



Cost-optimized Adjustable 2-wire Transmitter for Pt100 Input



APAQ-HRF is an analog, multirange 2-wire temperature transmitter for in-head mounting in DIN B or larger connection heads.

The 4-20 mA output is temperature linearized.

Designed for highest reliability and cost-efficiently manufactured, APAQ-HRF combines attractive pricing with high quality and industrial performance.

The Intrinsically Safe version, APAQ-HRFX, is available with ATEX and FM approval.

Multirange design

- Adjustable for different Pt100 ranges in both °C and °F.
- Adjustments are made with solder pads and potentiometers.

Temperature linear output

- Fully temperature linear 4-20 mA output offers accurate Pt100 measurements.

Adjustments APAQ-HRF/-HRFX

Zero adjustment	-50 to +50 °C		-60 to +120 °F				
Span selection							
°C	50	100	150	200	300	400	500
°F	100	200	300	400	600	800	1000

Easy mounting and access

- Flat design gives easy access to terminals and adjustments.
- Large center hole lets the lead wires or an insert tube pass easily.

Safety

- Genuine sensor break detection with selectable upscale or downscale action.
- Excellent EMC performance.

High load capacity

- Only 6.5 V voltage drop over the transmitter allows for high loads in the 4-20 mA output loop.

Industrial design

- The "Low Profile" housing, with its protected electronics, is extremely durable.

Cost-optimized

- High volumes combined with cost-effective design and production contributes to a very attractive pricing.

Specifications : APAQ-HRF/-HRFX

Input

Pt100 ($\alpha = 0.00385$), 3-wire connection	Adjustable to specific ranges within: -50 to +550 °C / -60 to +1120 °F
Sensor current	~1.1 mA
Max. sensor wire resistance	15 Ω / wire

Monitoring

Sensor break detection, selectable	Upscale ~25 mA, downscale ~3 mA
------------------------------------	---------------------------------

Adjustments

Zero	-50 to +50 °C / -60 to +120 °F
Span, selectable	50 to 500 °C / 100 to 1000 °F
Span, fine adjustment	$\pm 10\%$ ($\pm 5\%$ for 600 / 800 / 1000 °F)

Output

Current	4 - 20 mA
Linearity	Temperature linear
Current limitation	~ 25 mA
Permissible load	APAQ-HRF 700 Ω @ 24 VDC, 25 mA
	APAQ-HRFX 620 Ω @ 24 VDC, 25 mA

Temperature

Ambient, storage	-40 to +100 °C / -40 to +212°F
Ambient, operating	APAQ-HRF -40 to +85 °C / -40 to +185 °F
	APAQ-HRFX ATEX: T4 /+85 °C, T5 /+55 °C, T6 /+40 °C; FM: T4/+80 °C

General data

Response time 10-90%	≤ 0.2 s
Humidity (non-condensing)	0 to 95 %RH
Intrinsic safety	APAQ-HRFX ATEX: II 1 G EEx ia IIB T4, T5, T6 FM: Class I, Div.1, Group A-D

Power supply, polarity protected

Supply voltage	APAQ-HRF 6.5 to 32 VDC
	APAQ-HRFX 8.5 to 30 VDC
Permissible ripple	4 Vp-p @ 50/60 Hz

Accuracy

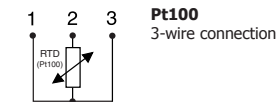
Linearity	$\pm 0.1\%$ of span
Calibration	$\pm 0.1\%$ of span
Temperature influence	$\pm 0.6\%$ of span/25 °C, $\pm 0.7\%$ of span/50 °F
Sensor wire influence	± 0.005 °C/ Ω / ± 0.009 °F/ Ω ¹⁾
RFI influence, 0.15-1000MHz, 10 V or V/m	$\pm 0.2\%$ of span (typical)
Supply voltage influence	$\pm 0.02\%$ of span/V
Supply ripple influence, 50/60 Hz, 4 Vp-p	$\pm 0.05\%$ of span
Long term stability	$\pm 0.1\%$ of span/year

Housing

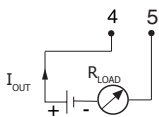
Material / Flammability(UL)	Zinc alloy + ABS / V0
Mounting	DIN B-head or larger
Connection, single/stranded wires	≤ 2.5 mm ² , AWG 14
Weight	40 g
Protection, housing with cover/terminals	IP 20 / IP 10

¹⁾ Per wire, with equal resistance

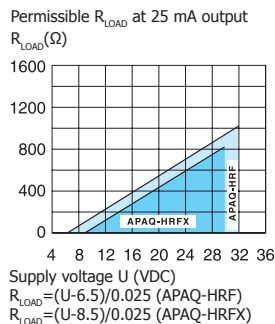
Input connections



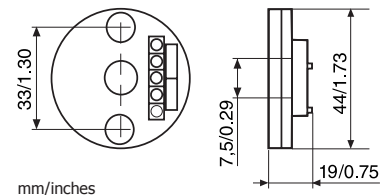
Output connections



Output load diagram



Dimensions



Ordering information

APAQ-HRF	70APHRF001
APAQ-HRFX (ATEX)	70APHRFX01
APAQ-HRFX (FM)	70APHRFX11
Head mounting kit	70ADA00011
Rail mounting kit	70ADA00013
Configuration	70CAL00001