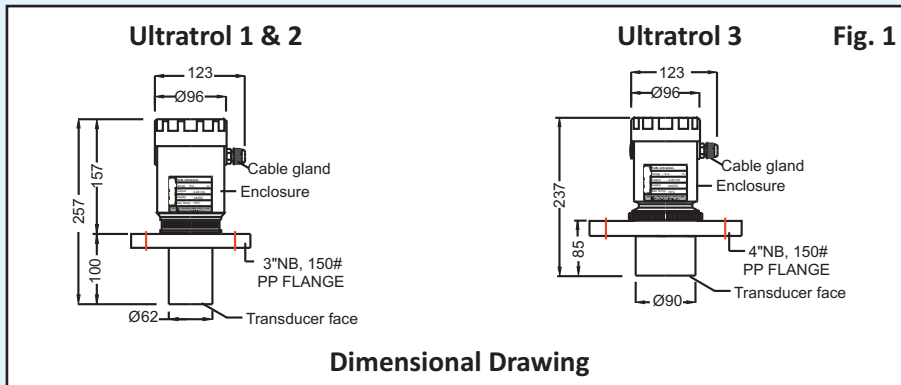


Techtrol Ultrasonic Level System for Liquid, 'TUS'- Utratrol



Pre Installation Check :

1. Unpack the box carefully and visually check & ensure that transmitter is not damaged in transit.
2. Ensure that the supplied transmitter is as per ordered.

Installation Guidelines :

Ensure the following during location and mounting of transmitter.

General

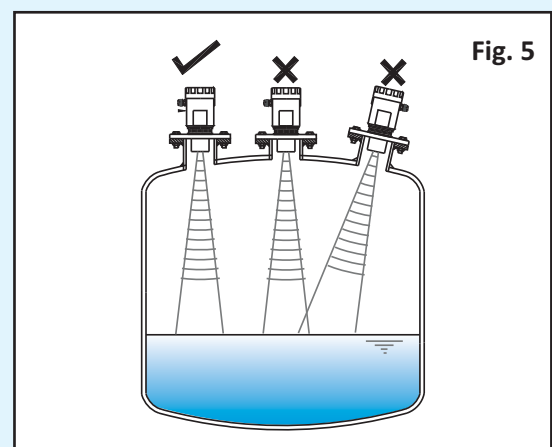
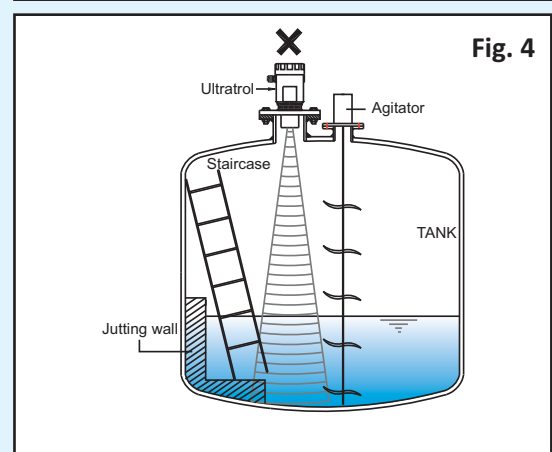
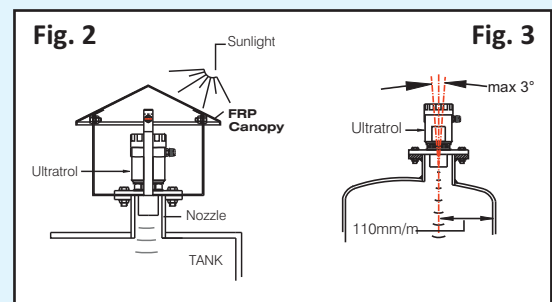
1. Installation must be carried out by trained personnel
2. Ensure that the ambient temperature and process temperature must be within specified limits.

Location of transmitter

1. In outdoor location, transmitter electronics should be protected from severe weather conditions and direct sunlight, by use of canopy.
2. The location should not have any strong wind/ breeze or turbulence in vessel which may disturb ultrasonic signal.
3. Distance between tank wall and transmitters center line should be at least 110mm per meter of its measuring range. (fig 3)
4. Obstructions like(ladder, agitator, jutting tank wall) should not come in the way of ultrasonic beam (fig 4)
5. In closed tank with concave cover, transmitter should be mounted 'off-centre' and 'vertical' to minimize creation of unwanted echoes. (fig 5)

Liquid surface conditions

1. In case of excessive turbulence in liquid, use of still well is suggested.
2. Not suitable for application where heavy condensation could form on the transducer face.
3. Not suitable for foaming liquids.

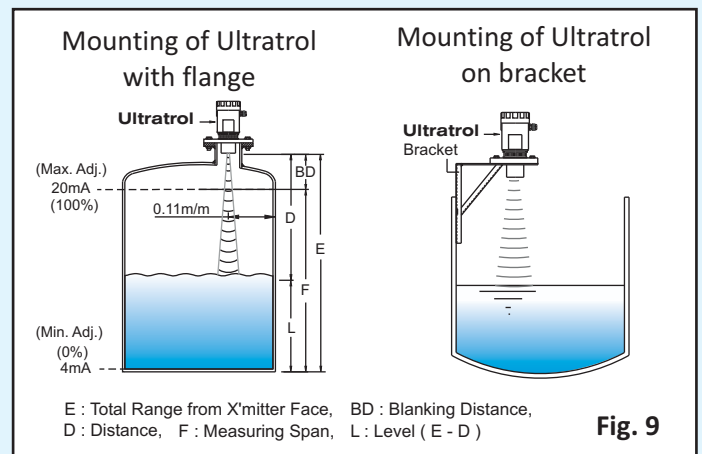
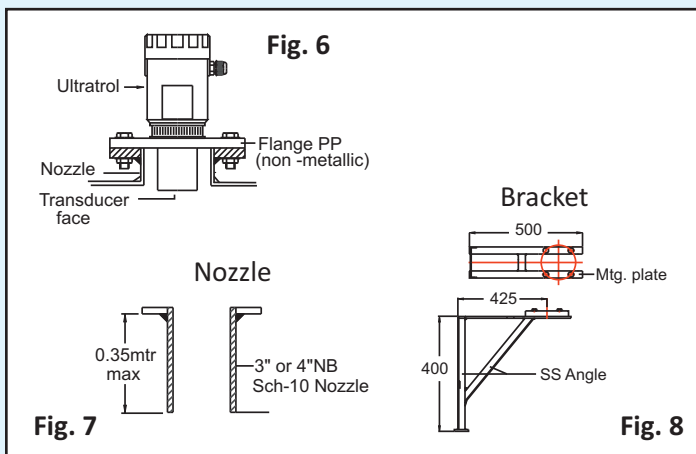


⚠ Caution

- ☑ Instruction manual should be read & understood before installation of gauge.
- ☑ Installation should be carried out by qualified & experienced personnel.

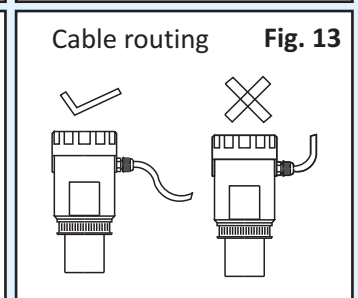
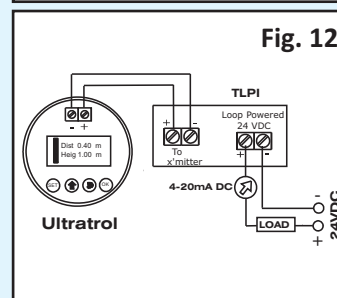
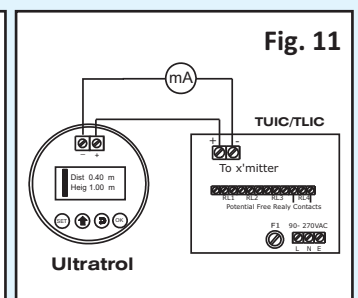
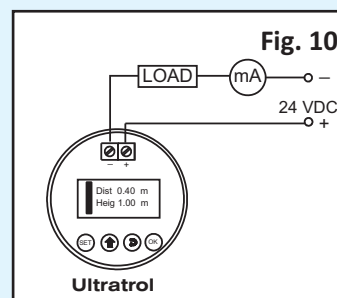
Mounting Considerations

1. Mount away from any source of electrical noise such as a variable speed drive or other high powered electrical devices.
2. Transmitter process flange should be of PP MOC (non-metallic) and equivalent counter flange on tank. (Fig. 6)
3. When mounted on a nozzle, ensure that the transducer face protrudes at least 5mm into the tank. (Fig. 6) If this is not possible, ensure nozzle dimensions are as indicated in (Fig. 7)
4. The mounting nozzle should be welded in-plumb to the tank and be free from internal weld beads or other projections.
5. Ensure maximum liquid level does not come within blanking distance (dead zone) of x'mitter..
6. Fixing of bracket to the tank should be at right angle, to ensure mounting of transmitter is vertical. (Fig. 8 & 9)
7. Mount transmitter perpendicular to liquid surface to ensure good echo from liquid surface.



Termination and Wiring :

1. During wiring of transmitter, supply should be kept off.
2. Open the enclosure cover and wire transmitter to power supply (16 to 30VDC) with correct polarity by using 2 core screen cable and its output 4-20 mA can be used further to interface with PLC or SCADA. (fig 10)
3. Wire transmitter along with Techtrol Indicators and Controller (TUIC/TLIC) as shown in fig 11.
4. Wire transmitter along with Techtrol Loop Powered Indicator as shown in fig 12.
5. Max. cable run from Ultratrol to control room should be less than 100mtrs.

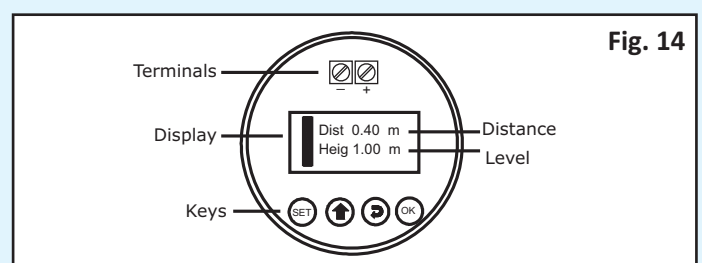


Precautions :





1. Before switching on supply, ensure correct polarity of wiring.
2. Ensure transmitter enclosure is closed properly with its cover & gasket.
3. After wiring, ensure cable is routed downward before cable gland to prevent seepage of water in the enclosure. (fig 13)
4. Ensure cable should be full tight in gland ensuring zero gap between 'cable gland ID' and 'cable OD'.

Programming :

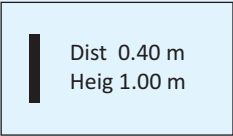
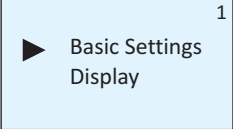
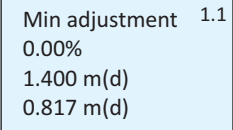
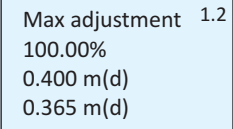
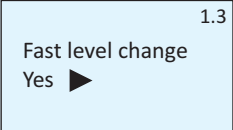
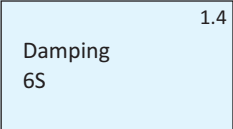
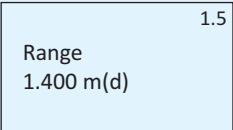
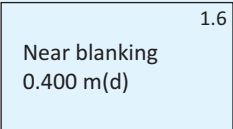
Transmitter is programmed through keys, in conjunction with display. Correct programming is essential for obtaining accuracy, reliable performance and measurement.



Function of Keys : (Fig 14)

1.		Key to exit from programming
2.		Key to increment of digit
3.		Key for shifting to right digit or select next menu or choose options
4.		Key to enter in programming menu or enter parameter and move next programming menu

Using **Increment** and **Next/Shift** key, you can edit the parameters while programming.

SL	Programming Menus and Steps	Display
1.	In 'Run mode' data can be viewed on display are measured value of LEVEL and DISTANCE, as shown in adjacent column. Press OK to enter in programming (Menu 1)	
2.	Basic Settings - (Menu 1) Press OK to enter in Basic Setting such as max and min range. Press OK to enter in next menu.	
3.	Min Adjustment - Setting for 4 mA (Menu 1.1) Press OK to edit distance in mtr, using Increment and Next/Shift key. Press OK to confirm and go to next (Menu 1.2)	
4.	Max. Adjustment - Setting for 20 mA (Menu 1.2) Press OK to edit distance in mtr, using Increment and Next key. Press OK to confirm and go to next (Menu 1.3)	
5.	Fast Level Change - (Menu 1.3) Select Yes or No using Next key. Press OK to enter selection and go to next (Menu 1.4)	
6.	Damping (Menu 1.4) Do not edit this menu and Press Next key to enter in next (Menu 1.5)	
7.	Range Setting for total range including blanking dist. (Menu 1.5) Edit value in meter and Press OK key to confirm and go to next (Menu 1.6)	
8.	Near Blanking Setting for blanking distance (Menu 1.6) Edit value in meter of blanking distance and press OK key to confirm and display shows 'Run Mode Display'	

Periodic Maintenance :

1. During maintenance switch off the power supply.
2. Check and tighten all loose electric connections.
3. The equipment should be cleaned with a damp cloth, without use of solvents.
4. After maintenance, ensure transmitter enclosure is closed with its gasket and cover to ensure weather proofness.

Trouble shooting :

SL	Problem	Cause	Solution
1.	No display	<ol style="list-style-type: none"> 1. Wiring with incorrect polarity. 2. Loose connections 	<ol style="list-style-type: none"> 1. Wire with correct polarity (Fig 5, 6,7) 2. Tighten loose connections
2.	Incorrect output	<ol style="list-style-type: none"> 1. Incorrect supply 2. Transmitter not perpendicular to liquid surface 3. Incorrect calibration 4. Incorrect programming 	<ol style="list-style-type: none"> 1. Ensure supply is between 16 to 30VDC. 2. Ensure perpendicularity as per installation guidelines 3. Re-calibrate the transmitter 4. Check and re-program correct parameter values
3.	No change in output	<ol style="list-style-type: none"> 1. Wrong installation 2. Obstructions by tank internal 	<ol style="list-style-type: none"> 1. Refer Installation guidelines for correct installation 2. Remove / Shift obstructions

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Dt. 20th April 2009



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