

# Electronic contact thermometer

RE 50224/05.10

1/10

## Type ABZMT

Component series 1X



H7706\_d

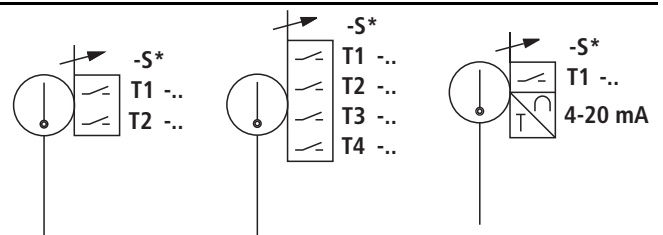
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## Features

- Electronic contact thermometers serve the temperature control of hydraulic systems.
- The contact thermometers have two or four programmable temperature switching outputs, alternatively one programmable switching output and one analog output 4-20 mA, with display and control unit.
- For the temperature display, °C or °F can be selected.

## Symbol



**Two** programmable switching outputs for temperature (T2)

**Four** programmable switching outputs for temperature (T4)

**One** programmable switching output and one analog output 4-20 mA for temperature (T1A)

Information on available spare parts:  
[www.boschrexroth.com/spc](http://www.boschrexroth.com/spc)

## Ordering code

**ABZMT** / **T** / **1X** / / / **K24**

### Power unit accessories

Measuring devices = **ABZM**

Electronic contact thermometer = **T**

Component series 10 to 19 = **1X**

(10 to 19: unchanged installation and connection dimensions)

Sensor length in mm [inch]

L = 0200 mm [7.86] = **0200**

L = 0300 mm [11.82] = **0300**

L = 0500 mm [19.69] = **0500**

L = 1000 mm [39.37] = **1000**

### Sensor

Brass MS (with NBR seal) = **MS**

Stainless steel 1.4571 (with FKM seal) = **ES**

### Display and control unit

Directly attached display and control unit = **D0**

External display and control unit with cable set M12x1; 4-pole, PUR

1.5 m, mating connector angled and mating connector straight = **E1**

3.0 m, mating connector angled and mating connector straight = **E3**

5.0 m, mating connector angled and mating connector straight = **E5**

**K24 =** <sup>1)</sup> **Electrical connection**  
Connector M12x1; 4-pole

**Temperature**

**T2 =** Temperature display and two programmable switching outputs

**T4 =** Temperature display and four programmable switching outputs

**T1A =** Temperature display, one programmable switching output and one analog output 4-20 mA

<sup>1)</sup> The mating connectors are not included in the scope of delivery and must be ordered separately, if necessary (see page 3).

### Order example:

Electronic contact thermometer, sensor length 300 mm, brass sensor, directly attached control and display unit, temperature display and two programmable switching outputs, connector K24:

**ABZMT-1X/0300MS/D0-T2-K24**

**Material no. R901247784**

## Standard types

Type	Mat. no.
ABZMT-1X/0300MS/D0-T2-K24	<b>R901247784</b>
ABZMT-1X/0300MS/D0-T4-K24	<b>R901247785</b>
ABZMT-1X/0300MS/D0-T1A-K24	<b>R901247786</b>
ABZMT-1X/0300MS/E3-T2-K24	<b>R901247787</b>
ABZMT-1X/0300MS/E3-T4-K24	<b>R901247788</b>
ABZMT-1X/0300MS/E3-T1A-K24	<b>R901247789</b>

**Standard types and standard units are contained in the EPS (standard price list).**

## Resistance

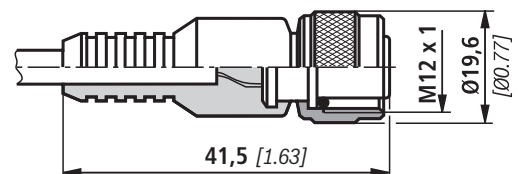
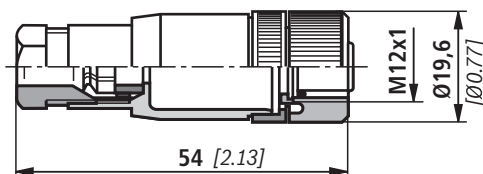
Hydraulic fluids				Seals	
				NBR	FKM
Mineral oils	Mineral oil	HL / HLP	according to DIN 51524	Resistant	Resistant
Flame-resistant	Emulsions	HFA-E	according to DIN 24320	Not resistant	
	Water solutions	HFC	according to VDMA 24317	Not resistant	
	Phosphoric acid esters	HFD-R		Resistant	
	Organic esters	HFD-U		Resistant	
Fast biodegradable	Triglycerides (rape seed oil)	HETG	according to VDMA 24568	Not resistant	
	Synthetic esters	HEES		Not resistant	
	Polyglycols	HEPG		Not resistant	

## Mating connectors (dimensions in mm [inch])

For detailed information see RE 08006

Mating connector for connector K24

Mating connector for connector K24 with potted-in PVC cable, 3 m long



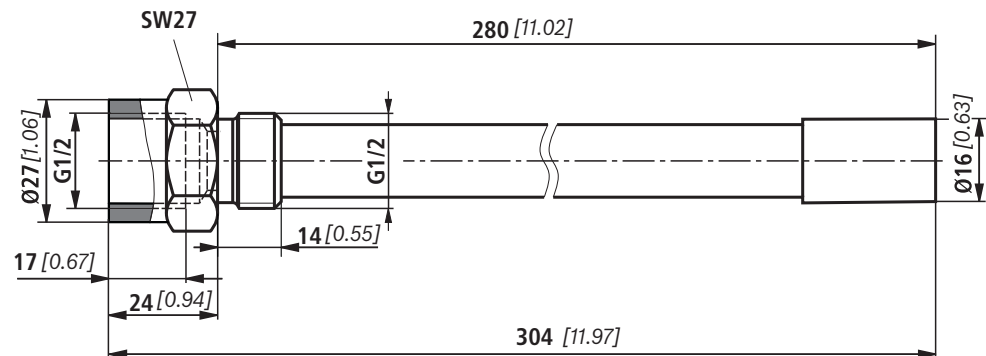
Description	Material no.
LEITUNGDOSE 4P Z24 SPEZ	R900031155

Description	Material no.
LEITUNGDOSE 4P Z24M12X1+3MSPEZ	R900064381

## Accessories: (not included in scope of delivery)

Tank installation sleeve

Material no. R901248320



**Technical data** (For applications outside these parameters, please consult us!)

<b>general</b>		<b>Version MS</b>	<b>Version VA</b>
Temperature range	°C [°F]	0 to 100 [32 to 212]	0 to 100 [32 to 212]
Maximum operating pressure	bar [psi]	5 [72.52]	10 [145.04]
Installation position		Any (preferably vertical)	Any (preferably vertical)
Ambient temperature range	°C [°F]	-20 to 70 [-4 to 158]	-20 to 70 [-4 to 158]
Material	- Pipe	CU alloy	Stainless steel 1.4571
	- Flange	Anodized aluminium	Stainless steel 1.4571
Seal material		NBR seals	FKM seal
Maximum sensor length	mm [inch]	1000 [39.37]	1000 [39.37]
Sensor connection		G ½	G ½
Weight with L = 300 mm]	kg [lbs]	0.25 [0.55]	0.35 [0.77]

**electrical**

Protection class according to DIN EN 60529		IP 65
Plug-in connection		M12x1; 4-pole (material: Metal)

**Temperature sensor**

Sensor element		PT100 class B; DIN EN 60751
Measuring range	°C [°F]	0 to 100 [32 to 212]
Accuracy	K	+/- 0.8

**Display and control unit**

Supply voltage	V DC	10 to 32
Max. contact load	A	1
Display range	°C [°F]	-20 to 120 [-4 to 248]
Alarm adjustment range	°C [°F]	0 to 100 [32 to 212]
Housing design		PA, IP65 (antistatic)
Display		4 digits, seven-segment LED display
Current consumption upon switch-on		ca. 100 mA for 100 ms
Current consumption in operation		ca. 50 mA with UB 24 V
Max. ambient temperature	°C [°F]	-20 to 70 [-4 to +158]
Accuracy		1 % of the measurement range end value
Operation		3 buttons

**Version T2**

Switching points		2 programmable switching outputs
Max. switching current	A	0.5 per output / max. 1 in total

**Version T4**

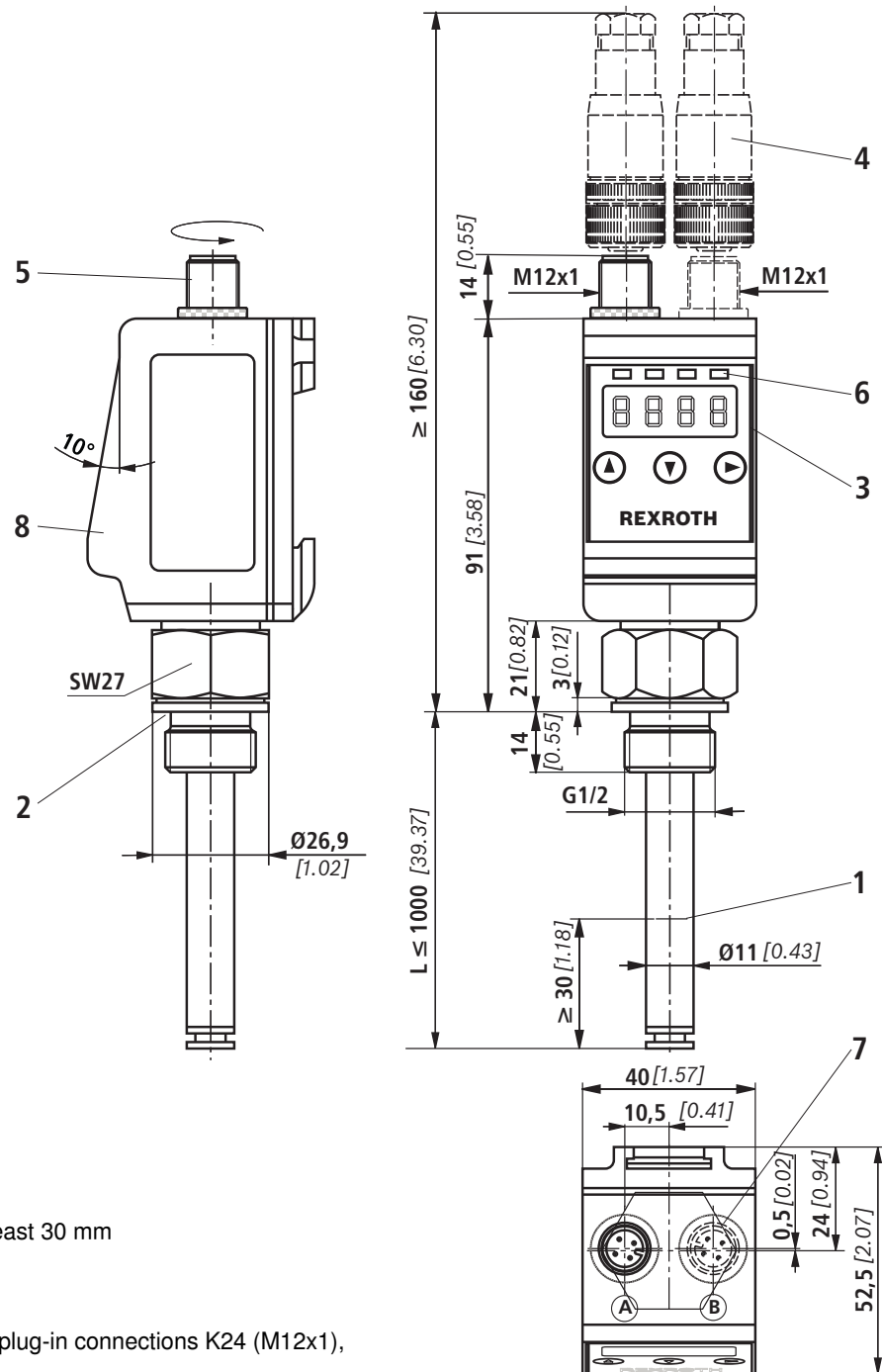
Switching points		4 programmable switching outputs
Max. switching current	A	0.5 per output / max. 1 in total

**Version T1A**

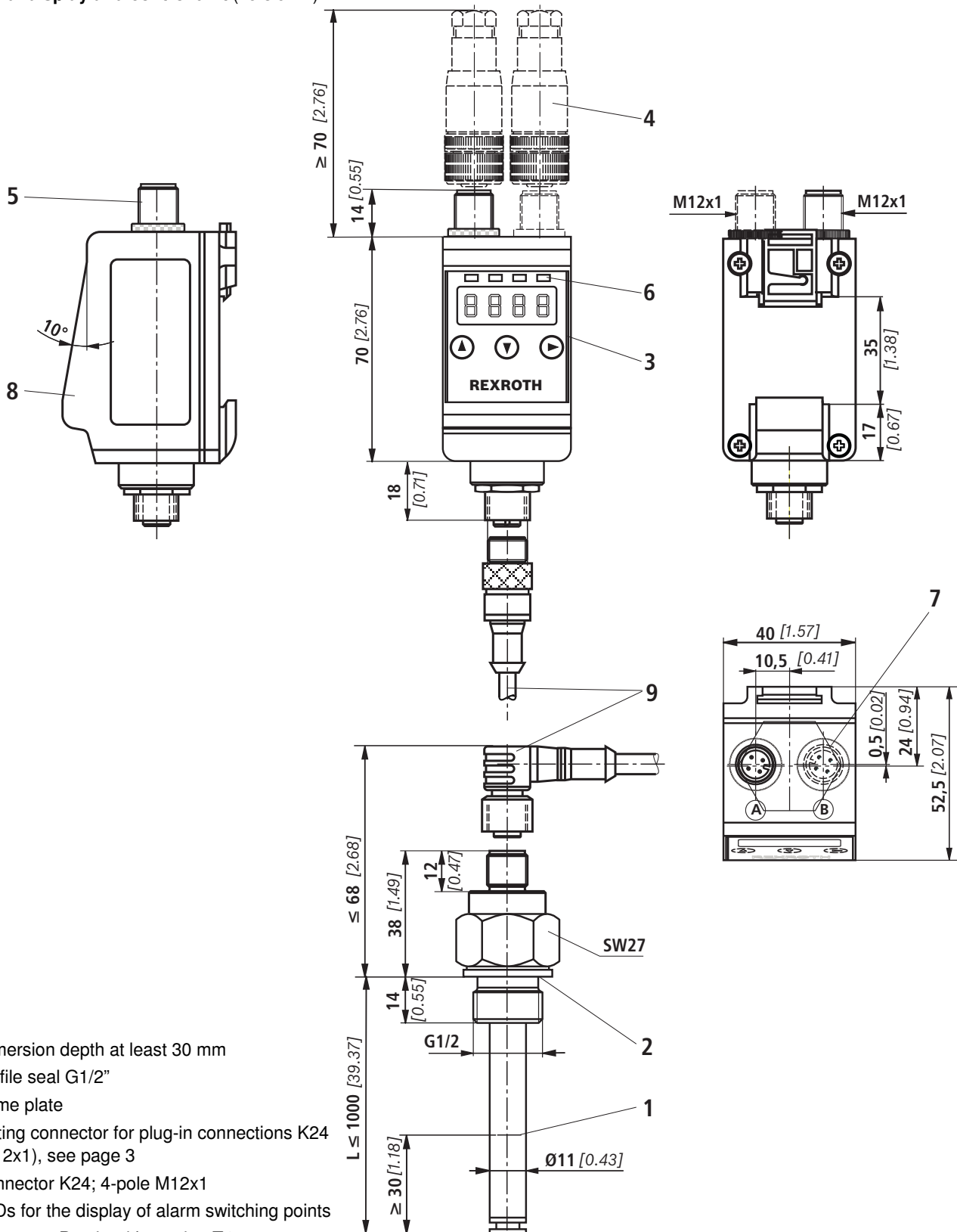
Switching point		1 programmable switching output
Max. switching current	A	0.5 per output / max. 1 in total
Output signal		4-20 mA (alternatively 0-10, 2-10 or 0-5 Volt can be set)
Max. load	Ω	500
Attachment external display and control unit		Assembly on top hat rail 35 mm

## Unit dimensions (dimensions in mm [inch])

Directly attached display and control unit (version D)

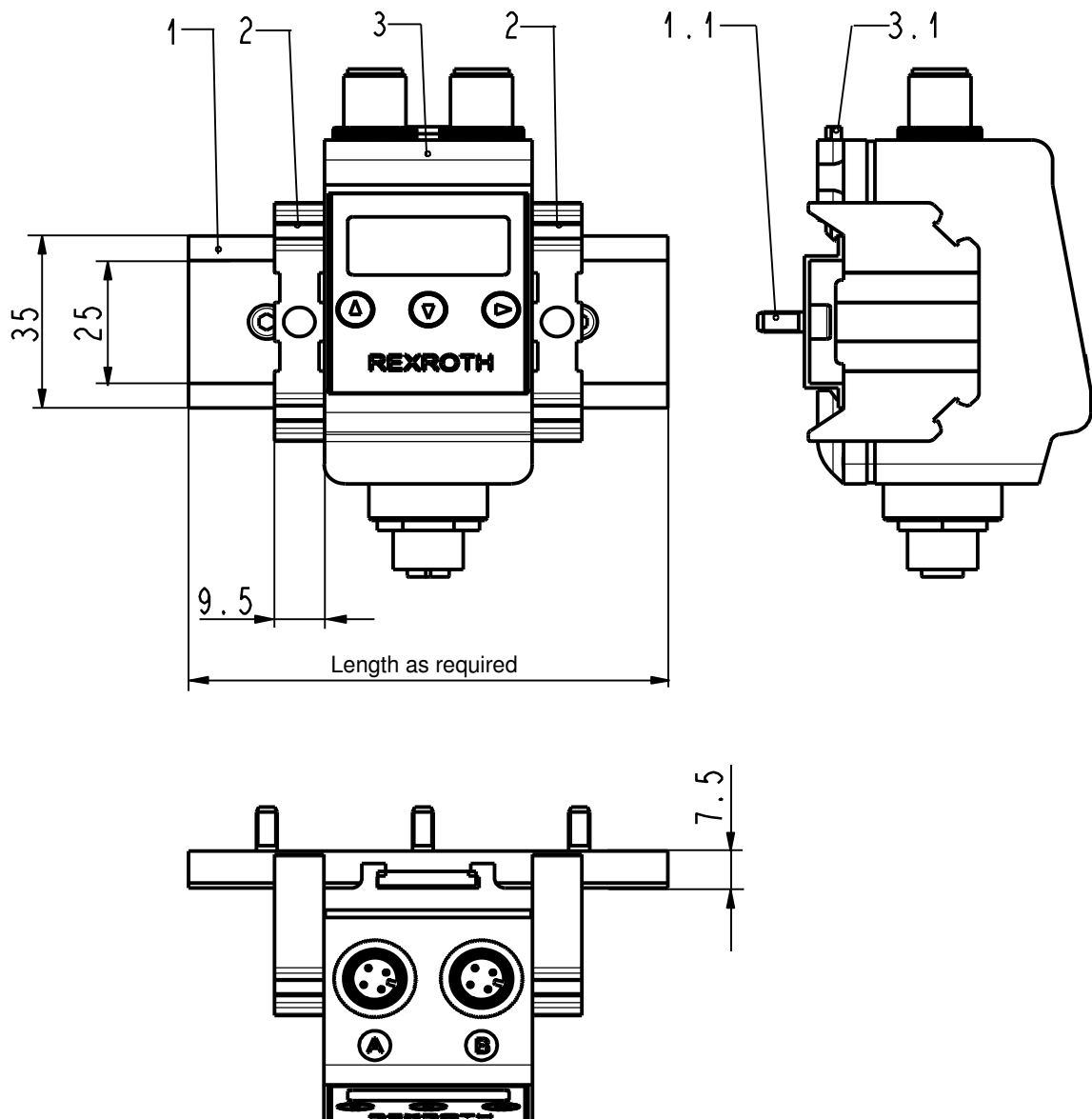


- 1 Immersion depth at least 30 mm
- 2 Profile seal G1/2"
- 3 Name plate
- 4 Mating connector for plug-in connections K24 (M12x1), see page 3
- 5 Connector K24; 4-pole M12x1
- 6 LEDs for the display of alarm switching points
- 7 Connector B only with version T4
- 8 Display and control unit can be rotated by 270°

**Unit dimensions** (dimensions in mm [*inch*])**External display and control unit** (version E)

- 1 Immersion depth at least 30 mm
- 2 Profile seal G1/2"
- 3 Name plate
- 4 Mating connector for plug-in connections K24 (M12x1), see page 3
- 5 Connector K24; 4-pole M12x1
- 6 LEDs for the display of alarm switching points
- 7 Connector B only with version T4
- 8 Display and control unit
- 9 Cable set M12x1; 4-pole, PUR, see page 2

## Assembly external display and control unit



- Item 1.0: Top hat rail TS35 DIN EN 60715 (R900016056)
- Item 1.1: Hex. socket head cap screw M5
- Item 2.0: Clamping bracket E/NS35N (R900227399)
- Item 3.0: External display and control unit
- Item 3.1: Mounting clip

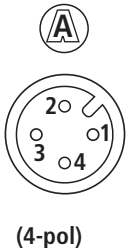
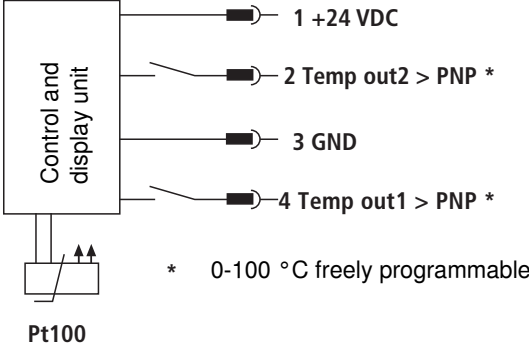
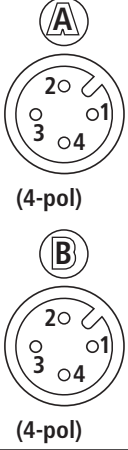
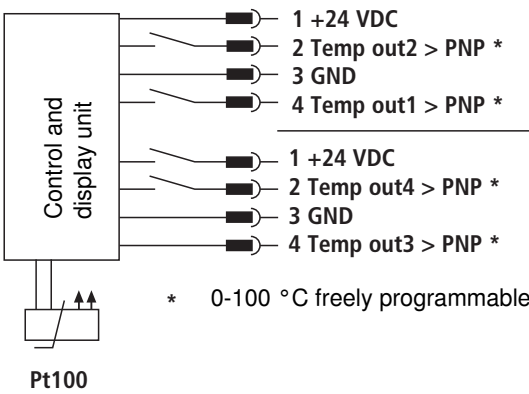
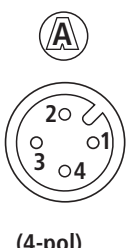
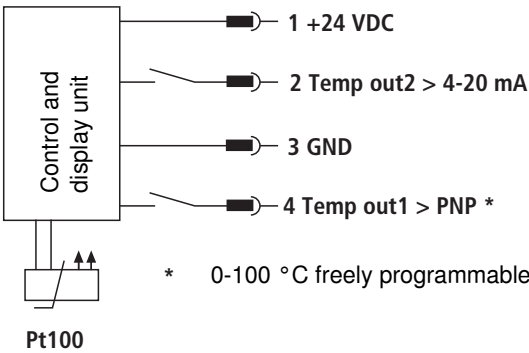
### Assembly information

- (1) Shorten the top hat rail item 1 (delivery length 2000 mm) to the required dimension and attach to substructure using the hex. socket head cap screws M5 item 1.1
- (2) Position the display and control unit item 3 on the top hat rail and fasten it using the mounting clip item 3.1
- (3) Fix the display and control unit item 3 on both sides using clamping brackets item 2

The mounting accessories item 1, item 1.1 and item 2 are not included in the scope of delivery of item 3.

## Pinout

### Switching function plug-in connection M12x1

Version	T2	 <p>(4-pol)</p>	 <p>* 0-100 °C freely programmable</p>	Connector B not available
	T4	 <p>(4-pol)</p>	 <p>* 0-100 °C freely programmable</p>	<p>(A)</p> <p>(B)</p>
	T1A	 <p>(4-pol)</p>	 <p>* 0-100 °C freely programmable</p>	Connector B not available



## Function

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### Function display and control unit

The microprocessor-controlled display and control unit processes the analog input signals for the analysis of the temperature control. The temperature settings can be made at the control unit in a simple menu tree by means of pushbuttons and read at the LED display.

The display and control unit has a red, four-digit seven-segment LED display and 3 pushbuttons for the operation as well as up to 4 LEDs integrated in the front plate for displaying alarm conditions.

The device has moreover two (T2) or four (T4) freely adjustable PNP switching outputs plus the adjustable switch-back points. One PNP output can be programmed as frequency output. Alternatively one freely programmable PNP switching output and one 4 - 20 mA output for the continuous temperature measurement. The switching conditions are shown in the display that can be rotated by 270° (version D0).

The 4...20 mA output can optionally be changed to 0 - 10 V, 2 - 10 V or 0 - 5 V.

In the display, the desired unit (°C, °F) will be shown according to the setting of the measured temperature. By default, the temperature display is set to °C.

During the setting and/or programming of the corresponding process parameters, the parameter values and/or the related menu items will be shown in the display.

In case of an energy supply failure, all input values will be stored, the min/max values can be retrieved from a permanent memory, if necessary.

### Parameterization

The menu navigation is based on the VDMA standard sheet for fluid sensors 24574-1.

The operating menu is designed hierarchically, as tree structure.

That means that frequently used functions and adjustment points can be accessed very quickly and rarely used menu items can be found in a sub-menu.

Using the ▲ and ▼ keys, the corresponding parameter is set and/or the next menu item is displayed.

Using the ► key, the marked menu item is selected and/or the set parameter is accepted and saved.

The parameter may be a numerical value and a selection of functions (e.g. NO [output as normally open contact], NC [output as normally closed contact] or i1 [analog output 4-20 mA]).

After confirmation of a parameter or selection of a function using the ► key, the display switches back to the current menu item. Then, you can display the next menu item using ▲ and ▼ and select it using the ► key.

## Spare parts

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When ordering spare parts for the electronic contact thermometer, the complete type designation has to be specified.

Seal	Mat. no
1 profile seal G ½ NBR	<b>R900012472</b>
2 profile seal G ½ FKM	<b>R900012507</b>

## Assembly information

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- Avoid flows
- Do not expose the switch to strong impact and bends
- Avoid external magnetic fields

### Electrical connections:

- Electrical connections may only be performed by specialists.
- Tighten round connector M12x1 or mating connectors after connection
- Only plug in the round connector M12x1 or mating connector if it is de-energized
- Tightening torque of the screwed plug 25 Nm
- In case of inductive load, provide for a protective circuit!

### Use in explosive areas according to directive 94/9/EC (ATEX)

The electronic contact thermometers according to ABZMT are not suitable for the use in explosive areas.

## Normative references

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### RE 08006

Mating connectors for controlling electrically operated valves and sensors

### DIN 24320

Flame-resistant fluids – Hydraulic fluids of categories HFAE and HFAS – Properties and requirements

### DIN 51524

Hydraulic fluids; hydraulic oils

### DIN EN 60715

Dimensions of low-voltage switchgear and control gear – Standardized mounting on rails

### DIN EN 60751

Industrial platinum resistance thermometers and platinum temperature sensors (IEC 60751:2008)

### DIN EN 175201-804:

Detail specification – Circular connectors – Round contacts, size diameter 1.6 mm; threaded coupling; German version EN 175201-804:1999

### DIN EN 175301-803:

Detail specification: Rectangular connectors – Flat contacts, 0.8 mm thickness, locking screw not detachable; German version EN 175301-803:1999

### DIN EN 60529

Degrees of protection provided by enclosures

### VDMA 24317

Fluid technology – Flame-resistant fluids – Technical minimum requirements

### VDMA 24568

Fluid technology – Fast biodegradable hydraulic fluids – Technical minimum requirements

### VDMA 24574-1

Fluid technology – Terms, menu navigation and electrical connection for fluid sensors