

## 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  $\text{Ex}$

Type 8137 can be combined with...



**Type 8793**

Process controller



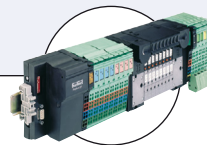
**Type 2103**

Diaphragm valve



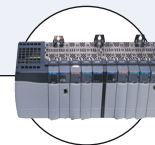
**Type 8802-GD**

Element control valve system



**Type 8644**

Valve islands



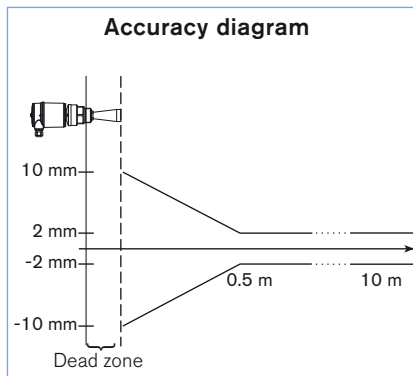
**PLC**

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 ( $\varnothing$  40 mm) particularly suitable for use in small tanks and process vessels for measurement of almost any product.

- with flange and horn antenna ( $\varnothing$  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.



### 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)	Klingsil 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 G 1½ or NPT 1½  
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

$\epsilon_r > 1.6$

#### Dead zone

50 mm

#### Measuring range

0.05 to 10 m (recommended - antenna with  $\varnothing$  40 mm)  
0.05 to 30 m (recommended - antenna with  $\varnothing$  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  $\varnothing$  40 mm)  
10° (antenna with  $\varnothing$  75 mm)



#### Adjustment time

> 1 s (dependent on the parameter adjustment)

#### Accuracy

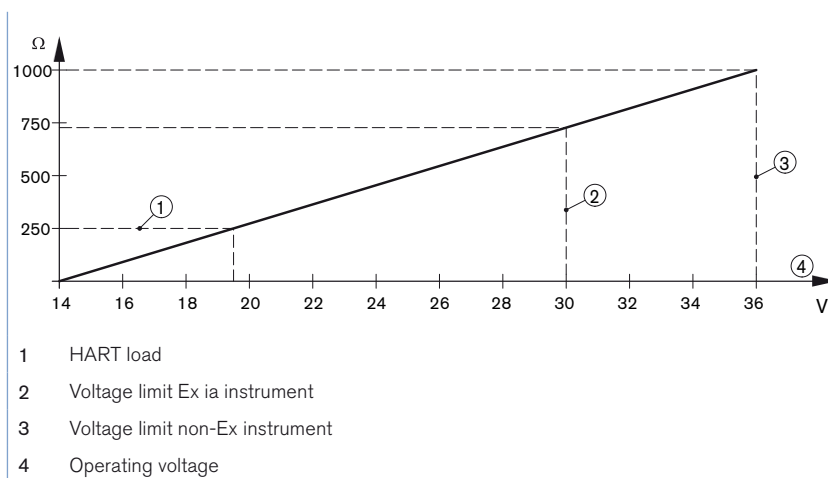
$\pm 2$  mm (see diagram)

\* 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: U <sub>ss</sub> < 1 V 100 Hz... 10 kHz: U <sub>ss</sub> < 10 mV
Output signal	4... 20 mA/HART
Resolution	1.6 $\mu$ A
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 <sup>1)</sup> : EN60079-0; EN60079-11; EN60079-26
Specifications Ex	
 - Protection	Categories 1/2G or 2G
 - 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	-40 to +55 °C (-40 to 131 °F) (dependent on categories)
Internal capacity C <sub>i</sub>	negligible
Internal inductivity L <sub>i</sub>	negligible

1) homologation certificate PTB 08 ATEX 2002X

### Load diagram



## Target applications

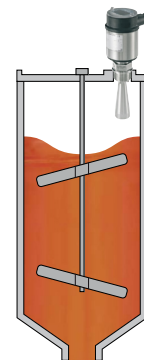
### In storage tanks

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.

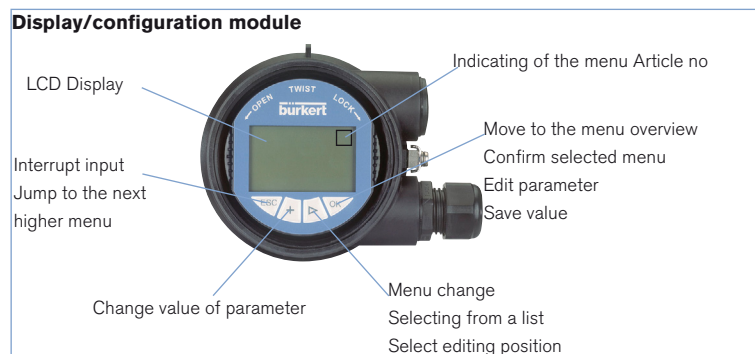
The measuring device can be adjusted with:

- 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



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

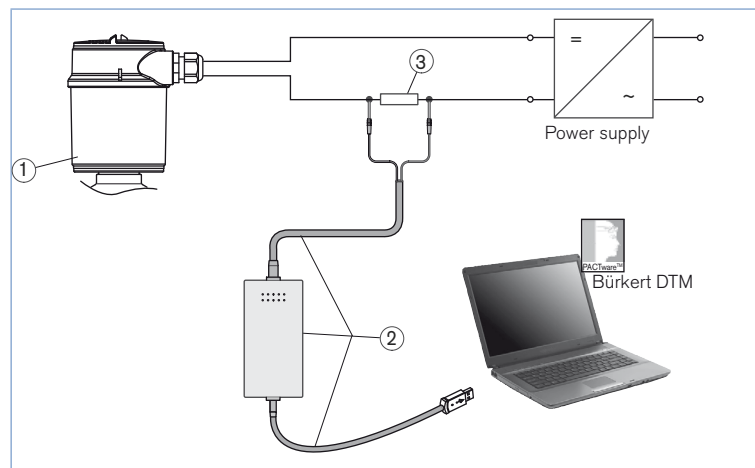
The measuring device can be operated thanks to PACTware™, via HART communication. An interface adapter is necessary for the adjustment with PACTware™. For the setup of the Type 8137, the DTM in the actual version must be used. The basic version of DTM incl. PACTware™ is available as a free-of-charge download from the Internet at [www.burkert.com](http://www.burkert.com).

#### Connecting the PC via HART

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

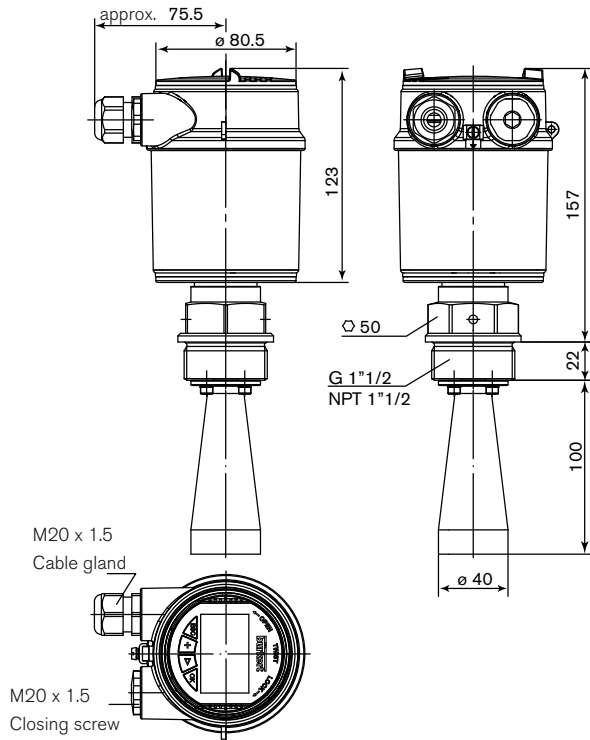
#### Necessary components:

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

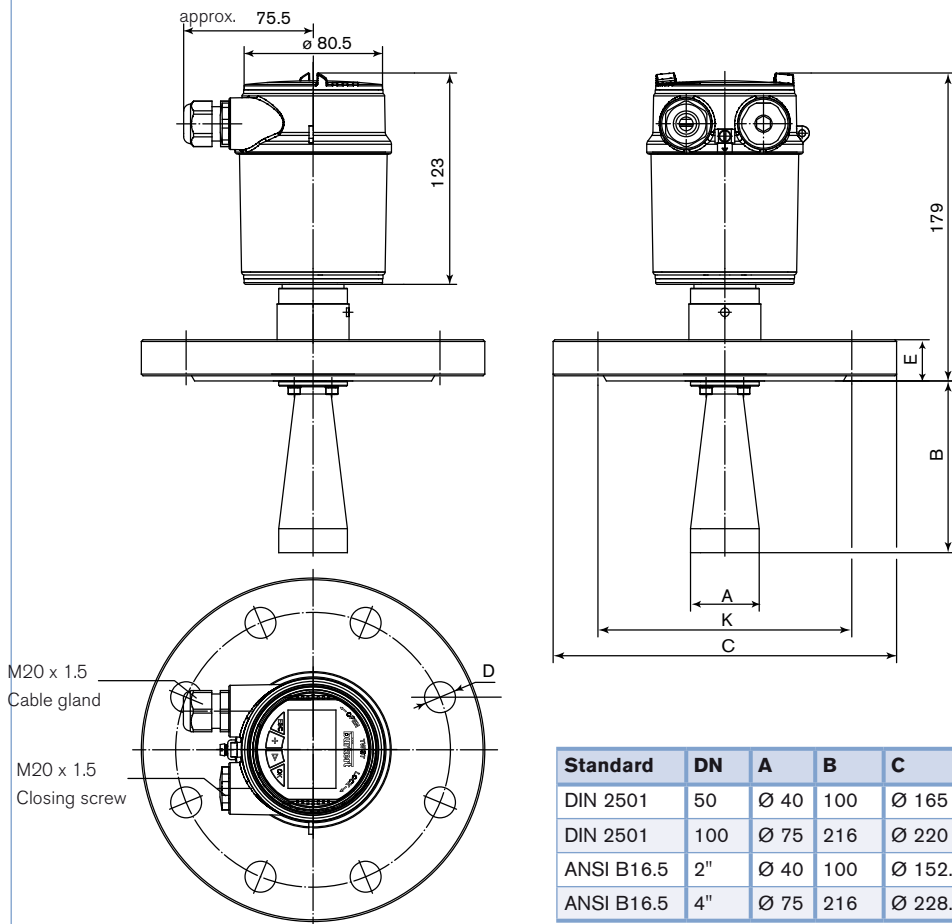


Dimensions [mm]

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	Article no. without display/ configuration module
Standard version	14 - 36 V DC	4... 20 mA/HART (2 wires)	Ø 40 mm	G 1½	Cable gland M20 x 1.5	560157
				NPT 1½	Cable gland M20 x 1.5	560159
				Flange DN50 DIN2501 / 40 bar	Cable gland M20 x 1.5	560161
			Ø 75 mm	Flange 2" ANSI B16.5 / 150 lb RF	Cable gland M20 x 1.5	560163
				Flange DN100 DIN2501 / 40 bar	Cable gland M20 x 1.5	560165
				Flange 4" ANSI B16.5 / 150 lb RF	Cable gland M20 x 1.5	560167
Ex version - ATEX approval	14 - 30 V DC	4... 20 mA/HART (2 wires)	Ø 40 mm	G 1½	Cable gland M20 x 1.5	560158
				NPT 1½	Cable gland M20 x 1.5	560160
				Flange DN50 DIN2501 / 16 bar	Cable gland M20 x 1.5	560162
			Ø 75 mm	Flange 2" ANSI B16.5 / 150 lb RF	Cable gland M20 x 1.5	560164
				Flange DN100 DIN2501 / 40 bar	Cable gland M20 x 1.5	560166
				Flange 4" ANSI B16.5 / 150 lb RF	Cable gland M20 x 1.5	560168



## 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	Article no.
Set with 2 reductions M20 x 1.5/NPT½" + 2 neoprene flat seals for cable gland + 2 screw-plugs M20 x 1.5	551782
Hart-USB Modem	560177
Set with a display/configuration module, a transparent cover and a seal ring	559279
Set with a transparent cover and a seal ring	561006

**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**       G 1 1/2       NPT 1 1/2

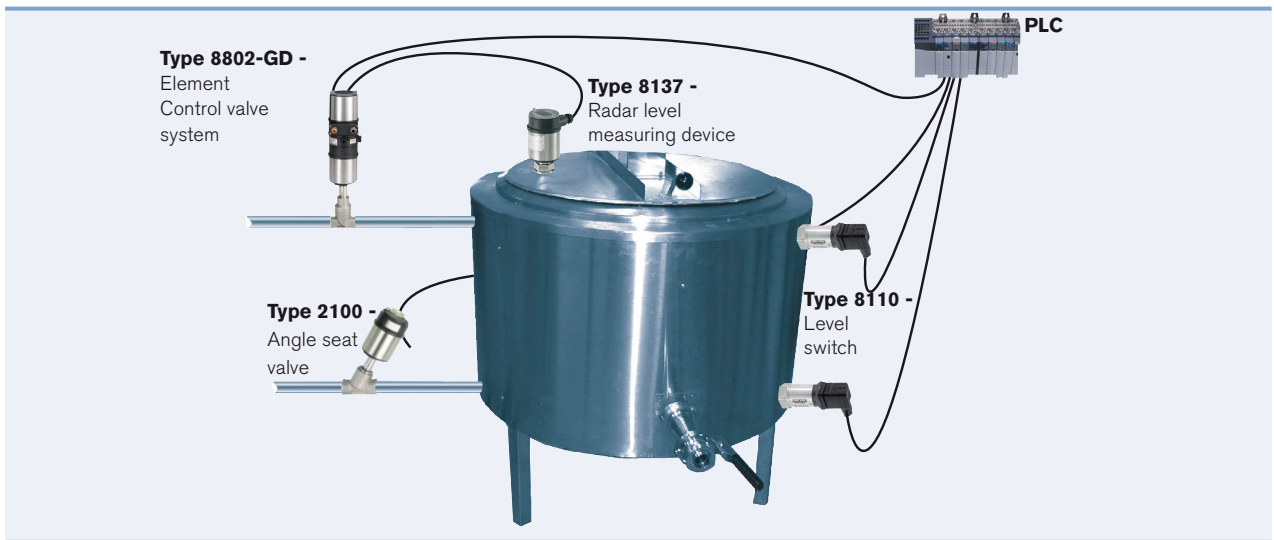
**Flange**

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

**Interconnection possibilities with other Bürkert devices**



\*To find your nearest Bürkert office, 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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1803/10\_EU-en\_00895042

DTS 1000105438 EN Version: J Status: RL (released | freigegeben | valide) printed: 13.03.2018