

PRINCIPLE OF OPERATION

Ultrasonic level metering is based on the principle of measuring the time required for the ultrasonic pulse to travel from sensor to the surface of the liquid and then back. The Ultrasonic sensor emits an ultrasonic pulse train and receives the echos reflected from the liquid surface. The received signal is processed by selecting the echo reflected by the liquid surface and calculating the time of flight, the distance to the liquid surface is measured.

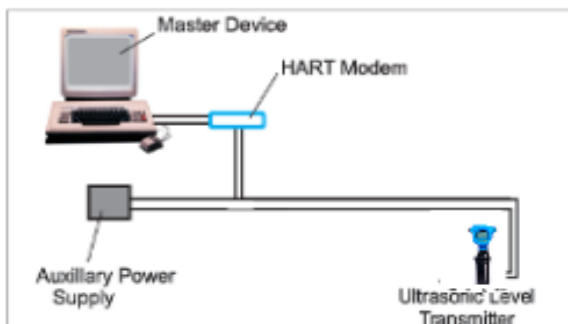
APPLICATION

The Model 136 Ultrasonic Level Indicator Transmitter is specially designed to provide convenience of non-contact measurement of Level. Open channel Flow, Volume, percentage level/volume can be derived from level by using optional indicators as detailed below. Sophisticated design and rugged construction guarantees no maintenance. Graphical Display visible in bright sunlight.

OPTIONS

- Optional Remote Indicator (96X96), Model 176 suitable for panel mounting may be added with up to 4 set points for control purpose and MODBUS output for real time field information at control room.
- Optional Tank Side Indicator, Model 103 HTL suitable for field mounting in weatherproof enclosure. Other similar features as per Model 176.
- Optional Remote Flow Indicator - Totalizer (96X96), Model 191 suitable for panel mounting for Open channel flow metering applications.
- *24 VDC supply can be made available through 176/103 HTL/ 191

SINGLE CHANNEL APPLICATION WITH PC AND MODEM



FEATURES

- Micro-processor based Instrument
- HART version 7 compatible
- Device Description (DD) file available for standard HART configurator
- Rugged Construction - Weatherproof
- Graphical Display
- Self diagnostic functions i.e. error messages on display provided to ease setting up
- Automatic Temperature Compensation
- Unaffected by product properties
- No site calibration required

SPECIFICATIONS:

Instrument Range	4m	8m	10m/15m
Dead Band(m)	0.25	0.4	0.5
Beam Angle(α)	9°	9°	9°
Process Connection	2" BSP Threaded	2" BSP Threaded	M78X2
Measuring Frequency (KHz)	64KHz \pm 5%	40KHz \pm 5%	25KHz \pm 5%
Sensor Material	PP/PVDF	PP/PVDF	Nylon 6
Housing Material	Aluminum, PU Painted	Aluminum, PU Painted	Aluminum, PU Painted
Ingress Protection	IP67/68	IP67/68	IP67/68
Process Temperature	(-10~60) °C	(-10~60) °C	(-10~60) °C
Ambient Temperature	(-20~60) °C	(-20~60) °C	(-20~60) °C
Operating Pressure	Atmospheric	Atmospheric	Atmospheric
Power Supply	16 to 36VDC	16 to 36VDC	16 to 36VDC (2 wire version) 220 VAC +/- 10% (4 wire version)
Accuracy**	\pm 0.2% of (Full Measurement Range)	\pm 0.2% of (Full Measurement Range)	\pm 0.2% of (Full Measurement Range)
Resolution	1mm	1mm	1mm
Output	4~20mA/HART*	4~20mA/HART*	4~20mA/HART*
Output Configuration	2 Wire	2 Wire	2 Wire/4 Wire
Keyboard/Display	Yes	Yes	Yes
No. of cable entries	1(M20x1.5) / 1/2" NPT	1(M20x1.5) / 1/2" NPT	1(M20x1.5) / 1/2" NPT
Display parameters	Distance, Level	Distance, Level	Distance, Level
Mounting	Top	Top	Top
Display formats for measuring range	xx.xxx(m)	xx.xxx(m)	xx.xxx(m)

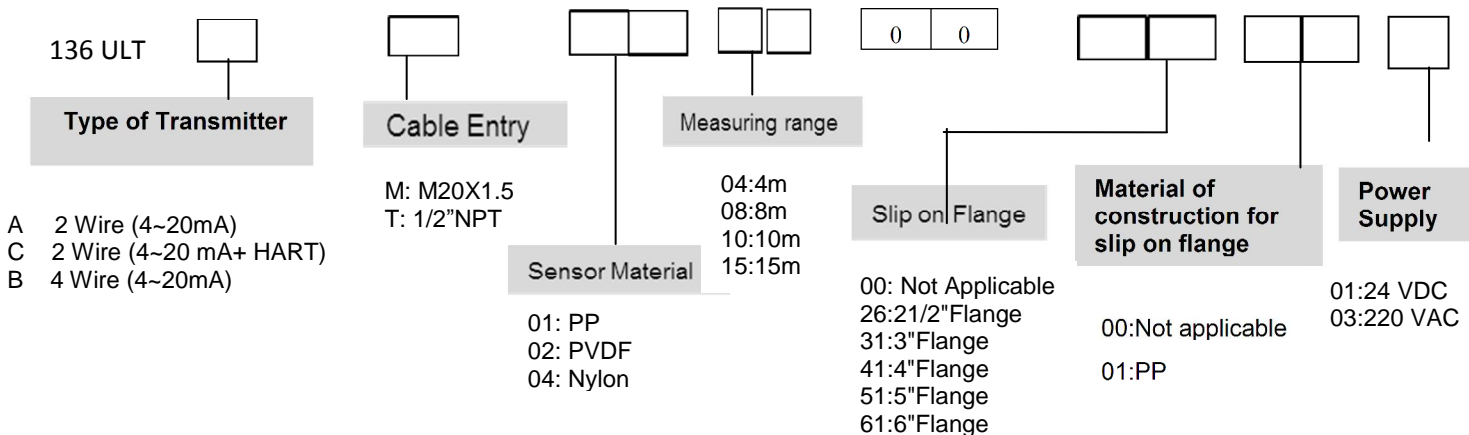
Not recommended for pressurized tanks, tanks under vacuum, fuming and foaming liquids

* HART 7 compatible

** Under optimal circumstances of reflection, stabilized & uniform temperature throughout the measuring zone

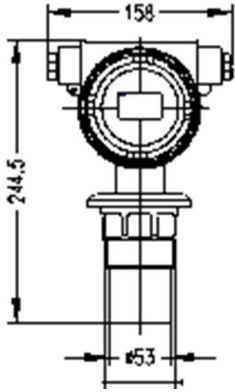
*** IP68 versions are with 2 m cables (Pre glanded with special cable gland)

ORDER CODE

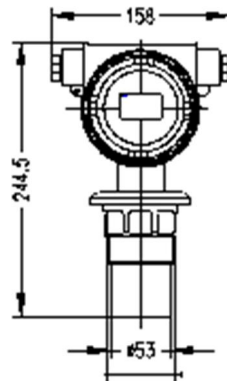


MECHANICAL DETAILS

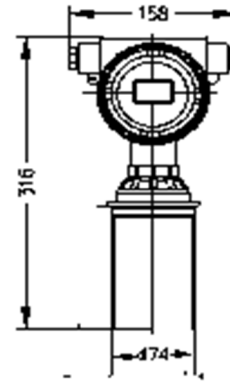
4m Range-2 Wire



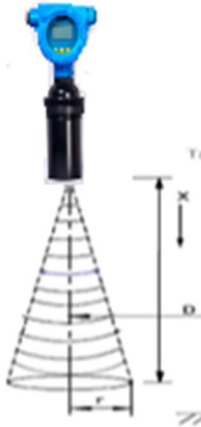
8 m Range-2 Wire



10/15 m Range-2 Wire/4 wire



SONIC CONE



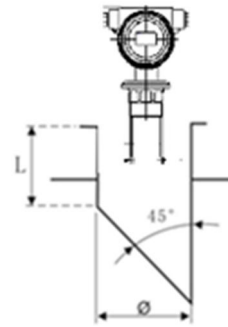
Tank Height (mtr)	r in 'mm'
1	158
2	317
3	475
4	634
5	792
6	950
7	1109
8	1267
9	1425
10	1584
11	1742
12	1901
13	2059
14	2217
15	2376

NOTE

1) A clear path with NO interfacing objects for various Heights are required as shown.
* D MUST BE > r.

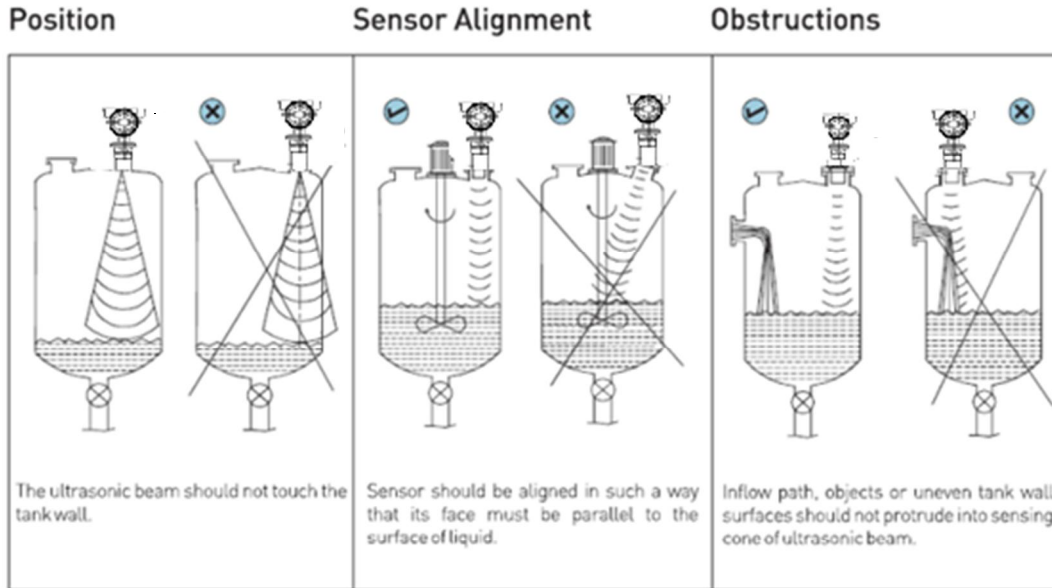
2) The inner wall of connecting pipe should be free of burr and bulges and vertical and the weld joint shall be polished. The connection of connecting pipe and tank top shall be outwards polished at an oblique angle of 45°.

MAXIMUM NOZZLE HEIGHT



Sr.no	Length (L) of connecting pipe	Minimum Inner diameter of pipe (Ø)
1	150mm	100mm
2	200mm	150mm
3	250mm	180mm
4	300mm	220mm
5	400mm	280mm

INSTALLATION GUIDELINES



In case of dome shaped or horizontal cylindrical tanks, the unit must NOT be mounted at the centre of the tank.

APPLICATION DRAWING

