

Sanitary and flange radar level transmitter



- Compact for level measurement up to 20 m
- 4 ... 20 mA/Hart - 2 wires
- Adjustable with PC
- ATEX approvals Ex
- Clamp, Varivent[®] process connection

Type 8138 can be combined with...



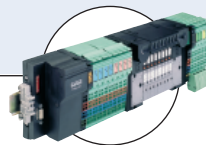
Type 8635
SideControl EEx



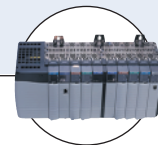
Type 2035
Diaphragm valve



Type 2301 (8692)
Continuous
TopControl system



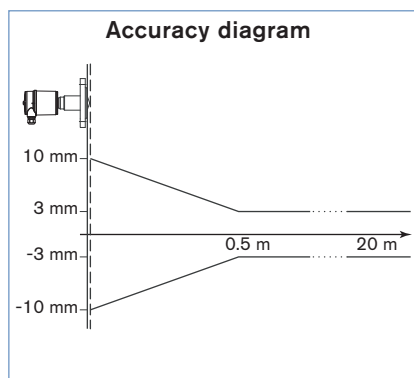
Type 8644
Valve islands



PLC

The Type 8138 is a non-contact radar level transmitter for continuous level measurement.

It is particularly suitable for use in small vessels that contain beverage liquids under sanitary process conditions.



General data	
Materials	
Housing / Cover	PBT, Stainless steel 316L / PC
Seal ring / Ground terminal	NBR / Stainless steel 316Ti/316L (1.4571/1.4435)
Wetted parts	
Process fitting / Antenna / Seal	Stainless steel 316L / TFM-PTFE / EPDM
Display *	LCD in full dot matrix (in option)
Process fitting	Clamp 2", Varivent [®] DN25, Flange DN50, DN100 DIN2501
Torque of the flange screws	60 Nm
Electrical connection	Cable glands M20 x 1.5
Measuring type	Distance between process fitting and product surface
Min. dielectric figure	$\epsilon_r > 1.6$
Dead zone	50 mm (from flange)
Measuring range	0.05 up to 10 m (Clamp 2", flange DN50 or Varivent [®] version) 0.05 up to 20 m (flange DN100)
Process temperature	
with Clamp, flange connection	-40 up to +150°C (-40 to 302°F)
with Varivent [®] connection	-40 up to +130°C (-40 to 266°F)
Vessel pressure¹⁾	
with Clamp connection	-1 up to 16 bar (-14.51 to 232.16 PSI) (-100 up to 1600 kPa)
with Varivent [®] connection	-1 up to 10 bar (-14.51 to 145.1 PSI) (-100 up to 1000 kPa) or according flange rules
Vibration resistance	Mechanical vibrations with 4.g and 5...100 Hz
Temperature coefficient	0.03%/10K (Average temperature coefficient of the zero signal - temperature error)
Resolution	max. 1 mm
Frequency	K-band (26 GHz technology)
Interval	approx. 1 s
Beam angle at 3dB	18° (Measuring range 0.05 up to 10m) 10° (Measuring range 0.05 up to 20m)
Adjustment time	> 1 s (dependent on the parameter adjustment)
Accuracy	± 3 mm (see diagram)

Varivent[®] is a registered Trademark of GEA Tuchenhausen.

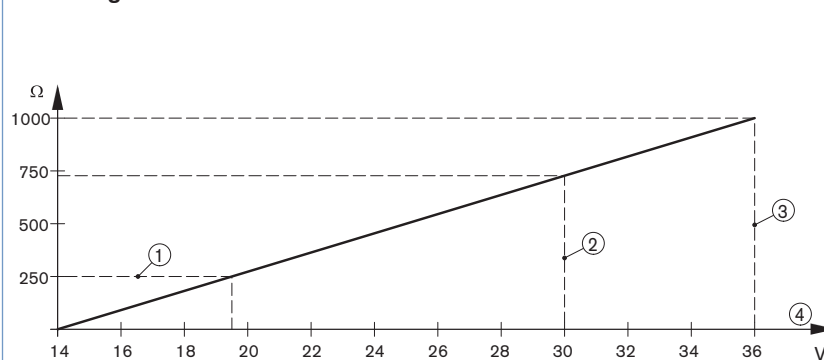
* to be ordered separately

Electrical data	
Power supply	14 to 36 V DC or 14 to 30 V DC (EEx ia instrument)
Permissible residual ripple	< 100 Hz: $U_{ss} < 1$ V 100 Hz...10 kHz: $U_{ss} < 10$ mV
Output signal	4...20 mA/HART
Resolution	1.6 mA
Fault signal	current output unchanged; 20.5 mA; 22 mA < 3.6 mA (adjustable)
Current limitation	22 mA
Load	see load diagram
Damping (63% of the input variable)	0...999 s, adjustable
Fulfilled NAMUR recommendation	NE 43
Environment	
Ambient temperature	-40 to +80°C (-40 to 176°F) (operation and storage)
Relative humidity	20-80 %; without condensation
Standards and approvals	
Protection	IP66/IP67 with M20 x 1.5 gland mounted and tightened
Overvoltage category	III
Protection class	II
Standard	
EMC	EN61326
Security	EN61010-1
NAMUR	NE 21; NE 43
Approvals	ATEX: EN50014; EN50020; EN50284 FDA WHG (overflow protection) FM and 3A (in progress)

Specifications EEx	
Ex - Protection	Categories 1/2 G or 2G
Ex - Certification	EEx ia IIC T6
Conformity specifications¹⁾	
Power supply U_i	30 V
Short circuit rating I_i	131 mA
Power limitation P_i	983 mW
Ambient temperature	-40 up to +55°C (-40 to 131°F) (depend on categories)
Internal capacity C_i	negligible
Internal inductivity L_i	negligible

1) homologation certificate PTB 03 ATEX 2060 X

Load diagram



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

Target applications

In highly purified water

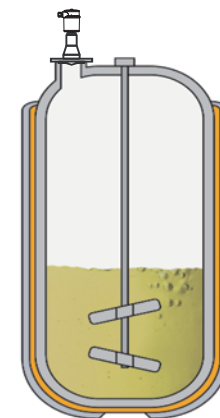
The manufacture of products, which are either injected directly into the bloodstream, or administered as nose or eye drops, requires high purity water (WFI). The transmitter 8138 is especially suitable for level measurement in the WFI storage tank. The contactless measurement is unaffected by pressure or vacuum. The front flush antenna of the Type 8138 guarantees optimum CIP and SIP cleaning results. The antenna is PTFE encapsulated to protect it against highly ionised water.



in the stirring and preparation vessel

Processes like yoghurt produce take place in controlled, highly sterile surroundings. They therefore place heavy demands on the cleanliness of all parts that touch the medium. The cleaning processes themselves are correspondingly thorough. Contamination with foreign bacteria would lead to spoilage of the entire batch.

The radar transmitter 8138 lends itself well for reliable level measurement here. The contactless measuring principle is not affected by the density changes in the yoghurt and the abrasiveness of the fruits. The front-flush antenna allows optimal CIP and SIP cleaning, is insensitive to high-pressure water jets and doesn't show thermal shock behaviour.



Principle of operation

The radar transmitter consists of an electronic housing, a process fitting element the antenna and a sensor. The antenna emits short radar pulses with a duration of approximate 1 ns to the measured product. These pulses are reflected by the product surface and received by the antenna as echoes. Radar waves travel at the speed of light. The running time of the radar pulses from emission to reception is proportional to the distance and hence to the level. The determined level is converted into an output signal and transmitted as an measured value.

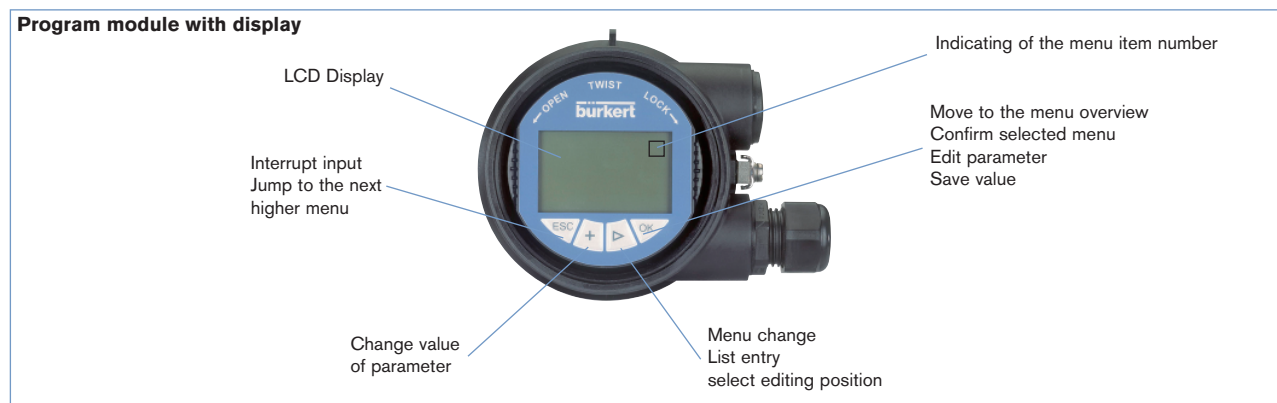
The transmitter can be adjusted with:

- the program module with display
- 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 transmitter Type 8138. Optionally, parameters may also be uploaded and downloaded with the program module with display or in PACTware™

▶ Set up with program module with display

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



▶ Set up with PACTware™ / DTM and HART communication

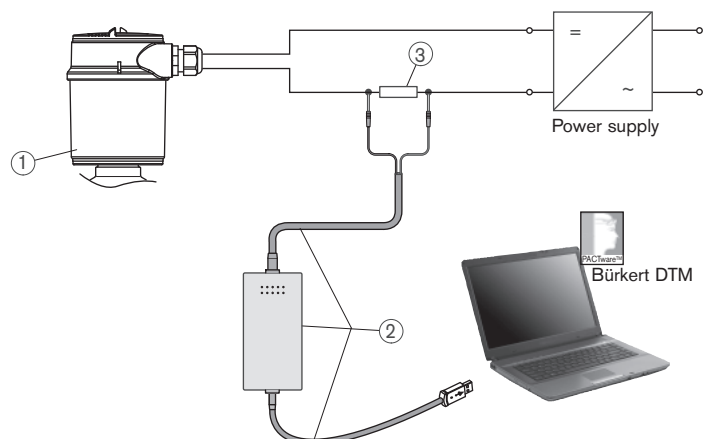
The transmitter can be operated directly on the instrument via PACTware™ or via the HART signal on the signal cable. An interface adapter is necessary for the adjustment with PACTware™. For the setup of the Type 8138, DTM-Collection in the actual version must be used. The basic version of this DTM Collection incl. PACTware™ is available as a free-of-charge download from the Internet at www.burkert.com.

Connecting the PC via HART to the signal cable

1. Transmitter 8138
2. HART-USB Modem
3. Resistance 250 Ohm

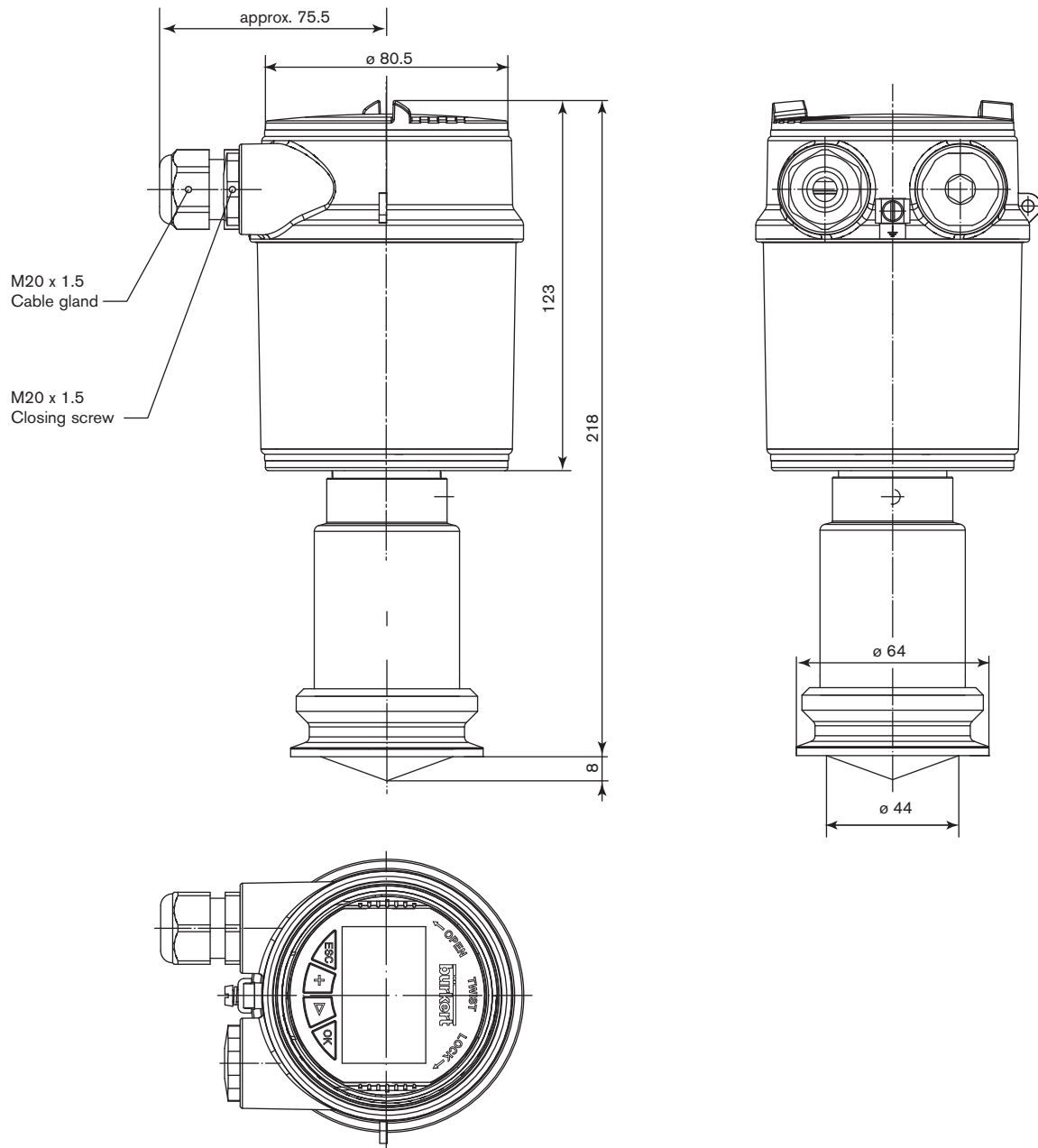
Necessary components :

- Transmitter 8138
- PC with PACTware™ and suitable Bürkert DTM
- HART-USB Modem from the market
- Resistance approx. 250 Ohm
- Power supply unit



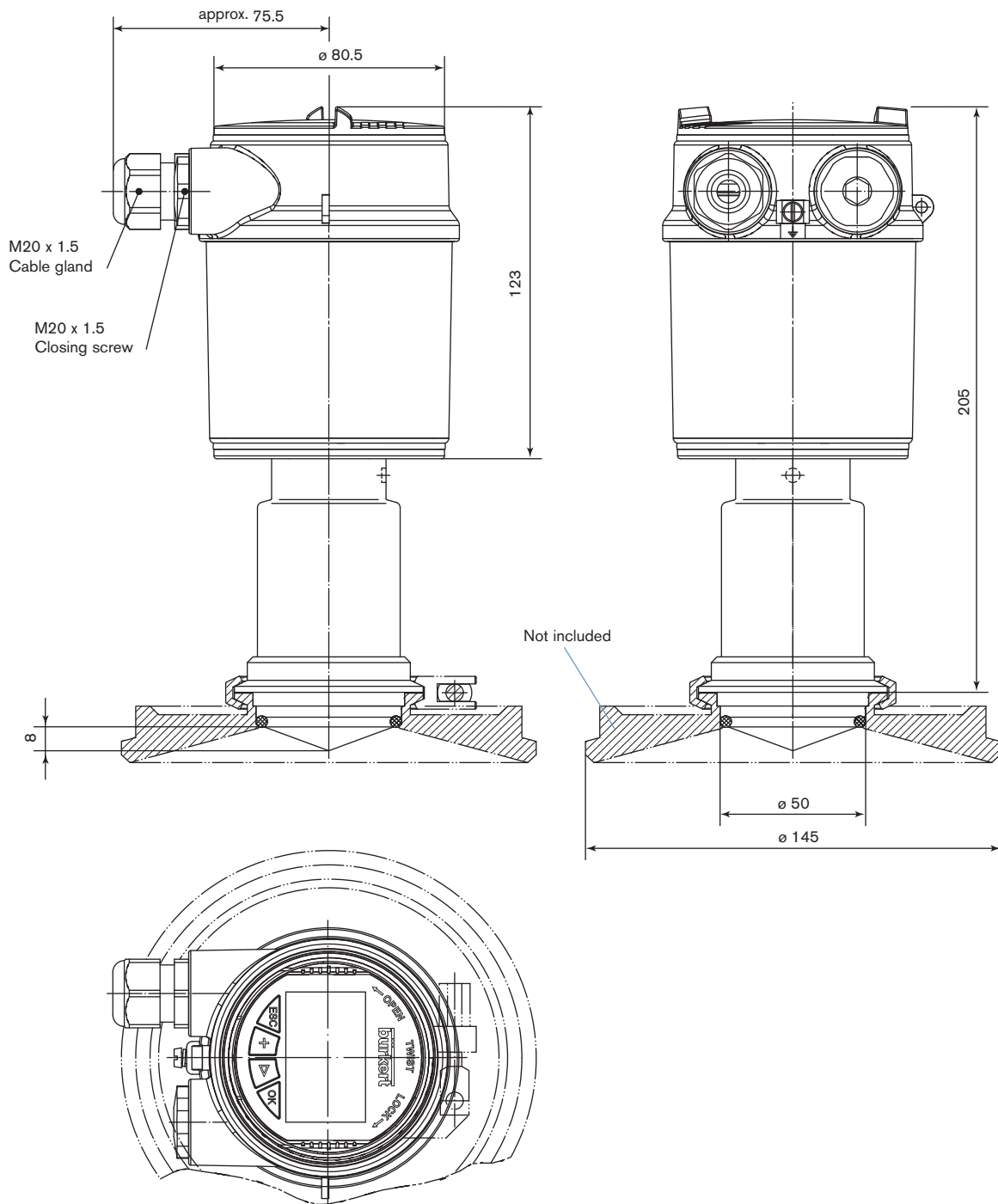
Dimensions [mm]

Clamp connection



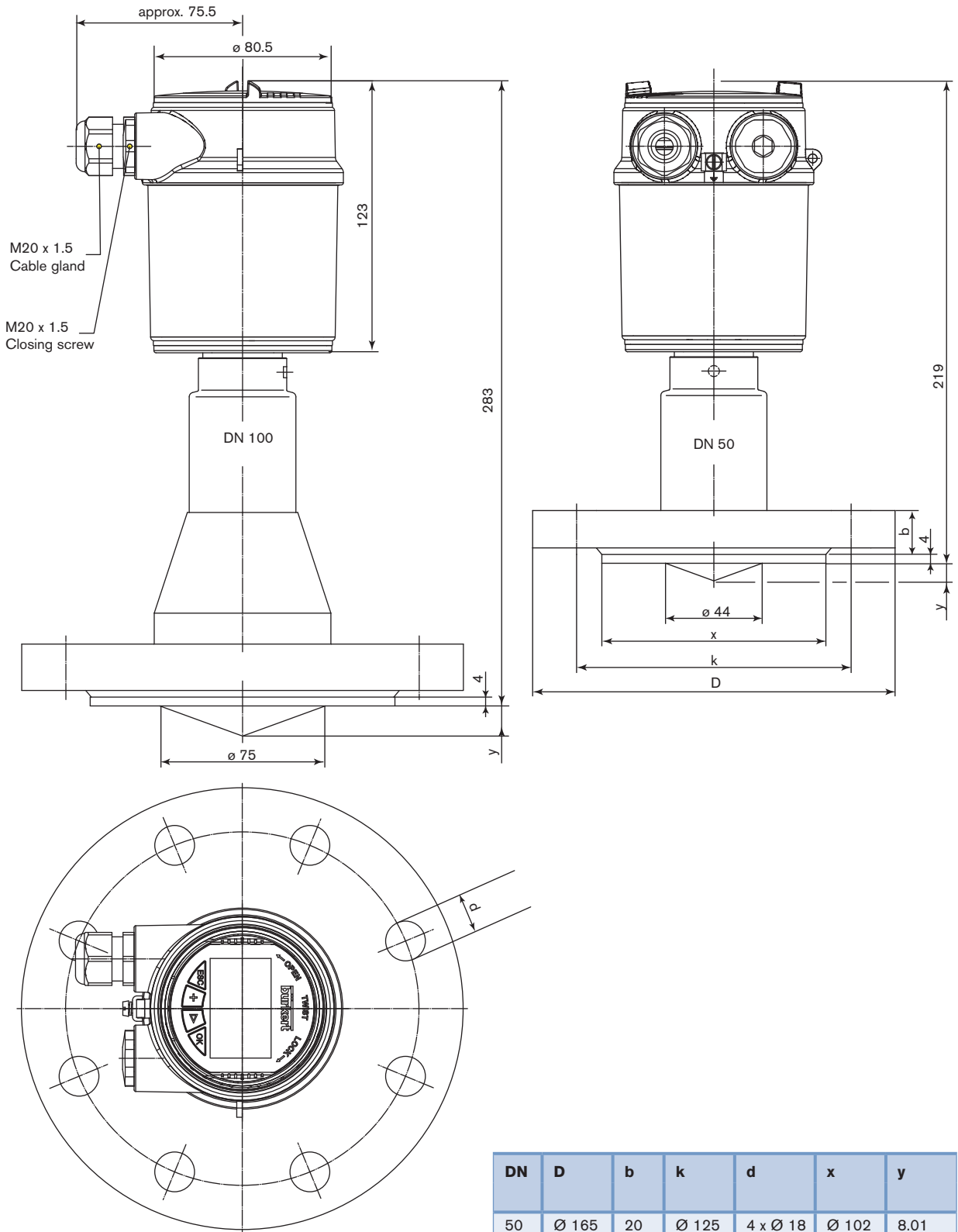
Dimensions [mm]

Varivent® connection



Dimensions [mm]

Flange connection



DN	D	b	k	d	x	y
50	Ø 165	20	Ø 125	4 x Ø 18	Ø 102	8.01
100	Ø 220	20	Ø 180	8 x Ø 18	Ø 158	13.65

Ordering chart for compact transmitter Type 8138

Specifications	Voltage supply	Output	Process connection	Electrical connection	without program module no display
Standard version	14-36 V DC	4-20 mA/HART (2 wires)	Clamp 2"	Cable gland M 20 x 1.5	560 169
			Varivent® DN25	Cable gland M 20 x 1.5	560 171
			Flange DN50 DIN 2501 /16 bar	Cable gland M 20 x 1.5	560 173
			Flange DN100 DIN 2501 /16 bar	Cable gland M 20 x 1.5	560 175
EEx version - ATEX approval	14-30 V DC	4-20 mA/HART (2 wires)	Clamp 2"	Cable gland M 20 x 1.5	560 170
			Varivent® DN25	Cable gland M 20 x 1.5	560 172
			Flange DN50 DIN 2501 /16 bar	Cable gland M 20 x 1.5	560 174
			Flange DN100 DIN 2501 /16 bar	Cable gland M 20 x 1.5	560 176

 **Further versions on request**

Please also use the "request for quotation" form on page 6 for ordering a customized transmitter. [go to page](#)

**Process connection**

Flange DN80PN40 Form C DIN2501
DN150PN16 Form C DIN2501
DN150PN40 Form C DIN2501
2" 150 lb RF; ANSI B16.5
3" 150 lb RF; ANSI B16.5
4" 150 lb RF; ANSI B16.5
6" 150 lb RF; ANSI B16.5

Clamp 3"; 4"

**Approvals**

FM, 3A agreements in progress

Ordering chart - accessories for transmitter Type 8138 (has to be ordered separately)

Specifications	Item no.
Set with 2 reductions M 20 x 1.5 / NPT1/2" + 2 neoprene flat seals for cable gland + 2 screw-plugs M 20 x 1.5	551 782
Set with a display and programming module, a transparent cover and a seal ring	559 279
Set with a transparent cover and a seal ring	561 006
Hart-USB Modem	560 177

Customized transmitter Type 8138 - 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:

Radar level transmitter 8138

Quantity: Desired delivery date:

■ **Antenna** Encapsulated horn (-40...150°C) Hygienic encapsulated horn (-40...130°C)

■ **Process fitting connection:**

■ **Clamp** 2" 2" 1/2 3" 4"

■ **Bolting DIN 11851** DN50 PN16, DN65 PN16 DN80 PN16 DN100 PN16

■ **Hygienic fitting** with tension flange DN32PN16 with compression nut F40 PN16

■ **Aseptic Bolting DIN 11864-2-A** DN50 (O-ring at vessel) DN60 (O-ring at vessel) DN80 (O-ring at vessel)

■ **SMS 1145** DN51 DN76

■ **Neuno Biocontrol** Size 50 PN16

■ **Flange**

DN50 PN40, Form C, DIN2501 2" 150 lb RF, ANSI B16.5

DN80 PN40, Form C, DIN2501 3" 150 lb RF, ANSI B16.5

DN100 PN40, Form C, DIN2501 4" 150 lb RF, ANSI B16.5

DN150 PN40, Form C, DIN2501 6" 150 lb RF, ANSI B16.5

DN200 PN40, Form C, DIN2501 8" 150 lb RF, ANSI B16.5

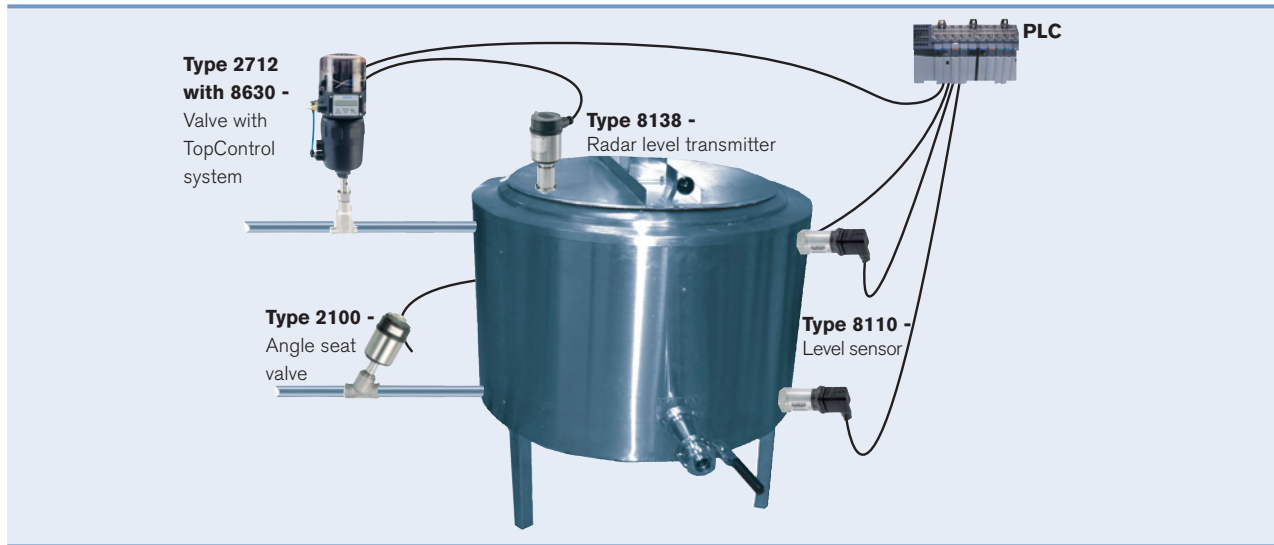
■ **Varivent®** DN25... PN10

■ **Program module and display** Yes No

■ **ATEX approval** Yes No ■ **FDA approval** Yes No

■ **WHG approval** Yes No

■ **FM approval** *in progress*



*To find your nearest Bürkert facility, click on the orange box → www.burkert.com

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