

## Multirange 2-wire DIN Rail Temperature Transmitters

APAQ-LR and APAQ-LC are two multirange 2-wire temperature transmitters for DIN rail mounting.

APAQ-LR is used for Pt100 input, and APAQ-LC for different thermocouple inputs.

Designed for highest reliability and cost-efficiently manufactured, the APAQ-L transmitters combine attractive pricing with high quality and excellent industrial performance.



### Main features

#### Multirange design

- Reduced inventory costs.
- APAQ-LR for Pt100 input with selectable measurement ranges.
- APAQ-LC 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.

#### Space saving and simple mounting

- Only 17.5 mm / 0.7 inch wide.
- Quick mounting on DIN rail.

#### 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-LR and APAQ-LC are analog, 2-wire, DIN rail transmitters with selectable ranges for Pt100 and selectable types and ranges for thermocouple input.

The compact housing snaps onto a 35 mm DIN rail and is equipped with rugged terminals for easy and safe wire connections.

APAQ-LR is adjustable for different Pt100 ranges and has a temperature linear 4-20 mA output.

APAQ-LC covers 5 different thermocouple types, is continuously adjustable and has a voltage linear 4-20 mA output.

The selection of measuring ranges and thermocouple types is made with internal solder pads. The fine adjustment is made with potentiometers in the front.

APAQ-LR and APAQ-LC are covered by a 5 year limited warranty.

## Specifications

Input	APAQ-LR	APAQ-LC
Pt100 ( $\alpha = 0.00385$ ), 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 mA	
Input impedance		>5 M $\Omega$
Max. sensor wire resistance	15 $\Omega$ /wire	500 $\Omega$ (total loop)
<b>Monitoring</b>		
Sensor break detection, selectable	Upscale ~25 mA, downscale ~ 3 mA	Upscale ~25 mA, downscale ~ 3 mA
<b>Adjustments</b>		
Zero	-50 to +50 °C / -60 to +120 °F	$\pm 10$ % of span
Span, selectable	50 to 500 °C / 100 to 1000 °F	10 to 50 mV
Span, fine adjustment	$\pm 10$ % ( $\pm 5$ % for 600/800/1000°F)	$\pm 10$ %
<b>Output</b>		
Current	4 - 20 mA	4 - 20 mA
Linearity	Temperature linear	Voltage linear
Current limitation	~ 25 mA	~ 25 mA
Permissible load <i>See load diagram</i>	700 $\Omega$ @ 24 VDC, 25 mA	700 $\Omega$ @ 24 VDC, 25 mA
<b>Temperature</b>		
Ambient, storage	-20 to +70 °C / -4 to +158°F	-20 to +70 °C / -4 to +158°F
Ambient, operating	-20 to +70 °C / -4 to +158°F	-20 to +70 °C / -4 to +158°F
<b>General data</b>		
Response time 10-90%	$\leq 0.2$ s	$\leq 0.2$ s
Humidity (non-condensing)	0 to 95 %RH	0 to 95 %RH
<b>Power supply</b> , polarity protected		
Supply voltage	6.5 to 32 VDC	6.5 to 32 VDC
Permissible ripple	4 Vp-p @ 50/60 Hz	4 Vp-p @ 50/60 Hz
<b>Accuracy</b>		
Linearity	$\pm 0.1$ % of span	$\pm 0.1$ % of span
Calibration	$\pm 0.1$ % of span	$\pm 0.1$ % of span
Cold Junction Compensation (CJC)		$\pm 1.0$ °C / $\pm 1.8$ °F
Temperature influence	$\pm 0.6$ % of span/25°C, $\pm 0.7$ % of span/50°F	$\pm 0.6$ % of span/25°C, $\pm 0.7$ % of span/50°F
Temperature influence CJC		$\pm 1.25$ °C/25°C, $\pm 2.5$ °F/50°F <sup>2)</sup>
Sensor wire influence	$\pm 0.005$ °C/ $\Omega$ / $\pm 0.009$ °F/ $\Omega$ <sup>1)</sup>	0.5 $\mu$ V/ $\Omega$
RFI influence, 0.15-1000MHz, 10 V or V/m	$\pm 0.2$ % of span(typical)	$\pm 0.2$ % of span(typical)
Supply voltage influence	$\pm 0.02$ % of span/V	$\pm 0.02$ % of span/V
Supply ripple influence, 50/60 Hz, 4 Vp-p	$\pm 0.05$ % of span	$\pm 0.05$ % of span
Long term stability	$\pm 0.1$ % of span/year	$\pm 0.1$ % of span/year
<b>Housing</b>		
Material / Flammability(UL)	PC + Glassfibre / VO	PC + Glassfibre / VO
Mounting	Rail acc. to DIN EN 50022, 35 mm	Rail acc. to DIN EN 50022, 35 mm
Connection, single/stranded wires	$\leq 1.5$ mm <sup>2</sup> , AWG 16	$\leq 1.5$ mm <sup>2</sup> , AWG 16
Weight	55 g	55 g
Protection, housing / terminals	IP 20 / IP 20	IP 20 / IP 20

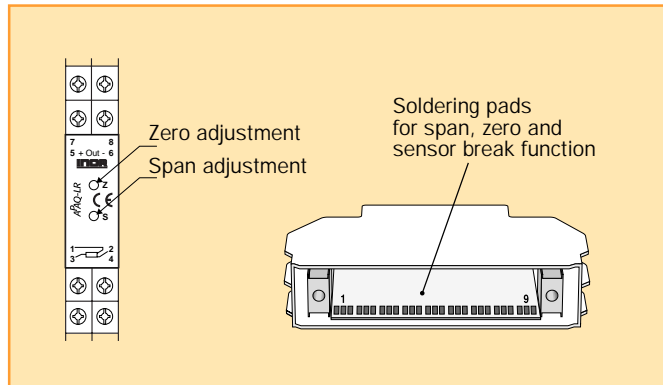
<sup>1)</sup> Per wire, with equal resistance

<sup>2)</sup>  $\pm 2.5$  °C/25 °C,  $\pm 5.0$  °F/50 °F for type T

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

### Range adjustments APAQ-LR

<b>Zero adjustment</b>	-50 to +50 °C	-60 to +120 °F
<b>Span selection</b>	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



### Range adjustments APAQ-LC

<b>Zero adjustment</b>	Adjustable ±10 % of span					
<b>Span selection</b>	<b>mV</b>	<b>T/C J *</b>	<b>T/C L *</b>	<b>T/C T *</b>	<b>T/C K *</b>	<b>T/C N *</b>
	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

#### Connections

**APAQ-LR**

**APAQ-LC**

#### Dimensions

#### Output load diagram

Permissible  $R_{Load}$  at 25 mA output

$R_{Load} = (U - 6.5) / 0.025$

#### Ordering table

<b>Transmitter</b>	<b>Part No.</b>
APAQ-LR, Pt100 transmitter	70APLR0001
APAQ-LC, T/C transmitter	70APLC0001