


## Guided microwave level measuring device - sanitary version

- Universal level measuring device for liquids and bulk materials
- 4... 20 mA/Hart - 2 wires
- Insensitive to dust and steam
- ATEX approvals 

Type 8186 can be combined with...



**Type 8635**

SideControl Ex



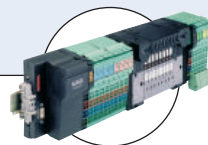
**Type 2035**

Diaphragm valve



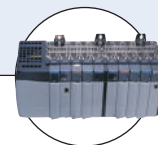
**Type 8802-GD**

Continuous  
TopControl system



**Type 8644**

Valve islands



**PLC**

The Type 8186 is a level measuring device with rod probe, designed for continuous level measurement. The unit is suitable for liquids, but also for solids, for industrial use in all areas of process technology. It can be used in corrosive liquids. 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 measuring result.

### General data

#### Materials

Housing / Cover  
Seal ring / Ground terminal  
Inner conductor, Rod- $\varnothing$  10 mm  
Wetted parts  
Process fitting / process seal  
Rod- $\varnothing$  10 mm

PBT, Stainless steel 316L / PC  
NBR / Stainless steel 316L  
Stainless steel 316L (1.4435)

#### Display

LCD in full dot matrix

#### Weight

Housing  
Rod- $\varnothing$  10 mm

890 g  
approx. 350 g/m

#### Process fitting

Clamp 2" or DIN11851 DN50

#### Length

0.3... 4 m - Lateral load: 4 Nm

#### Electrical connections

Cable gland M20 x 1.5

#### Measuring type

Level of liquids and solids

#### Min. dielectric figure

$\epsilon_r > 1.6$

#### Dead zone

From top of probe: 80 mm - from bottom of probe: 0 mm

#### Measuring range

0.08... 4 m (see diagram on next page)

#### Process temperature

-40 to 150°C (-40 to 302°F) (flange temperature)

#### Process pressure

-1 to 16 bar (-14.51 to 232.16 PSI) (-100... 1600 kPa) (depends on the process fitting)

#### Temperature drift

0.06%/10K (Relating to the max. measuring range)

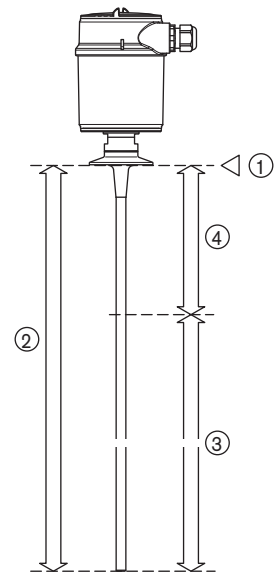
#### Accuracy

See accuracy diagram, on next page

Electrical data	
<b>Operating voltage</b>	14 - 36 V DC or 14 - 30 V DC (Ex ia instrument)
<b>Lightening power consumption</b>	approx. 80 mW
<b>Permissible residual ripple</b>	< 100 Hz: $U_{ss} < 1$ V 100 Hz... 10 kHz: $U_{ss} < 10$ mV
<b>Output signal</b>	4... 20 mA/HART
<b>Resolution</b>	1.6 $\mu$ A
<b>Fault signal</b>	current output unchanged; 20.5 mA; 22 mA < 3.6 mA (adjustable)
<b>Current limitation</b>	22 mA
<b>Load</b>	see load diagram
<b>Integration time</b> (63% of the input variable)	0... 999 s, adjustable
Environment	
<b>Ambient temperature</b> with display, adjustment elements	-20 to +70°C (-4 to 158°F) (operation and storage)
<b>Relative humidity</b>	max. 75% (operation), max. 85% (storage); without condensation
Standards and approvals	
<b>Protection</b>	IP66/IP67 with M20 x 1.5 gland mounted and tightened
<b>Overvoltage category</b>	III
<b>Protection class</b>	II
<b>Standard</b>	
EMC	EN61326
Security	EN61010-1
ATEX <sup>1)</sup>	EN50014; EN50020; EN50284
NAMUR	NE 21; NE 43
<b>Approvals</b>	FDA
Specifications Ex	
<b>Ⓢ - Protection</b>	Categories 1/2 G or 2 G
<b>Ⓢ - Certification</b>	Ex ia IIC T6
<b>Conformity specifications<sup>1)</sup></b>	
Operating voltage $U_i$	30 V
Short circuit rating $I_i$	131 mA
Power limitation $P_i$	983 mW
Ambient temperature	-20 to +41°C (-4 to 105.8°F) (depend on categories)
Internal capacity $C_i$	negligible
Internal inductivity $L_i$	negligible

1) homologation certificate PTB 07 ATEX 2007 X

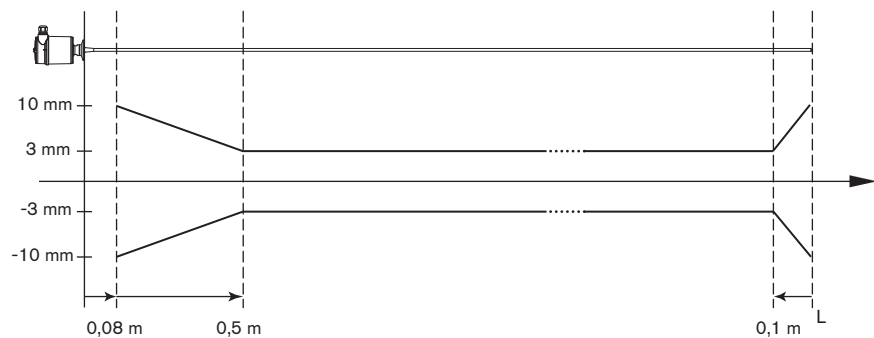
## Measuring range diagram



- 1 Reference plane
- 2 Probe length
- 3 Measuring range
- 4 Upper dead band

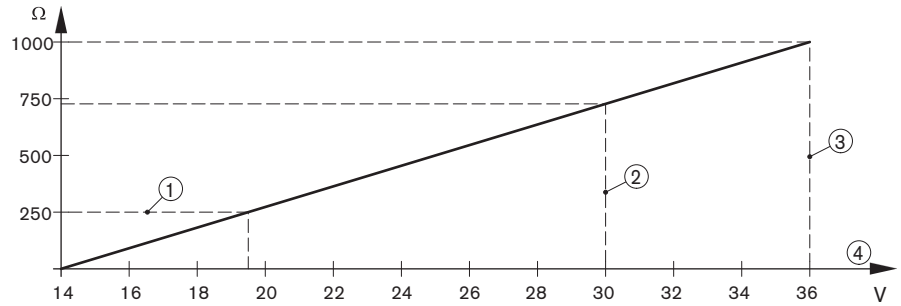
## Accuracy diagram

## Rod probe version



**Load diagram**

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

**Target applications with Type 8186****Foodstuffs and animal feed**

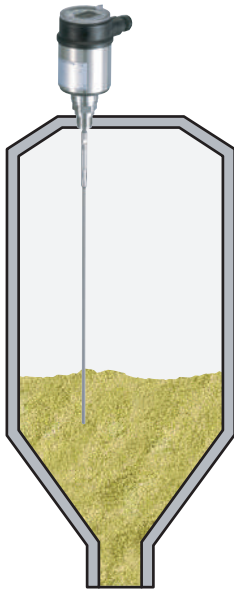
Products such as beer, milk, wine, cereals, sugar, flour, coffee, corn-flakes, cacao, instant powder, animal feed - liquids or bulk solids levels must be measured everywhere in the food industry.

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

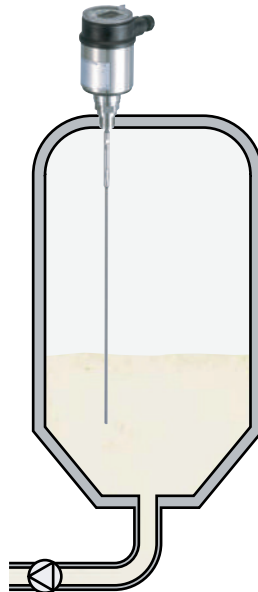
**Chemical industries**

Many finished products in the chemical industry are produced as powder, granules, pellets, solvents... The different and sometimes fluctuating product characteristics place heavy demands on the level measurement.

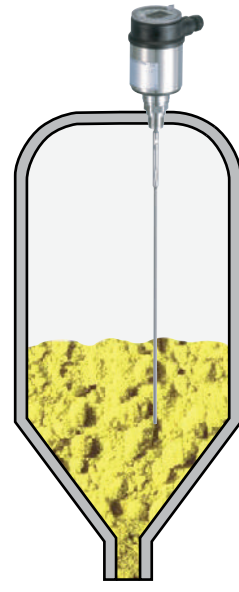
The measuring result is influenced neither by fluctuating product quality nor by dust generation, density, temperature, overpressure, foam or build-up.

**Application examples**

Level measurement in a grain silo



Level measurement in a milk vessel



Level measurement of plastic granules

## Principle of operation

High frequency microwave pulses are guided along a steel cable or 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 cable and rod versions can be adapted individually to the local requirements.

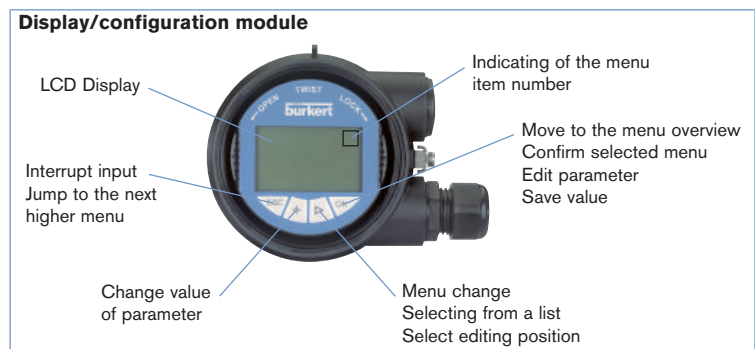
The measuring device can be adjusted with:

- 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 8186. 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

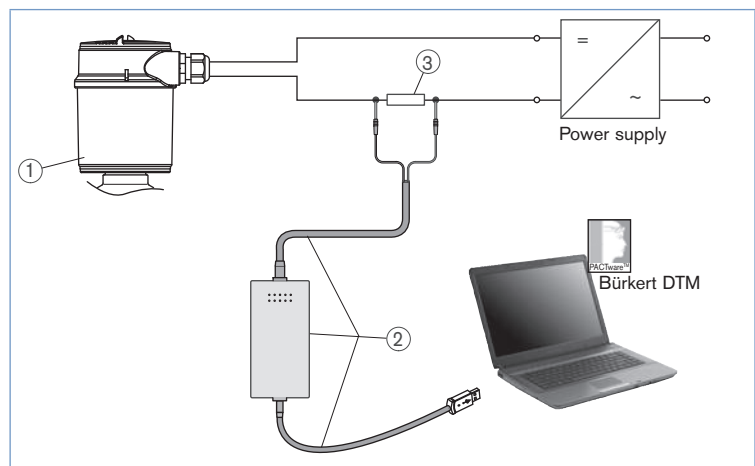
The measuring device can be operated thanks to PACTware™, via the HART signal. An interface adapter is necessary for the adjustment with PACTware™. For the setup of the Type 8186, DTM-Collection in the actual version must be used. The basic version of this DTM Collection incl. PACTware™ is available 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 8186
2. HART-USB Modem
3. Resistance 250 Ohm

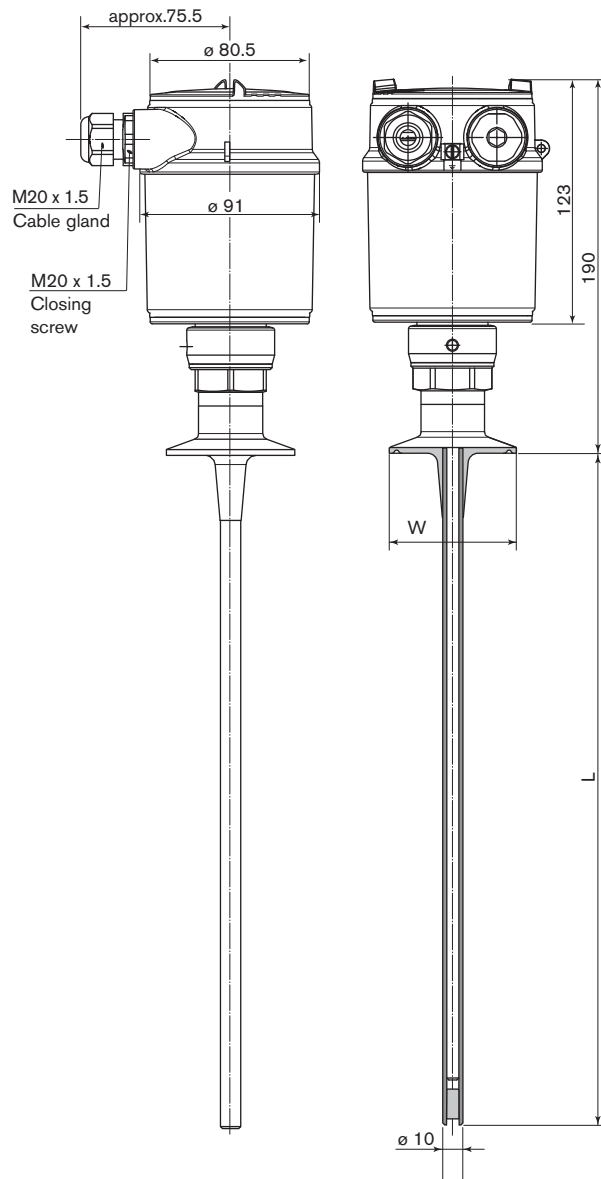
#### Necessary components:

- Measuring device 8186
- PC with PACTware™ and suitable Bürkert DTM
- HART-USB Modem
- Resistance approx. 250 Ohm
- Power supply unit



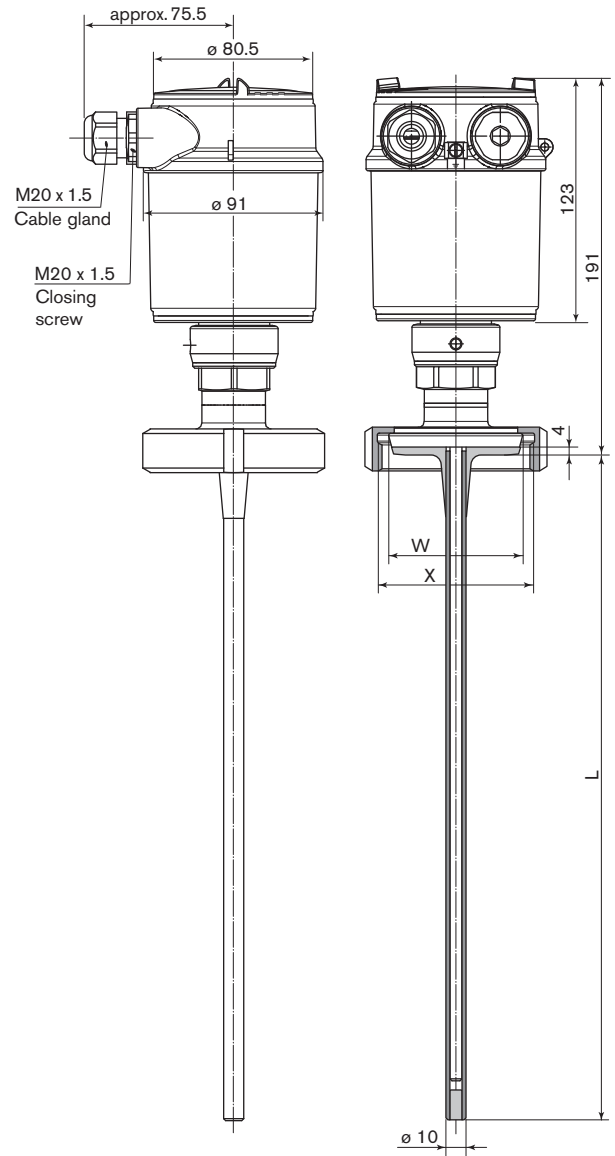
## Dimensions [mm]

## with Clamp connection



Clamp connection	W
1", 1"1/2	ø 50.5
2"	ø 64.0
2"1/2	ø 77.5
3"	ø 91.0

## with DIN 11851 connection



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

## Ordering chart for compact measuring device Type 8186

Specifications	Voltage supply	Output	Probe	Length	Electrical connection	Item no. with display/ configuration module	Item no. without display/ configuration module
Clamp 2"	14 - 36 V DC	4 - 20 mA/ HART (2 wires)	Rod	1 m	Cable gland M20 x 1.5	558 253	559 271
				2 m	Cable gland M20 x 1.5	558 255	559 273
DIN11851 DN50	14 - 36 V DC	4 - 20 mA/ HART (2 wires)	Rod	1 m	Cable gland M20 x 1.5	558 254	559 272
				2 m	Cable gland M20 x 1.5	558 256	559 274
Ex version - ATEX approval - Clamp 2"	14 - 30 V DC	4 - 20 mA/ HART (2 wires)	Rod	1 m	Cable gland M20 x 1.5	558 257	559 275
				2 m	Cable gland M20 x 1.5	558 259	559 277
Ex version - ATEX approval - DIN11851 DN50	14 - 30 V DC	4 - 20 mA/ HART (2 wires)	Rod	1 m	Cable gland M20 x 1.5	558 258	559 276
				2 m	Cable gland M20 x 1.5	558 260	559 278

 Further versions on request


## Port connection

Clamp 1<sup>1</sup>/<sub>2</sub>, 2<sup>1</sup>/<sub>2</sub>, 3"  
DIN 11851 DN32, DN40, DN65

## Ordering chart - accessories for measuring device Type 8186 (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 measuring device Type 8186 - 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 measuring device 8186**

Quantity:  Desired delivery date:

■ **Process fitting 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 200 mm between 600 and 4000 mm for Rod version)

■ **display/configuration module**     Yes     No

■ **ATEX approval**     Yes     No

■ **FDA approval**     Yes     No

**Interconnection possibilities with other Bürkert devices**

