

MULTI-PROCESS VARIABLE LIQUID LEVEL SENSOR
Total Tank Level System - Dual 4-20mA Output
Magnetostrictive Liquid & Interface Level Sensor with Temperature outputs

Sensors are available in 316SS rigid and flexible probe designs with a choice of Single or Dual NPT mountings. Systems include an explosion-proof conduit housing containing a wiring terminal strip and an intrinsically safe probe. All systems offer totally welded construction.

The Total Tank Level System is an Explosion Proof sensor with Modbus digital output for total level, interface level and temperature sensor outputs. Temperature sensors are evenly distributed over the active length of the probe.

A variety of floats and mounting accessories are available to fit virtually any application. Contact your local representative to match your needs today.

Accurately Measures:

- Total Level
- Interface Level
- Temperature - 5 sensors over active range.

4-20mA & HART digital output for:

- Total level
- Interface level
- Temperature
- System diagnostics

Easy Installation

- No calibration needed

High Accuracy

- 0.01% of measured span - less than 1 mm absolute, over full measurement range.

Minimal Maintenance

- Unique diagnostic output provides float position beyond active range, as well as loss of float(s).

Designed for Hazardous Area Applications

- Rigid Stainless Steel and Flexible Probe models meet FM, ATEX, and IECEx hazardous area approvals. See specification section for details.



Proven Magnetostrictive Sensing Performance with Field Programmable Span.

Total Tank Level System

SPECIFICATIONS

Technology:

- Magnetostrictive

Operating Voltage:

- 14 - 30 VDC

Output Signal:

- Single or Dual 4-20mA
- HART provided on one output

Response Time:

- 1.0 Second (Approximately)

Temperature Range:

Rigid 316 SS Probe

Options (F and S) Probes only

- Process: -40°F to 212°F (-40°C to 100°C)
- Housing: -40° F to 158° F (-40°C to 70°C)

Option (B) Probe

- -40°F to 212°F (-40°C to 100°C)

UltraFlex PVDF Probe

- -40°F to 158°F (-40°C to 70°C)

Process Pressure Rating:

- Rigid 316 SS Probe: 1000 psig. (69 bar)
- UltraFlex PVDF Probe: 150 psig. (10 bar)
- Float: Dependent, 316SS floats Typical to 350 psig, (24 bar) Consult Factory

Resolution:

- +/- 0.01"

Repeatability:

- +/- 0.01"

Accuracy:

- Level: 0.01% or +/- 0.039" (1 mm) Whichever is greater
- Temp. Sensor: +/- 1°F (+/- 0.5°C)

Hysteresis:

- 0.002% or .005" Whichever is greater

Null Zone (Top of Probe):

Rigid 316 SS Probe

- 9.25" (235 mm)

UltraFlex PVDF Probe

- Variable by selection

Dead band (Bottom of Probe):

Rigid 316 SS Probe

- 2.00" (51 mm)

UltraFlex PVDF Probe

- Variable by selection

Enclosure Rating:

- IP66, IP67, TYPE 4-4X

Wetted Parts:

- Rigid - 316 SS
- Flexible - PVDF (Kynar), 316 SS

Probe Length:

- **316SS**
 - Option (B) 20" to 378" (508 - 9601 mm)
 - Option (F) 20" to 200" (508 - 5080 mm)
 - Option (S) 20" to 140" (508 - 3556 mm)
- **Flexible PVDF (Kynar)**
 - 65" to 600" (915 - 15240 mm)
 - Probes available in 1" (25 mm) increments

Minimum Liquid / Liquid Interface Measurement:

- $\geq 4.2"$ (100 mm)

Hazardous Area Approvals

XP-IS CL I, DIV 1, GRP C,D T4
NI CL I, DIV 2, GRP A,B,C,D, T4
DIP-IS CLII, III, DIV 1, GRP E,F,G,T4
CL I ZN 0/1 AEx ia/db IIB T4 Ga/Gb
FM16US0417X
EX ia/db IIB Ga/Gb T4, FM16CA0192X
-40°C $\leq$ Ta $\leq$ +70°C
TYPE 4, 4X IP67

ATEX

FM 16 ATEX0114X
II 1/2 G Ex ia/db IIB T4 Ga/Gb
II2 D Ex ia tb IIIC T90°C Db
-30°C $\leq$ Ta $\leq$ +70°C
IP66, IP67

IECEx

IECEx FMG 17.005X
Ex ia/db IIB T4 Ga/Gb
Ex ia tb IIIC T90°C T4 Db
-30°C $\leq$ Ta $\leq$ +70°C
IP66, IP67

NOTE: Consult the Manufacturer if Dimensional Information on the Flameproof Joints is Necessary.

Installation of PVDF Probe

CAUTION!

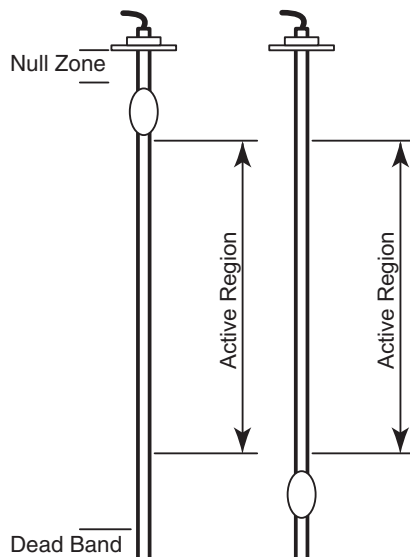
Part of the equipment enclosure is constructed of non-metallic material; to prevent the risk of electrostatic sparking, the non-metallic enclosure material should be cleaned only with a damp cloth.

3A Sanitary Option (S) Probe Only

Note: 3A Sanitary option (s) Probes

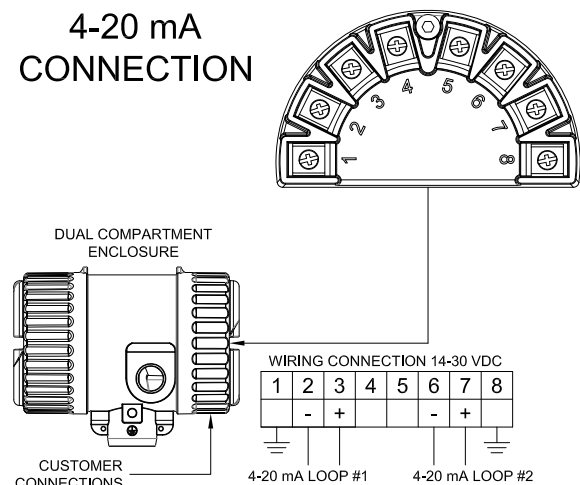


FLOAT DIAGNOSTIC



WIRING

4-20 mA CONNECTION

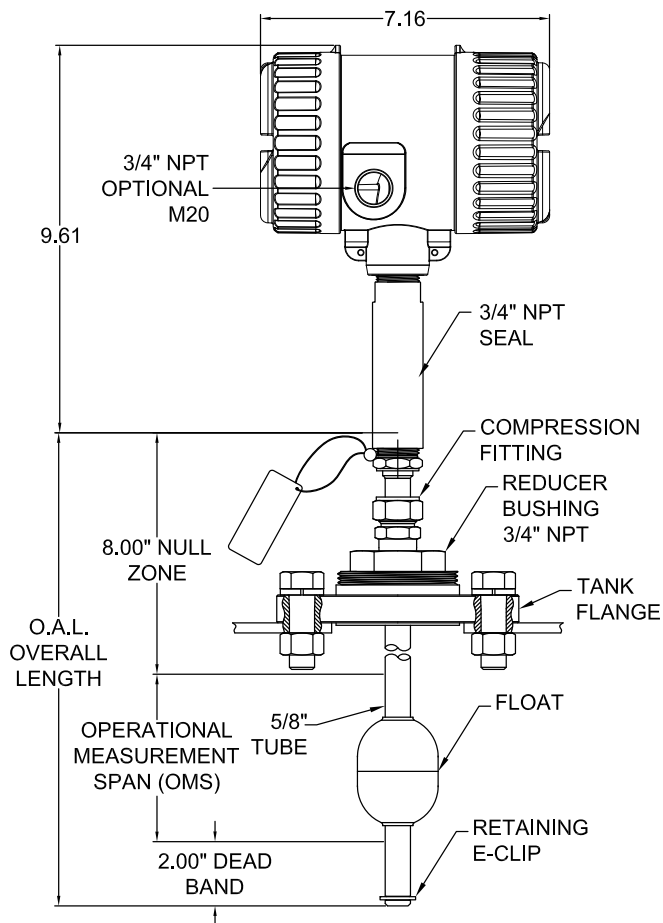


Total Tank Level System

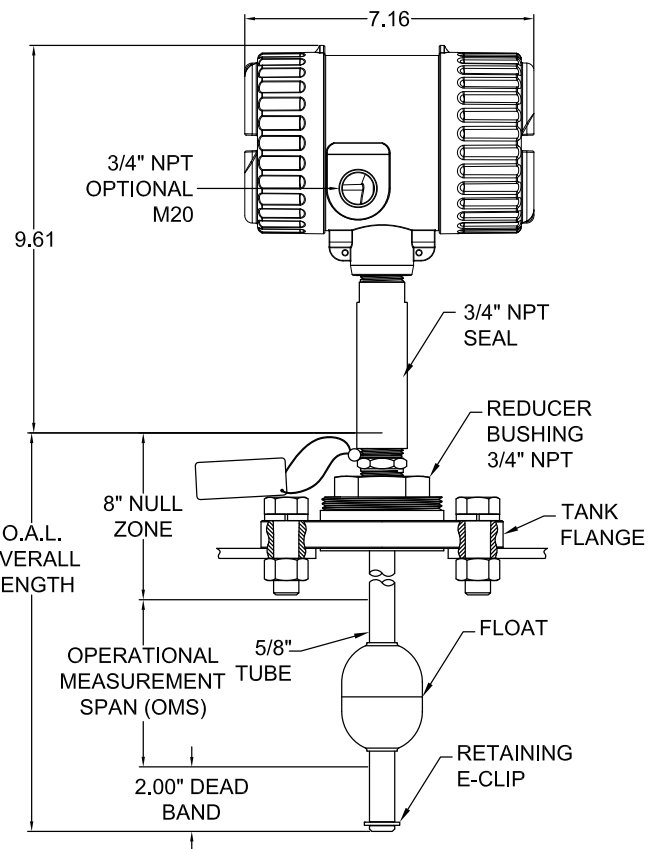
Total Tank Level System (316 SS Rigid Probe)

DIMENSIONS INCHES, (MM)

RIGID 316 SS SERIES



ADJUSTABLE MOUNT



FIXED MOUNT

Total Tank Level System

MODEL NUMBERING

Model - Total Tank Level System

M Total Tank Level System

Output

- 2** Single 4-20mA w/HART
- 3** Dual 4-20mA w/HART (Single HART output)

Housing

- 3** Dual compartment powder coated aluminum, 3/4" NPT (No Display)
- 4** Dual compartment powder coated aluminum, M20 (No Display)
- 5** Dual compartment powder coated aluminum, 3/4" NPT (Display w/Viewport Lid)
- 6** Dual compartment powder coated aluminum, M20 (Display w/Viewport Lid)

Dual Seal

- X** None
- 1** Yes

Material

- B** 316 SS Stainless Steel (Rigid) 20" to 378" Long
- V** PVDF (UltraFlex) 65" to 600" Long
- S** Sanitary, 3A (Tri-clamp mounting, polished tubing 240 grit 316 SS Rigid only) 21" to 140"
- F** Food Grade (Tri-clamp mounting, 180 grit 316 SS Rigid only) 21" to 200"

Mounting

- 1** Adjustable, 16" Long Extension Tube UltraFlex Option only
- 2** 3/4 NPT 316 SS Rigid Option only
- 3** Adjustable 316 SS Rigid Option only
- A** 2" Tri-clamp Sanitary or Food Grade Option only
- B** 2 1/2" Tri-clamp Sanitary or Food Grade Option only
- C** 3" Tri-clamp Sanitary or Food Grade Option only
- D** 4" Tri-clamp Sanitary or Food Grade Option only

Span: (Maximum Level)

XXX 3 figure number (specified in inches)

Temperature Points

- R1** 1 Sensor (@36")
- R5** 5 Sensors
- T1** 1 Sensor (close to bottom)

Number of Floats

- F1** 1 Float
- F2** 2 Floats

Over All Length (OAL)

XXX 3 figure number (specified in inches)

Float Kit 1 - Total Product Float Kit

- XXX** = None
- 001** = 316SS, 2.06" Diameter, 0.54 SG. UltraFlex PVDF Option
- 002** = 316SS, 2.06" Diameter, 0.64 SG. UltraFlex PVDF Option
- 003** = 316SS, 2.06" Diameter, 0.54 SG. E-Clip/Spacer 1.25" Long Rigid
- 004** = 316SS, 2.06" Diameter, 0.64 SG. E-Clip/Spacer 1.25" Long Rigid
- 005** = 316SS, 1.83" Diameter, 0.65 SG. R-Clip (3A Sanitary) Rigid "S" Option
- 006** = 316SS, 1.83" Diameter, 0.65 SG. E-Clip (Food Grade) Rigid "F" Option

Float Kit 2 - Interface Float Kit

- XXX** = None
- 101** 316SS, 2.06" Diameter, 0.85 SG. UltraFlex PVDF Option
- 102** 316SS, 2.06" Diameter, 0.96 SG. UltraFlex PVDF Option
- 103** 316SS, 2.05" Diameter, 0.85 SG. E-Clip/Spacer .875" Long Rigid
- 104** 316SS, 2.05" Diameter, 0.96 SG. E-Clip/Spacer .875" Long Rigid
- 105** 316SS, 2.05" Diameter, 1.10 SG. E-Clip/Spacer .875" Long Rigid

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