

Analog Input / Output Modules



TI214/x Temperature Input Modules

The temperature recording modules TI214/x provide 14 temperature measuring channels in a single module width. With the TI214 either Pt100/Pt1000 sensors in 2 and 3 wire technology or type J or K thermocouples can be connected to each measuring channel. The TI214/2 module allows for the connection of type N or S thermocouples. The sensor type can be individually selected for each channel. In this way, the most effective and cost-efficient solution can be implemented for the application. The average determination of the measured value can be set between 16 fold and 64 fold for easy an reliable interference suppression.

With the module version TI214 the temperature of the switching cabinet can be measured on the same module with an inexpensive Pt100 sensor, while for example the temperature control systems are fitted with thermocouples.

The new 3-wire measuring evaluation of the Pt100/Pt1000 sensor compensates the voltage error of both symmetrical cable runs and enables the precision of complex 4-wire measuring technology to be implemented in inexpensive 3-wire technology. The Pt sensors can also be connected in simple 2-wire technology and this is sufficient for many applications with short measuring lines.

TI214/x

- Resolution 14 bit (16 bit measured value averaging)
- Averaging of measured values for interference suppression
- Wire break detection the inputs
- Channels isolated against the system
- Monitoring of the external power supply
- Cold junction temperature compensated

TI214

- 14 inputs for Pt100 / Pt1000 sensors as well as type J or K thermocouples
- 2-wire or 3-wire input for Pt100 / Pt1000 sensors

TI214/2

- 14 inputs for thermocouples type N or S

Item	Item No.
TI214	00014008-00
TI214/2	00014008-20

Analog Input / Output Modules

	TI214	TI214/2
Temperature measuring inputs		
Quantity	14	14
Connection type Pt100/Pt1000	3-wire or 2-wire technology	-
Input filter	Low pass filter 1st order cutoff frequency (3 dB) 17 kHz	Low pass filter 1st order cutoff frequency (3 dB) 8Hz
Sensor types thermocouples	J or K in insulated or uninsulated design in accordance with DIN IEC584 each input can be programmed for different types	N or S in insulated or uninsulated design in accordance with DIN IEC584 each input can be programmed for different types
Temperature range Pt100/Pt1000	-100 to +800 °C	-
Temperature range thermocouples	J/K: -30 to +1000 °C	N: -30 to +1300 °C S: -30 to +1600 °C
Constant current Pt sensor	2 mA (Pt100), 200 µA (Pt1000)	-
Digital resolution	14 bits (16 bits representation with measured value averaging)	
Value of the LSB	0.055 K (Pt100 / Pt1000) 0.062 K (thermocouple -30 to +1000 °C)	0.08 K (thermocouple N -30 to +1300 °C) 0.098 K (thermocouple S -30 to +1600 °C)
Base accuracy	0.1 % of measuring range at 25 °C (Pt100 / Pt1000)* 0.15 % of measuring range at +25 °C (thermocouples J / K)**	0.15 % for type N and 0.25 % for type S of measuring range at +25 °C (thermocouples N / S)**
Conversion time	80 ms at 16 fold averaging 320 ms at 64 fold averaging	1 ms without averaging 80 ms at 16 fold averaging 320 ms at 64 fold averaging
Thermocouples linearization	Polynomial to IEC60584 part 1, for sensor types J or K	Polynomial to IEC60584 part 1, for sensor types N or S
Error detection	Wire break	
Interference voltage strength	-36 to +36 V	
External power supply		
Galvanic isolation from system	500 V	
Voltage range	18 to 34 VDC	
Current consumption internal	Normally 160 mA at + 24 VDC	
Reverse polarity protection	Yes	
Approvals / certificates		
General	CE, UL/cUL, CCC	
Marine	GL/DNV, LR, ABS, BV	
Ambient conditions		
Operating temperature	-30 to +60 °C	
Rel. humidity operation	5 to 95 % without condensation	
Storage temperature	-40 to +85 °C	
Rel. humidity storage	5 to 95 % with condensation	
Pollution degree	2 (without condensation; according to IEC 60664-1)	

* only applies for 3-conductor technology

** without consideration of cold point compensation

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Order Codes TI214/x		
Item	Item No.	Description
TI214	00014008-00	Temperature recording module; 14x thermocouple type J,K (FeCo/NiCrNi); Pt100/1000; 14bit; 0.15%; isolated
TI214/2	00014008-20	Temp.-recording module; 14x thermocouple type N,S; 14 bit; 0.15%; isolated
Accessories		
KS-TI214 B+C	00014432-50	Terminal set cage clamp small (1x KZ 51/02; 2x KS 35/16; 2x KS 35/12) with labeling strip and coding elements
SS-TI214 B+C	00014395-50	Terminal set Phoenix screw side (1x SS 51/02; 2x SS 35/16; 2x SS 35/12) with labeling strip and coding elements