

BM SERIES WAVE COMPACT 6.3 GHZ – CW SERIES

PULSE RADAR LEVEL INSTRUMENTS (6.3 GHz)

DESCRIPTION

The Radar Level Meters of **BM COMPACT WAVE 6.3 GHz** series are excellent devices for no contact level measurement. The microwave impulses, emitted by the radar's antenna, travel at speed of light and a part of their energy, reflected by the surface of the medium to be measured, is received by the same antenna. The period of time (flying time) between the emission and the arrival of the impulses, is proportional to the existing distance between the antenna and the surface of the medium to be measured.

The electromagnetic wave travels at a very high speed (nanosecond), so it is difficult to identify it: **BM COMPACT WAVE 26 GHz** Radar Level Meters, thanks to their integrated management system, use a suitable demodulation technology that allows them to identify the period of time between the emission of the impulses and their corrected reception and, consequently, determine and measure the level.

The Alphanumeric Display allows the user not just to enter the data for the level measurement, but even to display and isolate false echoes .

BM_WARE is a software for the configuration and calibration of the units with a PC is available too, it has HART communication protocol and it is used with a standard HART MODEM (mandatory).

An advanced microprocessor and the "EchoDiscovery" technology make the device suitable for measurements in critical areas with hard conditions, such as high temperatures and high pressure. The function "False Echo Storage" identifies the correct echo, even if there is a false echo: in this way a correct measurement is gained. An integrated temperature sensor compensates the temperature in real time.

The Radar Level Meters can be installed both in metallic or non metallic tanks; their use is not harmful to humans or environment.



PRODUCTS OVERVIEW

COMPACT WAVE CW51



COMPACT WAVE CW52



COMPACT WAVE CW53






BM SERIES WAVE COMPACT 6.3 GHZ

PRODUCTS OVERVIEW

Display:



Housings:

			
HOUSING CODE	A	B / C	D
MATERIAL	Plastic	Aluminium Alloy <i>(available also in Two-Chamber version)</i>	SS 316L





Process Connections:

								
TYPE	E	E1	F	G	H	I	J	K
MATERIAL	SS 316L		PTFE	PP	SS 316L			
PRESSURE	-1...40 bar		-1...3 bar	Normal Pressure	-1...40 bar	-1...5 bar	-1...40 bar	-1...40 bar
TEMPERATURE in °C	-60..+130	-60..+250	-40..+130	-40..+80	-60..+150	-60..+130	-60..+250	-60..+400







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PRODUCTS OVERVIEW

Flanges:

				
TYPE	L	M	N	P
MATERIAL	PTFE / PP	SS 316L	PP – GIMBAL	SS 316L – GIMBAL
FEATURES	Rust-Proof	High Temp / Pressure	Standard Temp / Pressure	High Temp / Standard Pressure

Antennas:

						
TYPE	R	S	T	U	V	W
MATERIAL	PTFE	PP (PTFE shield)	SS 316L	PTFE	SS 316L (PTFE shield)	SS 316L
DIMENSIONS in mm	Ø44, Length 137 Ø 44, Length 237	Ø98, Length 280 Ø98L, Length 440	Ø48, Length 140 Ø78, Length 227 Ø98, Length 288 Ø98L, Length 474 Ø123, Length 620	DN50 DN80 DN100	Ø98, Length 300 Ø98L, Length 480 Ø123, Length 625	Ø96 Ø246
	Rust-Proof	Standard Temp / Pressure	High Temp / Pressure	Rust-Proof / High Pressure	Standard Temp / Pressure	High Temp / Pressure

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TECHNICAL DETAILS

CW51 for liquids

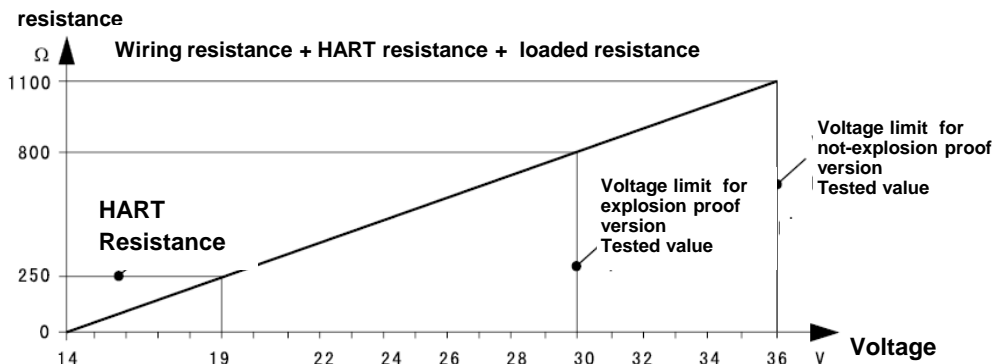
Applications:

Level measurement in simple working conditions.

Range:	0...30 m
Accuracy:	± 10 mm
Process connection:	G1½ "A - NPT
Antenna:	Rod
Materials: antenna:	PP / PTFE
housing:	plastic PBT-FR / Aluminium / Stainless Steel 316L
Working temperature:	-40 ÷ 120°C
Storage temperature:	-40 ÷ 80°C
Relative umidity:	<95%
Working Pressure :	-1 ÷ 3 bar
Resistance to vibrations:	mechanical vibrations 10m/s ² , 10÷150Hz
Frequency:	6 GHz
Beam Angle:	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:	ref. to the following diagram
Resistance 4 wires version:	max 500 ohm
Integration time:	0÷99s, programmable
Cables entry:	1x PG 13.5
Weight:	~2 kg



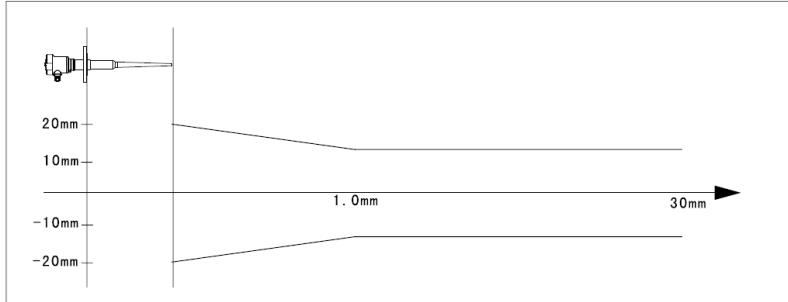
Diagram of loaded resistance, 2 wires version



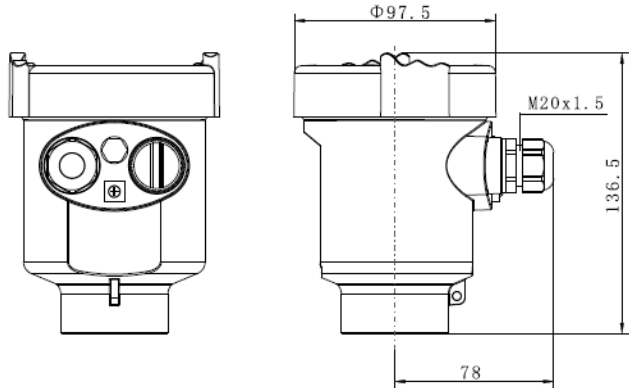
BM SERIES WAVE COMPACT 6.3 GHZ

TECHNICAL DETAILS CW51

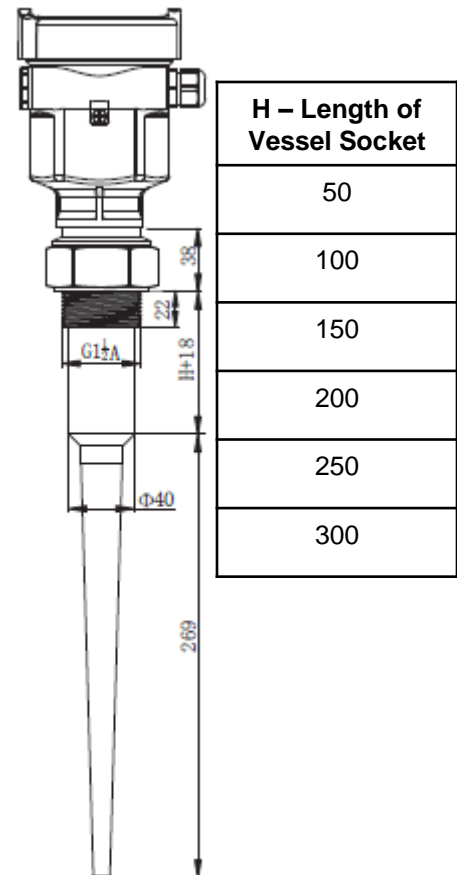
Precision



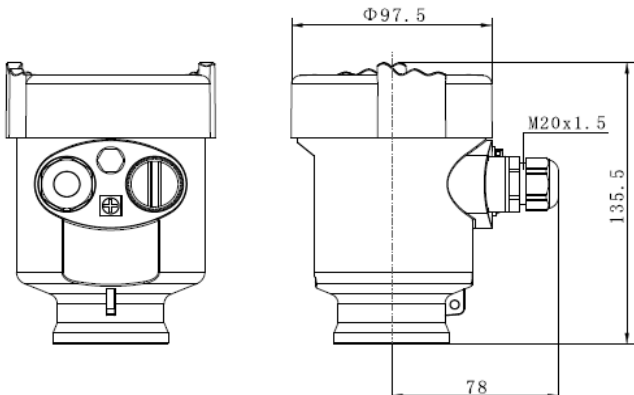
Dimensions in mm with AL/316L frame



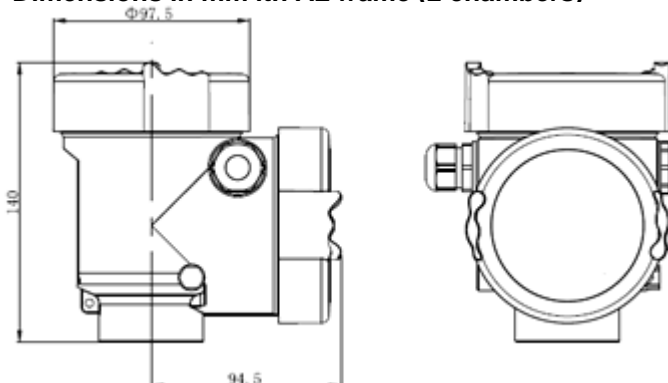
Dimensions in mm



Dimensions in mm with PBT-FRL frame



Dimensions in mm with AL frame (2 chambers)





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**

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

* ON REQUEST FOR QUANTITIES > 10 PCS ONLY.

**With Electronic code "C" or "D" (4 wires versions), Housing code "D" (Aluminium - 2 chambers) is mandatory

BM SERIES WAVE COMPACT 6.3 GHZ

TECHNICAL DETAILS

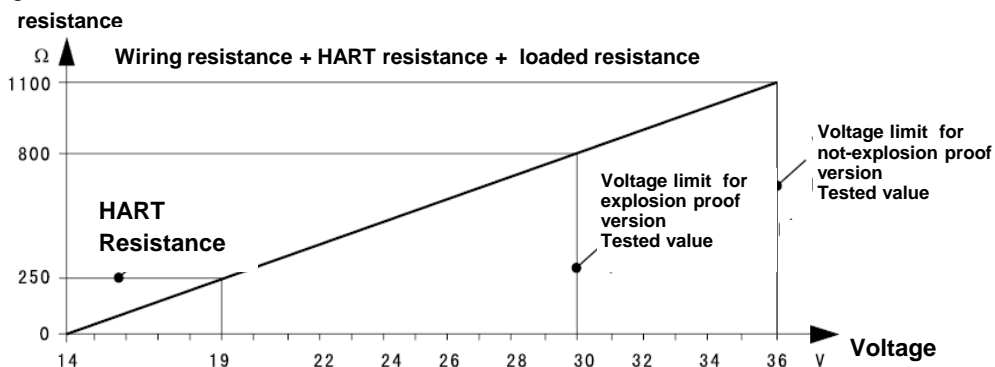
CW52 for liquids

Applications: Level measurement in liquids. Suitable for highly erosive environments.

Range:	0...30 m
Accuracy:	±10 mm
Process connection:	PTFE Protected Flanges SS 316L PN16 DN 50, 100, 150, 200, 250, 300
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%
Working Pressure :	-1 ÷ 16 bar
Resistance to vibrations:	mechanical vibrations 10m/s ² , 10÷150Hz
Frequency:	6 GHz
Beam Angle:	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:	ref. to the following diagram
Resistance 4 wires version:	max 500 ohm
Integration time:	0÷99s, programmable
Cables entry:	1x PG 13.5
Weight:	up to ~5 kg (depending on the Flange Ø)



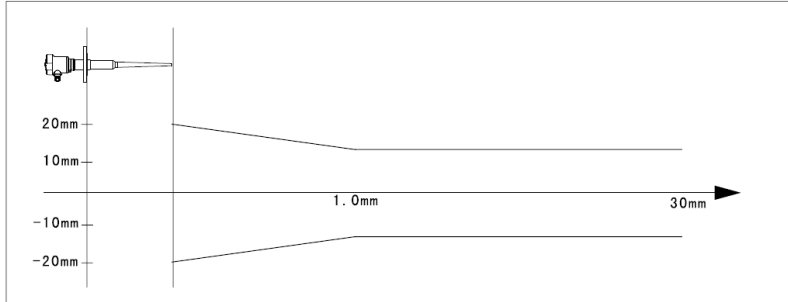
Diagram of loaded resistance, 2 wires version



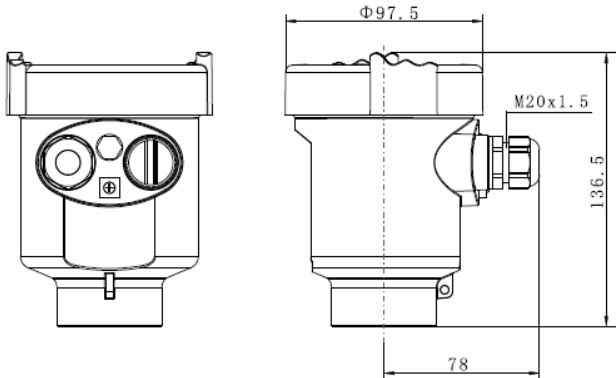
BM SERIES WAVE COMPACT 6.3 GHZ

TECHNICAL DETAILS CW52

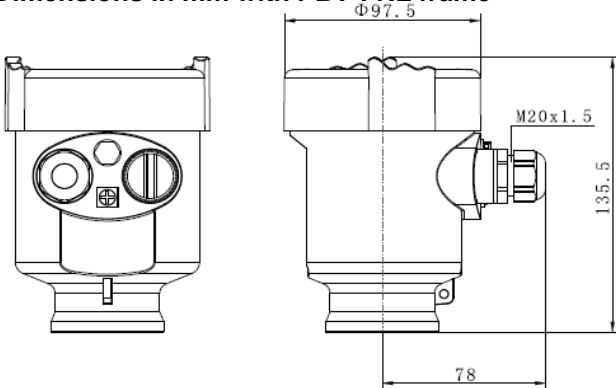
Precision



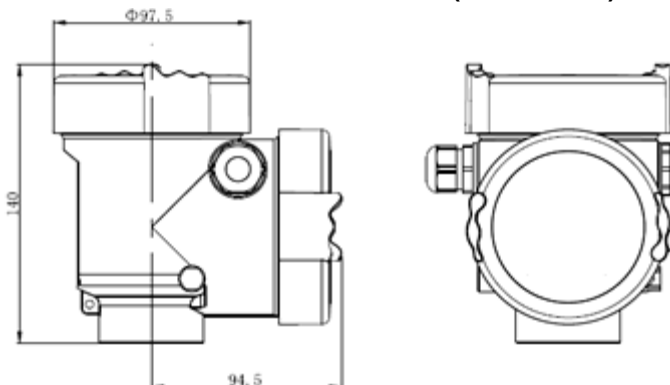
Dimensions in mm with AL/316L frame



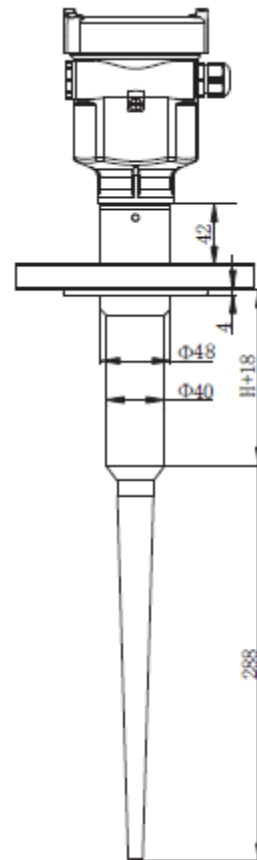
Dimensions in mm with PBT-FRL frame



Dimensions in mm with AL frame (2 chambers) frame



Dimensions in mm



H - Length of Vessel Socket
50
100
150
200
250
300



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**

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

* ON REQUEST FOR QUANTITIES > 10 PCS ONLY.

**With Electronic code "C" or "D" (4 wires versions), Housing code "D" (Aluminium - 2 chambers) is mandatory

NOTE:

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

BM SERIES WAVE COMPACT 6.3 GHZ

TECHNICAL DETAILS

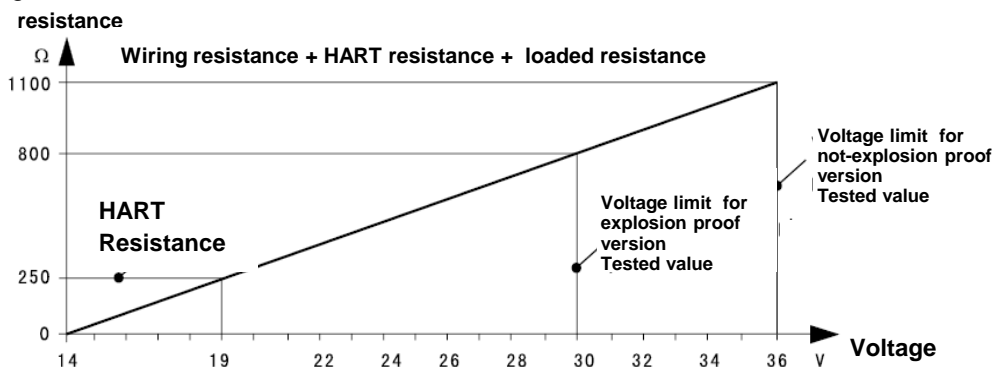
CW53 for liquids and solids

Applications: Level measurement in liquids and solids (short-range). Suitable for hard working conditions.

Range:	0...35 m
Accuracy:	±10 mm
Process connection:	Flanges AISI 316L SS PN16 DN50,80,100,150,200
Antenna:	Horn Ø 50, 80, 100, 150, 200
Materials: antenna:	SS 316L
housing:	plastic PBT-FR / Aluminium / AISI
flanges:	SS 316L
Working temperature:	-40...200°C
Storage temperature:	-40 ÷ 80°C
Relative umidity:	<95%
Working pressure:	-1 ÷ 40 bar
Resistance to vibrations:	mechanical vibrations 10m/s ² , 10÷150Hz
Frequency:	6 GHz
Beam Angle:	29°; 26°; 24°; 20° (depending on horn 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:	ref. to the ollowing diagram
Resistance 4 wires version:	max 500 ohm
Time of integration:	0÷99s, programmable
Cables entry:	1x PG 13.5
Weight	up to ~6 kg (depending on the Flange Ø)



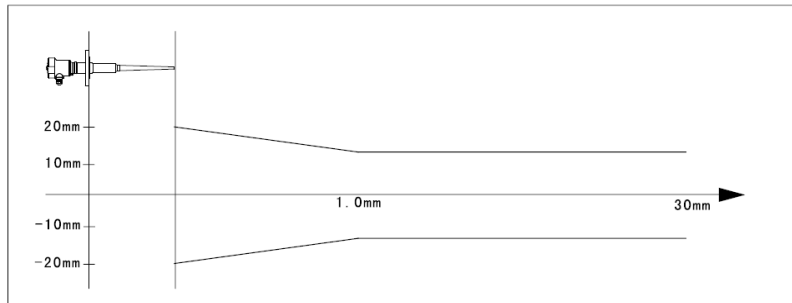
Diagram of loaded resistance, 2 wires version



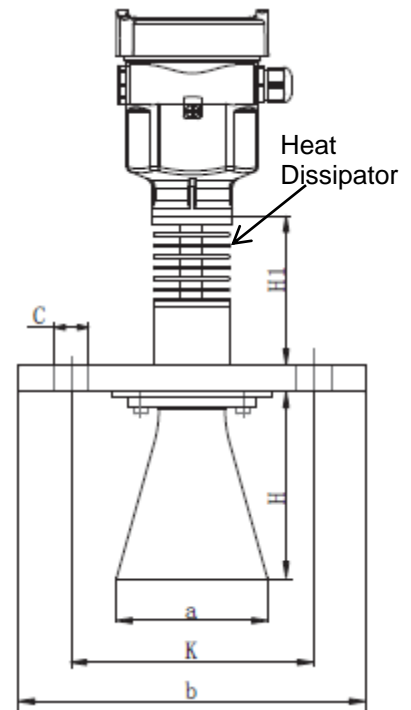
BM SERIES WAVE COMPACT 6.3 GHZ

TECHNICAL DETAILS CW53

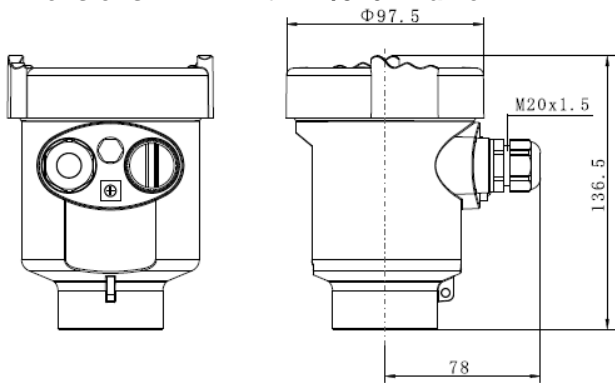
Precision



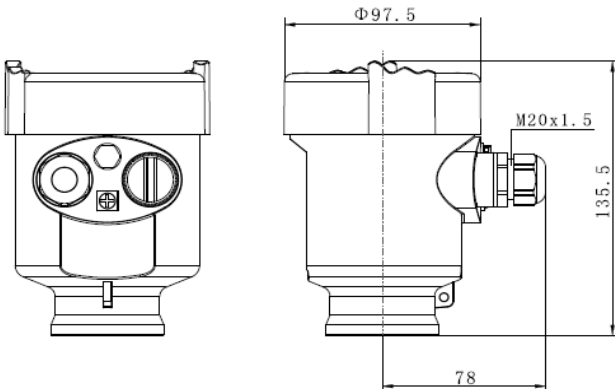
Dimensions in mm



Dimensions in mm with AL/316L frame

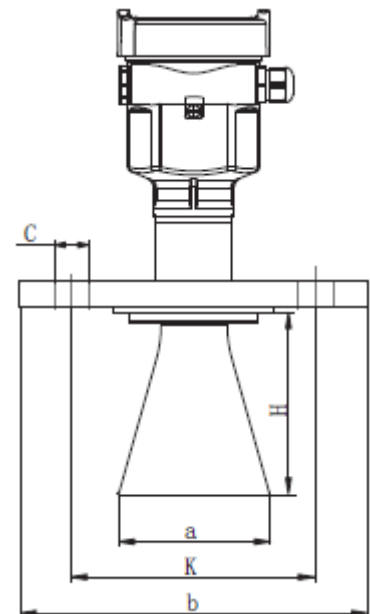
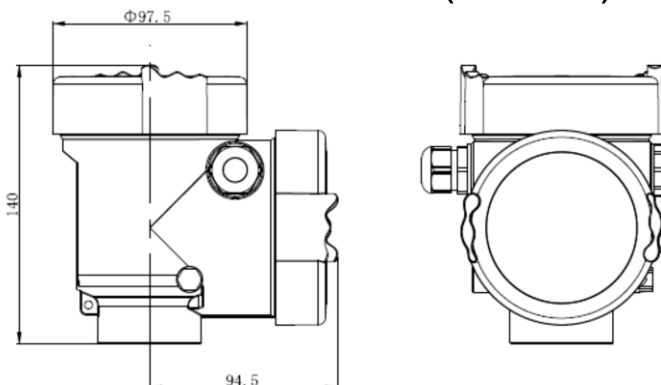


Dimensions in mm with PBT-FRL frame



	a	K	b	C	H	H1
DN50	-	Ø125	Ø165	Ø16 X4	-	123
DN80	Ø75	Ø160	Ø200	Ø16X8	60	123
DN100	Ø96	Ø180	Ø220	Ø16X8	120	123
DN150	Ø146	Ø240	Ø285	Ø20X8	205	123

Dimensions in mm with AL frame (2 chambers)





BM SERIES WAVE COMPACT 6.3 GHZ

ORDERING CODE CW53

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

Antenna Extensions

- 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

Housing Material / Protection

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

Wiring

- M M20x1.5
- N ½ NPT

Display / Programming

- A Yes

Sweeping System

- A Yes
- X No

** ON REQUEST FOR QUANTITIES > 10 PCS ONLY.*

***With Electronic code "C" or "D" (4 wires versions), Housing code "D" (Aluminium - 2 chambers) is mandatory*



BM SERIES WAVE COMPACT 6.3 GHZ

Important Notices for CW53

- The size of the antenna CANNOT be smaller than the size of the flange or viceversa.

If the antenna is bigger than the flange (nozzle) hole, the antenna cannot fit in.
Example: Horn Antenna Ø 150mm code "F" CANNOT be matched with Flange DN100 PN16 code "FC"
- 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 has to build the flange with the same size of the Parabolic Antenna
- With sprayed PTFE Antenna, please use a sprayed PTFE flange with larger size