HIKMICRO

User Manual

Radar Level Meter

LRG10 SERIES

Contact Us

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1 Overview

1.1 Introduction

1.1.1 Product Description

LRG10 series radar level meters provide non-contact, continuous level measurement of materials (solids or liquids) in closed or open containers, and can be used in various industrial processes. The devices are suitable for dust environments, as well as scenarios where there are large changes in temperature and pressure, or the presence of inert gases and vapors. The devices are with low emission power and there is no harm to human body and the environment, and no frequent on-site calibration is needed for the devices.

1.1.2 Product Design

Note

The device diagrams in this document are for reference only. Please refer to the actual device.

Product Configurations

The product can be configured in different combinations by pairing the level meter housing with various antennas, as shown in Figure 1-1.

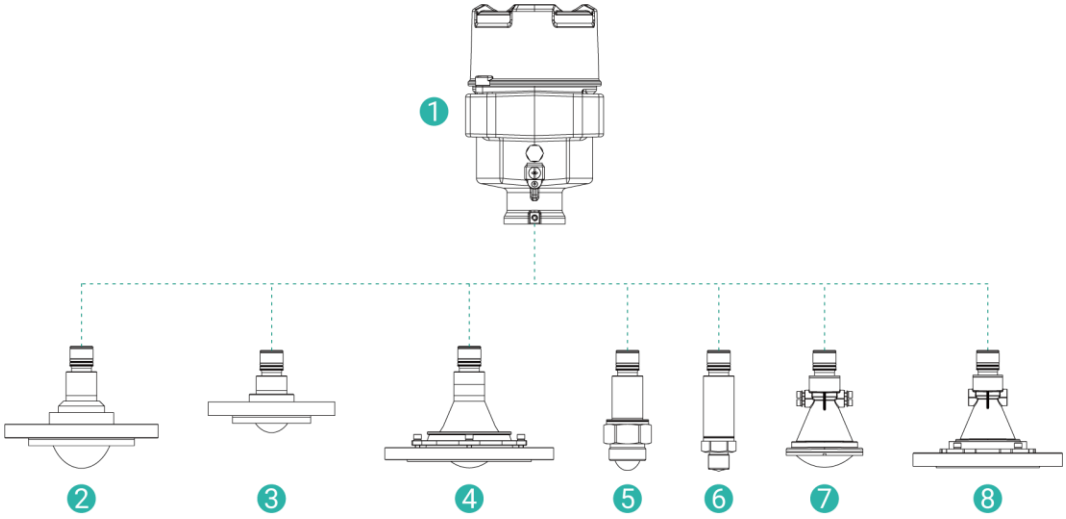


Figure 1-1 Product Configurations

No.	Description
1	Housing
2	74 mm (3°) flange fully encapsulated PTFE antenna
3	42 mm (6°) flange fully encapsulated PTFE antenna
4	74 mm (3°) flange antenna with rinsing air connection and swivelling holder
5	34 mm (8°) threaded connection antenna
6	14.5 mm (14°) threaded connection antenna
7	74 mm (3°) PP antenna
8	74 mm (3°) PP antenna with flange

Housing

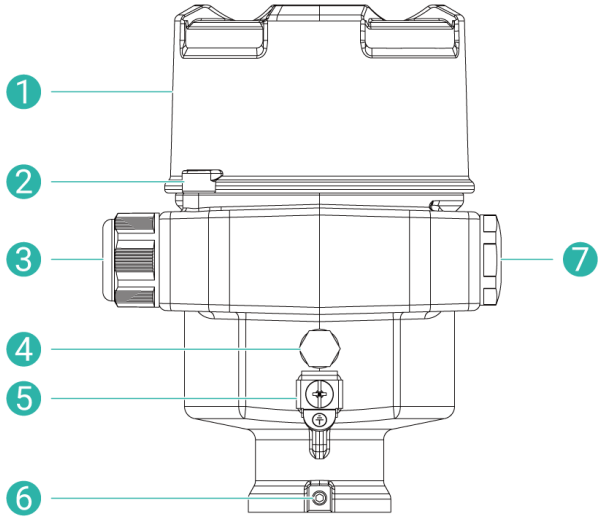


Figure 1-2 Housing

No.	Name	Description
1	Housing cover	Removable for accessing display module and signal terminals.
2	Tamper-proof screw	Secures housing cover.
3	Cable gland	For inserting cables into wiring chamber.
4	Waterproof vent valve	Provides IP protection and maintains pressure equilibrium.

5	Grounding terminal	For grounding. Refer to ***Grounding*** for the details.
6	Antenna locking screw	Secures antenna position; loosening allows housing rotation. See ***Rotate Housing***.
7	Plug	Seals wiring chamber.

1.2 Product Dimensions

1.2.1 Housing

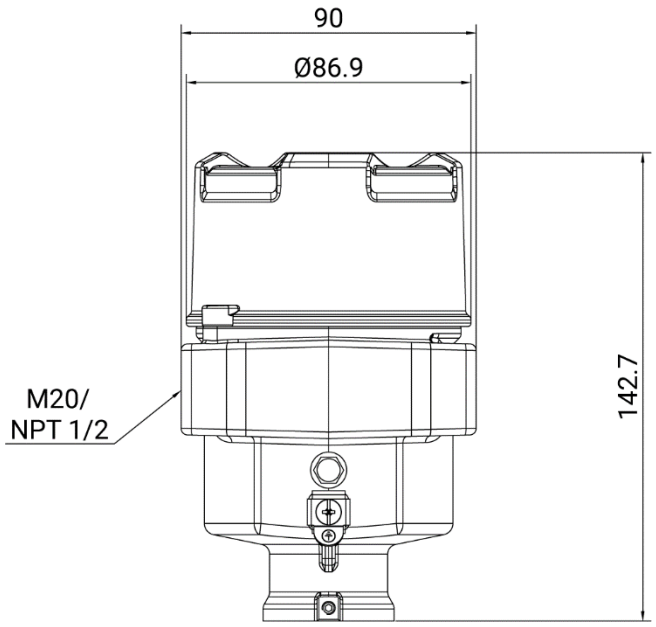
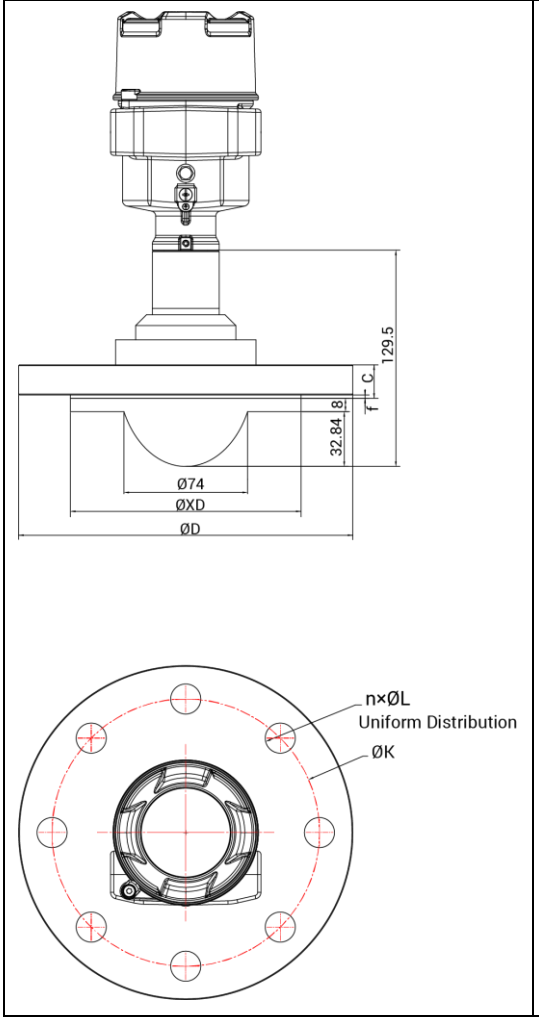
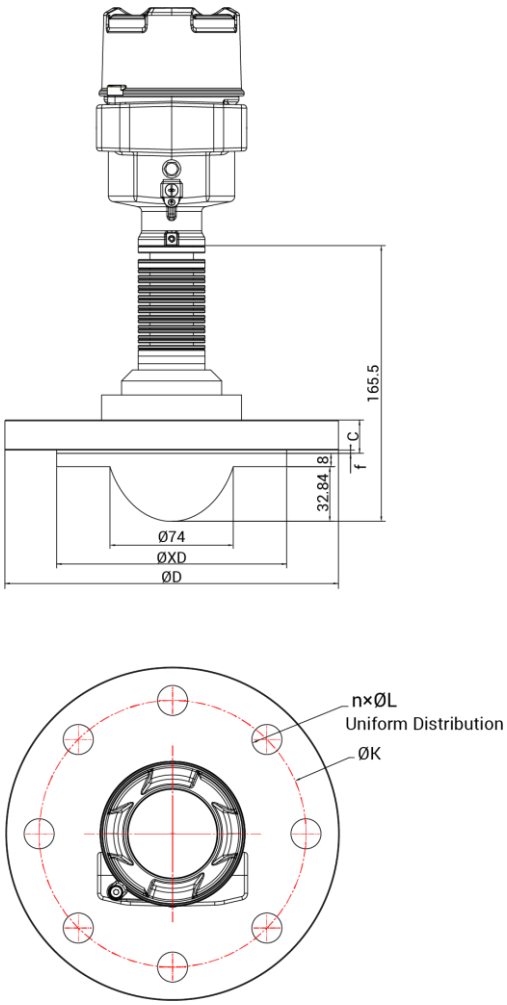


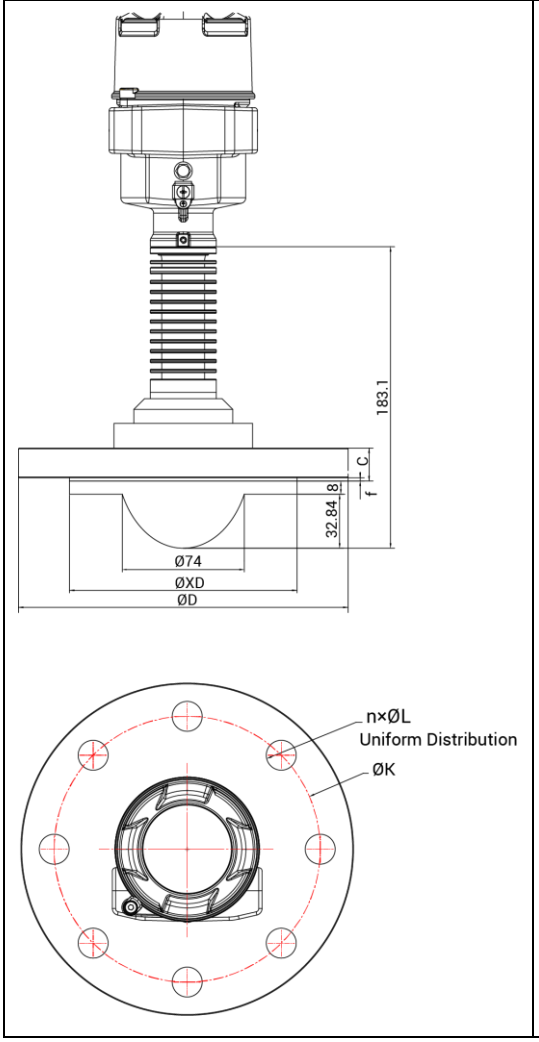
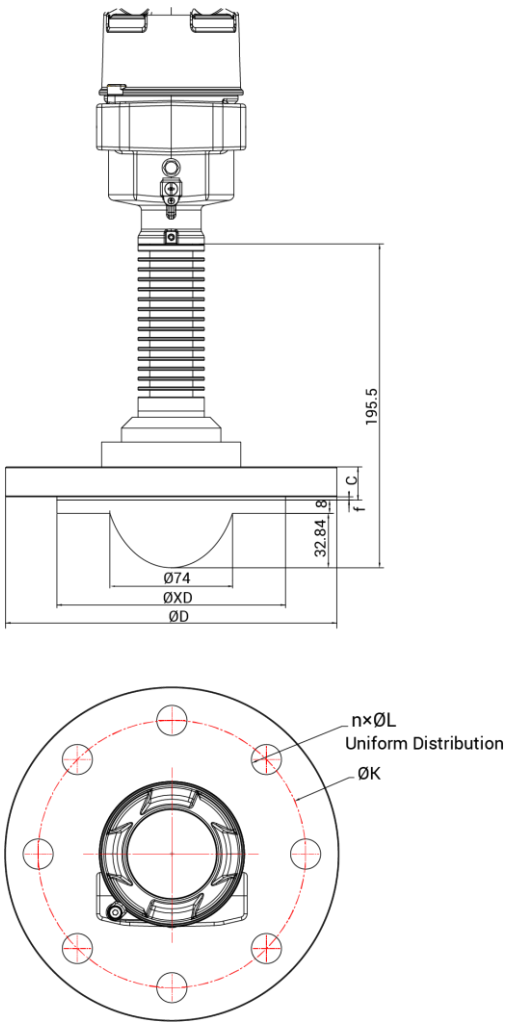
Figure 1-3 Housing Dimensions (mm)

Dimensions for various antenna models are specified in sections 1.2.2 to 1.2.8 .

1.2.2 74 mm (3°) Flange Fully Encapsulated PTFE antenna

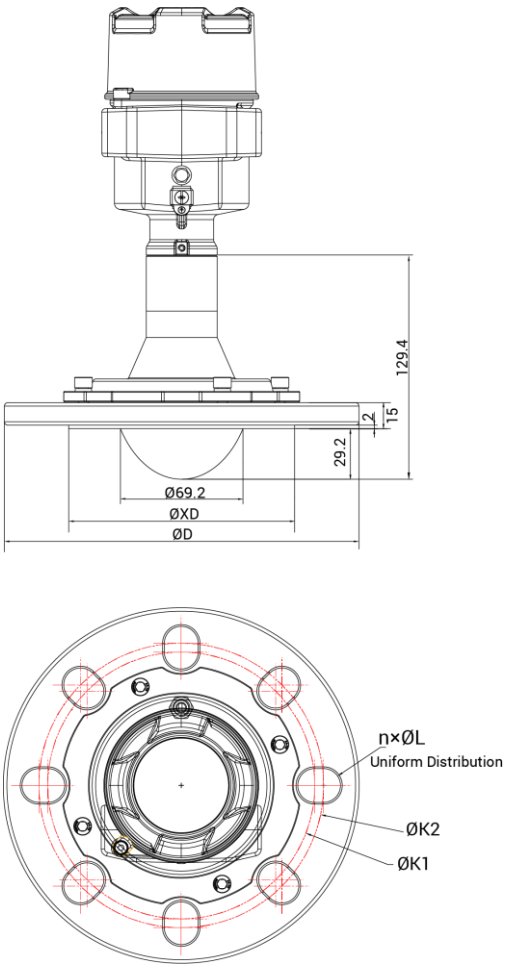
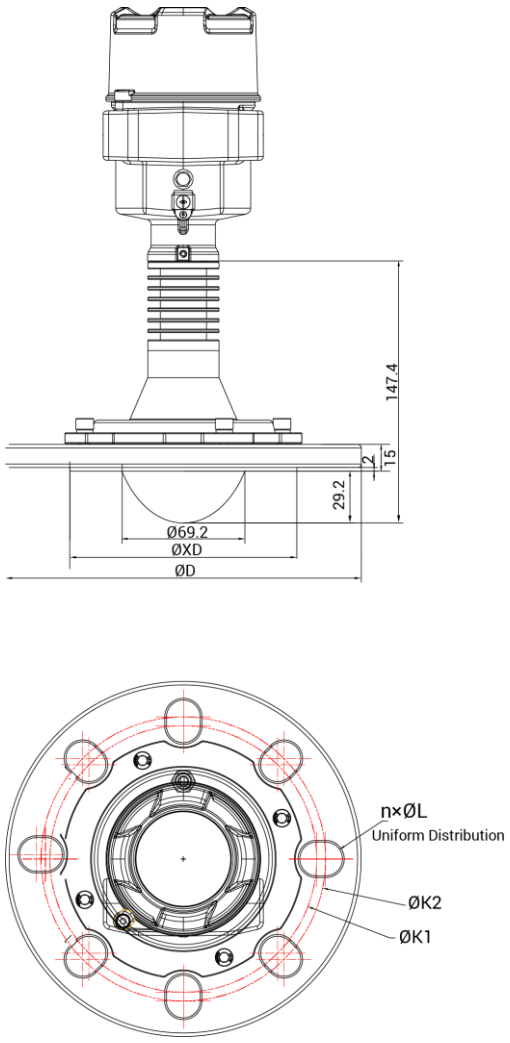
Process Temperature (Dimensions in mm)	
80 ℃	150 ℃
	

Unspecified dimensions are given in Table 1-1 (Section 1.2.8).

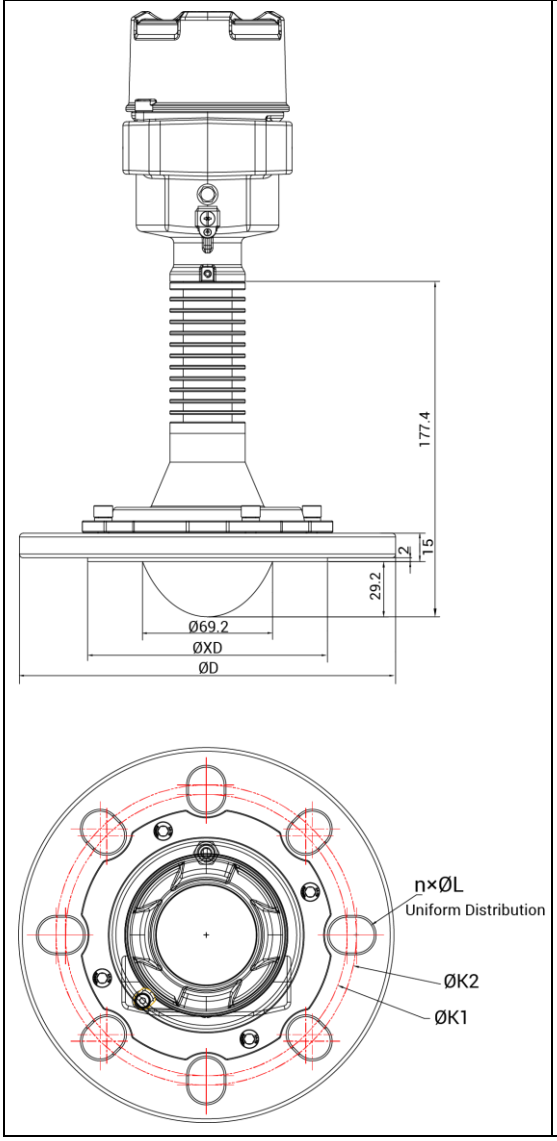
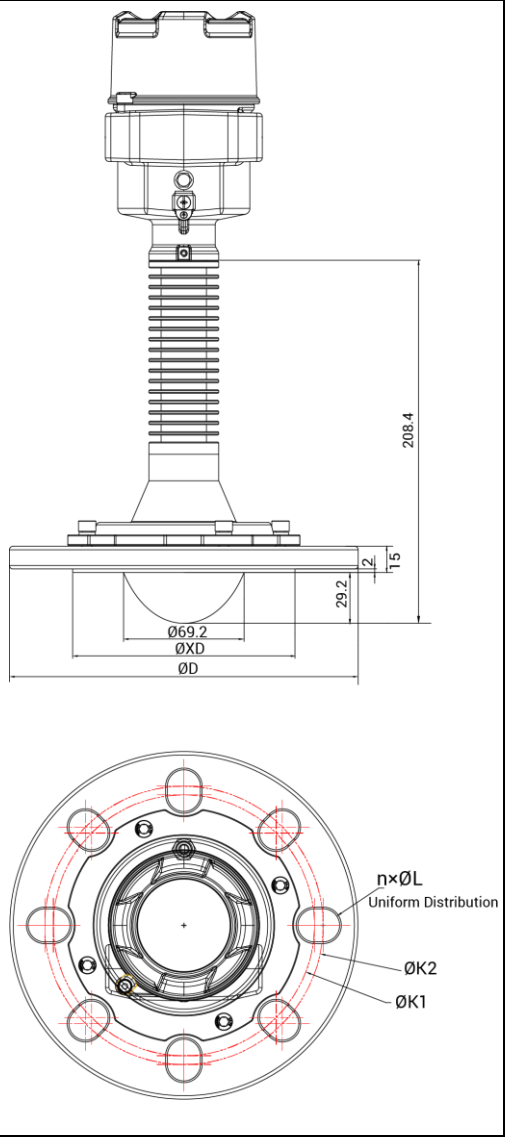
Process Temperature(Dimensions in mm)	
200 ℃	250 ℃
	

Unspecified dimensions are given in Table 1-1 (Section 1.2.8).

1.2.3 74 mm (3°) Flange Antenna with Rinsing Air Connection and Swivelling Holder

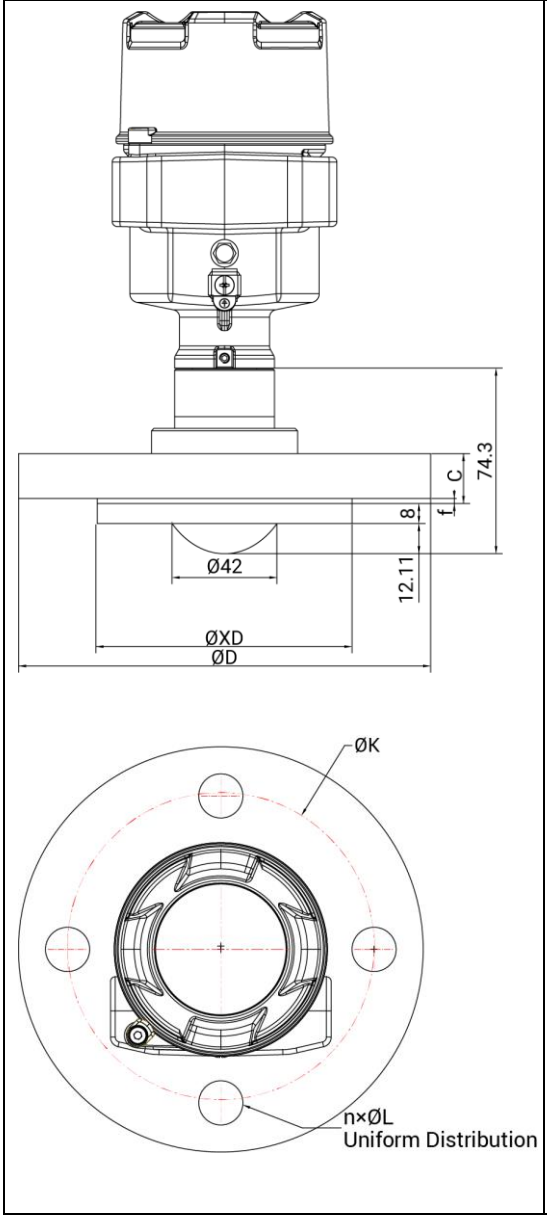
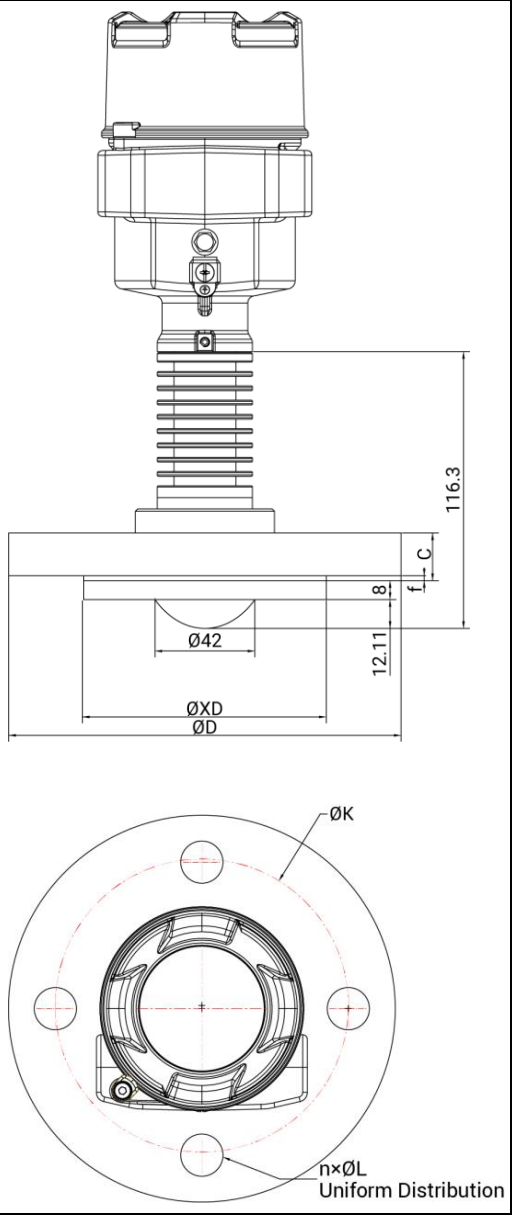
Process Temperature (Dimensions in mm)	
80 ℃	150 ℃
	

Unspecified dimensions are given in Table 1-2 (Section 1.2.8).

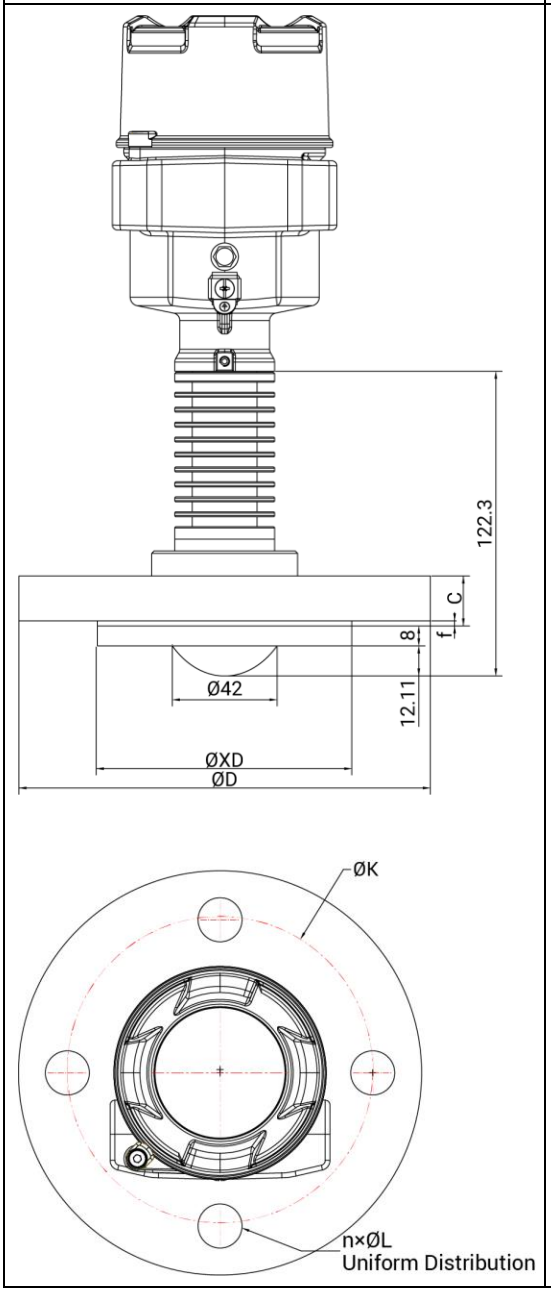
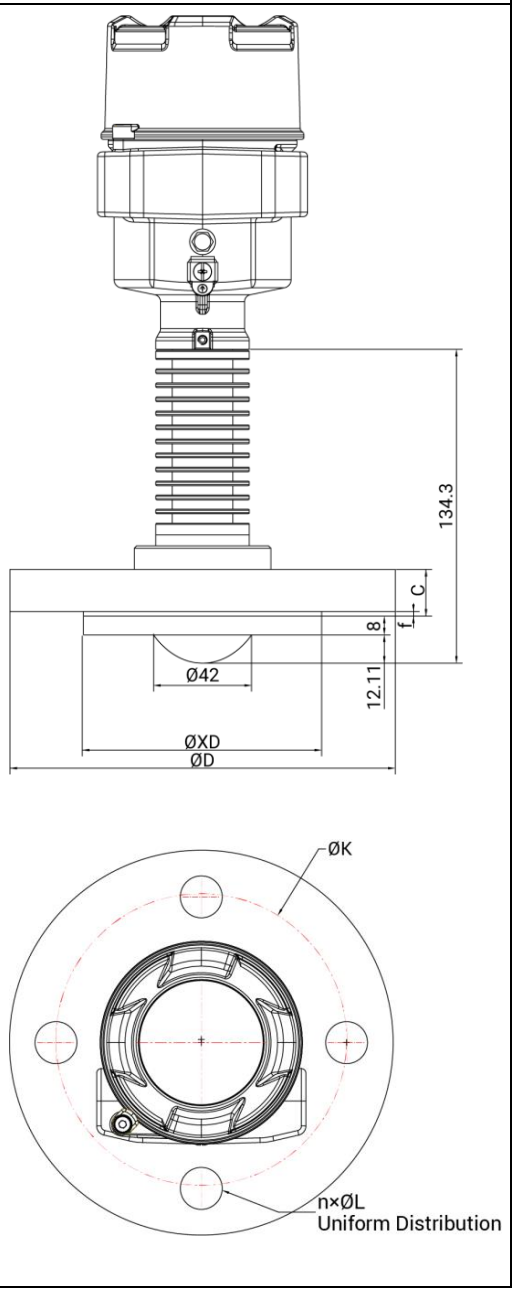
Process Temperature (Dimensions in mm)	
200 ℃	250 ℃
	

Unspecified dimensions are given in Table 1-2 (Section 1.2.8).

1.2.4 42 mm (6°) Flange Fully Encapsulated PTFE Antenna

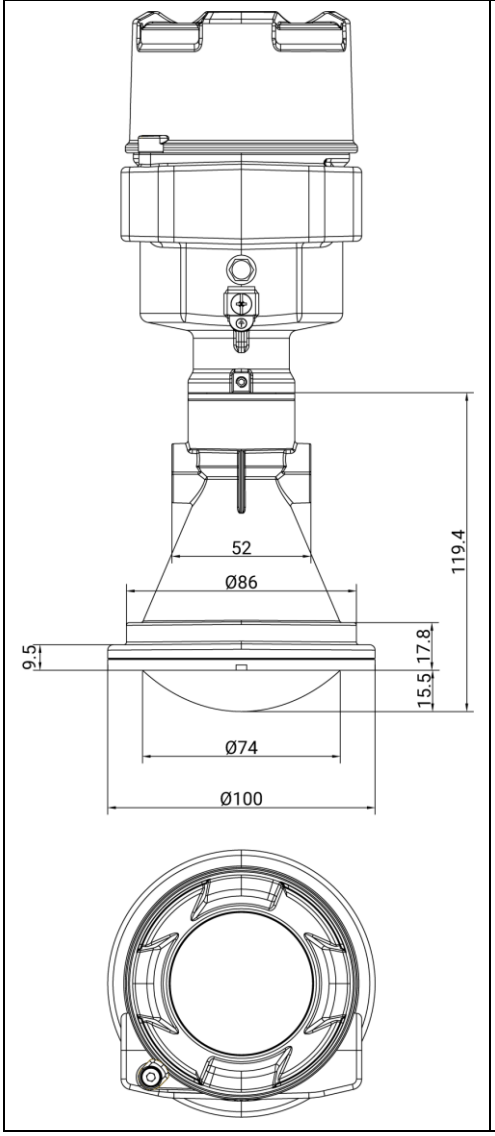
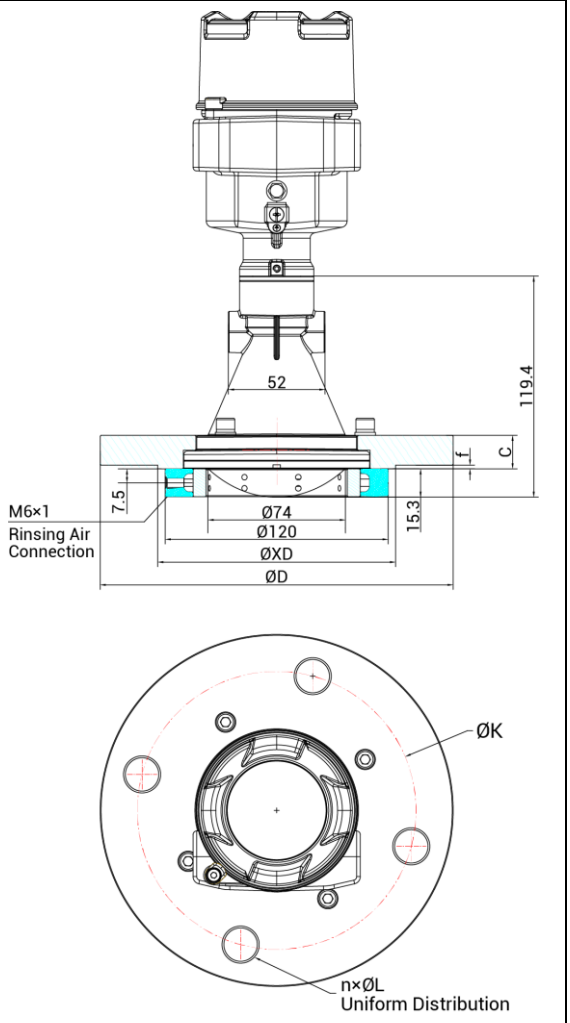
Process Temperature(Dimensions in mm)	
80 ℃	150 ℃
	

Unspecified dimensions are given in Table 1-1 (Section 1.2.8).

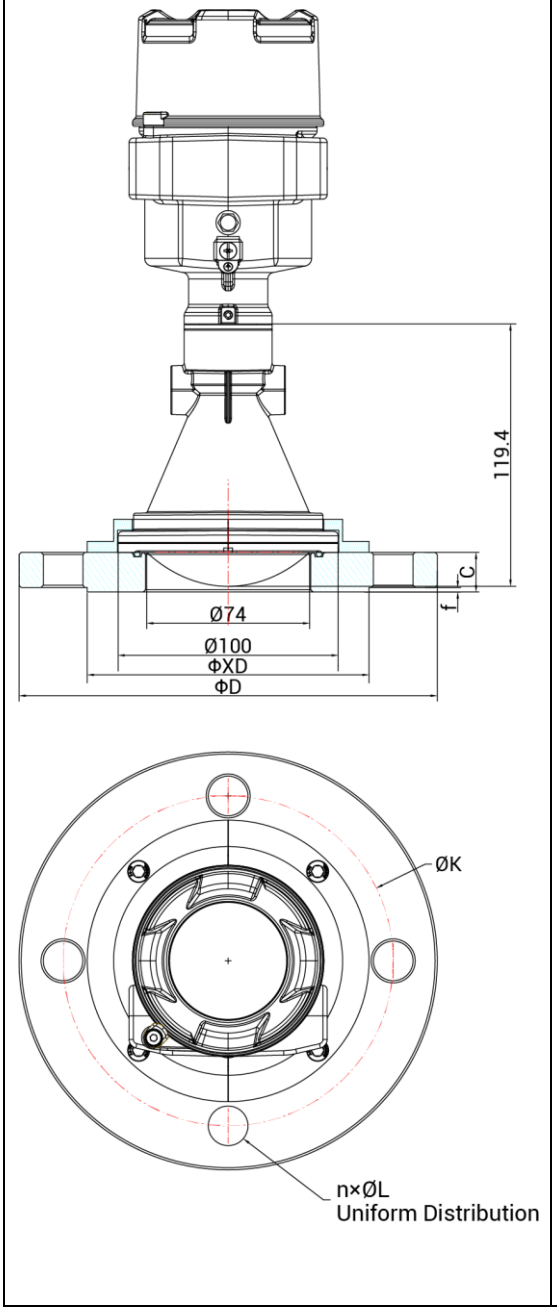
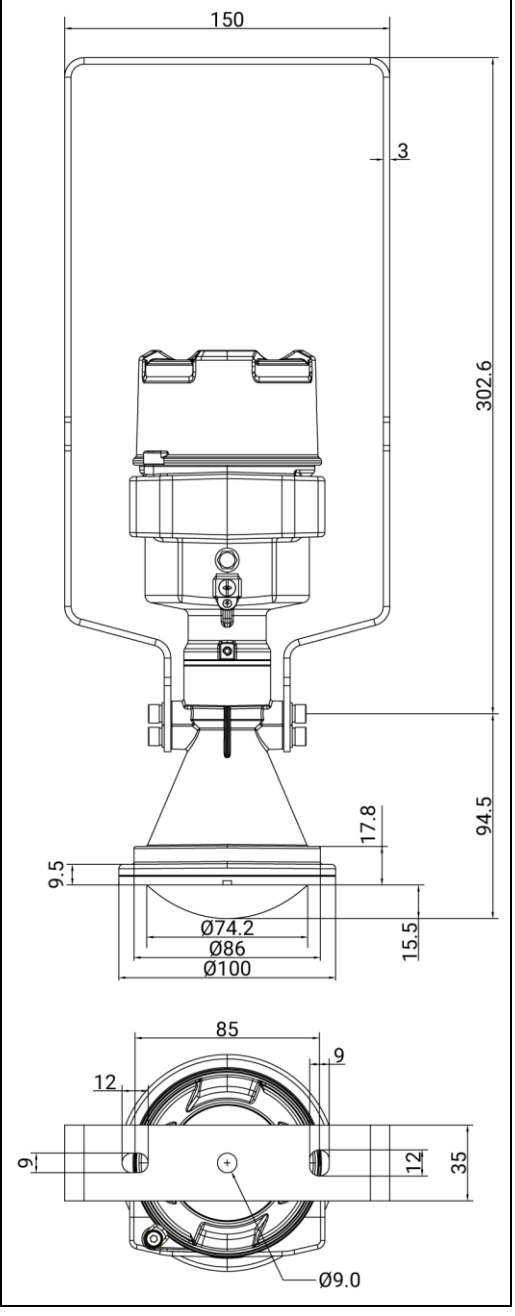
Process Temperature(Dimensions in mm)	
200 ℃	250 ℃
	

Unspecified dimensions are given in Table 1-1 (Section 1.2.8).

1.2.5 74 mm (3°) PP antenna

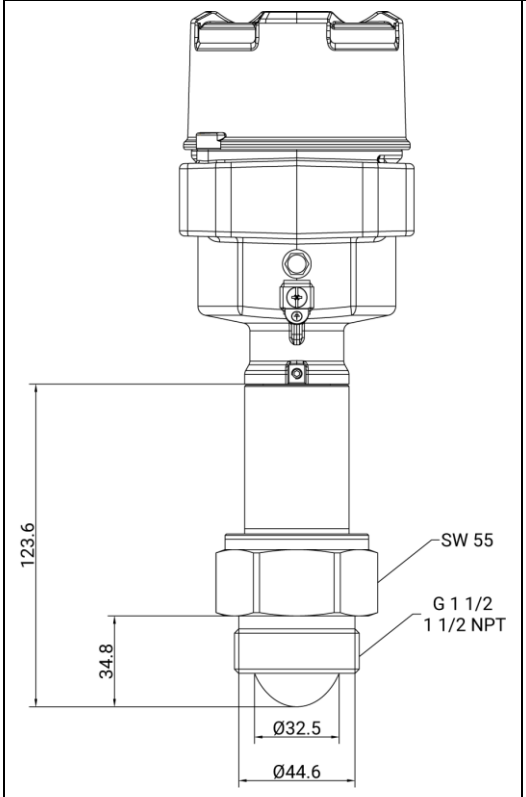
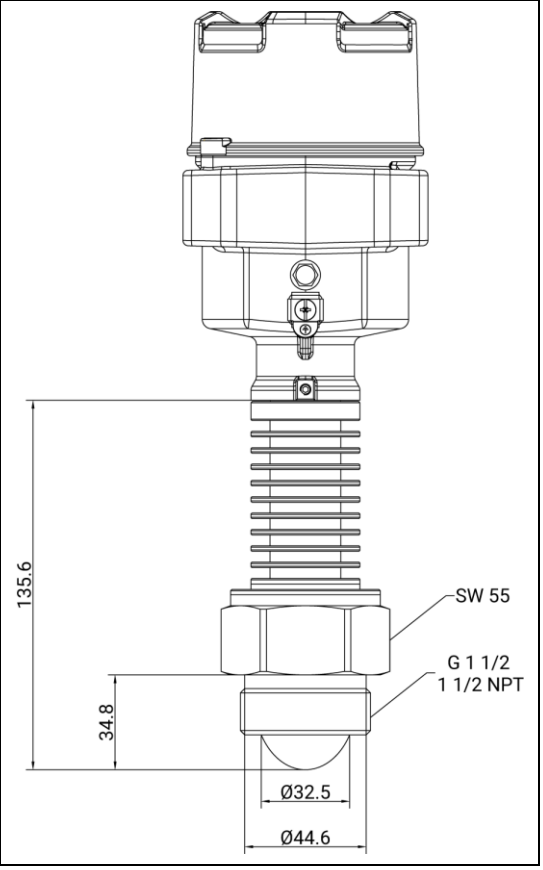
Bare Device (Unit: mm)	Device with Rinsing air connection (Unit: mm)
	

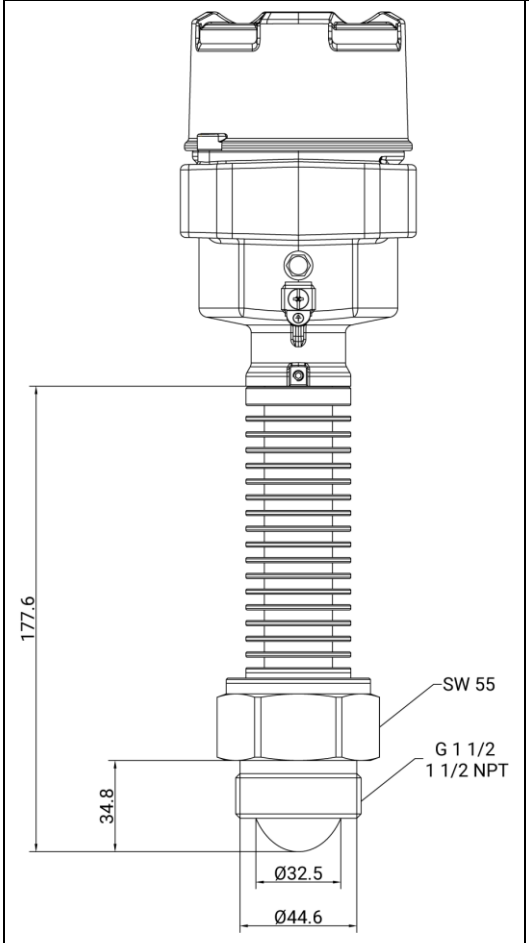
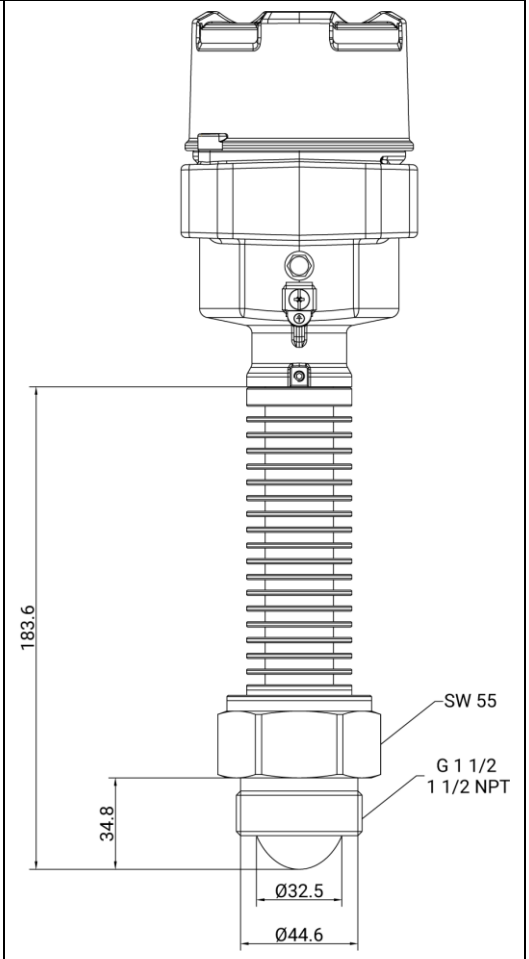
Unspecified dimensions are given in Table 1-1 (Section 1.2.8).

Adapter Flange (Unit: mm)	Mounting Gantry (Unit: mm)
	

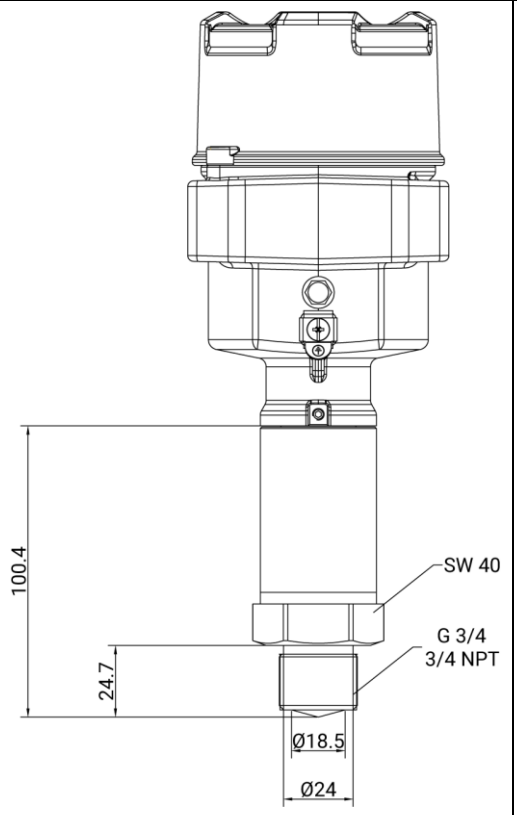
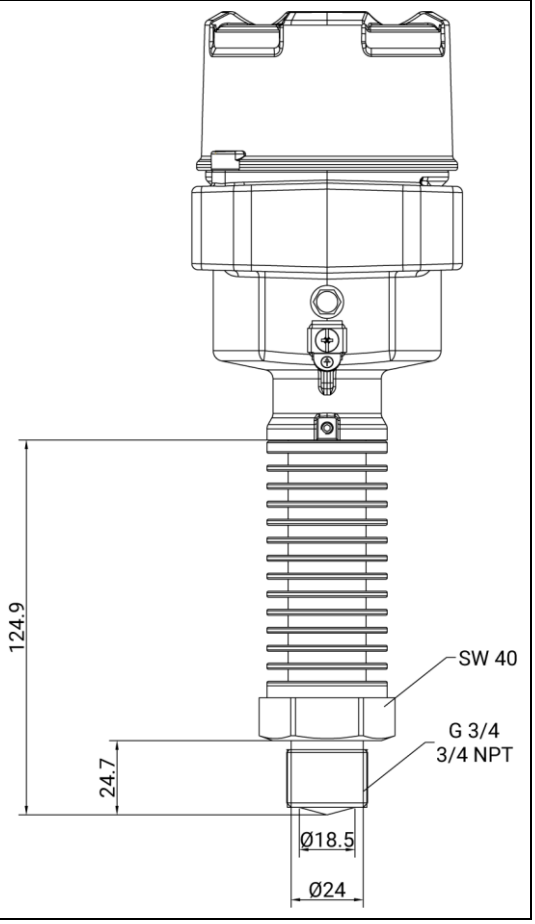
Unspecified dimensions are given in Table 1-1 (Section 1.2.8).

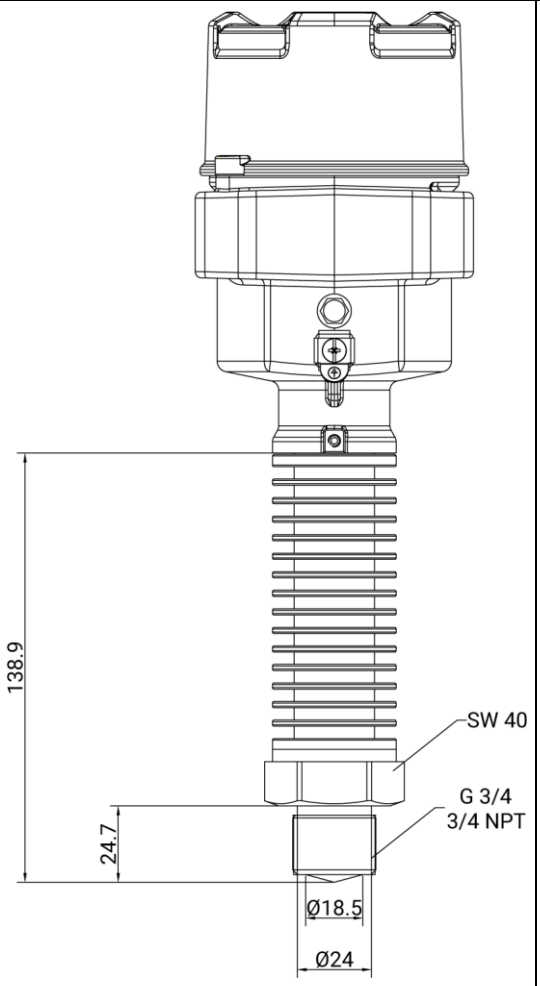
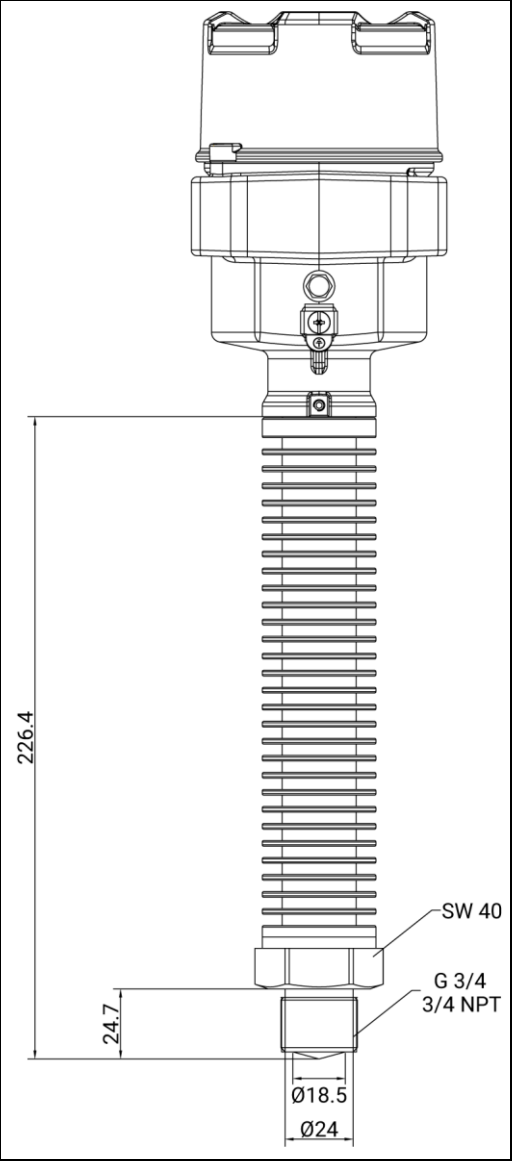
1.2.6 34 mm (8°) Threaded Connection Antenna (PTEE)

Process Temperature(Dimensions in mm)	
80 ℃	150 ℃
	

Process Temperature(Dimensions in mm)	
200 ℃	250 ℃
	

1.2.7 14.5 mm (14°) Threaded Connection Antenna (PEEK)

Process Temperature(Dimensions in mm)	
80 ℃	150 ℃
	

Process Temperature(Dimensions in mm)	
200 ℃	250 ℃
	

1.2.8 Flange Dimensions

Dimensions for different specifications are listed in Table 1-1 and Table 1-2.

Table 1-1 Universal Flange Dimensions

Flange Specifications		Flange Dimensions (RF Series, Unit: mm)						
Diameter Nominal	Pressure Level	D	XD	f	C	n	L	K
DN50	PN2.5	140	90	2	16	4	14	110

DN50	PN6	140	90	2	12	4	14	110
DN50	PN10	165	102	2	18	4	18	125
DN50	PN16	165	102	2	18	4	18	125
DN50	PN25	165	102	2	20	4	18	125
DN50	PN40	165	102	2	20	4	18	125
DN65	PN2.5	160	110	2	16	4	14	130
DN65	PN6	160	110	2	14	4	14	130
DN65	PN10	185	122	2	18	8	18	145
DN65	PN16	185	122	2	18	4	18	145
DN65	PN25	185	122	2	22	8	18	145
DN65	PN40	185	122	2	22	8	18	145
DN80	PN2.5	190	128	2	18	4	18	150
DN80	PN6	190	128	2	16	4	18	150
DN80	PN10	200	128	2	20	8	18	160
DN80	PN16	200	138	2	20	8	18	160
DN80	PN25	200	138	2	24	8	18	160
DN80	PN40	200	138	2	24	8	18	160
DN100	PN2.5	210	148	2	18	4	18	170
DN100	PN6	210	148	2	16	4	18	170
DN100	PN10	220	158	2	20	8	18	180
DN100	PN16	220	158	2	20	8	18	180
DN100	PN25	235	162	2	24	8	22	190
DN100	PN40	235	162	2	24	8	22	190
DN125	PN2.5	240	178	2	20	4	18	200
DN125	PN6	240	178	2	18	8	18	200
DN125	PN10	250	188	2	22	8	18	210
DN125	PN16	250	188	2	22	8	22	210

DN125	PN25	270	188	2	26	8	26	220
DN125	PN40	270	188	2	26	8	26	220
DN150	PN2.5	265	202	2	20	8	18	225
DN150	PN6	265	202	2	18	8	18	225
DN150	PN10	285	212	2	22	8	22	240
DN150	PN16	285	212	2	22	8	22	240
DN150	PN25	300	218	2	28	8	26	250
DN150	PN40	300	218	2	28	8	26	250
DN200	PN2.5	320	258	2	22	8	18	280
DN200	PN6	320	258	2	20	8	18	280
DN200	PN10	340	268	2	24	8	22	295
DN200	PN16	340	268	2	24	12	26	295
DN200	PN25	360	278	2	30	12	26	310
DN200	PN40	375	285	2	34	12	30	320

Table 1-2 Flanges for 74 mm (3°) Antenna with Rinsing Air Connection and Swivelling Holder

Diameter Nominal	Flange Dimensions (RF Series, Unit: mm)							
	D	XD	f	C	n	L	K1	K2
DN80	200	127.5	2	15	8	18	150	160
DN100	229	148	2	15	8	18	170	195
DN125	254	178	2	15	8	18	200	215.9
DN150	285	202	2	15	8	18	225	241.3
DN200	343	258	2	15	8	22	280	298.4

1.3 Receiving Inspection

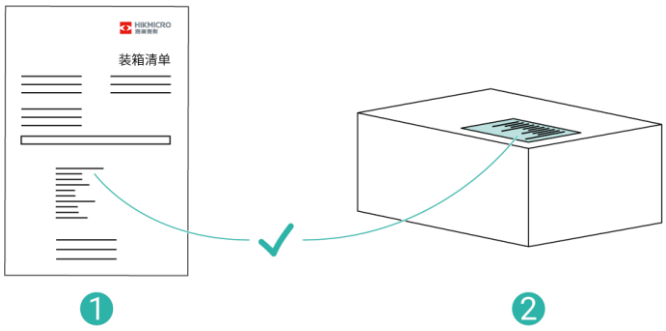


Figure 1-4 Receiving Inspection

Upon product arrival, verify the following:

- Packing List (1) matches Product Label (2) in Purchase Order No.
- Goods are free from physical damage.
- Specifications in product label align with ordered parameters on Packing List.
- Product Certificate of Conformity and Factory Calibration Reports are provided accompanying the product.

1.4 Product Label

The product label contains：

- Manufacturer's name
- Product tag number, product specification, and serial number
- Technical parameters (including measuring range, process temperature, protection rating, etc.)
- Explosion-proof certification
- Manufacture date

Note

Provide the serial number when enquiring about product service.

1.5 Manufacturer Information

Manufacturer： Hangzhou Microimage Intelligent Control Technology Co., Ltd.

Address: G2, NO.258 Dongjia Road, Fengchuan Street, Tonglu County, Hangzhou City, Zhejiang Province, China

Tel.: 4000 400 206 / +86 571 6715 9000

Website: www.hikmicrotech.com

1.6 Storage and Transport

1.6.1 Storage

- Use the original packaging box of the device.
- Store the device in a clean and dry environment with impact protection measures.
- Device storage temperature: -40 to 70 ℃.

1.6.2 Transport

If the device needs to be transported, please use the original packaging box to protect the product from damage.

During transportation, the product should be protected from rain, dust, and mechanical damage, and avoid being transported together with flammable, explosive, or corrosive items.

Caution

- The housing or sensor may be damaged or fall off, posing a risk of injury.
- Use the original packaging to transport the device to the measurement point, or carry the device by holding the process connection.
- Pay attention to the device's center of gravity to prevent accidental tipping or slipping.

1.7 Product Model Identification

The product models are identified in Figure 1-5, in which the uppercase letters are fixed characters and the lowercase letters are variable. Refer to Table 1-3 for the detailed descriptions. The digit 1 is not related to explosion-proof, and refer to Table 1-4 for the details.

HM-LR X 10-W a b c d e f g h i j k l 1 - m n o

Figure 1-5 Product Model Identification Format

Table 1-3 Product Model Description

Digits	Descriptions	Available Options
HM	HIKMICRO	/

Digits	Descriptions	Available Options
LR	Level Meter	/
X	Product Model	G: Intelligent Model
10	10 Series	/
W	Measuring Frequency	80 GHz
a	Certificate	N: Non-explosion-proof A: Intrinsic safety T: Dust-tight dust explosion proof
b	Output	2: Two-wire/4-20mA/HART
c	Process Connection Standard	A: HG/T20592-2009 (PN series Flange) C: ASME B16.5(Class series Flange) D: ASME B1.20.1 (Threads NPT) E: BS 84 (G Threads) M: ISO 68-1 (M Threads) N: None
d	Process Connection	L1: Threads G1 1/2 L2: Threads G 3/4 L3: Threads 3/4” NPT L4: Threads 1 1/2” NPT F1: DN50 (2") F2: DN65 (2.5") F3: DN80 (3") F4: DN100 (4") F5: DN125 (5") F6: DN150 (6") F7: DN200 (8") F8: DN250 (10") F9: DN300 (12") M1: Gantry Connection N: None
e	Process Pressure Level	0: PN2.5 2: PN6 3: PN10 4: PN16 5: PN25 6: PN40 B: Class 150 C: Class 300

Digits	Descriptions	Available Options
f	Process Seal	N: None A: RF Convex B: FM Concave C: M Convex D: FF Full Flat
g	Process Connection Material	1: PTFE 2: PP 3: 304 stainless steel 4: 316L stainless steel
h	Lens Diameter	A: 74 mm (3°) B: 42 mm (6°) C: 34 mm (8°) D: 14.5 mm (14°)
i	Process Seal Material	1: PTFE 2: PP 3: 304 stainless steel + PP 4: 316L stainless steel + PEEK 5: 304 stainless steel + PEEK 6: 304 stainless steel + PTFE 7: 316L stainless steel + PTFE
j	Process Temperature	B1: -40~80 ℃ B2: -20~80 ℃ B3: -40~150 ℃ B4: -20~150 ℃ B5: -40~200 ℃ B7: -40~250 ℃
k	Sealing Ring Material	A: FKM (-20~150 ℃) C: EPDM (-40~150 ℃) D: VMQ (-40~250 ℃) E: NBR (-35~100 ℃) N: None
l	Add-ons	N: None C: Rinsing air connection W: Swivelling holder G: Rinsing air connection + Swivelling holder
m	Display Module	A:LCD with physical buttons and built-in Bluetooth

Digits	Descriptions	Available Options
n	Housing	L: AlSi10Mg Aluminum single chamber S: Stainless steel single chamber
o	Electrical Connection	1: Cable gland M20×1.5 2: 1/2” NPT

Table 1-4 Digit [1] (Unrelated to Explosion Proof)

No.	Descriptions	Available Options
1	Measuring Range	010: 10 m distance 030: 30 m distance 050: 50 m distance 120: 120 m distance

1.8 Technical Specifications

The technical specifications and antenna selection of the level meters are shown in Table 1-5.

Table 1-5 Technical Specifications

Name	Specification
Transmit Frequency	76 to 81 GHz
Measuring Range	0.1 to 120 m
Measurement Accuracy	10/30/50 m Measuring Range: ±2 mm 120 Measuring Range: ±5 mm
Blind Zone (Near)	0.1 m
User Interface	LCD + Physical buttons and built-in Bluetooth
Power Input	DC 14 to 30 V
Output	Two-wire/4-20mA/HART
Ambient Temperature	-40 to 70 °C
Operating Humidity	5% to 95% RH (25 ℃)
Process Temperature	-40 to 250 °C

Process Pressure	-0.1 to 4 MPa
Ingress Protection	IP66/IP67
Explosion Proof Markings	ATEX Intrinsic Safety: Ⓔx II 1 G Ex ia IIC T6...T1 Ga, II 1 D Ex ia IIIC T_{200}**°C Da ATEX Flameproof Enclosure: Ⓔx II 1 D Ex ta IIIC T_{200}**°C Da IECEx Intrinsic Safety: Ex ia IIC T6...T1 Ga, Ex ia IIIC T_{200}**°C Da IECEx Flameproof Enclosure: Ex ta IIIC T_{200}**°C Da

1.9 Explosion Proof

The installation of an explosion proof device must comply with relevant laws, explosion proof regulations, and the explosion-proof certificates of the device. The explosion proof mark can be found on the product label.

1.9.1 Intrinsic Safety

Certificates

- ATEX: TÜV 25 ATEX 9253X
- IECEx: IECEx TUR 25.0013X

Standards

- ATEX: EN IEC 60079-0: 2018, EN 60079-11: 2012
- IECEx: IEC 60079-0: 2017, IEC 60079-11: 2023

Markings

- ATEX: Ⓔx II 1 G Ex ia IIC T6...T1 Ga, II 1 D Ex ia IIIC T_{200}**°C Da
- IECEx: Ex ia IIC T6...T1 Ga, Ex ia IIIC T_{200}**°C Da

Thermal Data - Gas

In the gas explosive atmosphere, the process temperature and ambient temperature for each antenna list as following:

74 mm (3°) Flange Fully Encapsulated PTFE Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T2	-40 to 250℃	-40 to 48℃
2	T3	-40 to 195℃	-40 to 48℃
3	T4	-40 to 130℃	-40 to 48℃
4	T5	-40 to 95℃	-40 to 48℃
5	T6	-40 to 80℃	-40 to 43℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T3	-40 to 195℃	-40 to 54℃
2	T4	-40 to 130℃	-40 to 54℃
3	T5	-40 to 95℃	-40 to 54℃
4	T6	-40 to 80℃	-40 to 49℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T4	-40 to 130℃	-40 to 56℃
2	T5	-40 to 95℃	-40 to 56℃
3	T6	-40 to 80℃	-40 to 51℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T6	-40 to 80℃	-40 to 46℃

42 mm (6°) Flange Fully Encapsulated PTFE Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T2	-40 to 250℃	-40 to 56℃
2	T3	-40 to 195℃	-40 to 56℃
3	T4	-40 to 130℃	-40 to 56℃
4	T5	-40 to 95℃	-40 to 56℃
5	T6	-40 to 80℃	-40 to 45℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T3	-40 to 195℃	-40 to 49℃
2	T4	-40 to 130℃	-40 to 49℃

No.	Temperature Class	Process Temperature	Ambient Temperature
3	T5	-40 to 95℃	-40 to 49℃
4	T6	-40 to 80℃	-40 to 44℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T4	-40 to 130℃	-40 to 48℃
2	T5	-40 to 95℃	-40 to 48℃
3	T6	-40 to 80℃	-40 to 43℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T6	-40 to 80℃	-40 to 42℃

74 mm (3°) Flange Antenna with Rinsing Air Connection and Swivelling Holder

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T2	-40 to 250℃	-40 to 49℃
2	T3	-40 to 195℃	-40 to 49℃
3	T4	-40 to 130℃	-40 to 49℃
4	T5	-40 to 95℃	-40 to 49℃
5	T6	-40 to 80℃	-40 to 44℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T3	-40 to 195℃	-40 to 56℃
2	T4	-40 to 130℃	-40 to 56℃
3	T5	-40 to 95℃	-40 to 56℃
4	T6	-40 to 80℃	-40 to 51℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T4	-40 to 130℃	-40 to 52℃
2	T5	-40 to 95℃	-40 to 52℃
3	T6	-40 to 80℃	-40 to 47℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T6	-40 to 80℃	-40 to 53℃

34 mm (8°) Threaded Connection Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T2	-40 to 250℃	-40 to 50℃
2	T3	-40 to 195℃	-40 to 50℃
3	T4	-40 to 130℃	-40 to 50℃
4	T5	-40 to 95℃	-40 to 50℃
5	T6	-40 to 80℃	-40 to 45℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T3	-40 to 195℃	-40 to 47℃
2	T4	-40 to 130℃	-40 to 47℃
3	T5	-40 to 95℃	-40 to 47℃
4	T6	-40 to 80℃	-40 to 42℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T4	-40 to 130℃	-40 to 49℃
2	T5	-40 to 95℃	-40 to 49℃
3	T6	-40 to 80℃	-40 to 44.0℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T6	-40 to 80℃	-40 to 43℃

14.5 mm (14°) Threaded Connection Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T2	-40 to 250℃	-40 to 49℃
2	T3	-40 to 195℃	-40 to 49℃
3	T4	-40 to 130℃	-40 to 49℃
4	T5	-40 to 95℃	-40 to 49℃

No.	Temperature Class	Process Temperature	Ambient Temperature
5	T6	-40 to 80℃	-40 to 44℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T3	-40 to 195℃	-40 to 54℃
2	T4	-40 to 130℃	-40 to 54℃
3	T5	-40 to 95℃	-40 to 54℃
4	T6	-40 to 80℃	-40 to 49℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T4	-40 to 130℃	-40 to 54℃
2	T5	-40 to 95℃	-40 to 54℃
3	T6	-40 to 80℃	-40 to 49℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T6	-40 to 80℃	-40 to 47℃

74 mm (3°) PP Antenna

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T1~T6	-40 to 80℃	-40 to 56℃

Thermal Data – Dust

In the dust explosive atmosphere, the process temperature and ambient temperature for each antenna list as following:

74 mm (3°) Flange Fully Encapsulated PTFE Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 260℃	-40 to 235℃	-40 to 46℃
2	T_{200} 200℃	-40 to 185℃	-40 to 46℃
3	T_{200} 130℃	-40 to 115℃	-40 to 46℃
4	T_{200} 100℃	-40 to 85℃	-40 to 46℃

No.	Temperature Class	Process Temperature	Ambient Temperature
5	T_{200} 85℃	-40 to 70℃	-40 to 46℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 200℃	-40 to 185℃	-40 to 52℃
2	T_{200} 130℃	-40 to 115℃	-40 to 52℃
3	T_{200} 100℃	-40 to 85℃	-40 to 52℃
4	T_{200} 85℃	-40 to 70℃	-40 to 52℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 130℃	-40 to 115℃	-40 to 55℃
2	T_{200} 100℃	-40 to 85℃	-40 to 55℃
3	T_{200} 85℃	-40 to 70℃	-40 to 55℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 50℃

42 mm (6°) Flange Fully Encapsulated PTFE Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 260℃	-40 to 235℃	-40 to 49℃
2	T_{200} 200℃	-40 to 185℃	-40 to 49℃
3	T_{200} 130℃	-40 to 115℃	-40 to 49℃
4	T_{200} 100℃	-40 to 85℃	-40 to 49℃
5	T_{200} 85℃	-40 to 70℃	-40 to 49℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 200℃	-40 to 185℃	-40 to 47℃
2	T_{200} 130℃	-40 to 115℃	-40 to 47℃
3	T_{200} 100℃	-40 to 85℃	-40 to 47℃
4	T_{200} 85℃	-40 to 70℃	-40 to 47℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 130℃	-40 to 115℃	-40 to 46℃
2	T_{200} 100℃	-40 to 85℃	-40 to 46℃
3	T_{200} 85℃	-40 to 70℃	-40 to 46℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 46℃

74 mm (3°) Flange Antenna with Rinsing Air Connection and Swivelling Holder

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 260℃	-40 to 235℃	-40 to 47℃
2	T_{200} 200℃	-40 to 185℃	-40 to 47℃
3	T_{200} 130℃	-40 to 115℃	-40 to 47℃
4	T_{200} 100℃	-40 to 85℃	-40 to 47℃
5	T_{200} 85℃	-40 to 70℃	-40 to 47℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 200℃	-40 to 185℃	-40 to 55℃
2	T_{200} 130℃	-40 to 115℃	-40 to 55℃
3	T_{200} 100℃	-40 to 85℃	-40 to 55℃
4	T_{200} 85℃	-40 to 70℃	-40 to 55℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 130℃	-40 to 115℃	-40 to 51℃
2	T_{200} 100℃	-40 to 85℃	-40 to 51℃
3	T_{200} 85℃	-40 to 70℃	-40 to 51℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 57℃

34 mm (8°) Threaded Connection Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 260℃	-40 to 235℃	-40 to 48℃
2	T_{200} 200℃	-40 to 185℃	-40 to 48℃
3	T_{200} 130℃	-40 to 115℃	-40 to 48℃
4	T_{200} 100℃	-40 to 85℃	-40 to 48℃
5	T_{200} 85℃	-40 to 70℃	-40 to 48℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 200℃	-40 to 185℃	-40 to 46℃

No.	Temperature Class	Process Temperature	Ambient Temperature
2	T_{200} 130℃	-40 to 115℃	-40 to 46℃
3	T_{200} 100℃	-40 to 85℃	-40 to 46℃
4	T_{200} 85℃	-40 to 70℃	-40 to 46℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 130℃	-40 to 115℃	-40 to 47℃
2	T_{200} 100℃	-40 to 85℃	-40 to 47℃
3	T_{200} 85℃	-40 to 70℃	-40 to 47℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 47℃

14.5 mm (14°) Threaded Connection Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 260℃	-40 to 235℃	-40 to 47℃
2	T_{200} 200℃	-40 to 185℃	-40 to 47℃
3	T_{200} 130℃	-40 to 115℃	-40 to 47℃
4	T_{200} 100℃	-40 to 85℃	-40 to 47℃
5	T_{200} 85℃	-40 to 70℃	-40 to 47℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 200℃	-40 to 185℃	-40 to 52℃
2	T_{200} 130℃	-40 to 115℃	-40 to 52℃
3	T_{200} 100℃	-40 to 85℃	-40 to 52℃
4	T_{200} 85℃	-40 to 70℃	-40 to 52℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 130℃	-40 to 115℃	-40 to 52℃
2	T_{200} 100℃	-40 to 85℃	-40 to 52℃
3	T_{200} 85℃	-40 to 70℃	-40 to 52℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 51℃

74 mm (3°) PP Antenna

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 60℃

1.9.2 Flameproof Enclosure

Certificates

- ATEX: TÜV 25 ATEX 9254X
- IECEx: IECEx TUR 25.0014X

Standards

- ATEX: EN IEC 60079-0: 2018, EN 60079-31: 2014, EN IEC 60079-31: 2024
- IECEx: IEC 60079-0: 2017, IEC 60079-31: 2022

Markings

- ATEX: ⟨Ex⟩ II 1 D Ex ta IIIC T_{200}**°C Da
- IECEx: Ex ta IIIC T_{200}**°C Da

Thermal Data

In the dust explosive atmosphere, the process temperature and ambient temperature for each antenna list as following:

74 mm (3°) Flange Fully Encapsulated PTFE Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 260℃	-40 to 235℃	-40 to 46℃
2	T_{200} 200℃	-40 to 185℃	-40 to 46℃
3	T_{200} 130℃	-40 to 115℃	-40 to 46℃
4	T_{200} 100℃	-40 to 85℃	-40 to 46℃
5	T_{200} 85℃	-40 to 70℃	-40 to 46℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 200℃	-40 to 185℃	-40 to 52℃
2	T_{200} 130℃	-40 to 115℃	-40 to 52℃
3	T_{200} 100℃	-40 to 85℃	-40 to 52℃
4	T_{200} 85℃	-40 to 70℃	-40 to 52℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 130℃	-40 to 115℃	-40 to 55℃
2	T_{200} 100℃	-40 to 85℃	-40 to 55℃
3	T_{200} 85℃	-40 to 70℃	-40 to 55℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 50℃

42 mm (6°) Flange Fully Encapsulated PTFE Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 260℃	-40 to 235℃	-40 to 49℃
2	T_{200} 200℃	-40 to 185℃	-40 to 49℃
3	T_{200} 130℃	-40 to 115℃	-40 to 49℃
4	T_{200} 100℃	-40 to 85℃	-40 to 49℃
5	T_{200} 85℃	-40 to 70℃	-40 to 49℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 200℃	-40 to 185℃	-40 to 47℃
2	T_{200} 130℃	-40 to 115℃	-40 to 47℃
3	T_{200} 100℃	-40 to 85℃	-40 to 47℃
4	T_{200} 85℃	-40 to 70℃	-40 to 47℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 130℃	-40 to 115℃	-40 to 46℃
2	T_{200} 100℃	-40 to 85℃	-40 to 46℃
3	T_{200} 85℃	-40 to 70℃	-40 to 46℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 46℃

74 mm (3°) Flange Antenna with Rinsing Air Connection and Swivelling Holder

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 260℃	-40 to 235℃	-40 to 47℃
2	T_{200} 200℃	-40 to 185℃	-40 to 47℃

No.	Temperature Class	Process Temperature	Ambient Temperature
3	T_{200} 130℃	-40 to 115℃	-40 to 47℃
4	T_{200} 100℃	-40 to 85℃	-40 to 47℃
5	T_{200} 85℃	-40 to 70℃	-40 to 47℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 200℃	-40 to 185℃	-40 to 55℃
2	T_{200} 130℃	-40 to 115℃	-40 to 55℃
3	T_{200} 100℃	-40 to 85℃	-40 to 55℃
4	T_{200} 85℃	-40 to 70℃	-40 to 55℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 130℃	-40 to 115℃	-40 to 51℃
2	T_{200} 100℃	-40 to 85℃	-40 to 51℃
3	T_{200} 85℃	-40 to 70℃	-40 to 51℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 57℃

34 mm (8°) Threaded Connection Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 260℃	-40 to 235℃	-40 to 48℃
2	T_{200} 200℃	-40 to 185℃	-40 to 48℃
3	T_{200} 130℃	-40 to 115℃	-40 to 48℃
4	T_{200} 100℃	-40 to 85℃	-40 to 48℃
5	T_{200} 85℃	-40 to 70℃	-40 to 48℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 200℃	-40 to 185℃	-40 to 46℃
2	T_{200} 130℃	-40 to 115℃	-40 to 46℃
3	T_{200} 100℃	-40 to 85℃	-40 to 46℃
4	T_{200} 85℃	-40 to 70℃	-40 to 46℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 130℃	-40 to 115℃	-40 to 47℃
2	T_{200} 100℃	-40 to 85℃	-40 to 47℃

No.	Temperature Class	Process Temperature	Ambient Temperature
3	T_{200} 85℃	-40 to 70℃	-40 to 47℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 47℃

14.5 mm (14°) Threaded Connection Antenna

- Process Temperature: 250°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 260℃	-40 to 235℃	-40 to 47℃
2	T_{200} 200℃	-40 to 185℃	-40 to 47℃
3	T_{200} 130℃	-40 to 115℃	-40 to 47℃
4	T_{200} 100℃	-40 to 85℃	-40 to 47℃
5	T_{200} 85℃	-40 to 70℃	-40 to 47℃

- Process Temperature: 200°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 200℃	-40 to 185℃	-40 to 52℃
2	T_{200} 130℃	-40 to 115℃	-40 to 52℃
3	T_{200} 100℃	-40 to 85℃	-40 to 52℃
4	T_{200} 85℃	-40 to 70℃	-40 to 52℃

- Process Temperature: 150°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 130℃	-40 to 115℃	-40 to 52℃
2	T_{200} 100℃	-40 to 85℃	-40 to 52℃
3	T_{200} 85℃	-40 to 70℃	-40 to 52℃

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 51℃

74 mm (3°) PP Antenna

- Process Temperature: 80°C

No.	Temperature Class	Process Temperature	Ambient Temperature
1	T_{200} 85℃	-40 to 70℃	-40 to 60℃

1.9.3 Important Instructions on Explosion Proof

Special Conditions for Safe Use

- Flameproof Enclosure
  - Under explosive dust circumstances, the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with damp cloth.
  - The equipment shall be incorporate with Ex certified cable glands or blanking plugs in accordance with EN/IEC 60079-14.
  - The equipment must be powered by safety barriers. The output parameter of safety barrier must be lower than Po=650mW.
- Intrinsic Safety
  - Under explosive dust circumstances, the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with damp cloth.
  - The transmitter enclosure of equipment is manufactured from aluminum. In rare cases, ignition sources due to impact and friction sparks could occur. When the equipment is intended to be used as EPL Ga, this shall be considered during installation.
  - The equipment shall be incorporated with Ex certified cable glands or blanking plugs in accordance with IEC 60079-14.

Precautions

- The suffix "X" of the explosion-proof certificate number indicates that there are special conditions for safe use of the product, that is, the manufacturer of the product should be contacted for the maintenance of the explosion-proof joint surface.
- The product is equipped with a grounding terminal, which should be reliably grounded when the product is installed and in use. The grounding screw tightening torque is 0.8 N·m.
- The removal torque of the end cover of the product is ≥ 15 N·m.
- To ensure the explosion-proof performance and avoid occurrence of damage, users shall not replace the electrical parts of the product, and shall work with the product manufacturer for troubleshooting.
- The installation, use and maintenance of the product shall follow the product manual and the following Ex standards.
  - IEC 60079-0:2017
  - IEC 60079-11:2023

- IEC 60079-31: 2022
- EN IEC 60079-0:2018
- EN 60079-11:2012
- EN 60079-31:2014

2 Installation and Setup

2.1 Installation Requirements

2.1.1 General Requirements

When the process temperature is higher than the ambient temperature, to ensure the effectiveness of the device's explosion-proof safety, there shall be no dust accumulation within a 0.3-meter range outside the device tank. This restriction does not apply when the process temperature is lower than or equal to the ambient temperature.

If equipped with a rinsing air device, it must be connected.

Avoid installing any internal components, such as limit switches, temperature sensors, vertical rods, vacuum rings, heating coils, baffles, etc., within the signal beam range of the device (beam angle α, see Figure 2-1).

In liquids, direct the device as perpendicularly as possible to the medium surface to achieve optimum measurement results (see Figure 2-1).

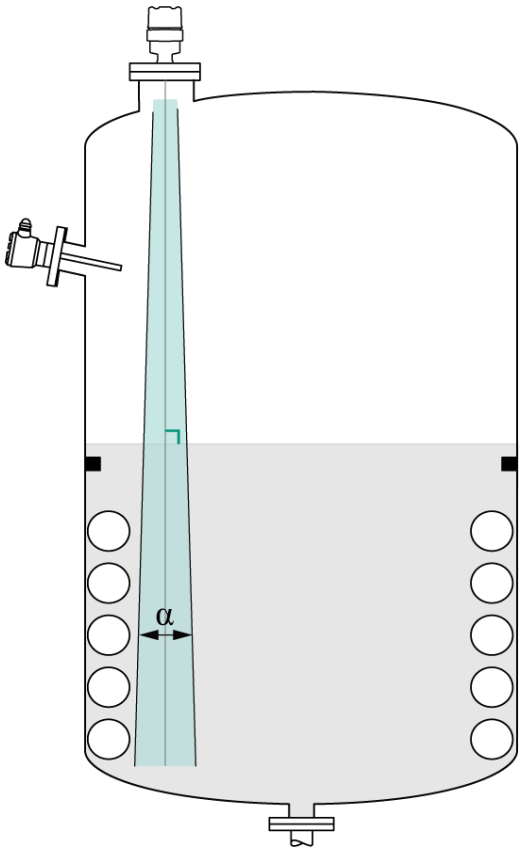


Figure 2-1 Device Installation in Liquid Measurement

In solids, direct the device in a way that the radar signal reaches the lowest vessel level. Hence it is possible to detect the complete vessel volume (see Figure 2-2).

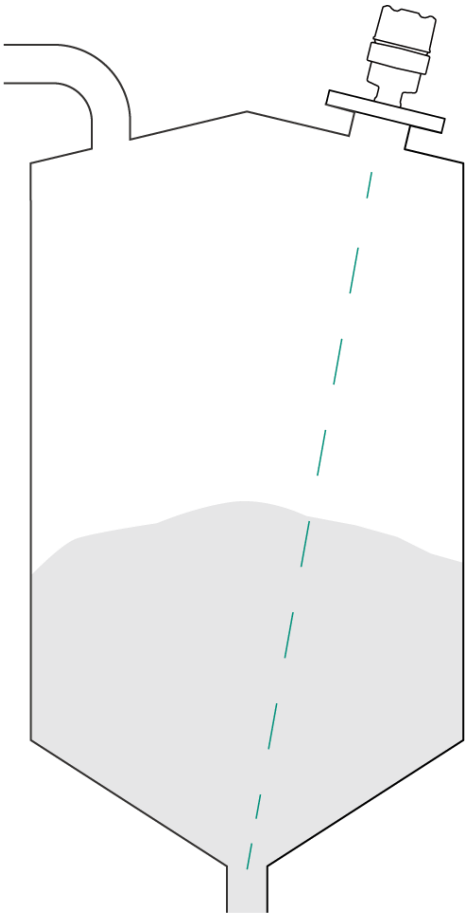


Figure 2-2 Device Installation in Solid Measurement

2.1.2 Interference Echo Reduction

Inclined metal reflector plates installed near obstacles can scatter radar signals, thereby reducing interference echoes. Refer to Figure 2-3.

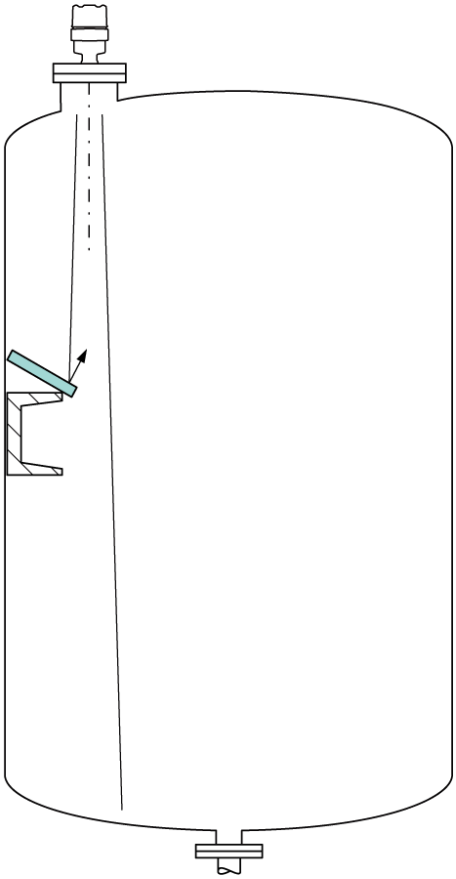


Figure 2-3 Interference Echo Reduction

2.1.3 False Echo Suppression

Measurement results can be optimized through false echo suppression. This function is primarily used to suppress false echoes from known obstacles in the container to prevent their impact on measurement accuracy. For details, refer to ***False Echo Suppression***.

2.1.4 Tightening Torque

To ensure installation safety and sealing performance, adhere to the following torque requirements when tightening bolts. Over-tightening is strictly prohibited to avoid damaging the device or seals.

Torque Requirements for Different Antennas

Antenna Type	Beam Angle	Installation Part	Recommended/Max. Tightening Torque
PP Antenna	3°	Antenna Housing and Gantry	Recommended: 1.5 N·m
Threaded Antenna	8°	G1½ Process Connection	Max.: 200 N·m
Threaded Antenna	14°	G¾ Process Connection	Max.: 30 N·m
Antenna with Rinsing Air Connection and Swivelling Holder	3°	Flange and Swivelling Holder	Max.: 1.5 N·m

Special Requirements for 3°/6° Fully Encapsulated Antennas

These antennas are equipped with PTFE gaskets for process sealing. To ensure long-term sealing performance:

- Flat washers and spring washers must be used together.
- Initial tightening torque required for bolts on standard flanges: 60 N·m.
- Recommended re-tightening torque for bolts on standard flanges: 60–100 N·m.
- Due to the creep characteristics of PTFE material, regularly inspect and re-tighten flange bolts according to changes in process temperature and pressure to maintain sealing integrity.

2.2 Antenna Installation Sleeve

2.2.1 Sleeve Installation Requirements

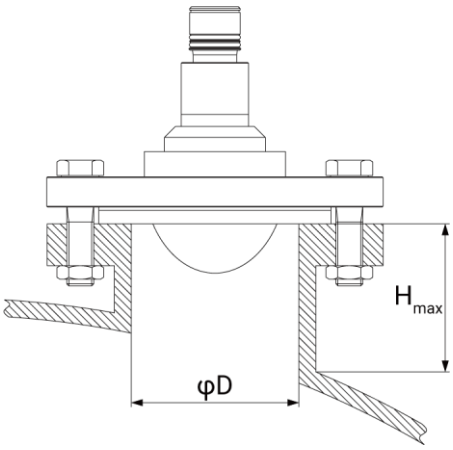
The maximum allowable sleeve height (H_{max}) is determined by the sleeve diameter (φD). Exceeding H_{max} may degrade measurement performance.

- The sleeve bottom must be smooth and burr-free, with rounded edges.
- False echo suppression must be performed (refer to ***False Echo Suppression***).

- If the installed sleeve height exceeds H_{max}, contact the manufacturer for technical support.

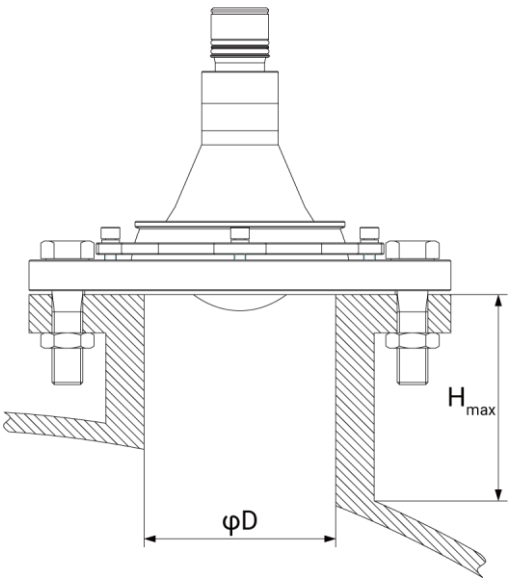
2.2.2 74 mm (3°) Flange Fully Encapsulated PTFE Antenna

The relationship between installation sleeve diameter (φD) and maximum allowable height (Hmax) is shown in the following table.

	φD	H_{max}
	80~100 mm	600 mm
	100~150 mm	850 mm
	≥150 mm	1000 mm

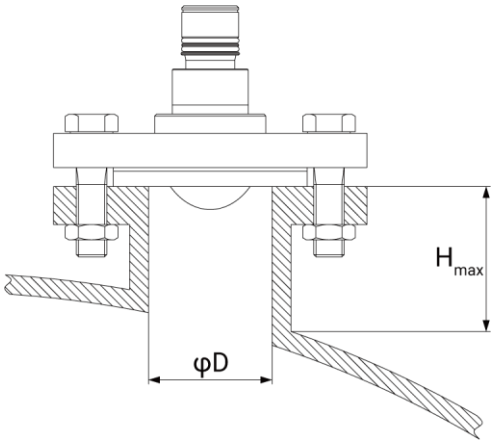
2.2.3 74 mm (3°) Flange Antenna with Rinsing Air Connection and Swivelling Holder

The relationship between installation sleeve diameter (φD) and maximum allowable height (Hmax) is shown in the following table.

	φD	H_{max}
	80~100 mm	600 mm
	100~150 mm	850 mm
	≥150 mm	1000 mm

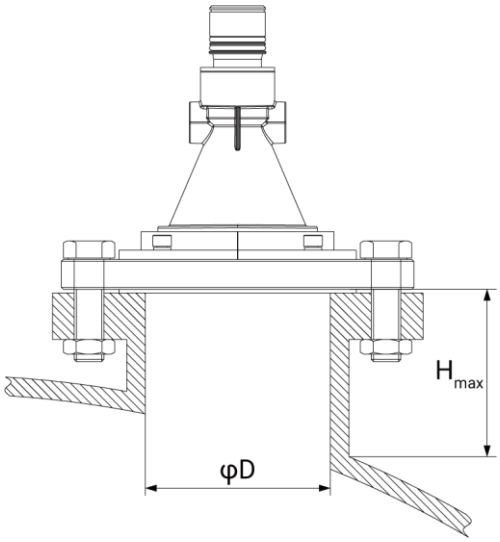
2.2.4 42 mm (6°) Flange Fully Encapsulated PTFE Antenna

The relationship between installation sleeve diameter (φD) and maximum allowable height (Hmax) is shown in the following table.

	φD	H_{max}
	50~80 mm	200 mm
	80~100 mm	350 mm
	100~150 mm	400 mm
	≥150 mm	650 mm

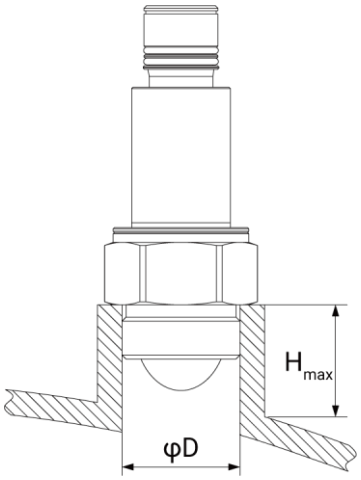
2.2.5 74 mm (3°) PP Antenna

The relationship between installation sleeve diameter (φD) and maximum allowable height (Hmax) is shown in the following table.

	φD	H_{max}
	80~100 mm	600 mm
	100~150 mm	850 mm
	≥150 mm	1000 mm

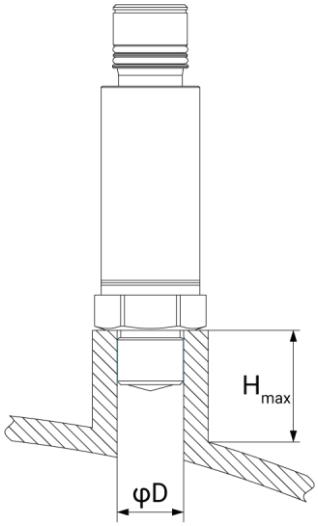
2.2.6 34 mm (8°) Threaded Connection Antenna (PTEE)

The relationship between installation sleeve diameter (φD) and maximum allowable height (Hmax) is shown in the following table.

	φD	H_{max}
	40~50 mm	100 mm
	50~80 mm	120 mm
	80~100 mm	220 mm
	100~150 mm	300 mm
	≥150 mm	500 mm

2.2.7 14.5 mm (14°) Threaded Connection Antenna (PEEK)

The relationship between installation sleeve diameter (φD) and maximum allowable height (Hmax) is shown in the following table.

	φD	H_{max}
	20~50 mm	30 mm
	50~80 mm	80 mm
	80~100 mm	110 mm
	≥100 mm	150 mm

2.3 Antenna Installation: Beam Angle

The beam angle α is defined as the angle at which the radar wave energy density reaches half of its maximum value (3 dB width). Microwaves are emitted beyond the signal beam range and can be reflected by interfering objects.

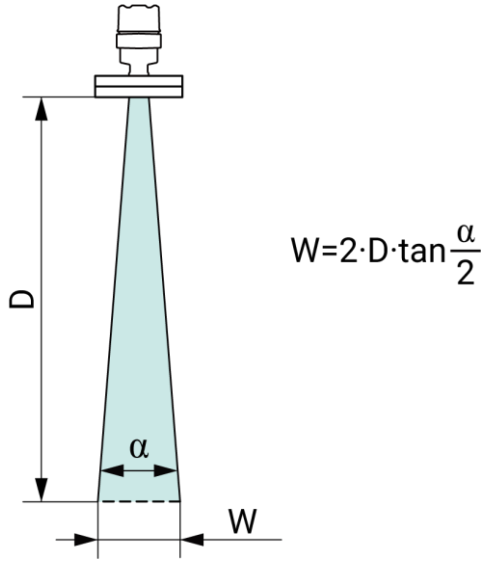


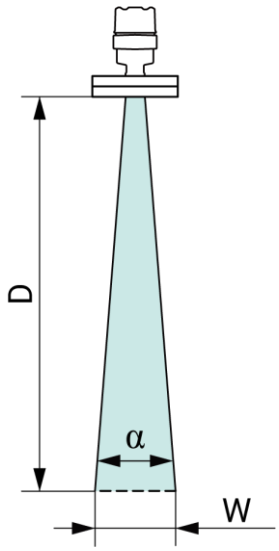
Figure 2-4 Definition of Beam Angle

Note

The beam width W depends on the beam angle α and the distance D.

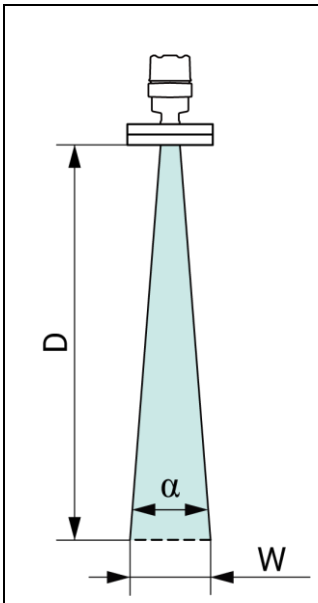
2.3.1 74 mm Antenna (α = 3°)

- 74 mm (3°) flange fully encapsulated PTFE antenna
- 74 mm (3°) flange antenna with rinsing air connection and swivelling holder
- 74 mm (3°) PP antenna



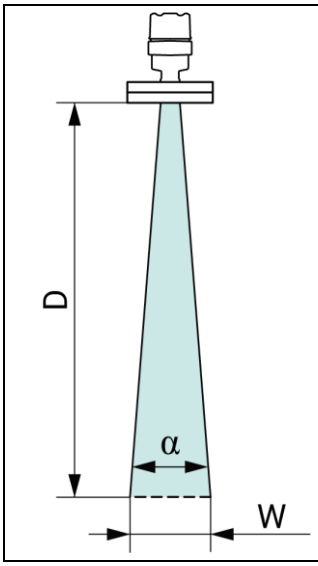
D	W
1 m (3.28 ft)	0.03 m (0.10 ft)
3 m (9.84 ft)	0.08 m (0.26 ft)
5 m (16.40 ft)	0.13 m (0.43 ft)
10 m (32.81 ft)	0.26 m (0.85 ft)
15 m (49.21 ft)	0.39 m (1.28 ft)
20 m (65.62 ft)	0.52 m (1.71 ft)
25 m (82.02 ft)	0.65 m (2.13 ft)
30 m (98.43 ft)	0.79 m (2.59 ft)
40 m (131.23 ft)	1.05 m (3.44 ft)
50 m (164.04 ft)	1.31 m (4.30 ft)
60 m (196.85 ft)	1.57 m (5.15 ft)
70 m (229.66 ft)	1.83 m (6.00 ft)
80 m (262.47 ft)	2.09 m (6.86 ft)
120 m (393.70 ft)	3.14 m (10.30 ft)

2.3.2 42 mm Flange Fully Encapsulated PTFE Antenna (α = 6°)



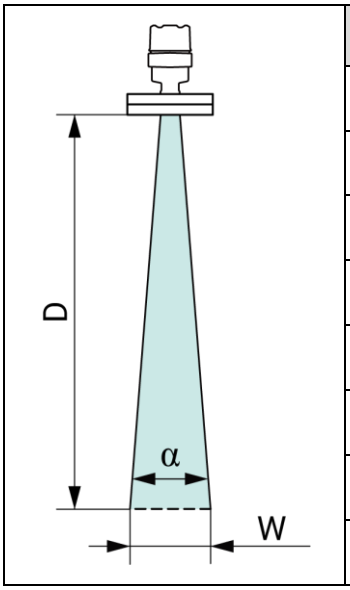
D	W
1 m (3.28 ft)	0.05 m (0.16 ft)
3 m (9.84 ft)	0.16 m (0.52 ft)
5 m (16.40 ft)	0.26 m (0.85 ft)
10 m (32.81 ft)	0.52 m (1.71 ft)
15 m (49.21 ft)	0.79 m (2.59 ft)
20 m (65.62 ft)	1.05 m (3.44 ft)
25 m (82.02 ft)	1.31 m (4.30 ft)
30 m (98.43 ft)	1.57 m (5.15 ft)
40 m (131.23 ft)	2.10 m (6.89 ft)
50 m (164.04 ft)	2.62 m (8.60 ft)

2.3.3 34 mm Threaded Connection Antenna (α = 8°)



D	W
1 m (3.28 ft)	0.07 m (0.23 ft)
3 m (9.84 ft)	0.21 m (0.69 ft)
5 m (16.40 ft)	0.35 m (1.15 ft)
10 m (32.81 ft)	0.70 m (2.30 ft)
15 m (49.21 ft)	1.05 m (3.44 ft)
20 m (65.62 ft)	1.40 m (4.59 ft)
25 m (82.02 ft)	1.75 m (5.74 ft)
30 m (98.43 ft)	2.10 m (6.89 ft)

2.3.4 14.5 mm Threaded Connection Antenna (α = 14°)



D	W
1 m (3.28 ft)	0.12 m (0.39 ft)
3 m (9.84 ft)	0.37 m (1.21 ft)
5 m (16.40 ft)	0.61 m (2.00 ft)
10 m (32.81 ft)	1.23 m (4.04 ft)
15 m (49.21 ft)	1.84 m (6.04 ft)
20 m (65.62 ft)	2.46 m (8.07 ft)
25 m (82.02 ft)	3.07 m (10.07 ft)
30 m (98.43 ft)	3.68 m (12.07 ft)

2.4 Antenna Installation: Process Pressure

For process conditions, additional compliance with the specifications on the product label is required, including minimum values.

Antenna Type	Beam Angle	Selection	Process Pressure
PP Antenna	74 mm (3°)	Flange Clamping	-0.1 to 0.2 MPa
Threaded Antenna	34 mm (8°)	PN2.5	-0.1 to 0.6 MPa
		PN6	
		PN10	-0.1 to 1.6 MPa
		PN16	
		PN25	-0.1 to 4.0 MPa
		PN40	
Threaded Antenna	14.5 mm (14°)	PN2.5	-0.1 to 0.6 MPa
		PN6	
		PN10	-0.1 to 1.6 MPa
		PN16	
		PN25	-0.1 to 4.0 MPa
		PN40	
Fully Encapsulated Antenna	74 mm (3°)	PN2.5	-0.1 to 0.6 MPa
		PN6	
		PN10	-0.1 to 1.6 MPa
		PN16	

Antenna Type	Beam Angle	Selection	Process Pressure
		PN25	-0.1 to 2.5 MPa
		PN40	
Fully Encapsulated Droplet Antenna	42 mm (6°)	PN2.5	-0.1 to 0.6 MPa
		PN6	
		PN10	-0.1 to 1.6 MPa
		PN16	
		PN25	-0.1 to 2.5 MPa
		PN40	
Antenna with Rinsing Air Connection & Swivelling Holder	74 mm (3°)	PN2.5	-0.1 to 0.1 MPa
		PN6	
		PN10	
		PN16	

2.5 Antenna Installation Gantry

The 3° PP antenna supports gantry installation, allowing horizontal, vertical, or inclined installation while maintaining correct device orientation, as shown in the following figures.

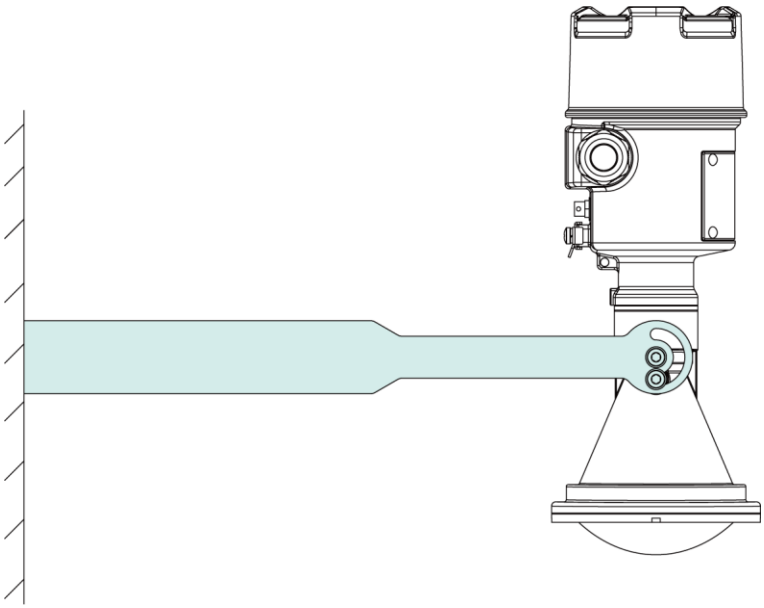


Figure 2-5 Horizontal Gantry Installation

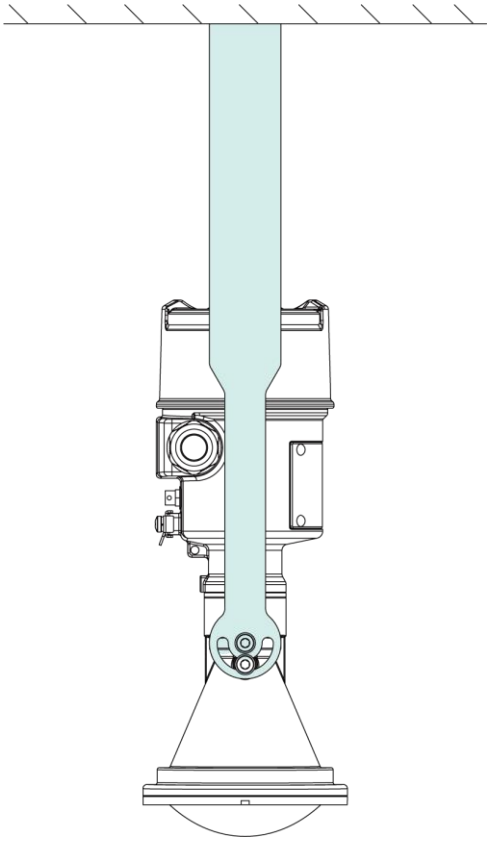


Figure 2-6 Vertical Gantry Installation

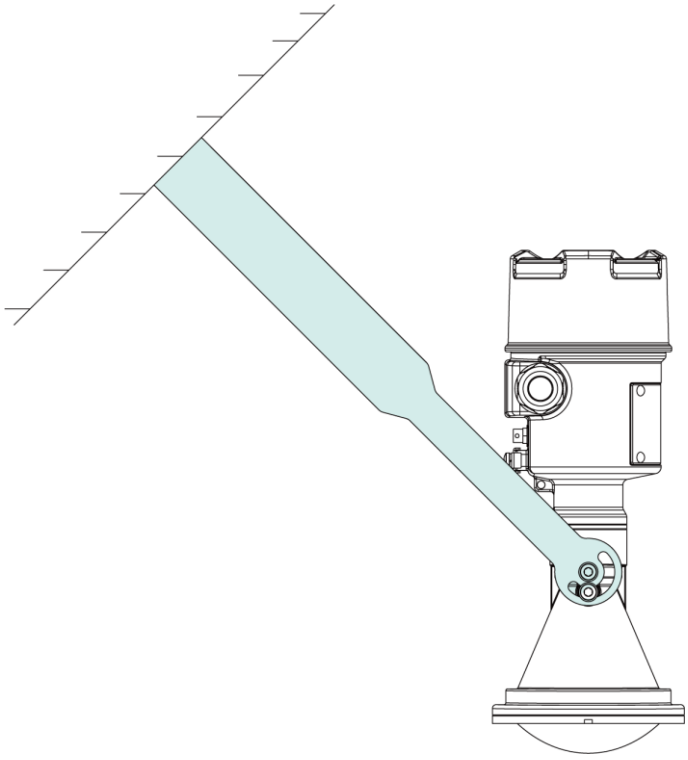


Figure 2-7 Inclined Gantry Installation

2.6 Rotate Housing

Loosen the antenna locking screw (see Figure 2-8) to rotate the housing (max. 360°).

Housing rotation enables:

- Optimal positioning for installation access
- Improved device operation
- Field display unit adjustment for reading convenience

After rotation, tighten the locking screw (2 mm hex key, torque 1.5 N·m).

Caution

Do not loosen antenna locking screws more than one full revolution. Excessive loosening beyond the index mark may cause component disengagement or detachment hazards.

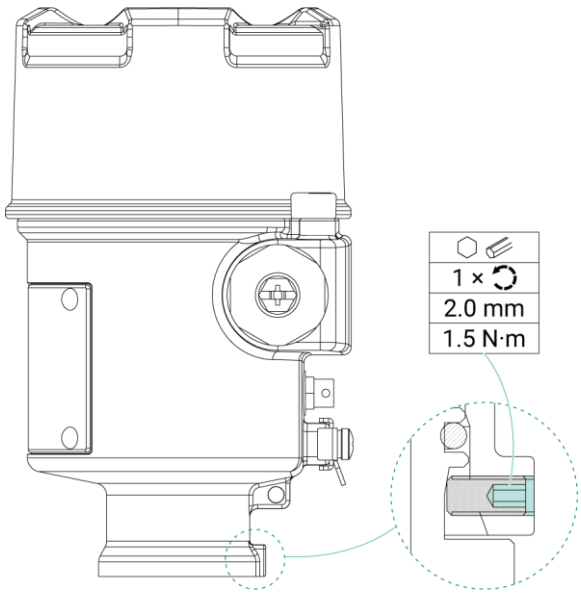


Figure 2-8 Antenna Locking Screw

2.7 Rotate Display Module

The display module supports 4×90° rotation mounting, allowing field-adjustable orientation as required.

Caution

Live operation risks electric shock and/or explosion. Open enclosure ONLY after power disconnection.

Steps

1. Loosen the tamper-proof screw on the housing cover by counterclockwise rotation (2.5 mm hex key, torque 0.7 N·m)

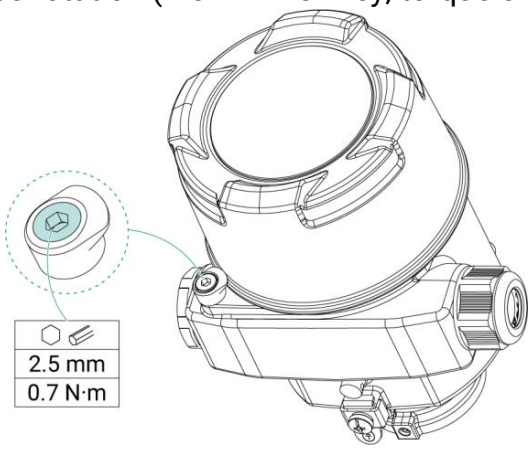


Figure 2-9 Loosen the Tamper-proof Screw

2. Rotate counterclockwise (1) and remove the housing cover (2)

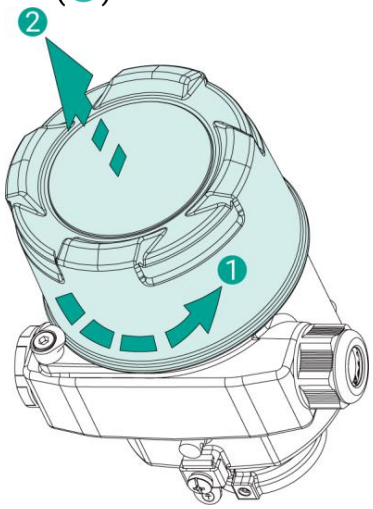


Figure 2-10 Remove the Housing Cover

3. Rotate counterclockwise and remove the display module.

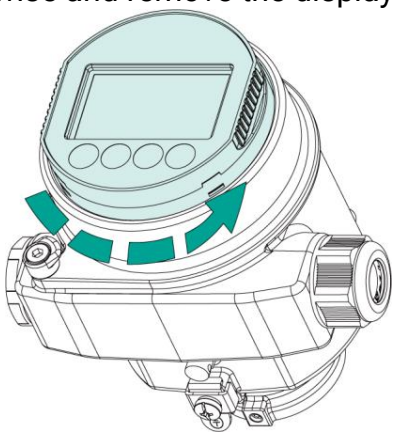
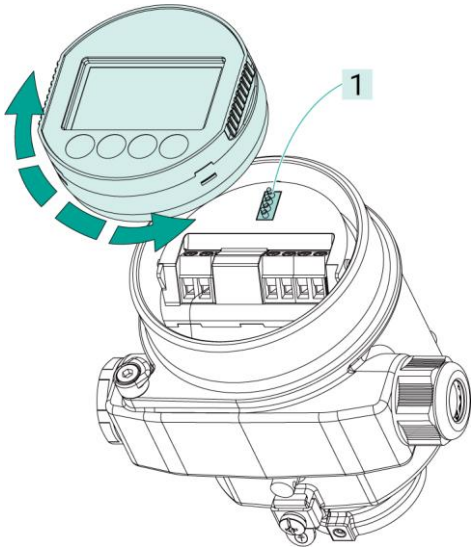


Figure 2-11 Remove the Display Module

4. Rotate the display module to select the desired mounting angle (4×90°).

Caution

Do not expose the display module connector to corrosive substances to prevent contact failure and operational abnormalities.



1: Display module connector

Figure 2-12 Rotate the Display Module

5. Reinstall the display module (1) and tighten the latch clockwise (2) to complete installation. An audible 'click' will confirm proper latch engagement.

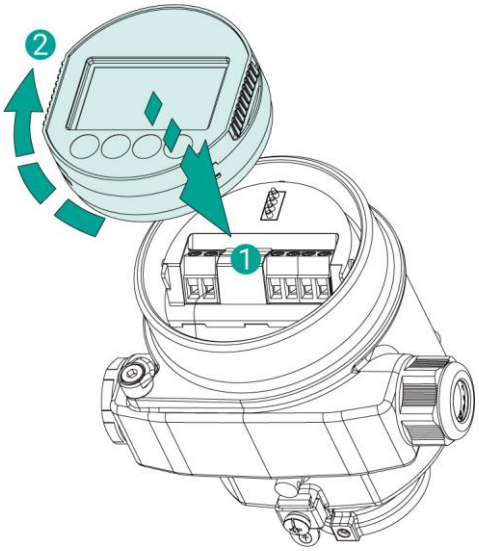


Figure 2-13 Reinstall the Display Module

6. Install the housing cover.

7. Position the housing cover in (1), tighten clockwise (2), and secure the tamper-proof screw (3).

Note

- Apply anti-friction coating to the housing cover threads.
- No lubrication is required for the housing cover threads.

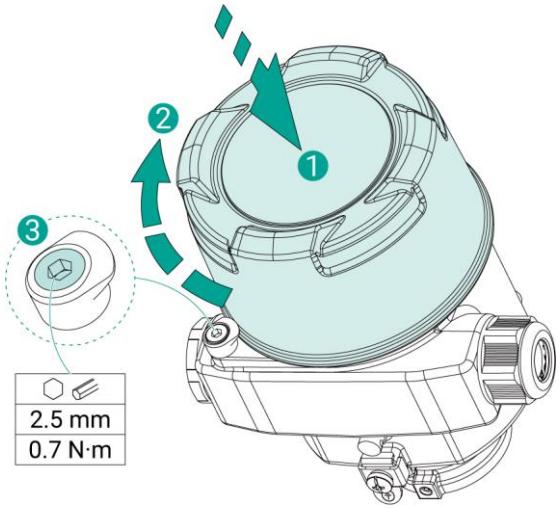


Figure 2-14 Install the Housing Cover

Caution

- Dust may cause damage to threads and housing. Clean dust and debris from both housing cover and housing threads.
- If significant resistance occurs during housing cover installation, inspect and clean thread surfaces of any dust accumulation.

2.8 Post-Installation Inspection

After installation, verify the following items:

- The device is intact (visual inspection).
- Measurement point markings and labels are correct (visual inspection).
- Adequate protective measures are implemented to avoid direct exposure to sunlight and rain.
- Antenna locking screw and housing cover tamper-proof screw are securely tightened.
- Device parameters comply with measurement point specifications (e.g., process temperature, process pressure, ambient temperature, measuring range).

3 Electrical Connections

3.1 Connection Requirements

3.1.1 Housing Cover Installation/Removal

The device housing cover is secured with a locking screw as shown in Figure 3-1. Incorrect installation of the screw may compromise the housing cover's sealing performance.

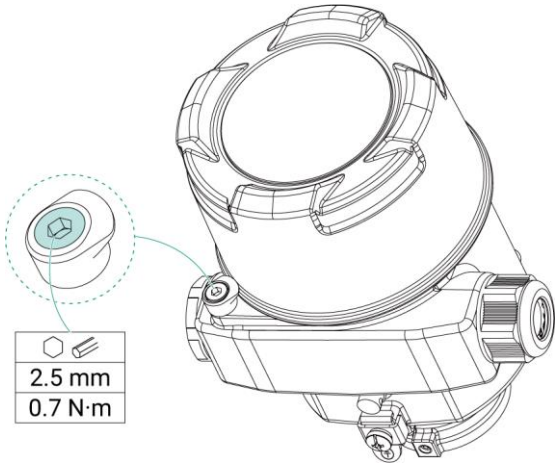


Figure 3-1 Housing Cover Locking Screw

- Opening the Housing Cover

Loosen the housing cover locking screw. Before reinstallation, inspect and verify the integrity of the housing cover sealing gasket.

- Closing the Housing Cover

Firmly thread the housing cover onto the housing body. Ensure the locking screw is correctly installed. Confirm there is no visible gap between the housing cover and housing body.

3.1.2 Grounding

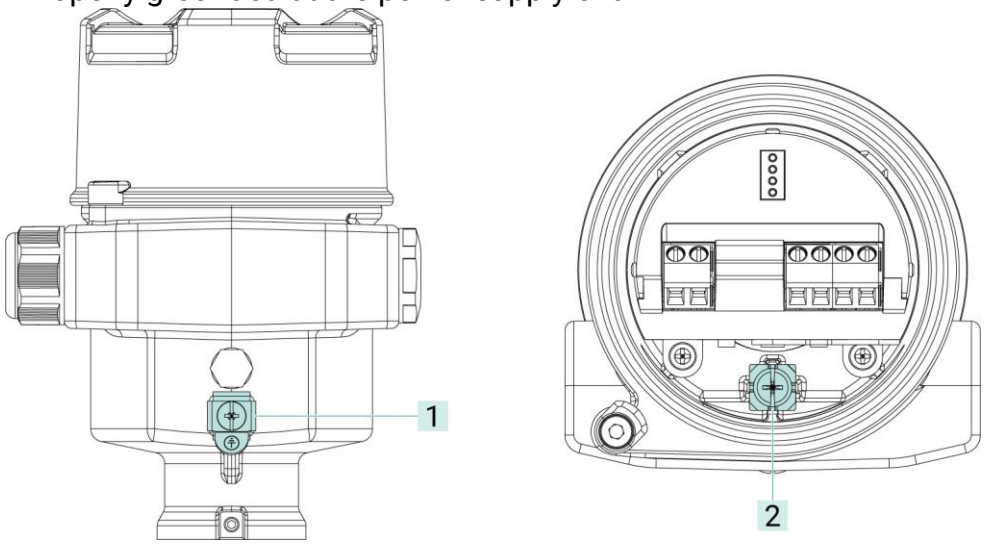
The grounding terminals for internal and external connections are shown in Figure 3-2.

To achieve optimal electromagnetic compatibility:

- Keep grounding cables as short as possible.
- Use shielded twisted-pair cables with a cross-section from 0.2 to 2.5 mm².

Cable shielding must meet these requirements:

- Trim neatly without contacting the device's housing.
- When routed through junction boxes, connect to the next shield segment.
- Properly grounded at the power supply end.



1: External grounding terminal

2: Internal grounding terminal (visible after removing housing cover and display module)

Figure 3-2 Grounding Terminals

Note

Grounding requires self-provided grounding clamps, and grounding wires must be equipped with terminals.

3.2 Device Connection

3.2.1 Power Input

Caution

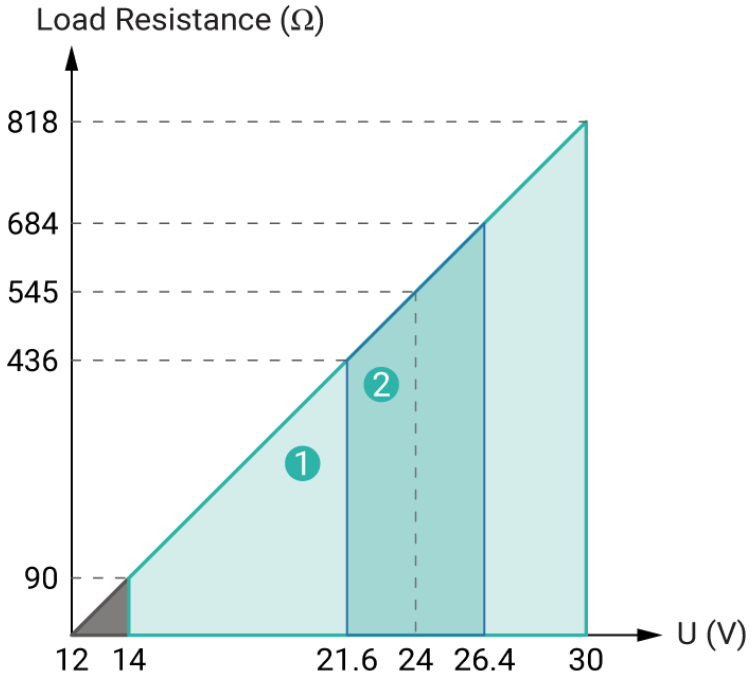
- Always follow relevant guidelines when performing electrical installation.
- The level meter is equipped with no power switch, and an overcurrent protection or a power cut-off device needs to be added to the system.
- The power supply unit must be tested to verify compliance with safety requirements and relevant protocol specifications.

Requirements for the power supply:

- DC power input (applicable to explosion-proof and non-explosion-proof equipment): 14 to 30 VDC.
- Nominal current: 4 to 20 mA.
- Verify that the operating voltage matches the specifications on the product label.

3.2.2 Load Resistance

The minimum starting voltage of the device is 14 VDC. A load must be applied above this voltage. The load capacity of the device is shown in Figure 3-3.



1: 14 to 30 VDC power supply

2: 21.6 to 26.4 VDC, power supply for intrinsic safety devices

Figure 3-3 Load Resistance

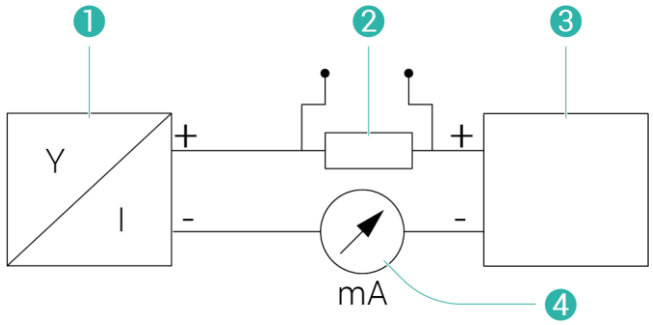
3.2.3 Cable Specifications

Standard Cable Cross-sectional Area	Power supply	0.5 to 2.5 mm^2
	Protective grounding or cable screen grounding	>1 mm^2
	External grounding terminal	0.5 to 4 mm^2
Cable Outer Diameter	Plastic plugs	6 to 12 mm
	Stainless steel plugs	7.5 to 12 mm

3.2.4 HART Connection (for 4~20 mA Output HART Models)

HART Device Connection Diagram

Refer to Figure 3-4 for the HART device connection diagram.



1: HART device
2: HART communication resistor
3: DC power supply
4: Multimeter or ammeter

Figure 3-4 HART Device Connection Diagram

Note

- When using a low-impedance power supply, a HART communication resistor (250 Ω) must be connected in series in the signal loop.
- When installing a 250 Ω communication resistor, the maximum voltage drop is 6 V.

HART Handheld Communicator Connection

The HART handheld communicator connection diagram is shown in Figure 3-5.

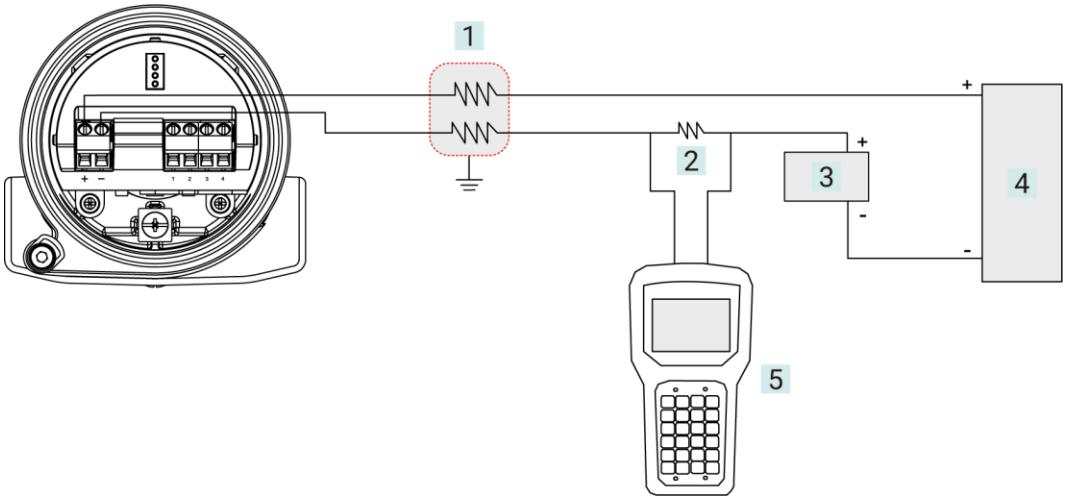
As shown in the figure, the HART handheld communicator can be connected in parallel at any point in the signal loop to operate the level meter.

The communicator communicates via an AC signal superimposed on the 4 to 20 mA output. This modulation does not change the average value and will not affect the measurement signal.

The resistance between the communicator and the power supply needs to be at least 250 ohms. If the resistance in standard installation is below 250 ohms, connect an additional resistor.

Note

The HART handheld communicator is not included in the package and needs to be purchased separately.



1: Load

2: Minimum resistance 250 Ω

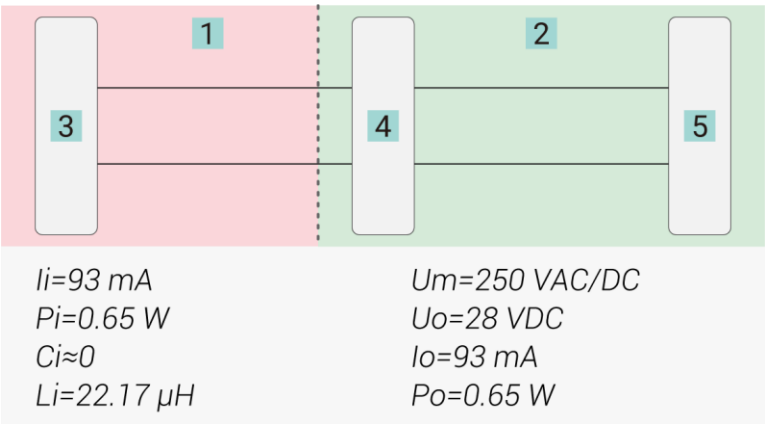
3: Signal receiver

4: Power supply

5: HART handheld communicator

Figure 3-5 HART Handheld Communicator Connection Diagram

3.2.5 Intrinsic Safe Protection System Wiring Diagram



1: Hazardous Area

2: Safe Area

3: Radar Level Meter

4: Safety Barrier

5: Secondary Instrument/Control Room Equipment

Co/Lo：Refer to Safety Barrier Manual

Figure 3-6 Intrinsic Safe Protection System Wiring Diagram

Note

The requirements for parameter matching of intrinsic safety system are as follows: Uo ≤ Ui; Io ≤ Ii; Po ≤ Pi; Cc ≤ Co−Ci; Lc ≤ Lo−Li.

3.2.6 Connection Terminal Assignment

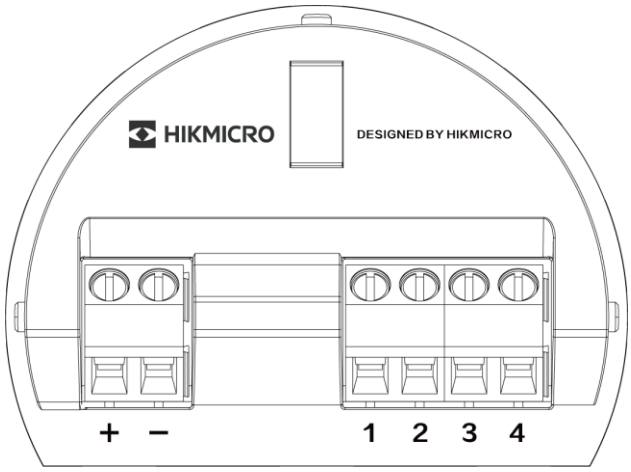


Figure 3-7 Connection Terminals

Connection Terminals		Description
Power/Signal	+	● Power supply input ● 4 to 20 mA signal output
	-	
Tank Side Display (R&D reserved)	1	VCC
	2	Display A
	3	Display B
	4	GND

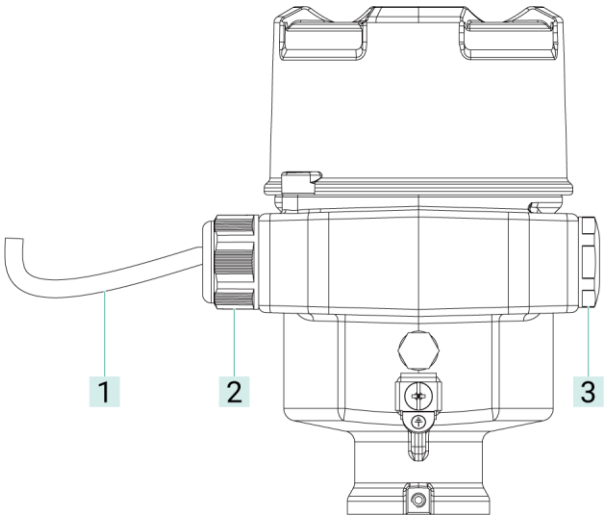
3.2.7 Device Connection

Cable Gland

The cable gland is located on the side of the device, as shown in Figure 3-8.

Note

The cable gland is M20×1.5-6g or NPT 1/2”, with a thread length of 16 mm. If used in explosive environments, certified explosion-proof cable entry devices must be installed.



1: Connection cable

2: Cable gland

3: Plug

Figure 3-8 Cable Connection

- Please use appropriate connection cables.
- When wiring, the cable must be bent downward to form a drainage loop.
- If the cable gland thread is NPT 1/2” and a stainless steel plug or cable gland is used, wrap 4 to 5 layers of PTFE tape around the threads in the direction opposite to tightening for entry sealing.

Cable Requirements

- The cross-sectional diameter of the cable core wire must be from 0.2 to 2.5 mm².
- The length of the non-bendable section of the tinned cable must be ≤15 mm.
- The minimum bending radius of the cable (at 25°C) is 25 mm.

Connection procedure

Caution

- The device may be live, posing risks of electric shock and/or explosion.
- When using the device in hazardous areas, ensure compliance with national and industry technical standards.
- The power supply voltage must match the specifications in product label.
- Before performing wiring operations, disconnect the power supply.

- If required, connect the grounding cable to the external grounding terminal of the device before connecting the power cables.
- Install a dedicated circuit breaker for the device.
- Cables must be fully insulated, with guaranteed power supply voltage and overvoltage protection ratings.
- Connected cables must exhibit excellent temperature stability, accounting for ambient temperature effects.
- Operate the device only when the housing cover is closed.
- Non-metallic components of the housing may accumulate static charges; avoid friction or impact to prevent ignition hazards. Contact with liquid media during installation or use is strictly prohibited. Clean only with a damp cloth.
- For housings containing PBT plastic, prevent ignition hazards caused by impact or friction.
- During maintenance, avoid friction or impact on non-metallic components of the housing and antenna to prevent ignition hazards.

Follow these steps to perform device connection.

Steps

1. Loosen the tamper-proof screw on the housing cover (2.5 mm hex key, torque: 0.7 N·m)

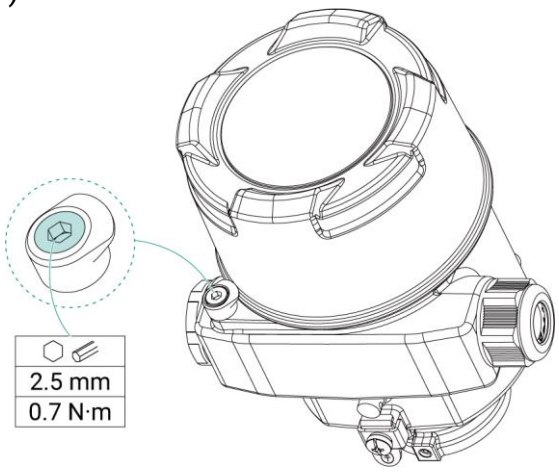


Figure 3-9 Loosen the Tamper-Proof Screw

2. Rotate counterclockwise (1) and remove the housing cover (2)

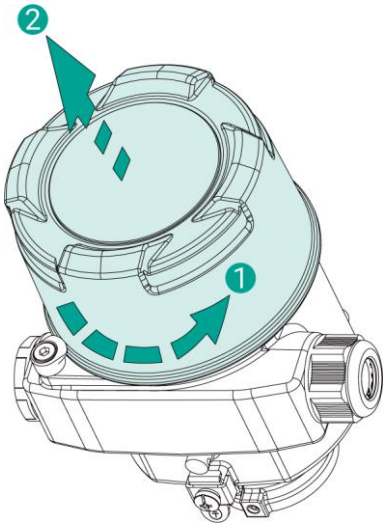


Figure 3-10 Remove the Housing Cover

3. Rotate counterclockwise and remove the display module

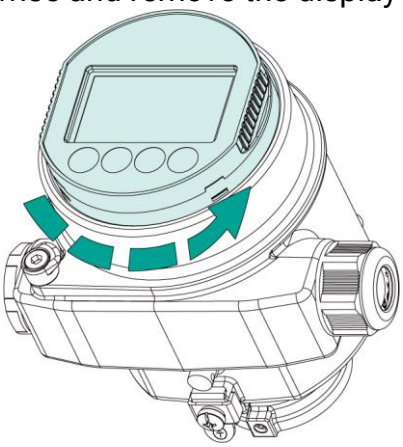


Figure 3-11 Remove the Display Module

4. Rotate counterclockwise to remove the cable gland nut, then insert the cable.

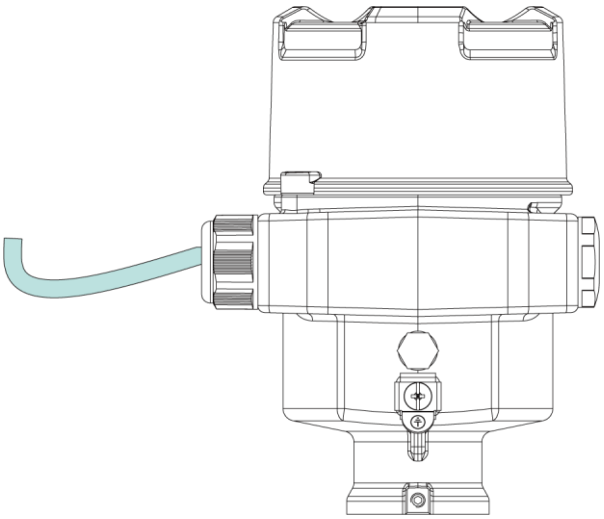


Figure 3-12 Insert the Cable Through the Cable Gland

Caution

During cable routing, the cables must be bent downward to form an effective drainage loop. Water must not be allowed to flow back along the cables into the equipment, to prevent short circuits or damage.

5. Connect the device terminals. For terminal definitions, refer to ***Connection Terminal Assignment***.
6. Tighten the cable gland nut to ensure airtightness and prevent leakage.
7. Reinstall the display module.

   Place the display module into the mounting position (1) and tighten it clockwise to secure (2).

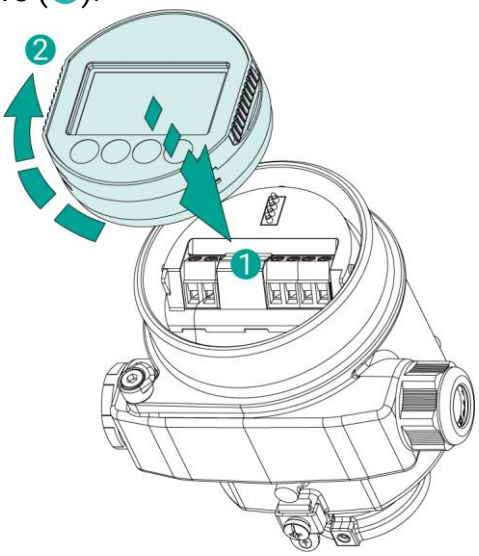


Figure 3-13 Reinstall the Display Module

The tightening torque for cable glands and plugs is shown in the table below.

Item	Recommended Tightening Torque
M20 Plastic Gland & Plug	2 N·m
M20 Stainless Steel Gland & Plug	2 N·m
NPT½ Plastic Gland & Plug	20 N·m
NPT½ Stainless Steel Gland & Plug	15 N·m

8. Reinstall the housing cover.

   Place the housing cover into the mounting position (1), tighten clockwise (2), and secure the tamper-proof screw of the housing cover (3).

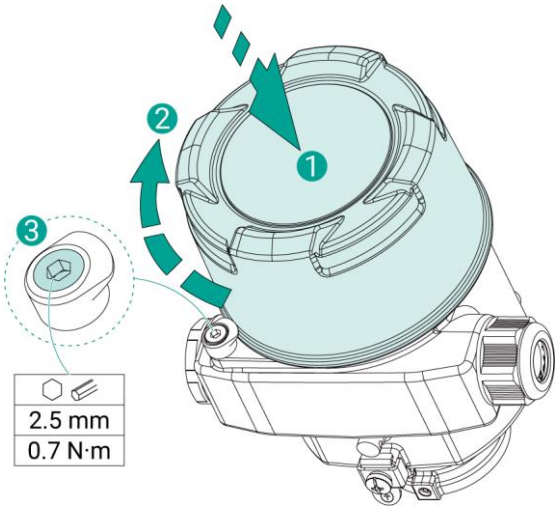


Figure 3-14 Reinstall the Housing Cover

3.2.8 Post-connection Inspection

After device connection, verify the following items:

- Cables and equipment are intact (visual inspection).
- Installed cables meet specifications.
- Stress relief is applied to all cables.
- All cable glands are properly installed, securely tightened, and verified leak-proof.
- Power supply voltage matches ratings in product label.
- Correct polarity and proper terminal connections.
- Housing cover is correctly tightened.
- Tamper-proof screw of housing cover is properly secured.

4 Quick Setup

4.1 Tank Level Configuration

Typical tank level configuration is shown in Figure 4-1.

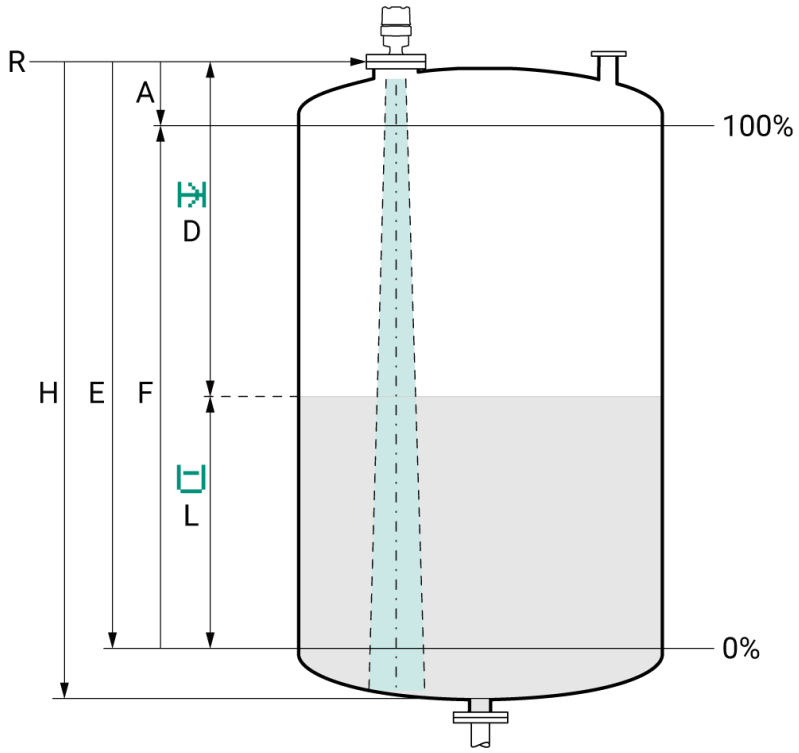


Figure 4-1 Tank Level Configuration

No.	Description
R	Reference plane
A	Maximum level of the material (100% material level)
E	Minimum level of the material (0% material level)
F	Measuring range
D	Distance to material surface
L	Level
H	Tank height

4.2 Device Interface

The operating interface will be displayed when the device is powered on. The device will periodically read the detection data and display it on the LCD screen. The interface is shown in Figure 4-2.

Note

The device interfaces in this document are for reference only. As the interface may be updated due to firmware upgrades, please refer to the actual device.

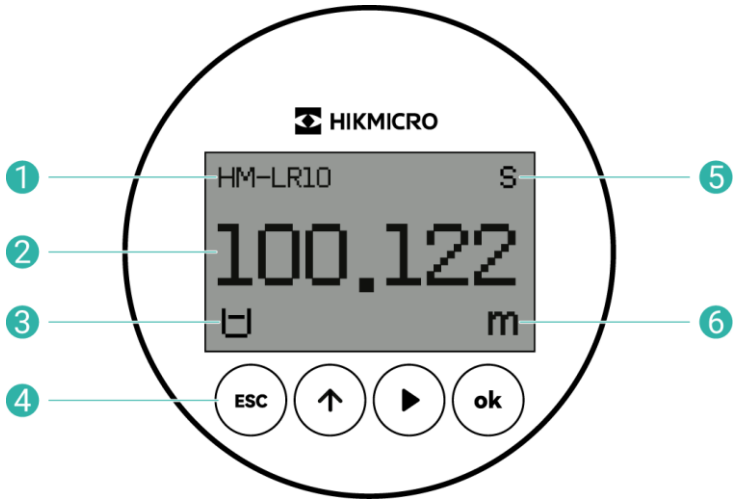


Figure 4-2 Device Interface

No.	Name	Description
1	Device Tag	Fixed device identifier. Used for marking and recognizing device.
2	Measurement Values	Display current measurement values such as level, distance, temperature, etc.
3	Measurement Icons	Level, Distance, Current Output, Temperature, Percentage, Measurement Reliability, Tilt Angle
4	Buttons	Descriptions of button functions are provided in 0.
5	Status Bar	F/S/M/C: Device diagnostic status. ● F: Device malfunction. Measured values are invalid. ● S: Non-compliant with specifications, e.g., not meeting the device technical requirements. ● M: Requires maintenance. Measured values remain valid.

		● C: Functional check (e.g. simulation/service mode). : Bluetooth connected. Refer to ***Bluetooth***. :Write protection enabled. Refer to ***Write Protection***.
6	Unit of Measurement Values	● Distance: mm/m/in/ft ● Temperature: °C/K/°F ● Current: mA ● Angle: ° (degree)

Table 4-1 Button Descriptions

Buttons	Function Descriptions
ESC	● Main interface: Switch between numerical or curve display. ● Menu mode: Press to return or exit, hold to return to the main interface.
↑	● Main Interface: Switch measurement values. ● Menu mode: Move up or set parameter value.
▶	● Main Interface: Switch display style (selectable: single value/dual values/single value + bar chart) ● Menu mode: Move down or switch setting digits.
ok	● Main Interface: Press to enter the menu. ● Menu mode: Confirm selection or save settings.

4.3 Device Menu

4.3.1 Menu Structure

Press **ok** in the main interface to enter the device menu. You can select **Quick Setup** and **All Settings** from the menu.

- Quick Setup: Quickly set the main measurement parameters.
- All Settings: Contains all functional parameters of the device.

Press ↑ or ▶ to switch menu items. Press **ok** to confirm the selection. Press **ESC** to return or exit.

4.3.2 Quick Setup Menu

The menu item levels are defined as below.

Level 1	Level 2	Level 3

Quick Setup

Medium
Water-soluble Liquid
Organic Liquid
Powdered Solid
Block Solid
Mortar

Application
Storage Tank
Mixing Storage Tank
Marine Storage
Mixing Tank
Mixing Container
Plastic Tank
Movable Plastic Tank
Open-air
Opening Container
Overflow Tank
Demo

Container Shape
Container Top
Flat
Conical
Arcuate
Container Bottom
Flat
Conical
Arcuate
Double-conical

Container Height

Max. Adjustment

Max. Percentage

Min. Adjustment

Min. Percentage

Note

For the detailed structure of All Settings menu, refer to ***Structure of All Settings Menu***.

Parameters in Quick Setup

Parameter	Description
Medium	Select the same or similar medium based on your using scenario.
Application	Select the same or similar application scenario according to actual needs.
Container Shape	Select the container shape. The top and bottom shapes of the container can be set separately.
Container Height	Set the overall height of the container.
Max. Adjustment	Set the distance to the maximum level of the material (100% material level).
Max. Percentage	Set the remaining material percentage corresponding to the maximum material level. Generally, keep the default 100%.

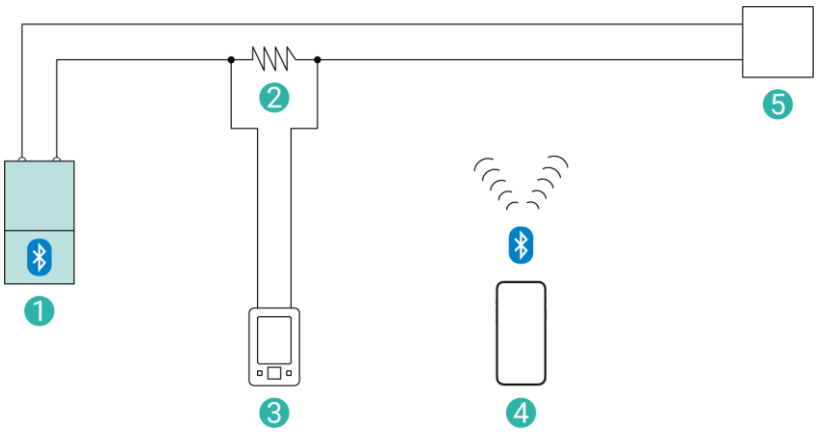
Min. Adjustment	Set the distance to the minimum level of the material (0% material level).
Min. Percentage	Set the remaining material percentage corresponding to the minimum material level. Generally, keep the default 0%.

Note

- For option-type parameters (e.g., Medium), press ↑ or ▶ to switch menu items, and press **ok** to confirm.
- For numerical parameters (e.g., Container Height), press ↑ to adjust the value, press ▶ to switch digits, and press **ok** to confirm.

4.4 Device Interconnection

The level meter supports interconnection with various devices, such as a HART handheld communicator or a smartphone, as shown in Figure 4-3.



1: Level Meter
2: Communication Resistor
3: HART Handheld Communicator
4: Smartphone
5: Power Supply

Figure 4-3 Device Interconnection

- HART Handheld Communicator

Connect the HART handheld communicator via the 4~20 mA output. For details, refer to ***HART Connection (for 4~20 mA Output HART Models)***.

- Smartphone

Connect the device to a smartphone via Bluetooth for device operation. Search for the App HIKMICRO Meter and install it on your phone. Before

the connection, ensure Bluetooth is enabled on the device. Refer to ***Bluetooth***.

5 Device Settings

5.1 Structure of All Settings Menu

The menu item levels are defined as below.

Level 1	Level 2	Level 3	Level 4

All Setttings

Commissioning

Device Tag

Unit

Distance Unit

mm/m/in/ft

Temperature Unit

℃/K/℉

Application

Medium

Water-soluble Liquid

Organic Liquid

Powdered Solid

Block Solid

Mortar

Application

Storage Tank

Mixing Storage Tank

Marine Storage

Mixing Tank

Mixing Container

Plastic Tank

Movable Plastic Tank

Open-air

Opening Container

Overflow Tank

Demo

Container Shape

Container Top

Container Bottom

Container Height

Adjustment

Max. Adjustment

Max. Percentage

Min. Adjustment

Min. Percentage

Current Output

Current Curve

4-20mA

20-4mA

Failure Behavior

≤3.6mA

≥22mA

Last Measurement

Current Range

4-20mA

3.8-20.5mA

Output Value

Level

Distance

Dead Zone

False Echo Supp.

False Echo Curve

False Echo Supp.

Damping

Current Calib.

4mA Calibration

20mA Calibration

Write Protection

Copy Parameters

Import Data

Export Data

Display

Language

Display Format

1 Value
2 Values
1 Value & Bar Chart

Display Value 1/2

Level
Distance
Percentage
Meas. Reliability
Electronics Temp.
Current Output

Value 1/2 Decimal Places

Auto
#
#.#
#.##
#.###

Backlight

Enable
Disable

Diagnostics

Echo Curve

24h History Curve

Level
Percentage
Distance
Meas. Reliability
Current Output
Electronics Temp.

Dev Status

Dev Status

Meas. Values

Percentage
Level
Meas. Reliability
Current Output
Distance
Electronics Temp.

Power Supply

Current Voltage
Min. Voltage
Run@Min. Voltage
Max. Voltage
Run@Max. Voltage
Rst Extreme Value

Temp. Sensor

Current Temp.
Min. Elect. Temp.
Max. Elect. Temp.
Rst Extreme Value

Meas. Reliability

Current Value
Min. Reliability
Max. Reliability
Rst Extreme Value

Simulation

Simulation Mode

Current Output
Level
Distance
Percentage
Disable

Diagnostics

Self-Test
Full Diagnosis
CCU
Storage Unit
Meas. & Sensing
Power Supply
Output & Alarm
UI Module

Data Log
Save Diag. Data
Start
Stop

Additional

Date/Time
Date
Time

HART Address

Bluetooth
Bluetooth
Enable
Disable

Reset Password

Reset
Factory Reset
Basic Reset

More Settings
Tank Size
Large
Medium
Small
Custom

Surface Fluct.
Strong
Medium
Weak
Custom

About

Device Info
Device Model
Device Tag
SN
Last Configuration
Factory Calib.
Version
Manufacturer

Device Features
Certifications
PC Spec
Process Temp.
PC Material
Electronics
Housing
Display Unit
Electrical Conn
Antenna
Core Module SN
Housing SN

5.2 Commissioning

Follow the steps below to enter the **Commissioning** menu.

Steps

1. In the main interface, press **ok** to enter the menu.
2. Press ↑ or ▶ to select **All Settings**, and press **ok** to confirm.
3. Press ↑ or ▶ to select **Commissioning**, and press **ok** to confirm.

Note

- For option-type parameters (e.g., Medium), press ↑ or ▶ to switch menu items, and press **ok** to confirm.
- For numerical parameters (e.g., Container Height), press ↑ to adjust the value, press ▶ to switch digits, and press **ok** to confirm.

5.2.1 Device Tag

This function is used to view the device tag.

Select **All Settings > Commissioning > Device Tag** in the menu.

5.2.2 Unit

This function is used to adjust the distance and temperature units displayed on the device.

Select **All Settings > Commissioning > Unit** in the menu.

- Selectable distance units: mm/m/in/ft
- Selectable temperature units: °C/°F/K

5.2.3 Application

Select **All Settings > Commissioning > Application** in the menu. The following parameters can be set.

Parameter	Description
Medium	Select the same or similar medium based on your using scenario.
Application	Select the same or similar application scenario according to actual needs.
Container Shape	Select the container shape. The top and bottom shapes of the container can be set separately.

Container Height	Set the overall height of the container.

5.2.4 Adjustment

Select **All Settings > Commissioning > Adjustment** in the menu. The following parameters can be set.

Parameter	Description
Max. Adjustment	Set the distance to the maximum level of the material (100% material level).
Max. Percentage	Set the remaining material percentage corresponding to the maximum material level. Generally, keep the default 100%.
Min. Adjustment	Set the distance to the minimum level of the material (0% material level).
Min. Percentage	Set the remaining material percentage corresponding to the minimum material level. Generally, keep the default 0%.

5.2.5 Current Output

Select **All Settings > Commissioning > Current Output** in the menu, and set the following parameters.

Parameter	Description
Current Curve	● 4~20 mA: Outputs 4 mA at the min. material level. ● 20~4 mA: Outputs 20 mA at the min. material level. Typically set to 4~20 mA.
Failure Behavior	Typically set to Last Measured Value. The current default value is 3.55 mA.
Current Range	Typically set to 4~20 mA.
Output Value	Select which measured variable's value is output via the respective current output. It is generally set to Level.

5.2.6 Dead Zone

This function is used to adjust the measurement dead zone (blind zone) of the device. Select **All Settings > Commissioning > Dead Zone** in the menu.

The dead zone refers to the distance range where the device cannot effectively detect or accurately respond to the material level. Setting the dead zone actively shields this invalid signal area, allowing the level meter

to process only valid echoes while avoiding physical impact or signal interference that could damage the device.

5.2.7 False Echo Suppression

Select **All Settings > Commissioning > False Echo Supp.** in the menu.

This function can be used to update the background curve for the current measurement scenario or suppress false echoes from known obstacles in the container, ensuring the signals of the obstacles are enveloped by the background curve and not detected.

Note

- It is recommended to set False Echo Suppression when the tank is empty.
- If there is no empty tank on-site for setup, adjust the setting by examining the material level diagrams under static and feeding conditions. A mobile App is recommended to precisely adjust the distance for suppression threshold.

Steps

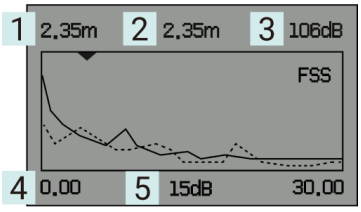
1. When setting false echo suppression for the first time, select **False Echo Supp.** and press **ok** to add new settings.
2. Set the false echo **Distance** and **Gain**. Press ↑ to adjust the value, press ▶ to switch digits, and briefly press **ok** to confirm.

Note

- **Distance**: The false echo suppression distance should be greater than the distance caused by interference echo but should not exceed the starting position of the authentic signal made by the measured material.
- **Gain**: Set based on the stability of the false echo amplitude. When the amplitude is relatively stable, it is generally set to 3 dB. If the amplitude fluctuates significantly, a higher value is recommended.
- After setting false echo suppression, if the RF parameters or cumulative measurement frames change, the echo curve amplitude will also change. The previously set false echo suppression amplitude may no longer apply. In this case, adjust the gain to change the amplitude.

3. Update or delete false echo suppression settings. Select **Update** or **Delete** from the menu.

After setting false echo suppression, select **False Echo Curve** to view the signal waveform. The solid line represents the echo curve, and the dashed line represents the false echo curve.



1: Output measurement value
2: Real-time measurement value
3: Echo strength
4: Measuring range
5: Signal-to-noise ratio

Figure 5-1 False Echo Suppression

5.2.8 Damping

Select **All Settings > Commissioning > Damping** in the menu.

- Damping time is primarily used to smooth measurement fluctuations, enhance measurement stability, and reduce the impact of environmental interference.
- Damping time directly affects the output response. A larger setting value results in smoother measurement changes.
- The default value is 6 seconds, which is generally maintained within a 10m measurement range. For other ranges, it can be adjusted by multiplying the default value by a factor.

5.2.9 Current Calibration

This function is used to calibrate the 4 mA and 20 mA output current of the device.

Select **All Settings > Commissioning > Current Calib.** in the menu.

5.2.10 Write Protection

Enable this function to require a passcode when setting device parameters, preventing accidental modifications.

Select **All Settings > Commissioning > Write Protection** in the menu.

Enable Write Protection

When write protection is disabled, select **Enable**, set a passcode, and press **ok** to confirm.

When write protection is enabled, the status bar displays the icon . And passcode is required to set device parameters.

Disable Write Protection

When write protection is enabled, select **Disable**, enter the passcode, and press **ok** to confirm.

Change Passcode

When write protection is enabled, select **Change Passcode**, enter the original passcode, set a new passcode, and press **ok** to confirm.

5.2.11 Copy Parameters

Use the display module to copy parameters between different level meters. Select **All Settings > Commissioning > Copy Parameters** in the menu.

This function enables quick parameter copying between devices, suitable for device replacement, batch commissioning, or parameter standardization.

Import Data

Install the display module of another device onto the current device. Select **Import Data** to import parameters from the display module into the current device.

Note

During data import, the device performs compatibility check on the imported parameters, including device model and parameter version. If the compatibility check fails, no data will be imported. If successful, the device operates based on the new parameters.

Export Data

Select **Export Data** to copy the data to the display module of the current device. Then the display module can be used to copy parameters to other level meters of the same model.

5.3 Display

Select **All Settings > Display** in the menu. Adjust the display settings of the device.

Parameter	Description
Language	Only English is supported by the device.
Display Format	Select to display 1 Value, 2 Values, or 1 Value & Bar Chart.
Display Value 1/2	Select the type of measurement value to be displayed for Display Value 1/2. Options: Level, Distance, Percentage, Meas. Reliability, Electronics Temp., Current Output.
Value 1/2 Decimal Places	Select the number of decimal places to be displayed for Display Value 1/2. Options: Auto or 0 to 3 decimal places.
Backlight	Select to Enable or Disable the display backlight.

5.4 Diagnostics

This function can be used for device diagnosis to assist in troubleshooting device faults. It includes setting and checking device measurement curves, checking device status, performing simulation, and device self-tests, etc.

Select **All Settings > Diagnostics** in the menu.

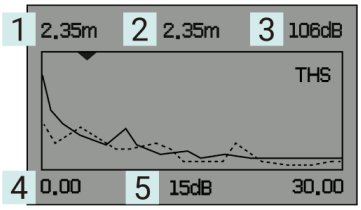
5.4.1 Echo Curve

Select **All Settings > Diagnostics > Echo Curve** in the menu.

This function is used to view the curves of the device measurement data, including Echo Curve, Threshold Curve, and False Echo Curve.

- **Echo Curve**: A distance-amplitude curve generated from the radar measurement data returned by the level meter. A higher amplitude indicates a greater possibility of a target at that position.
- **Threshold Curve**: Generated in real-time by the device's measurement algorithm based on the echo curve. If the echo curve amplitude exceeds the threshold curve at a position, that position may be the target location.
- **False Echo Curve**: Generated based on the false echo distance (interference target distance) set by the user. When the echo curve

amplitude exceeds the threshold curve, it can cause interference with target measurement and judgment. False echo suppression can shield the interfering echo and eliminate such interference.



1: Output measurement value

2: Real-time measurement value

3: Echo strength

4: Measuring range

5: Signal-to-noise ratio

Figure 5-2 Measurement Data Curve Display

On the curve display interface:

- Press ▶ to switch the displayed curves. Such as Echo Curve + Threshold Curve, or Echo Curve + False Echo Curve.
- Press **ok** to select the echo curve zoom ratio to view more details. After zooming, press ↑ or ▶ to pan the curve left or right.

5.4.2 24-Hour History Curve

Select **All Settings > Diagnostics > 24h History Curve** in the menu.

The 24h History Curve stores historical measurement data from the past 24 hours. You can select to display curves for Level, Percentage, Distance, Measurement Reliability, Current Output, Electronics Temperature, etc., to assist in device diagnosis.

On the curve display interface:

- Press ↑ or ▶ pan the curve left or right and view data for individual data points.
- Press **ok** to select the curve zoom ratio to view more details.

5.4.3 Device Status

Select **All Settings > Diagnostics > Dev Status** in the menu. You can check the device operation and measurement status.

Parameter	Description
Dev Status	View the current S/C/M/F status of the device. Press ↑ or ▶ to switch pages.
Meas. Values	View the current measurement value of the device. Selectable: Percentage, Level, Meas. Reliability, Current Output, Distance, ElectronicsTemp.
Power Supply	View the input power supply status of the device. Including the current voltage, the maximum and minimum voltages. Also the running time at the max./min. voltage.
Temp. Sensor	View the temperature of the device's electronic components. Including the current temperature, the maximum and minimum temperatures.
Meas. Reliability	View the measurement reliability data of the device. Including the current value, the maximum and minimum values.

5.4.4 Simulation

Select **All Settings > Diagnostics > Simulation** in the menu.

This function is used to set the simulation output of device measurement values to assist in troubleshooting device faults. You can simulate measurement values like Current Output, Level, Distance, and Percentage.

Current Output Simulation

Steps

1. In the Simulation menu, press ↑ or ▶ to select **Current Output**, and press **ok** to confirm.
2. Press ↑ or ▶ to select **Current Output** again, and press **ok** to confirm.
3. Press ↑ or ▶ to select the desired current value for simulation, and press **ok** to confirm.
4. (Optional) Select **Custom** for **Current Output** to define a custom simulation value.
5. Check the current output of the device to confirm if the correct simulation value is being output.

Level/Distance/Percentage Simulation

Steps

1. In the Simulation menu, press ↑ or ▶ to select **Level**, **Distance**, or **Percentage**, and press **ok** to confirm.
2. Set the simulation value. Press ↑ to adjust the value, press ▶ to switch digits, and press **ok** to confirm.
3. Check the Level/Distance/Percentage output of the device to confirm if the correct simulation value is being output.

5.4.5 Self-Test

Select **All Settings > Diagnostics > Self-Test** in the menu.

This function performs functional self-tests on various device modules to assist in device diagnosis.

The device self-test allows selection of either a full diagnosis or individual functional self-tests for modules/units. Including the CCU (Central Control Unit), Storage Unit, Measurement and Sensing Unit, Power Supply, Output & Alarm Module, and UI Module.

5.4.6 Data Log

Select **All Settings > Diagnostics > Self-Test > Save Diag. Data** in the menu.

Select **Start** to enable this function to save device diagnostic data. If you need to disable it, select **Stop**.

5.4.7 Diagnostic Event List

Provide the diagnostic code shown on the screen when contacting a service engineer.

Diag. Code	Description	Repair Guidance
Measurement and Sensing		
001	Sensor Startup Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
002	Sensor Communication Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module

007	Sensor Data Acquisition Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
009	Sensor Data Processing Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
818	Measurement Sensor Error	1. Restart the device 2. Contact service engineer 3. Replace electronic module
819	Echo Signal Limit Exceeded	1. Check measurement process conditions 2. Check application parameters
820	Echo Signal Abnormal	1. Restart the device 2. Contact service engineer 3. Replace electronic module
821	Echo Noise Abnormal	1. Check measurement process conditions 2. Contact service engineer 3. Replace electronic module
822	Echo Data Abnormal	1. Restart the device 2. Contact service engineer 3. Replace electronic module
823	No Valid Echo Signal	1. Check measurement process conditions 2. Check application parameters 3. Contact service engineer 4. Replace electronic module
824	Echo Signal Jump	1. Check measurement process conditions 2. Check application parameters
Storage		
205	Storage Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
210	Critical Storage Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
403	Critical Configuration Retrieval Error	1. Restart the device 2. Contact service engineer 3. Replace electronic module

404	Configuration Retrieval Error	1. Restart the device 2. Contact service engineer 3. Replace electronic module
407	Factory Storage Configuration Failure	1. Restart the device 2. Contact service engineer 3. Check factory configuration 4. Import factory configuration file 5. Replace electronic module
408	Factory Angle Data Failure	1. Restart the device 2. Contact service engineer 3. Check factory configuration 4. Import factory configuration file 5. Replace electronic module
Power Supply		
800	Power Voltage Out of Range	1. Check port voltage 2. Adjust port voltage
815	Transmitter Maintenance Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
UI Module		
803	Transmitter Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
Central Control		
203	Transmitter Pre-alarm Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
204	Auxiliary Function Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
202	Temperature Sensor Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
208	Ambient Temperature Limit Exceeded	1. Check ambient temperature 2. Check process temperature
206	Date/Time Failure	1. Restart the device 2. Contact service engineer 3. Replace electronic module
Configuration Diagnosis		
400	Simulation Mode Enabled	Disable Simulation Mode

5.5 Additional Settings

Select **All Settings > Additional** in the menu. You can configure functions including date/time, HART address, Bluetooth, device reset, etc.

5.5.1 Date/Time

Select **All Settings > Additional > Date/Time** in the menu. You can set the date and time of the device.

Steps

1. In Date/Time settings, press ↑ or ▶ to select **Date** or **Time**, and press **ok** to confirm.
2. Press ↑ to adjust the value, press ▶ to switch digits, and press **ok** to confirm.

5.5.2 HART Address

Select **All Settings > Additional > HART Address** in the menu. You can set the HART address of the device. 64 addresses (0 to 63) are available.

5.5.3 Bluetooth

Select **All Settings > Additional > Bluetooth** in the menu. You can enable or disable Bluetooth, or reset Bluetooth password of the device.

Enable Bluetooth

Steps

1. Select **Bluetooth** in the menu and press **ok** to confirm.
2. Press ↑ or ▶ to select **Enable**, and press **ok** to confirm. The status bar displays the Bluetooth icon when enabled.

Reset Bluetooth Password

Steps

1. In the Bluetooth menu, select **Reset Password** and press **ok** to confirm.
2. Press **ok** again to reset the Bluetooth password.

Note

- HIKMICRO Meter App will not be able to search for or connect to the device if Bluetooth is disabled on the device.
- If the Bluetooth password is reset on the device, reconfigure the password on HIKMICRO Meter App for activation.

5.5.4 Reset

Select **All Settings > Additional > Reset** in the menu. You can perform Factory Reset or Basic Reset for the device.

- **Factory Reset**: Reset all parameters to the factory defaults.
- **Basic Reset**: Retain HART address and Bluetooth password settings and reset the other parameters to the factory defaults.

5.5.5 More Settings

Select **All Settings > Additional > More Settings** in the menu. Tank size and material surface fluctuation parameter can be set.

- **Tank Size**: Select a preset tank size or enter a custom value.
- **Surface Fluct.**: Set the intensity of material surface fluctuation or enter a custom value.

5.6 About

Select **All Settings > About** in the menu. You can check the basic information and component features of the device.

- **Device Info**: Includes Device Model, Device Tag, SN (serial number), Version, etc.
- **Device Features**: Includes device Certifications, Process Connection, Electronic Components, Housing, Display Unit, Electrical Connection, Antenna, Core Module SN, etc.

6 Maintenance

6.1 Device Inspection

Regularly check the output signals of the device according to the operating instructions, based on the on-site working conditions of the device. Ensure the device is functioning properly.

6.2 Device Repair

Safety regulations must be followed throughout the entire usage period. The device should only be opened for cleaning, inspection, repair, or replacement of failed components.

Level meters can only be repaired by the manufacturer. Fault devices should be returned to the manufacturer for repair, and if possible, provide a description of the fault and its cause.

Legal Information

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About this Manual

The Manual includes instructions for using and managing the Product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version of this Manual at the HIKMICRO website (www.hikmicrotech.com).

Please use this Manual with the guidance and assistance of professionals trained in supporting the Product.

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Other trademarks and logos mentioned are the properties of their respective owners.

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IN THE EVENT OF ANY CONFLICTS BETWEEN THIS MANUAL AND THE APPLICABLE LAW, THE LATTER PREVAILS.

Regulatory Information

These clauses apply only to the products bearing the corresponding mark or information.

EU Conformity Statement



This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the Directive 2014/30/EU (EMCD), Directive 2014/35/EU (LVD), Directive 2011/65/EU (RoHS), Directive 2014/53/EU.

Hereby, Hangzhou Microimage Intelligent Control Technology Co., Ltd. declares that this device (refer to the label) is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address:
https://www.hikmicrotech.com/en/support/download-center/declaration-of-conformity/

Frequency Bands and Power (for CE)

The frequency bands and transmitting power (radiated and/or conducted) nominal limits applicable to the following radio equipment are as follows:
BLE (2402-2480 MHz): 3.08 dBm (Max EIRP)
Radar (76-81 GHz): 33.74 dBm (Max EIRP)

RF Exposure Information

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with anyother antenna or transmitter.

For the device without a supplied power adapter, use the power adapter provided by a qualified manufacturer. Refer to the product specification for detailed power requirements.

For the device without a supplied battery, use the battery provided by a qualified manufacturer. Refer to the product specification for detailed battery requirements.

Warning: This is a class A product. In a domestic environment this product may cause radio interference, in which case, the user may be required to take adequate measures.



Directive 2012/19/EU (WEEE Directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info



Regulation (EU) 2023/1542 (Battery Regulation): This product contains a battery and it is in conformity with the Regulation (EU) 2023/1542. The battery cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), or lead (Pb). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info.

Explosion Proof

ATEX Flameproof Enclosure

Certificate: TÜV 25 ATEX 9254 X

Standards: EN IEC 60079-0: 2018, EN 60079-31: 2014, EN IEC 60079-31: 2024

Markings: Ⓔx II 1 D Ex ta IIIC T_{200}**℃ Da

Special Conditions for Safe Use

1. Under explosive dust circumstances, the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with damp cloth.

2. The equipment shall be incorporate with Ex certified cable glands or blanking plugs in accordance with EN 60079-14.

3. The equipment must be powered by safety barriers. The output parameter of safety barrier must be lower than Po=650mW.

ATEX Intrinsic Safety

Certificate: TÜV 25 ATEX 9253 X

Standards: EN IEC 60079-0: 2018, EN 60079-11: 2012

Markings:  II 1 G Ex ia IIC T6...T1 Ga, II 1 D Ex ia IIIC T_{200}**°C Da

Electrical Data: Ui=28V, Ii=93mA, Pi=650mW, Ci=negligible, Li=22.17uH.

Special Conditions for Safe Use

1. Under explosive dust circumstances, the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with damp cloth.

2. The transmitter enclosure of equipment is manufactured from aluminum. In rare cases, ignition sources due to impact and friction sparks could occur. When the equipment is intended to be used as EPL Ga, this shall be considered during installation.

3. The equipment shall be incorporated with Ex certified cable glands or blanking plugs in accordance with IEC 60079-14.

IECEx Flameproof Enclosure

Certificate: IECEx TUR 25.0014X

Standards: IEC 60079-0: 2017, IEC 60079-31: 2022

Markings: Ex ta IIIC T_{200}**°C Da

Special Conditions for Safe Use

1. Under explosive dust circumstances, the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with damp cloth.

2. The equipment shall be incorporate with Ex certified cable glands or blanking plugs in accordance with IEC 60079-14.

3. The equipment must be powered by safety barriers. The output parameter of safety barrier must be lower than Po=650mW.

IECEx Intrinsic Safety

Certificate: IECEx TUR 25.0013X

Standards: IEC 60079-0: 2017, IEC 60079-11: 2023

Markings: Ex ia IIC T6...T1 Ga, Ex ia IIIC T_{200} **°C Da

Electrical Data: Ui=28V, Ii=93mA, Pi=650mW, Ci=negligible, Li=22.17uH.

Special Conditions for Safe Use

1. Under explosive dust circumstances, the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with damp cloth.

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3. The equipment shall be incorporated with Ex certified cable glands or blanking plugs in accordance with IEC 60079-14.

INFORMATIONEN FÜR PRIVATE HAUSHALTE

1. Getrennte Erfassung von Altgeräten:

Elektro- und Elektronikgeräte, die zu Abfall geworden sind, werden als Altgeräte bezeichnet. Besitzer von Altgeräten haben diese einer vom unsortierten Siedlungsabfall getrennten Erfassung zuzuführen. Altgeräte gehören insbesondere nicht in den Hausmüll, sondern in spezielle Sammel- und Rückgabesysteme.

2. Batterien und Akkus sowie Lampen:

Besitzer von Altgeräten haben Altbatterien und Altakkumulatoren, die nicht vom Altgerät umschlossen sind, die zerstörungsfrei aus dem Altgerät entnommen werden können, im Regelfall vor der Abgabe an einer Erfassungsstelle vom Altgerät zu trennen. Dies gilt nicht, soweit Altgeräte einer Vorbereitung zur Wiederverwendung unter Beteiligung eines öffentlich-rechtlichen Entsorgungsträgers zugeführt werden.

3. Möglichkeiten der Rückgabe von Altgeräten:

Besitzer von Altgeräten aus privaten Haushalten können diese bei den Sammelstellen der öffentlich-rechtlichen Entsorgungsträger oder bei den von Herstellern oder Vertreibern im Sinne des ElektroG eingerichteten Rücknahmestellen unentgeltlich abgeben. Rücknahmepflichtig sind Geschäfte mit einer Verkaufsfläche von mindestens 400 m² für Elektro- und Elektronikgeräte sowie diejenigen Lebensmittelgeschäfte mit einer Gesamtverkaufsfläche von mindestens 800 m², die mehrmals pro Jahr

oder dauerhaft Elektro- und Elektronikgeräte anbieten und auf dem Markt bereitstellen. Dies gilt auch bei Vertrieb unter Verwendung von Fernkommunikationsmitteln, wenn die Lager- und Versandflächen für Elektro- und Elektronikgeräte mindestens 400 m² betragen oder die gesamten Lager- und Versandflächen mindestens 800 m² betragen. Vertreiber haben die Rücknahme grundsätzlich durch geeignete Rückgabemöglichkeiten in zumutbarer Entfernung zum jeweiligen Endnutzer zu gewährleisten. Die Möglichkeit der unentgeltlichen Rückgabe eines Altgerätes besteht bei rücknahmepflichtigen Vertreibern unter anderem dann, wenn ein neues gleichartiges Gerät, das im Wesentlichen die gleichen Funktionen erfüllt, an einen Endnutzer abgegeben wird.

4. Datenschutz-Hinweis:

Altgeräte enthalten häufig sensible personenbezogene Daten. Dies gilt insbesondere für Geräte der Informations- und Telekommunikationstechnik wie Computer und Smartphones. Bitte beachten Sie in Ihrem eigenen Interesse, dass für die Löschung der Daten auf den zu entsorgenden Altgeräten jeder Endnutzer selbst verantwortlich ist.

5. Bedeutung des Symbols „durchgestrichene Mülltonne“:



Das auf Elektro- und Elektronikgeräten regelmäßig abgebildete Symbol einer durchgestrichenen Mülltonne weist darauf hin, dass das jeweilige Gerät am Ende seiner Lebensdauer getrennt vom unsortierten Siedlungsabfall zu erfassen ist.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 **Note**	Provides additional information to emphasize or supplement important points of the main text.
 **Caution**	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 **Danger**	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.

Safety Instruction

These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss. Please read all the safety information carefully before using.

Danger

- During the installation and use of the equipment, strictly adhere to all electrical safety regulations of the country/region.
- Use power adapters provided by reputable manufacturers. Refer to the product specifications for specific requirements of the power adapter. It is recommended to equip each device with an independent power adapter (exceeding the adapter's load capacity may generate excessive heat or cause a fire).
- When performing wiring, disassembly, or other operations, disconnect the power supply of the device; do not operate with power on.
- To avoid heat accumulation, ensure that the area around the device is well ventilated.
- Do not touch the product's heat dissipation components directly to avoid burns.
- When installing the product on walls or supports, secure it firmly.
- Incorporate easily accessible power-off devices into the building's electrical installation.
- The lightning protection and grounding design for outdoor installations and wiring must be integrated with the building's lightning protection requirements and comply with relevant national or regional standards and industry standards.
- Caution! Only disassemble the instrument under normal pressure conditions.
- When using the device in hazardous environments, installation, use, and maintenance must comply with both the user manual and relevant national standards.
- When installing this equipment in environments with explosion hazards, strictly adhere to applicable local, national, and international standards, guidelines, and regulations. Check the product certification for any restrictions related to safe installation.
- In explosive gas environments, ensure that the instrument is installed according to intrinsically safe or non-flammable field wiring practices before connecting a handheld communicator.
- In explosion-proof or flameproof installations (non-intrinsic safety explosion-proof), do not remove the instrument cover while the device

is powered.

- The instrument is powered by an external power source, and the power supply circuit must meet the energy-limited circuit requirements specified by relevant standards. Be aware of potential high voltage in the circuit.
- Process leaks can cause injury or death. To avoid process leaks, use only O-rings that are compatible with the corresponding flange joints to ensure proper sealing.

Caution

- The radar sensors are high-tech and specialized instruments. Please read the user manual and related documents carefully before use.
- Read the specifications of the device and do not use the device beyond its rated capacities.
- When using the device in special environments (such as mountaintops, towers, forests, etc.), install a lightning arrester at the equipment's incoming line end.
- The plug or socket of the equipment is a device for disconnecting power. Do not obstruct it to facilitate plugging and unplugging.
- After the circuit breaker is disconnected, the exposed components (such as screws) on the external incoming line side are still live. Do not touch them.
- Ensure that the operating environment of the equipment meets the product parameter requirements.
- In areas with strong thunderstorms or high induced voltage (such as high-voltage substations), additional high-power lightning protection devices and lightning rods must be installed.
- Store the equipment in a dry, non-corrosive gas environment. Avoid storing it in locations with direct sunlight, poor ventilation, or near heat sources (such as heaters, radiators, etc.).
- Connecting the product to the Internet may cause risks, including but not limited to potential network attacks, hacker attacks, and virus infections. Our company will not be responsible for any product malfunctions, information leaks, or other issues caused by these risks, but we will provide timely technical support related to the product.
- If the device is connected to the Internet, it may face cybersecurity issues. Please enhance the protection of your personal information and data security. If you discover potential network security risks, please contact us promptly.
- Please understand that you are responsible for reasonably configuring all passwords and other product security settings and for properly managing your username and password.

- The installation, commissioning, and maintenance of the radar sensor should be carried out by professional engineers or technicians. Before installation, read the product manual carefully, understand, and comply with all the regulations therein.

Installation Requirements

When used in scenarios without a top cover, or in regular industrial storage and dynamic processes, such as open channels, ore piles, mixing tanks, etc., the device should meet the following installation requirements:

(1) The devices shall always be installed at permanent fixed positions.

(2) A strict (stable) orientation of device antennas under any operating conditions shall be ensured by appropriate installation.

(3) The devices are intended to be installed in industrial environments by professionally trained personnel.

(4) From 0 km up to 4 km radius around any radio astronomy station, installation of devices operating in 75 GHz to 85 GHz bands shall be prohibited unless a special authorization has been provided by the responsible national administration.

(5) From 4 to 40 km around any radio astronomy station, the antenna height of installation of devices operating in 75 GHz to 85 GHz bands shall not exceed 15 m.

When used in high temperature and high pressure, complex media, hygiene requirements, or extreme environments, such as reaction vessels, LNG storage tanks, pharmaceutical tanks, or highly corrosive containers, etc, the device should meet the following installation requirements:

(1)The devices are required to be installed at a permanent fixed position at a closed (not open) metallic tank or reinforced concrete tank, or similar enclosure structure made of comparable attenuating material.

(2) Flanges and attachments of the TLPR equipment should provide the necessary microwave sealing by design.

(3) Sight glasses should be coated with a microwave proof coating when necessary (i.e. electrically conductive coating).

(4) Manholes or connection flanges at the tank should be closed to ensure a low-level leakage of the signal into the air outside the tank.

(5) Mounting of the devices should be on top-level of the tank structure to fulfil the intended use in the tank structure with the orientation of the antenna to point in a downward direction.

(6) Installation and maintenance of the devices should be performed by professionally trained individuals only.

Personnel Requirements

- Possessed a qualification certificate or experience for the installation and maintenance of this product, and have qualifications for related work (such as working at heights).
- With basic knowledge and installation skills for this equipment and its components.
- With basic knowledge and operational skills for low-voltage wiring and low-voltage electronic circuit connections.
- With basic knowledge and skills in network security and be able to understand the contents of this manual.

Requirements for Lifting Equipment

- Use safe lifting equipment suitable for the installation site and the equipment.
- The lifting equipment should be with sufficient lifting height to reach the installation position.
- The lifting equipment should be with good safety performance.

Transportation

- Keep the device in original or similar packaging while transporting it.
- Keep all wrappers after unpacking them for future use. In case of any failure occurred, you need to return the device to the factory with the original wrapper. Transportation without the original wrapper may result in damage on the device and the company shall not take any responsibilities.
- Do not drop the product or subject it to physical shock. Keep the device away from magnetic interference.

Maintenance

- If the product does not work properly, please contact your dealer or the nearest service center. We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.
- Make sure that the power has been disconnected before device teardown and repair by professionals.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the device may be impaired.

Using Environment

- Make sure the running environment meets the requirement of the device.
- DO NOT expose the device to high electromagnetic radiation.
- Avoid equipment installation on vibratory surface or places subject to shock (neglect may cause equipment damage).

Emergency

If smoke, odor, or noise arises from the device, immediately turn off the power, unplug the power cable, and contact the service center.

Manufacture Address

G2, NO.258 Dongjia Road, Fengchuan Street, Tonglu County, Hangzhou City, Zhejiang Province, China

Hangzhou Microimage Intelligent Control Technology Co., Ltd.



HIKMICRO Industrial

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