
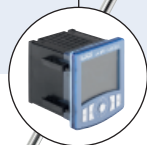


## Guided microwave level measurement device - sanitary version

- Universal level measurement device for liquids
- Liquid interface measurement
- Insensitive to dust and steam

- 4... 20 mA/Hart - 2 wires, ATEX/IECEx approvals 

Type 8189 can be combined with...



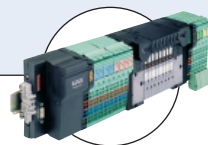
**Type 8619**  
multiCELL  
Transmitter/Controller



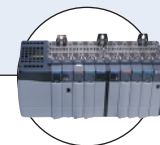
**Type 2035**  
Diaphragm valve



**Type 8802-GD**  
Continuous  
TopControl system



**Type 8644**  
Valve islands



**PLC**

The Type 8189 is a level measurement device with interchangeable rod probe, designed for continuous level measurement. The unit is suitable for liquids, for industrial use in all areas of process technology. But the main application targets are in Food and Beverage (F&B) and pharmaceutical tanks to the new rod in stainless steel 1.4435 with  $R_a < 0.76 \mu\text{m}$ . For applications with corrosive liquids a PFA coated version is available.

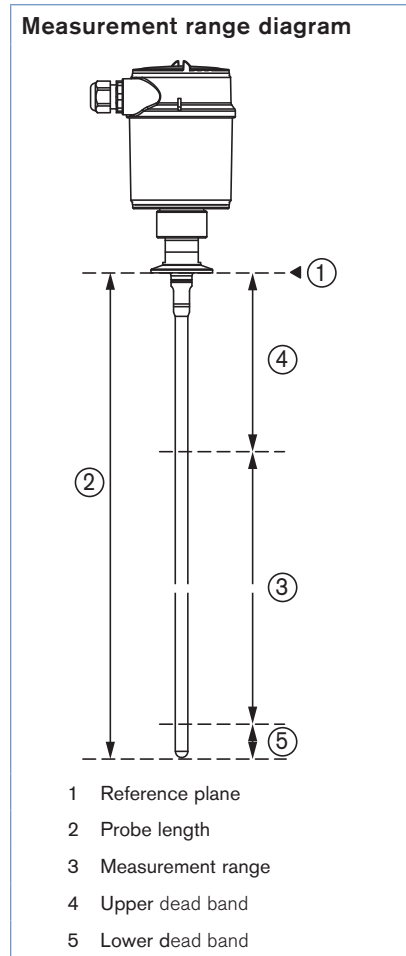
Even process conditions such as strong steam generation, density fluctuations or changes of the dielectric constant do not influence the accuracy of the measurement.

Build-up or condensation on the probe or vessel wall do not influence the measurement result.

### General data

<b>Materials</b>	
Housing / Cover	PBT, Stainless steel 316L (1.4404) / PC
Seal ring / Ground terminal	NBR / Stainless steel 316L
Wetted parts	
Process fitting / process seal	Stainless steel 316L (1.4404 or 1.4435) and PEEK / EPDM
Rod- $\varnothing$ 8 mm - polished	Stainless steel 316L (1.4435)
<b>Rod surface finish</b>	$R_a < 0.76 \mu\text{m}$ (BN2)
<b>Display</b>	LCD in full dot matrix
<b>Weight</b>	
Housing	890 g
Rod- $\varnothing$ 8 mm	approx. 400 g/m
<b>Process fitting</b>	Clamp 2" or DIN11851 DN50
<b>Length</b>	0.3... 4 m - Lateral load: 10 Nm
<b>Electrical connections</b>	Cable gland M20 x 1.5
<b>Measurement type</b>	Level of liquids
<b>Min. dielectric figure</b>	$\epsilon_r > 1.6$
<b>Dead band</b>	
in water	From top of probe: 80 mm - from bottom of probe: 0 mm
in oil	From top of probe: 150 mm - from bottom of probe: 100 mm
<b>Measurement range</b>	0.08... 4 m (see diagram on next page)
<b>Process temperature</b>	-20 to 150°C (-4 to 302°F)
<b>Process pressure</b>	-1 to 16 bar (-14.51 to 232.16 PSI) (-100... 1600 kPa) (depends on the process fitting)
<b>Temperature drift</b>	0.03%/10K (Relating to the max. measurement range)
<b>Repeatability</b>	$< \pm 1 \text{ mm}$
<b>Deviation</b>	$\pm 2 \text{ mm}$ (see deviation diagram, on next page)

Electrical data	
Operating voltage (U <sub>n</sub> )	9.6 - 35 V DC or 9.6 - 30 V DC (Ex ia instrument)
Output signal	4... 20 mA/HART [Range of the output signal 3.8... 20.5 mA/HART (default setting)]
Resolution	0.3 µA
Fault signal (adjustable)	Last valid measured value or ≥ 21 mA or ≤ 3.6 mA
Current limitation	21.5 mA (max. output current)
Load	(U <sub>n</sub> - U <sub>min.</sub> )/0.0215 A
Integration time (63% of the input variable)	0... 999 s, adjustable
Environment	
Ambient temperature with display, adjustment elements	-40 to +80°C (-4 to 176°F) (operation and storage)
Relative humidity	max. 75% (operation), max. 85% (storage); without condensation
Standards and approvals	
Protection	IP66/IP67 with M20 x 1.5 gland mounted and tightened
Overvoltage category	III (IEC 61010-1)
Protection class	III (IEC 61010-1)
Standard	EN61326 / EN61010-1
EMC / Safety	EN60079-0; EN60079-11; EN60079-26
ATEX <sup>1)</sup>	NE 21; NE 43
NAMUR	
Approvals	FDA
Specifications Ex	
⊕ - Protection	Categories 1 G, 1/2 G or 2 G
⊕ - Certification	Ex ia IIC T6
Conformity specifications <sup>1)</sup>	
Operating voltage U <sub>i</sub>	30 V
Short circuit rating I <sub>i</sub>	131 mA
Power limitation P <sub>i</sub>	983 mW
Ambient temperature	-50 to +46°C (-40 to 105.8°F) (depend on categories)
Internal capacity C <sub>i</sub>	negligible
Internal inductivity L <sub>i</sub>	≤ 5 µH

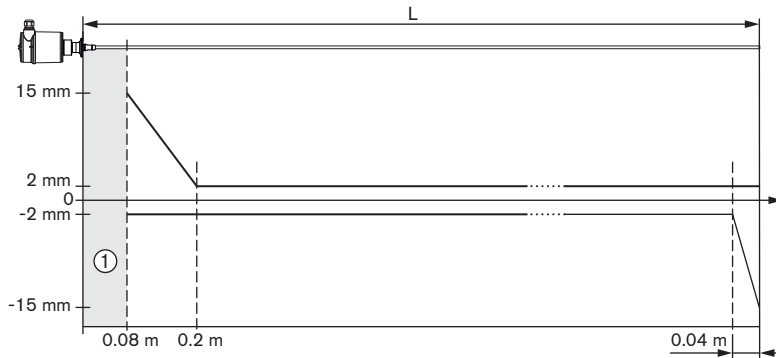


1) homologation certificate IECEx TUR 14.0014 X / TÜV 14 ATEX 7490 X

**Deviation diagram**

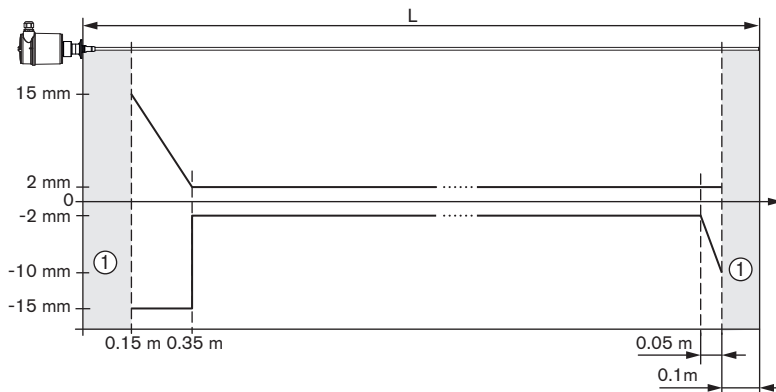
**Rod probe version in water**

- ① Dead band - no measurement possible in this area
- L Probe length



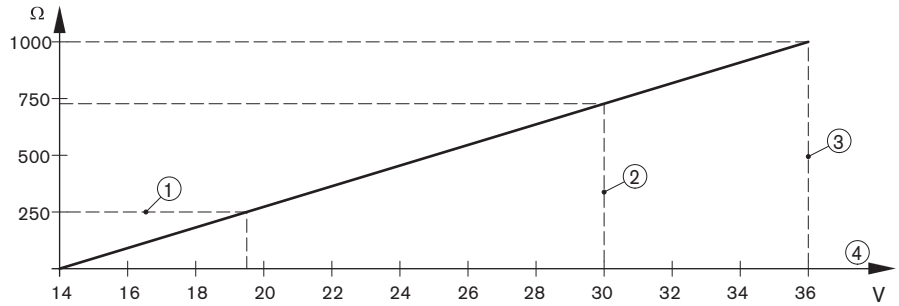
**Rod probe version in oil**

- ① Dead band - no measurement possible in this area
- L Probe length



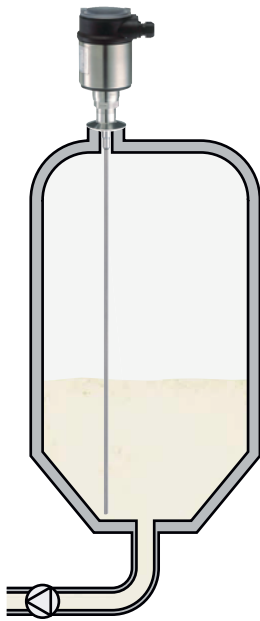
**Load diagram**

- 1 HART load
- 2 Voltage limit Ex ia instrument
- 3 Voltage limit non-Ex instrument
- 4 Supply voltage

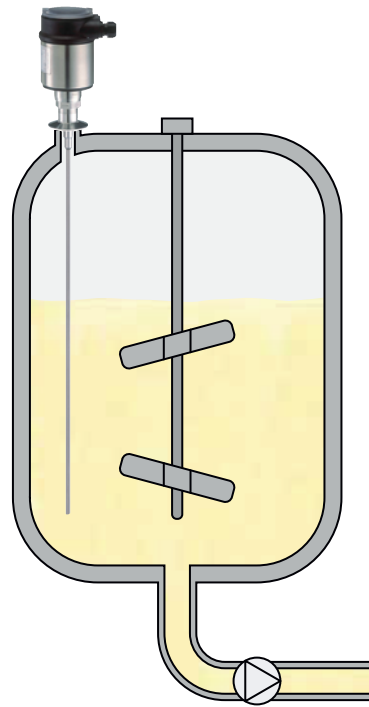
**Target applications with Type 8189****Foodstuffs and animal feed**

Products such as beer, milk, wine, cereals, sugar, flour, coffee, cornflakes, cacao, instant powder, animal feed - liquids or bulk solids levels must be measured everywhere in the food industry.

The microwave principle works independent of products characteristics such as moisture, intense dust or noise generation, density, temperature, over-pressure, foam dielectric value and the shape of the material cone.

**Application examples**

Level measurement in a milk vessel



Level measurement in an ice cream vessel

## Principle of operation

High frequency microwave pulses are guided along a rod. When they reach the product surface, the microwave pulses are reflected and received by the processing electronics. The running time is valuated by the instrument and outputted as distance.

Time consuming adjustment with medium is not necessary. The instruments are preset to the ordered probe length.

The shortenable rod versions can be adapted individually to the local requirements.

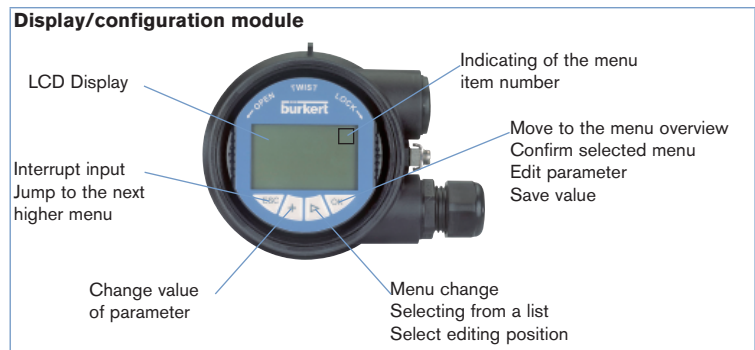
The measuring device can be adjusted with:

- the display/configuration module
- the suitable Bürkert DTM in conjunction with adjustment software according to the FDT/DTM standard, e.g. PACTware™ and PC.
- a HART handheld

The entered parameters are generally saved in the measuring device Type 8189. Optionally, parameters may also be uploaded and downloaded with the display/configuration module or in PACTware™

### ▶ Set up with display/configuration module

The display/configuration module can be inserted into the measuring device and removed again at any time. It is not necessary to interrupt the power supply. The measuring device is adjusted via the four keys of the display/configuration module



### ▶ Set up with PACTware™/DTM and HART communication

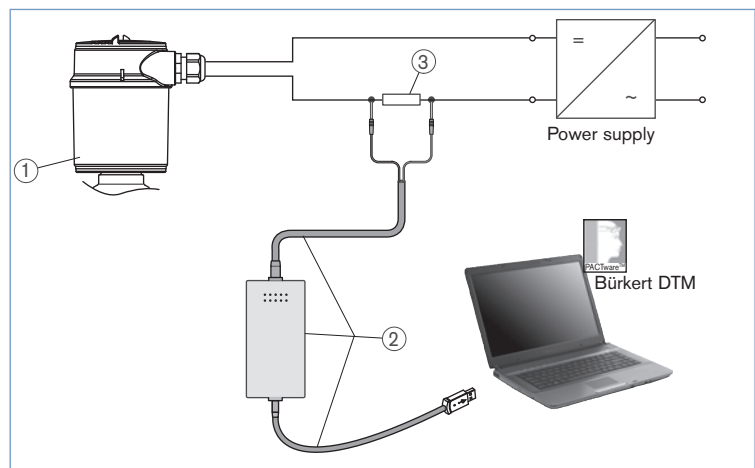
The measuring device can be operated thanks to PACTware™, via the HART signal. An interface adapter is necessary for the adjustment with PACTware™. For the setup of the Type 8189, DTM-Collection in the actual version must be used. The basic version of this DTM Collection incl. PACTware™ is available as a free-of-charge download from the Internet at [www.burkert.com](http://www.burkert.com).

#### Connecting the PC via HART

1. Measuring device 8189
2. HART-USB Modem
3. Resistance 250 Ohms

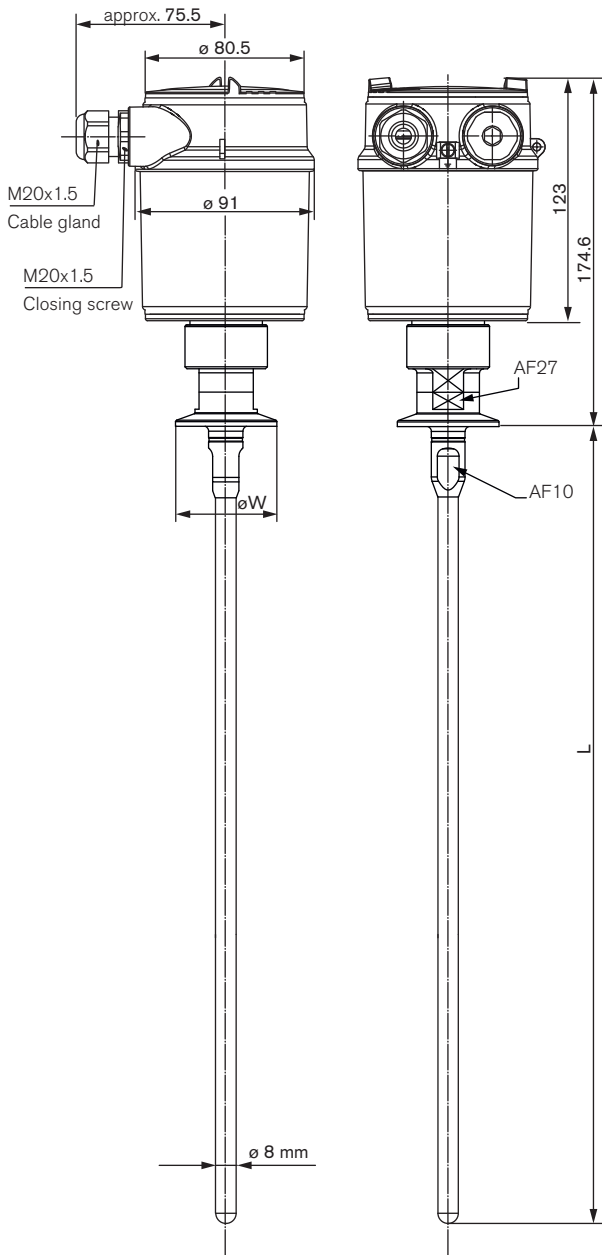
#### Necessary components:

- Measuring device 8189
- PC with PACTware™ and suitable Bürkert DTM
- HART-USB Modem
- Resistance approx. 250 Ohms
- Power supply unit



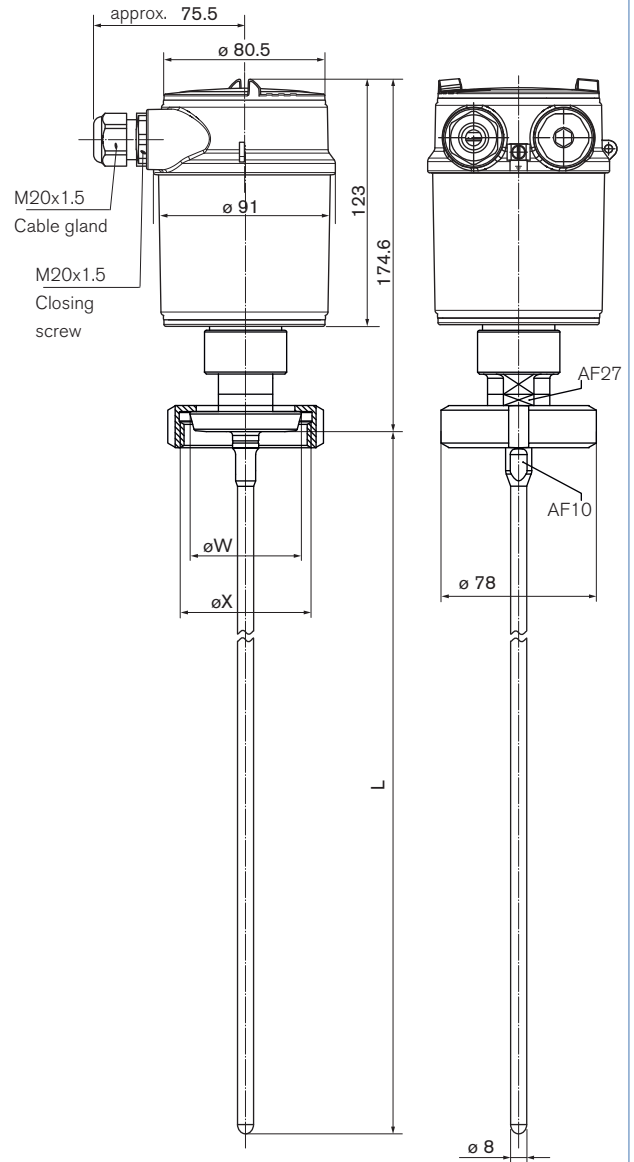
Dimensions [mm]

with Clamp connection



Clamp connection	ø W	L
1", 1 1/2"	50.5	0.3... 4 m
2"	64.0	
2 1/2"	77.5	
3"	91.0	

with DIN 11851 connection



DIN 11851 connection	ø W	ø X	L
DN32	50.0	Rd 58x1/6	0.3... 4 m
DN40	56.0	Rd 65x1/6	
DN50	68.5	Rd 78x1/6	
DN65	86.0	Rd 95x1/6	

## Ordering chart for compact measurement device Type 8189

Specifications	Voltage supply	Output	Probe	Length	Electrical connection	Item no. with display/ configuration module
Clamp 2"	9.6 - 35 V DC	4 - 20 mA/HART (2 wires)	Rod	1 m	Cable gland M20 x 1.5	565 850
				2 m	Cable gland M20 x 1.5	565 852
DIN11851 - DN50	9.6 - 35 V DC	4 - 20 mA/HART (2 wires)	Rod	1 m	Cable gland M20 x 1.5	565 851
				2 m	Cable gland M20 x 1.5	565 853
Ex version - ATEX approval - Clamp 2"	9.6 - 30 V DC	4 - 20 mA/HART (2 wires)	Rod	1 m	Cable gland M20 x 1.5	565 854
				2 m	Cable gland M20 x 1.5	565 856
Ex version - ATEX approval - DIN11851 DN50	9.6 - 30 V DC	4 - 20 mA/HART (2 wires)	Rod	1 m	Cable gland M20 x 1.5	565 855
				2 m	Cable gland M20 x 1.5	565 857
Ex version - IECEx approval - Clamp 2"	9.6 - 30 V DC	4 - 20 mA/HART (2 wires)	Rod	1 m	Cable gland M20 x 1.5	565 858
				2 m	Cable gland M20 x 1.5	565 860
Ex version - IECEx approval - DIN11851 DN50	9.6 - 30 V DC	4 - 20 mA/HART (2 wires)	Rod	1 m	Cable gland M20 x 1.5	565 859
				2 m	Cable gland M20 x 1.5	565 861

 Further versions on request


**Port connection**  
Clamp 1"1/2, 2"1/2, 3"  
DIN 11851 DN32, DN40, DN65



**Additional**  
Without display/configuration module

## Ordering chart - accessories for measurement device Type 8189 (has to be ordered separately)

Specifications	Item no.
Set with 2 reductions M20 x 1.5/NPT1/2" + 2 neoprene flat seals for cable gland + 2 screw-plugs M20 x 1.5	551 782
Hart-USB Modem	560 177
Set with a display/configuration module, a transparent cover and a seal ring	559 279
Set with a transparent cover and a seal ring	561 006

**Guided microwave level measurement device Type 8189 - request for quotation**

**Note**  
You can fill out the fields directly in the PDF file before printing out the form.

Please fill in and send to your local Bürkert Sales Centre\* with your inquiry or order.

Company:	Contact person:
Customer No.:	Department:
Address:	Tel. / Fax.:
Postcode / Town:	E-mail:

**Guided microwave level measurement device 8189**

Quantity:  Desired delivery date:

■ **Process connection:**

**Clamp**     1"1/2     2"     2"1/2     3"

**DIN 11851**     DN32     DN40     DN50     DN65

■ **Sensor version:**

**Length**     1 m     2 m

Spec. length  mm (multiple of 100 mm between 300 and 4000 mm for Rod version)

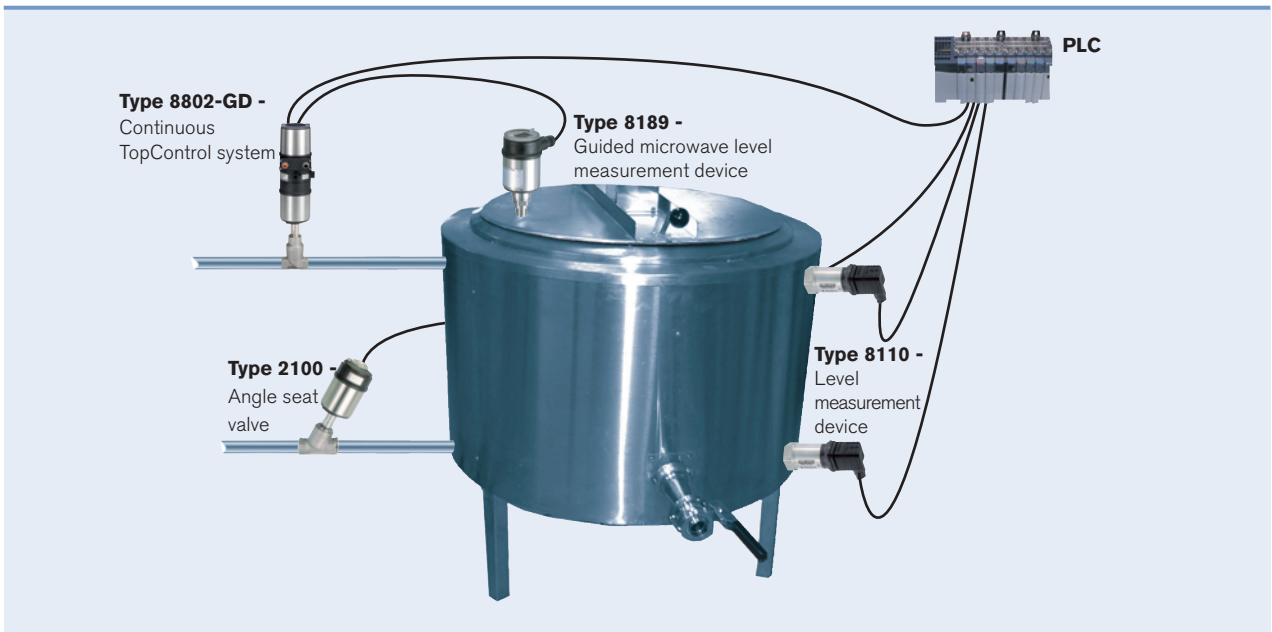
■ **Display/configuration module**     Yes     No

■ **ATEX approval**     Yes     No

■ **IECEX approval**     Yes     No

■ **FDA approval**     Yes     No

**Interconnection possibilities with other Bürkert devices**



\*To find your nearest Bürkert facility, click on the orange box →

[www.burkert.com](http://www.burkert.com)

In case of special application conditions, please consult for advice.

Subject to alteration.  
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