



ENCARDIO RITE



SUBMERSIBLE LEVEL TRANSMITTER

MODEL ELT-30S

INTRODUCTION

The ELT-30S is designed for monitoring changes in water level in bore holes, wells, reservoirs, dams, rivers or any other water body. The transmitter is fixed below the lowest expected water level so that it always remains submerged in water. The measured water level is the head of water between the surface of water and the nose cone of the transmitter. Different measurement ranges are available that can monitor water level changes up to a maximum of 3.5 to 140 metres.

FEATURES

- ◆ Immersion type level transmitter for accurate monitoring of water level in bore holes, reservoirs,, dams and rivers etc.
- ◆ Two wire, 4 – 20 mA current output allows remote level indication over long distances without any error due to cable resistance.
- ◆ Linearity better than $\pm 0.25\%$ of FS.
- ◆ Rugged and reliable design with long term stability.
- ◆ Superb corrosion resistance against most dissolved matter in water.
- ◆ High immunity from EMI and lightning effect.
- ◆ Intrinsically safe when used with approved Zener Barrier.



The two wire 4-20 mA current output design allows the remote level display or controller to be placed at long distance without any error due to increased cable resistance. The two wire output design saves on the extra two wires generally required for carrying power supply. It allows a two core extension cable to be used saving on costs compared to a four core cable when long extension cables are required.

OPERATING PRINCIPLE

The pressure is sensed by a high purity Alumina ceramic diaphragm that has semiconductor strain gauges bonded to the non wetted side. The ceramic sensing diaphragm is isolated from the fluid media by a highly flexible stainless steel diaphragm. The thin space between the two diaphragms is filled with a suitable oil.

Direct fusion of the strain gauge and other trimming and compensating resistors to the ceramic diaphragm provides a very good linearity, thermal characteristics and long term stability.

The non-wetted side of the pressure sensor is vented to the atmosphere through a capillary vent tube provided in the signal cable. This allows any change in atmospheric pressure to be cancelled out allowing more precise measurement of water level.

The integral electronics converts the strain gauge bridge output signal to a two wire current loop signal. An electronic circuit provides a high degree of protection to the transmitter from large voltage transients due to nearby electromagnetic interference and lightning effect.

DESCRIPTION OF EQUIPMENT

The ELT-30S is housed in a non-rusting, corrosion resistant stainless steel body. A nylon nose cone with slanted holes allows water inside the sensor capsule. This design prevents the sensitive sensing diaphragm from direct outside access while providing better immunity from blockage due to silting inside the sensor capsule.

The integral signal cable is both mechanically and epoxy sealed against ingress of water inside the transmitter body. The cable has an integral plastic tubing for venting the non-wetted side of the pressure sensor to the atmosphere. The vent tube has to be kept open to atmosphere above the maximum expected water level in a suitable housing. The cable is additionally provided with a high tensile strength fibre core that allows the cable itself to support large weights without the need for any additional steel suspension wires.

The transmitter is supplied with an integral cable that is 5 metres longer than the maximum specified immersion depth unless otherwise specified in order.

INSTALLATION

The sensor has to be installed below the minimum expected water level so that it is always submerged in water. The transmitter can be suspended using the integral cable itself but should be fixed if there is a possibility of the transmitter drifting from its position due to current or turbulence in water.

Where level monitoring of flowing or turbulent water is required a carefully designed stilling well is absolutely necessary.

The free end of the transmitter cable with the open vent tube has to be fixed at a point above the water level. Suitable two wire instrumentation cables can be used to extend the transmitter signal to a remote indicator or display.

SPECIFICATIONS

Sensing element	Ceramic diaphragm with bonded strain gauge
Range (m water column)	0 to 3.5, 10, 20, 35, 70, 140 mWC
Signal Output	4 – 20 mA, two wire
Non-linearity (including hysteresis)	± 0.25 % fs
Operating temp. range	0 to +70 °C
Temperature effect	
Zero	< ± 0.01 % fs per °C
Span	< ± 0.02 % fs per °C
Safe over pressure	1.5 times fs
Power supply	16 to 32 V DC (24 V DC nominal recommended)
Material in contact with media	Stainless steel AISI 304, Nitrile, Polyurethane
Sealing	IP-68
Electrical connections	Cable terminated with flying leads and open end of vent tube.
Dimensions	31 mm Φ × 220 mm long (including cable gland)

All specification are subject to change without notice

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