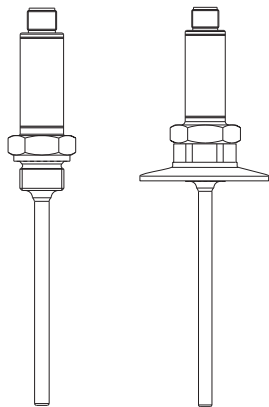


Operating manual

Series 450



Compact thermometer

BA01235O/09/en/01.13
71220279

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1 Safety instructions

Designated use

- The device is a compact thermometer for the acquisition and optional conversion of temperature input signals for industrial temperature measurement.
- The manufacturer is not liable for damage caused by improper or non-designated use.

Installation, commissioning, operation

- The device must only be installed, connected and commissioned by qualified and authorized expert staff (e.g. electrical technicians) strictly adhering to the instructions contained in this manual, the applicable norms, legal regulations and certificates (depending on the application).
- These experts must have read and understood this manual and follow the instructions it contains.
- Damaged devices must not be put into operation and they must be labeled as defective.

Operational safety

- ❑ The device is safely built and tested according to state-of-the-art technology and has left the factory in perfect condition as regards technical safety. The applicable regulations have been taken into account.
- ❑ The device must only be powered by a power supply unit with a limited energy electric circuit in accordance with IEC 61010-1: "SELV or Class 2 circuit".
- ❑ Due to its design, the device is not repairable. When later disposing of the device, please observe the local regulations.

2 Installation

Installation instructions

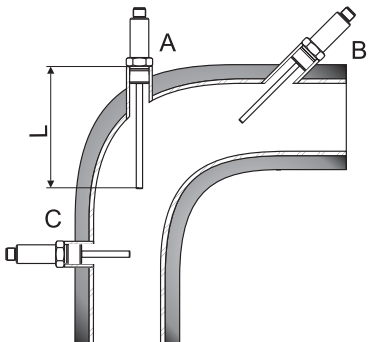
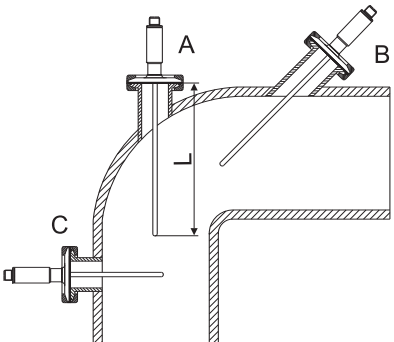
- ❑ Permitted ambient temperature range: -40 to 85 °C (-40 to 185 °F)
- ❑ Process temperature limits:
 - without extension neck: -50 to 150 °C (-58 to 302 °F)
 - with extension neck: -50 to 200 °C (-58 to 392 °F)
 - without transmitter: -50 to 200 °C (-58 to 392 °F)

Restrictions (process connection for general applications) subject to the ambient temperature (recommended guideline values):

Max. ambient temperature	Max. process temperature	Max. process temperature with extension neck
<ul style="list-style-type: none">■ up to 25 °C (77 °F)■ up to 40 °C (104 °F)■ up to 60 °C (140 °F)■ up to 85 °C (185 °F)	<ul style="list-style-type: none">■ 150 °C (302 °F)■ 135 °C (275 °F)■ 120 °C (248 °F)■ 100 °C (212 °F)	<ul style="list-style-type: none">■ 200 °C (392 °F)■ 180 °C (365 °F)■ 160 °C (320 °F)■ 133 °C (271 °F)

- Process pressure limits:
depending on the process connection, up to max. 100 bar (1450 PSI) at
20 °C (68 °F).

Mounting location

Compact thermometer (process connection for general applications)	Compact thermometer (with process connection adapter for hygienic applications)
	
<ul style="list-style-type: none">■ Pos. A: On angle brackets■ Pos. B: In smaller pipes, inclined■ Pos. C: Perpendicular to the direction of flow■ L = Insertion length	



Minimum insertion length $L_{\min} = 40 \text{ mm}$ (1.6 in)

Installation

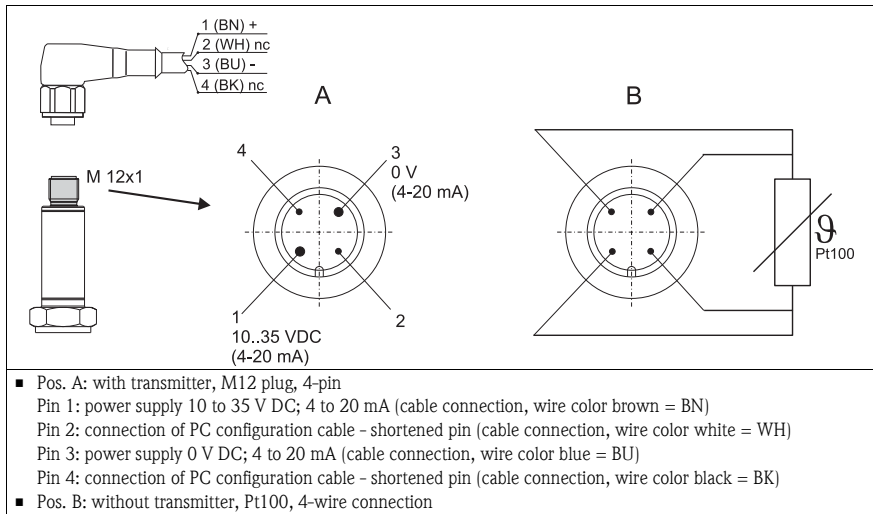
1. Seal the process connection (for general applications) with Teflon tape before you screw in the device.
2. Ensure that the hygienic process connections and the connection adapters can withstand the maximum process pressure.
3. Install the device before the process application is started.
4. Fit the M12 plug onto the device and connect the power supply accordingly (see chap. 3).

CAUTION

Do not tighten the M12 plug too much, in order to prevent damage to the device.

3 Wiring overview

Pin assignment of the 4-wire M12 plug for output signal and power supply.



4 Commissioning

Once the supply voltage is applied, the device is in operation.

5 Operation

The configuration of the compact thermometer is performed using the PC configuration software, which is available in the configuration kit as an accessory.

Settable parameters	
Standard settings	<ul style="list-style-type: none">■ Measuring unit (°C/°F)■ Measuring range limits -50 to 150 °C (-58 to 302 °F) without extension neck -50 to 200 °C (-58 to 392 °F) with extension neck
Advanced settings	<ul style="list-style-type: none">■ Fault condition reaction■ Output (analog standard/inverse)■ Filter (0 ... 8 s)■ Offset (-9.9 to +9.9 K)■ Measurement point identification/Tag
Service functions	<ul style="list-style-type: none">■ Simulation (on/off)

Detailed information about configuration using the PC configuration software can be found in the online documentation of the PC software.

6 Accessories

Configuration kit (PC configuration software and interface cable USB) for the compact thermometer. Please contact your supplier when ordering.

7 Troubleshooting

Always start troubleshooting with the checklists below if faults occur after start up or during operation. This takes you directly (via various queries) to the cause of the problem and the appropriate remedial measures.

Due to its design, the device cannot be repaired. However, it is possible to send the device in for examination. See the information in the "Return" section.

Problem	Possible cause	Remedy
Device is not responding	Supply voltage does not match that specified on the nameplate.	Apply correct voltage.
	Broken cable, or connecting cables are not in contact with the terminals.	Check cable and contacting of the cables and correct if necessary.
Measured value is incorrect/inaccurate	Incorrect sensor orientation.	Install the sensor correctly.
	Device programming is incorrect (scaling).	Change scaling.
	Offset incorrectly set.	Check offset.
Failure current (≤ 3.6 mA or ≥ 21 mA)	Device programming is incorrect (scaling).	Change scaling.
	Faulty sensor.	Replace device.
	Electronics unit is defective.	

8 Return

The following procedures must be carried out before a device is returned to the manufacturer:

- Remove all fluid residues. This is particularly important if the fluid is hazardous to health, e.g. flammable, toxic, caustic, carcinogenic, etc.



Do not return a measuring device if you are not absolutely certain that all traces of hazardous substances have been removed, e.g. substances which have penetrated crevices or diffused through plastic.

BA01235O/09/EN/01.13 - 71220279 - FM10



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