

IO-LINK TEMPERATURE TRANSMITTER



Type: **TH-TIO**

- Pt100 3-WIRE · TYPE J · K · N
- -200 ... 1372 °C
- IO-LINK INTERFACE
- HEAD MOUNTING Ø 45 x 23 mm



ORDER CODE

Code	Field	Meaning
EKMG	series	IO-Link temperature transmitter TH-TIO
4	input	please specify — Pt100 3-wire, or thermocouple type J, K or N
1	output	IO-Link
0 · 1	housing	standard, no connection head · connection head B, aluminium die-cast
0	configuration	customized, please specify
0 · 1	special model	no · yes, please specify

Factory setting: Pt100 in three-wire connection, -200 ... 800 °C.



OVERVIEW

The TH-TIO sits in the connection head and passes temperature on over IO-Link instead of a current loop. It measures either with one Pt100 in three-wire connection over -200 to 800 °C or with a thermocouple of type J, K or N, together covering -200 to 1372 °C. The amplifier resolves 16 bit and adds at most 0.02 % of the nominal range to the sensor error; the response time is 20 ms, the filter setting 25 s. Supply is 24 V DC with less than 30 mA in normal operation and at most 130 mA in total when the switching output is loaded; reverse polarity does not destroy the device, and input and output are isolated with 1 kV AC. The black PA66 case measures $\varnothing 45 \times 23$ mm, weighs about 35 g and is rated IP20. On request the device comes with an aluminium die-cast connection head of form B.

MEASUREMENT AND INTERFACE	DEVICE AND SUPPLY
• Pt100, 3-wire, $-200 \dots 800$ °C • Type J $-210 \dots 1200$ °C • Type K $-200 \dots 1372$ °C • Type N $-200 \dots 1300$ °C • Accuracy max. 0.02 % of nominal range • Resolution 16 bit, response time 20 ms • IO-Link, signal level 0 / 24 V • Filter setting 25 s	• Case synthetics PA66, black • Dimensions $\varnothing 45 \times 23$ mm, approx. 35 g • Terminal screws, conductor 1 mm^2 recommended • Protection class IP20 • Supply 24 V DC • Current < 30 mA, total max. 130 mA • Isolation 1 kV AC, reverse polarity safe • Operating temperature $-20 \dots +80$ °C



TECHNICAL DATA

INPUT

Pt100	1 × Pt100 · 3-wire · nominal range –200 ... 800 °C · sensor current 0.9 mA
Thermocouple type J	–210 ... 1200 °C
Thermocouple type K	–200 ... 1372 °C
Thermocouple type N	–200 ... 1300 °C

AMPLIFIER AND SUPPLY

Accuracy	max. 0.02 % of the nominal range plus sensor error
Resolution	16 bit
Supply voltage	24 V DC
Current	normal < 30 mA · switching current (SIO) max. 100 mA · total max. 130 mA
Reverse polarity	protected — no function, no destruction
Insulation voltage	1 kV AC

INTERFACE

Interface	IO-Link
Signal level	0 / 24 V to the IO-Link specification
Transmission	linear with temperature
Response time	20 ms
Switch-on delay	< 5 s
Filter setting	25 s

ENVIRONMENT

Operating temperature	–20 ... +80 °C
Storage temperature	–40 ... +85 °C
Air humidity	30 ... 90 % rH at 40 °C, no condensation
EMC conformity	EN 61000-6-4 · EN 61000-6-2

MECHANICS

Case	synthetics PA66, black · Ø 45 × 23 mm
Protection class	IP20
Electrical connection	terminal screws · conductor cross section 1 mm ² recommended · stripping length 8 mm recommended
Weight	approx. 35 g, not potted
Option	aluminium die-cast connection head of form B, from the order code



ELECTRICAL CONNECTION

Supply and IO-Link

+24 V DC

1

supply 24 V DC

GND

2

reference potential

C/Q

3

IO-Link · switching output

Resistance thermometer

6

5

4

Pt100, 3-wire

Thermocouple

6

5

type J · type K · type N

Supply and interface lie on terminals 1 (+24 V DC), 2 (GND) and 3 (IO-Link C/Q). A Pt100 is connected in three-wire technique to 6, 5 and 4, where 5 carries the compensation lead; a thermocouple goes with its minus leg to 6 and with its plus leg to 5.

ACCESSORIES

Connection head B	aluminium die-cast, ordered with the device
IO-Link master	needed for configuration and operation; not part of the delivery

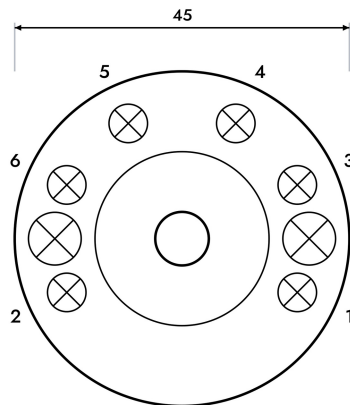
The manufacturer document names no further accessories.

COMPLIANCE

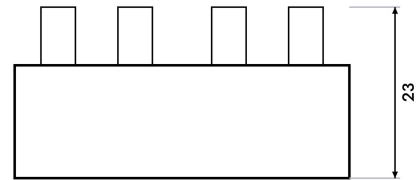
 IP20	Protection class	IP20 to IEC 60529 — mounted in the connection head
 IO-Link	Interface	IO-Link, signal level 0 / 24 V
 PA	Case material	synthetics PA66, black

The manufacturer names EN 61000-6-4 and EN 61000-6-2 as EMC conformity and an insulation voltage of 1 kV AC.

DIMENSIONS (mm)



Top view



Side view

Drawn by octogon from the manufacturer document; dimensioned are the two values it gives, $\varnothing$ 45 and 23 mm. The two large terminals carry no designation in the document and therefore none here; the outline is schematic.

