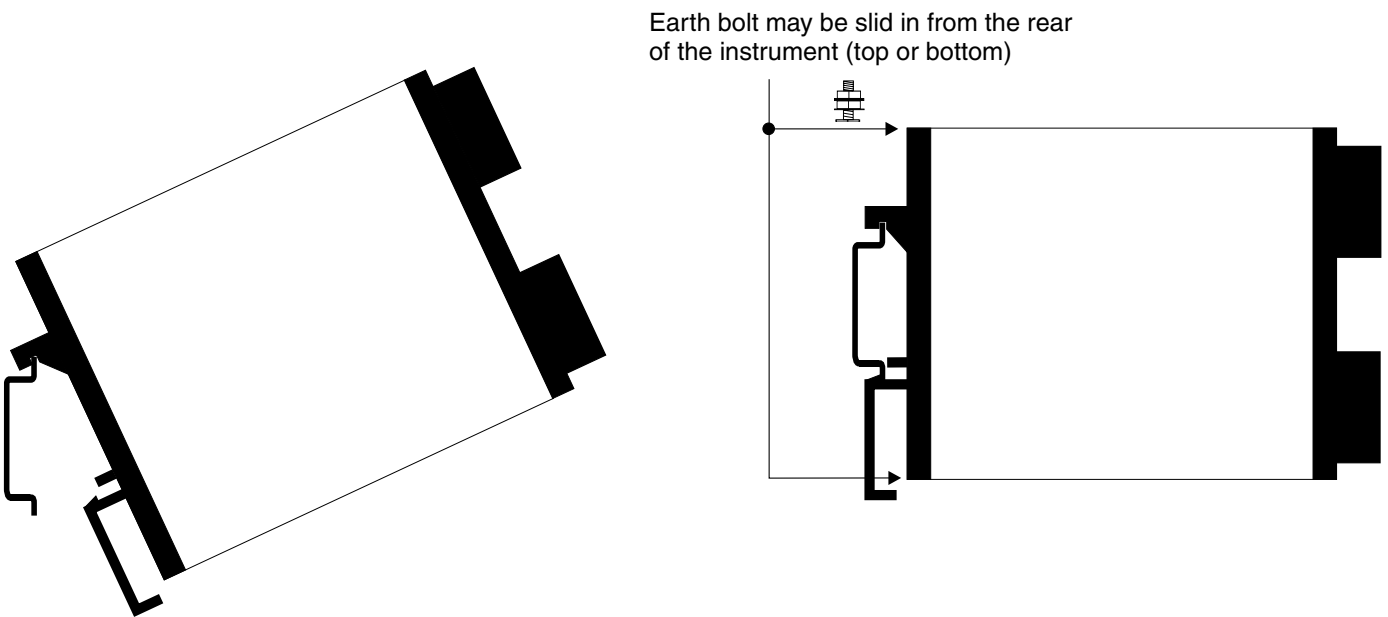
This manual covers the installation and operation of the RM3-AV AC volts true RMS transmitter . The RM3 accepts inputs in the ranges 1.5V, 15V, 150V or 250V RMS (link selectable) and produces a loop powered 4-20mA output which is zero and span adjustable. For voltages above 250V RMS an external voltage transformer can be used to lower the input voltage to a suitable range. A DC link selection is also provided, with the DC link in any DC component of the AC waveform will be measured. With the DC link out only the AC components of the waveform will be measured. The RM3-AV is available in one, two, three or four channel versions. An optional inbuilt loop supply board is available for use with one or two channel models.

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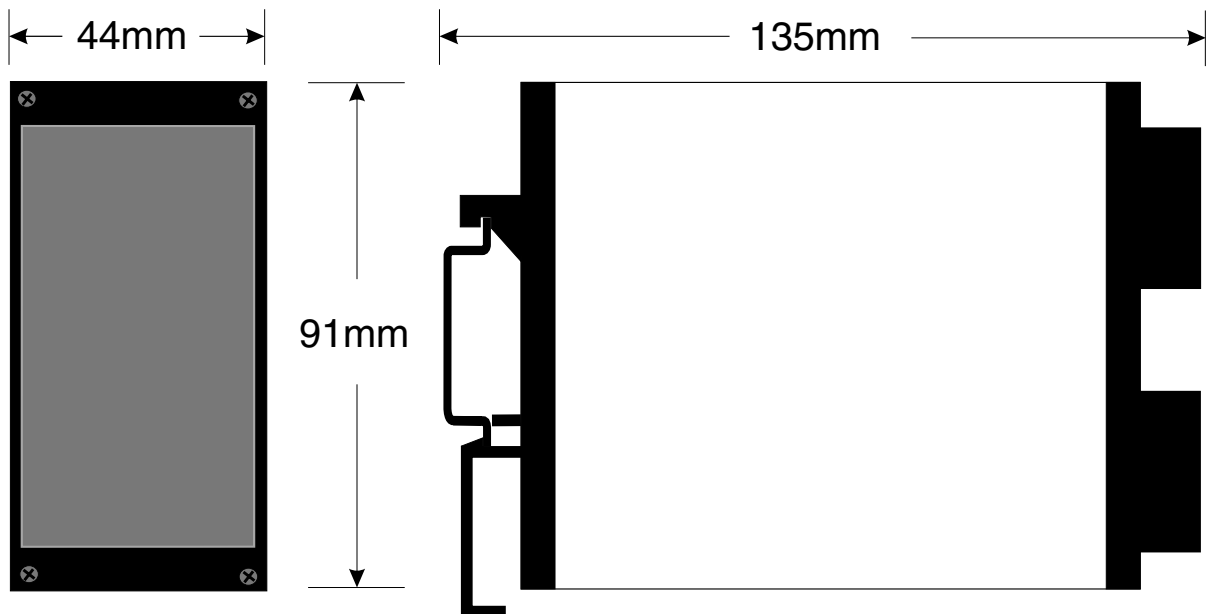
## Mechanical Installation

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The RM3 clips onto a standard 35mm DIN rail as shown below.

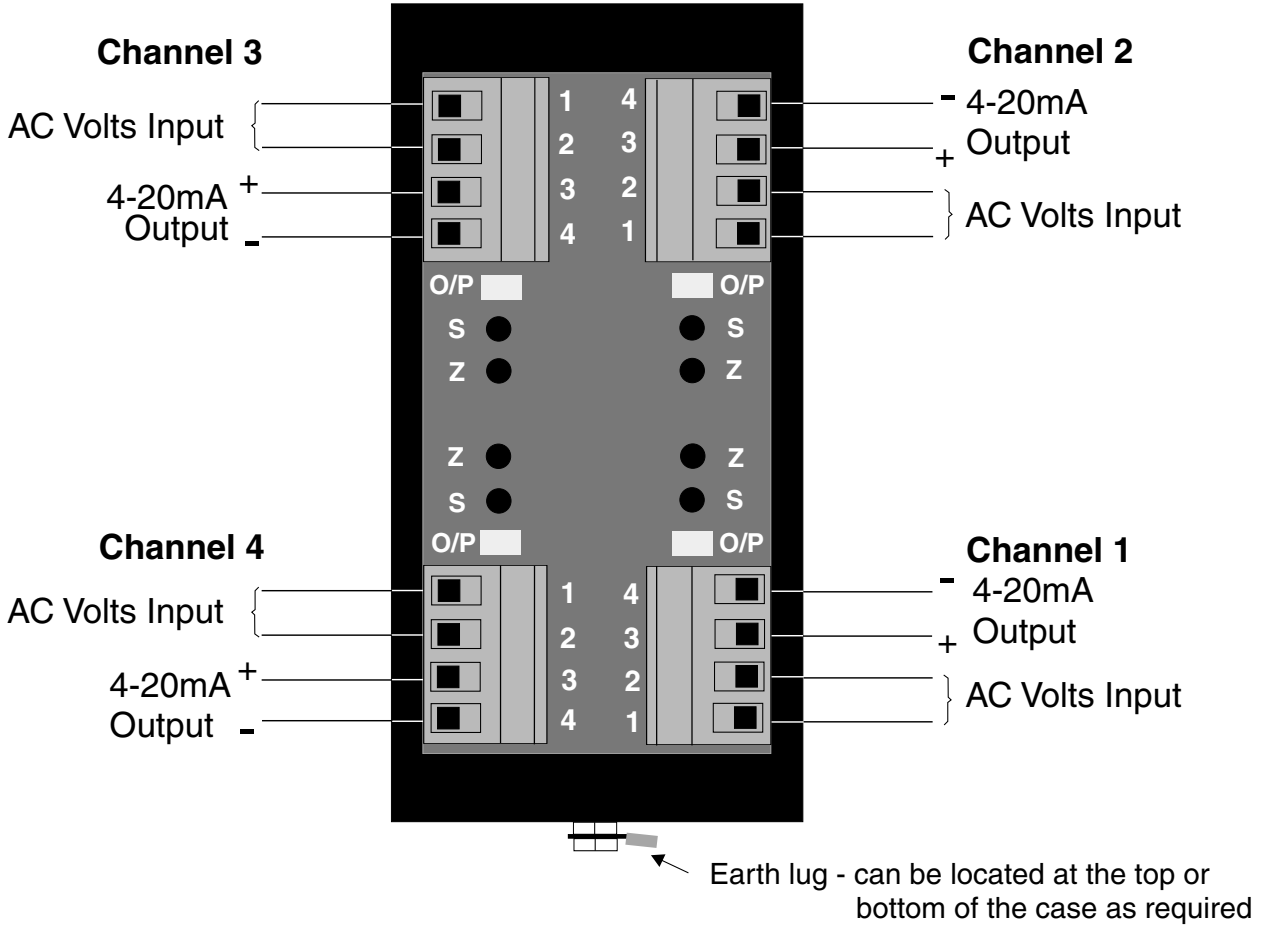


### Dimensions



# Electrical Installation

Plug in type screw connector terminal blocks are provided for ease of installation. The terminal blocks allow for wires of up to 2.5mm<sup>2</sup> to be fitted. Connect the wires to the appropriate terminals as indicated in the diagram below. For EMC compliance the case of the instrument should be earthed via the case earth lug. The diagram below shows a 4 channel version.

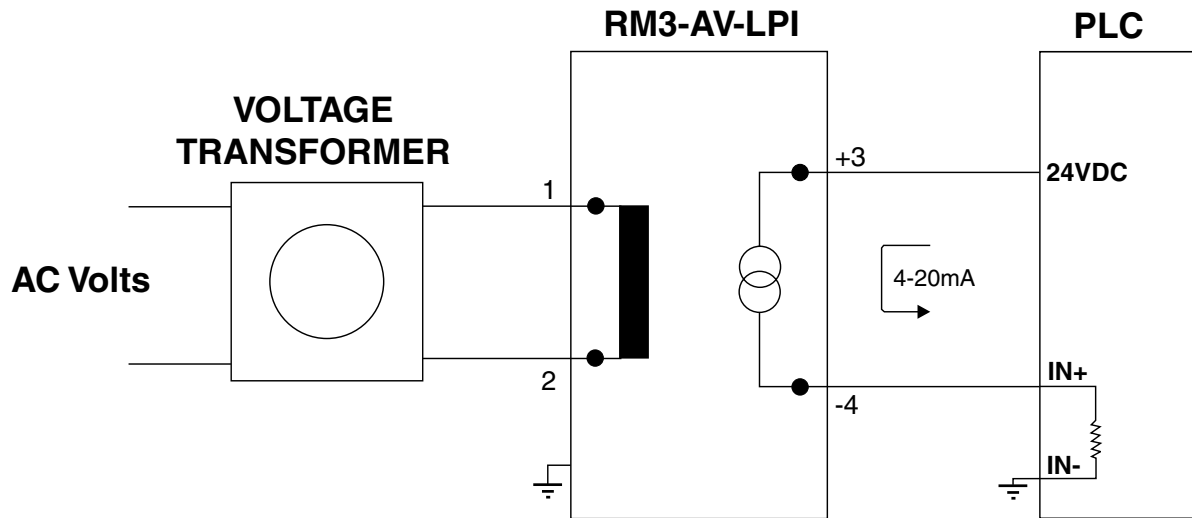


1 AC VOLTS INPUT 2 AC VOLTS INPUT	4 CHANNELS
3 4-20mA OUTPUT +VE 4 4-20mA OUTPUT -VE	
RM3-AV-LPI-4	SERIAL No :

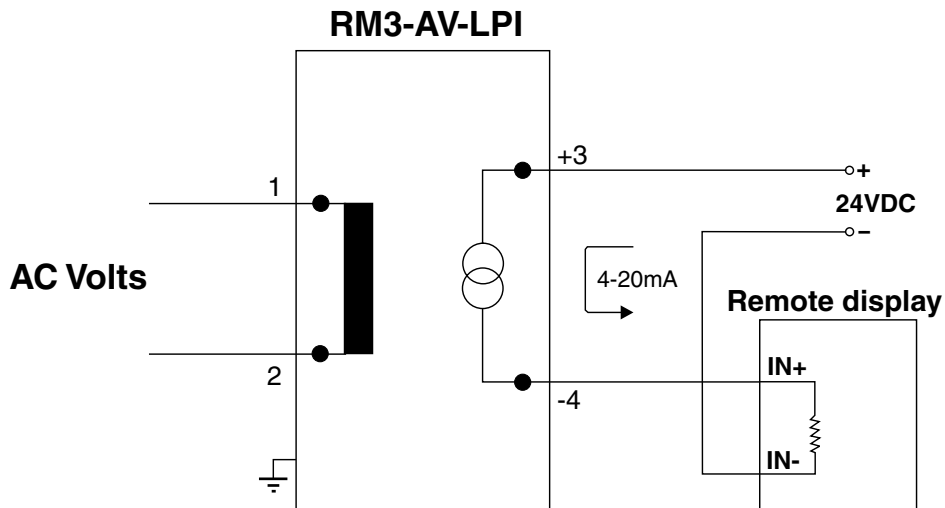
Instrument data label - 4 channel example

## Typical interconnection diagram

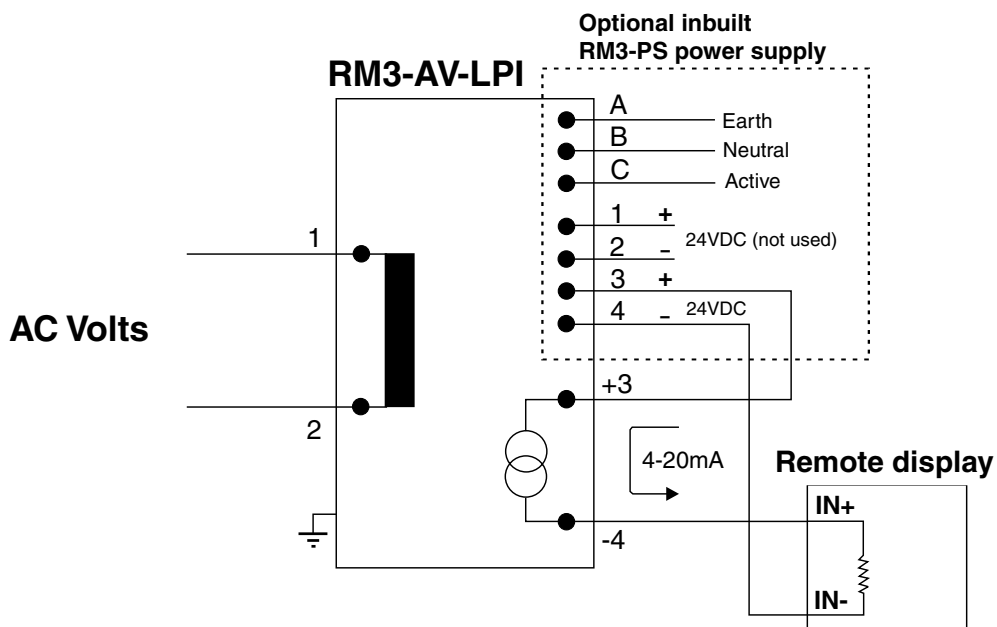
**Example 1** - connection to PLC using PLC supplied 24VDC to power the output loop. External voltage transformer used to step down input voltage.



**Example 2** - connection to a remote display using external 24VDC supply to power the output loop.

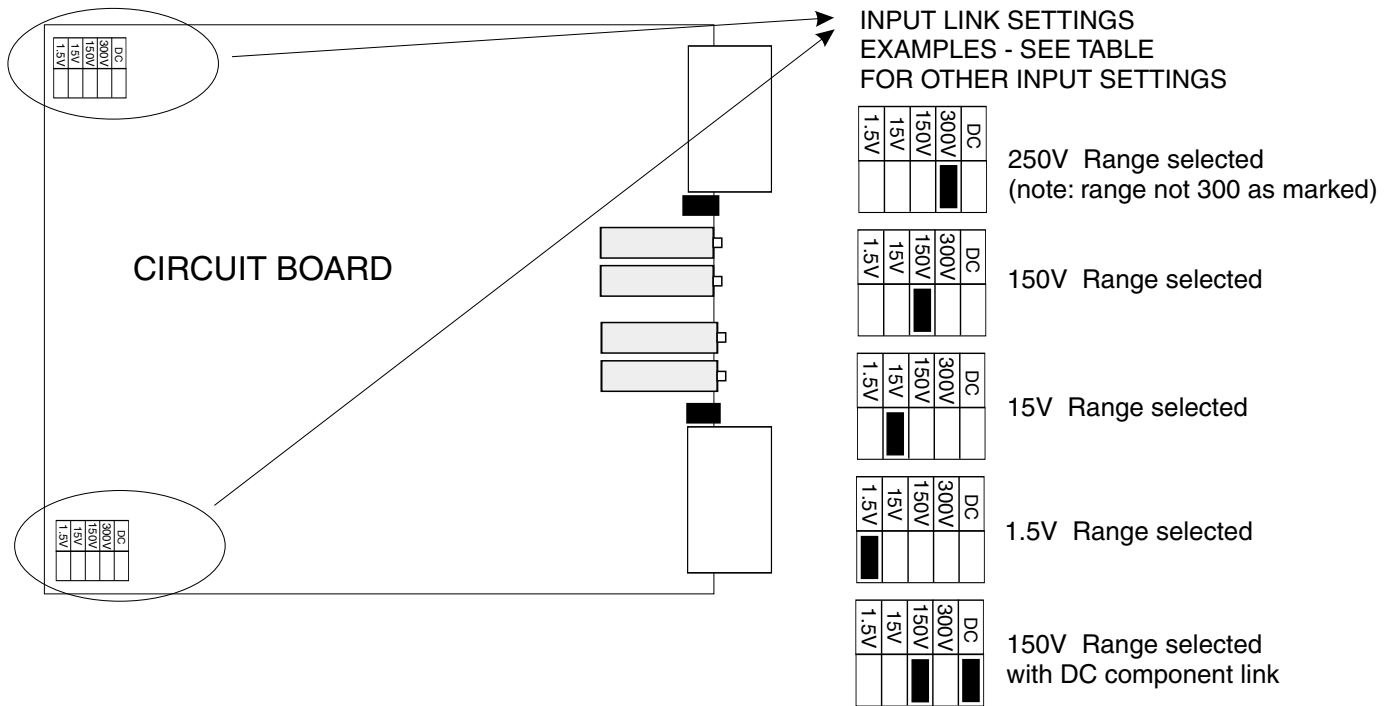


**Example 3** - connection to a remote display using the optional internal RM3-PS dual 24VDC output power supply to power the output loop.



# Input range links

To gain access to the input range link settings remove the four front bezel screws and the single screw which passes through the side of the instrument then slide out the bezel and circuit boards. If more than one board is fitted they are joined via a single multi way connector and can be pulled apart.



## Zero and Span Adjustment

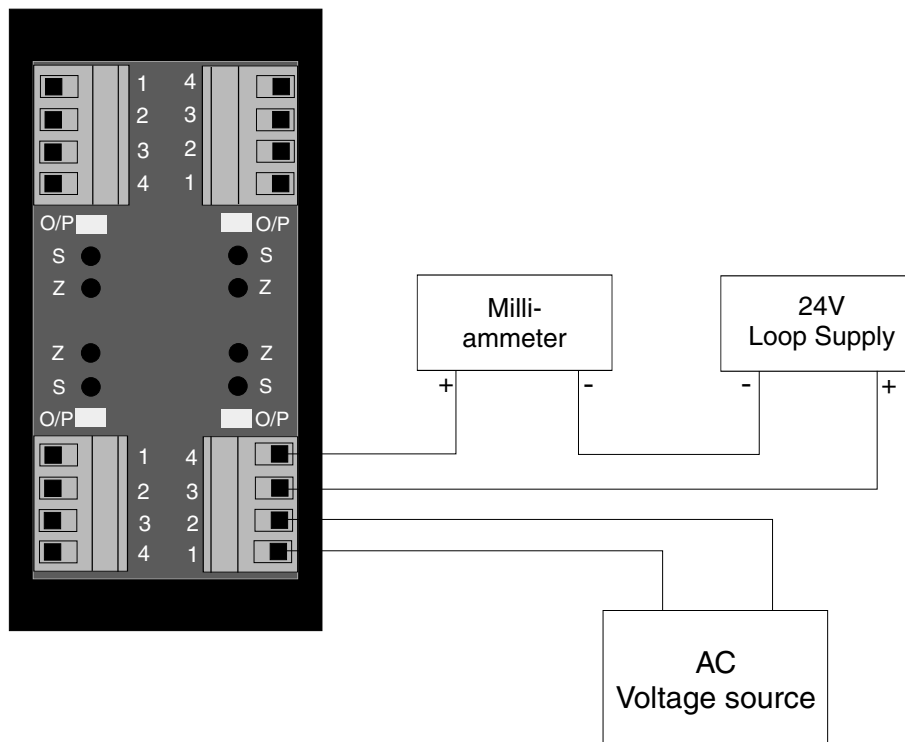
Each channel of the RM3-AV is adjustable for zero and span. Adjustment is via front panel potentiometer. The procedure for zero and span adjustment is given below.

1. Ensure that the input links have been set for the correct input type.
2. Using a simulator live input set the input to the level required for a 4mA output.
3. Measure the output using a milli-ammeter and adjust the zero potentiometer until the output is 4mA.
4. Using a simulator live input set the input to the level required for a 20mA output.
5. Adjust the span potentiometer until the meter reading is 20mA.
6. Repeat steps 2 to 5 until the output at both 4 and 20mA are correct to the required tolerance.

Note: The RM3-AV is able to be spanned over a part of its input range if required. A table giving span range for each input is given below.

Maximum Input Range	Typical Zero Adjustment Range	Typical Span Adjustment Range
0 to 1.5V	0 to 0.075V	1.2 to 1.8V
0 to 15V	0 to 0.75V	12 to 18V
0 to 150V	0 to 7.5V	120 to 180V
0 to 250V	0 to 15V	240 to 250V

An example of a typical zero and span adjustment measurement setup is shown below.



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## Specifications

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### TECHNICAL SPECIFICATIONS

Input:	Link selectable 0-1.5, 0-15, 0-150 or 0-250VAC with DC link to allow DC component of the waveform to be taken into account if required.
Output:	4-20mA (true RMS measurement)
Supply:	Loop powered. Loop supply voltage required 9 to 34VDC
Accuracy:	0.5% of full scale (pure sinewave input)
Linearity:	Better than 0.5%
Response Time:	<0.5 sec to 1% Response time is specified over the stated RMS input level with the input signal increasing from zero. Response time will be greater for decreasing amplitude signals
Protection:	Reverse polarity output protection
Isolation:	2kV between channels and input/output (for 60 seconds).
Loop Supply:	9 to 34VDC
Maximum Load:	$R_L = \frac{\text{Supply (V)} - 9}{0.02}$ Ohms
Load Effects:	Effect on accuracy of changing load resistance is no greater than 0.1% of full scale
Ambient temp:	0 to 60°C
Humidity:	5 to 95% non condensing

### PHYSICAL CHARACTERISTICS

Case size:	44mm x 91mm x 120mm
Mounting:	35mm DIN Rail mount (EN50022)
Connections:	Plug in screw terminals (max 2.5mm <sup>2</sup> wire)
Weight:	250 gms for one channel 300 gms for two channels 350 gms for three channels 400 gms for four channels

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## Guarantee & Service

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The product supplied with this manual is guaranteed against faulty workmanship for a period of 2 years from the date of dispatch.

Our obligation assumed under this guarantee is limited to the replacement of parts which, by our examination, are proved to be defective and have not been misused, carelessly handled, defaced or damaged due to incorrect installation. This guarantee is VOID where the unit has been opened, tampered with or if repairs have been made or attempted by anyone except an authorised representative of the manufacturing company.

Products for attention under guarantee (unless otherwise agreed) **must be returned to the manufacturer freight paid** and, if accepted for free repair, will be returned to the customer's address in Australia free of charge.

When returning the product for service or repair a full description of the fault and the mode of operation used when the product failed must be given.

In any event the manufacturer has no other obligation or liability beyond replacement or repair of this product.

Modifications may be made to any existing or future models of the unit as it may deem necessary without incurring any obligation to incorporate such modifications in units previously sold or to which this guarantee may relate.

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This product is designed and manufactured in Australia.