

Guided Wave Radar Level Meter

Product Manual

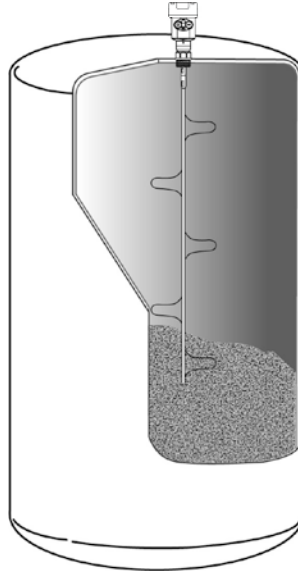
Model: WERD-60X

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Guided Wave Radar Level Meter

1、 Measurement Principle



Principle:

High-frequency microwave pulses issued by the guided wave radar propagate along detection components (steel cable or steel rod), meet the media to be measured, since the dielectric constant of the mutation, cause reflections, a portion of the pulse energy is reflected back. Transmit pulse and the reflected pulse is proportional to the distance and the time interval measured media.

Features:

As a result of advanced microprocessor and unique Echo Discovery echo processing technology, guided wave radar level meter can be used in a variety of complex conditions.

Because of the type of process connections and detection components, making 70X Series Guided Wave Radar Level Meter is suitable for a variety of complex conditions and applications. Such as: high temperature, high pressure and low dielectric constant media.

Pulsed work, guided wave radar level instruments transmit power is very low, can be installed in a variety of metals, non-metallic container, no harm to humans and the environment.

Explanation:

Guided Wave Radar is a time travel to the principle of measuring instruments, radar run at the speed of light, the running time can be converted into a level signal by electronic components. When the pulse reaches the surface of the material, the pulse is reflected back

and is received by the receiving container inside the instrument, the distance the signal is converted to level signals.

Reflected pulse signal along the cable or rod probe type transmit to the instrument electronic circuit parts, the microprocessor processes the signal, identify the microwave pulse echo generated in the material surface. Correct identification of the echo signal are completed the implementation by the pulse software, D, the distance from the material surface and the pulse travel time T is proportional:

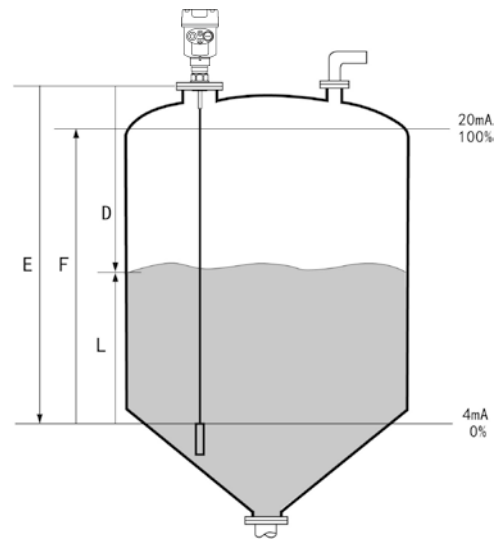
$$D=C \times T/2$$

Where C is the speed of light

Because the empty distance E is known, the level L is:

$$L=E-D$$

By entering the empty height of E (= zero), full tank height F (= hundred) and the application to set some parameters, application parameters will automatically adapt the instrument to measure the environment, corresponding to the 4-20mA output.



Measuring range:

Explanation:

H--- Measuring range

L---Empty distance

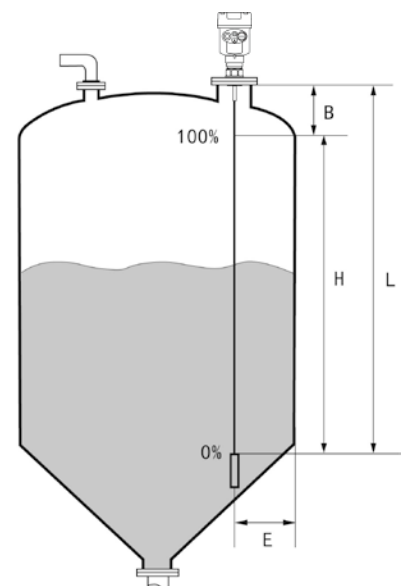
B---The top of the blind

E---The minimum distance from the probe to the tank wall

--Blind spot is the minimum distance between the top of the highest material surface materials and measurement reference point.

--The bottom of the blind refers to a distance near the very bottom of the cable can not be accurately measured.

--Between the top and bottom of the blind is blind effective measure distances.



Note:

In order to ensure the accuracy of level measurement, the material should be located between the top and bottom of the blind the blind.

2、Product Introduction

● WERD-601



Suitable for Medium: Liquid, solid powder
Application: Liquid and solid powder measure, complicated process conditions
Explosion-proof Grade: Exia IIC T6 Ga/Exd IIC T6 Gb
Measuring Range: cable style 30m / rod style 6m
Frequency: 500MHz-1.8GHz
Antenna: Single cable or single rod antenna
Accuracy: $\pm 5\text{mm}$
Temperature: $-40^{\circ}\text{C}\sim 120^{\circ}\text{C}$ (Standard type)
 $-40^{\circ}\text{C}\sim 200^{\circ}\text{C}$ (High temperature type)
 $-40^{\circ}\text{C}\sim 280^{\circ}\text{C}$ (Customized type)
Process pressure: $(-0.1 \sim 4)$ MPa
Signal output: $(4 \sim 20)$ mA Hart / RS485 Modbus
The Scene Display: Four LCD/Can be programmed
Power Source: Two-wire (DC24V)
Four-wire (DC24V/AC220V)
Outer casing: Aluminum / Plastic / Stainless Steel
Connection: Flange (optional) / Thread

● WERD-602



Suitable for Medium: Liquid,
especially corrosive liquids
Application: Acids, bases or other corrosive media
Explosion-proof Grade: Exia IIC T6 Ga/Exd IIC T6 Gb
Measuring Range: cable style 20m / rod style 6m
Frequency: 500MHz-1.8GHz
Antenna: Full PTFE sealing cable type or rod antenna
Accuracy: $\pm 5\text{mm}$
Temperature: $-40^{\circ}\text{C}\sim 120^{\circ}\text{C}$ (Standard type)
 $-40^{\circ}\text{C}\sim 200^{\circ}\text{C}$ (High temperature type)
Process pressure: $(-0.1 \sim 0.3)$ MPa/ $(-0.1 \sim 1.0)$ MPa(PFA)
Signal output: $(4 \sim 20)$ mA Hart / RS485 Modbus
The Scene Display: Four LCD/Can be programmed
Power Source: Two-wire (DC24V)
Four-wire (DC24V/AC220V)
Outer casing: Aluminum / Plastic / Stainless Steel
Connection: Flange (optional) / Thread

● WERD-603



Suitable for Medium: Solid powder
Application: Cement silo powder measure;
Ash powder measure
Explosion-proof Grade: Exia IIC T6 Ga/Exd IIC T6 Gb
Measuring Range: cable style 30m / rod style 6m
Frequency: 500MHz-1.8GHz
Antenna: Double cable or double rod antenna
Accuracy: $\pm 5\text{mm}$
Temperature: $-40^{\circ}\text{C}\sim 120^{\circ}\text{C}$ (Standard type)
 $-40^{\circ}\text{C}\sim 200^{\circ}\text{C}$ (High temperature type)
Process pressure: $(-0.1 \sim 4)$ MPa
Signal output: $(4 \sim 20)$ mA Hart / RS485 Modbus
The Scene Display: Four LCD/Can be programmed
Power Source: Two-wire (DC24V)
Four-wire (DC24V/AC220V)
Outer casing: Aluminum / Plastic / Stainless Steel
Connection: Flange

● WERD-604



Suitable for Medium: Liquid, especially a liquid
with a low dielectric constant
Application: Measuring No ion water,
deoxygenated water and other liquids
Explosion-proof Grade: Exia IIC T6 Ga/Exd IIC T6 Gb
Measuring Range: 6m
Frequency: 500MHz-1.8GHz
Antenna: Coaxial tube type antenna
Accuracy: $\pm 5\text{mm}$
Temperature: $-40^{\circ}\text{C}\sim 120^{\circ}\text{C}$ (Standard type)
 $-40^{\circ}\text{C}\sim 200^{\circ}\text{C}$ (High temperature type)
 $-40^{\circ}\text{C}\sim 280^{\circ}\text{C}$ (Customized type)
Process pressure: $(-0.1 \sim 4)$ MPa
Signal output: $(4 \sim 20)$ mA Hart / RS485 Modbus
The Scene Display: Four LCD/Can be programmed
Power Source: Two-wire (DC24V)
Four-wire (DC24V/AC220V)
Outer casing: Aluminum / Plastic / Stainless Steel
Connection: Thread / Flange (optional)

● **WERD-605**

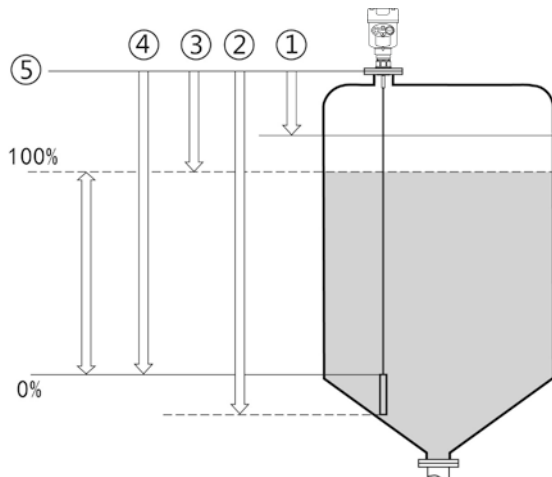


Suitable for Medium: Liquids, especially high temperature and pressure environment of liquid
 Application: Sealed cans, greater pressure liquid measurement
 Explosion-proof Grade: Exia IIC T6 Ga/Exd IIC T6 Gb
 Measuring Range: cable style 15m / rod style 6m
 Frequency: 500MHz-1.8GHz
 Antenna: Single cable or single rod antenna
 Accuracy: $\pm 5\text{mm}$
 Process Temperature: $(-200 \sim 400) \text{ } ^\circ\text{C}$
 Process pressure: $(-0.1 \sim 40) \text{ MPa}$
 Signal output: $(4 \sim 20) \text{ mA Hart / RS485 Modbus}$
 The Scene Display: Four LCD/Can be programmed
 Power Source: Two-wire (DC24V)
 Four-wire (DC24V/AC220V)
 Outer casing: Aluminum / Plastic / Stainless Steel
 Connection: Thread / Flange (optional)

3、 Installation Guide

Within the measurement range, determined not to come into contact with the cable or rod internal obstacles, Therefore, the installation should be avoided as far as possible the tank facilities, such as: human ladder, limit switches, heating devices, stand etc. Also note that the cable or rod may not intersect with the material during feeding.

Also note that when installing the meter : Highest Level measurement can not enter into the blind; Must be maintained between the instrument and the tank wall a certain distance; When the meter is installed, try to stick with cable or perpendicular to the surface of the measured medium. Meter installation in hazardous areas must comply with state regulations explosion hazardous installation area. Intrinsically safe instrument requires the use of shell with aluminum. Intrinsically safe instrument can be installed in explosion-proof requirements of the occasion, the instrument must be connected to the earth.



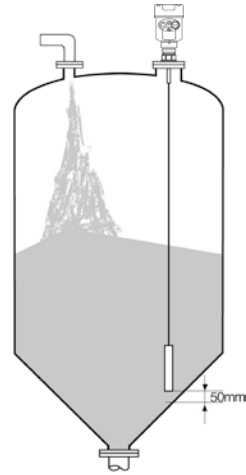
Measurement reference plane is the sealing surface of the thread.

- ① Blind Range (Menu 1.9)
- ② Cable Length (Menu 1.8)
- ③ Max.Measurement Range (Menu 1.2)
- ④ Min.Measurement Range (Menu 1.1)
- ⑤ reference Plane

The following guidelines apply to the installation of the cable and the rod radar level measuring solid powder or liquid.

● **Installation position:**

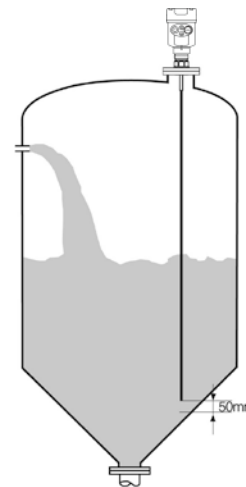
- Far away from the discharge port and inlet.
- Metal cans in the entire measuring range, not to touch the tank wall and tank bottom.
- Recommended meter installed in 1/4 or 1/6 of the silo diameter, and the minimum distance is 1/10 of the tank wall of the measuring range.
- Cable type or rod probe the minimum distance from the tank wall $\geq 300\text{mm}$.
- Bottom of the probe from the tank bottom $\geq 30\text{mm}$.
- The minimum distance from the probe obstructions $\geq 200\text{mm}$.
- If the bottom of the container is a cone, you can install a central tank top.



● **Below is a single rod radar level meter installation drawings, mainly used for liquid level measurement**

Features:

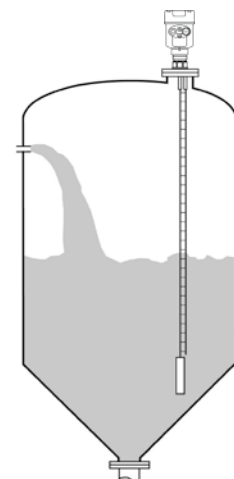
- You can measure any dielectric permittivity of ≥ 1.8 .
- Generally used to measure viscosity $\leq 500\text{cst}$, not prone to adhesion medium.
- Rod radar maximum range of 6 m.
- Instrumentation for steam and foam has a strong penetrating power, the measurement is not affected.
- For a lot of foam liquid measurement environment, you should select a single rod guided wave radar level meter measurement.



● **Below is double cable radar level meter installation drawings, mainly for low dielectric constant liquid and solid lightweight powder measurements**

Features:

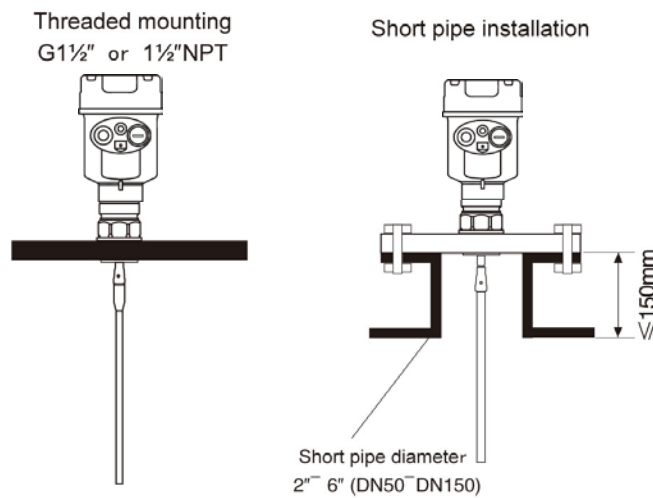
- For low dielectric constant of the liquid and light solid powder, can double cable measurement mode, in order to ensure accurate measurements.
- You can measure the dielectric constant of ≥ 1.6 in any medium.
- Generally used to measure viscosity $\leq 500\text{cst}$, not prone to adhesion medium.
- Double cable radar level meter maximum range of up to 30 meters.



- **Installation Method:**

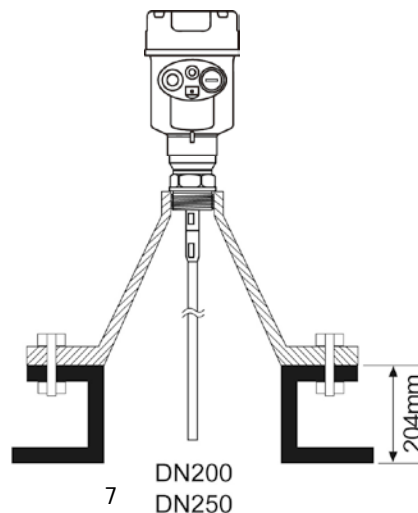
- **Reasonable meter installation to ensure long-term reliable and accurate measurement**

Guided Wave Radar Level Meter can be connected by threaded, thread length should not exceed 15mm, also can be installed on a short tube. When installing a short tube diameter of 2" to 6", the installation of a short tube height should $\leq 100\text{mm}$ (Thread length and short tube shorter measurement will be more stable) , If you install a short pipe is longer, it is best to cut it short, or using insulation bracket fixed cable type probe, avoiding probe in contact with the short end of the pipe to further to affect the measurement.



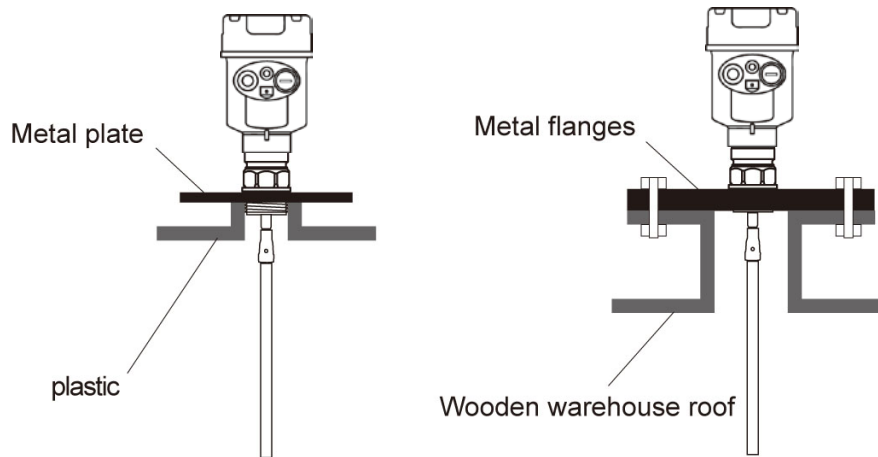
- **DN200 or DN250 installed in the short tube**

When guided wave radar level meter need to be installed at the short pipe diameters greater than 200mm, the short tube wall will produce an echo, the medium in the case of a low dielectric constant can cause measurement errors. Therefore, with a diameter of 200mm or 250mm short tube, you need to choose a special flange with a "horn Interface" of.



➤ **Installation Notes on plastic containers**

Whether cable or rod type, if you want to guided wave radar is working properly, the process of connecting to the metal surface should be. When the guided wave radar mounted on a plastic pot, If the tank top is plastic or other non-conductive material, the instrument needs with metal flanges, the use of threaded connections, to be equipped with a metal plate.



➤ **Optimized interference**

- ✧ Interference echo suppression : Software can be realized on disturbance echo suppression, to achieve the desired measurement results.
- ✧ For a medium viscosity of less than 500cst, can bypass pipe or waveguide (Only for liquids) to avoid interference.

➤ **Installation of low dielectric constant of the liquid**

For dielectric constant greater than 1.3, the viscosity $\leq 500\text{cst}$, and is not easy adhesion medium, guided wave radar meter can be installed in the waveguide is measured, has the following characteristics:

- ✧ superior reliability, high-precision
- ✧ Can be used in any medium of dielectric constant ≥ 1.3 , it doesn't matter between measurement and conductive medium.
- ✧ obstructions and short pipe size does not affect the measurement

➤ **Corrosive media measurement**

If the measurement of corrosive media, the choice of rod or cable probe sets PTFE, PFA sleeve measurement.

➤ **installed in horizontal and vertical tank on tank**

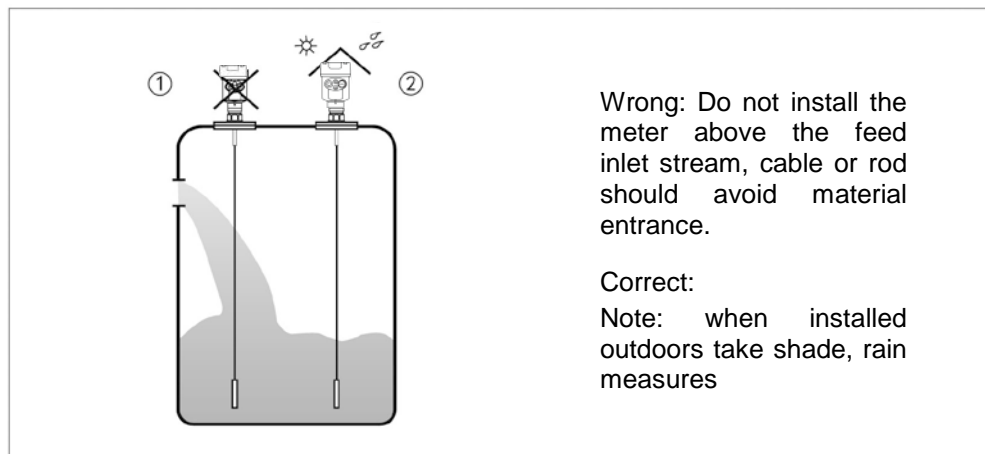
- ✧ Rod probe can be up to six meters, more than six meters for measuring distances tank, the choice of 4mm rope probe.

- ✧ Installation and fixation with the same measurement of solid powder compartment.
- ✧ Distance from the tank wall $\geq 300\text{mm}$, the probe must avoid contact with the tank wall.
- ✧ In the choice of probe length, note at the bottom of the probe from the tank bottom distance $> 30\text{mm}$.
- ✧ If obstructions are more, or too close to the probe by the sensor, it can then be measured by installing tube waveguide.

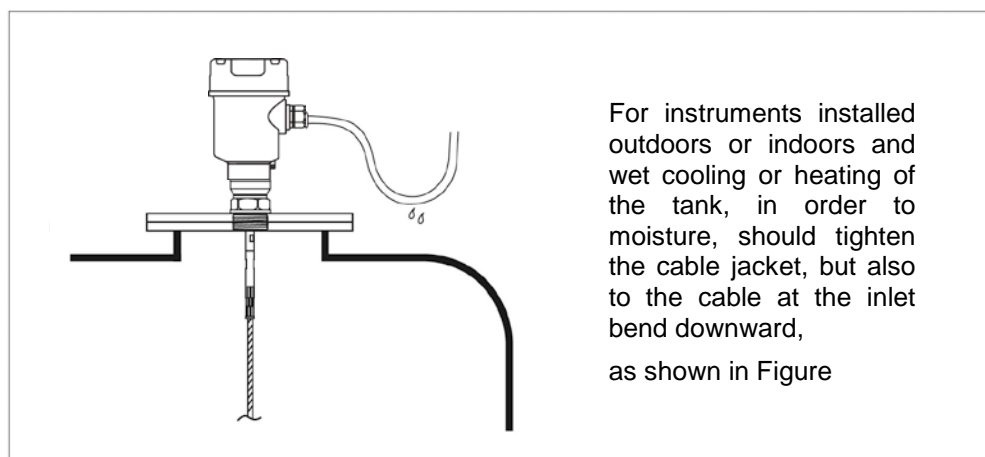
➤ **The matters needing attention:**

- ✧ To be measured in the waveguide radar, generally used in rod probe sensors, during installation You should use insulated bracket fixed probe, ensuring rod probe with concentric waveguide, or they will have a very strong false echoes.
- ✧ When measuring range exceeds the maximum measuring range rod probe should be used in guided wave radar probe cable, In this case waveguide diameter should be greater than or equal to 6", otherwise it will generate strong false echoes.

● **Installation of right and wrong**

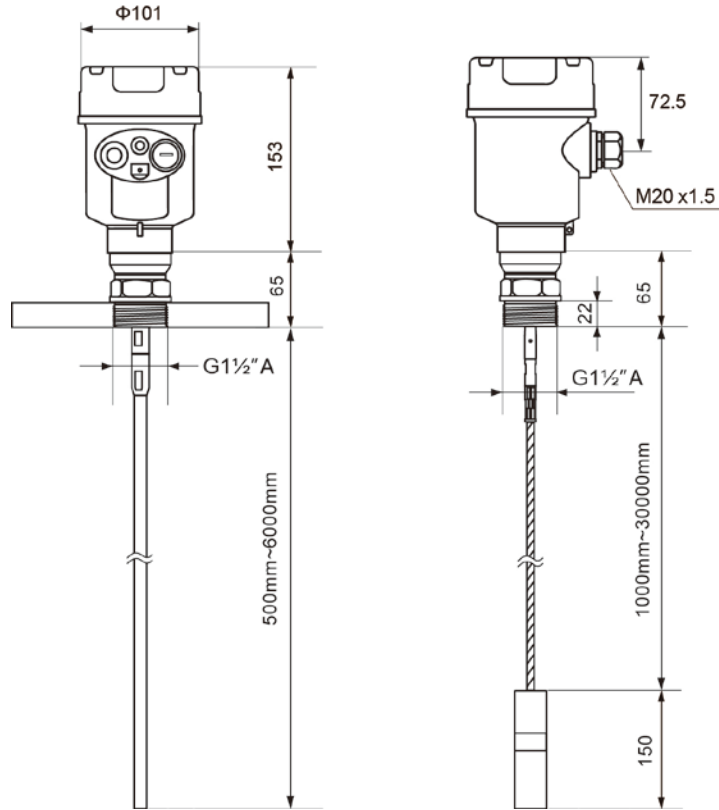


● **Moisture:**

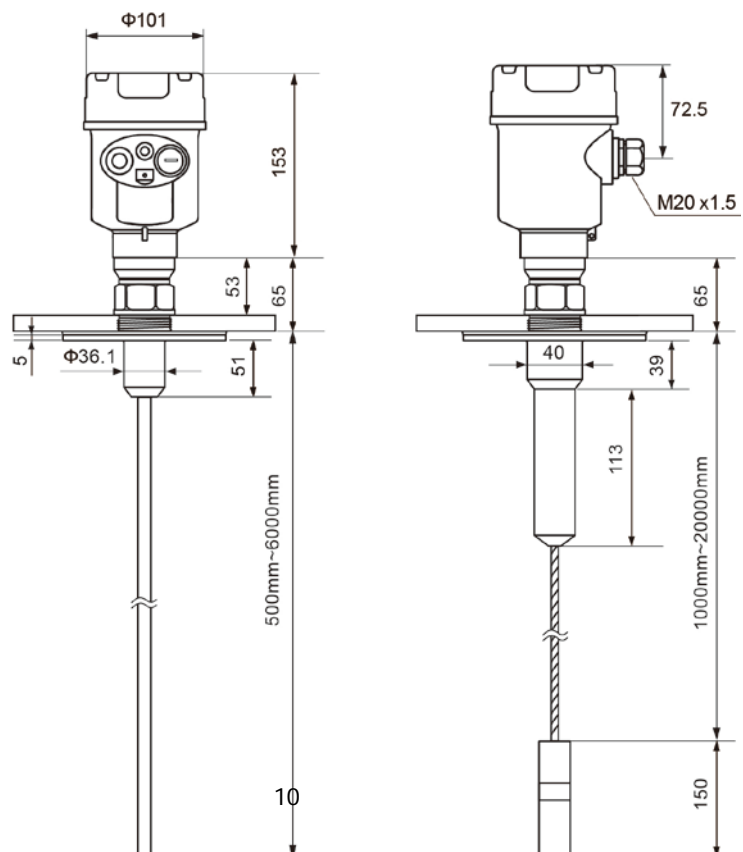


4、Structure Size (Unit: mm)

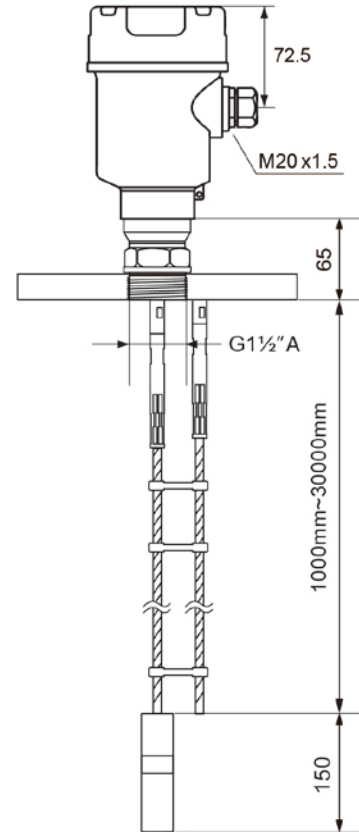
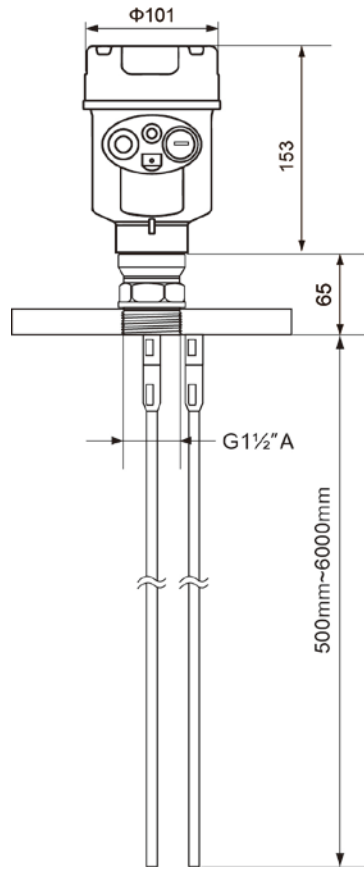
➤ WERD-601



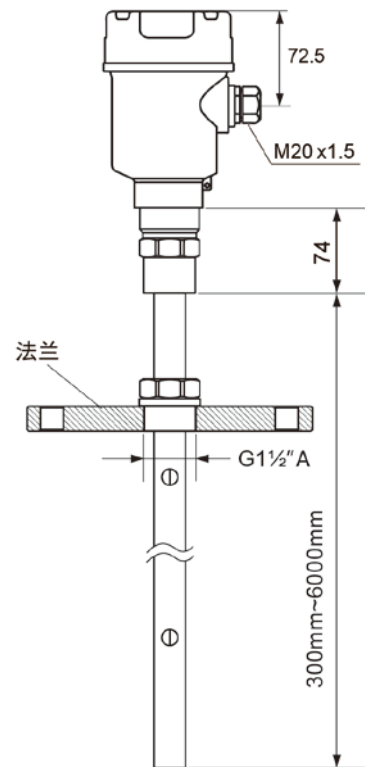
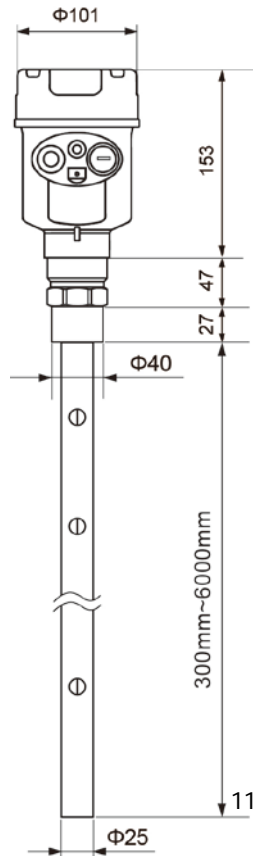
➤ WERD-602



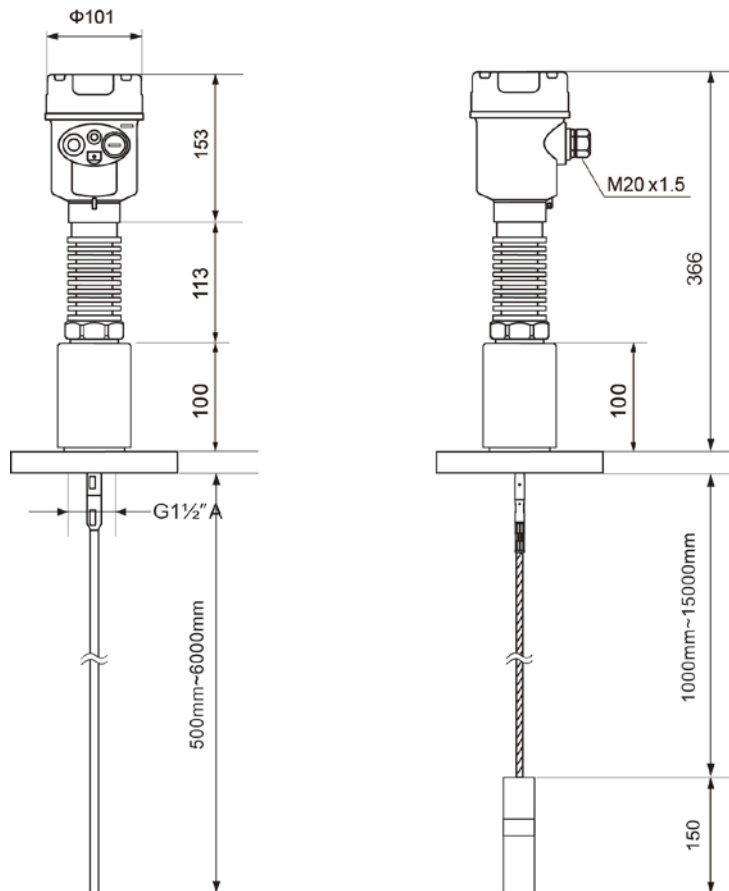
➤ WERD-603



➤ WERD-604



➤ WERD-605



5、 The Electrical Connection

● Power Supply

(4 ~ 20) mA/HART (Two-wire)

Power supply and current signal are carried by the same two-wire connection cable. See the Technical Specifications of this guide for detailed requirement on power supply. A safety barrier should be placed between power supply and instrument for intrinsically safe version.

(4 ~ 20) mA/HART (Four-wire)

Power supply and current signal are carried by two 2-wire connection cables respectively. See the Technical Specifications of this guide for detailed requirement on power supply.

RS485/Modbus

The power supply and Modbus signal lines are separated, and each uses a two-core shielded cable. For the specific supply voltage range, refer to the technical data.

● Cable Connection

General Introduction

Supply cable can use ordinary two-core cable, the cable diameter should be (6 ~ 12) mm, to ensure that the cable entry seal. If electromagnetic interference exists, recommended to use shielded cable.

(4 ~ 20) mA/HART (Two-wire)

Supply cable can use ordinary two-core cable.

(4 ~ 20) mA/HART (Four-wire)

Supply cable should be used with a dedicated ground cable.

RS485/Modbus

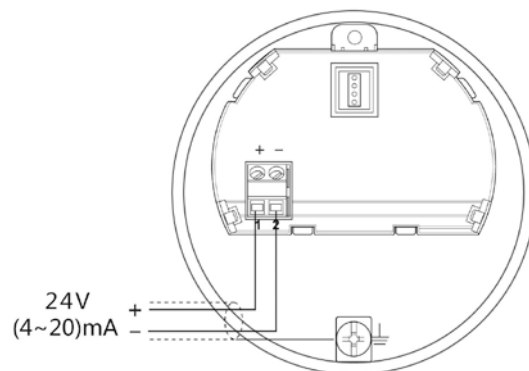
Shielded cable should be used for the power supply cable.

Shielding and wiring

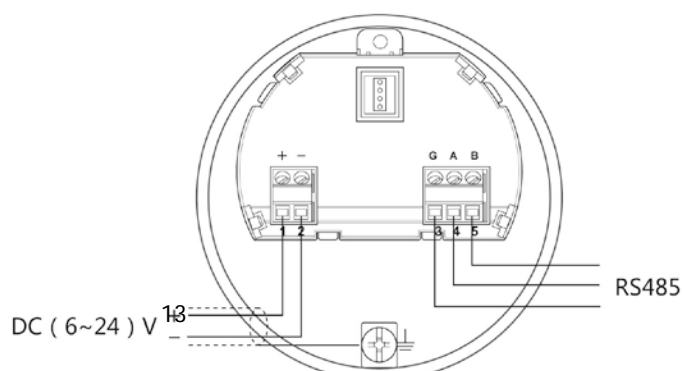
The two ends of shielded cable must be connected with earth terminal. The shielded cable must be connected with inner earth terminal directly inside the transducer, while the outside earth terminal on housing must be connected with ground. In the event of earth-connected current, the shielding side of shielded cable must be connected to ground potential via a ceramic capacitor (e.g. 1nF/1500V) in order to dampen the low frequency grounding current and avoid the disturbance caused by high frequency signals.

● Wiring Diagram

➤ 24V 2-wire:



➤ 6~24V RS485 Modbus:

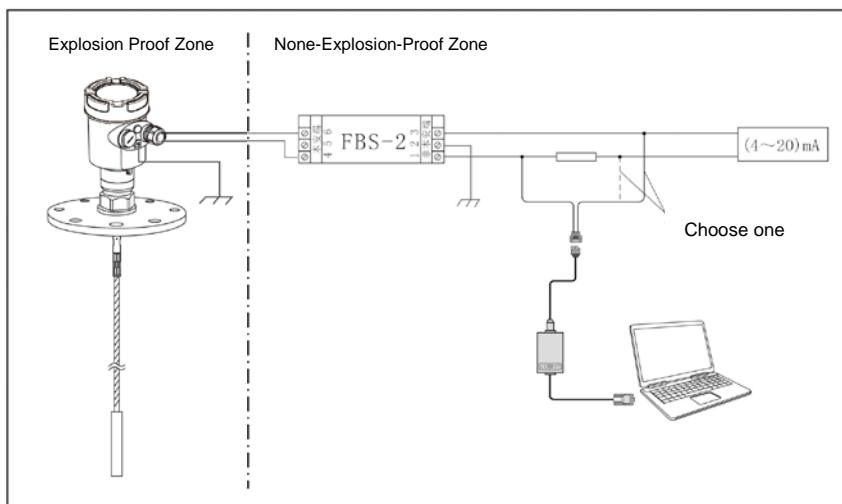


● Explosion Proof Connection

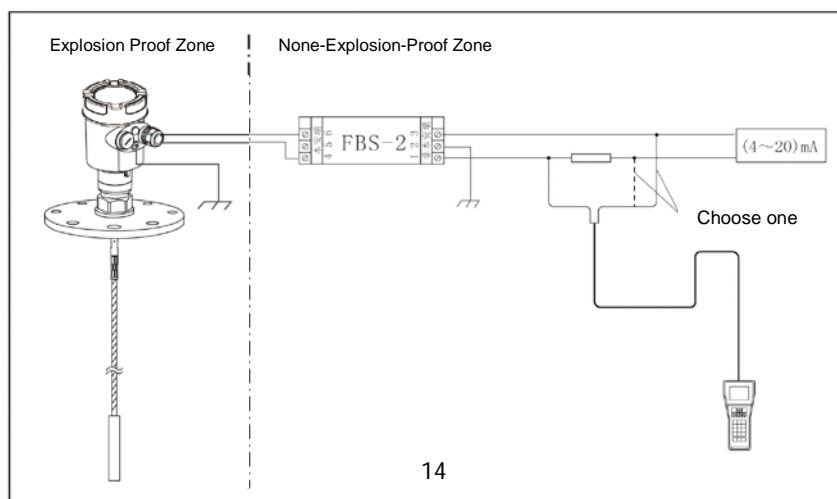
The intrinsic safety version sensors (Exia IIc T6) use Alu-die casting housing and filling Silicone rubber sealants internal structure aimed to prevent sparks resulted from circuit failure from leaking out. It is applicable for the continuous level measurement of flammable medium under Exia IIc T6.

A safety barrier FBS-2 must be used together with the intrinsic safety instrument. It is an associated device to this product for the power supply of this product. The main specification is intrinsic safety: Exia IIC, voltage of power supply: 24V DC \pm 5%, short-circuit current: 135mA, operating current: 4...20mA.

All cables must be shielded. The max length is 500m for the cable from the barrier to the sensor. Stray capacitor $\leq 0.1 \mu$ F/Km, stray inductance 1mH/Km. Instrument must be connected to the ground potential. Any unapproved associated device is not allowed to be used.



Adjustment with SOFTWARE



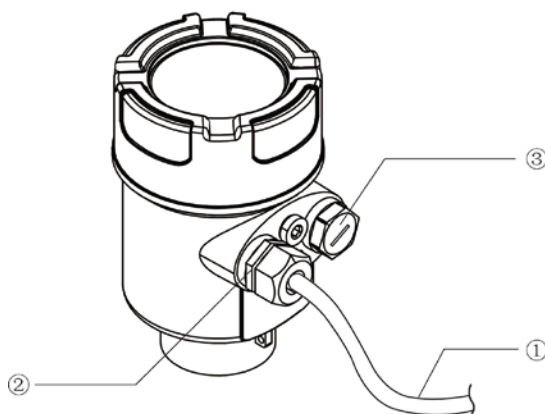
Adjustment with HART Handheld Programmer

● Safety instructions:

- Please observe the local electrical code requirements!
- Please comply with local requirements for personnel health and safety regulations.
All electrical components of instrument operation must be completed by the formal training of professionals.
- Please check the instrument nameplate to provide product specifications meet your requirements. Please make sure that the power supply voltage and instrument nameplate on the requirements.

● Protection Grade:

The instrument fully meet the requirements of protection class IP66/67, make sure the cable head waterproof seal. As shown below:



- ✧ How to ensure that the installation meets IP67 requirements:
- ✧ Make sure that the sealing head is not damaged.
- ✧ Make sure that the cable is not damaged.
- ✧ Make sure the cable is used in line with the electrical connection specifications.
- ✧ Before entering the electrical interface, bend the cable down to ensure that the water does not flow into the housing, see ①
- ✧ Please tighten the cable sealing head, see ②
- ✧ Keep electrical interface with blind unused block after block tight, see ③

6、Adjustment Instructions

● Adjustment Methods:

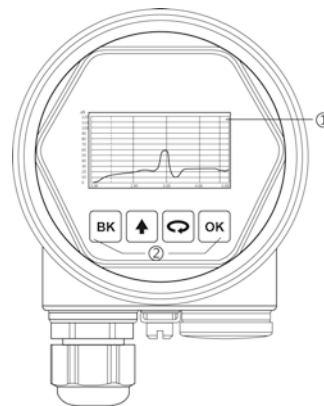
- ① Display/adjustment module View Point)
- ② An adjustment software
- ③ HART handheld programmer

● **Display / Adjustment Module**

View Point is a display debugging tool that can be plugged in. The adjustment can be done through operating with four buttons on View Point. Optional menu operation languages are available for selection. View Point is only used for display after adjustment in that the measurement results can be seen clearly through the glass window.

Display / Keypad

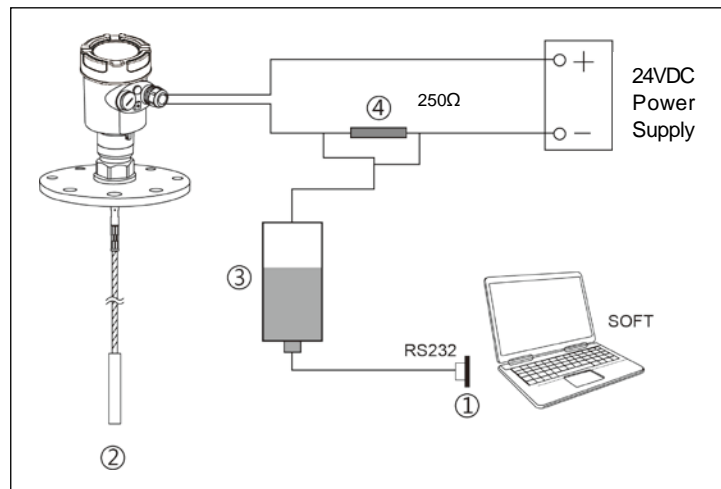
- ① Liquid Crystal Display
- ② Adjustment Keypad



● **PC debugging**

Connect with another unit through HART

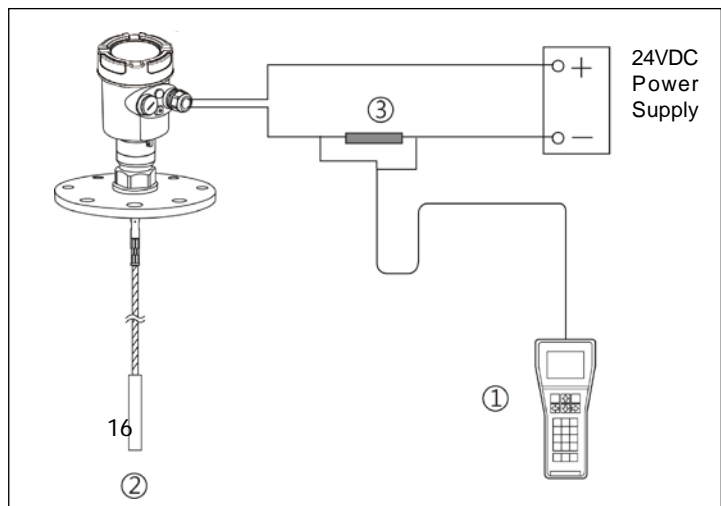
- ① RS232 Connect Cable /USB port
- ② Radar level meter
- ③ HATR port adapter used on COMWAY converter
- ④ 250 ohm Resistance



● **HART Handheld Programmer**

Adjust meter with HART Handheld Programmer

- ① HART Handheld Programmer
- ② Radar level meter
- ③ 250 ohm Resistance



7、 Technical Specification

General Parameters

Probe Material:

Rod	Stainless Steel I 304, 316L / PTFE / PFA
Cable	Stainless Steell 304, 316L / PTFE
Coax	Stainless Steel I 304, 316L
Seal	Viton fluororubber , Kalrez Fluorinated rubber
Process Connection	Stainless Steel 304, 316L
Outer casing	Aluminum, Plastic, Stainless Steel
Seal between the outer casing and the cover	Silicone Rubber
View Point Window	Polycarbonate
Ground Terminal	Stainless Steel 316L

Power

2-Wire	Standard Version	(16 ~ 26)V DC
	Intrinsic Safe Version	(21.6 ~ 26.4)V DC
	Power Consumption	max. 22.5mA
	Ripple Allowed	
	- <100Hz	U _{ss} < IV
	- (100 ~ 100K)Hz	U _{ss} < 10mV

Flameproof Type

(22.8 ~ 26.4) V DC	2-wire system
(198 ~242)V AC	4-wire system / 110V AC 4-wire system
Power Consumption	max. 1VA, 1W

Parameters on Cable

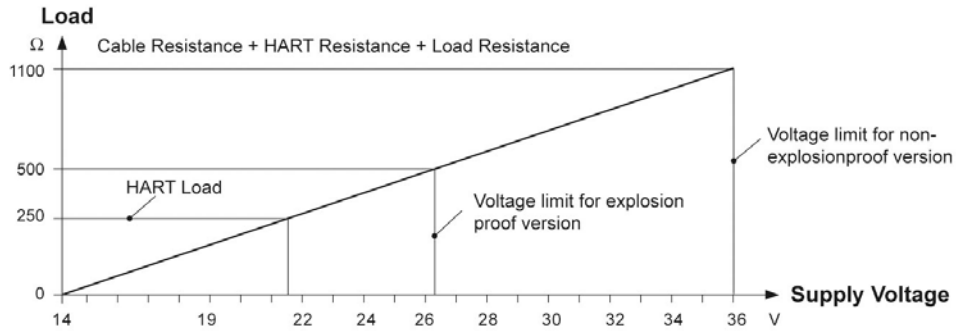
Cable Entry/Plug	One cable entry of M20×1.5 (cable diameter of 6 ~ 12mm) One blind stopper M20×1.5
Spring Connection Terminal	Applicable for cables with cross section of 2.5mm

Output

Output Signal	(4 ~ 20)mA HART / RS485 Modbus
Resolution	1.6μA
Failure mode	20.5mA; 22mA; 3.9mA, hold
2-wire load resistance	See the diagram below

4-wire load resistance Max.400 ohm
 Integration Time (0 ~ 36)sec, adjustable

2-Wire Load Resistance Diagram



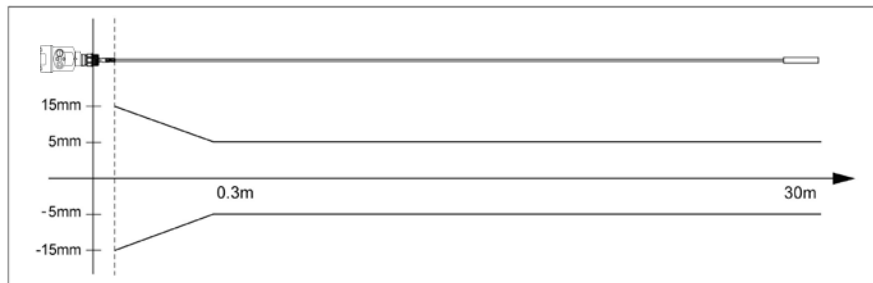
Technical data

Max Measurement Distance

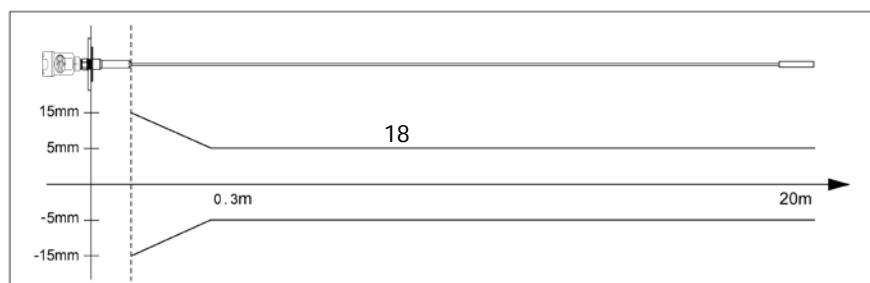
701	30m/6m (Cable /Rod)
702	20m/6m (Cable /Rod)
703	30m/6m (Cable /Rod)
704	6m
705	15m/6m (Cable /Rod)
Measurement Interval	About 1sec (Depend on parameter settings)
Adjustment Time	About 1sec (Depend on parameter settings)
Resolution of Display	1mm
Accuracy	±5mm(See the accuracy illustration diagram below)

The accuracy illustration diagram

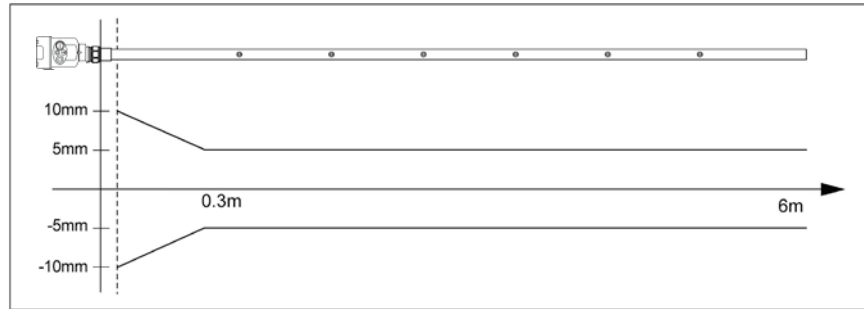
601、603



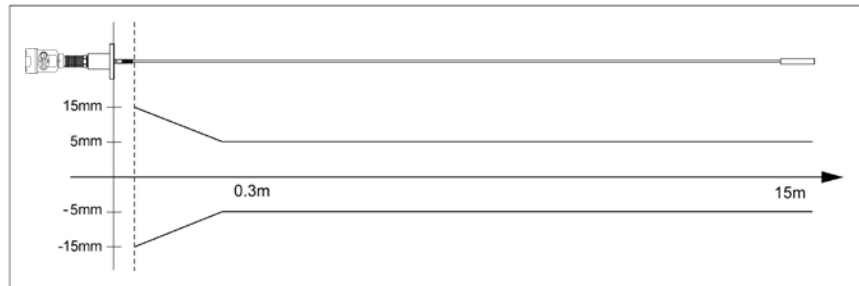
602



604



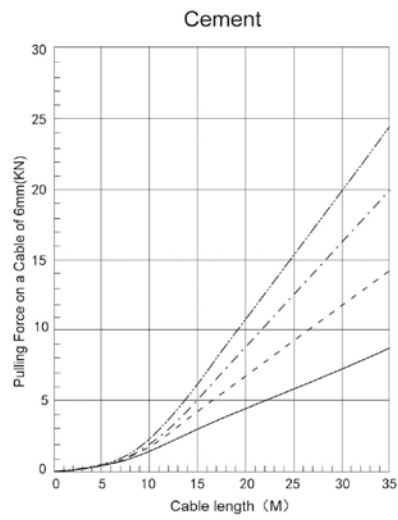
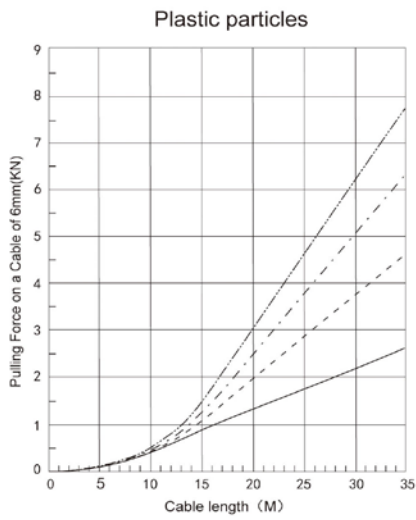
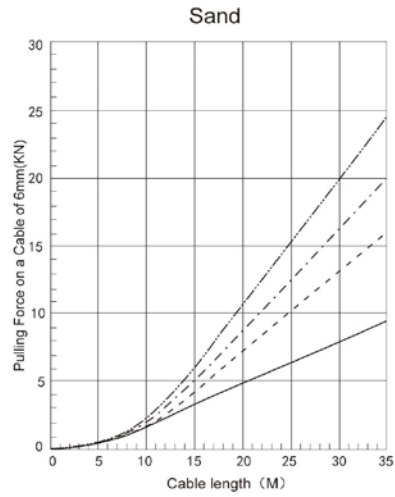
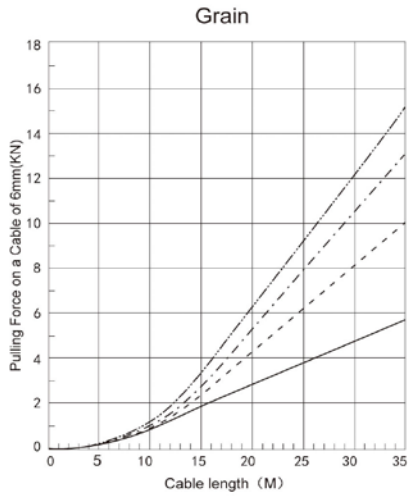
605



Temperature for Storage/Transport	(-40 ~ 80) °C
Process Temperature (Probe)	
701、704	(-40~120)°C Standard type/ (-40~230)°C High temperature type
702、703	(-40~120)°C Standard type/ (-40~200)°C High temperature type
705	(-200 ~ 400)°C
Relative Humidity	< 95%
Pressure	Max. 40MPa
Vibration Proof	Mechanical vibration 10m/s ² , (10 ~ 150)Hz
Max Pulling Force	See the illustrative diagram on pulling force

When measuring solid medium, the pulling force is determined by the diameter of vessel and medium level, some examples of pulling force generated by typical medium are shown on the diagrams below.

metal vessel with smooth sidewall
 ----- Diameter 12m
 - - - - - Diameter 9m
 - - - - - Diameter 6m
 _____ Diameter 3m



8、 Product Selection & Ordering Information

- WERD-601

ID:
Maximum Range / Type of detecting component

30000mm/ Single cable type or 6000mm / single rod type
Explosion Proof Approval
P Standard (Without Approval) I Intrinsically Safe (Exia IIC T6 Ga) G Intrinsically Safe+Flameproof (Ex db ia [ia Ga] II C T6 Gb)
Type of detecting component /Material
A Cable Φ8mm / Stainless Steel 304 B Cable Φ4mm / Stainless Steel 316L C Rod Φ12mm / Stainless Steel 304 D Rod Φ12mm / Stainless Steel 316L E Rod Φ10mm / Stainless Steel 316L
Process Connection /Material
G Thread G1½" A N Thread 1½" NPT C Flange DN50 PN16 / Stainless Steel D Flange DN80 PN16 / Stainless Steel E Flange DN100 PN16 / Stainless Steel F Flange DN150 PN16 / Stainless Steel H Flange DN200 PN16 / Stainless Steel I Flange 2" 150LBS ANSI Convex / Stainless Steel 316L J Flange 3" 150LBS ANSI Convex / Stainless Steel 316L K Flange 4" 150LBS ANSI Convex / Stainless Steel 316L L Flange 6" 150LBS ANSI Convex / Stainless Steel 316L M Flange 8" 150LBS ANSI Convex / Stainless Steel 316 L
Seal / Process Temperature
1. Normal (-40 ~ 120)°C 2. High Temperature (-40 ~ 200)°C 3. Customized type (-40°C~280°C)
The Electronic Unit
3 (4~20) mA / 24V DC / HART two wire system 4 (4~20) mA / 220V AC / HART four wire system 5 RS485 Modbus / 6~24V four wire system
Outer Covering / Protection Class
L Aluminum / Single cavity / IP67 H Aluminum / Double cavity / IP67 G Plastic / Single cavity / IP65 K Stainless steel / Single cavity / IP67
Cable Line
M M 20 × 1.5 N ½" NPT
Display / Programming
A With X Without

● **WERD-602**

ID:

Maximum Range / Type of detecting component
20000mm / Full PTFE sealing cable type or 6000mm / Full PTFE sealing rod type
Explosion Proof Approval
P Standard (Without Approval) I Intrinsically Safe (Exia IIC T6 Ga) G Intrinsically Safe+Flameproof (Ex db ia [ia Ga] II C T6 Gb)
Type of detecting component /Material
A Cable Φ 4mm / PTFE B Rod Φ 10mm / PTFE C Rod Φ 11mm / PFA
Process Connection /Material
G Thread G1½" A N Thread 1½" NPT C Flange DN50 PN16 / Stainless Steel /PTFE D Flange DN80 PN16 / Stainless Steel /PTFE E Flange DN100 PN16 / Stainless Steel /PTFE F Flange DN150 PN16 / Stainless Steel /PTFE H Flange DN200 PN16 / Stainless Steel /PTFE I Flange 2" 150LBS ANSI Convex / Stainless Steel 316L/PTFE J Flange 3" 150LBS ANSI Convex / Stainless Steel 316L /PTFE K Flange 4" 150LBS ANSI Convex / Stainless Steel 316L/PTFE L Flange 6" 150LBS ANSI Convex / Stainless Steel 316L/PTFE M Flange 8" 150LBS ANSI Convex / Stainless Steel 316 L /PTFE
Seal / Process Temperature
1. Normal (-40 ~ 120)°C 2. High Temperature (-40 ~ 200)°C
The Electronic Unit
3 (4~20) mA / 24V DC / HART two wire system 4 (4~20) mA / 220V AC / HART four wire system 5 RS485 Modbus / 6~24V four wire system
Outer Covering / Protection Class
L Aluminum / Single cavity / IP67 H Aluminum / Double cavity / IP67 G Plastic / Single cavity / IP65 K Stainless steel / Single cavity / IP67
Cable Line
M M 20 x 1.5 N ½" NPT
Display / Programming
A With X Without

● **WERD-603**

ID:
Maximum Range / Type of detecting component
30000mm/ Double cable type or 6000mm / Double rod type
Explosion Proof Approval
P Standard (Without Approval) I Intrinsically Safe (Exia IIC T6 Ga) G Intrinsically Safe+Flameproof (Ex db ia [ia Ga] II C T6 Gb)
Type of detecting component /Material
A Double cable Φ6mm / Stainless Steel 304 B Double cable Φ6mm / Stainless Steel 316L C Double rod Φ12mm / Stainless Steel 304 D Double rod Φ12mm / Stainless Steel 316L
Process Connection /Material
G Thread G1½" A N Thread 1½" NPT C Flange DN50 PN16 / Stainless Steel D Flange DN80 PN16 / Stainless Steel E Flange DN100 PN16 / Stainless Steel F Flange DN150 PN16 / Stainless Steel H Flange DN200 PN16 / Stainless Steel I Flange 2" 150LBS ANSI Convex / Stainless Steel 316L J Flange 3" 150LBS ANSI Convex / Stainless Steel 316L K Flange 4" 150LBS ANSI Convex / Stainless Steel 316L L Flange 6" 150LBS ANSI Convex / Stainless Steel 316L M Flange 8" 150LBS ANSI Convex / Stainless Steel 316 L
Seal / Process Temperature
1. Normal (-40 ~ 120)°C 2. High Temperature (-40 ~ 200)°C
The Electronic Unit
3 (4~20) mA / 24V DC / HART two wire system 4 (4~20) mA / 220V AC / HART four wire system 5 RS485 Modbus / 6~24V four wire system
Outer Covering / Protection Class
L Aluminum / Single cavity / IP67 H Aluminum / Double cavity / IP67 G Plastic / Single cavity / IP65 K Stainless steel / Single cavity / IP67
Cable Line
M M 20 × 1.5 N ½" NPT
Display / Programming
A With X Without

● **WERD-604**

ID:
Maximum Range / Type of detecting component
6000mm / Coaxial tube type antenna
Explosion Proof Approval
P Standard (Without Approval) I Intrinsically Safe (Exia IIC T6 Ga) G Intrinsically Safe+Flameproof (Ex db ia [ia Ga] IIC T6 Gb)
Type of detecting component /Material
A Coaxial tube Φ25mm / Stainless Steel 304 B Coaxial tube Φ25mm / Stainless Steel 316L
Process Connection /Material
G Thread G½" A N Thread 1½" NPT C Flange DN50 PN16 / Stainless Steel D Flange DN80 PN16 / Stainless Steel E Flange DN100 PN16 / Stainless Steel F Flange DN150 PN16 / Stainless Steel H Flange 2" 150LBS ANSI Convex / Stainless Steel 316L I Flange 3" 150LBS ANSI Convex / Stainless Steel 316L J Flange 4" 150LBS ANSI Convex / Stainless Steel 316L K Flange 6" 150LBS ANSI Convex / Stainless Steel 316L L Special Design
Seal / Process Temperature
1. Normal (-40 ~ 120)°C 2. High Temperature (-40 ~ 200)°C 3. Customized type (-40°C~280°C)
The Electronic Unit
3 (4~20) mA / 24V DC / HART two wire system 4 (4~20) mA / 220V AC / HART four wire system 5 RS485 Modbus / 6~24V four wire system
Outer Covering / Protection Class
L Aluminum / Single cavity / IP67 H Aluminum / Double cavity / IP67 G Plastic / Single cavity / IP65 K Stainless steel / Single cavity / IP67
Cable Line
M M 20 × 1.5 N ½" NPT
Display / Programming
A With

X Without

● **WERD-605**

ID:
Maximum Range / Type of detecting component
15000mm / Single cable type or 6000mm/ single rod type
Explosion Proof Approval
P Standard (Without Approval) I Intrinsically Safe (Exia IIC T6 Ga) G Intrinsically Safe+Flameproof (Ex db ia [ia Ga] II C T6 Gb)
Type of detecting component /Material
A Cable Φ8mm / Stainless Steel 304 B Cable Φ4mm / Stainless Steel 316L C Rod Φ12mm / Stainless Steel 304 D Rod Φ12mm / Stainless Steel 316L
Process Connection /Material
G Thread G1½" A N Thread 1½" NPT C Flange DN50 PN16 / Stainless Steel D Flange DN80 PN16 / Stainless Steel E Flange DN100 PN16 / Stainless Steel F Flange DN150 PN16 / Stainless Steel H Flange DN200 PN16 / Stainless Steel I Flange 2" 150LBS ANSI Convex / Stainless Steel 316L J Flange 3" 150LBS ANSI Convex / Stainless Steel 316L K Flange 4" 150LBS ANSI Convex / Stainless Steel 316L L Flange 6" 150LBS ANSI Convex / Stainless Steel 316L M Flange 8" 150LBS ANSI Convex / Stainless Steel 316L
Seal / Process Temperature
1. Normal (-200 ~ 400)°C
The Electronic Unit
3 (4~20) mA / 24V DC / HART two wire system 4 (4~20) mA / 220V AC / HART four wire system 5 RS485 Modbus / 6~24V four wire system
Outer Covering / Protection Class
L Aluminum / Single cavity / IP67 H Aluminum / Double cavity / IP67 G Plastic / Single cavity / IP65 K Stainless steel / Single cavity / IP67
Cable Line
M M 20 × 1.5 N ½" NPT
Display / Programming

A With X Without

Material level meter selection parameter table

Customer information

Company: _____ Contact: _____
 Address: _____ Zip code: _____
 The Telephone: _____ Fax: _____ Mobile phone: _____
 E-mail: _____ Date: _____

License

- The standard type (Non-explosion-proof) Intrinsically safe (Exia IIB T5)
- Intrinsically safe (Exia IIC T6 Ga) Intrinsically safe+marine license (Exia IIC T6 Ga)
- Flame proof (Exd IIC T6 Gb)

Tank / Container Information

The Types of Tank:

- Tank Reaction Tank Separation Tank Marine Tank

The Tank Structure:

Material of Tank: _____ Pressure: _____

Tank size:

Tank Height: _____ m Diameter: _____

The top of the tank:

- Vault Flat Open Cone type

The bottom of the tank:

- Cone bottom Flat Slope bottom Arc bottom

Installation:

- Top installation Side installation
- The bypass pipe mount Guided wave pipe installation

Installation takes over the top of the tank (information):

Height of take over : _____ mm Diameter of take over : _____ mm

Measurement of Medium

Media name: Liquid Solid Mixed Media

Medium temperature: _____ °C

Dielectric Constant:

Linked material: Yes No

Mixing: Yes No

Process Connection

Thread: G1½" A 1½" NPT

Flange Flange (DN=) Flange (ANSI=)

Power supply:

- 24V DC Two wire system 24V DC Four wire system 220V AC Four wire system

Output: 4-20mA HART RS485 Modbus

Display: Take the meter display program Without meter display program
