

USER INSTRUCTIONS



APAQ-HRF

Adjustable In-head Temperature Transmitters for Pt100 Sensors

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INOR

MADE IN SWEDEN



The manual must be read prior to adjustment and/or installation. All information subject to change without notice.

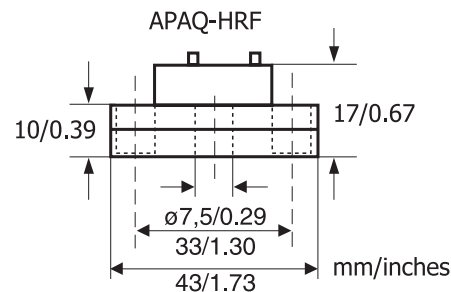
MEASURING MADE A LITTLE EASIER

INSTALLATION

Always use the cover when the transmitter is not in the configuration phase. The cover prevents the transmitter from getting dirt on the soldering pads as well as getting ESD by accidental touch of the soldering pads. Connect input, output and power supply acc. to fig. 2.

A convenient way to install the transmitter is to use the INOR mounting kits for in-head and DIN rail mounting, see figure 4 and 5. In order to minimize measuring errors make sure the connecting screws are tightened enough.

DIMENSIONS



IN-HEAD MOUNTING

Head mounting kit (APAQ-HRF) 70ADA00011

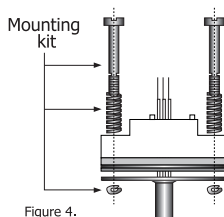
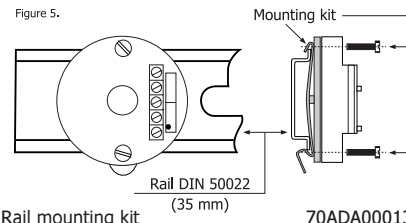


Figure 4.

DIN RAIL MOUNTING

Figure 5.

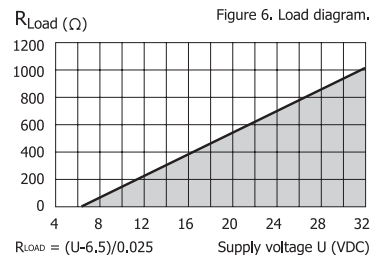


Rail mounting kit

70ADA00013

DATA (shortform)

Power supply: 6.5 to 32 VDC
 Input: Pt100 ($\alpha=0.00385$) 3-wire
 Configuration Zero-point: -50 to +50°C
 -60 to +120°F
 Configuration Span: 50, 100, 150, 200, 300, 400, 500°C
 100, 200, 300, 400, 600, 800, 1000°F
 Adjustment Span: $\pm 10\%$ of span
 ($\pm 5\%$ for 600, 800, 1000°F)
 Output: 4-20 mA temperature linear
 Operating temperature: -40 to +85°C
 -40 to +185°F



SWEDEN

INOR
PROCESS AB

ADDRESS PO Box 9125
S-200 39 MALMÖ, Sweden
 PHONE Domestic 040-31 25 60
International +46-40-31 25 60
 FAX Domestic 040-31 25 70
International +46-40-31 25 70
 E-MAIL support@inor.se

GERMANY

INOR
TRANSMITTER GmbH

ADDRESS Rodenbacher Chaussee 6
Gebäude 805
D-63457 Hanau-Wolfgang
 PHONE Domestic 06181-582940
International +49-6181-582940
 FAX Domestic 06181-582944
International +49-6181-582944
 E-MAIL inor.gmbh@t-online.de

USA

INOR
TRANSMITTER Inc.

ADDRESS 1860 Renaissance Blvd., Suite 203
Sturtevant, WI 53177, USA
 PHONE Domestic 1-888-430-INOR
(262) 884-4535
International +1-262-884-4535
 FAX Domestic (262) 884-4537
International +1-262-884-4537
 E-MAIL sales@inor.com

LIMITED WARRANTY

INOR Process AB, or any other affiliated company within the Inor Group (hereinafter jointly referred to as "Inor"), hereby warrants that the Product will be free from defects in materials or workmanship for a period of five (5) years from the date of delivery ("Limited Warranty"). This Limited Warranty is limited to repair or replacement at Inor's option and is effective only for the first end-user of the Product. Upon receipt of a warranty claim, Inor shall respond within a reasonable time period as to its decision concerning:

- 1 Whether Inor acknowledges its responsibility for any asserted defect in materials or workmanship; and, if so,
- 2 the appropriate cause of action to be taken (i.e. whether a defective product should be replaced or repaired by Inor).

This Limited Warranty applies only if the Product:

- 1 is installed according to the instructions furnished by Inor;
- 2 is connected to a proper power supply;
- 3 is not misused or abused; and
- 4 there is no evidence of tampering, mishandling, neglect, accidental damage, modification or repair without the approval of Inor or damage done to the Product by anyone other than Inor.

This Limited Warranty is provided by Inor and contains the only express warranty provided.

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Products that are covered by the Limited Warranty will either be repaired or replaced at the option of Inor. Customer pays freight to Inor, and Inor will pay the return freight by post or other "normal" way of transport. If any other type of return freight is requested, customer pays the whole return cost.

INTRODUCTION

The inhead 2-wire transmitter APAQ HRF is intended for temperature measurement in industrial environment. Input is 3-wire Pt100 sensor and output is a temperature linear 4-20mA signal. The burn-out detection is selectable, upscale or downscale.

GENERAL INFORMATION

It is suggested that the calibration is checked at least once a year. Recommended calibration equipment is a resistance source and a mA-meter, both with sufficient accuracy for your needed calibration accuracy, and a 24 VDC power supply. E.g. for a calibration accuracy of 0.1% we recommend calibration instruments with an accuracy of at least 0.02%.

The transmitter is polarity protected and will not be damaged by connecting the power supply with the wrong polarity, but the output will be 0 mA. The maximum load in the output loop depends on the supply voltage according to figure 6.

As all transmitters with potentiometer adjustments, this transmitter must not be exposed to heavy shocks or vibrations which may cause the transmitter to get out of calibration.

To avoid ESD (Electro Static Discharge) to the transmitter, which may cause permanent damage, always ground yourself by touching some grounded equipment before configuring the transmitter.

CALIBRATION

(To be carried out after Configuration)

1. Connect the transmitter to power supply, an input source and an ampere meter as shown in figure 2.
2. Apply an input signal to give an output of approximately 12 mA and leave the unit for 15 minutes, if possible in the ambient temperature it is intended to work in.
3. Apply I_{Nmin} corresponding to desired minimum input signal.
4. Adjust the Z-potentiometer to get $I_{out} = 4.00$ mA.
5. Apply I_{Nmax} corresponding to desired maximum input signal.
6. Adjust the S-potentiometer to get $I_{out} = 20.00$ mA.
7. Repeat 3-6 until readings converge.
8. Secure the potentiometer with lacquer. Calibration is completed.

CONNECTIONS

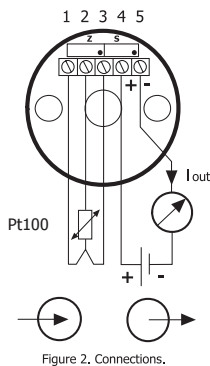


Figure 2. Connections.

CONFIGURATION

(To be carried out before Calibration)

Setting is done with solder jumpers. There are 9 positions and each position consists of 3 solder pads (see figure 1).

1. Select zero point in fig. 3. The solder jumper for position 9 is given for each interval in the figure.
2. Select span in table 1 (°C) or table 2 (°F).
3. Select burn-out detection in table 3.
4. Carry out the soldering of the jumpers according to the tables.

Table 1. APAQ-HRF Span configuration in °C.

Span	Solder jumpers
50 °C	Position 1 at 2
100 °C	Positions 1 at 2 and 3 at 4
150 °C	Positions 1 at 2, 3 at 4, and 4 at 5
200 °C	Positions 1 at 2, 3 at 4, 4 at 5, and 5 at 6
300 °C	Positions 1 at 2, 3 at 4, 4 at 5, 5 at 6, and 6 at 7
400 °C	Positions 1 at 2, 3 at 4, 4 at 5, 5 at 6, 6 at 7, and 7 at 8
500 °C	Positions 1 at 2, 3 at 4, 4 at 5, 5 at 6, 6 at 7, 7 at 8, and 8 at 9

Table 2. APAQ-HRF Span configuration in °F.

Span	Solder jumpers
100 °F	Position 1 at 2
200 °F	Positions 1 at 2 and 3 at 4
300 °F	Positions 1 at 2, 3 at 4, and 4 at 5
400 °F	Positions 1 at 2, 3 at 4, 4 at 5, and 5 at 6
600 °F	Positions 1 at 2, 3 at 4, 4 at 5, 5 at 6, and 6 at 7
800 °F	Positions 1 at 2, 3 at 4, 4 at 5, 5 at 6, 6 at 7, and 7 at 8
1000 °F	Positions 1 at 2, 3 at 4, 4 at 5, 5 at 6, 6 at 7, 7 at 8, and 8 at 9

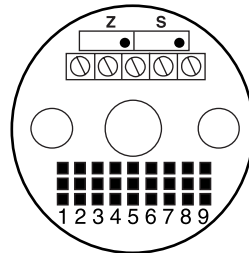


Figure 1. Illustration of solder jumpers.

Table 3. APAQ-HRF Burn-out configuration.

GBS	Solder jumpers
<3.5mA	Position 1 at 2
>23mA	Position 1 at 2 and 3 at 4

Figure 3. APAQ-HRF Zero-point configuration.

