



ULTRASONIC LEVEL METER SELECTION GUIDE

FOR LIQUID AND SOLID LEVEL



LONGRUN INDUSTRIAL INSTRUMENT CO., LTD

Contents

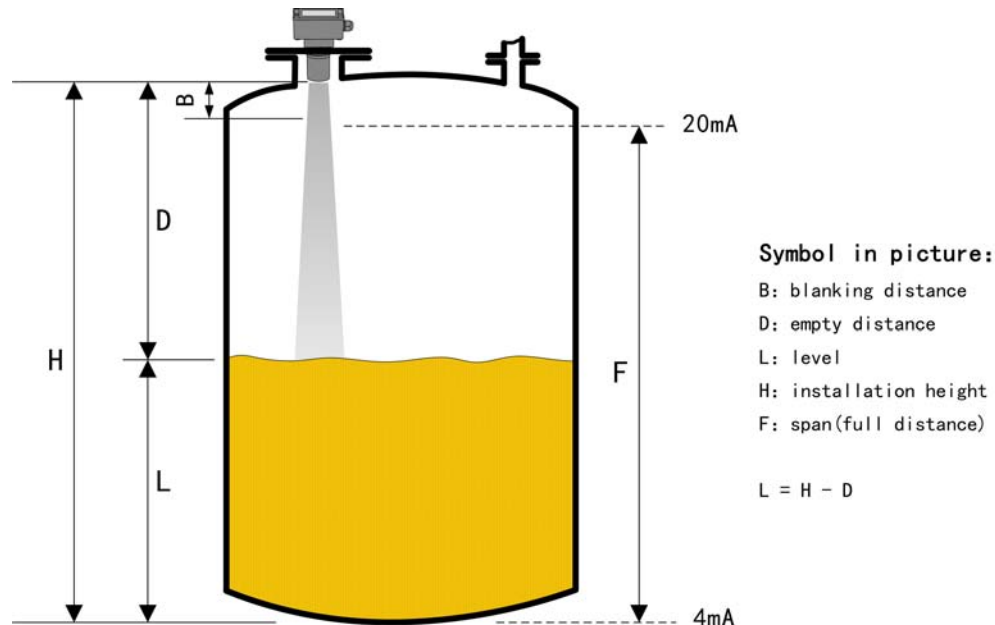
Part 1 Introduction

Technical principle.....	3
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Part2 Products

Compact version.....	4
HLT two-wire series.....	5
HLN three-wire series.....	6
HLU four-wire series.....	7
HLR RS485 series.....	8
Remote version	10
HLF series.....	10
HLML series.....	13
HLG series.....	14
Products technical data	17
Part3 Selecting a proper ultrasonic level meter.....	22

Technical principles



Time-of-flight method

The sensor of the meter pulses in the direction of the product surface. There, they are reflected back and received by the sensor. The meter measures the time t between pulse transmission and reception. The meter uses the time t (and the velocity of sound c) to calculate the distance D between the sensor membrane and the product surface:

$$D = c \cdot t / 2$$

As the device knows the empty distance H from a user entry, it can calculate the level as follows:

$$L = H - D$$

An integrated temperature sensor compensates for changes in the velocity of sound caused by temperature changes.

Calibration

Enter the empty distance H and the span F to calibrate the device.

Blanking distance

Span F may not extend into the blanking distance B . Level echoes from the blanking distance cannot be evaluated due to the transient characteristics of the sensor.

Compact version



Product features

- Max-range 30m 2-wire series in liquids
- Max-range 40m 4-wire series in liquids
- Min resolution 1mm
- big LCD/LED display
- Intelligent signal processing technology
- Simple configuration parameters ,without waiting for emptying containers
- Patent transducer structure. There is no request for the length of flange connection tube.
- Rot-proof plastic crust protect grade IP67,and many crusts to be selected
- HLU series with a dual-level relay
- Flexible setup
- DC/AC power supply , HLU series can be powered by AC

HLT two-wire series



Technical data

Measuring range	HLT4: 0-4m (in liquids); blacking distance:20cm
	HLT6: 0-6m (in liquids)、0-2m (in solids); blacking distance:25cm
	HLT8: 0-8m (in liquids)、0-4m (in solids); blacking distance:30cm
	HLT10: 0-10m (in liquids)、0-6m (in solids); blacking distance:35cm
	HLT15: 0-15m (in liquids)、0-8m (in solids); blacking distance:60cm
	HLT20: 0-20m (in liquids)、0-10m (in solids); blacking distance:80cm
	HLT30: 0-30m (in liquids)、0-15m (in solids); blacking distance :120cm
Accuracy	0.2% of full span (in air)
Output current	4-20mA
Power supply	DC24V(±20%) ≥30mA
Output load	0-500Ω
Output resolution ratio	0.03% of full span
Parameter set up	3 induction buttons
Temperature range	-40℃~80℃
Temperature compensation	Automatic in the whole range

Pressure range	±0.1MP (press definitely)
Beam angle	8° (3db)
Display	4 digit LCD (the height is 15mm)
Protect grade	IP67
Materials	The host: ABS\metal The probe: PVC\PTFE

HLN three-wire series



Technical data

Measuring range	HLN4: 0-4m (in liquids); blacking distance:20cm
	HLN6: 0-6m (in liquids)、0-2m (in solids); blacking distance:25cm
	HLN8: 0-8m (in liquids)、0-4m (in solids); blacking distance:30cm
	HLN10: 0-10m (in liquids)、0-6m (in solids); blacking distance:35cm
	HLN15: 0-15m (in liquids)、0-8m (in solids); blacking distance:60cm
	HLN20: 0-20m (in liquids)、0-10m (in solids); blacking distance:80cm
	HLN30: 0-30m (in liquids)、0-15m (in solids); blacking distance :120cm
Accuracy	0.2% of full span (in air)
Output current	4-20mA
Power supply	DC24V(±20%) ≥30mA
Output load	0-500Ω

Output resolution ratio	0.03% of full span
Parameter set up	3 induction buttons
Temperature range	-40℃~80℃
Temperature compensation	Automatic in the whole range
Pressure range	±0.1MP (press definitely)
Beam angle	8° (3db)
Display	4 digit LCD (the height is 15mm)
Protect grade	IP67
Materials	The host: ABS\metal The probe: PVC\PTFE

HLU four-wire series



Technical data

Measuring range	HLU4: 0-4m (in liquids); blacking distance:20cm
	HLU6: 0-6m (in liquids)、0-2m (in solids); blacking distance:25cm
	HLU8: 0-8m (in liquids)、0-4m (in solids); blacking distance:30cm
	HLU10: 0-10m (in liquids)、0-6m (in solids); blacking distance:35cm
	HLU15: 0-15m (in liquids)、0-8m (in solids); blacking distance:60cm
	HLU20: 0-20m (in liquids)、0-10m (in solids); blacking distance:80cm
	HLU30: 0-30m (in liquids)、0-15m (in solids); blacking

	distance :120cm
Accuracy	0.2% of full span (in air)
Output current	4-20mA
Power supply	DC24V(±20%) ≥30mA
Output load	0-500Ω
Output resolution ratio	0.03% of full span
Parameter set up	3 induction buttons
Temperature range	-40℃~80℃
Relays	2 relays (high and low); 5A 250VAC/30VDC
Temperature compensation	Automatic in the whole range
Pressure range	±0.1MP (press definitely)
Beam angle	8° (3db)
Display	4 digit LCD / 6 digit LED (the height is 15mm)
Protect grade	IP67
Materials	The host: ABS\metal ; The probe: PVC\PTFE

HLR serial communication series (RS485)



Technical data

Measuring range	HLR4: 0-4m (in liquids); blacking distance:20cm	
	HLR6: 0-6m (in liquids)、0-2m (in solids); blacking distance:25cm	
	HLR8: 0-8m (in liquids)、0-4m (in solids); blacking distance:30cm	
	HLR10: 0-10m (in liquids)、0-6m (in solids); blacking distance:35cm	
	HLR15: 0-15m (in liquids)、0-8m (in solids); blacking distance:60cm	
	HLR20: 0-20m (in liquids)、0-10m (in solids); blacking distance:80cm	
	HLR30: 0-30m (in liquids)、0-15m (in solids); blacking distance :120cm	
Accuracy	0.2% of full span (in air)	
Output current	4-20mA	
Power supply	DC24V(±20%) ≥30mA	
Output load	0-500Ω	
Output resolution ratio	0.03% of full span	
Parameter set up	3 induction buttons	
Temperature range	-40℃~80℃	
Serial communication	RS485 (modbus standard protocol/ hilevel simple protocol)	
Baud rate	19200/9600/4800	
Temperature compensation	Automatic in the whole range	
Pressure range	±0.1MP (press definitely)	
Beam angle	8° (3db)	
Display	4 digit LCD (the height is 15mm)	
Protect grade	IP67	
Materials	The host: ABS\metal ; The probe: PVC\PTFE	

Remote version

HLF standard series



HLML enhanced series



HLG difference-level series



Product features

- HLF series is the standard remote ultrasonic level meter.
 - ◆ HLF has 2 relays (high and low);
 - ◆ The cable between the probe and the host can be 20m at most.
- HLML series is the enhanced remote ultrasonic level meter.
 - ◆ HLML can have 2 probes to measure 2 point's level;
 - ◆ HLML can provide 6 relays at most;
 - ◆ HLML can provide RS485 serial communication;
 - ◆ The cable between the probe and the host can be 1000m at most;
 - ◆ HLML can be configured by "remote control".
- HLG series is the difference-level measurements.
 - ◆ HLG can provide two pair 4-20mA output or one 4-20mA and one RS485 output;

- ◆ The cable between the probe and the host can be 1000m at most;
- ◆ HLG can be configured by “remote control”.

HLF standard series

The host



Technical data

Type	HLF
Power supply	DC24V/AC220V
Display	4 digit LCD/6 digit LED
Accuracy	0.2% of full span (in air)
Output current	4-20mA
Output load	0-500Ω
Temperature range	-40℃~80℃
Pressure range	±0.1MP (press definitely)
Measure cycle	1 second
Parameter set up	3 induction buttons
Cable connection	PG11
Material	ABS
Protect grade	IP67
Fix	Hang

The probe--LU series (LU series---matching for HLF series)



LU-4、LU-6、LU-8 Technical data

Measuring range	LU-4:0-4m blacking distance:20cm LU-6:0-6m blacking distance:25cm LU-8:0-8m blacking distance:30cm
Temperature range	-40℃~80℃
Pressure range	±0.1MP (press definitely)
Beam angle	8° (3db)
Material	PVC/PTFE
Protect grade	IP65
The length of cable	10m(standard)
Fix	Flange /screw

LU-10 Technical data

Measuring range	LU-10:0-10m blacking distance:35cm
Temperature range	-40℃~80℃
Pressure range	±0.1MP (press definitely)
Beam angle	8° (3db)
Material	PVC
Protect grade	IP65
The length of cable	10m(standard)
Fix	Flange/screw



LU-15、LU-20、LU-30 Technical data



Measuring range	LU-15:0-15m blacking distance:60cm LU-20:0-20m blacking distance:100cm LU-30:0-30m blacking distance:120cm
Temperature range	-40℃~80℃
Pressure range	±0.1MP (press definitely)
Beam angle	8° (3db)
Material	PVC
Protect grade	IP65
The length of cable	10m(standard)
Fix	Flange /screw

HLML enhanced series

The host



Technical data

Type	HLML
Power supply	DC24V (±10%) 0.1A AC220V (±20%) 0.1A
Display	14 digit LCD in 2 rows

Accuracy	0.2% of full span (in air)
Output current	4-20mA /4-20mA&RS485
Relays quantity	2、4、6
Relays data	5A 250VAC/30VDC
Output load	0-500Ω
Temperature range	-40℃~80℃
Pressure range	±0.1MP (press definitely)
Measure cycle	1 second (changeable)
Parameter set up	3 induction buttons / remote control
Cable connection	PG9 /PG11/ PG13.5
Material	ABS
Protect grade	IP67
Fix	Hang

HLG difference-level series

The host



Technical data

Type	HLG
Power supply	DC24V (±10%) 0.1A AC220V (±20%) 0.1A
Display	14 digit LCD in 2 rows
Accuracy	0.2% of full span (in air)

Output current	4-20mA /RS485
Relays quantity	3
Relays data	5A 250VAC/30VDC
Output load	0-500Ω
Temperature range	-40℃~80℃
Pressure range	±0.1MP (press definitely)
Measure cycle	1 second (changeable)
Parameter set up	3 induction buttons / remote control
Cable connection	PG9/ PG13.5
Material	ABS
Protect grade	IP67
Fix	Hang

The probe--LB series (LB series---matching for HLML & HLG series)

LB-4、LB-6、LB-8 Technical data



Measuring range	LB-4:0-4m blacking distance:20cm LB-6:0-6m blacking distance:25cm LB-8:0-8m blacking distance:30cm
Temperature range	-40℃~80℃
Pressure range	±0.1MP (press definitely)
Beam angle	8° (3db)
Material	PVC/PTFE
Protect grade	IP65
The length of cable	10m(standard)
Fix	Flange /screw

LB-12 Technical data

Measuring range	LB-12:0-12m blacking distance:35cm
Temperature range	-40℃~80℃
Pressure range	±0.1MP (press definitely)
Beam angle	5° (3db)
Material	PVC
Protect grade	IP65
The length of cable	10m(standard)
Fix	Flange/screw



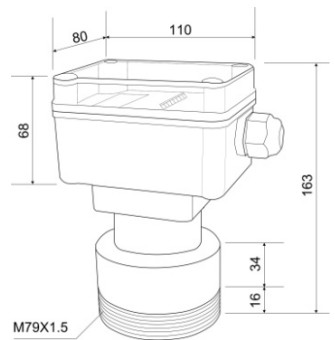
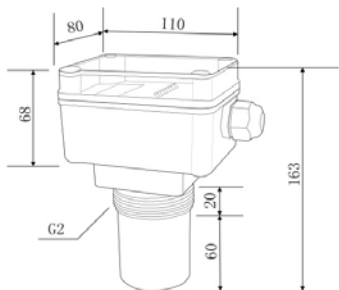
LB-15、LB-20、LB-30、LB-40

Technical data

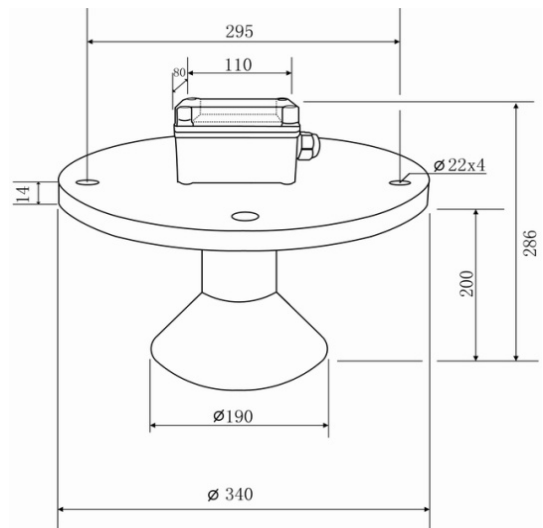
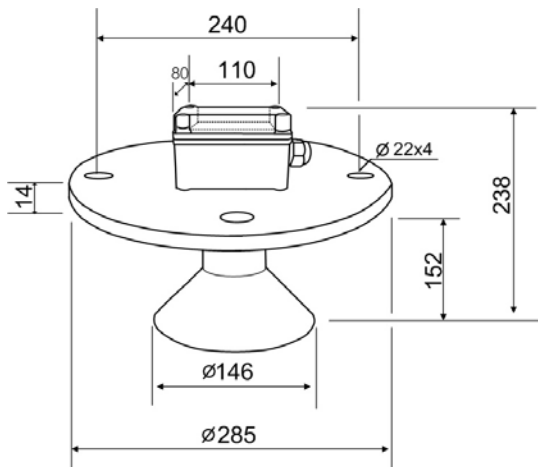


Measuring range	LB-15:0-15m blacking distance:60cm LB-20:0-20m blacking distance:80cm LB-30:0-30m blacking distance:100cm LB-40:0-40m blacking distance:120cm
Temperature range	-40℃~80℃
Pressure range	±0.1MP (press definitely)
Beam angle	5° (3db)
Material	PVC
Protect grade	IP65
The length of cable	10m(standard)
Fix	Flange /screw

Dimensions
The compact version---ABS material
crust

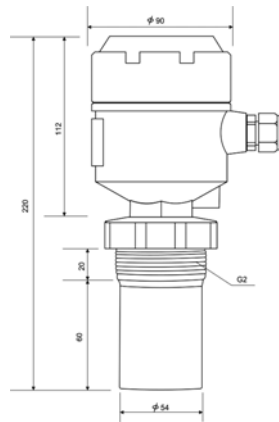


10m/12m

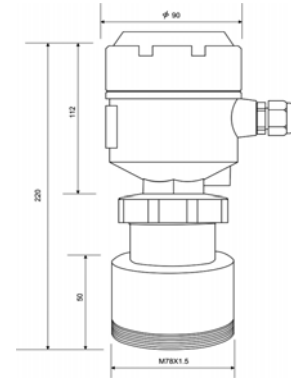


**The compact version---Metal material
crust**

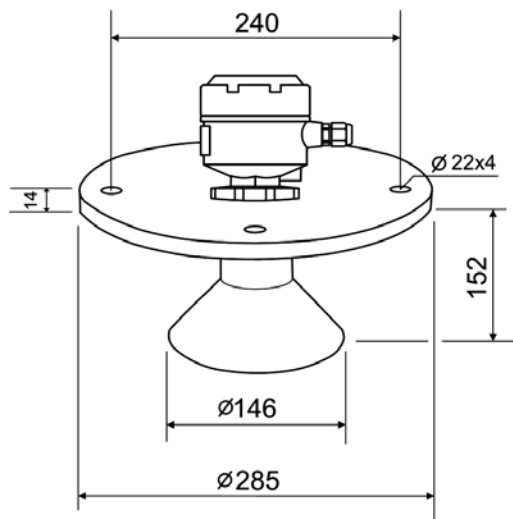
THE GREEN



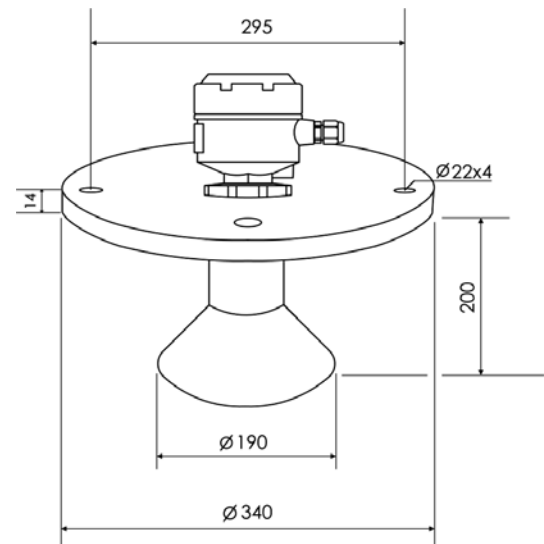
4m/6m/8m



10m/12m

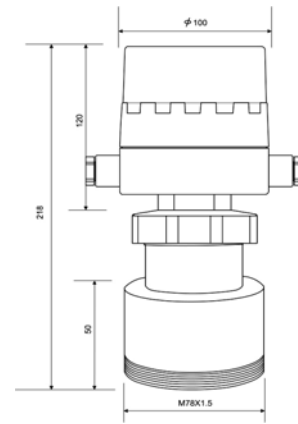
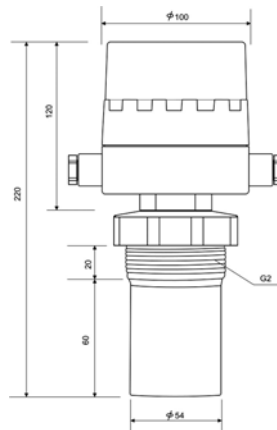


15m



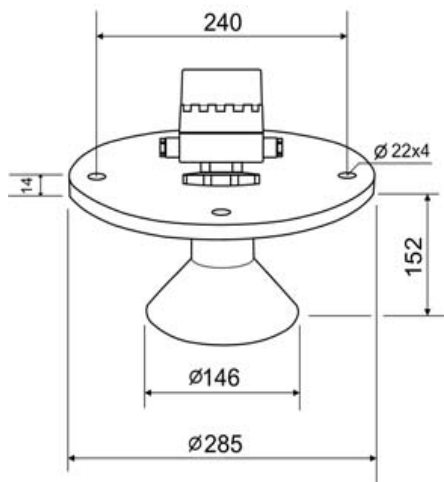
20m/30m/40m

THE BLUE

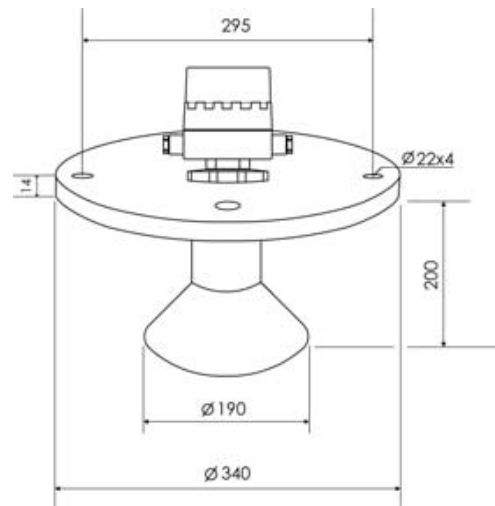


4m/6m/8m

12m



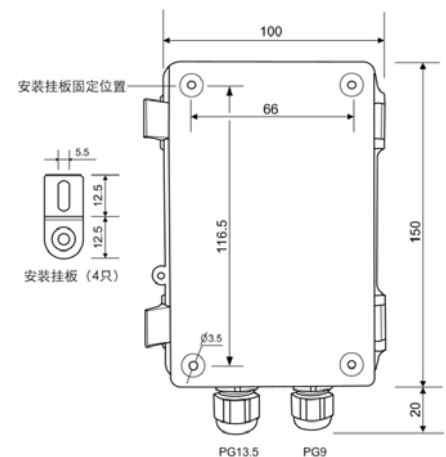
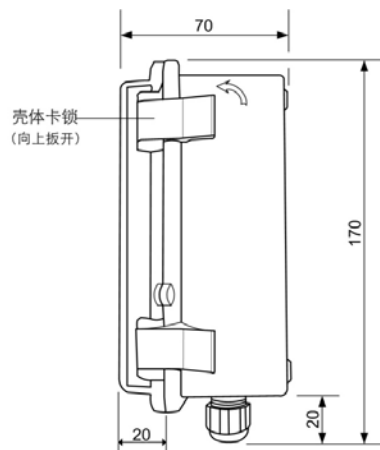
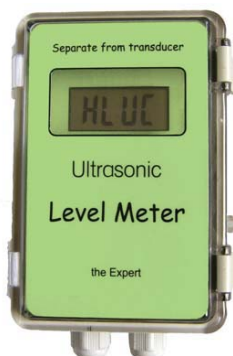
15m



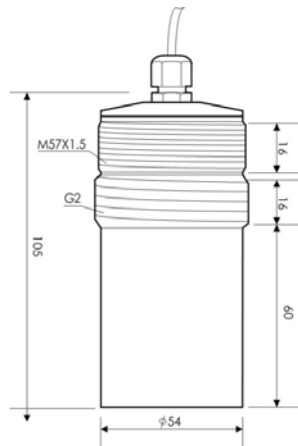
20m/30m/40m

The Remote version

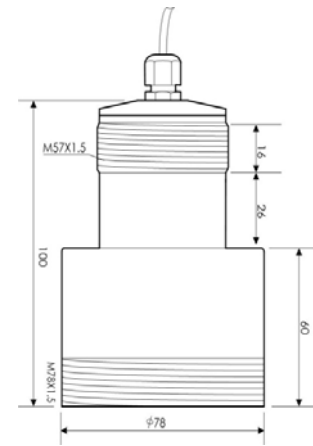
HLF series The host



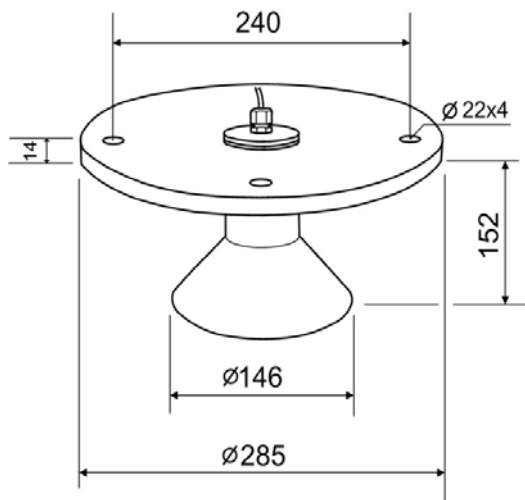
The probe---LU series



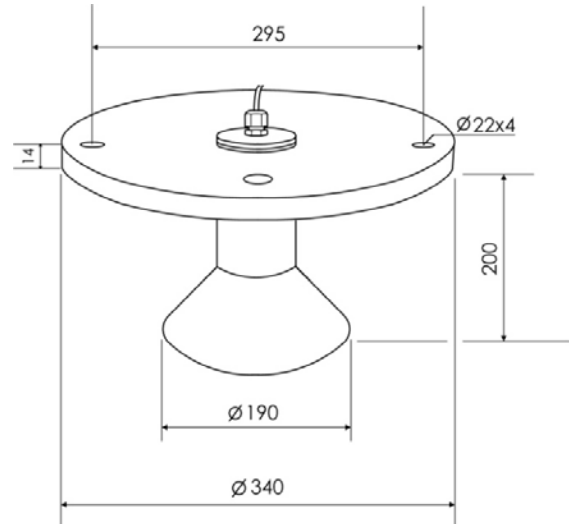
LU4/LU6/LU8



LU10



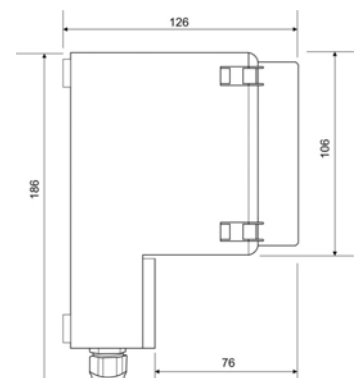
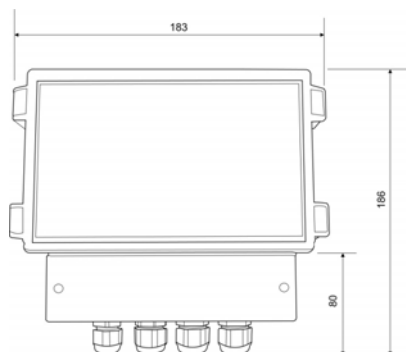
LU15



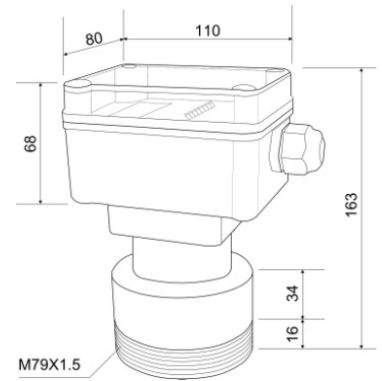
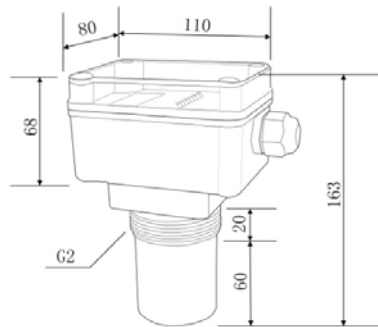
LU20/LU30/LU40

HLML 、HLG series

The host



The probe---LB series

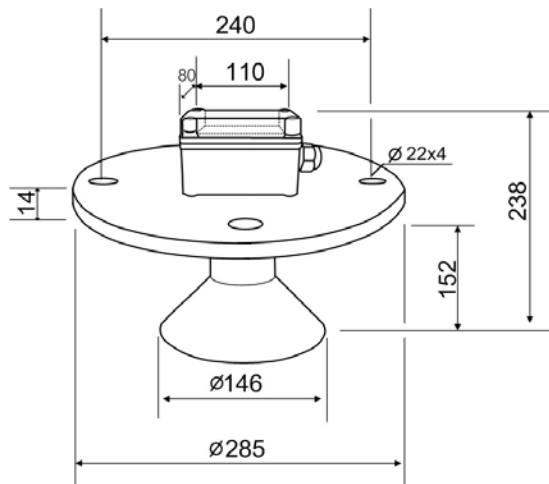


Main spindle: 59.614mm Minor spindle: 56.656mm

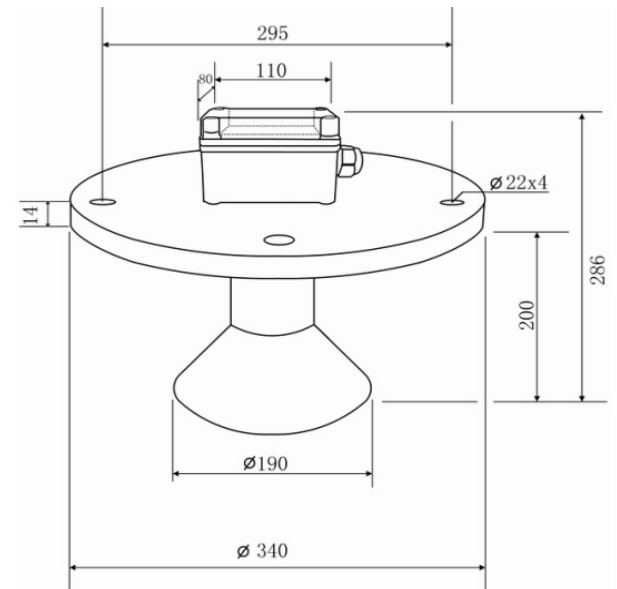
Screw-pitch: 2.309mm

LB-4/LB-6/LB-8

LB-12



LB15



LB20/LB/30/LB40

How to choose a proper ultrasonic level meter

The structure

The compact version: the host and the probe are integrated;

The remote version: the host and the probe are separated.

The wire

Two-wire system:

It is standard transmitter which power supply (only DC24v) and signal output (DC4-20mA) use same current loop; Two wires are enough.

Three-wire system:

Three-system is four-system in fact; either the power supply or (4-20mA) signal output uses one separate current loop. When negative is with same ground reference, then three wires are enough. Its advantage is strong transmitting power.

Four-wire system:

Either the power supply or signal output (4-20mA) uses one separate current loop. Its advantage is strong transmitting power and provides high and low relay output.

Measuring range

Select model number according to actual range. Select model number with bigger range if medium level fluctuating strongly. The range of solid level is generally one-half to two-third of that of liquid.

Power supply

DC24V power supply:

For two-wire system, the power supply current should not be less than 30 mA.

For three-wire system, the power supply current should not be

less than 60 mA.

For four-wire system, the power supply current should not be less than 80 mA.

AC220V power supply:

Only for four-wire system, the power supply current should not be less than 50 mA.

Mounting conditions for tank

Closed tank

For range less than 8m, the size of orifice on tank should be more than that of DN65 flange.

For range of 10m and 12m, the size of orifice on tank should be more than that of DN80 flange.

For range of 15m, the size of orifice on tank should be more than that of DN150 flange.

For range of 20m, 30m and 40m, the size of orifice on tank should be more than that of DN200 flange.

Open tank

For range less than 8m, the diameter of orifice on tank should be more than 65mm.

For range of 10m and 12m, the diameter of orifice on tank should be more than 80 and its thickness should be less than 15cm.

For range of 15m, the diameter of orifice on tank should be more than that 150mm and its thickness should be less than 15cm.

For range of 20m, 30m and 40m, the diameter of orifice on tank should be more than 200mm and its thickness should be less than 20cm.

Open pond

Fixing stand should be needed.