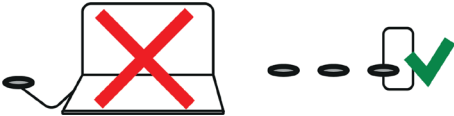


Universal in-head transmitter RTD/TC IPAQ-C330

Article number: 809700 1901

The IPAQ C330 for resistance sensors and thermocouples for installation in temperature probes with connection heads in DIN B or larger. The well thought-out product design leaves sufficient space for mounting. It is optimally designed for use in plant and machine construction and is characterized by high accuracy, reliability, long-term stability and its robust product design. The transmitter is extremely insensitive to external influences such as vibration and EMC interference. Installation and commissioning are particularly user-friendly. For example, parameterization can be carried out wirelessly, conveniently and easily via the cell phone app using NFC technology. The monitoring functions such as sensor break monitoring, sensor short-circuit and measuring range monitoring can also be activated via this.



Special features	
Inputs and outputs	Parametrization
Input: various resistance sensors and thermocouples Output: 4 to 20mA, temperature linear output signal	Configuration - wireless via NFC technology Free app for Iphone, Android & Huawei Parameterization templates for fast mass configuration
Accuracy and Long-term stability	
Accuracy: depending on temperature sensor / thermocouple Long-term stability Maximum $\pm 0.02\text{ }^{\circ}\text{C}$ or $\pm 0.02\text{ }\%$ of span per year	
Design	Alarm function
Robust - vibration and shock resistant design Compact - housing only 10.5 mm high Suitable for DIN B or larger connection heads Large center hole for easy mounting	configurable via app Sensor break monitoring Sensor short circuit Measuring range monitoring

Input Universal in-head transmitter RTD/TC IPAQ-C330				
Resistance sensors				
Measuring element	Norm	Maximum configurable measuring range	Min. Span	Accuracy
Pt100	IEC 60751 $a=0,00385$ JIS C 1604 $a=0,003916$	-200 °C to +850 °C -328 °F to +1562 °F	10 °C 50 °F	$\pm 0,08\text{ }^{\circ}\text{C}$ $\pm 0,08\text{ }\%$ ²⁾
Pt X (10<X<1000)	IEC 60751 $a=0,00385$	Corresp. to max. 4000 Ω	10 °C 50 °F	$\pm 0,1\text{ }^{\circ}\text{C}$ $\pm 0,1\text{ }\%$ ²⁾
NI100	DIN 43760	-60 °C to +250 °C -76 °F to +482 °F	10 °C 50 °F	$\pm 0,1\text{ }^{\circ}\text{C}$ $\pm 0,1\text{ }\%$ ²⁾
NI120	Edison Curve No. 7	-60 °C to +250 °C -76 °F to +482 °F	10 °C 50 °F	$\pm 0,1\text{ }^{\circ}\text{C}$ $\pm 0,1\text{ }\%$ ²⁾
Ni1000 ¹⁾	DIN 43760	-50 °C to +180 °C -58 °F to +356 °F	10 °C 50 °F	$\pm 0,1\text{ }^{\circ}\text{C}$ $\pm 0,1\text{ }\%$ ²⁾
Cu10	Edison Copper Windings No.15	-50 °C to +200 °C -58 °F to +392 °F	83 °C 181,4 °F	$\pm 1,5\text{ }^{\circ}\text{C}$ $\pm 0,2\text{ }\%$ ²⁾
Temperature influence $\pm 0.01\text{ }\%$ of span per °C ¹⁾ Ni1000 $\pm 0.02\text{ }\%$ at 2-wire > 2000 Ω of span per °C ²⁾ of span				
Connectinon type		2-, 3- and 4-Wire		
Sensor current		$\leq 300\text{ }\mu\text{A}$		
Max. wire loop resistance		2-Wire: Compensation for 0 to 40 Ω loop resistance 3-, 4-wire: 50 Ω wire		
Resistivity		Adjustable in the APP		

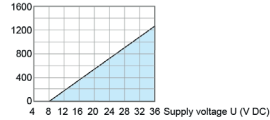
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Input Thermocouple					
Measuring element	Material / Raw Material	Norm	Maximum configurable measuring range	Min. Span	Accuracy
Type B	Pt30Rh-Pt6Rh	IEC 60584	-400 °C to +1800 °C -688 °F to +3272 °F	+700 °C +1292 °F	±1 °C ±0,1 % ¹⁾
Type C	W5-Re	ASTM E 988	0 °C to +2315 °C +32 °F to +4199 °F	+200 °C +392 °F	±1 °C ±0,1 % ¹⁾
Type D	W3-Re	ASTM E 988	0 °C to +2315 °C +32 °F to +4199 °F	+200 °C +392 °F	±1 °C ±0,1 % ¹⁾
Type E	NiCr-CuNi	IEC 60584	-200 °C to +1000 °C -328 °F to +1832 °F	+50 °C +122 °F	±0,5 °C ±0,1 % ¹⁾
Type J	Fe-CuNi	IEC 60584	-200 °C to +1000 °C -328 °F to +1832 °F	+50 °C +122 °F	±0,5 °C ±0,1 % ¹⁾
Type K	NiCr-Ni	IEC 60584	-200 °C to +1350 °C -328 °F to +2462 °F	+50 °C +122 °F	±0,5 °C ±0,1 % ¹⁾
Type N	NiCrSi-NiSi	IEC 60584	-100 °C to +1300 °C -148 °F to +2372 °F	+100 °C +212 °F	±0,5 °C ±0,1 % ¹⁾
Type N	NiCrSi-NiSi	IEC 60584	-250 °C to -100 °C -418 °F to +148 °F	±1 °C ±1 °F	±0,5 °C ±0,1 % ¹⁾
Type R	Pt13Rh-Pt	IEC 60584	-50 °C to +1750 °C -58 °F to +3182 °F	+100 °C +212 °F	±1 °C ±0,1 % ¹⁾
Type S	Pt10Rh-Pt	IEC 60584	-50 °C to +1750 °C -58 °F to +3182 °F	+300 °C +572 °F	±1 °C ±0,1 % ¹⁾
Type T	Cu-CuNi	IEC 60584	-200 °C to +400 °C -328 °F to +752 °F	+50 °C +122 °F	±0,5 °C ±0,1 % ¹⁾
Temperature influence ±0.01 % of span per °C ¹⁾ of span (cold junction compensation error is not included)					
Input impedance		>10 MΩ			
Max. wire loop resistance		500 Ω (incl. thermocouple)			
Cold Junction Compensation		Internal or external			

Additional inputs			
Resistance Potentiometer		Voltage input	
Resistance range (Ω)	0 to 10000	Voltage range (mV)	-10 to +1000
Potentiometer range (Ω)	100 to 10000		
Minimum span (Ω)	10	Minimum span (mV)	2
Customized linearization	Due to 50 points	Customized linearization	Due to 50 points
Sensor current (μA)	<300	Input impedance	> 10
Max. wire resistance (Ω)	20 wire	wire loop resistance	500

General information about the input	
Zero adjustment	Within measuring range
Max. offset adjustment	50% of selected max value

Output		
Output type	analog, temperature linear for RTD & TC	<div>Output load diagram</div> <div>Standard version</div> <div>$R_{LOAD}(\Omega) = (U-8)/0.022$</div> 



Time response		
Closing time / Update time (Inor)	~150 - 300	
Heating period	The specified accuracy is reached after max. 4 minutes	
Signal attenuation / Ajustable output filtering (Inor)	0,15 to 75 adjustable via App	
Measuring cycle	< 1	
Sensor monitoring & sensor error		
Sensor break / Short circuit	Upscale (≥21.0 mA) or Downscale (≤3.6 mA)	
Sensor failure effects (Inor)	according to NAMUR NE43	
Accuracy and stability		
Typical accuracy		
RTD and Thermocouples	See table below	
Resistance accuracy (digital) ¹⁾	0-1000 Ω: Max. ±40 mΩ or ±0,040 % of span 1000-10000 Ω: ±0,05 % or max. 1 Ω of span	
Resistance accuracy (analog) ¹⁾	±0.06 % of span	
Voltage accuracy (digital) ¹⁾	±5 µV or ±0.02 % of span	
Voltage accuracy (analog) ¹⁾	±0.06 % of span	
Temperature influence ±0.01 % of span per °C ¹⁾ Total accuracy = Sum of digital and analog accuracy, calculated as an RMS (Root Mean Square) value		
Temperature influence		
RTD and Thermocouples	see table below	
Resistance	±0,01 % < 4000 Ω ²⁾ < ±0,02 % of span per °C	
Voltage	±0,01 % of span per °C	
Temperature influence ±0.01 % of span per °C ²⁾ 2000 Ω at 2-wire		
Cold junction compensation		
Cold Junction Compensation	±0,5 °C within ambient temperature -40 °C to +85 °C	
Temperature influence	±0,01 °C per °C	
Influence of the sensor cable		
RTD and resistance (2-wire)	Adjustable wire resistance compensation	
RTD and resistance (3-wire)	Negligible, with equal wire resistance	
RTD and resistance (4-wire)	Negligible	
Thermocouples and Voltage	Negligible	
Further data		
Supply voltage influence	Within specified limits <±0,005 % of span per V	
Long-term drift	Max of ±0,02 °C or ±0,02 % of span per year	
Type		
Dimensions	See drawing	
Material Flammability	PC/ABS + PA, V0/HB, RoHS compliant	
Mounting	Rail according to DIN 50022 / EN 60715, 35mm / 1,38"	
Connection	Single wires, max. 1,5 mm², AWG 16	
Weight	55	
General data		
Isolation	1500 VAC, 1 min	All dimensions in mm
Supply Voltage (VDC)	8 to 36, polarity protected	

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Ambient conditions					
Ambient Temperatur	Storage	-40 °C to +85 °C -40 °F to +185 °F		Operating	-40 °C to +85 °C -40 °F to +185 °F
Humidity	0 to 98 (non-condensing)				
Protection	Housing IP20			Anschlussklemmen IP20	
Vibration	according to IEC 60068-2-6, Test Fc, 10bis2000 Hz, 10 g				
Shock	according to IEC-60068-2-27, test Ea				
Environmental influences	according to IEC 60068-2-31:2008, Test Ec				
EMC					
Standard	Directive: 2014/30/EU Harmonized standards: EN 61326-1, EN 61326-2-3 NAMUR NE 21				
Immunity performance	EN61326-1 and -2-3: Criteria A NE 21: <0,5% of span				

Factory configuration (if not ordered otherwise)			
Input	Pt100, 3-wire, 0 °C to 100 °C	Output (mA)	4 to 20
Sensor control	Upscale (≥21.0 mA)		

Delivery
Transmitter, Instruction manual, individually packed in PE bag

Matching accessories		
Picture	Designation	Order no.
	DIN rail power supply	On request
	Table power supply	On request
	Connection head mounting set	On request
	DIN rail adapter and screws (10 pcs.)	On request

Commissioning				
Input			Output	
			Output load diagram Standard version $R_{LOAD}(\Omega) = (U - 8) / 0.022$ 1600 1200 800 400 0 4 8 12 16 20 24 28 32 36 Supply voltage U (V DC)	
RTD - 2-wire	Resistor - 2-wire	Potentiometer - 3-wire		
RTD - 3-wire	Resistor - 3-wire	Voltage - mV		
RTD - 4-wire	Resistor - 3-wire	Thermocouple		
		RTD & Thermocouple (RTD also for remote CJC)		

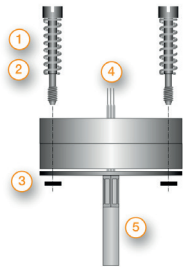
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Mounting

You can mount the APAQ C130 head transmitter in DIN B (or larger) connection heads or on the rail. Mounting is easy because you can easily pull out the sensor cable or the insertion tube through the large center hole Ø 7 mm. The electrical connection is made according to the wiring diagram. We offer mounting material for the installation of the transmitter as accessories. Depending on your requirements, you will find kits for head mounting and top hat rail mounting.

Important: To prevent measuring errors, the connecting screws for fastening the connecting cable must be tightened firmly.



Mounting to a connection head
(1) M4 screw
(2) spring
(3) Lock washer
(4) Wires from measuring insert
(5) MI cable



Mounting on the rail
(1) Place the transmitter on the mounting clip.
(2) Press the transmitter until it snaps firmly onto the clip
(3) Now you can clip one end of the mounting clip onto the rail at an angle.
(4) Then please clip the other end of the clip onto the rail as well.
(5) You can detach the transmitter from the rail if you press the hook on the fastening clip with the screwdriver and lift the clip out of the rail at the same time.

Configuration | Parametrization



Massenparametrierung & Einstellungs-Templates

Before making a configuration of APAQ C130TC you need to do following:
Make sure that you have a mobile device with NFC communication activated.
Download the app INOR Connect to your mobile device.

Required versions:
iOS: iOS 13 or later and Iphone 7 or later Android: Android 4.4 or later

Configuration procedure
Launch the app by clicking on the App icon or holding your mobile device against the transmitter on the part of the device where NFC is located (only possible with Android). Click on "Read Configuration" and hold your mobile device against the transmitter as explained in the first section.
In the app you can edit the following:
Sensor type and number of wire circuits
Measuring range
Upscale or Downscale
sensor control
TAG-number
Password settings
In the configuration window you can enter and change the parameters. The selected configuration is transferred to the transmitter by clicking the "Send to transmitter" button. After the transfer is completed, the transmitter uses the new parameters.

