Level Measurement & Control Solutions

ULTRASONIC LEVEL TRANSMITTER FOR LIQUIDS

ULTRAMATE 136-ULT

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.

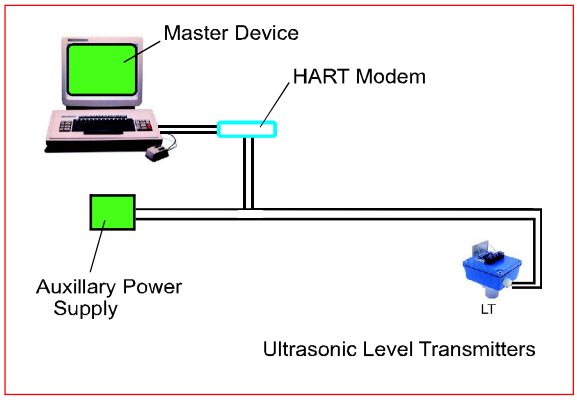
APPLICATION

The Model 136 Ultrasonic Level Indicator Transmitter is specially designed to provide convenience of non-contact measurement of Level. Open channel Flow, Volume percentage Volume can be derived from level through the software by simple strap entry. Percentage Level may also be displayed. Sophisticated design and rugged construction guarantees no maintenance. LCD Display visible in bright sunlight.

OPTIONS

- Optional Remote Indicator (96X96) suitable for panel mounting may be added with 2 set points for control purpose. (*24 VDC supply can be made available through remote indicator)

SINGLE CHANNEL APPLICATION WITH PC & MODEM



HART

FEATURES

- Both, Two Wire and Four Wire versions available.
- Micro-processor based Instrument.
- Level to Flow, Volume or % Volume conversion using Linearizer with upto 64 points.
- Rugged Construction - Weatherproof.
- Integral 6 Digit LCD Display.
- Self diagnostic functions i.e. error messages on display provided to ease setting up.
- All entries protected by password.
- Temperature Indication.
- Automatic Temperature Compensation.
- Unaffected by product properties.
- No site calibration required.

SPECIFICATIONS

Measuring Range	4mtr	8mtr	10mtr	8mtr	10mtr	15mtr
Type	2 wire	2 wire	2 wire	4 wire	4 wire	4 wire
Dead Band (m)	0.25	0.35	0.60	0.35	0.60	0.65
Beam Angle	12^{o}		14^{o}	12^{o}	14^{o}	14^{o}
Process Connection	1 ½"BSP Threaded	2"BSP Threaded	6"ANSI,150# PP, Flanged	2" BSP Threaded	6"ANSI,150# PP,Flanged	6"ANSI,150 # PP, Flanged
Measuring Frequency	80KHZ	40KHZ	30KHZ	40KHZ	30KHZ	30KHZ
Minimum head rise for flow	100mm	Not Recommended for flow.				
Sensor Material	PVDF		Glass Filled P	PVDF	Glass Filled.P	Glass Filled.P
Housing Material	Aluminium, PU Painted					
Ingress Protection	Weatherproof, IP 67					
Process Temperature	-10° C to 60° C					
Ambient Temperature	-10° C to 55° C					
Operating Pressure	Atmospheric					
Power Supply	14 to 30 VDC			20 to 30 VDC OR 110 / 230 VAC ± 10% 1 Phase, 50 Hz		
Accuracy	± 0.2% of measuring distance		± 0.2%	± 0.25%	± 0.25% of measuring distance	
Resolution	1mm		10 mm	1 mm	10 mm	
Output	4 - 20 mA,@ 600 Ohm,28 VDC HART*			Analog: 4 - 20 mA, 600 Ohm Galvanically Isolated(For AC version only) Relay: 1 SPDT (Optional) Contact Rating: 5A, 230 VAC HART*		
Display	3/4", 19 mm high, 6 Digit LCD Display					
Keyboard	Programming through removable magnetic key					
No. Of Cable Entries	1			2 (with relay) / 3 (without relay)		
Display Parameters	Distance,Level,% Level, Flow, Volume, % Volume, Linearised Level					
Mounting	Top					
Parameters	Level, Distance		% Volume, % Level		Flow, Volume	
Display Formats For measuring range upto 8m For measuring range 10m Onwards	xxx.x (cm) xxx.x (cm)		xxx.x (%) xxx.x (%)		xxxx.x xxxx.x Decimal can be shifted to x.xxx	
Applications in	Recommended Measuring Range and Type					
Foam/ Turbulence	8 mtr, 2 Wire	10 mtr, 2 Wire	15 mtr, 4 Wire	10 mtr, 4 Wire	15 mtr, 4 Wire	Consult H.O.
Open Air	10 mtr, 2 Wire	15 mtr, 4 Wire	15 mtr, 4 Wire	15 mtr, 4 Wire	15 mtr, 4 Wire	Consult H.O.
Fast Filling and Discharging rates	8 mtr, 4 Wire	10 mtr, 4 Wire	15 mtr, 4 Wire	10 mtr, 4 Wire	15 mtr, 4 Wire	Consult H.O.

Note: Not recommended for pressurized tanks, vacuum, fuming and foaming liquids.
* HART Compatible

ORDER CODE

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Type of Transmitter
A-Two Wire (4-20mA)
B-Four Wire (4-20mA)
C-Two Wire (4-20mA+HART)
D-Four Wire with 1 SPDT Relay Output
E-Four Wire (4-20mA+HART)
F-Four Wire (4-20mA+HART+Relay O/P)

Cable Entry
G - PG 11 (Std.)
F-3/4"UNF(F)
T-1/2"NPT(F)

Sensor Material
02 - PVDF
03 - Glass filled Polyester

Measuring Range
04 - 4m
08 - 8m
10 - 10m
15 - 15m

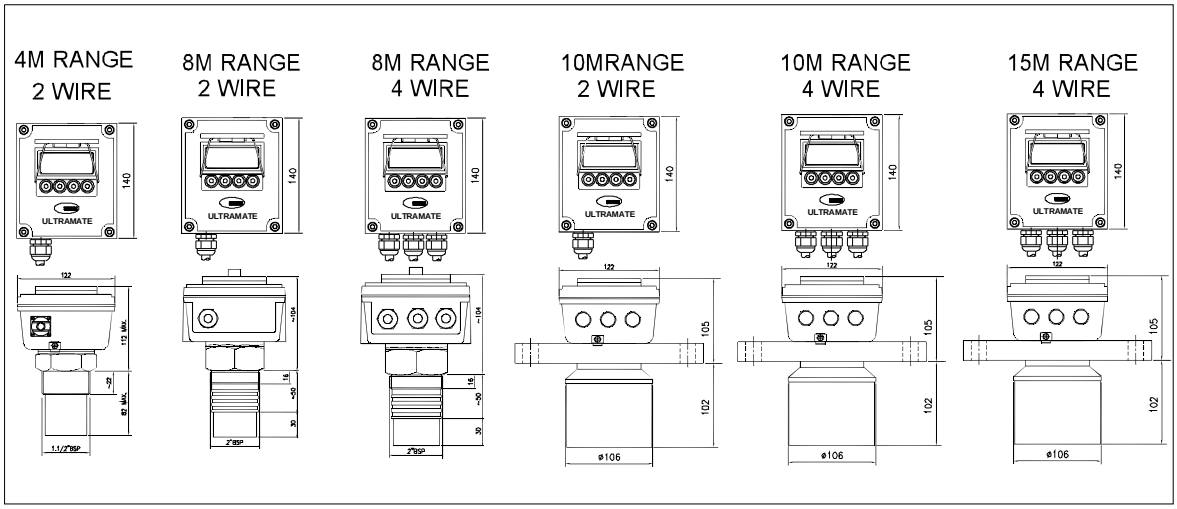
Slip-on Flange
00- Not Applicable
16- 1 ½" ANSI, 150#
21- 2" ANSI, 150#
26- 2 1/2" ANSI, 150#
31- 3" ANSI, 150 #
41- 4" ANSI, 150#
51- 5" ANSI, 150#
61- 6" ANSI, 150#

Material of Construction for slip-on flange
00- Not Applicable
01- Polypropylene

Power Supply
1 - 024 VDC
2 - 110 VAC
3 - 230 VAC

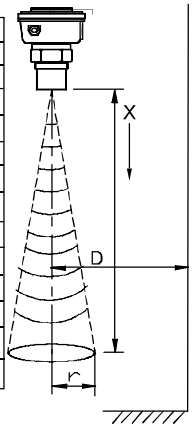
NOTES:
1. Slip-on flanges are applicable for transmitters upto 8m range.
2. Please refer Specifications table for selection of process connection and Power Supply.
3. For 2" Triclamp Process Connection, please refer to Head Office (H.O.)
4. For higher measuring ranges, please refer to Head Office

MECHANICAL DETAILS



SONIC CONE

	r (mm) when Beam Angle is	
	12 °	14 °
1	120	140
2	230	250
3	325	375
4	440	510
5	540	630
6	645	750
7	745	865
8	845	1000
9	955	1120
10	1065	1235
12	1280	1365
15	1585	1860

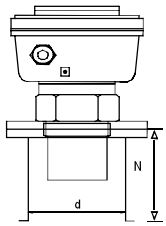


A CLEAR PATH WITH NO INTERFERING OBJECTS FOR VARIOUS HEIGHTS ARE REQUIRED AS SHOWN.
*D MUST BE > r

MAXIMUM NOZZLE HEIGHT

For 4m and 8 m models,

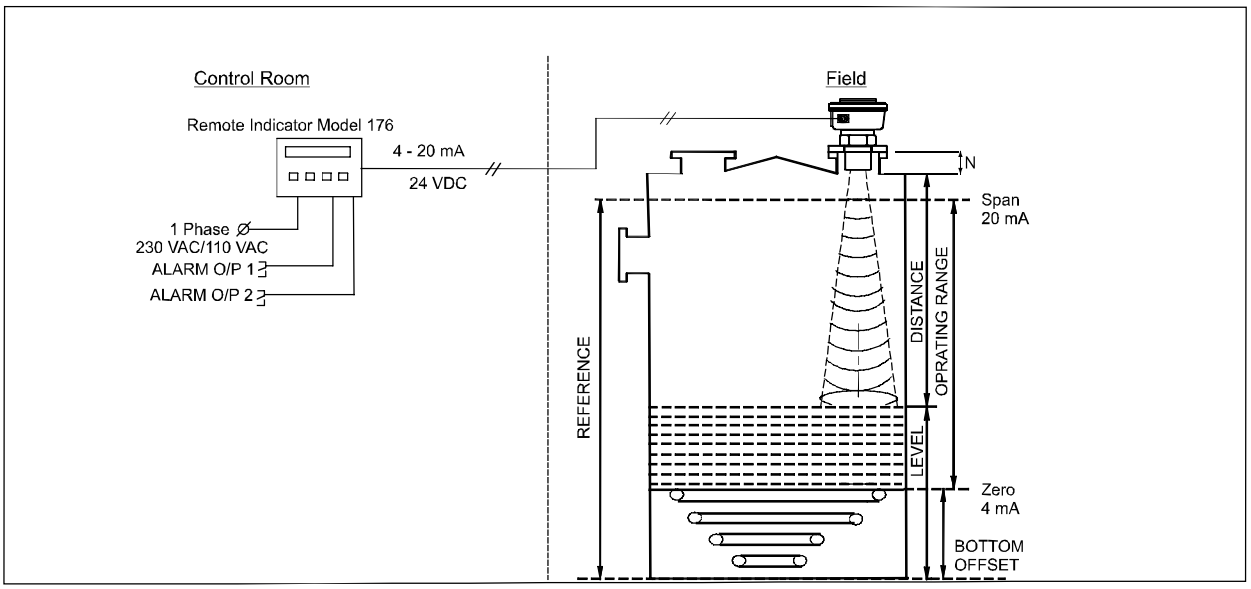
Nozzle Diameter 'd' (minimum)	Maximum permissible height of Nozzle, 'N'
100	150
200	300
300	350



Note:

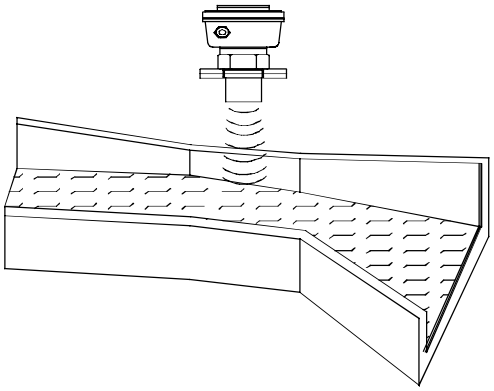
For 10m & above, Nozzle Pipes are not recommended. Transducer Face must protrude into the tank.

APPLICATION DRAWING



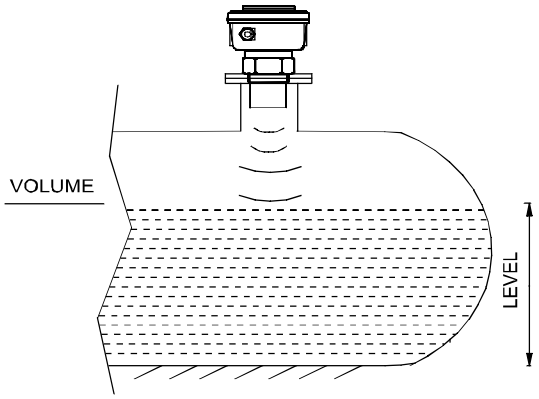
APPLICATIONS: LEVEL - FLOW - VOLUME

Flow Measuring Solutions



Flow can be simply derived from the general formula and by entering these values of flow against level rise, flow can be measured.

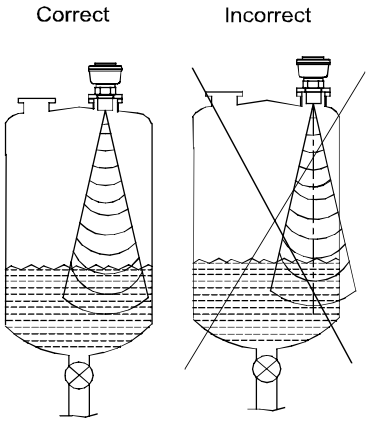
Volume Measurement



Level / Volume can be easily measured for various shapes of tanks by entering the strap table for volume against level.

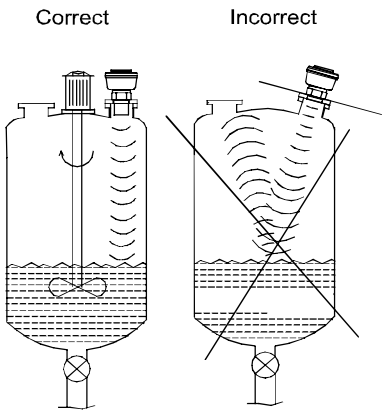
INSTALLATION

Position



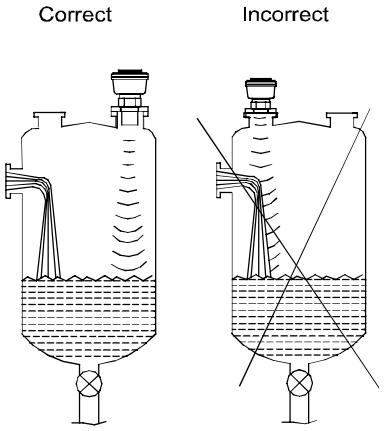
The ultrasonic beam should not touch the tank wall.

Sensor Alignment



Sensor should be aligned in such a way that its face must be parallel to the surface of liquid.

Obstructions



Inflow path, objects or uneven tank wall surfaces should not protrude into sensing cone of ultrasonic beam.

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

***Continuous developments may necessitate changes without notice. LF-136-0801 Rev.07 11/10 LF_UltrasonicTrans_136ULT

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ISO 9001: 2008