

RM3-RT-LPN

Pt100 RTD Input
4-20mA Output Transmitter
Operation and Instruction Manual

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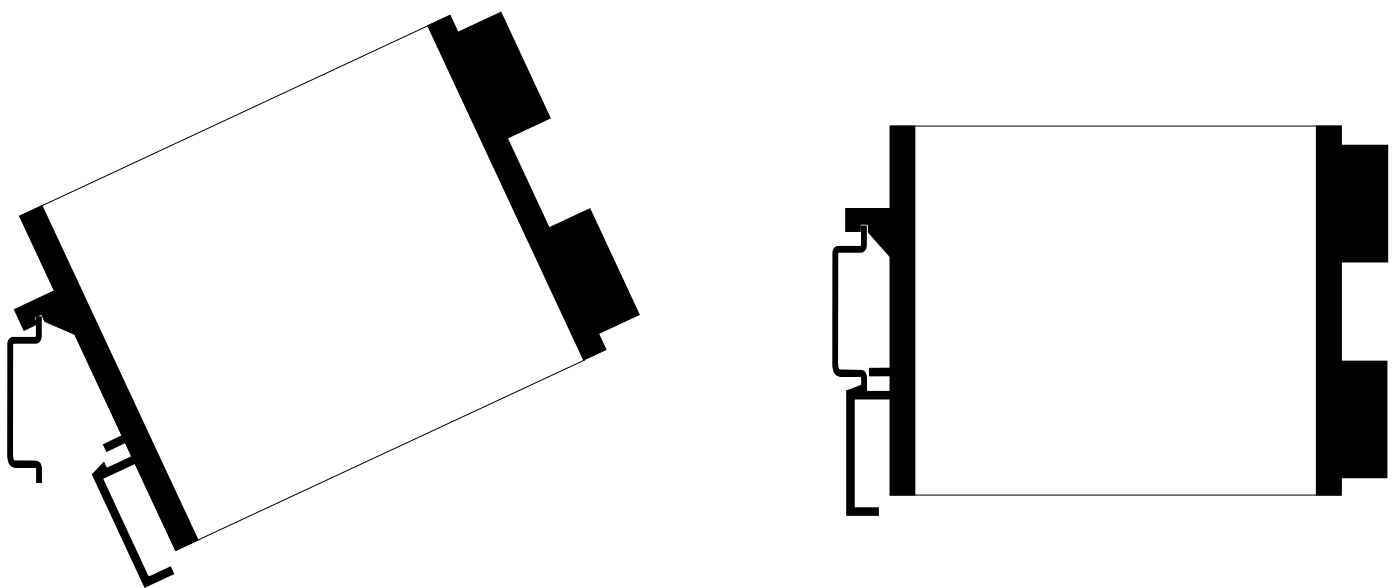
Introduction

This manual covers the installation and operation of model RM3-RT-LPN. The model RM3-RT accepts 100Ω RTD (PT100) inputs and has 4-20mA, loop powered outputs. The RM3-RT is available with one, two, three or four input/output channels. Reverse polarity and over current protection is provided on each output channel. A LED indicator is provided for each channel. The brightness of the LED will vary with output level, 20mA giving the brightest output.

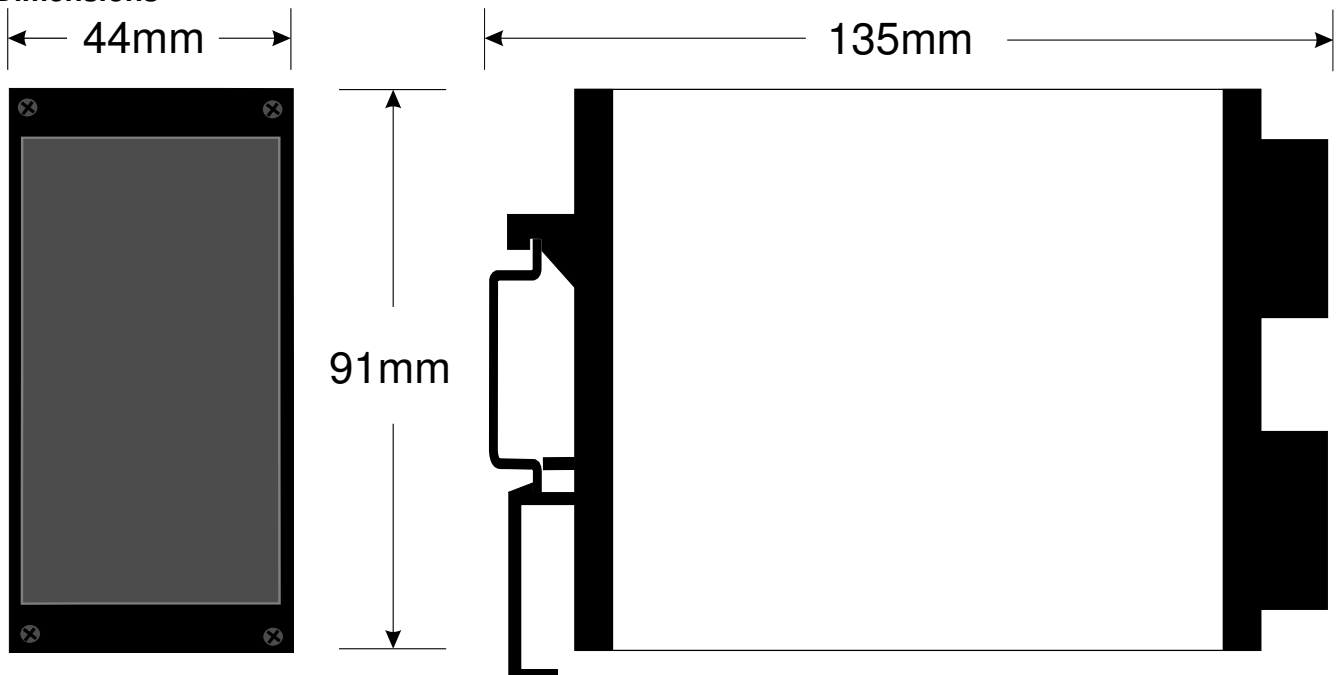
Zero & span adjustment is via front panel potentiometers marked Z and S. Range selection is via internal printed circuit board links.

Mechanical Installation

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

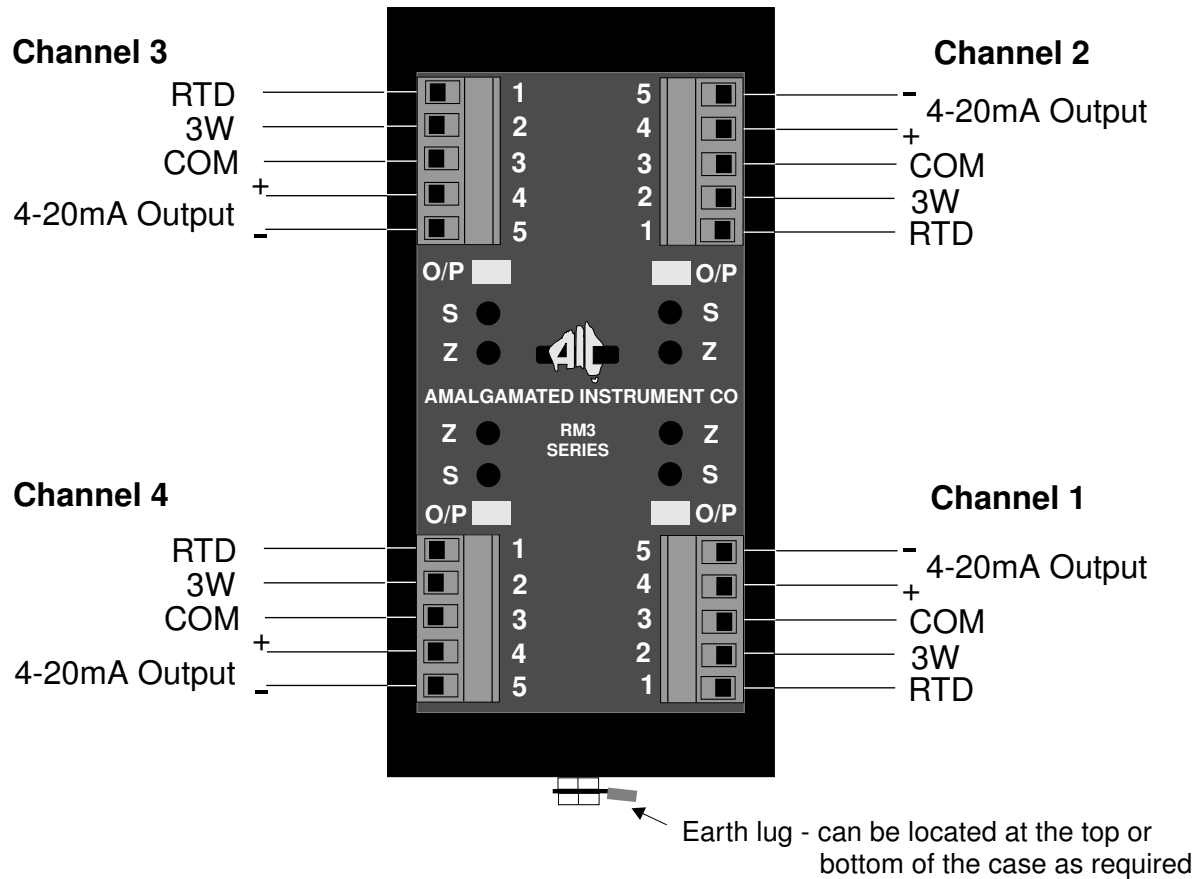


Dimensions



Electrical Installation

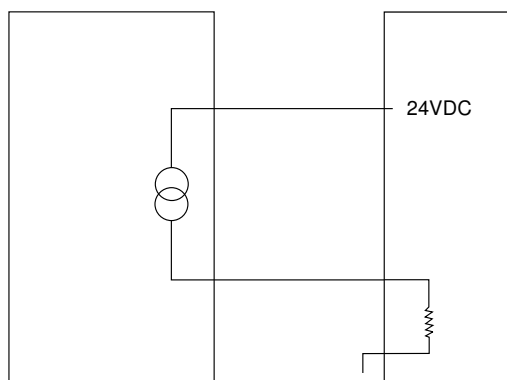
Plug in type screw connector terminal blocks are provided for ease of installation. The terminal blocks allow for wires of up to 1.5mm² to be fitted. Connect the wires to the appropriate terminals as indicated in the diagram below, connections for a 4 channel instrument are shown. A case earth lug which can be placed at the top or bottom of the instrument is provided.



Data label example (located on instrument case)

1	INPUT	RTD	4 CHANNELS
2	INPUT	3W	
3	INPUT	COM	
4	4-20mA OUTPUT	+VE	
5	4-20mA OUTPUT	-VE	
RM3-RT-LPN-4		SERIAL No :	

Typical interconnection diagrams - loop powered



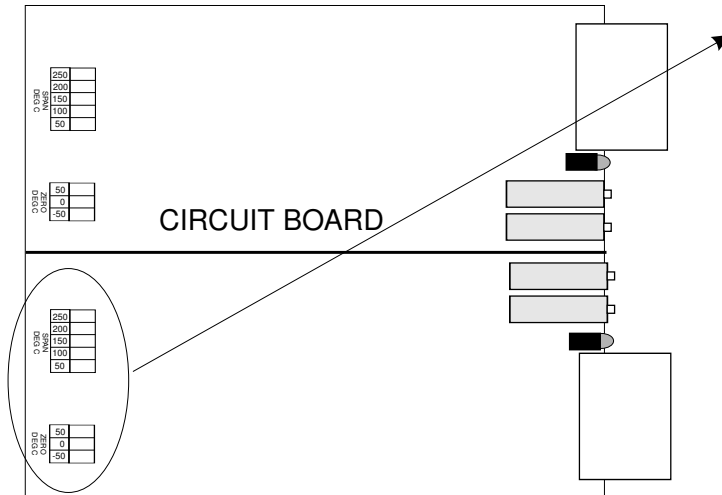
Zero & Span Adjustment Table

The table below shows the potentiometer zero and span adjustment possible with all possible link settings. Note the span value should be added to the zero value to calculate the measuring range e.g. a zero link setting of 50° and a span link setting of 250° will give a nominal measuring range of 50° to 300°, similarly a zero link setting of -50° and a span setting of 50° will give a nominal measuring range of -50° to 0°.

Zero link setting °C	Adjustment range °C
50	±5° approx.
0	±5° approx.
-50	±5° approx.
Span link setting °C	
250	±10° approx.
200	±20° approx.
150	±20° approx.
100	±20° approx.
50	±20° approx.

Zero & Span Link Settings

ZERO & SPAN LINK SETTING EXAMPLES



SPAN DEG C	250	
	200	
	150	
	100	
	50	█

Range = -50 TO 0°
Span Link = 50

ZERO DEG C	50	
	0	
	-50	█

Zero Link = -50

SPAN DEG C	250	
	200	
	150	█
	100	
	50	

Range = 0 TO 150°
Span Link = 150

ZERO DEG C	50	
	0	█
	-50	

Zero Link = 0

SPAN DEG C	250	
	200	
	150	
	100	█
	50	

Range = 50 TO 150°
Span Link = 100

ZERO DEG C	50	█
	0	
	-50	

Zero Link = 50

Zero and Span Adjustment

Each channel of the RM3-RT-LPN is individually adjustable for zero and span. Adjustment is via front panel potentiometers marked Z (zero) and S (span). The procedure for zero and span adjustment is given below.

1. If changes to the zero and span links are required then remove the front bezel by unscrewing the four screws in the front bezel and pulling off the front bezel. Remove the earth screw at the side of the case (there will be 2 earth screws, one on each side of the case, if the instrument has more than 2 channels). The circuit board or boards will now slide out of the case.

Change the zero and span links as required (see Page 4) then re-assemble the instrument.

2. Attach a milliammeter and power supply to the output terminals as shown on Page 4.

3. Using a calibrator or live input at the temperature required for 4mA output adjust the zero potentiometer until the milliammeter shows a reading of 4mA (or 4.0 etc.).

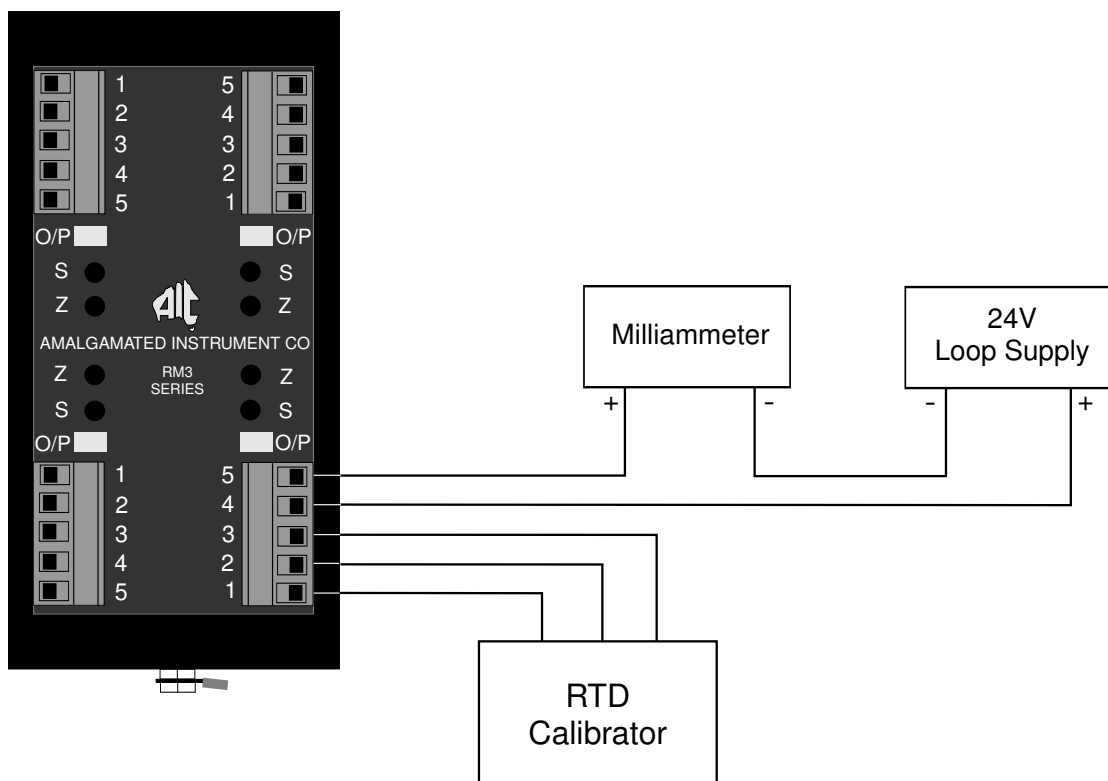
Note: If it is not possible to input the exact value for 4mA then input a value corresponding to an output of as close to 4mA as you can and adjust the zero potentiometer until the required mA output for this input is reached. For example if 0° is the 4mA input and the span is 100° then a RTD live input of 10° could be used and the zero potentiometer adjusted to give an output reading of 5.6mA. This figure is calculated by knowing that 10° is 10% of the input span and 1.6mA is 10% of the output span (4mA + 1.6mA gives the required output value of 5.6mA).

4. Change the calibrator or live input to the required value for a 20mA output. Adjust the span potentiometer until the milliammeter shows a reading of 20mA (or 20.00 etc.).

Note: If it is not possible to input the exact value for 20mA then input a value corresponding to an output of as close to 20mA as you can and adjust the zero potentiometer until the required mA output for this input is reached. For example if 0° is the 4mA input and the span is 100° then a RTD live input of 85° could be used and the span potentiometer adjusted to give an output reading of 17.6mA.

5. Repeat steps 3 and 4 until the required zero and span values are consistently read. No more than two or three repeats should be needed (more if a value other than 4mA was used as the to set the zero potentiometer).

Typical Zero and Span adjustment setup



Specifications

TECHNICAL SPECIFICATIONS

Input:	Pt100 RTD 2 or 3 wire
Output:	4-20mA, non isolated
Zero & span:	Link selectable Zero -50, 0 or 50°C adjustable Span 50 to 250°C adjustable
Supply:	Output - Loop powered 13 to 36VDC nominal. Supplies should be regulated and filtered.
Accuracy:	Better than 0.1% of full scale when calibrated
Linearity:	Better than 0.1 % of full scale when calibrated
Response Time:	0.5 sec to 1%
Protection:	Reverse polarity and over current output protection
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 135mm
Mounting:	35mm DIN Rail mount (EN50022)
Connections:	Plug in screw terminals (max 1.5mm ² wire)
Weight:	230 gms for single channel 250 gms for dual channel 300 gms for three channel 320 gms for four channel

OPTIONAL

Power supply:	Inbuilt power supply providing 2 x 24V isolated outputs. Separate DIN rail mount or can be fitted internally in single or dual channel RM3 transmitters. Models available powered from 240VAC or 110VAC.
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Specifications are subject to change without notice

Guarantee & Service

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 customers 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.