ULTRASONIC DIFFERENTIAL LEVEL TRANSMITTER

I. Product profile

1.1 Foreward

Ultrasonic liquid level differential meter is an intelligent non-contact liquid (material) level measurement instrument. Ultrasonic level meter is composed of three parts: ultrasonic probe and ultrasonic control host.

This instrument adopts modular circuit design, multi-layer PCB board of military quality, close hardware structure and reasonable layout. This product adopts 18-key operation menu, supports isolated 4-20mA output, HART communication, built-in GPRS, GPS, 4G and other wireless data transmission, built-in 500000 storage, support USB storage export Modules can also be added to achieve other functions according to customer requirements.

This product can meet most of the requirements of liquid level measurement without contact with industrial media. It completely solves the disadvantages of traditional measurement methods such as pressure type capacitor type float type winding blockage leakage medium corrosion and inconvenient maintenance, so it can be widely used in various fields related to material level monitoring

1.2 Product feature

●Ultrasonic non-contact liquid level measurement, completely did not affect the measured liquid, the accurate liquid level measurement is the ideal liquid level instrument.

●The probe has low power consumption, easy installation, easy positioning, widely used in petrochemical, metallurgy, electric power, pharmaceutical, water supply and drainage, environmental protection and other systems and the industry of various media liquid level measurement.

●Ultrasonic liquid level meter with a historical flow meter function, can record the flow data of the past 60 hours, 30 days, 12 months, 10 years, built-in 500,000 storage.

●Comprehensive instrument control function, four-way relay signal output, easy to connect to the common actuators (motor, alarm, etc.).

●According to the requirements of the working conditions, the probe can choose IP68, anti-corrosion, explosion-proof, small blind area high-precision, ultra-low power consumption, a large range and other special types of products.

●Chinese display interface, 18-key key operation.More accessible menu options, even more. Quick realization of human-machine communication.

●Built-in telecommunication module, you can customize various communication protocols (customized when ordering).

1.3 Measuring principle

d:measure height

h:liquid level

H:installation height
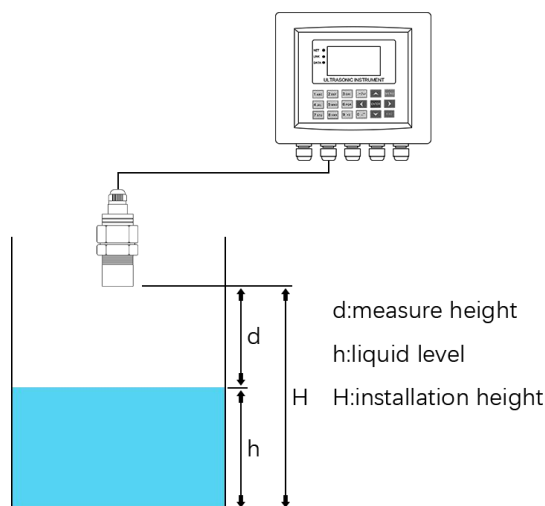
Ultrasonic liquid level meter is to measure the liquid level of fluid by using the characteristics of ultrasonic emission and reflection.Probe emit ultrasonic pulse signal to the surface of the medium, ultrasonic in the transmission of the medium (liquid) after reflection, the ultrasonic signal reflected by electronic module detection, through the processor, analyze the time difference of ultrasonic and echo, combined with the propagation speed of ultrasonic, can calculate the ultrasonic propagation distance, and can reflect the liquid level.

1.4 Technical parameters

●Flow accuracy：±0.2%F.S

●Ultrasonic probe (liquid level meter) performance index：

　　Blind zone：0.06~0.6m（It varies from sensor to sensor）

　　Distance measurement range：1，2(tandard configuration)，5，8，10，12，15，20, 25, 30, 35, 40m (Optional high precision small blind area type or larger range type)

　　ABS Material, IP65 levels of protection, 10 m Shield cable (Customizable at any length)

●Host performance metrics：

　　3 Level LCD display　　　The 18-bit keyboard operation

　　IP65 evels of protection　　　M16×1.5 Electrical interface

●AC 85~380V or DC 11~24V power supply power dissipation 5W

●Input signal：RS485 interface

●output signal：1line/2line 4-20mA (standard configuration for 1 line), Four-line relay, RS485

●Sensor mounting interface： standard 485 interface (24V power supply)×2

●working environment： normal temperatures and pressures

●Data browsing： Quick view of the liquid level data records

●Options: HART communication, U disk data export, 4G wireless transmission (purchase on order)

II．Structure and use of the instrument

2.1 Structure of the instrument

This ultrasonic level meter consists of the host machine and the ultrasonic probe.Easy to install and easy to operate. Its composition and structure is shown in Figure 2-1:

d:measure height
h:liquid level
H:installation height
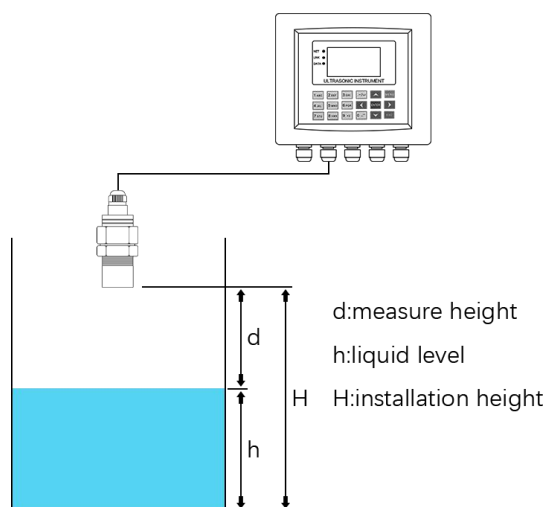
Host machine: display time, relay status, liquid level, probe and liquid level distance, current ambient temperature,

output signal and other related information.

Ultrasonic probe: detect the depth of liquid in the tank.

2.2 Basic setup of instrument

After the instrument is installed, only set the installation height of the two probes, and the instrument can operate normally.

2.21 Setting of the installation height

Installation height, according to the number and probe range, the two probes to choose the appropriate installation height.

III. Adjustment and installation

3.1 Keyboard input

Before the measurement begins, only complete the installation as required, set the basic parameters, and can be energized for normal measurement.18-Key keyboard input, the key basic functions are shown in sheet 1, the key is shown in the figure


sheet 1

MENU	Menu return	Keys into Password input	ESC	Cancel	Back to the Top
◀	Left mobile key	Cursor left	.–/⊔	Symbol	Incoming symbol
▶	Right mobile key	Cursor right	0 ,;"	'0'	'0'Entry key
ENTER	Determine the preservation	Determine, save Enter the menu	▲ ▼	Up and down to choose	Up down selection menu

3.2 Instrument connection

Note: Please connect correctly according to the wiring definition to avoid improper operation and damage caused by the wrong connection.
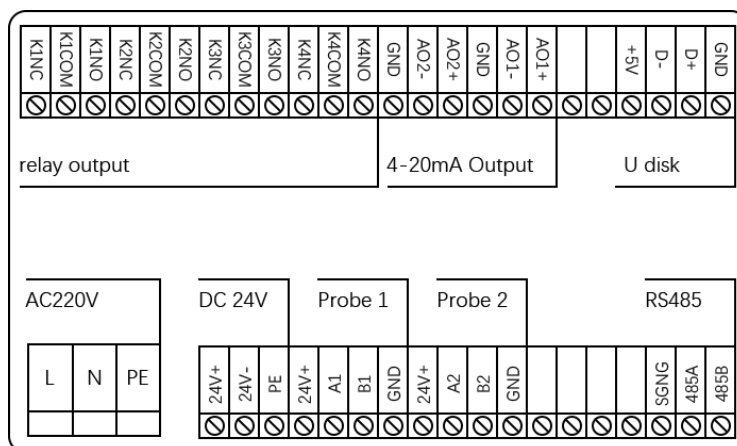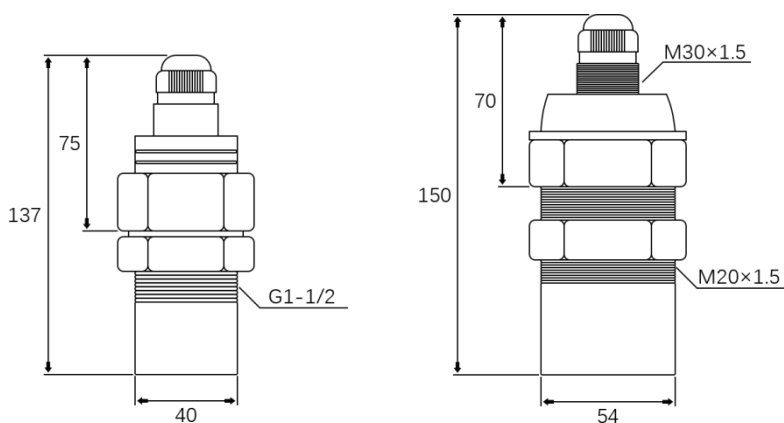
3.3 Instrument installation

### 3.3.1Installation of the ultrasonic probe of the liquid level meter

Conventional installation

The ultrasonic probe (level meter) is equipped with a fixed screw ring. Adjust the installation Angle of the ultrasonic probe on the installation position reserved in advance or the mounting hole of the bracket, and tighten the screw ring

Waveguide tube installation

In the special circumstances of the field environment, small volume tank, the ultrasonic level meter level detection is not accurate, often a certain fixed value phenomenon.The effective way to avoid this phenomenon is to add the installation method of the guide wave tube.
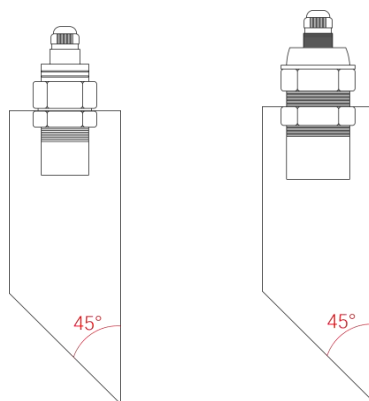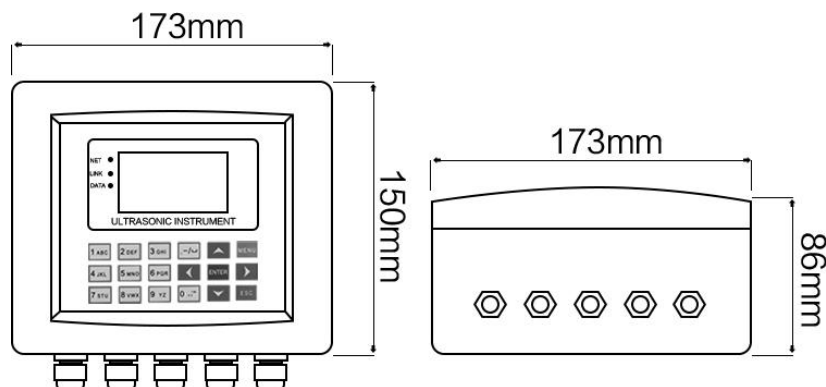
Guide wave tube can be selected PVC, PP and other plastic tube, smooth inside, inner diameter> 100MM, the length to extend into the tank, the front end should be cut into 45 oblique Angle, the port is neat and no burr.
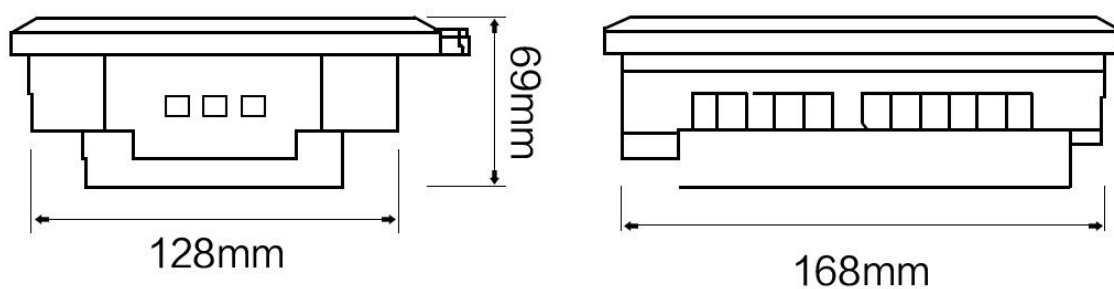
3.3.2 Host installation

host computer has two installation methods with embedded installation and wall-mounted

Main shape size 176×150×86mm：

Embedded installation

Open hole size 160×126mm，

Wall-mounted installation

The product design has four shortcut wall mounting mounting holes, just fix the screws according to the wall mounting fixing point, and then hang the product.The wall-hanging hole distance is 167×105mm.

Note: When installing the probe (liquid level meter), debug the product before fixing it.In order to extend the service life of the instrument, the instrument sunscreen and waterproof measures should be taken.
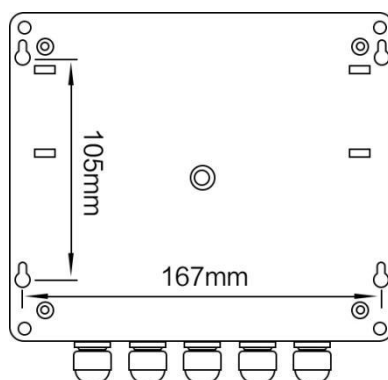
4. Model Selection

PROLEVEL 1000R		X	X	X	X	X	X	X	X	X
Measure Range	4m	4								
	6m	6								
	8m	8								
	12m	12								
	20m	20								
	30m	30								
	40m	40								
License	Standard Type (Non ex-proof)		P							
	Intrinsically safe (Exia IIC T6 Ga)		I							
Probe Material /Process Temperature/ Protection Grade	ABS/(-40-75)°C/IP67			A						
	PVC/(-40-75)°C/IP67			B						
	PTFE/(-40-100)°C/IP67			C						
Process Connection	Thread				G					
	Flange /PP				D					
Electronic Unit	DC 4~20mA Two wire					2				
	RS485 Modbus					3				
	HART					4				
Shell / Protection Grade	ABS / IP67						L			
Relay Output	None							N		
	Two Relay							2		
	Four Relay							4		
	Six Relay							6		
Power Supply	DC24V								D	
	AC220V								A	
Remote Cable Length	Standard is 10m									1
	Specialized cable length (max 1000m)									xx

PROLEVEL 1000RD