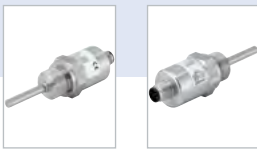




## RTD temperature sensor with CANopen interface

- Single resistance thermometer Type Pt1000
- Process connections: G 1/2", NPT 1/2" or clamp 3/4"
- Temperature measurement range: -50...+150 °C
- Limit value monitoring function
- Access to measured value, device status and settings via the CANopen interface



Product variants described in the data sheet may differ from the product presentation and description.

### Can be combined with



**Type ME43**  
Fieldbus gateway



**PLC**  
With CANopen interface

Integration into CANopen and bus networks

### Type description

Resistance thermometers are the preferred choice for measuring the temperature of liquids and gases. The design offers reliable tightness under negative and positive pressure.

The measuring insert is equipped with a Pt1000 temperature sensor according to DIN EN 60751, Class A. The measured temperature value is digitised, linearised and made available via the CANopen digital communication interface (CAN slave) for further processing.

Instead of an analogue output, this device offers the CANopen digital interface. This allows bidirectional data transfer, e.g. with a CAN/Ethernet gateway or directly to a PLC that is equipped with a CAN interface. CAN devices can also be connected to the Bürkert bus digital communication interface. A driver used for data exchange and settings of the 8412 is integrated in the Bürkert PC tool Communicator.

Several useful auxiliary functions have been implemented through the DS 404 device profile.

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## 1. General technical data

### Product properties

#### Material

Please make sure the device materials are compatible with the fluid you are using.

Detailed information can be found in chapter **"3.1. Chemical Resistance Chart – Bürkert resistApp"** on page 5.

#### Non wetted parts

Housing Stainless steel 1.4571 (316Ti)

#### Wetted parts

Process connection

- G or NPT variant: stainless steel 1.4571 (316Ti)
- Clamp variant: stainless steel 1.4435 (316L)

Protection tube

- G or NPT variant: stainless steel 1.4571 (316Ti)
- Clamp variant: stainless steel 1.4435 (316L)

Dimensions Detailed information can be found in chapter **"4. Dimensions"** on page 6.

Weight Approx. 80 g for the variant with thread connection and 100 mm probe length. The weight of the temperature sensor depends on the process connection and the insertion length.

Measuring element Pt1000 temperature sensor, two-wire circuit

Measuring probe length 25, 30, 50, 100 or 150 mm

Measuring range -50...+150 °C (-58...+302 °F)

Monitoring

- Measuring circuit
  - Underrange (freely selectable lower limit)
  - Overrange (freely selectable upper limit)
- Probe short circuit
- Probe break

Additional function

- Min./max. measured value memory
- Fine adjustment
- Toggling between °C, °F, °K
- Decimal places selectable 0, 1, 2

### Performance data

Sampling rate 250 ms

Transmission behaviour Temperature linear

Measuring resolution 12 Bit

Measurement deviation

- Tolerance class A according to EN 60751:2009 / IEC 60751:2008
- Max. ±0.2 % of the measuring range span

Response time

- $t_{0.5} = 5$  s;  $t_{0.9} = 12$  s, in water with a flow velocity of 0.4 m/s
- $t_{0.5} = 40$  s;  $t_{0.9} = 110$  s, in air with a flow velocity of 3.0 m/s

### Electrical data

Operating voltage 10...30 V DC, filtered and regulated

Power source (not supplied) The auxiliary energy of the pressure sensor must meet SELV requirements; optionally, an energy-limited current circuit according to section 9.3 of DIN EN 31010-1 and UL 61010-1 can be used.

DC reverse polarity protection Yes

Overvoltage protection Yes

Short circuit protection Yes

Protection class Class III according to EN 61140

Current consumption Approx. max. 45 mA

Recommended connection cable 5-wire shielded cable, length depends on the transmission speed. The physical CAN transmission is standardized according to ISO 11898-2 (high-speed) and ISO 11898-3 (low-speed)

### Medium data

Fluid Liquid and gaseous medium

Fluid pressure Max. 40 bar

### Process/Pipe connection & communication

Process connection

- G ½" or NPT ½" screw-in thread according to EN 837
- Clamp ¾" according to DIN 32676 series B

Electrical connection M12 × 1 male connector, 5 pin according to DIN IEC 60947-5-2

### Digital communication: CANopen

Protocol	CiA DS 301, V4.02, CANopen slave
Profile	CiA DS 404, V1.2; measuring devices and closed-loop controllers
Baud rate	20 kbaud to 1 Mbaud, setting via LSS or SDO
Node ID	1 to 127 setting via LSS or SDO
PDO	0 Rx, 1 Tx
SDO	1 Rx, 1 Tx
Emergency	Yes
Heartbeat	Yes (if active, then Node Guarding deactivated)
Node Guarding	Yes (if active, then Heartbeat deactivated)
LSS	Yes
SYNC	Yes
Operation and project planning	All parameters are accessible via the CANopen object directory (EDS) and can be set via standard CANopen software tools or Bürkert Communicator.
EDS (electronic data sheet)	<ul style="list-style-type: none"> <li>• Device driver in Bürkert Communicator tool Type 8920, see “Bürkert Communicator” on the website in the Software chapter <b>Type 8920</b> ▶</li> <li>• See “Device Description Files” on the website in the Software chapter <b>Type 8412</b> ▶</li> </ul>
Factory setting	See “Operating Instructions Type 8412” on the website in the User Manuals chapter <b>Type 8412</b> ▶

### Approvals and certificates

#### Directives

CE directive	The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable)
Pressure equipment directive	<ul style="list-style-type: none"> <li>• The device does not meet the requirements for “safety accessories” within the meaning of the Pressure Equipment Directive 2014/68/EU.</li> <li>• Complying with article 4, paragraph 1 of 2014/68/EU directive Detailed information on the pressure equipment directive can be found in chapter “<b>2.1. Pressure equipment directive</b>” on page 5.</li> </ul>

### Environment and installation

#### Ambient temperature

Operation	-20...+85 °C (-4...+185 °F)
Storage	-40...+85 °C (-40...+185 °F)
Temperature influence	≤ ±0.0025 % of the measuring span per K deviation from 22 °C
Relative air humidity	<ul style="list-style-type: none"> <li>• During operation: ≤ 100 %, without condensation on the outer housing surface of the device</li> <li>• During storage: ≤ 90 %, without condensation</li> </ul>
Climate class	3K7 according to EN 60721-3-3
Application range	Indoors and outdoors (protect this device against electromagnetic interference, ultraviolet rays and the effects of climatic conditions)
Degree of protection according to IEC/EN 60529	IP67 with female connector screwed on
Mounting position	Installation: unrestricted

## 2. Approvals

### 2.1. Pressure equipment directive

The device conforms to article 4, paragraph 1 of the pressure equipment directive 2014/68/EU under the following conditions:

#### Device used on a pipe

##### Note:

- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure, DN = nominal diameter of the pipe

Type of fluid	Conditions
Fluid group 1, article 4, paragraph 1.c.i	$DN \leq 25$
Fluid group 2, article 4, paragraph 1.c.i	$DN \leq 32$ or $PS \cdot DN \leq 1000$
Fluid group 1, article 4, paragraph 1.c.ii	$DN \leq 25$ or $PS \cdot DN \leq 2000$
Fluid group 2, article 4, paragraph 1.c.ii	$DN \leq 200$ or $PS \leq 10$ or $PS \cdot DN \leq 5000$

#### Device used on a vessel

##### Note:

- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure, V = vessel volume

Type of fluid	Conditions
Fluid group 1, article 4, paragraph 1.a.i	$V > 1 \text{ L}$ and $PS \cdot V \leq 25 \text{ bar} \cdot \text{L}$ or $PS \leq 200 \text{ bar}$
Fluid group 2, article 4, paragraph 1.a.i	$V > 1 \text{ L}$ and $PS \cdot V \leq 50 \text{ bar} \cdot \text{L}$ or $PS \leq 1000 \text{ bar}$
Fluid group 1, article 4, paragraph 1.a.ii	$V > 1 \text{ L}$ and $PS \cdot V \leq 200 \text{ bar} \cdot \text{L}$ or $PS \leq 500 \text{ bar}$
Fluid group 2, article 4, paragraph 1.a.ii	$PS > 10 \text{ bar}$ and $PS \cdot V \leq 10000 \text{ bar} \cdot \text{L}$ or $PS \leq 1000 \text{ bar}$

## 3. Materials

### 3.1. Chemical Resistance Chart – Bürkert resistApp



#### Bürkert resistApp – Chemical Resistance Chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

[Start Chemical Resistance Check](#)

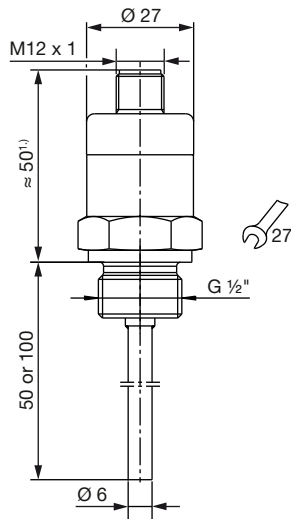
## 4. Dimensions

**Note:**

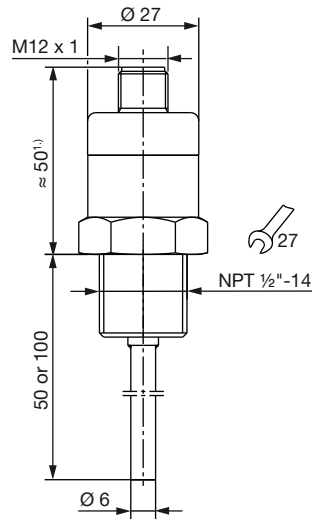
Dimensions in mm

Process connection:

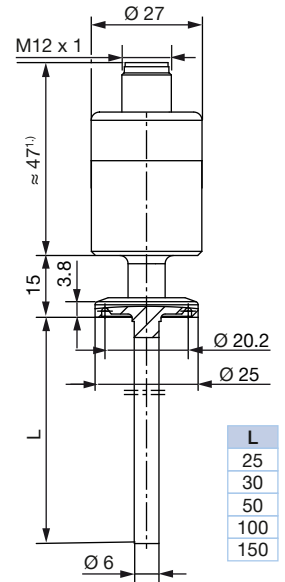
G 1/2" according to EN 837



NPT 1/2" according to EN 837



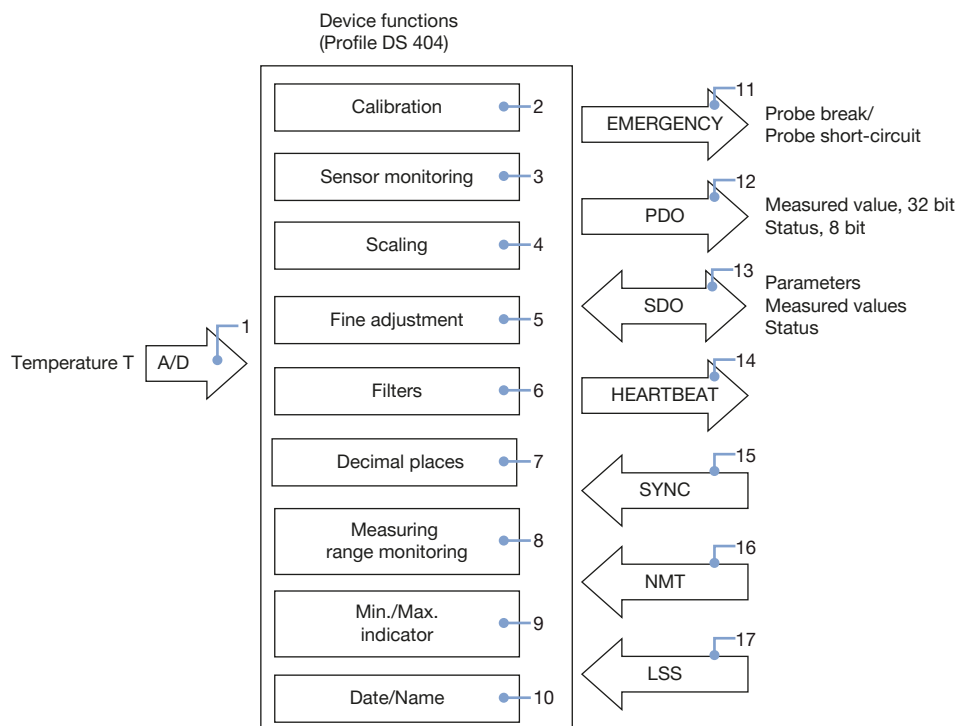
Clamp 3/4" according to DIN 32676 series B



1.) The total height is increased by the height of the used female connector and cable.

## 5. Product operation

### 5.1. Functional overview



No.	Description
1	The measured temperature value is digitized.
2	The temperature signal is adjusted digitally per default.
3	The sensor monitoring continuously checks the correct function of the sensor signal and triggers high-priority emergency frames in the event of an error.
4	The measured temperature value can be scaled to any measuring units (or in % of the measuring range).
5	The fine adjustment features a freely adjustable characteristic line offset.
6	Undesired signal fluctuations can be suppressed using the adjustable filter constant.
7	The measurement output has a freely selectable decimal place.
8	Free choice of upper and lower limits for range monitoring. The result is given as a status byte in addition to the measurement in the PDO frame.
9	The drag pointer ("min./max. index") function records the minimum and maximum temperature values.
10	The date and name of the last maintenance operation can be saved.
11	The emergency frame is triggered in the event of a sensor fault.
12	The PDO frame contains a 32-bit measurement and a 8-bit status. The measurement output can be controlled by means of different trigger conditions.
13	SDO frames can be used to set parameters and to request measured values and statuses.
14	The heartbeat signal can be used to additionally monitor the function of the transmitter.
15	The sync command can also be used to control the transfer of the measured values.
16	The NMT frames are for the purpose of controlling the operating status of the transmitter.
17	The CAN Node ID and the CAN baud rate are set either with LSS or SDO.


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## 6. Product accessories

### Note:

To set up a device, please use the USB-büS interface Type 8923 in combination with the Bürkert software tool Communicator Type 8920.

See **Software manual Type 8920** ► for more information.

Accessories	No.	Description
	1	Quick-Start
	2	Power supply:100...240 V AC/24 V DC 1 A and adaptors for power supply worldwide use
	3	büS terminating resistor on büS Y-splitter
	4	5 pin M12 male connector wired on free end cable
	5	büS connection cable with 5 pin M12 plug, micro USB B plug
	6	büS adapter with 5 pin M12 plug, A-coded to 5 pin M12 plug, A-coded
	7	büS stick (USB to büS/CANopen adaptor)
	8	büS service cable with 5 pin M12 plug, mini USB and circular plug-in connectors for power supply
	9	Magnetic key
	10	CD - Communicator (30-day license without registration, update and licensing over Bürkert home page). It is recommended to download and install the Communicator software from the homepage to use the latest version.

## 7. Ordering information

### 7.1. Bürkert eShop – Easy ordering and quick delivery



#### Bürkert eShop – Easy ordering and fast delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

[Order online now](#)

### 7.2. Bürkert product filter



#### Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements? Use the Bürkert product filter and find suitable articles for your application quickly and easily.

[Try out our product filter](#)



### 7.3. Ordering chart

**Note:**

All following versions have a 10...30 V DC operating voltage and a CANopen digital interface.

Process connection	Temperature range	Probe length	Article no.
	[°C]	[mm]	
G ½"	-50...+150	50	574638
		100	574639
NPT ½"		50	574640
		100	574641
Clamp ¾"		25	574320
		30	574321
		50	572034
		100	572035
		150	572036

Further versions on request	
<b>Process connection</b> Screw-in thread G ¼", G ⅜", M14x1.5, M18x1.5 and M20x1.5	<b>Temperature</b> -50...+450 °C
<b>Additional</b> <ul style="list-style-type: none"> <li>Pt1000 temperature sensor, two-wire circuit, class B according to EN 60751:2009 / IEC 60751:2008</li> <li>Insertion length: 150, 200 or 250 mm</li> </ul>	

### 7.4. Ordering chart accessories

**Note:**

- büS communication specifications are based on CANopen.
- All following accessories can be used for CANopen as well.

Description	Article no.
<b>System connection</b>	
<b>Type ME43 Gateway / Interface</b>	
büS/Ethernet (Profinet, Ethernet/IP, Modbus TCP, EtherCAT)	307390
büS/Profibus DP	307393
<b>Interface accessories</b>	
<b>büS Stick Set</b>	
USB-büS-Interface Set 1, Type 8923. Detailed information can be found in chapter "6. Product accessories" on page 8.	772426
USB-büS Interface Set 2, Type 8923 (only büS Stick, cable and büS service cable)	772551
<b>Connectors and sockets</b>	
büS Y-connector, 5 pin M12 female to 5 pin M12 male and 5 pin M12 female	772420
büS Y-connector, 5 pin M12 female to 5 pin M12 male and 5 pin M12 female (power interrupt)	772421
büS adaptor M12 male A-coded - M12 male A-coded	772867
büS termination, 5 pin M12 male cable plug	772424
büS termination, 5 pin M12 female cable plug	772425
<b>Extensions</b>	
5 pin M12 female and male straight cable plug moulded on cable (0.5 m, shielded)	772403
5 pin M12 female and male straight cable plug moulded on cable (1 m, shielded)	772404
5 pin M12 female and male straight cable plug moulded on cable (3 m, shielded)	772405
5 pin M12 female and male straight cable plug moulded on cable (5 m, shielded)	772406
5 pin M12 female and male straight cable plug moulded on cable (10 m, shielded)	772407
5 pin M12 female and male straight cable plug moulded on cable (20 m, shielded)	772408

Description	Article no.
<b>Software</b>	
Software Bürkert Communicator	Download <b>Type 8920</b> ▶

# Bürkert – Close to You

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please visit us at  
[www.burkert.com](http://www.burkert.com)

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