

Magnetostrictive Level Transmitter LMT100

Our Product Introduction

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Basic Information

- Brand Name: ABB
- Model Number: LMT100



Product Specification

Product Description

High accuracy liquid level and interface level detection

The LMT Series of level transmitters is a modular range of field mounted, advanced microprocessor-based electronic transmitters, utilizing multiple sensor technologies. Accurate and reliable measurement of liquid level and interface are provided in even the most difficult and hazardous industrial environments. The LMT100 is also available with optional temperature measurement.

Overview

The LMT100 is based upon the magnetostrictive principle.

1. The device electronics generates a low energy current pulse at fixed intervals.
2. The electrical pulses create a magnetic field which travels down a specialized wire inside the sensor tube.
3. The interaction of the magnetic field around the wire and the magnetic float causes a torsional stress wave to be induced in the wire. This torsion propagates along the wire at a known velocity, from the position of the magnetic float and toward both ends of the wire.
4. A patented sensing element placed in the transmitter assembly converts the received mechanical torsion into an electrical return pulse.
5. The microprocessor-based electronics measures the elapsed time between the start and return pulses (Time of Flight) and converts it into a position measurement which is proportional to the level of the float.

LMT100 is preferred for:

- Interface Measurement
- Exceptional performance with emulsion
- Measurement with foam on layers fluid surface
- Hydrocarbons and chemical control

Features:

High accuracy: 0.01% of full scale or + 1.27mm
 Never requires re-calibration: set it & forget it
 Superior Sensor (Patent #5,473,245)
 Local indication with HMI display
 Dual compartment housing with separate field terminal compartment
 Loop powered to 22m (75ft) probe length
 Total and/or interface level measurement
 Pressure to 165.48 bar (2400 psig) Std. 124.1 bar (1800 psig)
 Temperature range: -195.5 to 426.6°C (-320 to 800°F)
 with options
 Field replaceable/upgradable electronics module
 Built-in RFI/EMI filter
 Digital communications

Options:

Two level indications
 RTD for process temperature measurement
 Glass viewing window
 316/L Stainless Steel enclosure
 21-point linearization table

Data**ELECTRONIC TRANSMITTER**

Repeatability: $\pm 0.005\%$ of Full Scale or 0.305 mm (0.012 in), whichever is greater

Non-linearity: $\pm 0.01\%$ of Full Scale or 0.864 mm (0.034in), whichever is greater

Measuring accuracy: $\pm 0.01\%$ of Full Scale or 1.27 mm (0.050 in), whichever is greater¹

Supply voltage: 12 to 42 Vdc - 4-20mA HART loop powered

Output/Communications: 4-20mA HART7@

User Interface: Interactive display, DTM, EDDL with NE107 messaging

Power consumption:

4-20mA: at 36.0 Vdc - 3.6mA 0.13 watts; 21mA 0.76 watts

at 12.0 Vdc - 3.6mA 0.043 watts; 21mA 0.25 watts

HART mode (4.0mA): at 36.0 Vdc 0.144 watts

at 12.0 Vdc 0.048 watts

Maximum line resistance:

4-20mA: at 36.0 Vdc and 21mA, 1142 ohms*

at 24.0 Vdc and 21mA, 571 ohms

at 12 Vdc and 21mA, < 72 ohms**

*Maximum allowable with HART@ communication is 700 ohms

**See the current/resistance chart

HART mode (4.0mA): < 650 to 700 ohms

Polarity protection: 4-20mA, Diode in series with loop, FOUNDATION Fieldbus and Profibus PA, polarity insensitive

Update rate: 10 measurements per second

Minimum measuring span: 76.2 mm (3.0 in), consult factory if smaller span is required

Damping: Field Adjustable, Range: 0.1 to 60 seconds

Alarm output: NE43, Software or Hardware selectable. Upscale (21 mA) or Downscale (3.6 mA)

Surge Suppression Integral surge suppression available with option code S1

Ambient temperature: -40 to 85°C (-40 to 185°F) Ambient2

Humidity: 0 to 100% RH

Linearization: 21 Point Table Available

Building
19, No.
4388
Dong
Shan
Avenue,
Lin hu
Town,
Wu
Zhong
District,
Suzhou,
China zip
215106

techsz.com

Temperature sensor (optional): 1000 ohm Pt RTD, option code SER or STL
Temperature tolerance class: IEC 60751 Class B, + (0.3+0.005[t]), -700 to 2300C
Enclosure: Dual Compartment
Enclosure material: Cast Low Copper Aluminum with Powder Coat or 316 Stainless Steel
Device tag material: AISI 316 Stainless Steel
Electrical connection: Two M20 x 1.5 or two 1/2in. FNPT, adapters and bus connectors also available
Ingress protection: IP66, NEMA 4X

Notes:

1 Measurement accuracy is recorded at factory ambient conditions (23.88 °F +/-5.6 °C (75 °F +/-10 °F)) using a calibration magnet. Accuracy may be further influenced by other factors such as float hysteresis, installation, process conditions and ambient conditions.
2 Some agency approvals may differ.
HART® is a registered trademark of the FieldComm Group

SENSOR TUBE

Material:

Standard: 316/L Stainless Steel
Options: Alloy 20, Hastelloy® C-276, FEP-TEFLON® jacketed, electropolished 316/316L Stainless Steel, others on request

Process temperature:

Standard: -195.5 to 121.1°C (-320 to 250°F)
Options: up to 427°C (800°F) with options

Process pressure:

Standard: -1.0 to 124.1 bar @ 149°C (-14.7 to 1800 psig @ 300°F)
Options: 165.47 bar (2400 psig) maximum with the HP probe type

Probe length:

Standard: 304.8mm to 9.14m (1 to 30 ft)
Options: 22.86m (75ft) maximum w/ W7 flexible probe in sensor well

Probe length tolerance:

Standard/Options: ± 3.2mm (0.125in) up to 3.0m (10ft); +/- 6.4mm (0.25in) up to 6.0m (20ft); ± 9.0mm (0.35in) up to 9.0m (29.5ft); +/- 25.4mm (1.0in) up to 22.86m (75ft)

Mounting:

Standard: 3/4 in MNPT compression fitting
Options: plugs, threaded fittings, loose flanges a