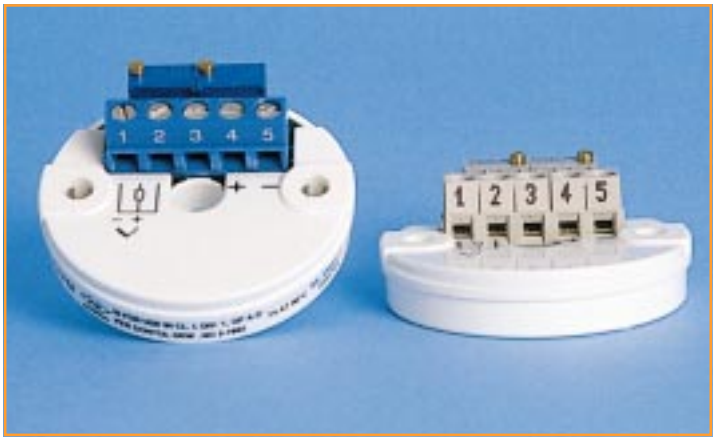
APAQ-H

Multirange
2-wire In-head Temperature Transmitters

Actual size



APAQ-H is a family of multirange 2-wire temperature transmitters for in-head mounting in DIN B or larger connection heads.

Designed for highest reliability and cost-efficiently manufactured, APAQ-H represents a family of transmitters that combine attractive pricing with high quality and excellent industrial performance.

Main features

Multirange design
- *APAQ-HRF for Pt100 input with selectable measurement ranges.*
- *APAQ-HCF for T/C J, L, T, K and N inputs with continuous range adjustment.*

Accurate measurements
- *Temperature linear 4-20 mA output for Pt100 input.*

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 action, upscale or downscale.*
- *Excellent EMC performance.*

High load capacity
- *Only 6.5 V voltage drop over the transmitter allows for high loads.*

Competitive pricing

5 year limited warranty

Description

APAQ-H is a family of analog, 2-wire, in-head transmitters with selectable ranges for Pt100 and selectable types and ranges for thermocouple input.

The "Low Profile" housing, with its protected electronics, is extremely durable and facilitates easy connections and adjustments.

APAQ-HRF is adjustable for different Pt100 ranges in both °C and °F and provides a temperature linear output.

APAQ-HCF covers 5 different thermocouple types, is continuously adjustable and provides a voltage linear output.

Adjustments are made with solder pads and potentiometers.

Intrinsically safe versions, APAQ-HRFX (Pt100) and APAQ-HCFX (T/C) are available with CENELEC and FM approvals.

Specifications

Input		APAQ-HRF/HRFX	APAQ-HCF/HCFX
Pt100 (α = 0.00385), 3-wire connection		Adjustable to specific ranges within:	
		-50 to +550 °C / -60 to +1120 °F	
Thermocouples			Selectable, type J, L, T, K and N with
			ranges within -5 to +55 mV
Sensor current		~1.1 mA	
Input impedance			>5 MΩ
Max. sensor wire resistance		15 Ω/wire	500 Ω (total loop)
Monitoring			
Sensor break detection, selectable		Upscale ~25 mA, downscale ~3 mA	Upscale ~25 mA, downscale ~3 mA
Adjustments			
Zero		-50 to +50 °C / -60 to +120 °F	±10 % of span
Span, selectable		50 to 500 °C / 100 to 1000 °F	10 to 50 mV
Span, fine adjustment		±10 % (± 5% for 600/800/1000°F)	±10 %
Output			
Current		4 - 20 mA	4 - 20 mA
Linearity		Temperature linear	Voltage linear
Current limitation		~ 25 mA	~ 25 mA
Permissible load	APAQ-HRF/HCF	700 Ω @ 24 VDC, 25 mA	700 Ω @ 24 VDC, 25 mA
	APAQ-HRFX/HCFX	620 Ω @ 24 VDC, 25 mA	620 Ω @ 24 VDC, 25 mA
Temperature			
Ambient, storage		-40 to +100 °C / -40 to +212°F	-40 to +100 °C / -40 to +212°F
Ambient, operating	APAQ-HRF/HCF	-40 to +85 °C / -40 to +185 °F	-40 to +85 °C / -40 to +185 °F
	APAQ-HRFX/HCFX	See "Intrinsic Safety specifications"	See "Intrinsic Safety specifications"
General data			
Response time 10-90%		- 0.2 s	- 0.2 s
Humidity (non-condensing)		0 to 95 %RH	0 to 95 %RH
Intrinsic safety	APAQ-HRFX/HCFX	CENELEC: EEx ia IIC T4, T5, T6	CENELEC: EEx ia IIC T4, T5, T6
		FM: Class I, Div.1, Gr.A-D	FM: Class I, Div.1, Gr.A-D
Power supply, polarity protected			
Supply voltage	APAQ-HRF/HCF	6.5 to 32 VDC	6.5 to 32 VDC
	APAQ-HRFX/HCFX	8.5 to 30 VDC [1]	8.5 to 30 VDC [1]
Permissible ripple		4 Vp-p @ 50/60 Hz	4 Vp-p @ 50/60 Hz
Accuracy			
Linearity		±0.1 % of span	±0.1 % of span
Calibration		±0.1 % of span	±0.1 % of span
Cold Junction Compensation (CJC)			±1.0 °C /±1.8 °F
Temperature influence		±0.6 % of span/25 °C, ±0.7 % of span/50 °F	±0.6 % of span/25 °C, ±0.7 % of span/50 °F
Temperature influence CJC			±1.25 °C/25 °C, ±2.5 °F/50 °F [3]
Sensor wire influence		±0.005 °C/Ω / ±0.009 °F/Ω [2]	0.4 µV/Ω
RFI influence,0.15-1000MHz, 10 V or V/m		±0.2 % of span(typical)	±0.2 % of span(typical)
Supply voltage influence		±0.02 % of span/V	±0.02 % of span/V
Supply ripple influence, 50/60 Hz, 4 Vp-p		±0.05 % of span	±0.05 % of span
Long term stability		±0.1 % of span/year	±0.1 % of span/year
Housing			
Material / Flammability(UL)		Zinc alloy + ABS / V0	Zinc alloy + ABS / V0
Mounting		DIN B-head or larger	DIN B-head or larger
Connection, single/stranded wires		-2.5 mm², AWG 14	-2.5 mm², AWG 14
Weight		40 g	40 g
Protection, housing with cover/terminals		IP 20 / IP 10	IP 20 / IP 10

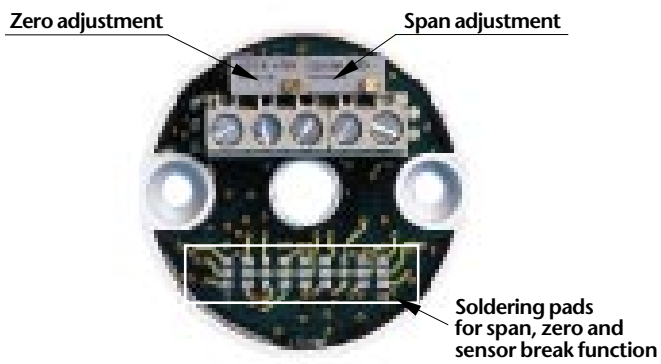
[1] Preliminary data for FM approval —
[2] Per wire, with equal resistance
[3] ±2.5 °C/25 °C, ±5.0 °F/50 °F for type T

The User Instructions must be read prior to adjustment and/or installation.

Range adjustments APAQ-HRF, APAQ-HRFX

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

Actual size



Range adjustments APAQ-HCF, APAQ-HCFX

Zero adjustment	Adjustable ±10 % of span					
Span selection	mV	T/C J *	T/C L *	T/C T *	T/C K *	T/C N *
	10 to 50	186 - 870°C	183 - 855°C	213 - >400°C	246 - 1232°C	319 - >1300°C
	(no gap)	335 - 1566°F	329 - 1540°F	383 - >720°F	443 - 2218°F	574 - >2340°F

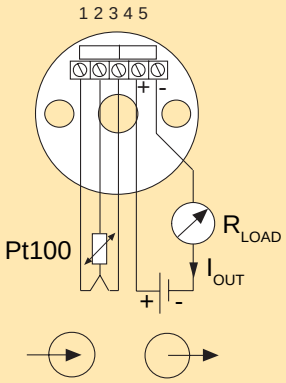
*The temperature spans correspond to the mV spans with zero adjustment = 0 % of span

Intrinsic Safety specifications

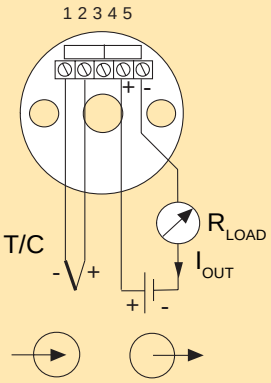
Specifications APAQ-HRFX APAQ-HCFX		
Approval	Demko / Cenelec	Factory Mutual (FM)
Classification	EEx ia IIC T4, T5, T6	IS for use in Class I, Div. 1,
	T4/+85°C, T5/+55°C, T6/+40°C	Group A-D, T4/+80°C
Certificate No.	96D.121000X, Appendix III	6D9A3.AX
Output/Supply		
Max voltage to transmitter	Ui = 30 Vdc	
Max current to transmitter	Ii = 100 mA	
Max power to transmitter	Pi = 700 mW	
Internal inductance	Li = 0 mH	
Internal capacitance	Ci = 0 nF	
Input (Sensor)		
Max voltage from transmitter	Uo = 30 Vdc	
Max current from transmitter	Io = 100 mA	
Max power from transmitter	Po = 700 mW	
Max inductance (input loop)	Lo = 5 mH	
Max capacitance (input loop)	Co = 66 nF	

Connections

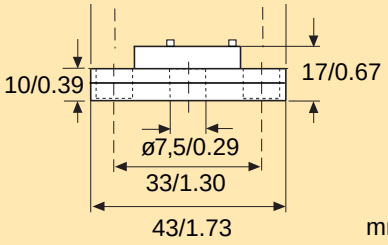
APAQ-HRF/HRFX



APAQ-HCF/HCFX



Dimensions

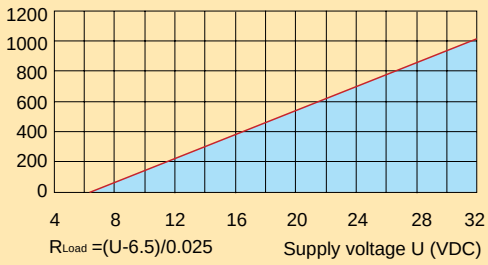


mm/inches

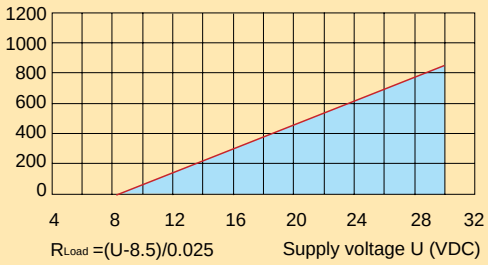
Output load diagrams

Permissible R_{Load} at 25 mA output

APAQ-HRF/HCF



APAQ-HRFX/HCFX



Ordering table

Item

Standard transmitter for Pt100

Type	Part No.
APAQ-HRF	70APHRF001

Intrinsically Safe transmitters for Pt100

Type	Part No.
APAQ-HRFX (Cenelec)	70APHRFX01
APAQ-HRFX (FM)	70APHRFX11

Standard transmitter for T/C

Type	Part No.
APAQ-HCF	70APHCF001

Intrinsically Safe transmitters for T/C

Type	Part No.
APAQ-HCFX (Cenelec)	70APHCFX01
APAQ-HCFX (FM)	70APHCFX11

Accessories

Item	Part No.
Surface mounting box	70ADA00008
Rail mounting box	70ADA00009
Head mounting kit	70ADA00011
Rail mounting kit	70ADA00013

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