

# Magnetostrictive Liquid Level Transmitters

THE NEW GENERATION



Instrumentation Division



TC Fluid Control has developed a new generation of liquid level transmitters based on the magnetostrictive principle which has considerable advantages over existing level transmitters. Exceptional reliability is a key benefit and these new transmitters will read to the highly accurate level of  $\pm 0.8\text{mm}$ . Easy to calibrate with push button operation or HART® and LCD display, they are not affected by high temperatures, shocks, vibration, vacuum or foaming contents.

Operators have the option to use as a stand alone unit or with the TC-Klinger magnetic level gauge to which it can be retro-fitted if required. Used with the magnetic level gauge it will operate on tank temperatures of up to 400°C.

- > **4.1/2 digit LCD local display - indicates process level measurement.**
- > **Exia or Exd approval (IEC Ex available).**
- > **Microprocessor based 2-wire powered transmitter providing a 4-20mA current output relative to the liquid level.**
- > **Continuous high accuracy measurement which goes beyond standard monitoring requirements to the accuracy required for inventory.**
- > **Stainless steel housing so no corrosion - especially appropriate for offshore and food environments.**
- > **Float failure alarm.**
- > **No media contact (when used with Magnetic Level Gauge).**
- > **Remote display and control is possible.**
- > **Lengths of up to 6m as standard and specially engineered options for high pressure capability.**
- > **Supplied with or without HART® communications.**
- > **Screw or flange fitting.**

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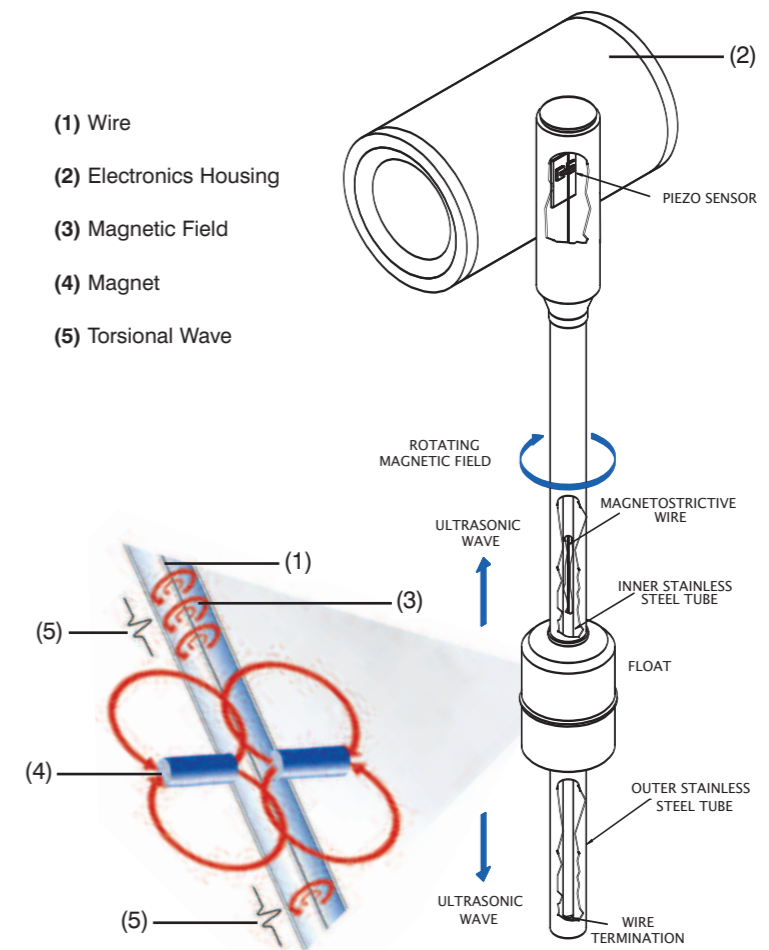
TC Fluid Control

## Magnetostrictive system

Magnetostriction is the change in the dimensions of a material when subjected to a magnetic field.

The measuring process begins with a current pulse. This current generates an axial magnetic field (3) along the length of the wire (1) made of a magnetostrictive material. This is held under tension inside the guide tube. The float, which sits on the liquid surface, is fitted with permanent magnets (4). When the pulse reaches the float the two magnetic fields interact and a torsional force results.

A torsional stress wave (5) is induced in the wire. A piezoceramic pick-up in the electronics housing (2) at the end of the wire converts this into an electrical signal. By measuring the elapsed time it is possible to determine the start point of the torsional stress wave and therefore the float position with a high degree of accuracy.



## ■ SPECIFICATION

### Electrical:

Supply Voltage: 12-28V dc, polarity protected.

Signal Range: 4-20mA.

Cable Entry: Threaded to suit  
M20 Gland.

Float Failure Alarm: 3.8mA.

Calibration: By push button switches  
or HART®

### Performance:

Resolution: +/- 0.8mm.

Repeatability: +/- 0.8mm.

Hysteresis: +/- 1.6mm.

### Mechanical:

Minimum Length: 150mm.

Maximum Length: 6 metres.

Outer Tube: 14mm diameter  
316 Stainless Steel.

Electronics Housing: St/Stl.

Protection: IP65.

Temperature Range: Process: -40 to (up to) 250°C  
(dependent on temperature  
class).

Ambient: -40 to +60°C  
(Ambient temp. limited to -5°C  
when fitted with LCD display).

Storage: -40 to +80°C.

For operation at process temperatures outside this  
range insulation is required between the level gauge  
and transmitter.

**NOTE: Temperature limitations when used in  
hazardous areas, see approvals section.**

## ■ APPROVALS

Ex ia IIC T2-T6 BASEEFA 06 ATEX 0159  II 1G.  
IEC Ex BAS 06.0038.

Exd: approval pending (please contact our sales  
office for further information or see our website).

Ui = 28VDC, Li = 93 mA, Pi = 0.65W, Li = 30 μH,  
Ci = 0.

Temperature Class: T2 - T6

Ambient Temperature Range: -50 to +60°C  
(for T class T2-T5).

-50 to +40°C  
(for T class T6).

Temperature Range for Probe: -40°C to (up to)  
+250°C dependent on T class.

EMC 89/336/EEC Emissions: EN61326:2004  
Class B.

Immunity: EN61326: 2004 parts  
A1, A2 & A3.

**When ordering, always specify operating  
temperature.**

*For other options and details, please consult  
Sales Office.*

