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Единый адрес: btk@nt-rt.ru **Веб-сайт:** www.burkert.nt-rt.ru

Уровнемеры Burkert

bürkert
FLUID CONTROL SYSTEMS

OEM radar measuring device, for aggressive media level measurement

- For level measurement up to 20 m, 4... 20 mA/Hart - 2 wires
- Adjustable via Display, key operation or PC-Tool with DTM
- ATEX approvals ⟨Ex⟩
- Insensitive to variations of temperature, pressure, medium data of the product and gas layers

Type 8136 can be combined with...

Type 8793
Process controller

Type 2103
Diaphragm valve

Type 8802-GD
Element control valve system

Type 8644
Valve islands

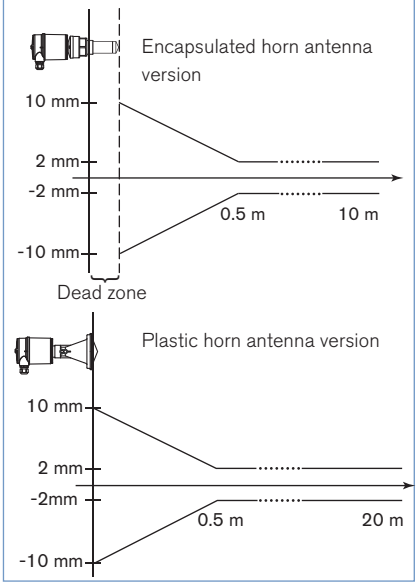
PLC

The Type 8136 is a non-contact radar level measuring device for continuous level measurement.

The unit is available in two versions:
- with encapsulated horn antenna particularly suitable for level measurement of aggressive liquids in small vessels.

- with plastic horn antenna particularly suitable for measurement in open flumes or gauge measurement in waters.

Accuracy diagram



General data	
Materials	
Housing / Cover	PBT, Stainless steel 316L (1.4404) / PC
Seal ring / Ground terminal	NBR / Stainless steel 316Ti/316L (1.4571/1.4435)
Mounting strap / Fixing screws	Stainless steel 304 (1.4301) / Stainless steel 316L (1.4435)
Wetted parts	
Encapsulated horn antenna version	
Process connection / Antenna / Seal	PVDF / PVDF (completely encapsulated) / FKM
Plastic horn antenna version	
Process connection	Stainless steel 316L (1.4435)
Horn antenna / Focus lens	PBT-GF30 / PP
Display*	LCD in full dot matrix (option)
Process connection	Thread G 1½" or NPT 1½" (Encapsulated horn antenna version) Mounting strap 170 mm (Plastic horn antenna version)
Max. torque mounting boss	4 Nm (mounting screws - strap on the sensor housing)
Electrical connection	Cable glands M20 x 1.5
Measuring value	Distance between process connection and product surface
Min. dielectric figure	εr > 1.6
Dead zone	50 mm[1)]
Measuring range	0.05 to 10 m (Encapsulated horn antenna version) 0 to 20 m (Plastic horn antenna version)
Process temperature	-40 to +80°C *(-40 to 176°F)*
Vessel pressure	-1 to 3 bar *(-14.51 to 43.53 PSI)* (-100 to 300 kPa)
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 3 dB	22° (Encapsulated horn antenna vers.) - 10° (Plastic horn antenna vers.)
Adjustment time	> 1 s (dependent on the parameter adjustment)
Accuracy	± 2 mm (see diagram)

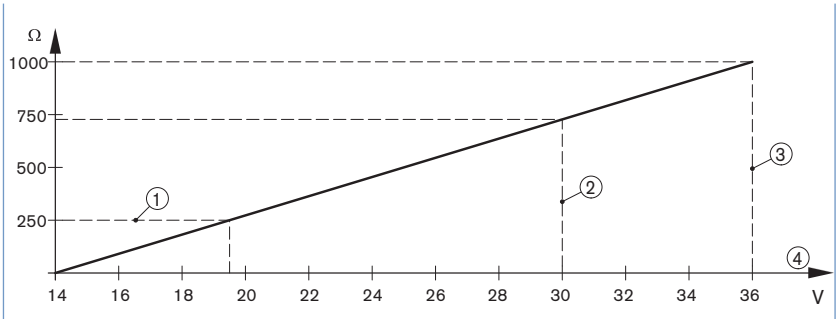
* to be ordered separately

[1)] Encapsulated horn antenna version. In products with low dielectric value up to 50 cm.

Electrical data	
Operating voltage	14 - 36 V DC or 14 - 30 V DC (Ex ia instrument)
Permissible residual ripple	< 100 Hz: Uss < 1 V 100 Hz... 10 kHz: Uss < 10 mV
Output signal	4... 20 mA/HART
Resolution	1.6 µA
Fault signal	current output unchanged 20.5 mA, 22 mA or < 3.6 mA (selectable)
Current limitation	22 mA
Load	see load diagram
Damping (63% of the input variable)	0... 999 s, adjustable
Environment	
Ambient temperature	-40 to +80°C *(-40 to 176°F)* (operation and storage)
Relative humidity	80% max; 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[2)] : EN60079-0; EN60079-11; EN60079-26
Specifications Ex	
- Protection	Categories 1/2G or 2G
- Certification	Ex ia IIC T6
Conformity specifications[2)]	
Operating voltage Ui	30 V
Short circuit rating Ii	131 mA
Power limitation Pi	983 mW
Ambient temperature	-40 to +55°C *(-40 to 131°F)* (dependent on categories)
Internal capacity Ci	negligible
Internal inductivity Li	negligible

2) homologation certificate PTB 08 ATEX 2002X

Load diagram

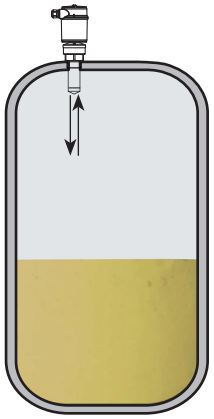


1 HART load
2 Voltage limit Ex ia instrument
3 Voltage limit non-Ex instrument
4 Operating voltage

Target applications

Dosing and processing systems

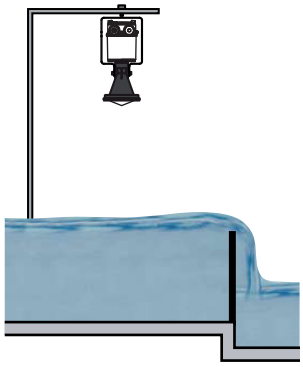
Level measurement:
The radar measuring principle is particularly suitable for continuous level measurement of toxic and corrosive substances. The measurement is non-contacting, i.e. there is no direct contact with the medium.
Due to the very small process connection and the PVDF encapsulated antenna, the 8136 radar level measuring device is ideal for this application.



Open flumes

Measurement for heavy demands:

Radar level measuring device like the Type 8136 are also suitable for measurement in open flumes. For wastewater treatment in chemical plants, where wastewater temperatures change drastically or where solvents are contained in the wastewater, the use of radar level measuring device is recommended.



Principle of operation

The radar measuring device consists of an electronic housing, a process connection element the antenna and a sensor. The antenna emits short radar pulses with a duration of approximate 1 ns to the medium. These pulses are reflected by the medium 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 a measured value.

The measuring device can be adjusted with:

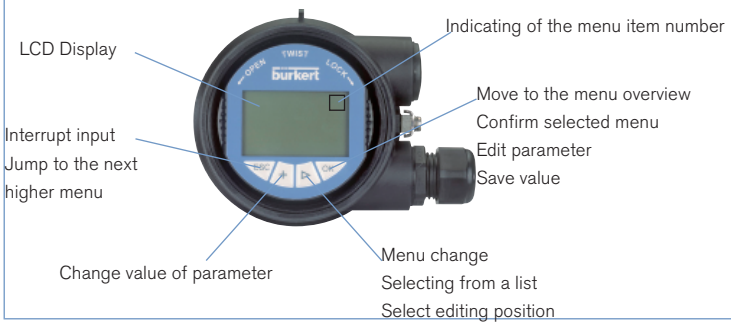
- the display/configuration module
- the suitable Bürkert DTM in conjunction with adjustment software according to the FDT/DTM standard, e.g. PACTware™ and PC
- a HART handheld

The entered parameters are generally saved in the measuring device Type 8136. Optionally, parameters may also be uploaded and downloaded with the display/configuration module or save in a file by using PACTware™/DTM

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

Display/configuration module



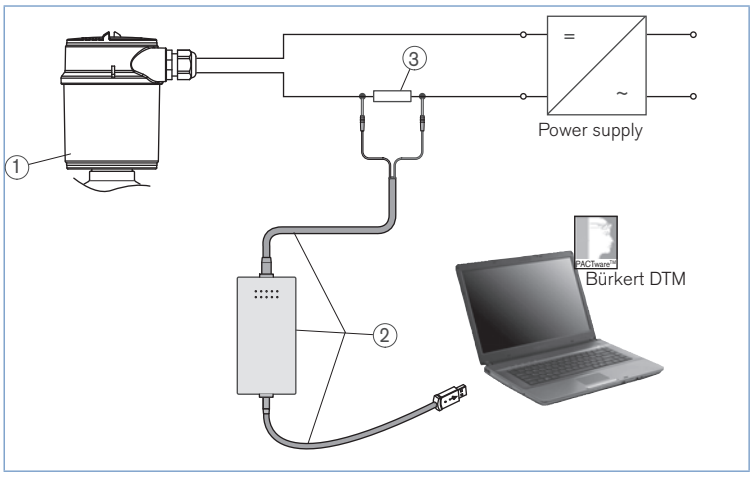
Set up with PACTware™/DTM and HART communication

Connecting the PC via HART

1. Measuring device 8136
2. HART-USB Modem
3. Resistance 250 Ohms

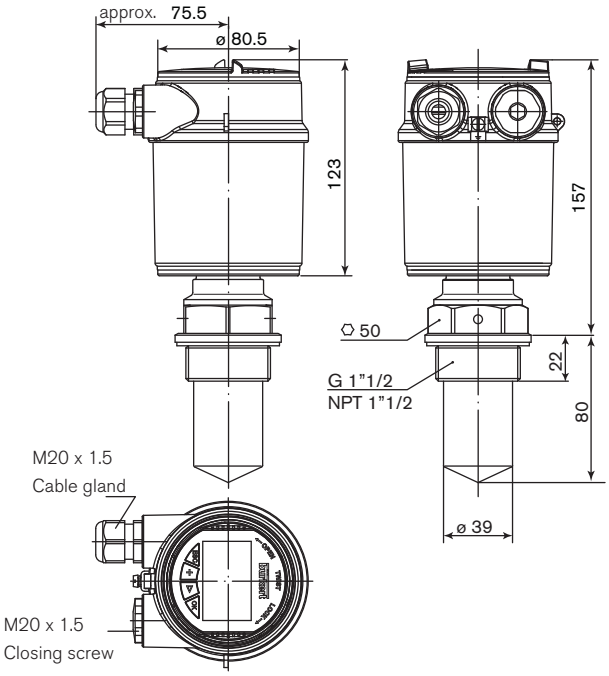
Necessary components:

- Measuring device 8136
- PC with PACTware™ and suitable Bürkert DTM
- HART-USB Modem
- Resistance approx. 250 Ohms
- Power supply unit

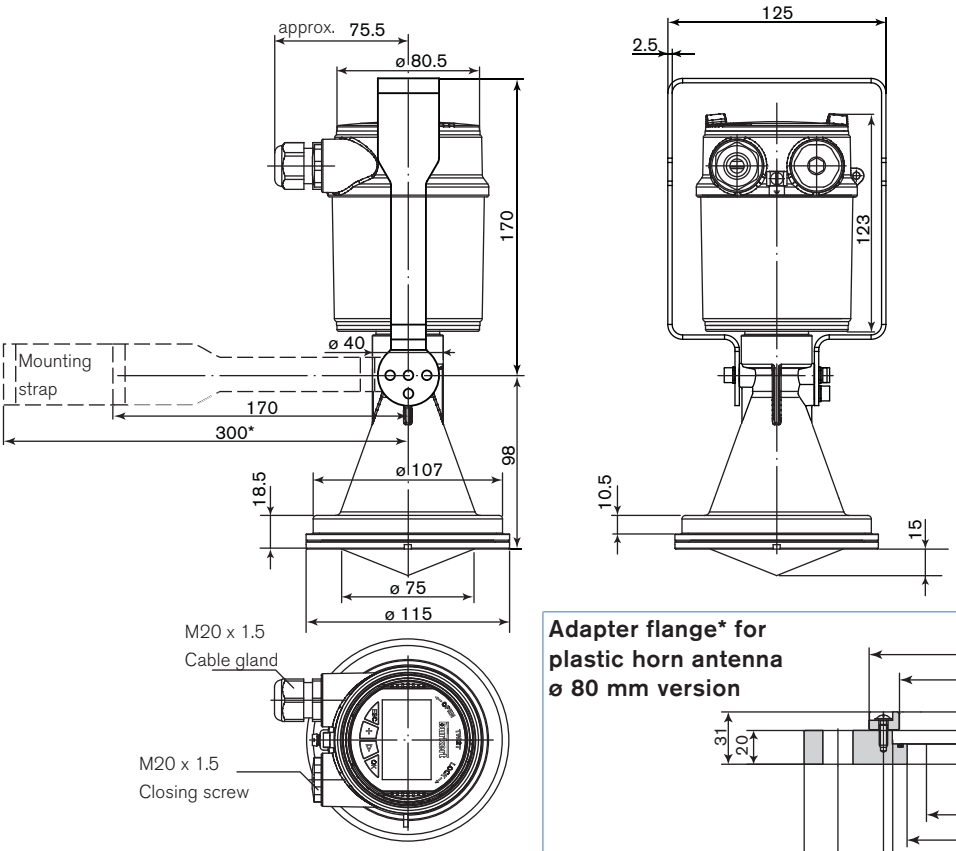


Dimensions [mm]

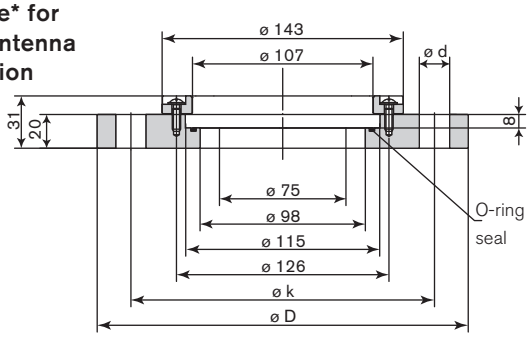
Encapsulated horn antenna version



Plastic horn antenna version



Adapter flange* for plastic horn antenna ø 80 mm version



Flange	ø D	ø k	ø d	Number of hole
DN100 PN16	220	180	18	8 x 45° (=360°)
ASME (ANSI B16.5) 4" 150 psi	228.6	190.5	19.1	8 x 45° (=360°)

* 300 mm strap, adapter flange has to be ordered separately

Ordering chart for compact measuring device Type 8136

Specifications	Operating voltage	Output	Antenna version	Process connection	Electrical connection	Item no. without display/ configuration module
Standard version	14 - 36 V DC	4... 20 mA/HART (2 wires)	Encapsulated horn - 40 mm	G1½"	Cable gland M20 x 1.5	560 146
				NPT1½"	Cable gland M20 x 1.5	560 148
			Plastic horn - 80 mm	Mounting strap	Cable gland M20 x 1.5	560 150
Ex version - ATEX approval	14 - 30 V DC	4... 20 mA/HART (2 wires)	Encapsulated horn - 40 mm	G1½"	Cable gland M20 x 1.5	560 147
				NPT1½"	Cable gland M20 x 1.5	560 149
			Plastic horn - 80 mm	Mounting strap	Cable gland M20 x 1.5	560 151

Further versions on request

Process connection
Clamp 2", 3"
bolting DN50, DN80 PN3, DIN11851 / 316L
without compression flange,
with compression flange DN80 PN16, ANSI3", JIS DN80 10K / PPH
adapter flange DN150 PN16 FKM / PPH
ANSI4" 150PSI FKM / PPH
ANSI6" 150PSI FKM / PPH
JIS DN100 10K FKM / PPH
JIS DN150 10K FKM / PPH

Please also use the "request for quotation" on page 6 for ordering a customized measuring device. go to page

Ordering chart - accessories for measuring device Type 8136 (has to be ordered separately)

Specifications	Item no.
Set with 2 reductions M20 x 1.5/NPT½" + 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
Mounting strap 300 mm	559 839
Adapter flange DN100 PN16 FKM / PPH	560 437
Adapter flange ASME (ANSI B16.5) 4" 150PSI FKM / PPH	560 436

Customized measuring device Type 8136 - 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:

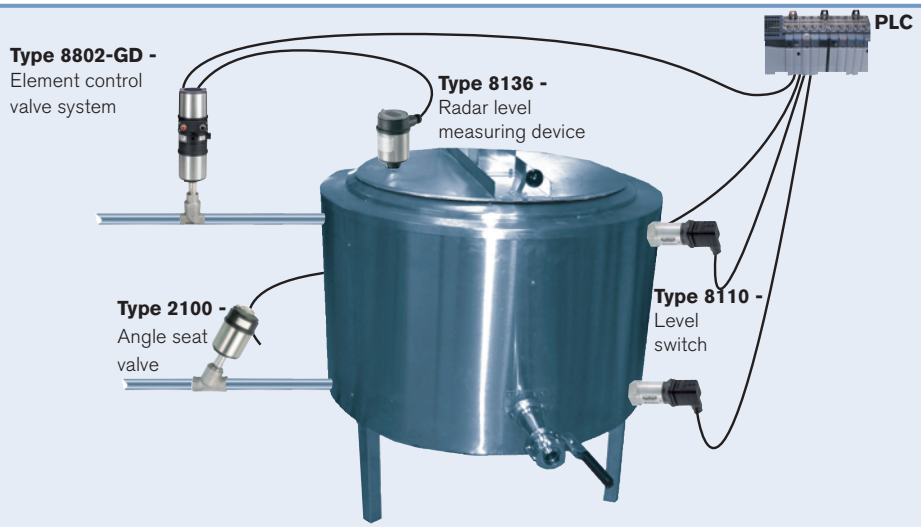
Radar level measuring device 8136

Quantity: ☐ **Desired delivery date:** ☐

Antenna	☐ Encapsulated horn in PVDF	☐ Plastic horn in PP	
Process connection:			
Compression flange	☐ with	☐ without	
External thread	☐ G 1½"	☐ NPT1½"	
Clamp	☐ 2" PN3	☐ 3" PN3	
Bolting	☐ DN50 PN3	☐ DN80 PN3	
Mounting strap	☐ 170 mm	☐ 300 mm	
Adapter flange	☐ DN100 PN16	☐ ANSI 4"	☐ JIS DN100 10K
	☐ DN150 PN16	☐ ANSI 6"	☐ JIS DN150 10K
Display/configuration module	☐ Yes	☐ No	
ATEX approval	☐ Yes	☐ No	

reset form

Interconnection possibilities with other Bürkert devices



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

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

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bürkert
FLUID CONTROL SYSTEMS

General purpose high pressure radar level measuring device

- For level measurement up to 30 m
- 4... 20 mA/Hart - 2 wires
- Adjustable via Display, key operation or PC-Tool with DTM
- ATEX approvals ⟨Ex⟩

Type 8137 can be combined with...

Type 8793
Process controller

Type 2103
Diaphragm valve

Type 8802-GD
Element
control valve system

Type 8644
Valve islands

PLC

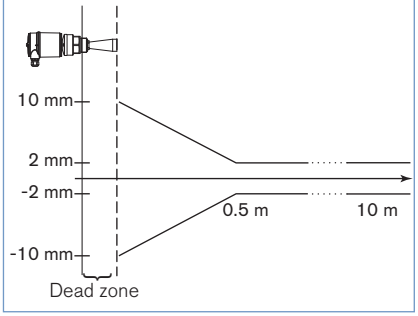
The Type 8137 is a non-contact radar level measuring device for continuous level measurement.

The unit is available in two versions:

- with thread and horn antenna (ø 40 mm) particularly suitable for use in small tanks and process vessels for measurement of almost any product.

- with flange and horn antenna (ø 40 or 75 mm) particularly suitable for use in storage tanks and process vessels for measurement of media such as solvent, hydrocarbons and fuels under extremely difficult process conditions.

Accuracy diagram



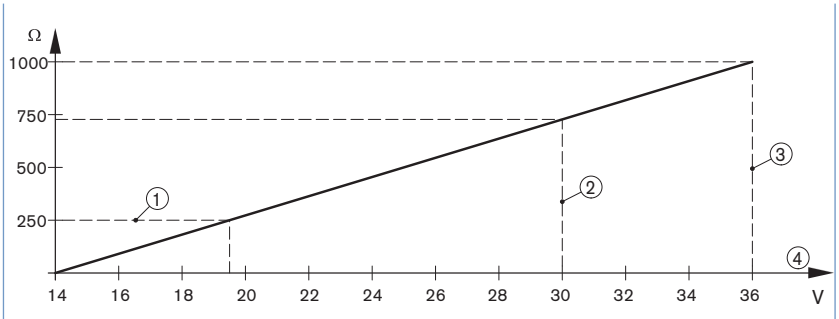
General data	
Materials	
Housing / Cover	PBT, Stainless steel 316L (1.4404) / PC
Seal ring / Ground terminal	NBR / Stainless steel 316Ti/316L (1.4571/1.4435)
Wetted parts	
Process connection	Stainless steel 316L
Seal (threaded version)	Klingersil C-4400
Antenna	Stainless steel 316L
Antenna cone	PTFE (TFM 1600 PTFE)
Seal (antenna system)	FKM
Display*	LCD in full dot matrix (option)
Process connection	Thread G1½" or NPT1½" Flange DN50 or 100 DIN2501, 2" or 4" ANSI B16.5
Electrical connection	Cable glands M20 x 1.5
Measuring value	Distance between process connection and product surface
Min. dielectric figure	εr > 1.6
Dead zone	50 mm
Measuring range	0.05 to 10 m (recommended - antenna with ø 40 mm) 0.05 to 30 m (recommended - antenna with ø 75 mm)
Process temperature	-40 to +130°C *(-40 to 266°F)*
Vessel pressure	-1 to 40 bar *(-14.51 to 580.4 PSI)* (-100 to 4000 kPa) or according to 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 3 dB	22° (antenna with ø 40 mm) 10° (antenna with ø 75 mm)
Adjustment time	> 1 s (dependent on the parameter adjustment)
Accuracy	± 2 mm (see diagram)

* to be ordered separately

Electrical data	
Operating voltage	14 - 36 V DC or 14 - 30 V DC (Ex ia instrument)
Permissible residual ripple	< 100 Hz: Uss < 1 V 100 Hz... 10 kHz: Uss < 10 mV
Output signal	4... 20 mA/HART
Resolution	1.6 µA
Fault signal	current output unchanged 20.5 mA, 22 mA or < 3.6 mA (selectable)
Current limitation	22 mA
Load	see load diagram
Damping (63% of the input variable)	0... 999 s, adjustable
Environment	
Ambient temperature	-40 to +80°C *(-40 to 176°F)* (operation and storage)
Relative humidity	80% max; 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[1)] : EN60079-0; EN60079-11; EN60079-26
Specifications Ex	
Ⓔx **- Protection**	Categories 1/2G or 2G
Ⓔx **- Certification**	Ex ia IIC T6
Conformity specifications[1)]	
Operating voltage Ui	30 V
Short circuit rating Ii	131 mA
Power limitation Pi	983 mW
Ambient temperature	-40 to +55°C *(-40 to 131°F)* (dependent on categories)
Internal capacity Ci	negligible
Internal inductivity Li	negligible

1) homologation certificate PTB 08 ATEX 2002X

Load diagram



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

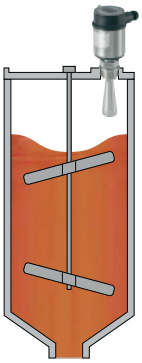
Target applications

In storage tanks

Lacquers, paints and thinners are stored in tanks up to 15 m high. These substances require no pre-treatment and are fed directly to incinerators via smaller day tanks. Agitators inside the tanks prevent fibrous materials and colour pigments from clumping and settling on the bottom. The 8137 radar measuring device is the ideal solution here for level measurement. The radar measurement is unaffected by ambient conditions, such as strong vapour emission of the waste, and delivers accurate measuring results even when the agitators are in motion.

In the digester, in the decanter

The bauxite is decomposed by adding thinned caustic soda and mixing it thoroughly with the bauxite in the digester. To achieve an optimal utilisation of the process, it is important to regulate the filling level in a fixed range. Contactless radar technology has all the right prerequisites for this measurement task. The 8137 radar measuring device records the current level and passes it on to the control system. Even the rotating agitator blades do not disrupt the measurement. Also in the decanter, which immediately follows the digester, the 8137 reliably performs its service in temperatures up to 200°C and pressures up to 40 bar. The steam atmosphere prevailing in the vessel does not affect the measurement either.



Principle of operation

The radar measuring device consists of an electronic housing, a process connection element the antenna and a sensor. The antenna emits short radar pulses with a duration of approximate 1 ns to the medium. These pulses are reflected by the medium 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 a measured value.

The measuring device can be adjusted with:

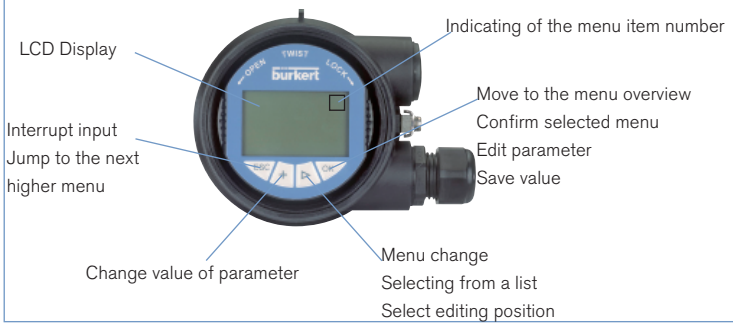
- the display/configuration module
- the suitable Bürkert DTM in conjunction with adjustment software according to the FDT/DTM standard, e.g. PACTware™ and PC
- a HART handheld

The entered parameters are generally saved in the measuring device Type 8137. Optionally, parameters may also be uploaded and downloaded with the display/configuration module or save in a file by using PACTware™/DTM

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

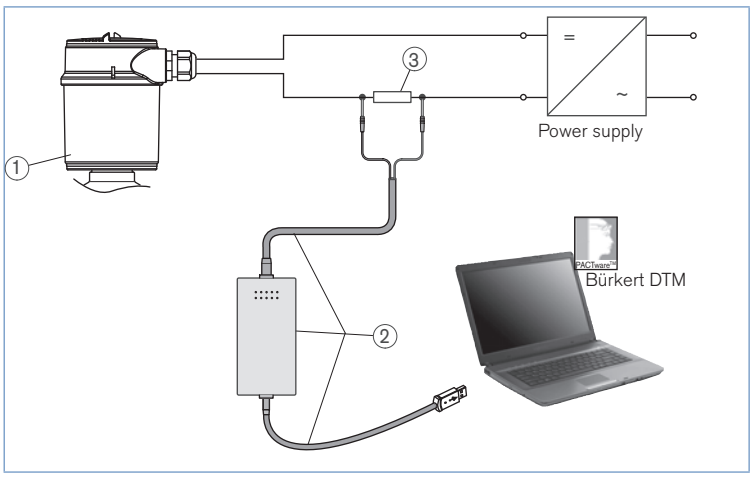
Display/configuration module



Set up with PACTware™/DTM and HART communication

Connecting the PC via HART

1. Measuring device 8137
2. HART-USB Modem
3. Resistance 250 Ohms

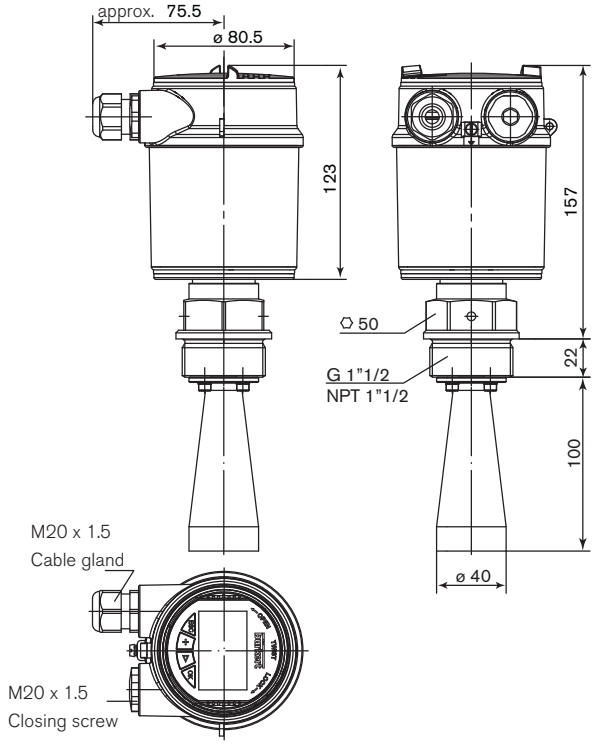


Necessary components:

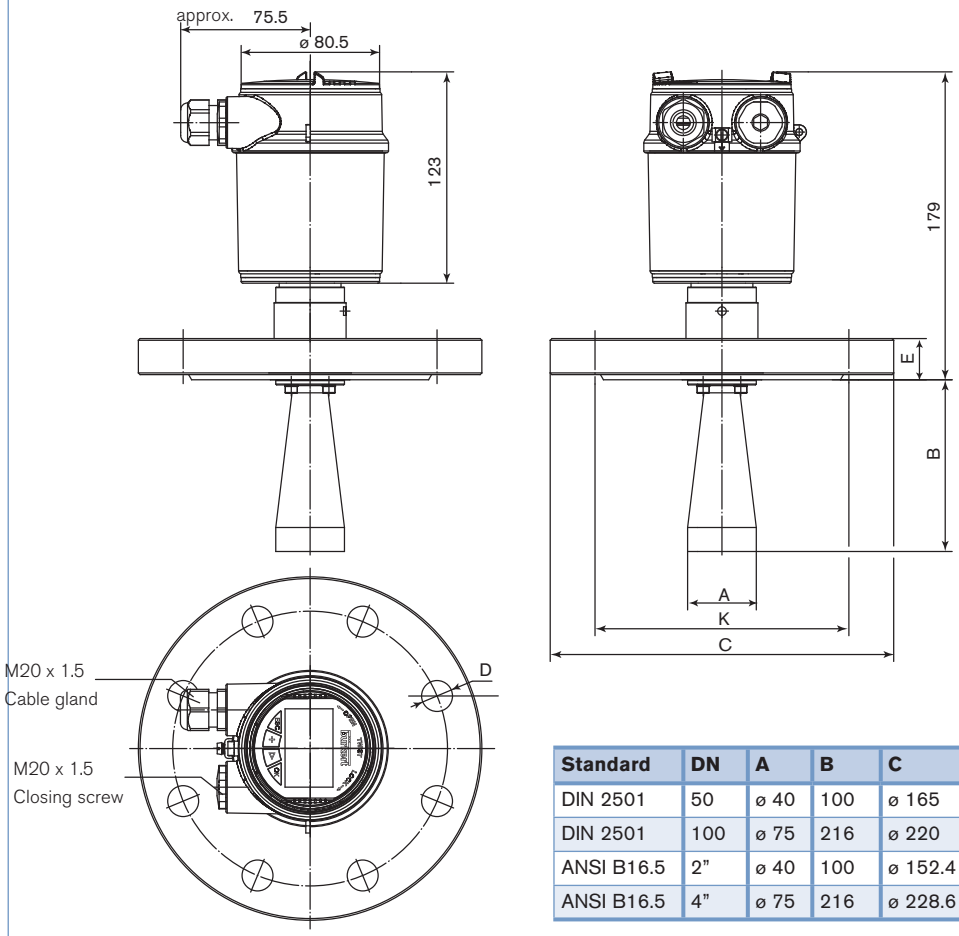
- Measuring device 8137
- PC with PACTware™ and suitable Bürkert DTM
- HART-USB Modem
- Resistance approx. 250 Ohms
- Power supply unit

Dimensions [mm]

Thread horn antenna version



Flange horn antenna version



Standard	DN	A	B	C	E	D	K
DIN 2501	50	ø 40	100	ø 165	20	4 x ø18	ø 125
DIN 2501	100	ø 75	216	ø 220	20	8 x ø18	ø 180
ANSI B16.5	2"	ø 40	100	ø 152.4	19.1	4 x ø19.1	ø 120.7
ANSI B16.5	4"	ø 75	216	ø 228.6	23.9	8 x ø19.1	ø 190.5

Ordering chart for compact measuring device Type 8137

Specifications	Operating voltage	Output	Antenna version	Process connection	Electrical connection	Item no. without display/ configuration module
Standard version	14 - 36 V DC	4... 20 mA/HART (2 wires)	ø 40 mm	G1½"	Cable gland M20 x 1.5	560 157
				NPT1½"	Cable gland M20 x 1.5	560 159
				Flange DN50 DIN2501 / 40 bar	Cable gland M20 x 1.5	560 161
				Flange 2" ANSI B16.5 / 150 lb RF	Cable gland M20 x 1.5	560 163
			ø 75 mm	Flange DN100 DIN2501 / 40 bar	Cable gland M20 x 1.5	560 165
				Flange 4" ANSI B16.5 / 150 lb RF	Cable gland M20 x 1.5	560 167
Ex version - ATEX approval	14 - 30 V DC	4... 20 mA/HART (2 wires)	ø 40 mm	G1½"	Cable gland M20 x 1.5	560 158
				NPT1½"	Cable gland M20 x 1.5	560 160
				Flange DN50 DIN2501 / 16 bar	Cable gland M20 x 1.5	560 162
				Flange 2" ANSI B16.5 / 150 lb RF	Cable gland M20 x 1.5	560 164
			ø 75 mm	Flange DN100 DIN2501 / 40 bar	Cable gland M20 x 1.5	560 166
				Flange 4" ANSI B16.5 / 150 lb RF	Cable gland M20 x 1.5	560 168

Further versions on request

Process connection

Flange
- DN80 PN40 Form C DIN2501
- DN150 PN40 Form C DIN2501
- DN200 PN40 Form C DIN2501
- 3" 150 lb RF; ANSI B16.5
- 6" 150 lb RF; ANSI B16.5
- 8" 150 lb RF; ANSI B16.5

Additional

Antenna ø 48 mm, 95 mm

Please also use the "request for quotation" on page 6 for ordering a customized measuring device. go to page

Ordering chart - accessories for measuring device Type 8137 (has to be ordered separately)

Specifications	Item no.
Set with 2 reductions M20 x 1.5/NPT½" + 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

Customized measuring device Type 8137 - 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:

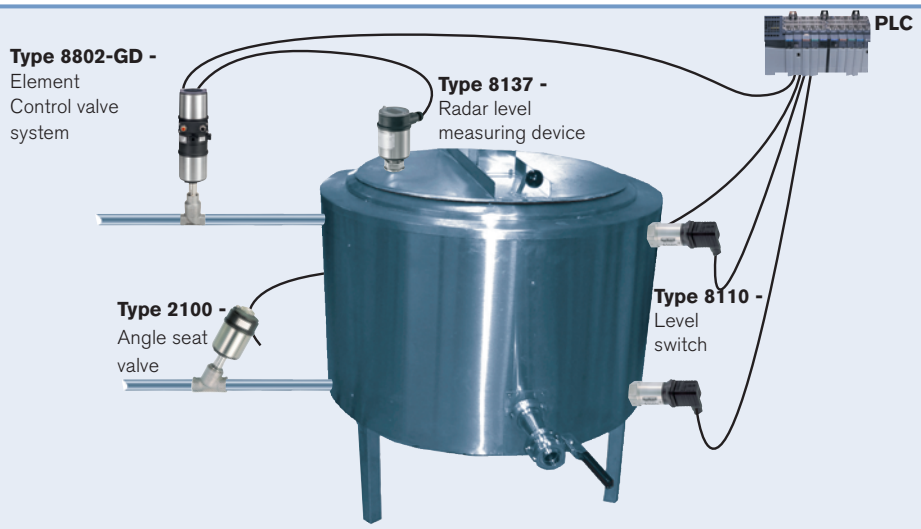
Radar level measuring device 8137

Quantity: ☐ **Desired delivery date:** ☐

Antenna	☐ Horn ø 40 mm (10 m)	☐ Horn ø 75 mm (30 m)	☐ Parabolic ø 245 mm (35 m)
	☐ Horn ø 48 mm (15 m)	☐ Horn ø 95 mm (30 m)	
Process connection:			
External thread	☐ G1½"	☐ NPT1½"	
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
Display/configuration module	☐ Yes	☐ No	
ATEX approval	☐ Yes	☐ No	

reset form

Interconnection possibilities with other Bürkert devices



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

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

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bürkert
FLUID CONTROL SYSTEMS

Radar level measuring device for hygienic applications

- For level measurement up to 20 m
- 4... 20 mA/Hart - 2 wires
- Adjustable via Display, key operation or PC-Tool with DTM
- ATEX approvals ⟨Ex⟩

Type 8138 can be combined with...

Type 8793
Process controller

Type 2103
Diaphragm valve

Type 8802-GD
Element
control valve system

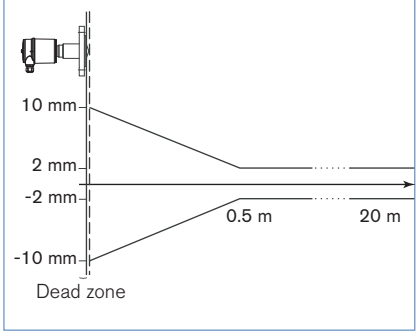
Type 8644
Valve islands

PLC

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

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

Accuracy diagram



General data	
Materials	
Housing / Cover	PBT, Stainless steel 316L (1.4404) / PC
Seal ring / Ground terminal	NBR / Stainless steel 316Ti/316L (1.4571/1.4435)
Wetted parts	
Process connection / Antenna / Seal	Stainless steel 316L / TFM-PTFE / EPDM
Display*	LCD in full dot matrix (option)
Process connection	Clamp 2", DN25 connection adapted for GEA Tuchenhagen VARINLINE process connections, Flange DN50, DN100 DIN2501
Torque of the flange screws	60 Nm
Electrical connection	Cable glands M20 x 1.5
Measuring value	Distance between process connection and product surface
Min. dielectric figure	εr > 1.6
Dead zone	50 mm (from flange)
Measuring range	0.05 to 10 m (Clamp 2", DN25 connection or flange DN50 version) 0.05 to 20 m (flange DN100)
Process temperature	
with Clamp, flange connection	-40 to +200°C *(-40 to 392°F)*
with DN25 connection	-40 to +130°C *(-40 to 266°F)*
Vessel pressure	
with Clamp connection	-1 to 16 bar *(-14.51 to 232.16 PSI)* (-100 to 1600 kPa)
with DN25 connection	-1 to 10 bar *(-14.51 to 145.1 PSI)* (-100 to 1000 kPa)
with flange connection	according to 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 3 dB	18° (Measuring range 0.05 to 10 m) 10° (Measuring range 0.05 to 20 m)
Adjustment time	> 1 s (dependent on the parameter adjustment)
Accuracy	± 2 mm (see diagram)

* to be ordered separately

Electrical data	
Operating voltage	14 - 36 V DC or 14 - 30 V DC (Ex ia instrument)
Permissible residual ripple	< 100 Hz: Uss < 1 V 100 Hz... 10 kHz: Uss < 10 mV
Output signal	4... 20 mA/HART
Resolution	1.6 µA
Fault signal	current output unchanged 20.5 mA, 22 mA or < 3.6 mA (selectable)
Current limitation	22 mA
Load	see load diagram
Damping (63% of the input variable)	0... 999 s, adjustable

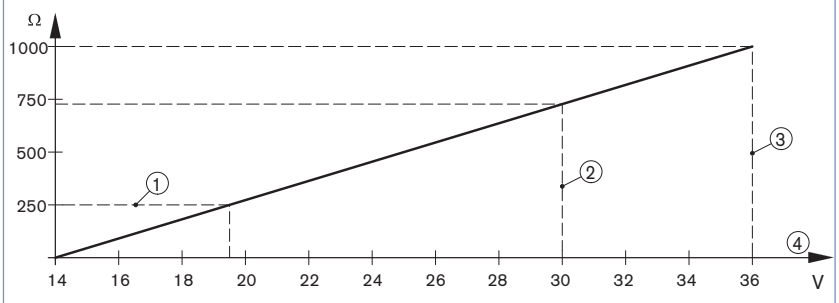
Environment	
Ambient temperature	-40 to +80°C *(-40 to 176°F)* (operation and storage)
Relative humidity	80% max; without condensation

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[1)] : EN60079-0; EN60079-11; EN60079-26 FDA

Specifications Ex	
Ⓔx **- Protection**	Categories 1/2G or 2G
Ⓔx **- Certification**	Ex ia IIC T6
Conformity specifications[1)]	
Operating voltage Ui	30 V
Short circuit rating Ii	131 mA
Power limitation Pi	983 mW
Ambient temperature	-40 to +55°C *(-40 to 131°F)* (dependent on categories)
Internal capacity Ci	negligible
Internal inductivity Li	negligible

1) homologation certificate PTB 08 ATEX 2002X

Load diagram



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

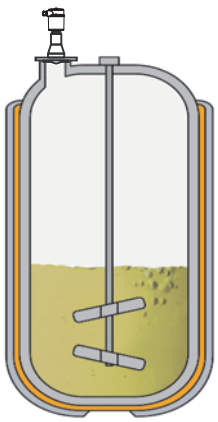
Target applications

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 measuring device 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 production take place in controlled, highly sterile surroundings. They therefore place heavy demands on the cleanability 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 measuring device 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 measuring device consists of an electronic housing, a process connection element the antenna and a sensor. The antenna emits short radar pulses with a duration of approximate 1 ns to the medium. These pulses are reflected by the medium 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 a measured value.

The measuring device can be adjusted with:

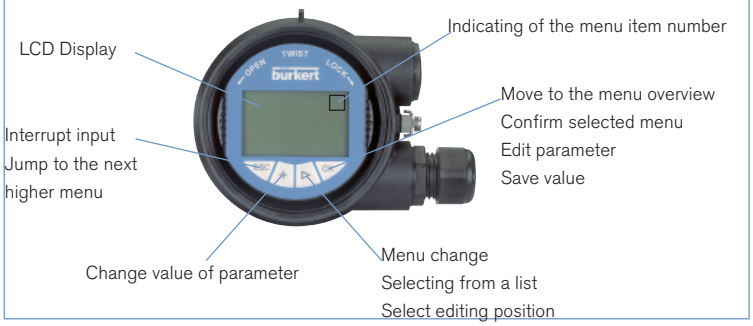
- the display/configuration module
- the suitable Bürkert DTM in conjunction with adjustment software according to the FDT/DTM standard, e.g. PACTware™ and PC
- a HART handheld

The entered parameters are generally saved in the measuring device Type 8138. Optionally, parameters may also be uploaded and downloaded with the display/configuration module or save in a file by using PACTware™/DTM

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

Display/configuration module

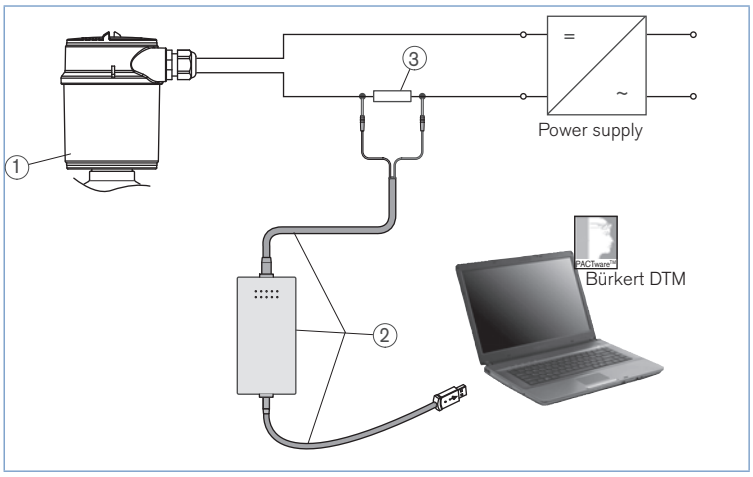


Connecting the PC via HART

1. Measuring device 8138
2. HART-USB Modem
3. Resistance 250 Ohms

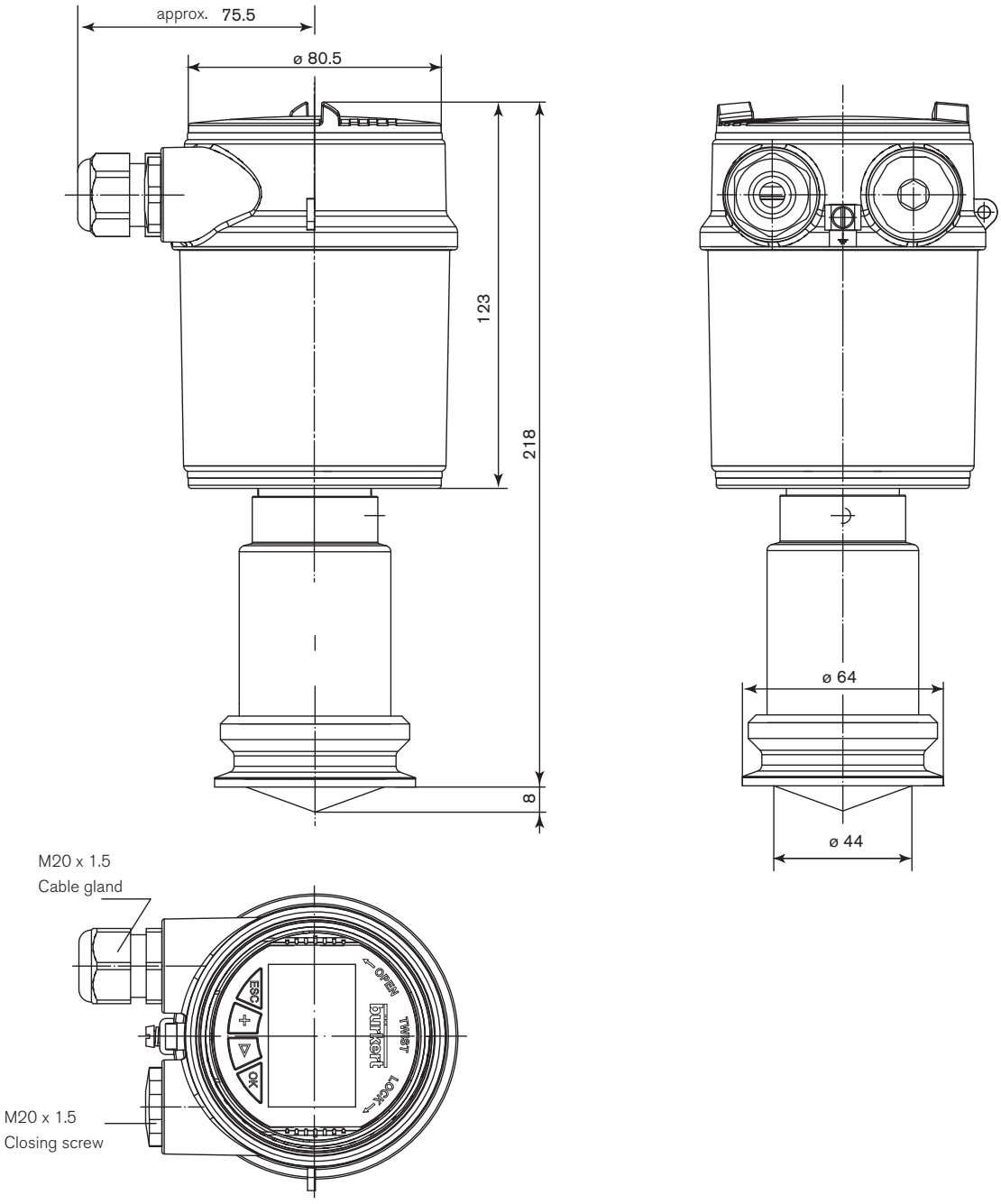
Necessary components:

- Measuring device 8138
- PC with PACTware™ and suitable Bürkert DTM
- HART-USB Modem
- Resistance approx. 250 Ohms
- Power supply unit



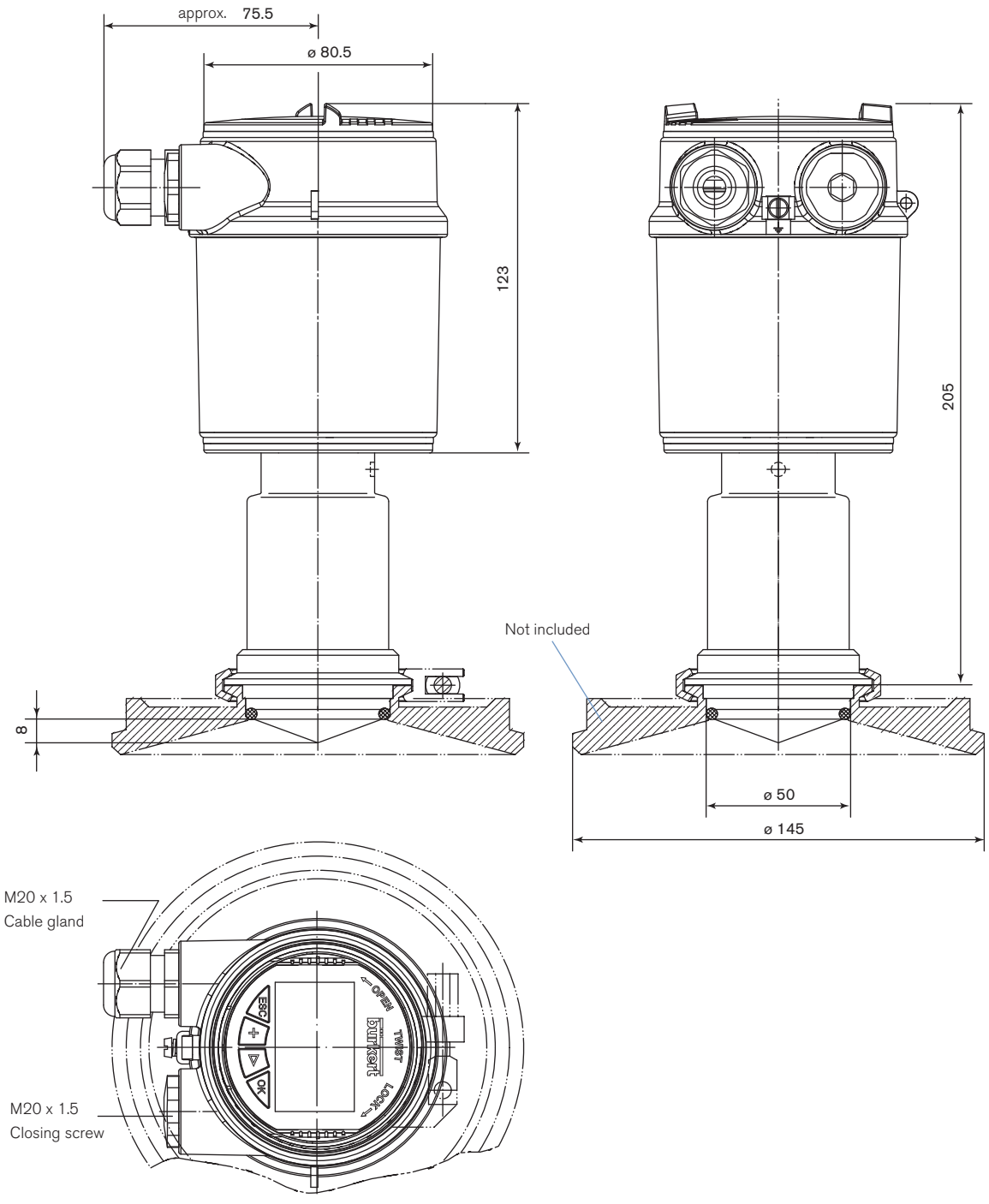
Dimensions [mm]

Clamp connection



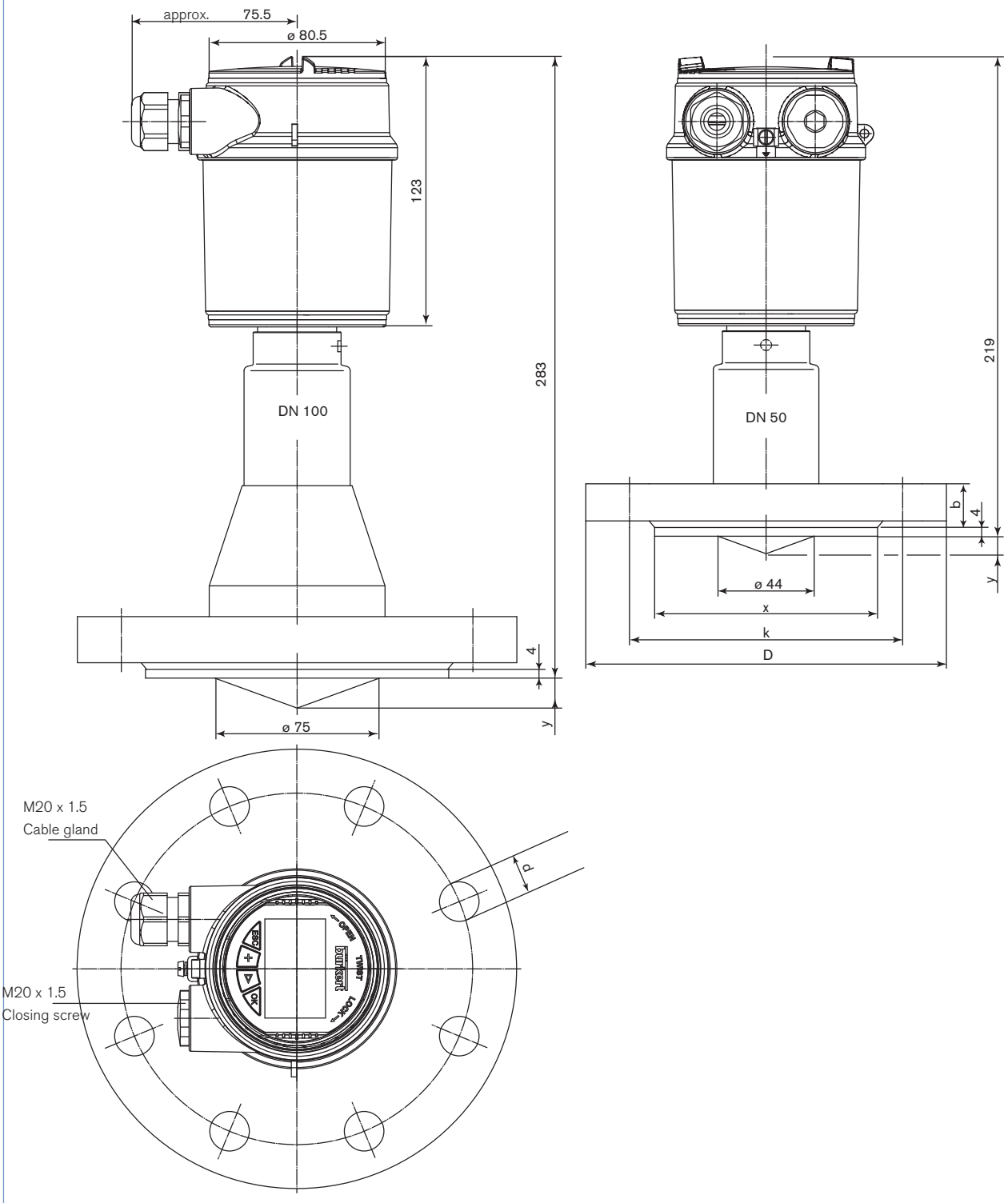
Dimensions [mm]

DN25 connection adapted for GEA Tuchenhagen VARINLINE process connections



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 measuring device Type 8138

Specifications	Operating voltage	Output	Process connection	Electrical connection	Item no. without display/ configuration module
Standard version	14 - 36 V DC	4... 20 mA/HART (2 wires)	Clamp 2”	Cable gland M20 x 1.5	560 169
			DN25 connection adapted for GEA Tuchenhagen VARINLINE process connections	Cable gland M20 x 1.5	560 171
			Flange DN50 DIN2501 / 16 bar	Cable gland M20 x 1.5	560 173
			Flange DN100 DIN2501 / 16 bar	Cable gland M20 x 1.5	560 175
Ex version - ATEX approval	14 - 30 V DC	4... 20 mA/HART (2 wires)	Clamp 2”	Cable gland M20 x 1.5	560 170
			DN25 connection adapted for GEA Tuchenhagen VARINLINE process connections	Cable gland M20 x 1.5	560 172
			Flange DN50 DIN2501 / 16 bar	Cable gland M20 x 1.5	560 174
			Flange DN100 DIN2501 / 16 bar	Cable gland M20 x 1.5	560 176

Further versions on request

Process connection

Flange	DN80 PN40 Form C DIN2501
	DN150 PN16 Form C DIN2501
	DN150 PN40 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”

Please also use the “request for quotation” on page 8 for ordering a customized measuring device. go to page

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

Specifications	Item no.
Set with 2 reductions M20 x 1.5/NPT½” + 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

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Customized measuring device 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:

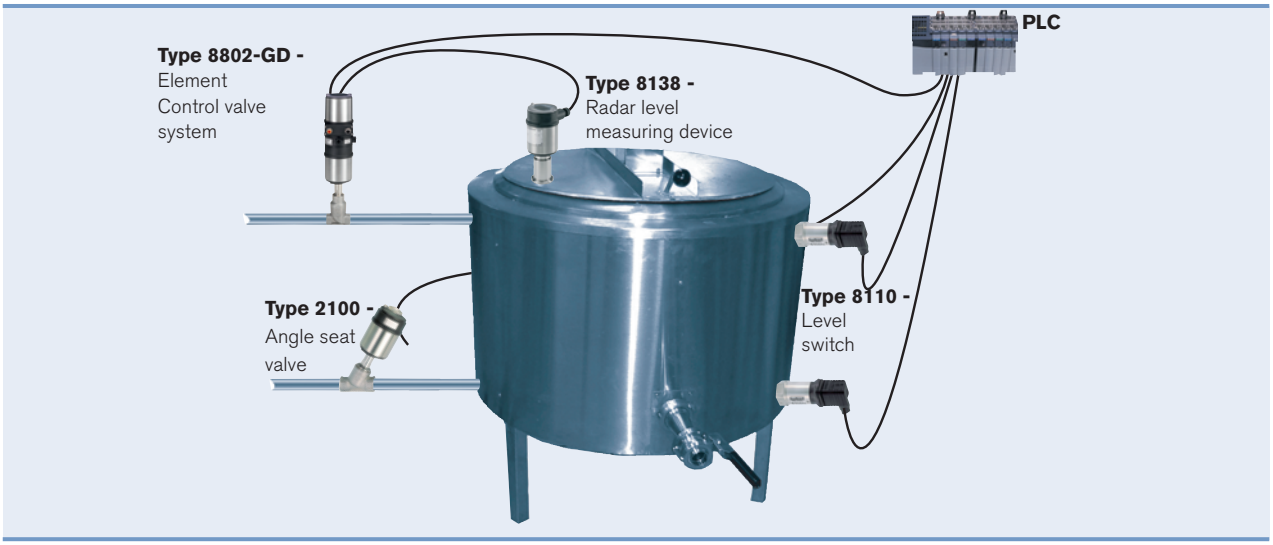
Radar level measuring device 8138

Quantity: ☐ **Desired delivery date:** ☐

- **Antenna** ☐ Encapsulated horn (-40... 200°C) ☐ Hygienic encapsulated horn (-40... 130°C)
- **Process connection:**
  - **Clamp** ☐ 2" ☐ 2½" ☐ 3" ☐ 4"
  - **Bolting DIN 11851** ☐ DN50 PN16, ☐ DN65 PN16 ☐ DN80 PN16 ☐ DN100 PN16
  - **Hygienic fitting** ☐ with tension flange DN32 PN16 ☐ 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
  - **DN25 connection** adapted for GEA Tuchenhagen VARINLINE process connections ☐ DN25... PN10
- **Display/configuration module** ☐ Yes ☐ No
- **ATEX approval** ☐ Yes ☐ No **FDA approval** ☐ Yes ☐ No

reset form

Interconnection possibilities with other Bürkert devices



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

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DATA SHEET

Type 8139

bürkert
FLUID CONTROL SYSTEMS

Radar level meter for liquids suitable for use in applications with aggressive fluids as well as with hygienic requirements

- Continuous level measurement up to 30 m, 4…20 mA, 2-wire
- Available process connections: Plastic horn antenna, thread (G, NPT ¾ and 1½), flange (DN50, DN100), clamp (2")
- Excellent radar signal focusing and high measurement dynamics
- Adjustable using the display/configuration module and keys, alternatively via PC-Tool with DTM

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

Can be combined with

Type 8619 ▸
multiCELL - Multi-channel and multi-function transmitter/controller

Type 8611 ▸
eCONTROL - Universal controller

Type 8692 ▸
Digital electropneumatic Positioner for the integrated mounting on process control valves

Type 8644 ▸
Remote Process Actuation Control System AirLINE

Type description

The Type 8139 is a non-contact radar level measuring device for continuous level measurement.

It is available with:

- integrated antenna (G- or NPT connection), especially suitable for level measurement of aggressive liquids, with special advantages for small vessels.
- plastic horn antenna (with mounting bracket), especially suitable for measurements in open flumes or gauge measurement in water.
- flange connection (DIN 2501) with encapsulated antenna system,
- clamp connection (DIN 32676, ISO 2852) with encapsulated antenna system for hygienic requirements.

The high focus of the radar signal and the high measurement dynamics allow excellent measurement results even in small, narrow and high containers, as the risk of signal interference by installations, constructions and vessel walls is much lowered. Signal damping, e.g. due to signal running length, foam build-up, low DK values of the liquids, has a much smaller effect.

Visit product website ▸

1. General technical data

Product properties	
Materials	
Non wetted parts	
Depending on antenna system. Detailed information can be found in chapter "2. Product versions" on page 5.	
Housing	Plastic PBT (Polyester), PPS and stainless steel 316L (1.4404)
Cover	PC transparent
Seal between housing and housing cover	EPDM
Cable gland	PA
Blind plug	PA
Ground terminal	Stainless steel 316L
Wetted parts	
Depending on antenna system. Detailed information can be found in chapter "2. Product versions" on page 5.	
Dimensions	Detailed information can be found in chapter "3. Dimensions" on page 7.
Weights	Approx. 2…17.2 kg (depending on process connection and antenna)
Measuring variable	Distance between the end of the sensor antenna and the product surface.
Measuring range	Max. 30 m (depending on antenna system). Detailed information can be found in chapter "2. Product versions" on page 5.
Beam angle[1.)]	Depending on antenna system. Detailed information can be found in chapter "2. Product versions" on page 5.
Damping (63 % of the input variable)	0…999 s, adjustable
Step response time[2.)3.)]	≤3 s
Product accessories	
Display	LCD in full dot matrix (optional, must be ordered separately)
Performance data	
Blocking distance	Null
Measurement deviation	According to EN 60770-1: ≤1 mm for liquids (measuring distance >0.25 m). Detailed information can be found in chapter "4.1. Measurement deviation diagram" on page 10.
Measuring range resolution	1 mm
Measuring frequency	W-Band (80 GHz technology)
Measuring cycle time[2.)]	Approx. 700 ms
Temperature drift	<0.03 %/10K relating to the 16 mA span or max. 0.3 %
Repeatability[4.)]	≤1 mm
Vibration resistance	Depending on antenna system. Detailed information can be found in chapter "2. Product versions" on page 5.
Shock resistance	100 g, 6 ms according to EN 60068-2-27 (mechanical shock)
Electrical data	
Operating voltage (U_n)	12…35 V DC
Starting current	≤3.6 mA; ≤10 mA for 5 ms after switching on
Load resistor	$(U_n - U_{min})/0.022$ A
Output signal	4…20 mA/HART
Signal resolution	0.3 µA
Range of the output signal	3.8…20.5 mA/HART (default setting)
Fault signal	Current output: mA value unchanged, 20.5 mA, 22 mA or <3.6 mA (adjustable)
Max. output current	22 mA
Residual ripple (at DC)	For 12 V< U_n <18 V: ≤0.7 V_{eff} (16…400 Hz) For 18 V< U_n <35 V: ≤1.0 V_{eff} (16…400 Hz)
Voltage supply cable	• Cable diameter: 5…9 mm • Wire cross-section (spring-loaded terminals): – massive wire, stranded wire: 0.2…2.5 mm² (AWG 24…14) – stranded wire with end sleeve: 0.2…1.5 mm² (AWG 24…16)
Media data	
Process temperature	Depending on antenna system. Detailed information can be found in chapter "2. Product versions" on page 5.
Process pressure	Depending on antenna system. Detailed information can be found in chapter "2. Product versions" on page 5.

Process/Port connection & communication	
Process connection	• Mounting bracket 170 mm (supplied as standard) or 300 mm (accessory) (version with plastic horn antenna) • Thread G or NPT - ¾" or 1½" (version with integrated horn antenna) • Flange DN50, DN100 DIN 2501 (version with encapsulated antenna system) • Clamp 2" DIN 32676, ISO 2852 (hygiene connection version with encapsulated antenna system)
Electrical connection	Cable gland M20 x 1.5
Approvals and Certificates	
Standards	
Degree of protection according to IEC/EN 60529	IP66/IP67 with cable plug mounted and tightened M20 x 1.5
Overvoltage category according to IEC 61010-1	Category III
Protection class according to IEC 61010-1	Class III
Directives	
CE directives	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)
NAMUR recommendations	NE21- Electromagnetic compatibility of equipment NE43 - Signal level for fault information from measuring transducers NE53 - Compatibility of field devices and display/adjustment components NE107 - Self-monitoring and diagnosis of field devices
Environment and installation	
Ambient temperature	Operation and storage: -40…+80 °C (-40…+176 °F)
Temperature derating	Depending on antenna system. Detailed information can be found in chapter **"4.2. Temperature derating diagram" on page 11**.
Relative air humidity	20…85 %, without condensation
Height above sea level	By default: max. 2000 m With connected overvoltage protection: max. 5000 m
Pollution degree	Degree 4 (when used with fulfilled housing protection)

1.) Outside the specified beam angle, the energy level of the radar signal is 50 % (-3 dB) less

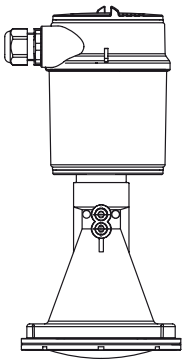
2.) With operating voltage $U_n \geq 24$ V DC

3.) Time span after a sudden distance change from 1…5 m until the output signal reaches 90 % of the final value for the first time (IEC 61298-2).

4.) Already included in the measurement deviation

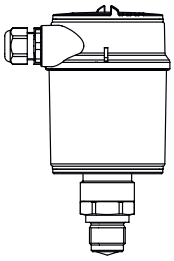
2. Product versions

2.1. Plastic horn antenna 80 mm



Product details	
Material	Non wetted parts: • antenna cone in PBT-GF 30 • mounting bracket and fixing screws, in stainless steel 316L Wetted parts: • focus lens in PP
Beam angle	3°
Measuring range	0…30 m
Vibration resistance	• With mounting bracket: 1 g with 5…200 Hz according to EN 60068-2-6 (vibration at resonance) • With adapter flange (as an option): 2 g with 5…200 Hz according to EN 60068-2-6 (vibration at resonance)
Process temperature	-40…+80 °C (-40…+176 °F)
Process pressure	With adapter flange: -1…1 bar (-100…100 kPa/-14.5…14.5 psig)
Accessories	
Material	Non wetted parts: • fixing screws for adapter flange in stainless steel 304 Wetted parts: • adapter flange for PP-GF30 black • seal for adapter flange in FKM (COG VI500)

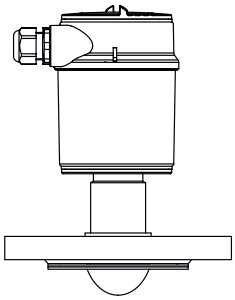
2.2. Thread with integrated antenna 40 mm



Product details	
Material	Wetted parts: • process connection in stainless steel 316L • antenna in PEEK • seal Antenna system in FKM • process seal in NBR with aramid fibres
Beam angle	• 14° for version G¾ or NPT¾ • 7° for version G 1½ or NPT 1½
Measuring range	• 0…10 m for version G¾ or NPT¾ • 0…20 m for version G 1½ or NPT 1½
Vibration resistance	4 g with 5…200 Hz according to EN 60068-2-6 (vibration at resonance)
Process temperature[1.)]	-40…+130 °C (-40…+266 °F)
Process pressure	-1…20 bar (-100…2000 kPa/-14.5…290.1 psig)

1.) Take into account reduced ambient temperature. Detailed information can be found in chapter "4.2. Temperature derating diagram" on page 11

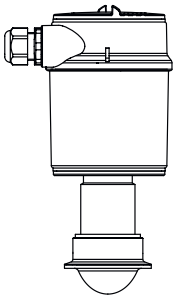
2.3. Flange with encapsulated antenna system



Product details	
Material	Wetted parts: • flange plating, antenna encapsulation in PTFE • seal in PTFE
Beam angle	• 6° for version DN50 • 3° for version DN100
Measuring range	• 0…25 m for version DN50 • 0…30 m for version DN100
Vibration resistance	4 g with 5…200 Hz according to EN 60068-2-6 (vibration at resonance)
Process temperature[1.)]	-40…+130 °C (-40…+266 °F)
SIP process temperature	+150 °C (+302 °F), vapour stratification up to 2 h
Process pressure	-1…16 bar (-100…1600 kPa/-14.5…232 psig)

1.) Take into account reduced ambient temperature. Detailed information can be found in chapter "4.2. Temperature derating diagram" on page 11

2.4. Hygiene connection with encapsulated antenna system

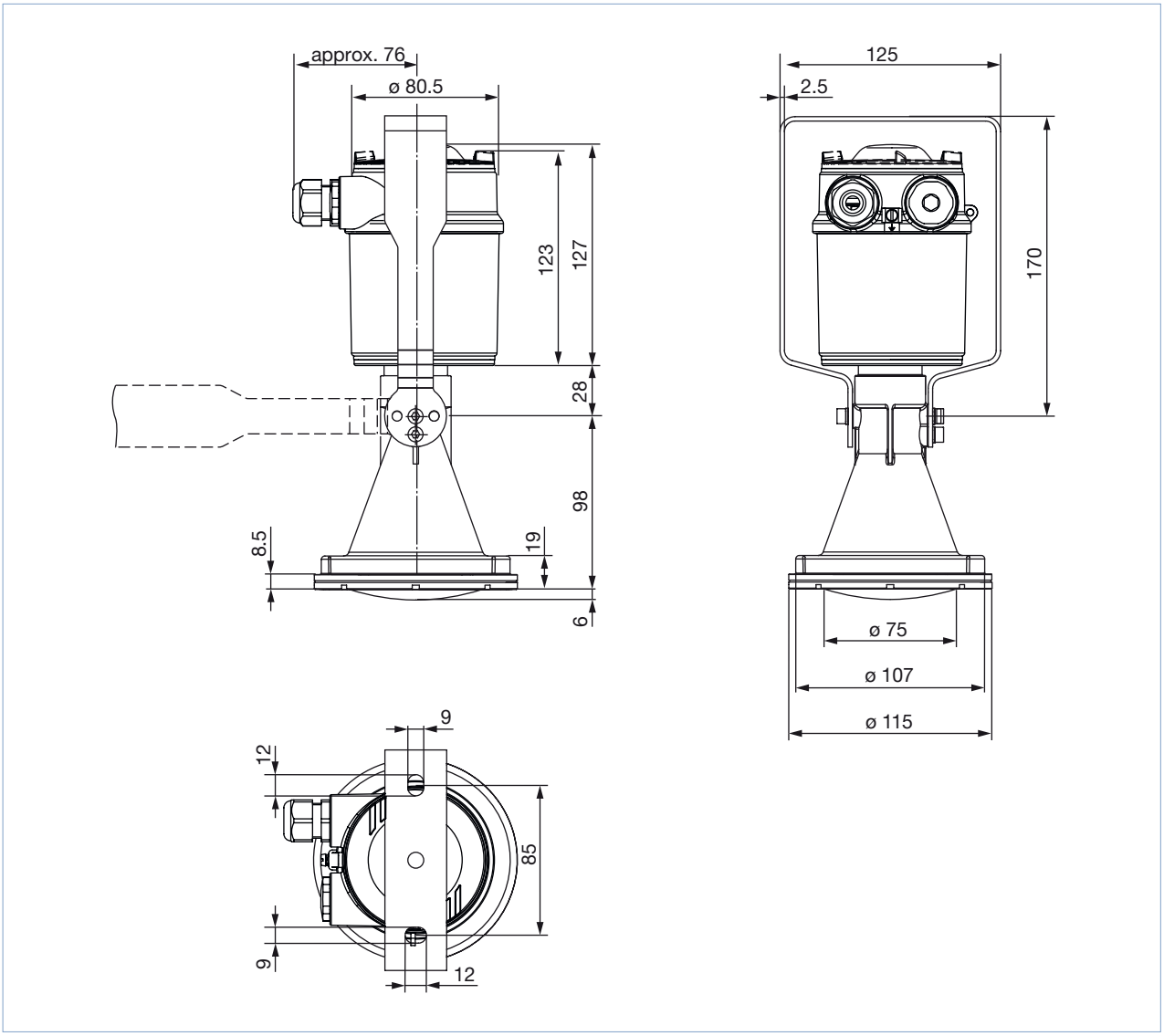


Product details	
Material	Wetted parts: • hygienic antenna encapsulation in PTFE • seal in PTFE
Surface roughness of the antenna encapsulation	Ra < 0.8 µm
Beam angle	6°
Measuring range	0…25 m
Process temperature	-40…+130 °C (-40…+266 °F)
SIP Process temperature	+150 °C (+302 °F), vapour stratification up to 2 h
Process pressure	-1…16 bar (-100…1600 kPa/-14.5…232 psig)

3. Dimensions

3.1. Plastic horn antenna 80 mm

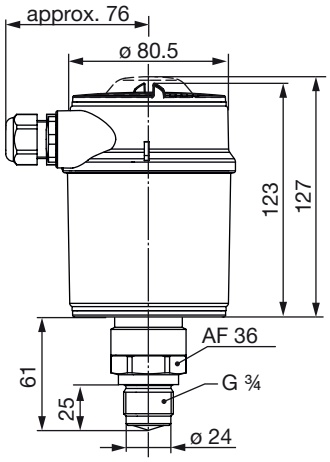
Note:
Specifications in mm



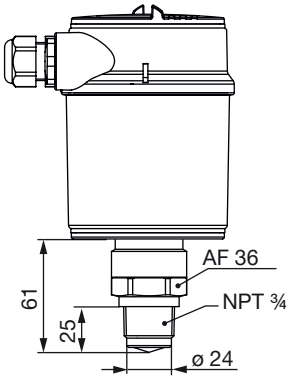
3.2. Thread with integrated antenna 40 mm

Note:
Specifications in mm

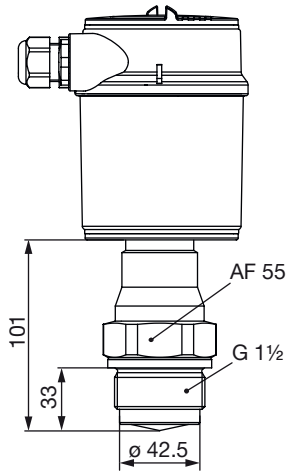
Version G ¾ (DIN 3852-E)



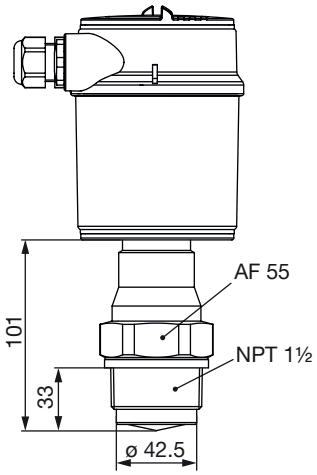
Version NPT ¾ (ASME B1.20.1)



Version G 1½ (DIN 3852-E)



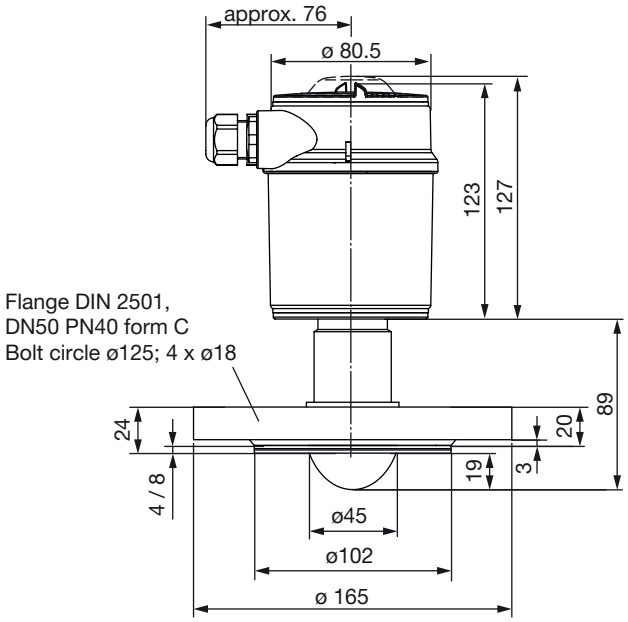
Version NPT 1½ (ASME B1.20.1)



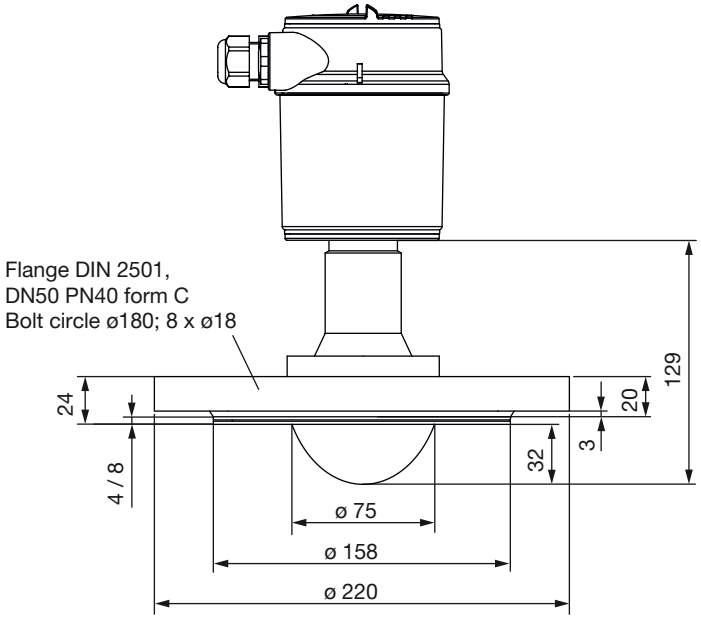
3.3. Flange with encapsulated antenna system

Note:
Specifications in mm

Version DN50 PN40, up to 130 °C



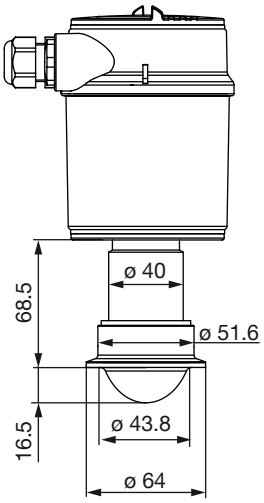
Version DN100 PN16, up to 130 °C



3.4. Hygiene connection with encapsulated antenna system

Note:
Specifications in mm

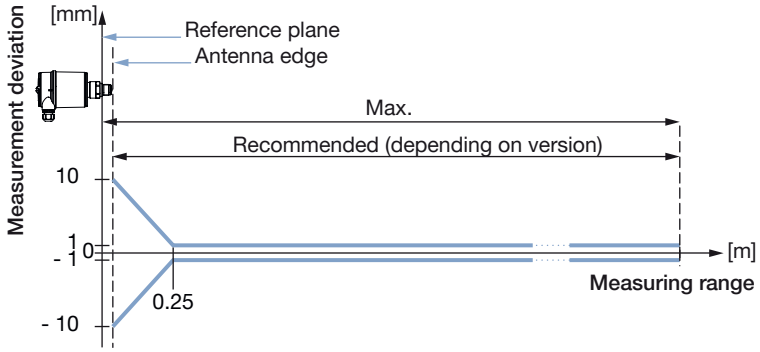
Version clamp 2" PN16, DIN 32676, ISO 2852



4. Performance specifications

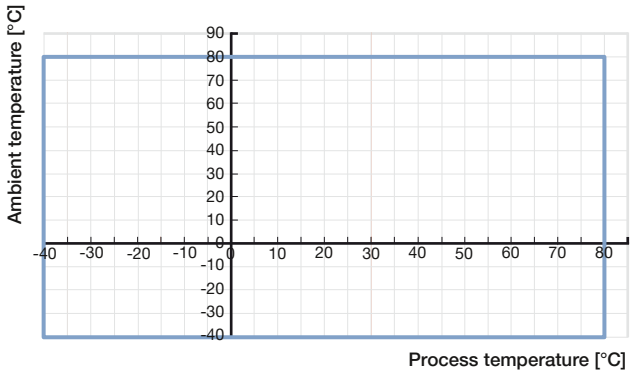
4.1. Measurement deviation diagram

Note:
The drawing shows the measurement deviation under reference conditions of Type 8139 with thread and integrated horn antenna. This applies accordingly to all versions.

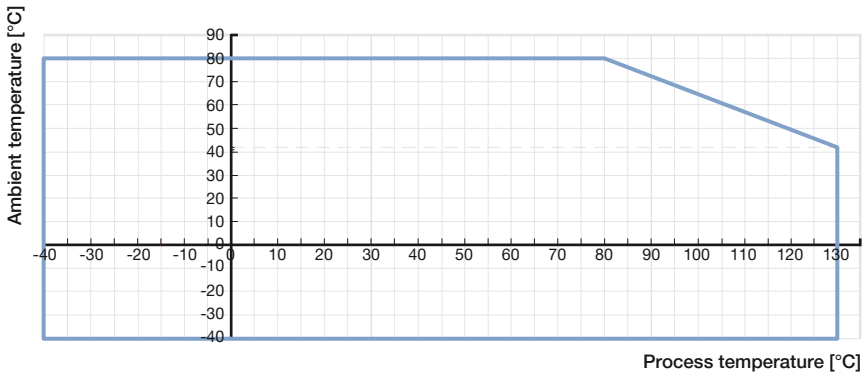


4.2. Temperature derating diagram

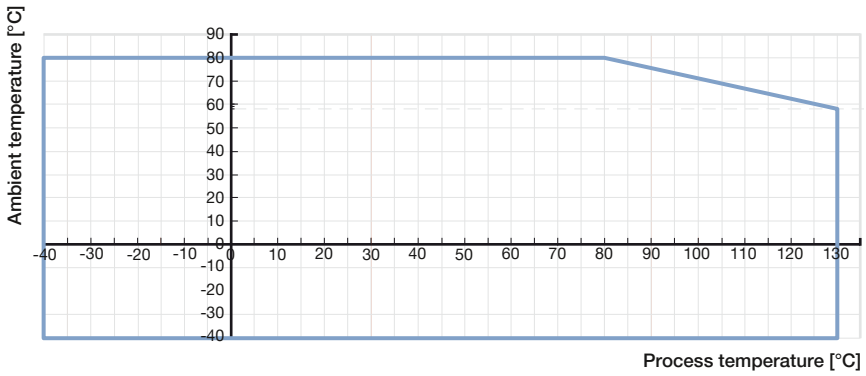
Plastic horn antenna 80 mm



Thread with integrated antenna 40 mm



Flange with encapsulated antenna system



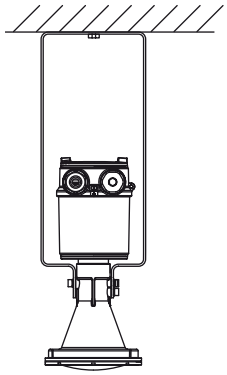
5. Product installation

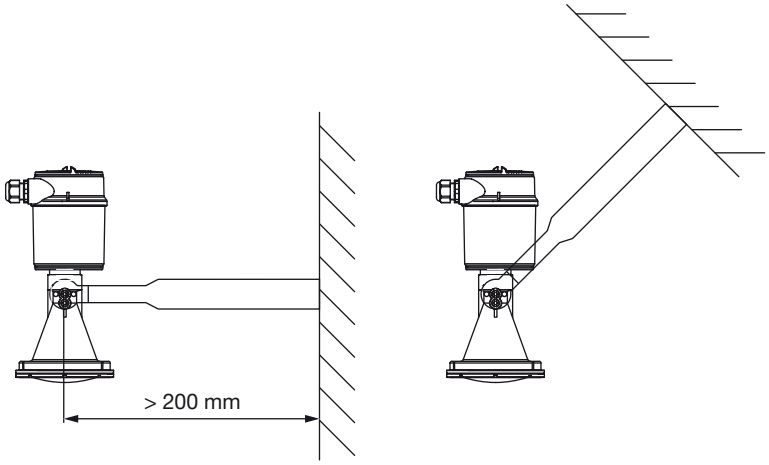
5.1. Mounting options

Plastic horn antenna 80 mm with mounting bracket

The mounting bracket allows simple mounting of the instrument on a wall, ceiling or boom. Especially in the case of open flumes, this is a simple and effective way to align the sensor to the surface of the liquids.

Mounting bracket - Ceiling mounting	Mounting bracket - Wall mounting
The instrument is normally mounted vertically with a bracket on the ceiling. This allows the sensor to swivel up to 180° for optimal alignment and rotate for optimal connection.	Alternatively, the bracket can be mounted horizontally or diagonally.

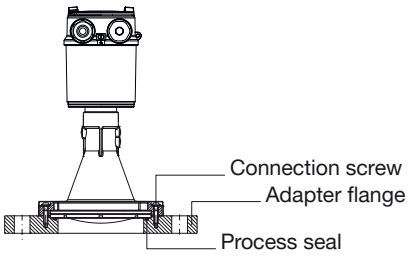




Plastic horn antenna 80 mm with flange

An adapter flange is available for mounting the device on a socket.

Adapter flange
The adapter flange is available from DN 100. It is permanently connected with the radar sensor and sealed.



6. Product operation

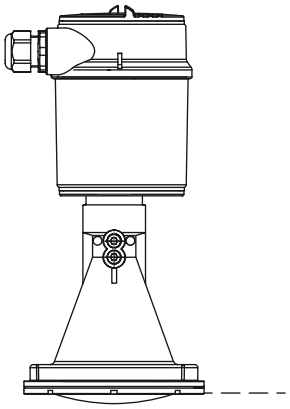
6.1. Measuring principle

The radar measuring device for the measurement of liquid levels consists of a housing with electronics and a process connection with antenna. The antenna of the radar sensor emits a continuous radar signal. This is reflected by the liquid surface and received by the antenna as an echo. Radar waves propagate at the speed of light. The frequency difference between the transmitted and received signal is proportional to the distance to the liquid surface. The filling level is calculated and converted into a corresponding output signal and transmitted as a measured value.

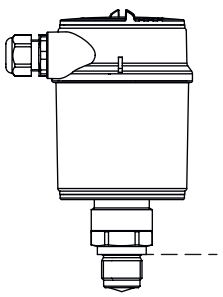
The measuring range of the radar level measuring device begins physically at the end of the antenna. However, the min./max. adjustment begins at the reference plane. The reference plane is different depending on the sensor version.

- Plastic horn antenna: the reference plane is the sealing surface on the lower edge
- Thread with integrated horn antenna: the reference plane is the sealing surface at the bottom of the hexagon
- Flange with encapsulated antenna system: the reference plane is the lower edge of the flange plating
- Hygiene connection with encapsulated antenna: the reference plane is the highest contact point between sensor process fitting and welded socket

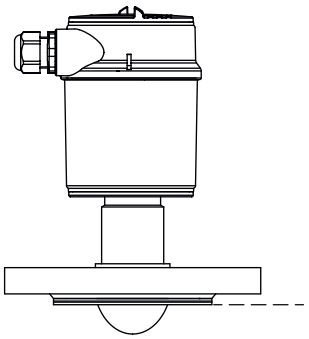
Plastic horn antenna 80 mm



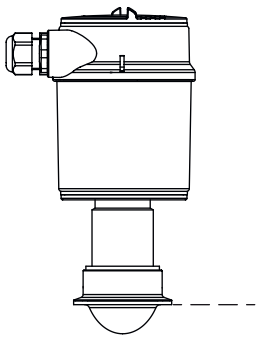
Thread with integrated horn antenna



Flange with encapsulated antenna system



Hygiene connection with encapsulated antenna



_ _ _ _ _ Reference plane

6.2. Product operation notes

Note:
The measuring device can be adjusted with:

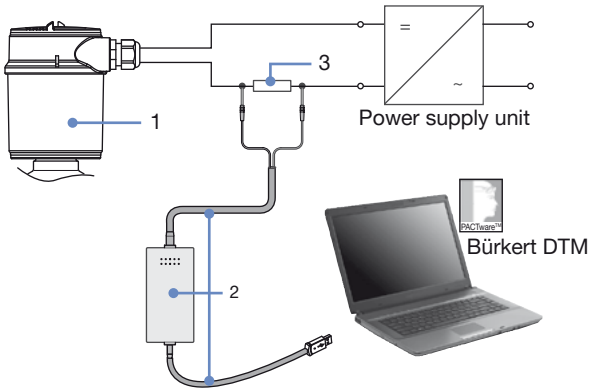
- the display/configuration module
- the suitable Bürkert DTM in conjunction with a software according to the FDT/DTM standard, e.g. PACTware™ and PC

The entered parameters are generally saved in the measuring device Type 8139. Optionally, parameters may also be uploaded and downloaded with the display/configuration module or saved in a file by using PACTware™/8139-DTM.

Set up with display/configuration module

Display/configuration module	Description
	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

Assembly	Description
	The measuring device can be operated thanks to PACTware™, via HART communication. An interface adapter is necessary for the adjustment with PACTware™. For the setup of the Type 8139, the DTM in the actual version must be used. The basic version of DTM incl. PACTware™ is available as a free-of-charge download from the internet at **www.burkert.com** ▶.

Connecting the PC via HART

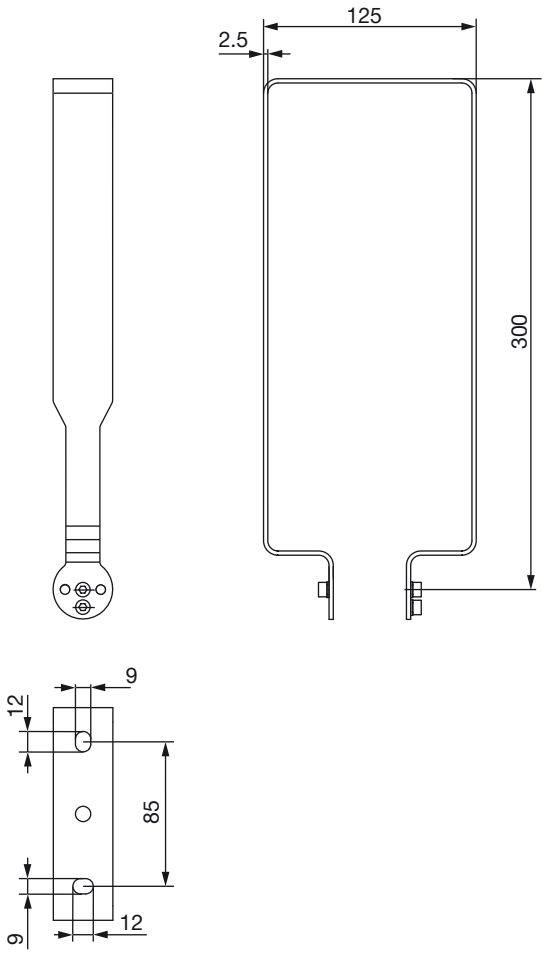
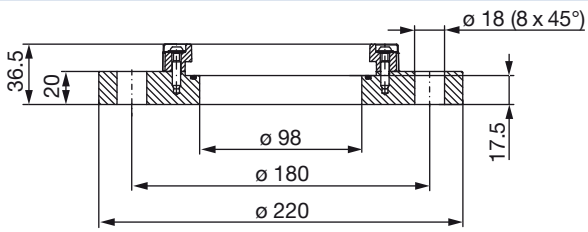
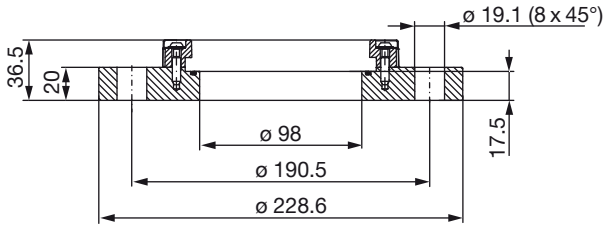
No.	Description
1	Measuring device Type 8139
2	HART-USB Modem
3	Resistance 250 Ω

Necessary components:

- measuring device Type 8139
- PC with PACTware™ and suitable Bürkert DTM
- HART-USB Modem
- resistance approx. 250 Ω
- power supply unit

7. Product accessories

Note:
The accessories for the plastic horn antenna 80 mm must be ordered separately.

Accessory	Description
	Mounting bracket 300 mm
	Adapter flange DN100 PN16 FKM / PPH
	Adapter flange ASME (ANSI B16.5) 4" 150PSI FKM / PPH

8. Ordering information

8.1. 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

8.2. 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

8.3. Ordering chart

Note:
All following versions are supplied without display/configuration module.

Description	Operating voltage	Output	Process connection	Electrical connection	Article no.
Plastic horn antenna 80 mm	12…35 V DC	4…20 mA/HART (2 wires)	Mounting bracket 170 mm	Cable gland M20 × 1.5	570592
Thread with integrated antenna 40 mm, PN20	12…35 V DC	4…20 mA/HART (2 wires)	G ¾	Cable gland M20 × 1.5	570620
			NPT ¾	Cable gland M20 × 1.5	570621
			G 1½	Cable gland M20 × 1.5	570590
			NPT 1½	Cable gland M20 × 1.5	570591
Flange with encapsulated antenna system	12…35 V DC	4…20 mA/HART (2 wires)	DN50 DIN2501, 40 bar	Cable gland M20 × 1.5	570606
			DN100 DIN2501, 16 bar	Cable gland M20 × 1.5	570607
Hygiene connection with encapsulated antenna system	12…35 V DC	4…20 mA/HART (2 wires)	Clamp 2"	Cable gland M20 × 1.5	570605

Further versions on request			
Material e.g. FFKM, PFA		**Pressure** e.g. 1…6 bar, 1…10 bar	
Process connection e.g. compression flange, adapter flange DN150, ANSI, JIS, clamp 3"		**Additional** Wit display	
Temperature e.g. -40…+200 °C			