



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 program. The average determination of the measured value can be set between 16 fold and 64 fold for easy and 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 for the voltage errors of both symmetrical cable runs and enables the precision of complex 4-wire measuring technology to be implemented in an 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
- Cable break detection for the inputs
- Isolation of all channels from the system
- Monitoring of the external power supply
- Cold spot temperature as ambient temperature

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

Part type designation	Part number
TI214	00014008-00
TI214/2	00014008-20

TI214/x

Temperature measuring inputs	TI214	TI214/2
Number	14	14
Connection type Pt100/Pt1000	3-wire or 2-wire technology	-
Input filter	Low-pass filter 1st order Cut-off frequency (3 dB) 17 kHz	Low-pass filter 1st order Cut-off frequency (3 dB) 8 Hz
Sensor types thermocouples	Thermocouples type J or K isolated or non-isolated, acc. to DIN IEC 584, each input independently programmable for different types	Thermocouples type N or S isolated or non-isolated, acc. to DIN IEC 584, each input independently programmable for different types
Temperature range Pt100/Pt1000	-100 °C to +800 °C	-
Temperature range thermocouples	J/K: -30 °C to +1000 °C	N: -30 °C to +1300 °C S: -30 °C to +1600 °C
Constant current Pt sensor	2 mA (Pt100), 200 µA (Pt1000)	-
Digital resolution	14 bits (16 bits representation with averaging the measurement values)	
Value of LSB	0.055 K (Pt100/Pt1000) 0.062 K (thermocouples -30 °C to +1000 °C)	0.08 K (thermocouples N: -30 °C to +1300 °C) 0.098 K (thermocouples S: -30 °C to +1600 °C)
Accuracy	0.1 % of measuring range at 25 °C (Pt100/Pt1000) ¹⁾ 0.15 % of measuring range at +25 °C (thermocouples J/K) ²⁾	0.15 % for type N and 0.25 % for type S of measuring range at +25 °C (thermocouples N/S) ²⁾
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 acc. to IEC 60584 part 1, for sensor types J or K	Polynomial acc. to IEC 60584 part 1, for sensor types N or S
Error detection	Cable break	
External withstand voltage	-36 V to +36 V	

¹⁾ Only applies for 3-wire technology

²⁾ Without consideration of cold junction compensation

External power supply

Galvanic isolation from the system	500 V
Voltage range	18 V DC to 34 V DC
Current consumption	Typ. 160 mA at +24 V DC
Reverse polarity protection	Yes

Approvals/Certificates

General	CE, UKCA, cULus
Marine	ABS, BV, DNV, KR, LR, NK, RINA

Environmental conditions

Operating temperature	-30 °C to +60 °C
Relative humidity, operation	5 % to 95 % noncondensing
Storage temperature	-40 °C to +85 °C
Relative humidity, storage	5 % to 95 % with condensation
Pollution degree acc. IEC 60664-1	2 (noncondensing)

Order data

Part type designation	Part number	Description
TI214	00014008-00	Temperature-recording module; 14x thermocouple element type J, K (FeCo/NiCrNi); Pt100/1000; 14 bit; 0.15 %; isolated
TI214/2	00014008-20	Temperature-recording module; 14x thermocouple element type N, S; 14 bit; 0.15 %; isolated

Accessories

Part type designation	Part number	Description
KS-TI214 B+C	00014432-50	Terminal set cage clamp narrow (1x KZ 51/02; 2x KS 35/16; 2x KS 35/12) with labeling strips + keying elements
SS-TI214 B+C	00014395-50	Terminal set Phoenix screw lateral (1x SS 51/02; 2x SS 35/16; 2x SS 35/12) with labeling strip and keying elements