

BM SERIES WAVE COMPACT 6.3 GHZ

PULSE RADAR LEVEL INSTRUMENTS (6.3 GHz)

DESCRIPTION

The instruments of the series **BM WAVE COMPACT 6.3 GHz** are excellent devices for level measurement without contact with the medium. The microwaves impulses emitted by antenna radar of the instrument, travel at speed of the light and a part of their energy, which is reflected by surface of medium to measure, comes receipt by same antenna. The period of time (flight time) that passes between the emission of the impulses and the reception of the same ones from the antenna, is proportional to the existing distance between the antenna and the surface of the fluid to be measure; since the electromagnetic wave travels to speed much elevated (nanosecond), is difficult to identify it: the radar instruments series BM WAVE COMPACT 6.3 GHz, thanks to the integrated management system, use a suitable demodulation technology that allows they independently to identify the period of time passed between the emission of the impulses and their corrected reception and, consequently, to determine the level

Through the alphanumeric display of configuration it is possible, beyond inserting all the data related to the measure of the level, to display and to isolate eventual false echo signals. A software for the configuration and calibration with PC is available too, also with protocol of communication HART.

The use of an advanced microprocessor and the technology "EchoDiscovery", allows the use of the device also in critical zones with onerous situations of job, like as an example high temperatures and high pressure. The function "False echo storage" allows the instrument to identify the echo correct also in presence of false echo, supplying in this way turned out of measure correct. The integrated temperature sensor puts into effect a compensation of the temperature in real time. The radar can be installed indifferently or in metallic and not metallic tanks; its use is not harmful for the man or the atmosphere.



PRODUCTS OVERVIEW

COMPACT WAVE CW51

COMPACT WAVE CW52

COMPACT WAVE CW53

COMPACT WAVE CW54



BM SERIES WAVE COMPACT 6.3 GHz

TECHNICAL DETAILS

CW51 for liquids

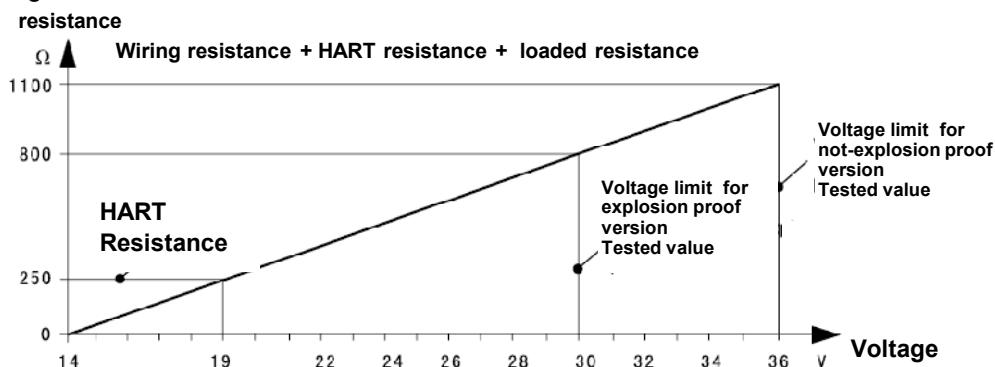
Applications:

Level measurement, Suitable for highly corrosive media.

Range:	until 30 m
Accuracy:	± 10 mm
Process connection:	G1½ "A - NPT
Antenna:	Rod
Materials: antenna:	PP / PTFE
housing:	plastic PBT-FR / Aluminium / Stainless Steel 316L
flanges:	AISI 316L
Working temperature:	-40 ÷ 120°C
Storage temperature:	-40 ÷ 80°C
Relative umidity:	<95%
Pressure of utilization:	-1 ÷ 3 bar
Resistance to vibrations:	mechanical vibrations 10m/s ² , 10÷150Hz
Frequency:	6 GHz
Angle emission lobe:	24°
Interval of measure:	~1sec
Interval of updating:	~1sec
Resolution display:	1mm
Supply 2 wires version:	
- Input voltages:	15÷36Vdc
- Absorption:	max. 22.5mA
- Ripple allowed:	<100Hz, U _{ss} >1V; 100Hz÷100KHz, U _{ss} <10mV
Supply 4 wires version:	
- Standard input voltages:	24Vdc ±10%; 230Vac ±10%
- Absorption:	max. 4VA, 2W
Output signal:	2/4 wires 4-20 mA, HART
Resolution:	1,6µA
Fixed signal for anomaly:	20.5mA; 22mA; 3.8mA
Resistance 2 wires version:	to see following diagram
Resistance 4 wires version	max 500 ohm
Integration time:	0÷99s, programmable
Cables entry:	1x PG 13.5
Weight:	~2 kg



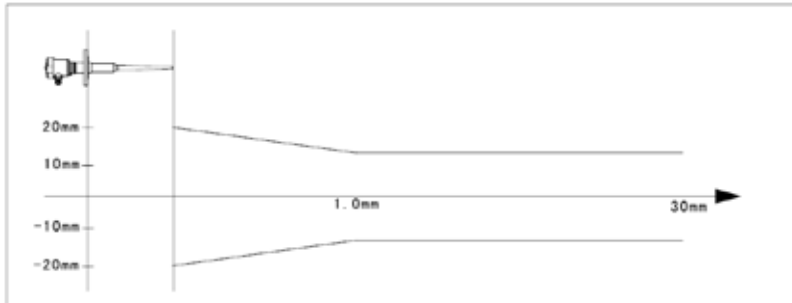
Diagram of loaded resistance, 2 wires version



BM SERIES WAVE COMPACT 6.3 GHz

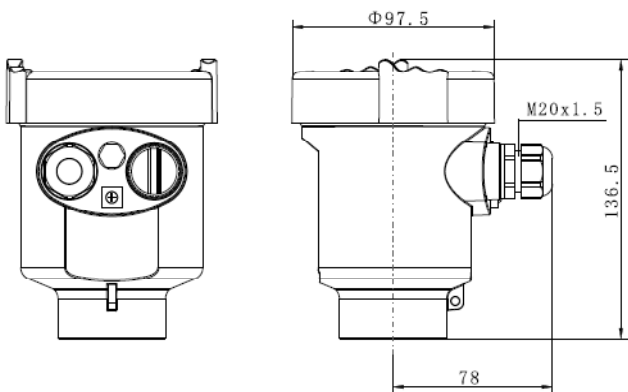
TECHNICAL DETAILS CW51 - follow

Precision

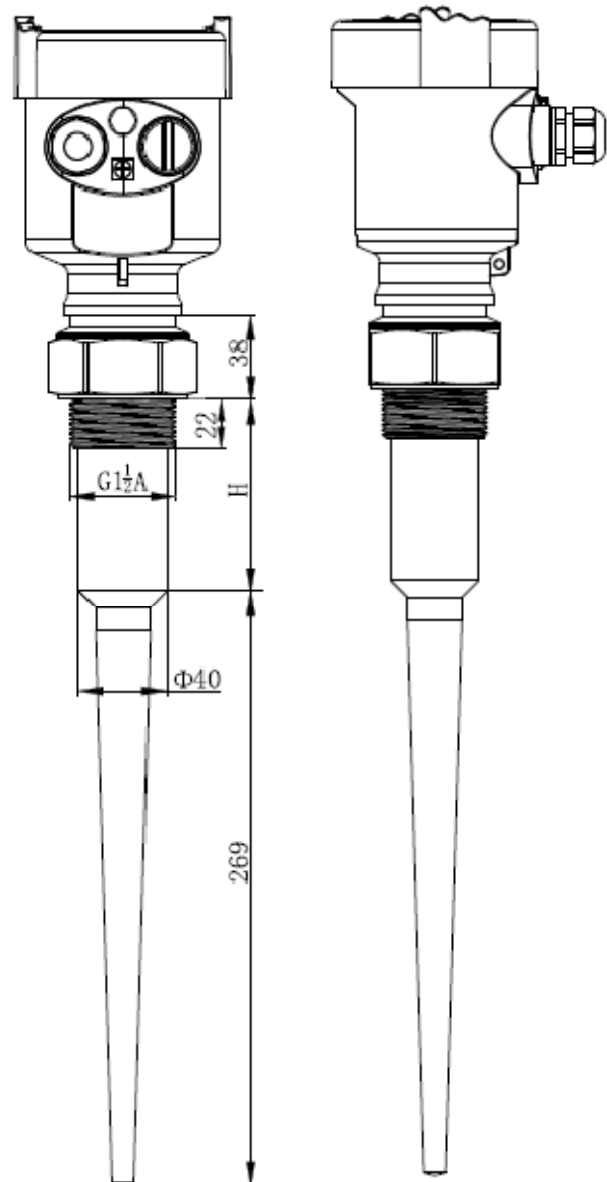


H
50
100
150
200
250
300

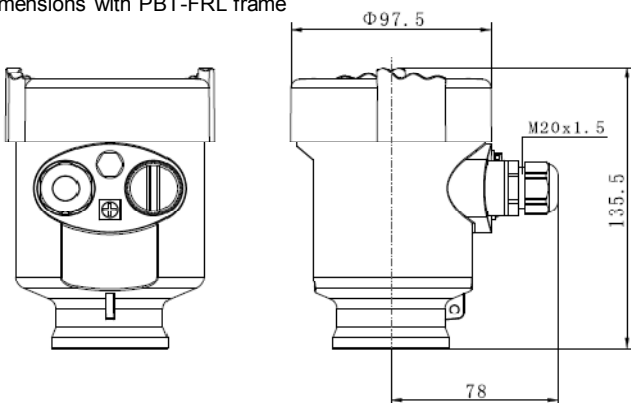
Dimensions with AL/316L frame



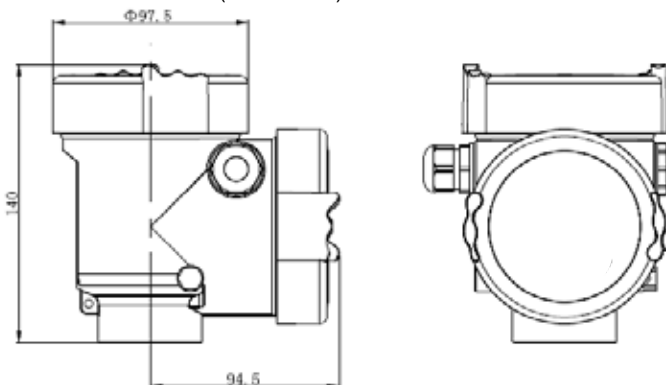
Dimensions



Dimensions with PBT-FRL frame



Dimensions with AL (2 chambers) frame



BM SERIES WAVE COMPACT 6.3 GHZ

ORDERING CODE CW51

P Standard

Type of Antenna / Material

- A Plastic Rod / PP / -40...120°C
- B Plastic Rod / PTFE / -40...120°C

Process Connection Length

- A 50mm
- B 100mm
- C 150mm
- D 200mm
- E 250mm
- F 300mm
- X Special type (on request)

Process Connections / Material

- GP Thread G 1½ A / PVDF
- NP Thread G 1½ NPT / PVDF
- FX Special type (on request)

Electronic

- B 4...20 mA HART 2 wires
- C 4...20 mA / 22,8...26,4 VDC / 4 wires
- D 4...20 mA / 198...242 VAC / HART 4 wires
- E 4...20 mA / 22,8...26,4 VDC / HART 2 wires

Housing Material / Protection

- B Plastic / IP67
- A Aluminium / IP67
- D Aluminium (2 chambers) / IP67
- G Stainless Steel / IP67

Wiring

- M M20x1.5
- N ½ NPT

Display / Programming

- A YES

BM SERIES WAVE COMPACT 6.3 GHZ

TECHNICAL DETAILS

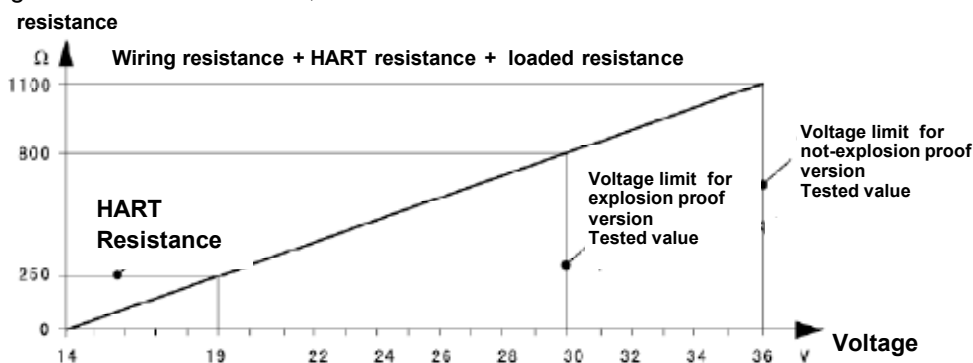
CW52 for liquids

Applications: Level measurement, suitable for highly corrosive media in defined conditions of temperature or pressure.

Range:	until 30 m
Accuracy:	10 mm
Process connection:	Protected flanges SS 316L PN16 DN 50, 100, 150, 200, 250, 300 PTFE
Antenna:	Rod
Materials: antenna:	PTFE
housing:	plastic PBT-FR / Aluminium / AISI
flanges:	SS 316L
Working temperature:	-40 ÷ 150°C
Storage temperature:	-40 ÷ 80°C
Relative umidity:	<95%
Pressure of utilization:	-1 ÷ 16 bar
Resistance to vibrations:	mechanical vibrations 10m/s ² , 10÷150Hz
Frequency:	6 GHz
Angle emission lobe:	24°
Interval of measure:	~1sec
Interval of updating:	~1sec
Resolution display:	1mm
Supply 2 wires version:	
- Input voltages:	15÷36Vdc
- Absorption:	22.5mA
- Ripple allowed:	<100Hz, U _{ss} >1V; 100Hz÷100KHz, U _{ss} <10mV
Supply 4 wires version:	
- Standard input voltages:	24Vdc ±10%; 230Vac ±10%
- Absorption:	max. 4VA, 2W
Output signal:	2/4 wires 4-20 mA, HART
Resolution:	1,6µA
Fixed signal for anomaly:	20.5mA; 22mA; 3.8mA
Resistance 2 wires version:	see following diagram
Resistance 4 wires version:	max 500 ohm
Integration time:	0÷99s, programmable
Cables entry:	1x PG 13.5
Weight:	until ~5 kg (depending by flange Ø)



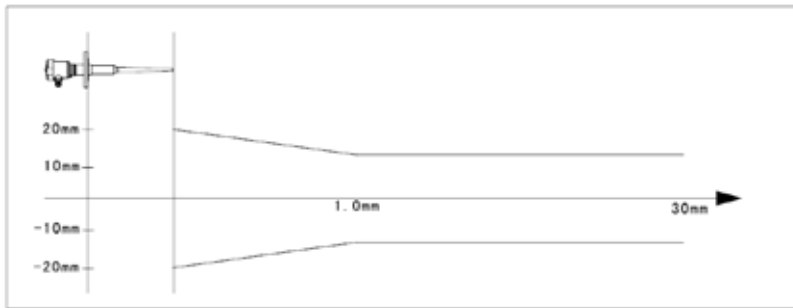
Diagram of loaded resistance, 2 wires version



BM SERIES WAVE COMPACT 6.3 GHZ

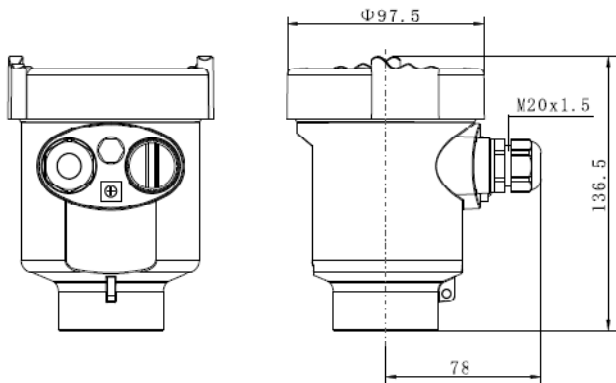
TECHNICAL DETAILS CW52 - follow

Precision

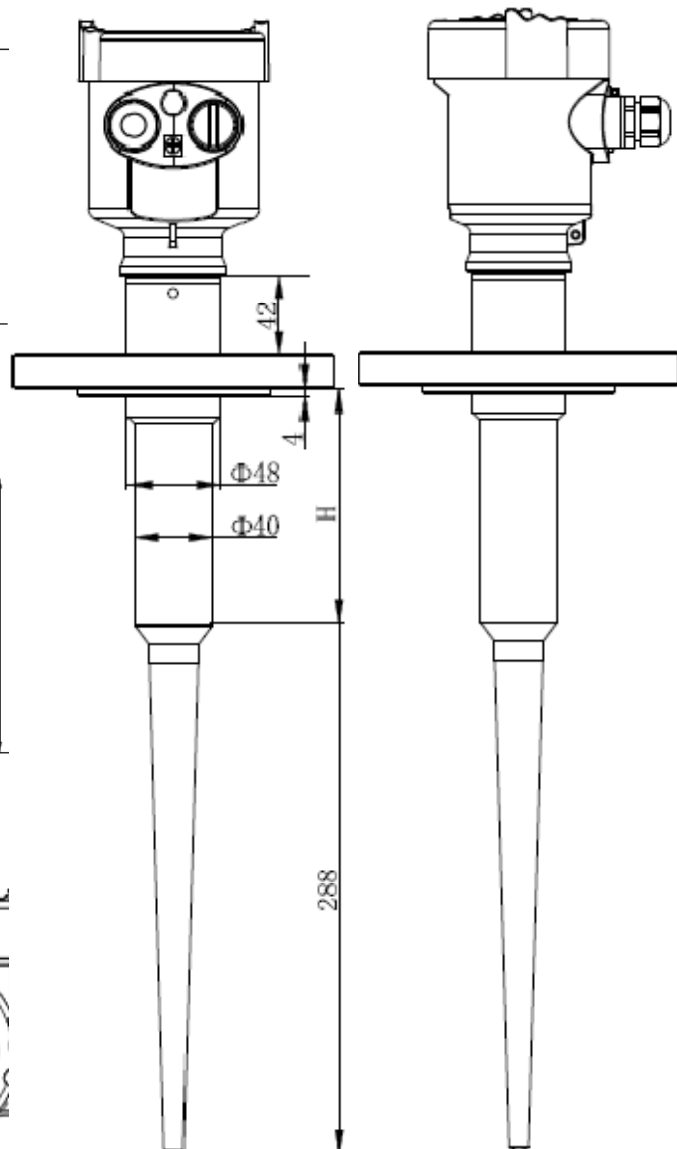


H
50
100
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250
300

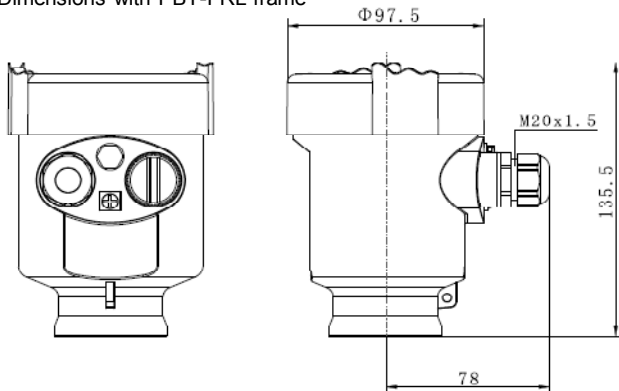
Dimensions with AL/316L frame



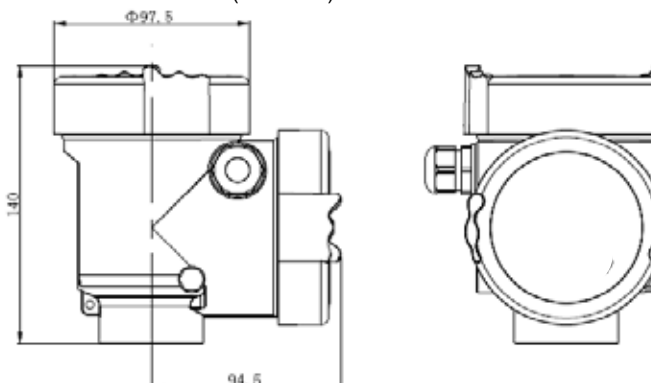
Dimensions



Dimensions with PBT-FRL frame



Dimensions with AL (2 readers) frame



BM SERIES WAVE COMPACT 6.3 GHZ

ORDERING CODE CW52

P Standard

Type of Antenna / Material / Working temperature

B Plastic Rod / PTFE / -40...150°C

Process Connection Length

- A 50mm
- B 100mm
- C 150mm
- D 200mm
- E 250mm
- F 300mm
- X Special type (on request)

Process Connection / Material

- FC PTFE Protected Flange DN50 PN16 SS 316L
- FD PTFE Protected Flange DN80 PN16 SS 316L
- FE PTFE Protected Flange DN100 PN16 SS 316L
- FK PTFE Protected Flange DN150 PN16 SS 316L
- YP Special connection (on request)

Electronic

- B 4...20 mA HART 2 wires
- C 4...20 mA / 22,8...26,4 VDC / HART 4 wires
- D 4...20 mA / 198...242 VAC / HART 4 wires
- E 4...20 mA / 22,8...26,4 VAC / HART 2 wires

Housing Material / Protection

- B Plastic / IP66
- A Aluminium / IP67
- D Aluminium (2 chambers) / IP67
- G Stainless Steel 316L / IP67

Wiring

- M M20x1.5
- N ½ NPT

Display / Programming

- A YES

BM SERIES WAVE COMPACT 6.3 GHZ

TECHNICAL DETAILS

CW53 for liquids and solids

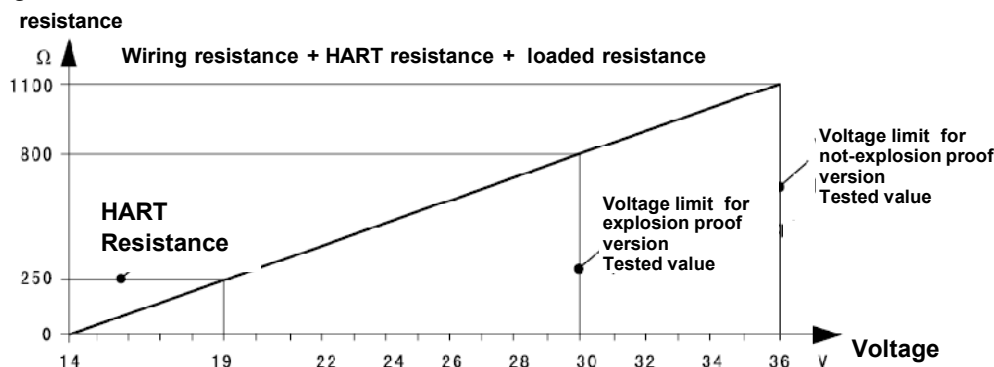
Applications:

Storage tanks with hazardous working conditions.

Range:	until 30 m
Accuracy:	10 mm
Process connection:	flanges AISI 316L SS PN16 DN50,80,100,150,200
Antenna:	conicals Ø 50, 80, 100, 150, 200
Materials: antenna:	SS 316L / PTFE
housing:	plastic PBT-FR / Aluminium / AISI
flanges:	SS 316L
Working temperature:	-40...200°C
Storage temperature:	-40 ÷ 80°C
Relative umidity:	<95%
Pressure:	-1 ÷ 40 bar
Resistance to vibrations:	mechanical vibrations 10m/s ² , 10÷150Hz
Frequency:	6 GHz
Angle emission lobe:	29°; 26°; 24°; 20° (depending by cones Ø)
Interval of measure:	~1sec
Interval of updating:	~1sec
Resolution display:	1mm
Supply 2 wires version:	
- Input voltage:	15÷36Vdc
- Absorption:	max. 22.5mA
- Ripple allowed:	<100Hz, U _{ss} >1V; 100Hz÷100KHz, U _{ss} <10mV
Supply 4 wires version:	
- Standard input version voltage:	24Vdc ±10%; 230Vac ±10%
- Absorption:	max. 4VA, 2W
Output signal:	2/4 wires 4-20 mA, HART
Resolution:	1,6µA
Fixed signal for anomaly:	20.5mA; 22mA; 3.8mA
Resistance 2 wires version:	to see following diagram
Resistance 4 wires version:	max 500 ohm
Time of integration:	0÷99s, programmable
Cables entry:	1x PG 13.5
Weight	until ~6 kg (depending by flange Ø)



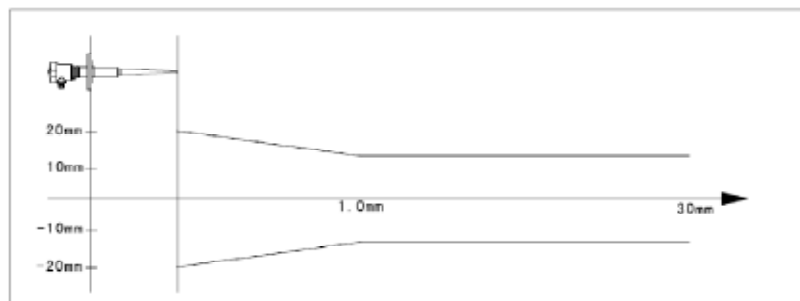
Diagram of loaded resistance, 2 wires version



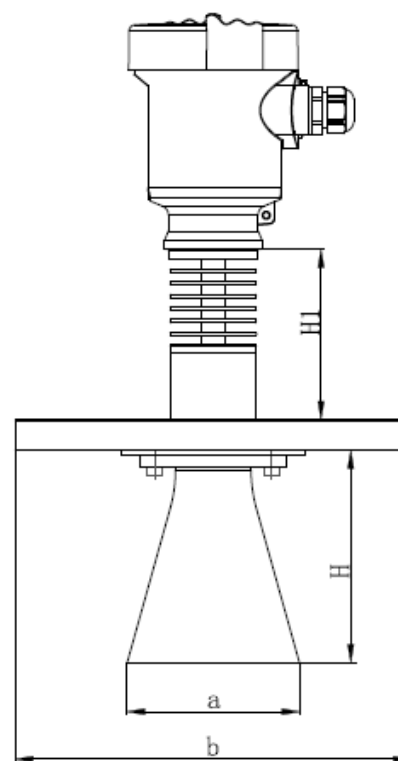
BM SERIES WAVE COMPACT 6.3 GHz

TECHNICAL DETAILS CW53 – follow

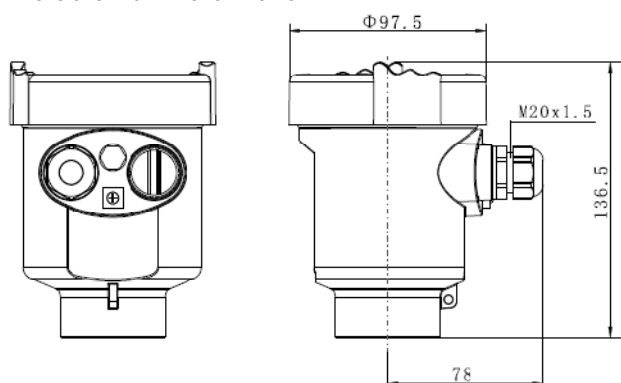
Precision



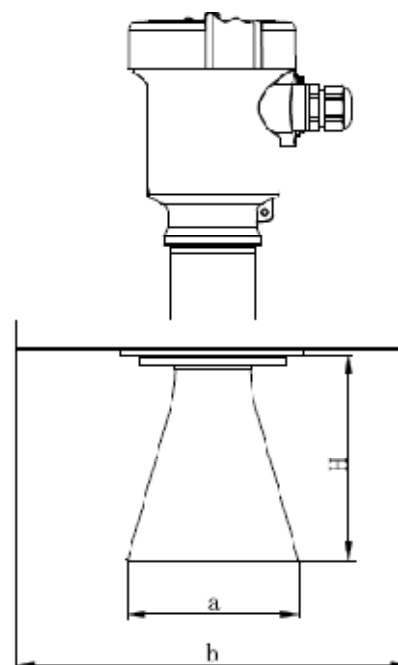
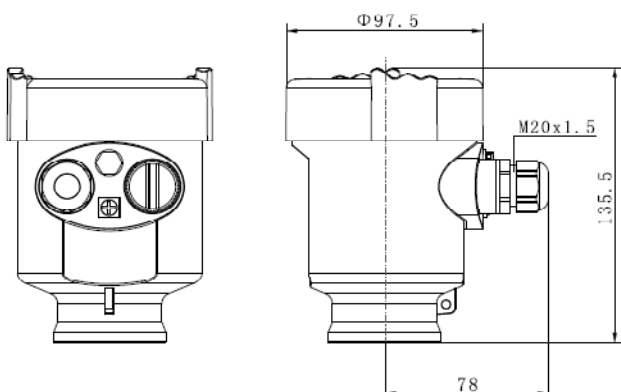
Dimensions



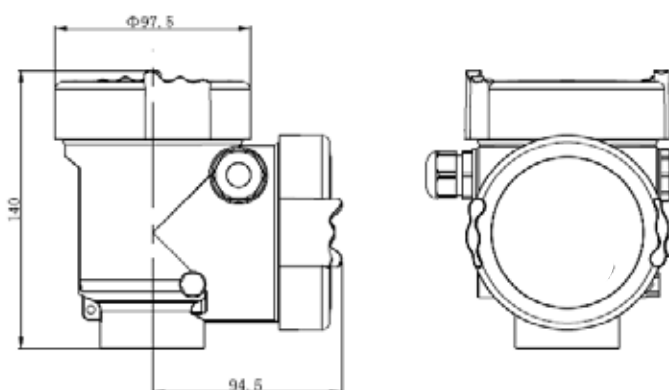
Dimensions with AL/316L frame



Dimensions with PBT-FRL frame



Dimensions with AL frame (2 readers)



	a	b	H	H1
DN50		$\Phi 165$		123
DN80	$\Phi 75$	$\Phi 200$	60	123
DN100	$\Phi 96$	$\Phi 220$	120	123
DN150	$\Phi 146$	$\Phi 285$	205	123

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P Standard

Types of Antenna / Material

- C Horn Antenna Ø 50mm / AISI 316L
- D Horn Antenna Ø 80mm / AISI 316L
- E Horn Antenna Ø 100mm / AISI 316L
- F Horn Antenna Ø 150mm / AISI 316L
- G Horn Antenna Ø 200mm / AISI 316L
- H Parabolic Antenna Ø 454mm / AISI 316L
- K Horn Antenna Ø 100mm / AISI 316L / Antenna Sprayed P
- L Horn Antenna Ø 150mm / AISI 316L / Antenna Sprayed P

Extensions of Antenna

- A -----
- B 200mm
- C 500mm
- D 1000mm
- E 2000mm
- X Special type (On request)

Connections / Material

- FA Flange DN50 PN16 AISI 316L
- FB Flange DN80 PN16 AISI 316L
- FC Flange DN100 PN16 AISI 316L
- FD Flange DN150 PN16 AISI 316L
- FE Flange DN200 PN16 AISI 316L
- YP Special type (On request)

Retained seal / Working Temperature

- 2 Viton / -40...130°C
- 3 Kalrez / -20...130°C
- 4 Viton / -40...200°C with heat dissipator
- 5 Kalrez / -20...200°C with heat dissipator

Electronic

- B 4...20 mA 2 wires
- C 4...20 mA / 22,8...26,4 VDC / HART 4 wires
- D 4...20 mA / 198...242 VAC / HART 4 wires
- E 4...20 mA / 22,8...26,4 VDC / HART (2 wires)

Housing Material / Protection

- B Plastic / IP67
- A Aluminium / IP67
- D Aluminium (2 chambers) / IP67
- G AISI 316L / IP66 / IP67

BM SERIES WAVE COMPACT 6.3 GHZ

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Wiring

M M20x1.5

N ½ NPT

Display / Programming

A YES

Sweeping System

A YES

X NO

Note:

- The size of the flange refers to GB/T9119-2000 PN16. the thickness of the flange is 15mm..
- DN100 flange is suggested when Parabolic Antenna is chosen
- The user have to build the flange with the same size of the Parabolic Antenna
- With sprayed PTFE Antenna, please use a sprayed PTF flange with larger size.

BM SERIES WAVE COMPACT 6.3 GHZ

TECHNICAL DETAILS

CW54 for liquids and solids

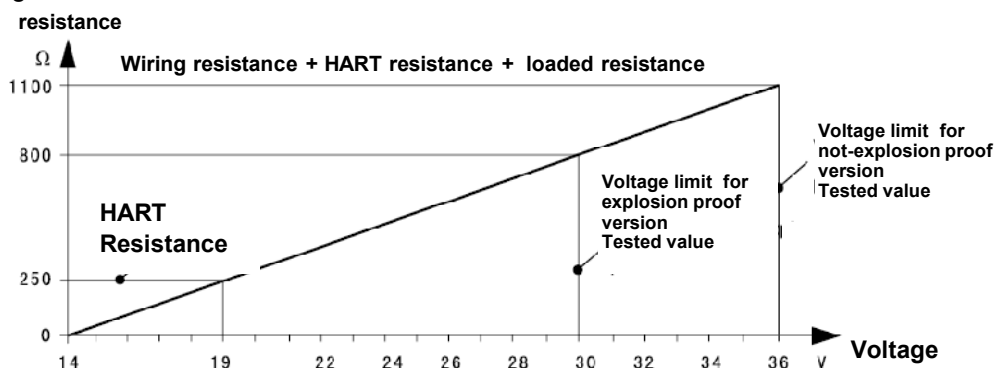
Applications:

Storage tanks with hazardous working conditions.

Range:	until 70 m
Accuracy:	20 mm
Process connection:	flanges SS 316L PN16 DN150, 200
Antenna:	conical Ø 150, 200, 200 (Lengthen) mm
Materials: antenna:	SS 316L
housing:	plastic PBT-FR / Aluminium / AISI
flanges:	AISI 316L
Working temperature:	-40...200°C
Storage temperature:	-40 ÷ 80°C
Relative umidity:	<95%
Pressure:	-1 ÷ 40 bar
Resistance to vibrations:	mechanical vibrations 10m/s2, 10÷150Hz
Frequency:	6 GHz
Angle emission lobe:	24°
Interval of measure:	~1sec
Interval of updating:	~1sec
Resolution display:	1mm
Supply 2 wires version:	
- Input voltage:	15÷36Vdc
- Absorption:	max. 22.5mA
- Ripple allowed:	<100Hz, Uss>1V; 100Hz÷100KHz, Uss<10mV
Supply 4 wires version:	
- Standard input version voltage:	24Vdc ±10%; 230Vac ±10%
- Absorption:	max. 4VA, 2W
Output signal:	2/4 wires 4-20 mA, HART
Resolution:	1,6µA
Fixed signal for anomaly:	20.5mA; 22mA; 3.8mA
Resistance 2 wires version:	to see following diagram
Resistance 4 wires version:	max 500 ohm
Time of integration:	0÷99s, programmable
Cables entry:	1x PG 13.5
Weight	until ~10 kg (depending by flange Ø)



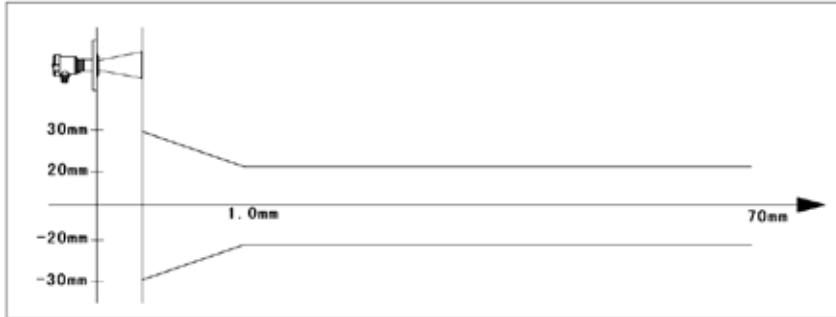
Diagram of loaded resistance, 2 wires version



BM SERIES WAVE COMPACT 6.3 GHZ

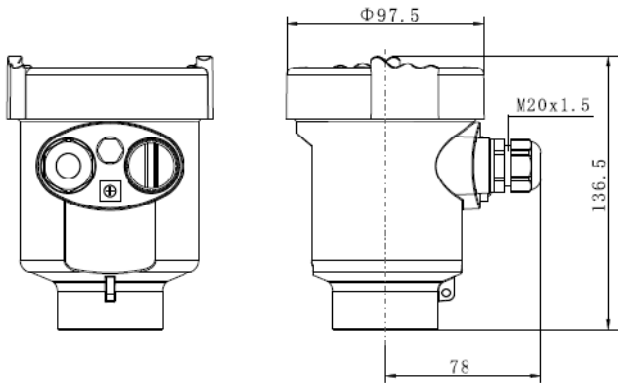
TECHNICAL DETAILS CW54 - follow

Precision

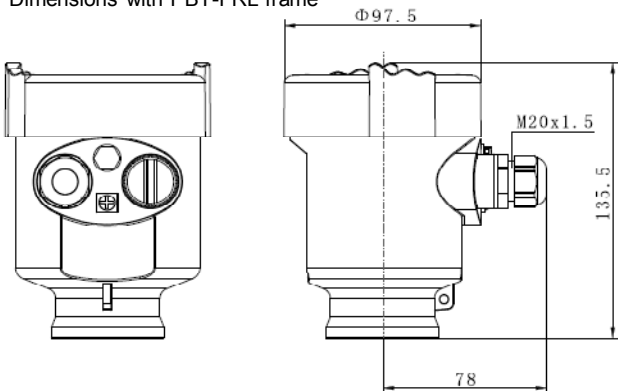


Dimensions

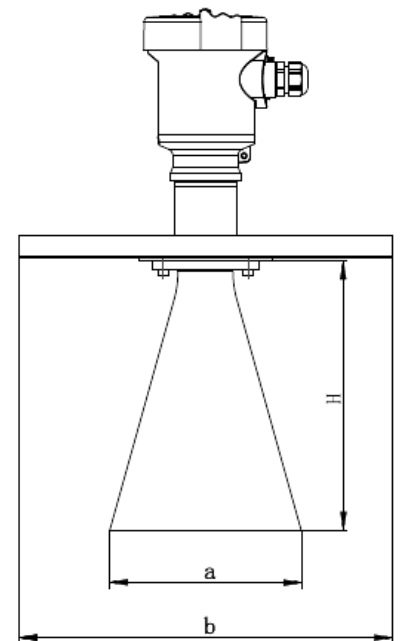
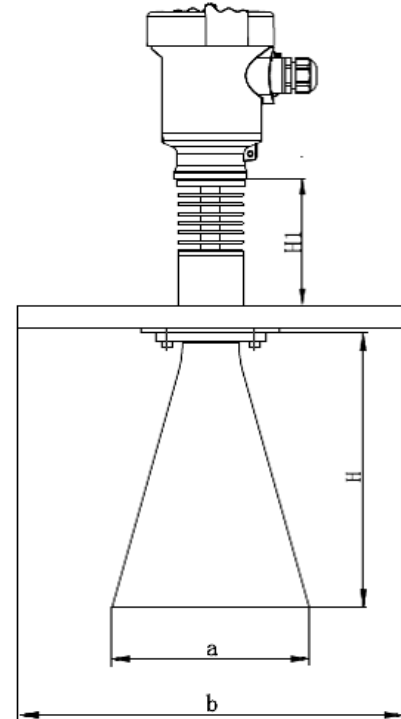
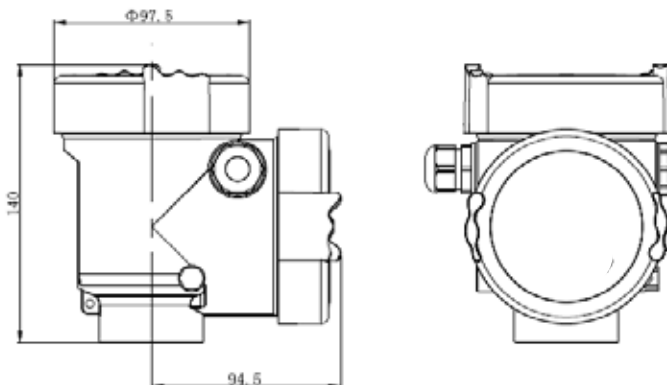
Dimensions with AL/316L frame



Dimensions with PBT-FRL frame



Dimensions with AL frame (2 readers)



	a	b	H	H1
DN150	Φ 146	Φ 285	205	123
DN200	Φ 197	Φ 340	296	123
DN250	Φ 244	Φ 405	380	123

BM SERIES WAVE COMPACT 6.3 GHZ

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P Standard

Type of Antenna / Material

- F Horn Antenna Ø 150mm / SS 316L
- G Horn Antenna Ø 200mm / SS 316L
- H Horn Antenna Ø 200mm (Lengthen) / SS 316L

Extensions of Antenna

- A -----
- B 200mm
- C 500mm
- D 1000mm
- X Special type (on request)

Flange / Material

- FB Flange DN150 PN16 / SS 316L
- FC Flange DN200 PN16 / SS 316L
- YP Special type (on request)

Retained seal / Working Temperature

- 2 Viton / -40...130°C
- 3 Kalrez / -20...130°C
- 4 Viton / -40...200°C with heat dissipator if over 100°C
- 5 Kalrez / -20...200°C with heat dissipator if over 100°C

Electronic

- B 4...20 mA HART (2 wires)
- C 4...20 mA / 22,8...26,4 VDC / HART 4 wires
- D 4...20 mA / 198...242 VAC / HART 4 wires
- E 4...20 mA / 22,8...26,4 VDC / HART 2 wires

Housing Material / Protection

- B Plastic / IP66
- A Aluminium / IP67
- D Aluminium (2 camere) / IP67
- G Stainless Steel 316L / IP67

Wiring

- M M20x1.5
- N ½ NPT

Display / Programming

- A YES

Sweeping System

- A YES
- X NO

Note:

- The size of the flange refers to GB/T9119-2000 PN16. the thickness of the flange is 15mm.