

Level Measurement Expert

26GHz Pulse Radar Liquid Level Transmitter

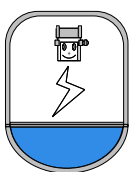
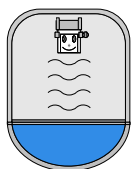


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1. Measurement Principle



- Principle

The extremely narrow microwave pulse emitted by the antenna on radar level instrument can travel at the speed of light and part of its energy, which is reflected off the surface of target medium, is received by the very same antenna. The time lapse between pulse emission and reception by the antenna is proportional to the distance between the surface of target medium and the reference point on antenna. However, due to the fact that the electromagnetic wave is transmitted at extremely high speed, which leads to the tiny time lapse (nanosecond level) and makes it difficult to be identified, TNRP5X series of radar level instrument have adopted a special demodulation technology, enabling itself to detect the time lapse between pulse emission and reception correctly, and eventually generate accurate measurement result.

- Features

The guided wave radar level instrument, adopted 26GHz as transmission frequency, which make this series have specialties as below: Small beam angle, which centralize energy, make TNRP5X high ability of anti-jamming, hence high accuracy and reliable. Small antenna size, easy to mount and easy to equip extra dust protection Small blind zone, good accuracy even for small vessels. Shorter wave-length, suitable for small power.

Equipped with advanced microprocessor and unique EchoDiscovery echo processing technology, the radar level instrument can be used under various hazardous process conditions

The guided wave radar level instrument, with pulses as its working tool and extremely low emission power, can be mounted on various metal or nonmetal vessels, harmless towards the environment and human beings.

2 Product Overview

TNRP55



TNRP56



Application :	Liquid Level measurement in liquids, especially highly erosive liquids	Liquid Level measurement in liquids, under certain temperature and pressure, mildly erosive liquids
Max Measurement Range: : Measurement Accuracy:	10m; 30m (Horn 80mm) ±5mm	30m ±3mm
Process Temperature:	(-40~130)° C	(-40~80)° C (-40~130)° C (-60~250)° C (-60~400)° C
Process Pressure:	(-0.1~0.3)MPa	Normal (-0.1~4) MPa
Frequency Range: Signal Output: Power:	26GHz (4~20)mA/HART 2-wire (DC24V) 4-wire (DC24V/AC220V)	26GHz (4~20)mA/HART 2-wire (DC24V) 4-wire (DC24V/AC220V)
LCD:	Optional	Optional
Housing:	A/B/C/D ¹ (See the page4)	A/B/C/D ¹
Process Connection:	F	G/H/I/J/K ²
Flange Accessories:	L	L/M/N/P ³
Antenna:	R	S/T/V ³

Notes:

- 1、Intrinsically Safe couldn't use "A"
- 2、Huff must use antenna "T" , process Connection must use "I" ;High temp.
Process Connection must use "J" "K"

TNRP57



TNRP58



TNRP59



Liquid
Level measurement of highly erosive
medium under certain pressure/
temperature limit and suitable for
20m
±3mm

(-40~150)° C

(-0.1~0.5)MPa

26GHz
(4~20)mA/HART
2-wire (DC24V)
4-wire (DC24V/AC220V)

Optional

A/B/C/D¹

U

Solid
strong dew/dust/crystal

70m
±15mm

(-40~80)° C
(-40~120)° C
(-60~250)° C
(-60~400)° C

Normal
(-0.1~4)MPa

26GHz
(4~20)mA/HART
2-wire (DC24V)
4-wire (DC24V/AC220V)

Optional

A/B/C/D¹(See the page4)

G/H/I/J/K²

L/M/N/P³

S/T/V³

Solid
Normal Temperature/Normal Pressure

15m
±10mm

(-40~80)° C
(-40~120)° C
(-60~250)° C

Normal
(-0.1~4)MPa

26GHz
(4~20)mA/HART
2-wire (DC24V)
4-wire (DC24V/AC220V)

Optional





A/B/C/¹

G/H/I/J/K²









L/M/N/P³

S/T/V³





● Housing

				
Serial number	A	B	C	D
Material	Plastic	Aluminum Alloy	Aluminum Alloy (Two-chamber)	Stainless steel (316L)
Specialty		Economic Suitable for explosion-protection	(Intrinsically safe + Flameproof Approval)	Ship Approval

● Process Connection







								
Serial number	E	EI	F	G	H	I	J	K
Material	Stainless Steel	Stainless Steel	PTFE	PP (Huff)	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Pressure	(-0.1~4)MPa	(-0.1~4)MPa	(-0.1~0.3)MPa	Normal Pressure	(-0.1~4)MPa	(-0.1~0.5)MPa	(-0.1~4)MPa	(-0.1~40)MPa
Temperature	(-60~130)°C	(-60~250)°C	(-40~130)°C	(-40~80)°C	(-60~150)°C	(-60~130)°C	(-60~250)°C	(-60~400)°C

● Flange Accessories

				
Serial number	L	M	N	P
Material	(PTFE/PP) Flange	Stainless Steel Flange	PP Gimbal Flange	Stainless Steel Gimbal Flange
Specialty	Rust tolerated	High temp./High Pressure	Normal Temperature/Normal Pressure	High temp./Normal Pressure

Pulse

● Antenna

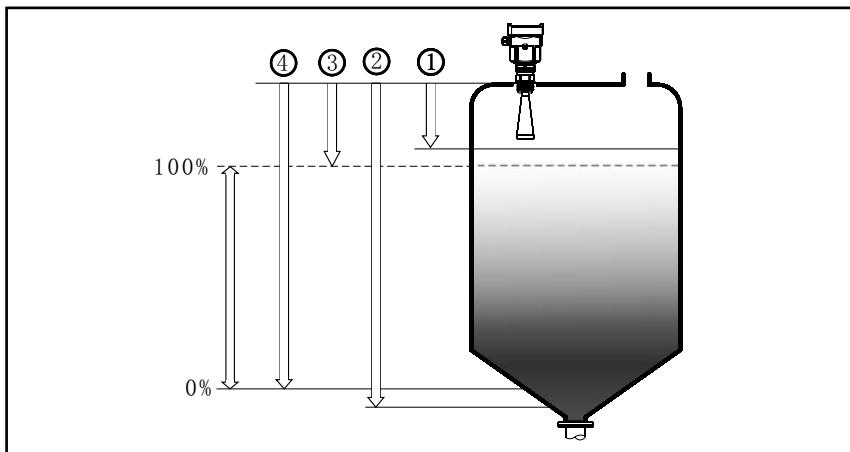
						
Serial number	R	S	T	U	V	W
Material	PTFE	PP (PTFE shield)	Stainless Steel	PTFE	Stainless Steel (PTFE shield)	Stainless Steel
Specification	Φ44/Length137 Φ44L/Length237	Φ98/Length280 Φ98L/Length440	Φ48/Length140 Φ78/Length227 Φ98/Length288 Φ98L/Length474 Φ123/Length620	DN50/ DN80/ Dn100	Φ98/300 Φ98L/480 Φ123/625	Φ196 Φ246
Specialty	Rust tolerated	Normal Temp. Normal Pressure	Temp. tolerated/ Pressure tolerated	Rust tolerated/ Pressure tolerated	Normal Temp. Normal Pressure	Temp tolerated Pressure tolerated

3. Mounting Requirements

- Basic Requirements

There is a certain existing beam angle while the antenna transmitting microwave pulses. There should be no barriers between the lower edge of antenna and surface of measured medium. Therefore it is highly recommended to avoid facilities inside vessels, such as ladders, limit switches, heating spirals, struts and etc, during the mounting process. "False echo learning" must be carried out during the installation in this case. Furthermore, microwave beams must NOT intersect the filling streams. Be cautious during the installation: the highest level of target medium must NOT enter into blanking zone; the instrument must keep certain distance to vessel walls; every possible measure needs to be taken to position the instrument so that the direction of antenna emission is perpendicular to the surface of measured medium. The installation of instruments in explosion proof area must abide by relevant local or federal safety regulations. Aluminum housing should be used for intrinsically safe explosion proof version, which is also applicable in explosion proof areas. The instrument must be connected with ground in this case.

- Illustrations

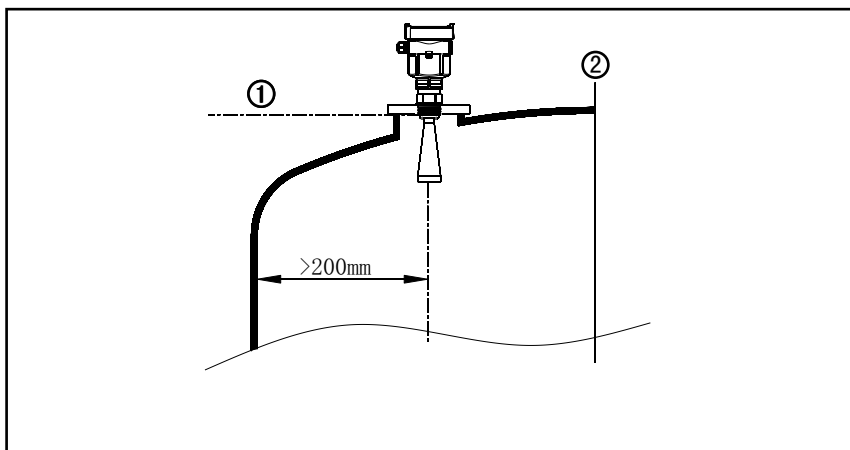


The reference plane is the thread or flange surface

1. Blanking Zone(menu1.9)
2. Empty(menu1.8)
3. Max. Adjustment(menu1.2)
4. Min. Adjustment(menu1.1)

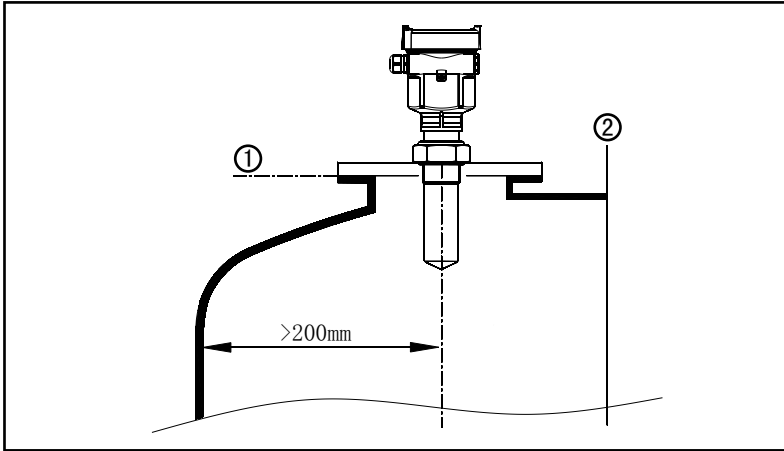
Note: The highest level of measured medium must not enter into blanking zone while radar level measurement instrument is in operation.

- Mounting Position

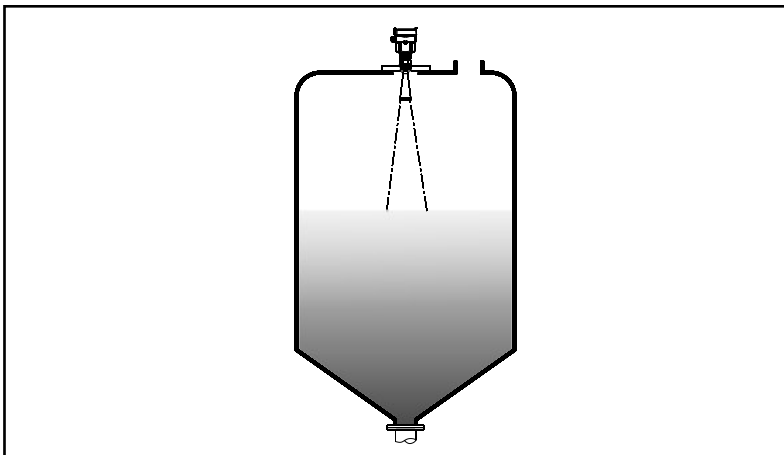


Minimum distance of 500mm between instrument and vessel wall during installation

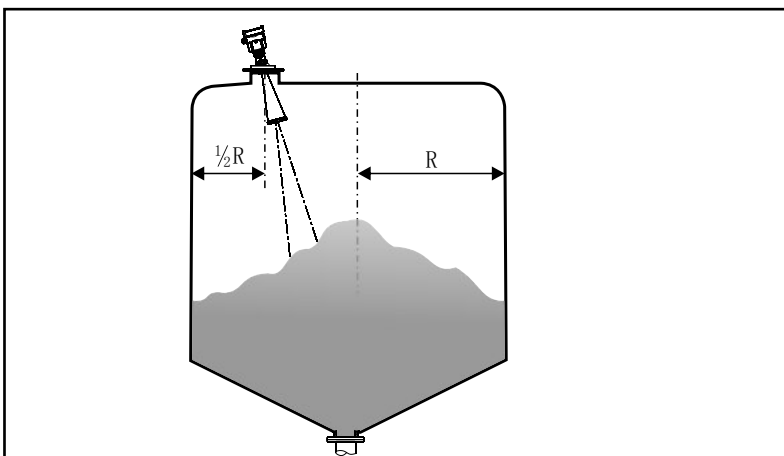
1. Reference Plane
2. Center of Vessel or Symmetrical Axis



- 1. Reference Plane
- 2. Center of Vessel or Symmetrical Axis

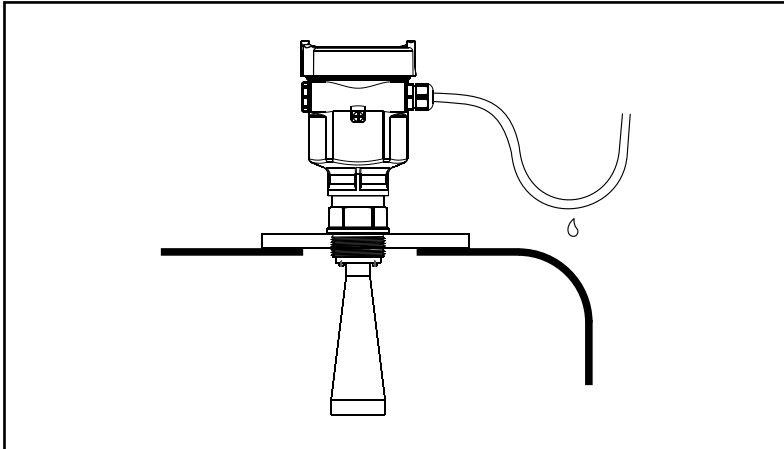


The best mounting position for a conical vessel with flat top is the center of its top, as the effective measurement can reach the bottom of vessel.



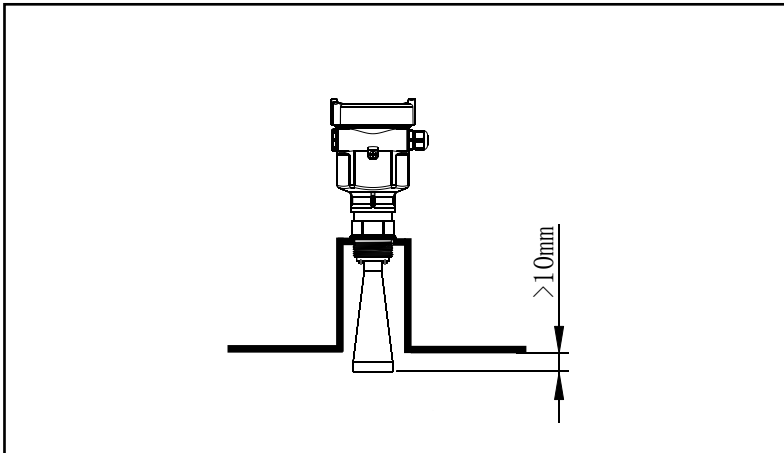
Installation with Gimbal

- Damp-proof



In order to avoid dampness under outdoor or humid indoor conditions or for those instruments mounted on cooling/heating vessels, seal rings used on cables should be screwed tight, plus the cable must be bended downward outside cable entry, indicated on the diagram below

- Antenna Extension



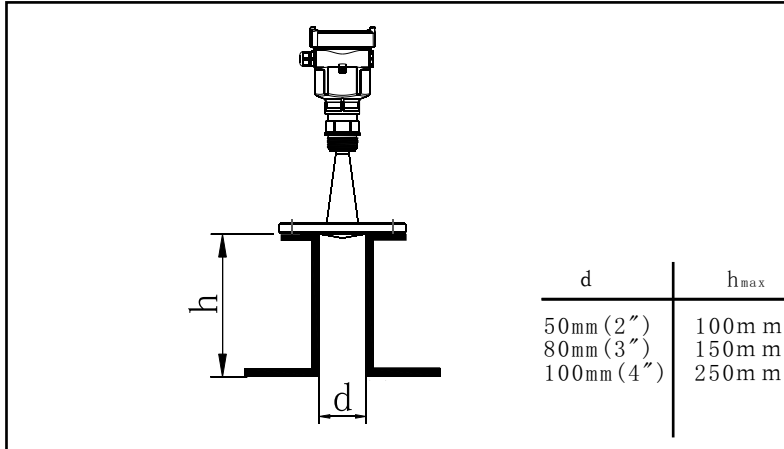
The transducer end must at least protrude 10mm out of socket.

TNRP56 Antenna Extension

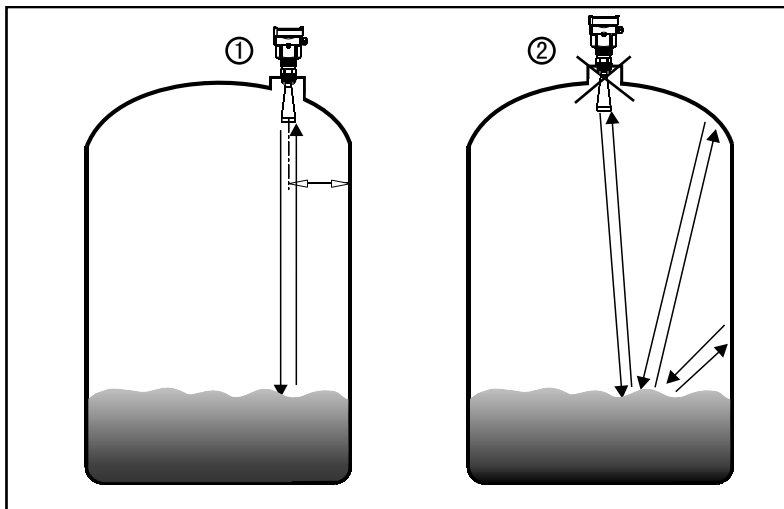
d	h _{max}
1½"	200m m
50mm (2")	250m m
80mm (3")	300m m
100mm (4")	500m m
150mm (6")	800m m

If the senser is mounted in a socket extension that is too long, strong false echoes are generated which enterfeere with the measurement. Make sure that the horn antenna protrudes out of the socket piece.

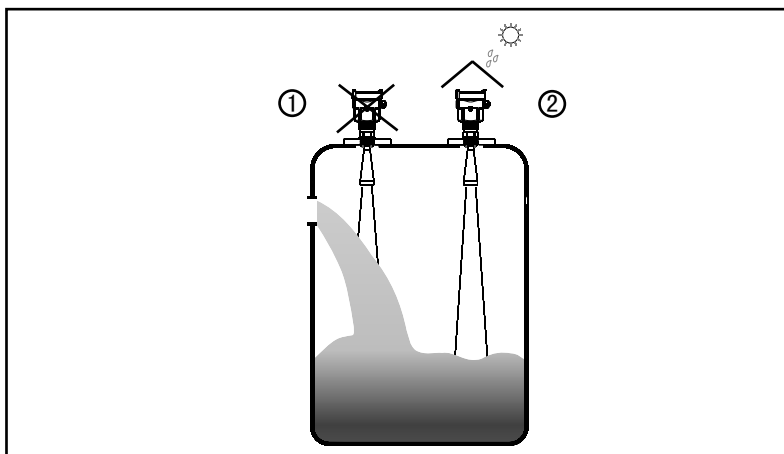
RP 57 Connecting pipe diagram



● Rights and Wrongs in Mounting

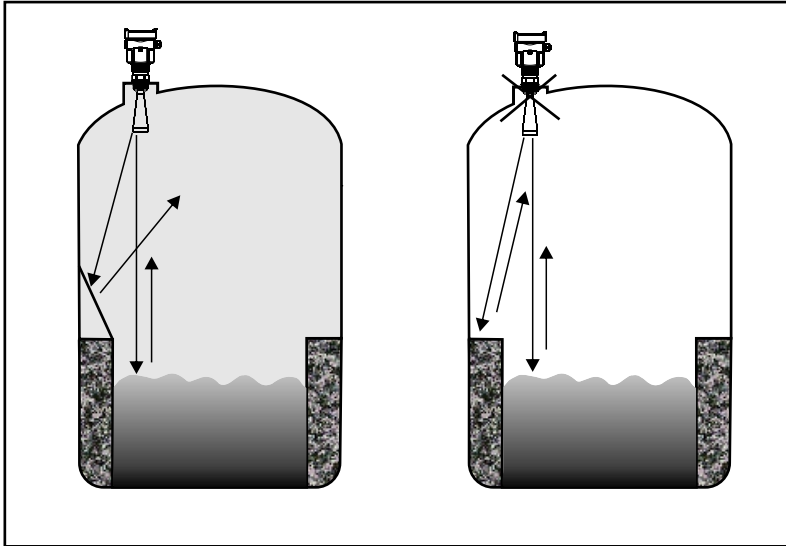


1. Correct
2. Wrong: Instruments are mounted in the center of concave or arched vessel tops, which results in multiple echoes.



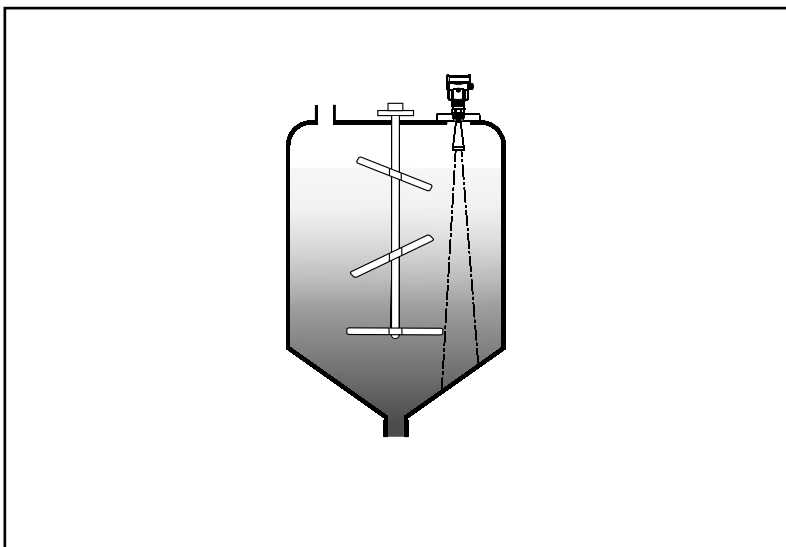
1. Wrong: Mount the instrument in/above filling stream, which results in the measurement of filling stream not the target medium.
2. Correct:

- Reflector installation



If there are barriers in vessels, it is required to mount baffle-board, by doing this, the echo reflected by the barrier will be reflected out. And “False Echo Storage” will be applied.

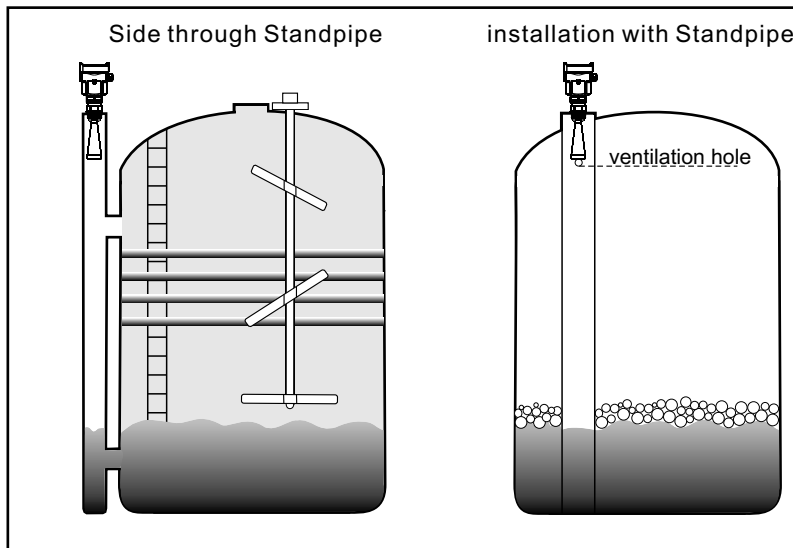
- Agitator



If there are agitators in vessels, instrument must be mounted as far away from agitators as possible. Once installation completed, a "false echo learning" should be carried out while agitators in motion to eliminate negative influence caused by false echo of agitators. You are advised to opt for installation with standpipe if foam or wave is generated due to the action of agitators.

- Installation with Standpipe

By using standpipe, the influence of foams can be reduced.



Note: You must NOT mount instrument inside standpipe while measuring adhesive medium.

You are advised to opt for installation with standpipe (or bypass tube) to avoid the influence on measurement caused by barriers inside vessels or foam generation.

It is advised to install antenna inside of the standpipe to avoid the error caused by foam. The minimum inner diameter of standpipe should be 50mm. Avoid large cracks or welding seam when connecting standpipe. False echo storage must be carried out as well in this case.

4 Electrical Connection

● Power Supply

20mA/HART(2-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.

20mA/HART(4-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. Earth-connected current output can be used for standard version of level instruments, while the explosion proof version must be operated with a floating current output. Both instruments and earth terminals should be connected with ground firmly and securely. Normally you can either choose to connect with the earth terminal on vessel or adjacent ground in case of plastic vessels.

● Cable Connection

General Introduction

4~20mA/HART

Standard 2-wire cable with outside diameter of 5...9mm, which assures the seal effect of cable entry, can be used as feeder cable. You are recommended to use screened cables in the event of electromagnetic Connection cable with special earth wire can be used as feeder cable.

Connection cable with special earth wire can be used as feeder cable.

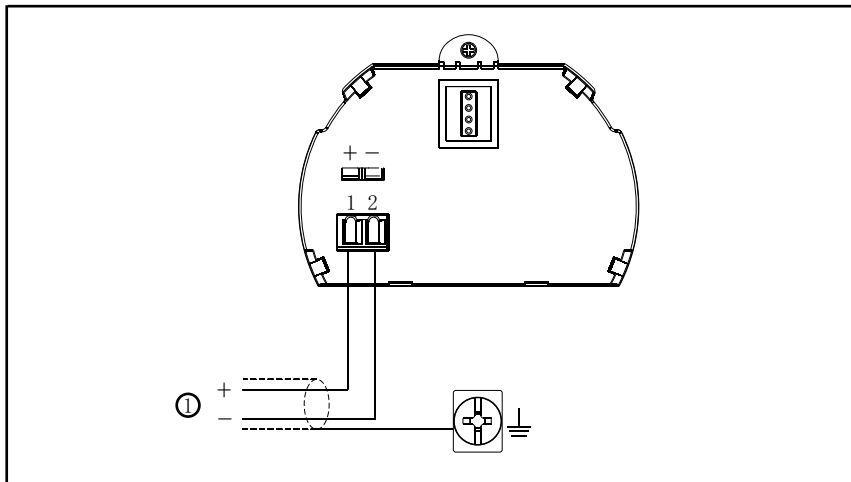
20mA/HART(4-wire)

Shielding & Grounding

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. : 1 μ F 1500V) in order to dampen the low frequency grounding current and avoid the disturbance caused by high frequency signals

● Wiring Diagram

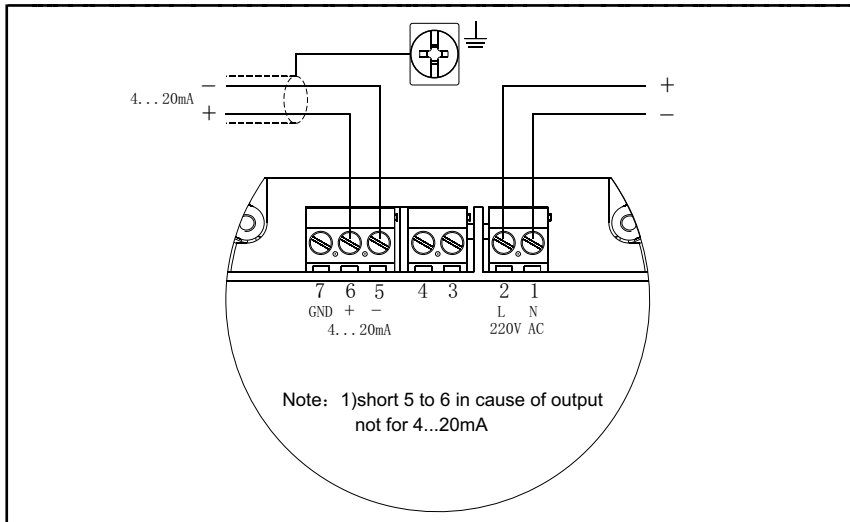
2-wire



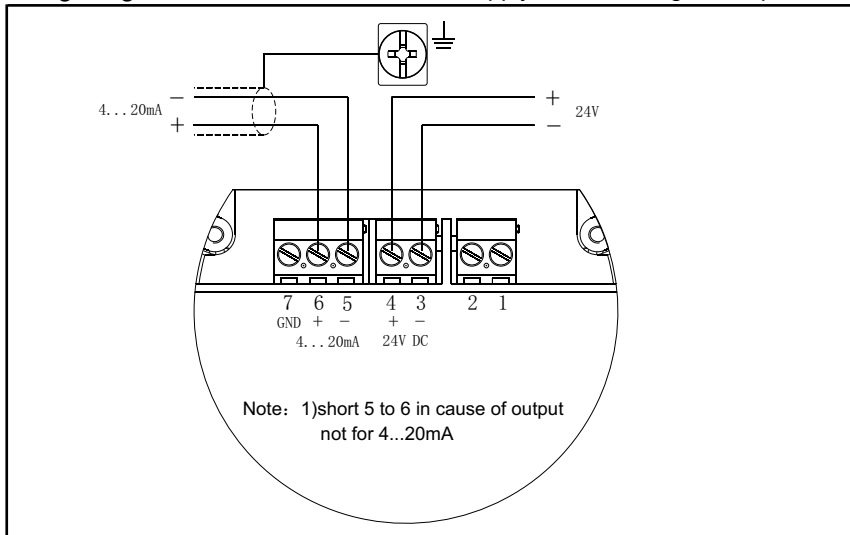
2-wire wiring used for HART (electronic unit B)
1) Power Supply and Signal Output

4-wire/2-chamber

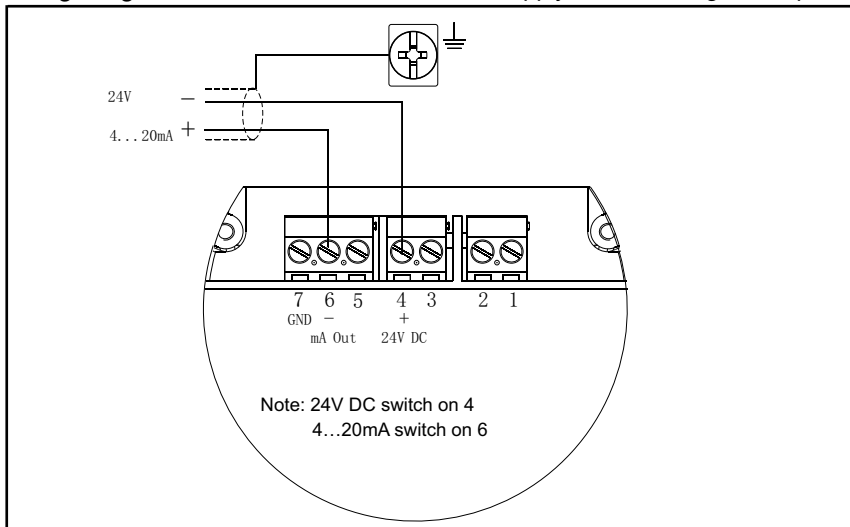
Wiring Diagram: 220V AC Power Supply, 4...20mA Signal Output (electronic unit D)



Wiring Diagram: 4-wire 24V DC Power Supply, 4...20mA Signal Output (electronic unit C)



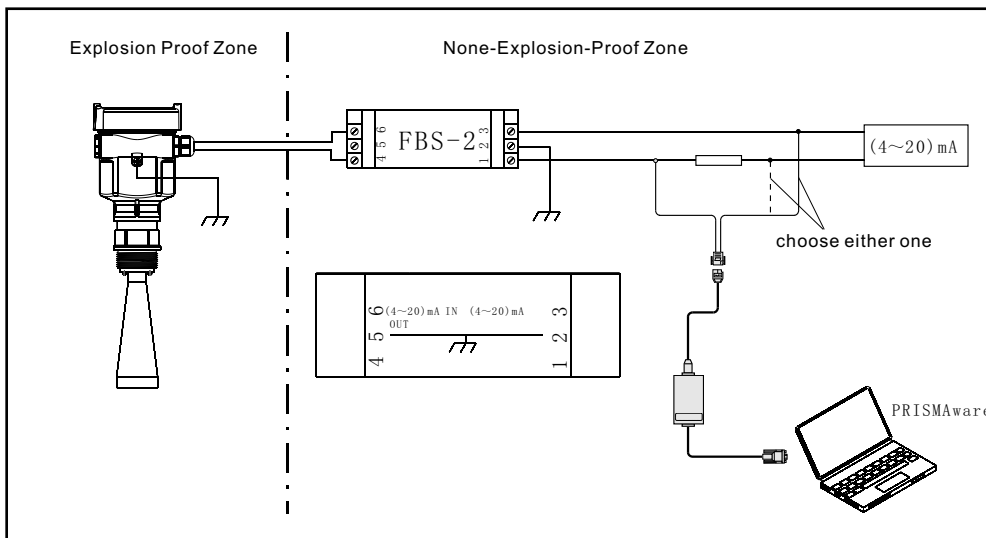
Wiring Diagram: dual-wire 24V DC Power Supply, 4...20mA Signal Output (electronic unit E)



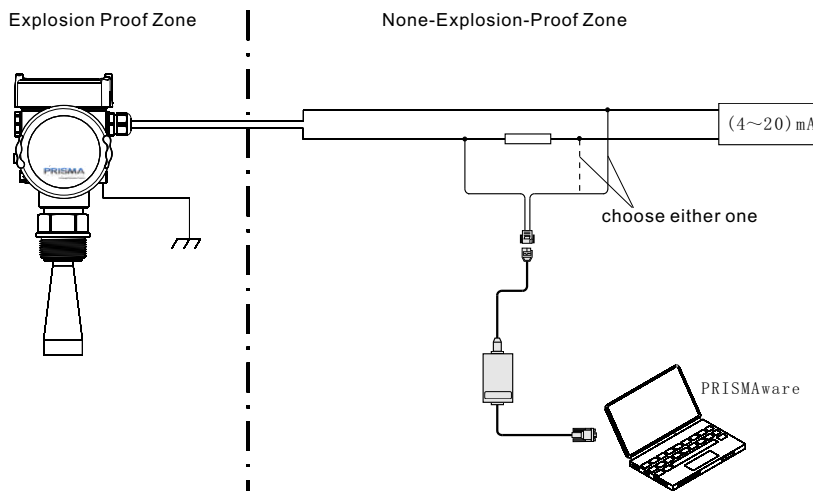
- Explosion Proof Connection

This product is an intrinsic safety explosion proof version (Exia II C T6) with aluminium housing and plastic-encapsulated internal structure aimed to prevent sparks resulted from transducer and circuit malfunction from leaking out. It is applicable for the non-contact continuous level measurement of flammable medium under the level of explosion proof inferior to Exia II c T6. You are required to use FBS-2 series (intrinsic safety explosion proof: [Exia] II C, voltage of power supply: 24V DC±5%, short-circuit current: 135mA, operating current: 4...20mA) of safety barriers, which are supplementary to this product, for the power supply of this product.

All connection cables must be screened with max. length of 500m. Stray capacitor ≤ 0.1 μ F/Km, stray inductance ≤ 1mH/Km. The level measurement instrument must be connected to ground potential and unapproved supplementary devices are not allowed to use.



Adjust with PRISMAware



Adjust with Intrinsically Safe+Flameproof Approval

5 Adjustment Instructions

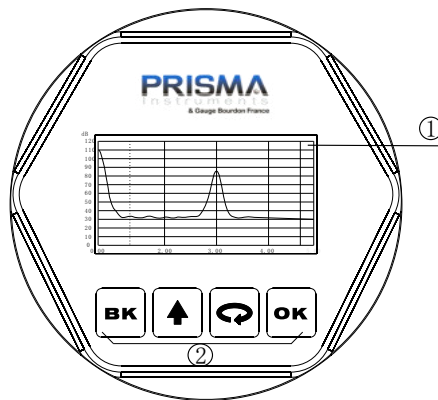
● Adjustment Methods

Three adjustment methods available for **TNP 5X**:

1. Display/Adjustment Module
2. Adjustment software PRISMAware
3. HART handheld programmer

ViewPoint is a pluggable display/adjustment module. The adjustment can be done through operating with four buttons on ViewPoint. Optional menu operation languages are available for selection. ViewPoint is only used for display after adjustment in that the measurement results can be seen clearly through the glass window.

Display/Adjustment Module



1 LCD 2 Adjustment Keypad

[OK] Keypad

- Enter programming mode;
- Confirm programming options;
- Confirm modifications to parameters.

[↻] Keypad

- Choose programming options;
- Choose the digit of parameters to edit;
- Display the contents of parameters.

[↑] Keypad

- Modify parameter values.

[BK] Keypad

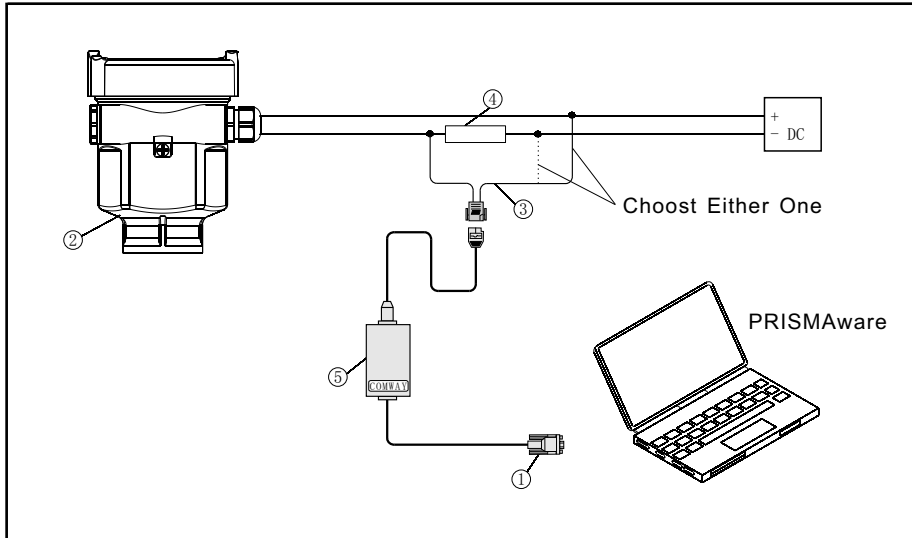
- Programming mode exit;
- Return to higher menu level.

Shortcut

- [BK] Display Echo wave

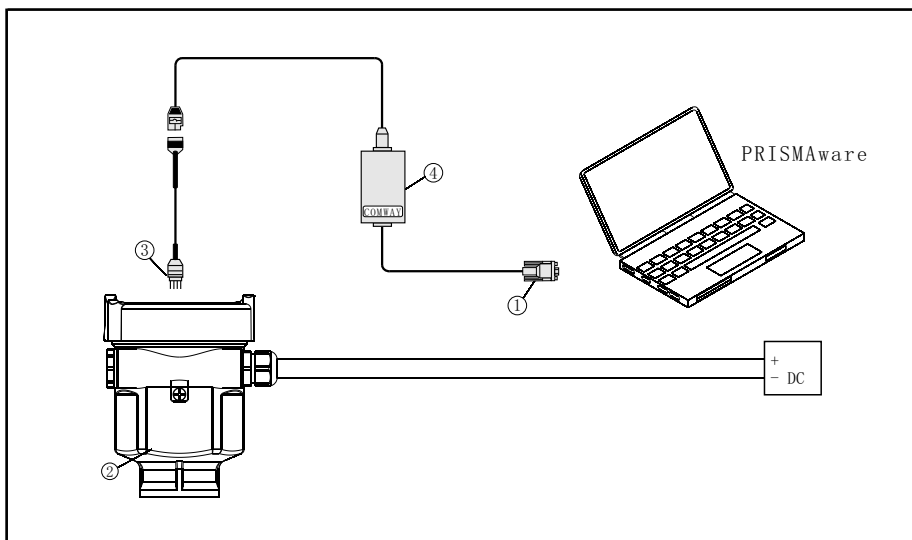
● PRISMAware

Connect with another unit through HART.



- 1 RS232 Connect Cable/USB port
- 2 TNRP5X
- 3 HATR port adapter used on COMWAY convertor
- 4 250 ohm Resistance
- 5 COMWAY Convertor

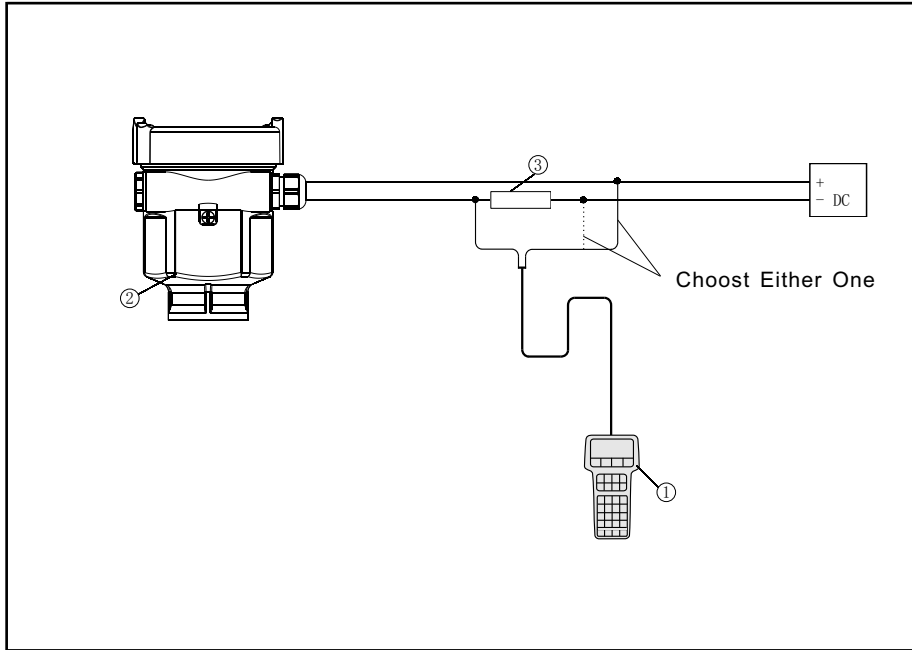
Connect with another unit through I²C.



- 1 RS232 Connect Cable/USB port
- 2 TNRP5X
- 3 I²C adapter port used on MOMWAY convertor
- 4 COMWAY Convertor

HART Handheld Programmer

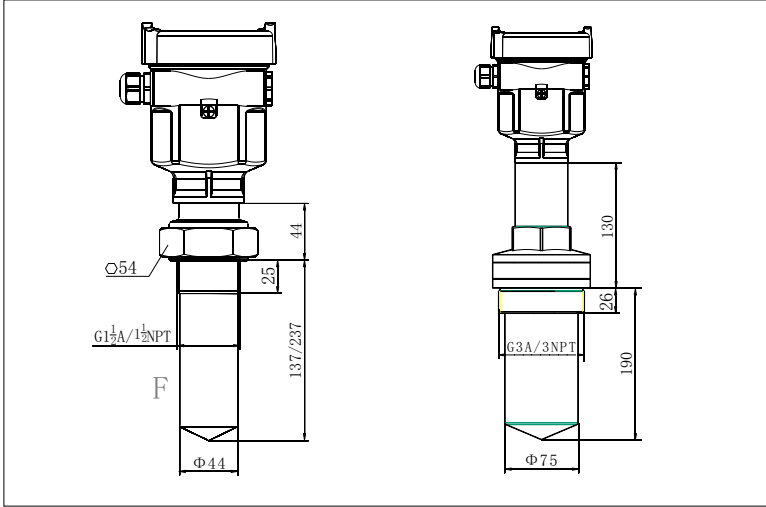
Adjust TNRP5X with HART Handheld Programmer



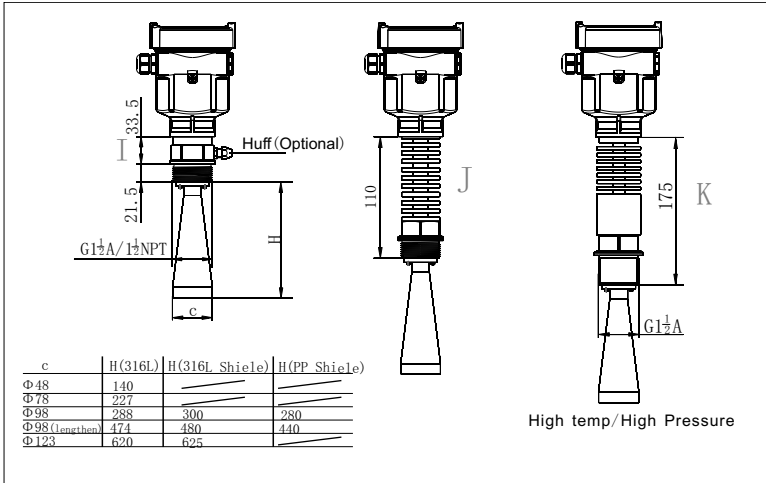
1 HART Handheld Programmer

2 TNRPX

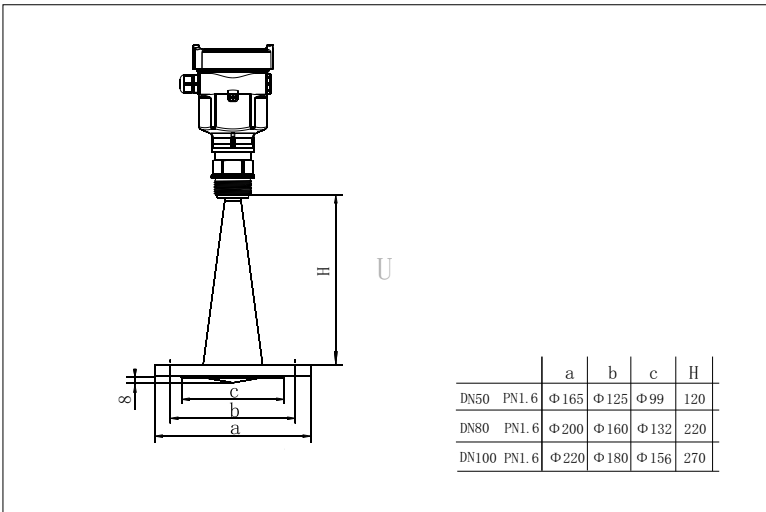
3 250 ohm Resistance



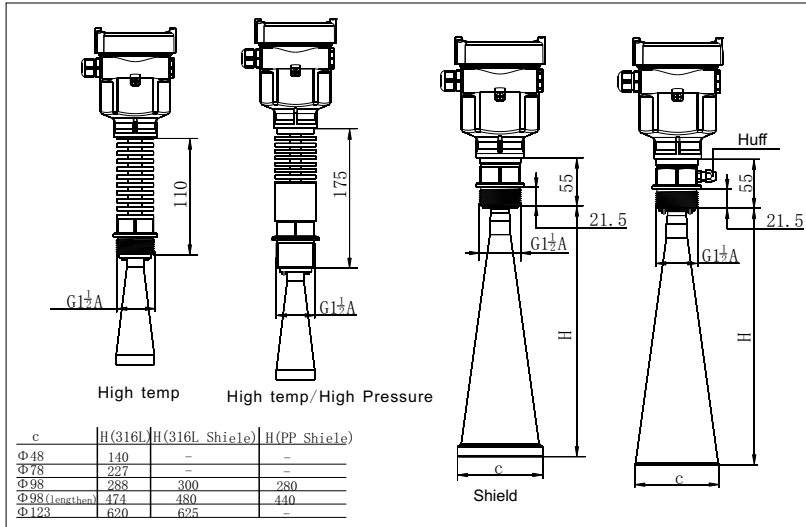
TNRP55 Threaded Vision



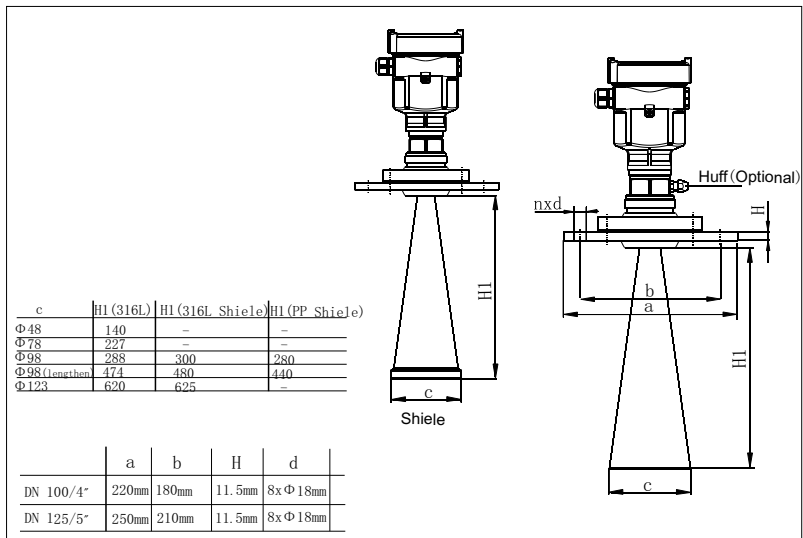
TNRP56 Threaded Vision



TNRP57 Threaded Vision

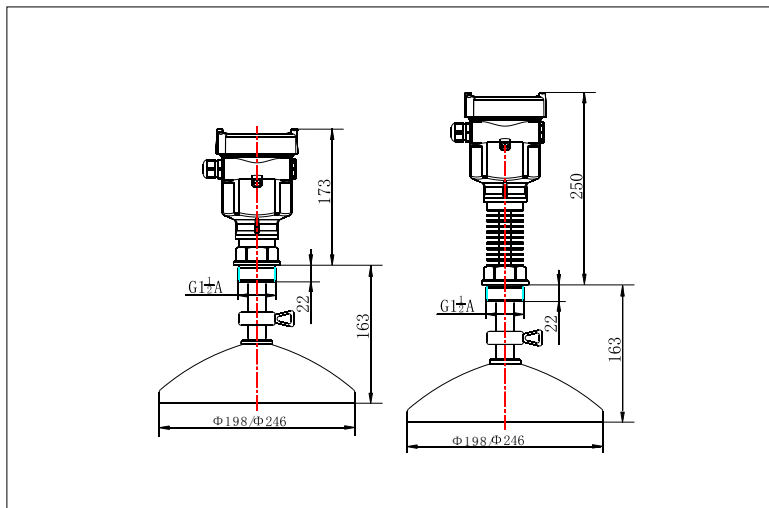


TNRP58/59 Threaded Vision

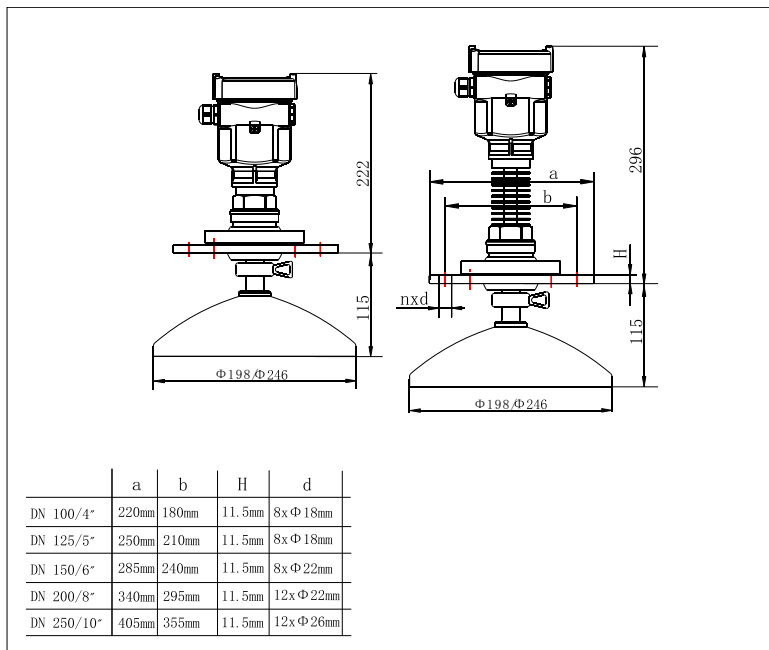


TNRP58/59 Gimbal Flange

Horn Antenna



TNRP58/59 Threaded Vision



TNRP 58/59 Gimbal Flange

Parabolic antenna

7 Technical Specifications

- General Parameters

产品型号	TNRP55	TNRP56	TNRP57	TNRP58	TNRP59
Process Connection	ThreadG1½A	ThreadG1½A		ThreadG1½A	
		Thread1½NPT	Flange 316L	Flange 316L	
				Thread1½NPT	
Material	PTFE	Stainless Steel 316L PTFE	PTFE	Stainless Steel316L PTFE	PTFE

Housing	Plastic PBT-FR; Aluminium,Stainless Steel 316L
Seal ring between housing and housing cover	Silicone
ViewPoint window on housing	Polycarbonate
Ground terminal	Stainless Steel

Weight	Weight	
	-TNRP55	1kg (Depend on process connections and housings)
	-TNRP56	2kg (Depend on process connections and housings)
	-TNRP57	3kg (Depend on process connections and housings)
	-TNRP58	7kg (Depend on process connections and housings)
-TNRP59	6kg (Depend on process connections and housings)	

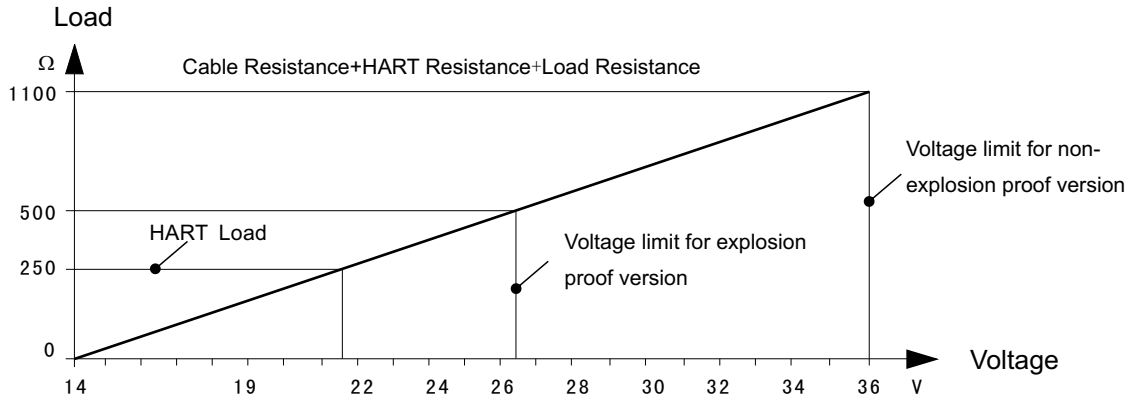
Power 2-wire	Standard Version	(16~26)V DC
	Intrinsic Safe Version	(21.6~26.4)V DC
	Power Consumption	max.22.5mA
	Ripple Allowed	
	-<100Hz	U _{ss} <1V
-(100~100K)Hz	U _{ss} <10mV	

4-wire/2-chamber	Intrinsic Safe+Explosion-Proof	(22.8~26.4)V DC, (198~242)V AC
	Power Consumption	max.1VA, 1W

Parameters on Cable	Cable Entry/Plug	One cable entry of M20x1.5 (cable diameter of 5~9mm) , one binding of M20x1.5
	Spring Connection Terminal	Applicable for cables with cross section of 2.5mm ²

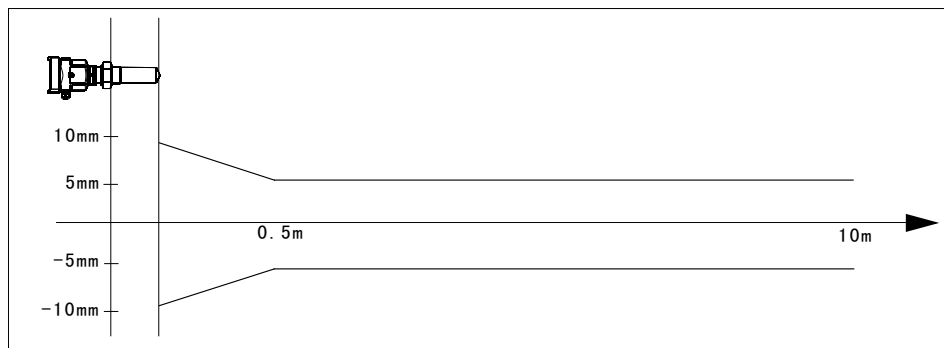
Output	Output Signal	4...20mA/HART
	Resolution	1.6µA
	Fault Signal	Constant current output: 20.5mA; 22mA; 3.9mA
	-2-wire load resistance	See diagram below
	-4-wire load resistance	Max. 500ohm
	Integration Time	0...40sec, adjustable

2-Wire Load Resistance Diagram



● Characteristic parameter	Blanking Distance	End of Antenna	
	Max Measurement Distance	- TNRP55	10m (liquid)
		- TNRP56	30m (liquid)
		- TNRP57	20m (liquid)
		- TNRP58	70m (solid)
		- TNRP59	15m (solid)
	Microwave Frequency	26GHz	
	Measurement Interval	About 1sec (Depend on parameter settings)	
	Adjustment Time ₁₎	About 1sec (Depend on parameter settings)	
	Resolution of Display	1mm	
	Accuracy	See the diagram below	
	Temperature for Storage/Transport	(-40~100)°C	
	Process Temperature (Probe)		
		- TNRP55	(-40~130) °C
		- TNRP56	(-60~400) °C
		- TNRP57	(-40~150) °C
		- TNRP58	(-60~400)°C
		- TNRP59	(-40~200) °C
	Relative Humidity	<95%	
	Pressure	Max. 40MPa	
	Vibration Proof	Mechanical vibration 10m/s 10m ² /s , 10~150Hz	

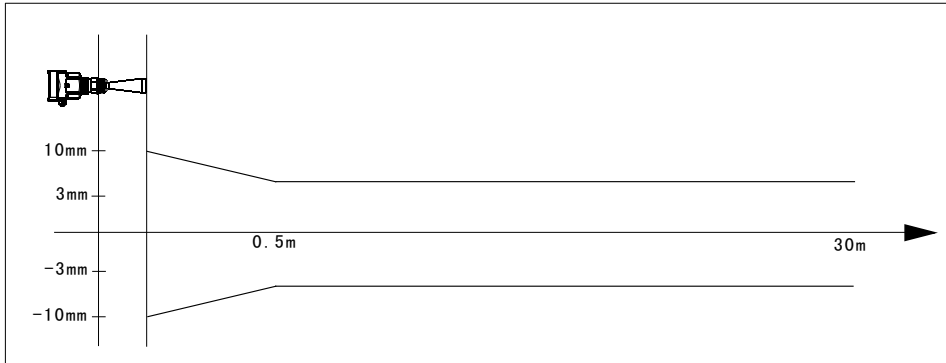
TNRP55



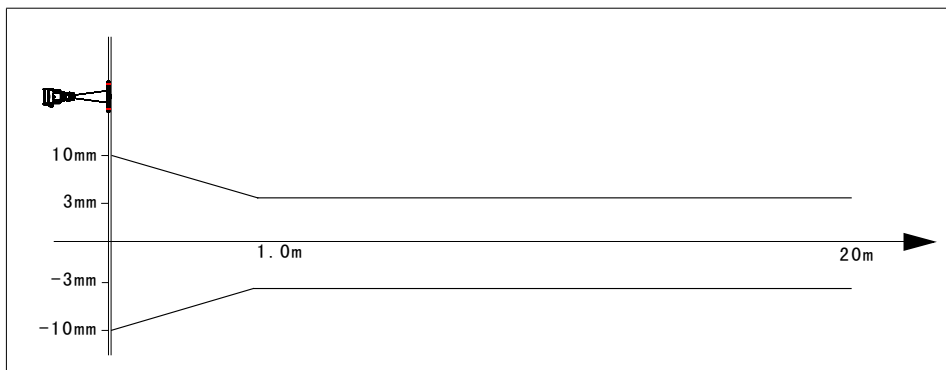
3dB Beam Angle 22°
Accuracy See the diagram left

1) The generation of accurate measurement results needs longer time than usual in the event of drastic level changes(mx. Error 10%).

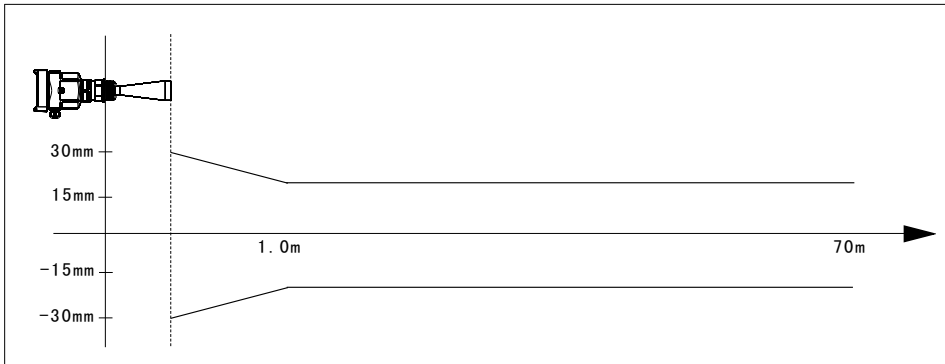
TNRP56	3dB Beam Angle	
	-Φ48mm	18°
	-Φ75mm	12°
	-Φ98mm	8°
	-Φ123mm	6°
Accuracy	See the accuracy illustration diagram below	



TNRP57	3dB Beam Angle	
	-flangeDN50	18°
Accuracy	-flangeDN80	12°
	See the accuracy illustration diagram below	



TNRP58	3dB Beam Angle	
	-Φ48mm	18°
	-Φ75mm	12°
	-Φ98mm	8°
	-Φ123mm	6°
	-Φ196mm	5°
Accuracy	-Φ246mm	4°
	See the accuracy illustration diagram below	



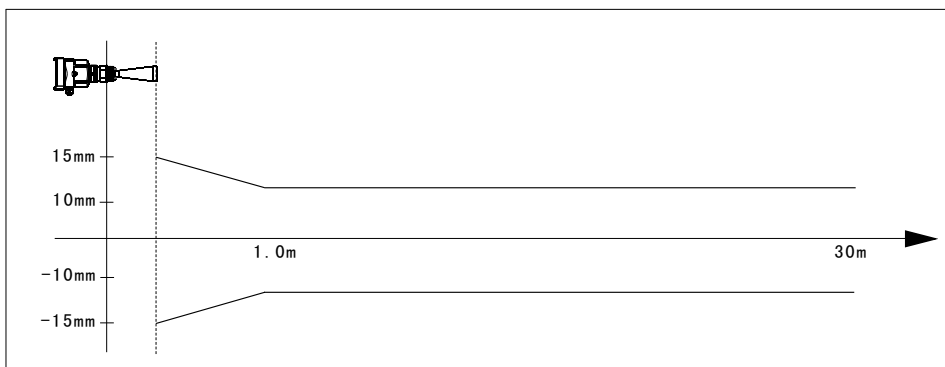
□ TNRP59

3dB Beam Angle

-Φ48mm	18°
-Φ75mm	12°
-Φ98mm	8°
-Φ123mm	6°
-Φ196mm	5°
-Φ246mm	4°

Accuracy

See the accuracy illustration diagram below



9 Selection & Ordering Information

● TNRP55

Explosion Proof Approval	
P	Standard (Without Approval)
I	Intrinsically Safe (Exia IIC T6)
C	Intrinsically Safe+Ship Approval (Exia IIC T6) (NO)
G	Intrinsically Safe+Flameproof Approval (Exd ia IIC T6)
Shape of Antenna/Material/Process Temperature	
B	(R) Airproof Horn 50/PTFE/(-40~130)°C
C	(R) Airproof Horn 80/PTFE/(-40~130)°C
Process Connection/Material	
GP	(F) Thread G1½A
NP	(F) Thread 1½NPT
FA	(L) Flange DN50/PTFE
FB	(L) Flange DN80/PTFE
FX	Special Design
Length of Vessel Socket	
A	100mm
B	200mm
Electronic	
B	(4~20) mA/HART2-Wire
C	(4~20) mA/(22.8~26.4) V DC /HART 4-wire
D	(198~242) V AC/HART 4-wire
E	(4~20) mA/(22.8~26.4) V DC /HART 2-wire
X	Special Design
Housing/Protection	
A	Aluminium/IP67
B	Plastic/IP66
D	Aluminium (2-chamber)/IP67
G	Stainless Steel316L/IP67
H	Stainless Steel316L(2-chamber)/IP67
Cable Entry	
M	M20x1.5
N	½NPT
Display/Programming	
A	Yes
X	No

Note: The instrument with approval "I" can use Electronic "B" and housing "A, D, G, H",
The instrument with approval "G" can use Electronic "C or D, E" and housing "D, H".
Standard flange size of the reference GB/T9119-2000 Thickness of 15mm.

● □ TNRP56

Explosion Proof Approval				
P Standard (Without Approval)				
I Intrinsically Safe (Exia IIC T6)				
C Intrinsically Safe+Ship Approval (Exia IIC T6)				
G Intrinsically Safe+Flameproof Approval (Exd ia IIC T6)				
Shape of Antenna/Material/Process Temperature				
B	(T)	Horn	Φ48mm/Stainless Steel 316L	
C	(T)	Horn	Φ78mm/Stainless Steel 316L	
H	(T)	Horn	Φ98mm/Stainless Steel 316L	
I	(T)	Horn	Φ98mm (Lengthen) /Stainless Steel 316L	
J	(T)	Horn	Φ123mm/Stainless Steel 316L	
K	(S)	Horn	Φ98mm/PP/PTFE Shield (NO)	
L	(S)	Horn	Φ98mm (Lengthen) /PP/PTFE Shield (NO)	
M	(V)	Horn	Φ98mm/Stainless Steel 316L/PTFE Shield	
N	(V)	Horn	Φ98mm (Lengthen) /Stainless Steel 316L/PTFE Shield	
P	(V)	Horn	Φ123mm/Stainless Steel 316L/PTFE Shield	
X	Special Design			
Process Connection/Material				
GP	(H)	thread	G1½A/Stainless Steel 316L	
GA	(H)	thread	1½NPT/Stainless Steel 316L	
GB	(G)	thread	G1½A/PP	
GC	(J)	thread	G1½A/Stainless Steel 316L/temperature (-60~250)°C	
GE	(I)	thread	G1½A/Stainless Steel 316L (Huff)	
GX	Special Design			
Flange/Material				
	Material	PP (L)	PTFE (L)	Stainless Steel (M)
Spec. Code				
	DN50	FA	FB	FC
	DN80	GA	GB	GC
	DN100	HA	HB	HC
	DN125	IA	IB	IC
F0 No				
FX Special Design				
Seal/Process Temperature				
2 Viton (-60~150)°C				
3 Kalrez (-60~250)°C				
4 Graphite (-60~400)°C				
Electronic				
B	(4~20) mA/HART 2-Wire			
C	(4~20) mA/(22.8~26.4) V DC /HART 4-wire			
D	(198~242) V AC/HART 4-wire			
E	(4~20) mA/(22.8~26.4) V DC /HART 2-wire			
X	Special Design			
Housing/Protection				
A	Housing/Protection/ IP67			
B	Plastic/ IP66			
D	Aluminium (2-chamber)/ IP67			
G	Stainless Steel 316L/ IP67			
H	Stainless Steel 316L (2-chamber)/ IP67			

Cable Entry	
M	M20x1.5
N	½NPT
Display/Programming	
A	Yes
X	No

Note: The instrument with approval "I" can use Electronic "B" and housing "A, D, G, H",
The instrument with approval "C" can use Electronic "B" and housing "G",
The instrument with approval "G" can use Electronic "C or D, E" and housing "D, H".
Standard flange size of the reference GB/T9119-2000 Thickness of 15mm.

● TNRP57

Explosion Proof Approval	
P	Explosion Proof Approval
I	Intrinsically Safe (Exia IIC T6)
C	Intrinsically Safe+Ship Approval (Exia IIC T6) (N0)
G	Intrinsically Safe+Flameproof Approval (Exd ia IIC T6)
Shape of Antenna/Material	
B	(U)Stainless Steel&PTFE Flange DN50
C	(U)Stainless Steel&PTFE Flange DN80
D	(U)Stainless Steel&PTFE Flange DN100
X	Special Design
Electronic	
B	(4~20)mA/HART 2-Wire
C	(4~20)mA/(22.8~26.4)V DC /HART 4-wire
D	(198~242)V AC/HART 4-wire
E	(4~20)mA/(22.8~26.4)V DC /HART 2-wire
X	Special Design
Housing/Protection	
A	Housing/Protection/IP67
B	Plastic/IP66
D	Aluminium (2-chamber)/IP67
G	Stainless Steel316L/IP67
H	Stainless Steel316L(2-chamber)/IP67
Cable Entry	
M	M20x1.5
N	½NPT
Display/Programming	
A	Yes
X	No

Note: The instrument with approval "I" can use Electronic "B" and housing "A, D, G, H",
The instrument with approval "G" can use Electronic "C or D, E" and housing "D, H".
Standard flange size of the reference GB/T9119-2000 Thickness of 15mm.

● TNRP58

Explosion Proof Approval						
P Explosion Proof Approval						
I Intrinsically Safe (Exia IIC T6)						
C Intrinsically Safe+Ship Approval (Exia IIC T6) (N0)						
G Intrinsically Safe+Flameproof Approval (Exd ia IIC T6)						
Shape of Antenna/Material						
B (T) Horn Φ 48mm/Stainless Steel316L						
C (T) Horn Φ 78mm/Stainless Steel316L						
H (T) Horn Φ 98mm/Stainless Steel316L						
I (T) Horn Φ 98mm (Lengthen) /Stainless Steel 316L						
J (T) Horn Φ 123mm/Stainless Steel316L						
K (S) Horn Φ 98mm/PP/PTFE Shield						
L (S) Horn Φ 98mm (Lengthen) /PP/PTFE Shield						
M (V) Horn Φ 98mm/Stainless Steel316L/PTFE Shield						
N (V) Horn Φ 98mm (Lengthen) /Stainless Steel316L/PTFE Shield						
P (V) Horn Φ 123mm/Stainless Steel316L/PTFE Shield						
Q (W) Parabolic Φ 196mm/Stainless Steel 316L						
R (W) Parabolic Φ 246mm/Stainless Steel 316L						
X Special Design						
Process Connection/Material						
GP (H) Thread G1½A/Stainless Steel316L						
GA (H) Thread 1½NPT/Stainless Steel316L						
GB (G) Thread G1½A/PP						
GC (J) Thread G1½A/Stainless Steel316L/ Temperature (-60~250)°C						
GE (I) Thread G1½A/Stainless Steel316L (Huff)						
GF (E) Thread G1½A/Stainless Steel316L/ Temperature (-60~150)°C						
GG (E1) Thread G1½A/Stainless Steel316L/ Temperature (-60~250)°C						
GX Special Design						
Flange/Material						
Material Spec. Code	PP (L)	PTFE (L)	Stainless Steel (M)	Gimbal Flange (PP) (N)	Gimbal Flange (Stainless Steel) (P)	
DN50	FA	FB	FC	-	-	
DN80	GA	GB	GC	-	-	
DN100	HA	HB	HC	HD	HE	
DN125	IA	IB	IC	ID	IE	
DN150	JA	JB	JC	-	JE	
DN200	KA	KB	KC	-	KE	
DN250	LA	LB	LC	-	LE	
F0 No						
FX Special Design						
Seal/Process Temperature						
2 Viton (-60~150)°C						
3 Kalrez (-60~250)°C						
4 Graphite (-60~400)°C						

Electronic	
B	(4~20) mA/HART 2-Wire
C	(4~20) mA/(22.8~26.4) V DC /HART 4-wire
D	(198~242) V AC/HART 4-wire
E	(4~20) mA/(22.8~26.4) V DC /HART 2-wire
X	Special Design
Housing/Protection	
A	Housing/Protection I/IP67
B	Plastic/IP66
D	Aluminium (2-chamber)/IP67
G	Stainless Steel 316L/IP67
H	Stainless Steel 316L(2-chamber)/IP67
Cable Entry	
M	M20x1.5
N	½NPT
Display/Programming	
A	Yes
X	No

Note: The instrument with approval "I" can use Electronic "B" and housing "A, D, G, H",
 The instrument with approval "G" can use Electronic "C or D, E" and housing "D, H".
 Standard flange size of the reference GB/T9119-2000 Thickness of 15mm.

● TNRP59

Explosion Proof Approval						
P Explosion Proof Approval						
I Intrinsically Safe (Exia IIC T6)						
C Intrinsically Safe+Ship Approval (Exia IIC T6) (N0)						
G Intrinsically Safe+Flameproof Approval (Exd ia IIC T6)						
Shape of Antenna/Material						
B (T) Horn Φ 48mm/Stainless Steel316L						
C (T) Horn Φ 78mm/Stainless Steel316L						
H (T) Horn Φ 98mm/Stainless Steel316L						
I (T) Horn Φ 98mm (Lengthen) /Stainless Steel 316L						
J (T) Horn Φ 123mm/Stainless Steel316L						
K (S) Horn Φ 98mm/PP/PTFE Shield						
L (S) Horn Φ 98mm (Lengthen) /PP/PTFE Shield						
M (V) Horn Φ 98mm/Stainless Steel316L/PTFE Shield						
N (V) Horn Φ 98mm (Lengthen) /Stainless Steel316L/PTFE Shield						
P (V) Horn Φ 123mm/Stainless Steel316L/PTFE Shield						
Q (W) Parabolic Φ 196mm/Stainless Steel 316L						
R (W) Parabolic Φ 246mm/Stainless Steel 316L						
X Special Design						
Process Connection/Material						
GP (H) Thread G1½A/Stainless Steel316L						
GA (H) Thread 1½NPT/Stainless Steel316L						
GB (G) Thread G1½A/PP						
GC (J) Thread G1½A/Stainless Steel316L/ Temperature (-60~250)°C						
GE (I) Thread G1½A/Stainless Steel316L (Huff)						
GF (E) Thread G1½A/Stainless Steel316L/ Temperature (-60~150)°C						
GG (E1) Thread G1½A/Stainless Steel316L/ Temperature (-60~250)°C						
GX Special Design						
Flange/Material						
	Material Spec. Code	PP (L)	PTFE (L)	Stainless Steel (M)	Gimbal Flange (PP) (N)	Gimbal Flange (Stainless Steel) (P)
	DN50	FA	FB	FC	-	-
	DN80	GA	GB	GC	-	-
	DN100	HA	HB	HC	HD	HE
	DN125	IA	IB	IC	ID	IE
	DN150	JA	JB	JC	-	JE
	DN200	KA	KB	KC	-	KE
	DN250	LA	LB	LC	-	LE
F0 No						
FX Special Design						
Seal/Process Temperature						
2 Viton (-60~150)°C						
3 Kalrez (-60~250)°C						
4 Graphite (-60~400)°C						

Electronic	
B	(4~20) mA/HART 2-Wire
C	(4~20) mA/(22.8~26.4) V DC /HART 4-wire
D	(198~242) V AC/HART 4-wire
E	(4~20) mA/(22.8~26.4) V DC /HART 2-wire
X	Special Design
Housing/Protection	
A	Housing/ProtectionI/IP67
B	Plastic/IP66
D	Aluminium (2-chamber)/IP67
G	Stainless Steel316L/IP67
H	Stainless Steel316L(2-chamber)/IP67
Cable Entry	
M	M20x1.5
N	1/2NPT
Display/Programming	
A	Yes
X	No

Note: The instrument with approval "I" can use Electronic "B" and housing "A, D, G, H",
The instrument with approval "G" can use Electronic "C or D, E" and housing "D, H".
Standard flange size of the reference GB/T9119-2000 Thickness of 15mm.

9 Application Questionnaire

Approvals

- Standard Version
 Intrinsically Safe Version (Exia IIC T6)
 Intrinsically Safe Version (Exia IIC T6)
 Intrinsically Safe Version+Ship Approval (Exia IIC T6)
 Intrinsically Safe Version+Explosion Proof (Exd [ia] IIC T6)

Measured Medium

Name _____
 Condition
 Liquid
 Solid (Form
 Mass
 Particle
 Dust)
 Temperature: Min. _____ °C Norm. _____ °C Max. _____ °C
 Surface Flat Turbulent Agitated Vorte
 Dielectric Constant $\epsilon_r < 3$ $\epsilon_r > 3$

Atmosphere

Atmosphere Form Foam Dust Deposit Vapour
 Atmosphere Pressure Min. _____ Norm. _____ Max. _____

Vessel

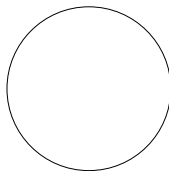
Shape of Top Flat Arch Conical Horizontal
 Height _____ Diameter _____
 Critical Information
 Nozzle Length: _____ Nozzle Diameter: _____ Measurement Range: _____

Process Connection

Thread (G½A ¾NPT G1A G1A, M105x2 G1½A 1½NPT G2A)
 Flange (DN=) Swivelling Holder

Installation

Mode: Top Side
 Filling Stream inlet position and installation position (Please specify in the diagram below)



Circular Vessel



Square Vessel

Power Supply 220V AC 2-wire 24V DC 3-wire 24V DC 4-wire 24V DC

Communication (4~20) mA/HART

Display Yes No

Customer Information

Contact: _____
 Company: _____
 Address: _____
 P. C.: _____ Tel: _____
 Email: _____ Fax: _____

Please give brief explanation on the application of instrument:

Date: _____

Level Measurement Expert

Prisma Instruments
Expertise & Industrial Solutions

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