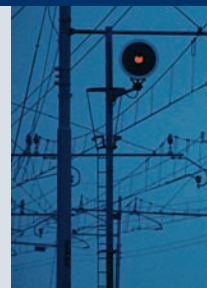


Modular Housings for Hazardous Areas

Knick >

ThermoTrans® 205/206



The practical solution for temperature measurement with resistance thermometers.

The Advantages

The ThermoTrans® 205/206 temperature transmitters provide you with just the flexibility you need:

- Configuration effort where it is only really necessary, instead of complicated parameter tables.
- High level of reliability and compact design due to digital signal processing specially developed for the measuring task instead of unnecessary reduction in reliability due to overburdening with complicated technology.

The Models

For the majority of standard applications with fixed preset parameters, you simply select one of the numerous preconfigured standard models.

You can solve special measuring tasks with a transmitter that we configure according to your specifications.

The Technology

The ThermoTrans® 205/206 temperature transmitters provide Safe Isolation and high insulation resistance between the input, output, and power supply. They meet the strict NAMUR EMC requirements and can easily be used for measurements in hazardous areas.

Vacuum encapsulation protects the devices against aggressive environmental influences, shock, and vibrations.

ThermoTrans® 205/206 for resistance thermometers

Resistance thermometers are highly accurate temperature sensors with long-term stability for measuring temperatures up to max. 850 °C.

They are mainly used to measure low and medium temperatures, for example, in air-conditioning, process engineering, and the food industry.

The ThermoTrans® 205/206 transmitters allow connection of all common resistance thermometers either in 2-, 3-, or 4-wire configuration.

The possibility for connecting resistive sensors and potentiometers creates a wide range of application possibilities, for example, in the field of path measurement. Converting the input signal into a proportional current/voltage signal allows simple further processing.

**Warranty
5 years!**

Defects occurring within 5 years from delivery are remedied free of charge at our works (carriage and insurance paid by sender).

Temperature Transmitters

Isolation Amplifiers
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings

Knick ➤

■ The Facts

Explosion protection [Ex ia] IIC according to ATEX

Trouble-free use in hazardous areas

Extensive range of standard models

Configuration not necessary for standard applications

Adjustable via optical interface

Universal for a wide range of measuring tasks, can also be configured on site

EMC tested

Reliable operation even with electromagnetic interference in the mains or in the environment

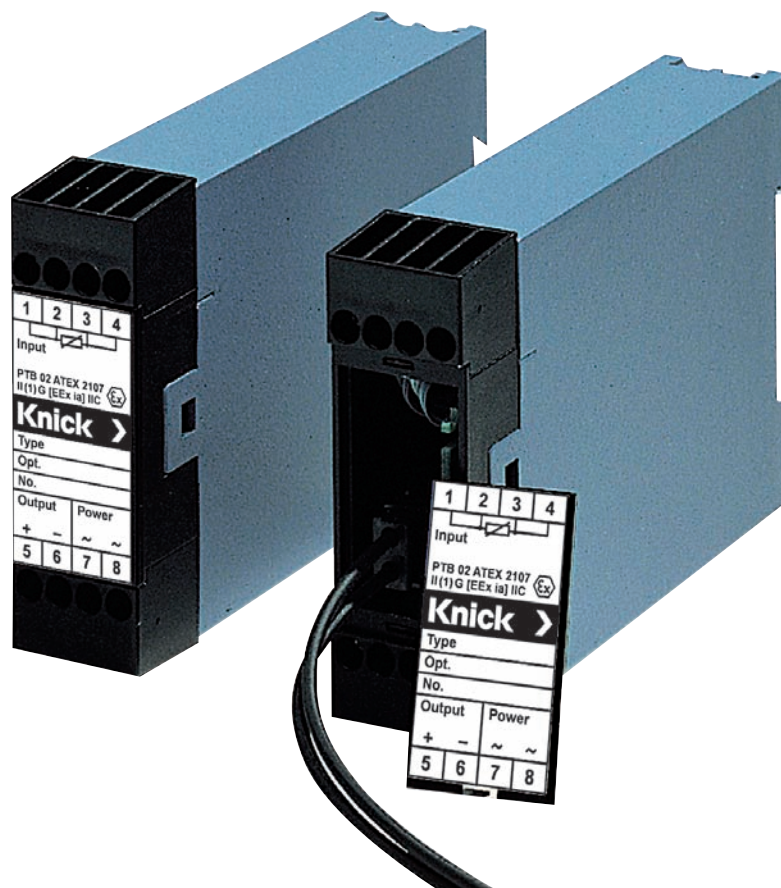
Safe Isolation according to EN 61140

Protection of maintenance staff and the subsequent devices against non-permitted high voltages

Modular housing, 22.5 mm wide with 73.5 mm standard height

Compact design means easy installation, also easy to fit in standard cabinets

5-year warranty



Modular Housings for Hazardous Areas

ThermoTrans® 205/206

■ Product Line

		ThermoTrans® 205 with current output	ThermoTrans® 206 with voltage output
Adjustable models	Order No.	205 A7 000 000 Opt. 444	206 A7 000 000 Opt. 444
Adjustable via interface, communication kit on request. See Configuration Schedule for factory setting.			
Fixed range standard models	Order No.	205 A7 x xx xx x Opt. 444	206 A7 x xx xx V Opt. 444
Sensors			
Pt 100 (–200 ... +850 °C)		A	A
Pt 1000 (–200 ... +850 °C)		B	B
Ni 100 (–60 ... +180 °C)		C	C
1000 ohms		D	D
5000 ohms		E	E
Span			
50 K		05	05
100 K		10	10
150 K		15	15
200 K		20	20
300 K		30	30
400 K		40	40
1000 K		70	70
5000 K		88	88
Start of scale			
–100 °C		02	02
–50 °C		01	01
0 °C		00	00
50 °C		11	11
100 °C		12	12
200 °C		14	14
0 ohm		30	30
Output			
0 ... 20 mA		D	
4 ... 20 mA		L	
0 ... 10 V			V

Sensor with 4-wire connection (3-wire connection Option 494), rising output curve, without filter constant
ThermoTrans® 205: open circuit recognition 22 mA; ThermoTrans® 206: open circuit recognition 11 V

Power supply	Order No.
230 V AC	
24 V AC/DC	336
115 V AC	363
Options	
ThermoTrans® 205/206 standard model with 3-wire connection	494

Temperature Transmitters

Isolation Amplifiers Transmitters	Indicators	Process Analytics	Portable Meters	Laboratory Meters	Sensors	Fittings
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Product Line (continued)

	ThermoTrans® 205 with current output	ThermoTrans® 206 with voltage output
Customer-specific models	Order No. 205 A7 999 999 Opt. 444	206 A7 999 999 Opt. 444

■ Configuration Schedule

Important! Please fill in the configuration schedule completely and enclose it with your order. If entries are missing, the value entered in square brackets or the red-colored setting ■ will be set.

ThermoTrans® 205/206

Sensor ¹⁾	Temperature detector: <input checked="" type="checkbox"/> Pt 100 according to IEC 751 <input type="checkbox"/> Pt 500 <input type="checkbox"/> Pt 1000 <input type="checkbox"/> Ni 100 according to DIN 43 760 <input type="checkbox"/> Ni 120 <input type="checkbox"/> Ni 500 <input type="checkbox"/> Ni 1000
	Resistive sensor or potentiometer: <input type="checkbox"/> ≤ 500 ohms <input type="checkbox"/> ≤ 5000 ohms
Connection	<input type="checkbox"/> 2-wire connection, line resistance ²⁾ _____, _____ ohms <input type="checkbox"/> 3-wire connection <input checked="" type="checkbox"/> 4-wire connection
Range	Start of scale ²⁾ _____ °C [0 °C] or _____ ohms Span ²⁾ _____ K [100 K] or _____ ohms
Output ³⁾	<input checked="" type="checkbox"/> 0 ... 20 mA <input type="checkbox"/> 4 ... 20 mA <input type="checkbox"/> 0 ... 10 V
Curve	<input checked="" type="checkbox"/> Rising <input type="checkbox"/> Falling
Error messages	Message: <input checked="" type="checkbox"/> only with open circuit <input type="checkbox"/> with open circuit and overrange
	Signal: <input checked="" type="checkbox"/> 22 mA or 11 V <input type="checkbox"/> -1 mA or -0.5 V
Filter constant T ₉₉	_____ s ²⁾ (1st order filter) [0 s]
Tag number	_____ [none]

1) Other models on request
2) See the specifications for the possible parameter range
3) Other values on request

Modular Housings for Hazardous Areas

ThermoTrans® 205/206

■ Specifications

Input data	Sensor type	Measurement range	Span (user-defined)
Intrinsically safe	Pt 100 to IEC 751	-200 ... +850 °C	25 ... 1050 K
	Pt 500		
	Pt 1000		
	Ni 100 to DIN 43760	-60 ... +180 °C	25 ... 240 K
	Ni 120		
	Ni 500		
	Ni 1000		
	Remote resistance transducer and potentiometer	0 ... 500 ohms or 0 ... 5000 ohms	9 ... 500 ohms or 90 ... 5000 ohms
Connection	<p>2-wire connection: configured line resistance is calculated in the measured value</p> <p>3-wire connection: $R_{L1} = R_{L4}$</p> <p>4-wire connection</p> <p>2-wire connection 3-wire connection 4-wire connection</p>		
Max. line resistance	$R_{L1} + R_{L4} = 100 \text{ ohms}$		
Sensor current	Approx. 1 mA or 0.1 mA depending on the measurement range		
Open-circuit voltage	< 5 V		
Sensor failure monitoring	All inputs for open circuit		
Input error limits	<p>Resistance: Range 0 ... 500 ohms $\pm 0.05 \text{ ohm}$</p> <p> Range 0 ... 5 kohms $\pm 0.5 \text{ ohm}$</p> <p>With Pt: Range -200 ... +850 °C $\pm 0.2 \text{ K}$</p> <p>With Ni: Range -60 ... +180 °C $\pm 0.2 \text{ K}$</p>		
Temperature coefficient at input	0.0025 % / K full scale (average TC in permitted operating temperature range, reference temperature 23 °C)		
Output data			
Output signal (0 ... 100 %)	<p>Model 205: 0/4 ... 20 mA, impressed current, load voltage $\leq 10 \text{ V}$</p> <p>Model 206: 0 ... 10 V, impressed voltage, load current $\leq 10 \text{ mA}$</p>		
Resolution	Approx. 8000 steps (for 0 ... 100 %)		
Control range	-2.5 ... 102.5 % span		
Overload range with error message	<p>Model 205: -1.0 mA or 22 mA</p> <p>Model 206: -0.5 V or 11 V</p>		
Output error limits	0.1 % full scale		

Temperature Transmitters

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Specifications (continued)

Output data

Temperature coefficient at output	0.01 % / K full scale (average TC in permitted operating temperature range, reference temperature 23 °C)
Residual ripple at output	< 10 mV _{pp} + digitalization error of input

Transmission behavior

Characteristic	Resistance or temperature linear rising or falling
Meas. rate	Approx. 1 / s
Response time T ₉₉	≤ 900 ms
Digital output filter	T ₉₉ = 0 ... 100 s (1st order filter)

Power supply

Power supply	230 V AC – 15 % + 10 %, 48 ... 62 Hz, approx. 2 VA
Option 336:	24 V AC/DC AC: – 15 % + 10 %, 48 ... 500 Hz, approx. 1.5 VA DC: – 15 % + 20 %, approx. 1.2 W
Option 363:	115 V AC – 15 % + 10 %, 48 ... 62 Hz, approx. 2 VA

Isolation

Galvanic isolation	3-port isolation between input, output and power supply
Test voltage	4 kV AC (input against output and power supply) 3 kV AC (output against power supply)
Working voltage (basic insulation)	1000 V AC/DC input against output and power supply with overvoltage category II and pollution degree 2, 300 V AC/DC output against power supply with overvoltage category II and pollution degree 2 according to EN 61010-1. For applications with high working voltages, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks. For hazardous area applications the maximum working voltage is 250 V.
Protection against electric shock	Safe Isolation according to EN 61140 by reinforced insulation in accordance with EN 61010-1. Working voltages with overvoltage category II and pollution degree 2: 600 V AC/DC for input against output and power supply, 300 V AC / DC for output against power supply. For applications with high working voltages, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks. When used in hazardous areas, the max. working voltage is 250 V.

Modular Housings for Hazardous Areas

ThermoTrans® 205/206

Specifications (continued)

Standards and approvals

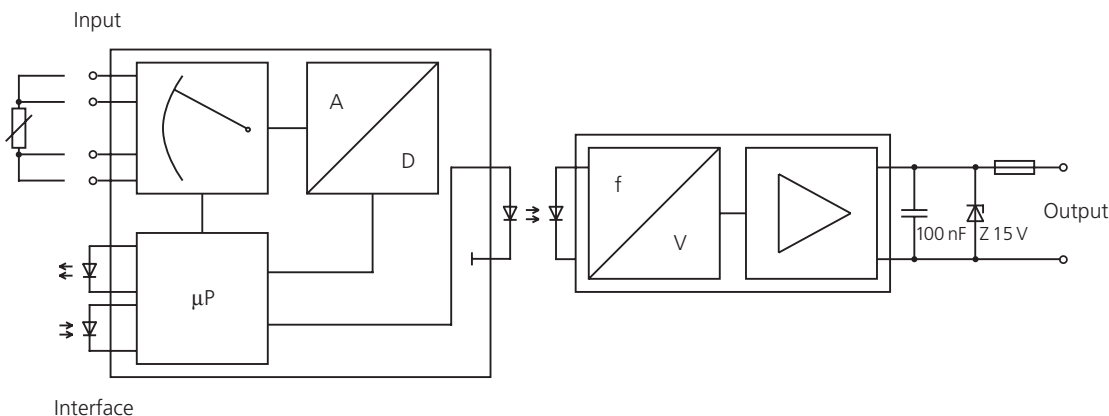
Explosion protection (Opt. 444)	II (1) G [EEx ia] II C PTB 02 ATEX 2107 For further details see certificates of conformity at our website: www.knick.de
Surge withstand	5 kV 1.2 / 50 µs according to IEC 255-4
EMC ¹⁾	89/336/EEC directive, EN 61326, NAMUR NE 21

Other data

Interface (adjustable models only)	Optical, interface adapter on RS 232 interface (PC) is included in the communications kit (ZU 0254)
Ambient temperature	Operation: -10 ... +60 °C Transport and storage: -30 ... +80 °C
Design	A7 modular housing, width 22.5 mm, screw terminals See dimension drawings for further measurements
Ingress protection	Housing IP 40, terminals IP 20
Mounting	With snap-on mounting for 35 mm top hat rail according to EN 50022-35, width 22.5 mm, see dimension drawings for conductor cross section
Weight	Approx. 300 g

1) Slight deviations are possible while there is interference from RF radiation

■ Block Diagram

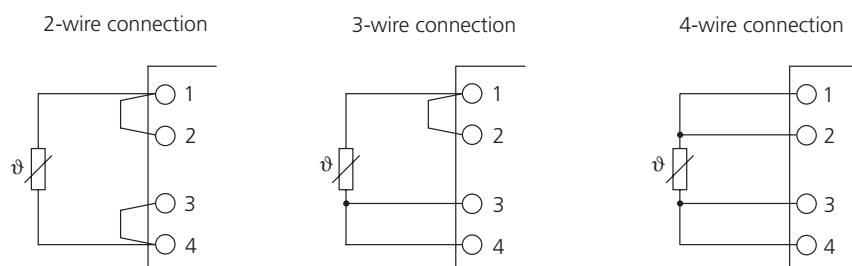


Temperature Transmitters

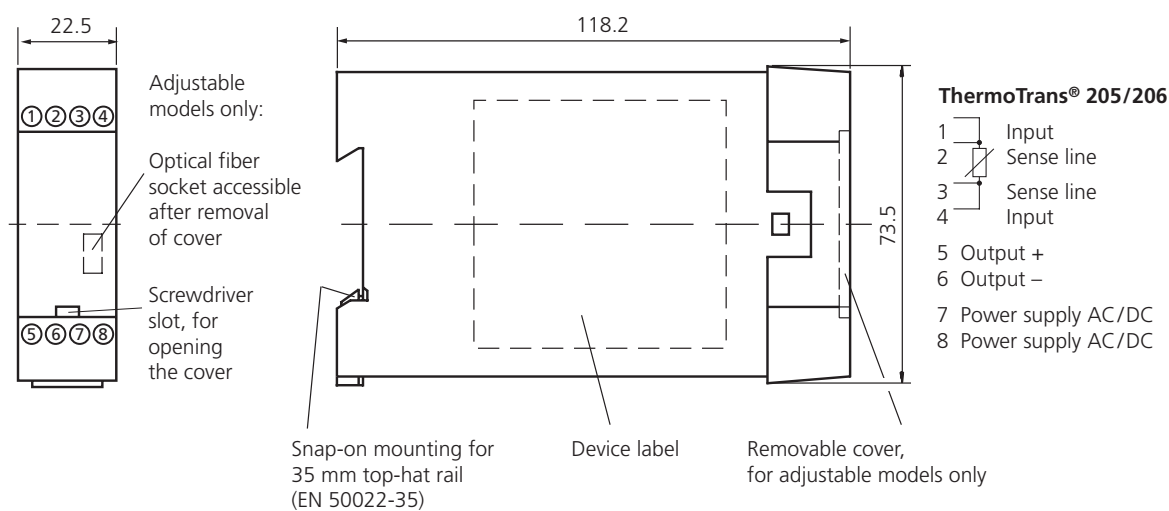
Isolation Amplifiers Transmitters	Indicators	Process Analytics	Portable Meters	Laboratory Meters	Sensors	Fittings
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■ Application Examples



■ Dimension Drawings and Terminal Assignments



Captive M3x8 clamping screws, box terminals with self-releasing wire protection
 Max. conductor cross-section 1 x 4 mm² solid
 1 x 2.5 mm² stranded wire with ferrule
 2 x 1.5 mm² stranded wire with ferrule

All dimensions in mm!