

LPN-R-H Head Mount RTD Transmitter.

Programmable, Linearised, 3 Wire
RTD Input to 4~20mA Output
Loop Powered Transmitter.

Features.

- Field Programmable.
- Pt100 RTD Standard Input.
- High Accuracy 0.1%.
- Linear With Temperature
- LED Indication of Current Loop (CL).
- Low Cost.
- Easy to Install.
- Compact Industrial Head Mount Enclosure.
- Dual mounting holes for 33mm or 40mm.
- Available Standard or Special Calibration.
- Reverse Polarity Protection.
- Also Available in Conduit Box, or with DIN Rail Mount Foot.



Ordering Information.

LPN-R-H Standard Calibration; Pt100, 0~100C Input, Upscale Break.

LPN-R-H - - -
EN SB Range. eg. -50/50C

Note 1. Ranges can be specified within the following limits. Zero Range: -100C to 100C. Span Range: 30C to 600C.

Note 2. Downscale Sensor Break is factory set and minimum order quantities apply.

ENCLOSURE (EN)		SENSOR BREAK (SB)	
I	Standard LPN-R-H head mount transmitter.	U	Upscale
C	LPN-R-H in Conduit Two Way J-Box 20mm.	D	Downscale
D	LPN-R-H mounted on DIN Rail Mount Foot.		

Ordering Examples.

LPN-R-H-I-U 0~100C

LPN-R-H; Industrial Head Mount; Pt100, 0~100C Input; Upscale Sensor Break.

LPN-R-H-C-U 0~50C

LPN-R-H; Conduit Two Way J-Box 20mm; Pt100, 0~50C Input; Upscale Sensor Break.

Specifications.

RTD Input.	Pt100 DIN (3 Wire type).
Sensor Current.	0.5mA Nominal.
Lead Wire Resistance.	5Ω/Wire max.
Zero Range	-100C to 100C. (-165 to 210F)
Span Range	30C to 600C. (55 to 1080F)
Output	2 wire 4~20mA. (Loop Powered.)
Power Supply.	10~33Vdc. (Loop Powered).
Supply Voltage Sensitivity.	<±0.005%/V FSO.
Output Load Resistance	700Ω @ 24Vdc. (50Ω/V above 10Vdc.)
Maximum Output Current	Limited to <26mA Typical.
Sensor Fail	-Upscale 23mA Min. Typical.
	-Downscale 3.8mA Max. Typical.
EMC Emissions & Immunity Compliance	EN 55022-A & EN 50082-1
Response time	200msec Typical. (From 10 to 90 % 50msec Typical.)
Accurate to	<±0.1% FSO Typical.
Linearity & Repeatability.	<±0.1% FSO Typical.
Ambient Drift.	<±0.01%/C FSO Typical
RF Immunity.	<1% Effect FSO Typical.
Operating Temperature.	-20~80C.
Storage Temperature.	-30~90C.
Operating Ambient Humidity.	5~95% RH Max. Non-condensing.

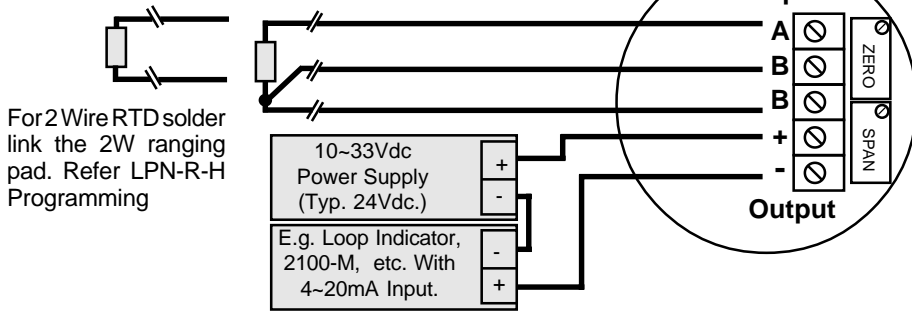
Product Liability. This information describes our products. It does not constitute guaranteed properties and is not intended to affirm the suitability of a product for a particular application. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification. Regrettably, omissions and exceptions cannot be completely ruled out. No liability will be accepted for errors, omissions or amendments to this specification. Technical data are always specified by their average values and are based on Standard Calibration Units at 25C, unless otherwise specified. Each product is subject to the 'Conditions of Sale'.

Warning: These products are not designed for use in, and should not be used for patient connected applications. In any critical installation an independent fail-safe back-up system must always be implemented.

Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design / development, production and final inspection grant the long term reliability of the instrument.

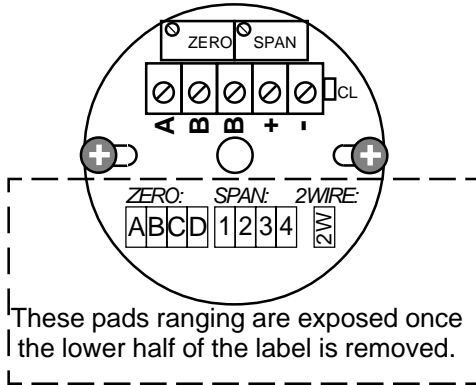
Example of LPN-R-H Connections.



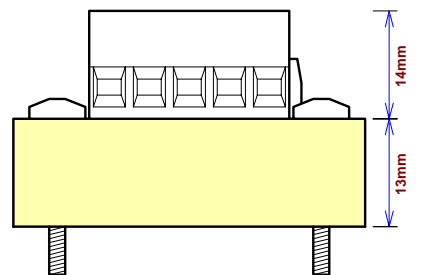
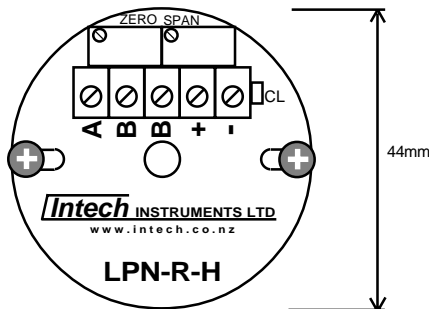
LPN-R-H Terminations.

Input		
1	A	RTD
2	B	Pt100
3	B	3 Wire
Output		
4	+mA Output	
5	-mA Output	

Location of LPN-R-H Solder Pads.

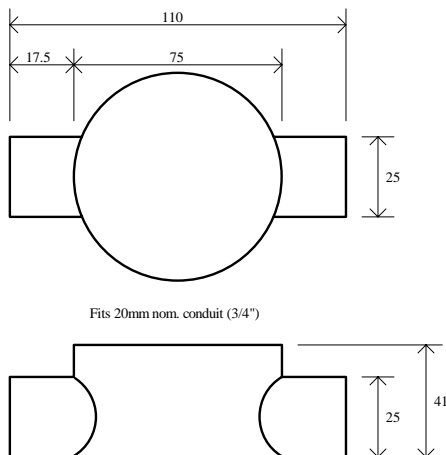


LPN-R-H Dimensions.



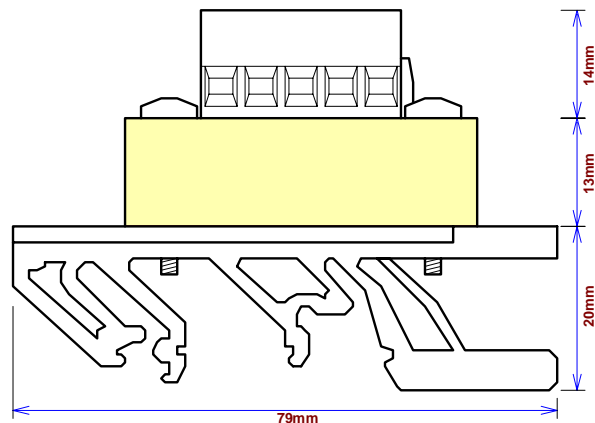
Screws can be placed at 33 or 40mm centres.

LPN-R-H-C Dimensions.



Marley Two Way J-Box, 20mm Code 22.20G

LPN-R-H-D Dimensions.



LPN-R-H Programming.

The Zero and Span can be set within the following values, as shown in the tables.

Refer to 'Location of LPN-R-H Solder Pads' for the positions of the Zero and Span Solder Pads.

Zero Solder Pad	Zero (C)	Zero (F)
A	From -105 to -55C	From -165 to 65F
B	From -55 to -5C	From -65 to 25F
C	From -5 to 45C	From 25 to 115F
D	From 45 to 100C	From 115 to 210F

Span Solder Pad	Span (C)	Span (F)
1	From 30 to 65C	From 55 to 115F
2	From 65 to 135C	From 115 to 245F
3	From 135 to 280C	From 245 to 505F
4	From 280 to 600C	From 505 to 1080F

E.g. 1. If a range of -50~50C is required.

Zero = -50C.

Solder Link 'B' LPN-R-H

Span = 50--50 = 100C

Solder Link '2' LPN-R-H

E.g. 2. If a range of 200~600F is required.

Zero = 200F. Solder Link 'D' LPN-R-H

Span = 600-200 = 400F Solder Link '3' LPN-R-H

Note. If the range cannot be attained using the Solder Pads shown in the tables above, try the next Solder Pad closest to the value you require.

To access the solder pads, the lower half of the label must be removed. Follow anti-static procedures at all times.

Use only an electronic temperature controlled soldering iron with a maximum tip width of 1.6mm, set to less than 380C.

Removing Solder: Do not use a 'solder sucker' to remove solder from the solder pads - they can lift pads and damage the PCB. Instead wipe the soldering iron tip with clean **dry** cotton material. The existing solder will adhere to the clean tip, removing it from the pads. This is a better and quicker method than using a solder sucker.

Resoldering Pads: To solder pads use a suitable electronic grade multicore solder. Check all solder joints are well made and in the correct positions. Use the minimum amount of solder necessary to make a join.

Failure to follow this procedure can result in unreliable performance due to damage to the PCB and solder pads lifting.

Once the range has been programmed, calibrate the LPN-R-H using the Span and Zero Pots.

Calibrate 0% = 4.00mA using the ZERO Pot. Calibrate 100% = 20.00mA using the SPAN Pot.

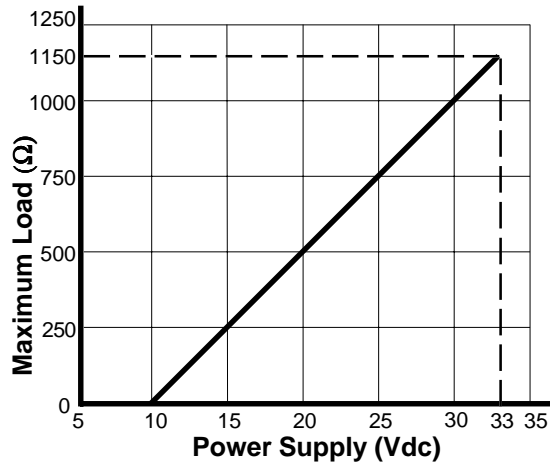
Repeat Zero and Span calibrations until readings are correct. Check 50% = 12.00mA ± 0.016mA (±0.1% linearity)

Once re-ranging and re-calibration is complete, the lower half of the label **MUST** be replaced with the new label, as provided with the LPN-R-H. This is essential to protect the solder pads from corrosion. Before mounting the new label ensure all contaminants are removed from the surface surrounding the solder pads and remove the adhesive from the back of the label. Carefully place the label over the lower half of the LPN-R-H and press firmly down ensuring all the edges are sealed.

Two Wire '2W'.

For 2 wire inputs, Solder Link the position marked '2W' or alternatively add a wire link between the two 'B' terminals.

Maximum Load Vs Power Supply.



The Proper Installation & Maintenance of LPN-R-H.

All power and signals must be de-energised before connecting any wiring or soldering pads.

MOUNTING.

- (1) Mount in a water proof industrial connection head, or in a clean electrical cabinet.
- (2) O-Rings are supplied fitted to the M4 screws between the LPN-R-H and the connection head, to allow for thermal expansion. Do not overtighten the M4 screws.
- (3) Do not subject to vibration or excess temperature or humidity variations.
- (4) Avoid mounting in cabinets with power control equipment.
- (5) To maintain compliance with the EMC Directives the LPN-R-H is to be mounted in a fully enclosed steel cabinet. The cabinet must be properly earthed, with appropriate input / output entry points, filtering, and cabling.

WIRING.

- (1) All cables should be good quality overall screened INSTRUMENTATION CABLE with the screen earthed at one end only.
- (2) Signal cables should be laid a minimum distance of 300mm from any power cables.
- (3) For 2 wire current loops Austral Standard Cables B5102ES is recommended. For three wire transmitters and RTD's Austral Standard Cables B5103ES is recommended.
- (4) It is recommended that you do not ground current loops and use power supplies with ungrounded outputs.
- (5) Lightning arrestors should be used when there is a danger from this source.
- (6) Refer to diagrams for connection information.

RTD'S.

- (1) Avoid locating the RTD where it will be in a direct flame.
- (2) Locate it where the average temperature will be measured. It should be representative of the mass.
- (3) Immerse the RTD far enough so that the measuring point is entirely in the temperature to be measured; nine to ten times the diameter of the protection tube is recommended. Heat that is conducted away from the measuring point causes a lower reading.

COMMISSIONING.

- (1) Once all the above conditions have been carried out and the wiring checked apply power to the LPN-R-H loop and allow five minutes for it to stabilize.
- (2) Due to differences in cable resistance in the RTD legs or errors within the RTD itself a small Zero error may occur (usually less than 0.5°C). To remove this error use a calibration standard RTD at the same immersion depth and adjust the ZERO Pot with a small screwdriver, until the two levels agree. (Clockwise to increase the output reading and anticlockwise to decrease the output reading)

MAINTENANCE.

- (1) Check RTD's in place - with a calibration RTD at the same immersion depth. Refer Commissioning.
- (2) Do it regularly - at least once every 6 months.
- (3) Replace defective protection tubes - even if they look good they may not be air or gas tight.
- (4) Check cables entering the RTD sensor head.
- (5) Keep rotary switches clean and free of oxidisation of contact points.

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