



# Tracer 2000™

Radar Level Transmitter for Solids Data Sheet



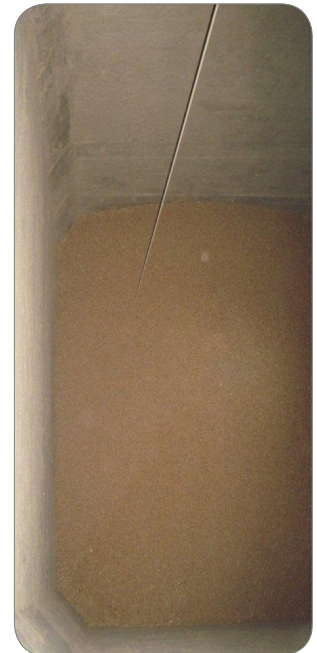
## Description

Featuring TDR (Time Domain Reflectometry) technology, the Tracer 2000™ provides continuous level measurement and point level detection in solids, with analog and switching output. This innovative device has almost no installation restrictions - it can be mounted in large tanks, tall and narrow nozzles and it measures precisely even with difficult tank geometries or close to interfering structures. Factory settings may be configured via HART® Communication protocol. Tracer 2000 is ideal for various types of processing and storage applications.

## Features & Benefits

- Revolutionary TDR Technology
- Heavy duty probe design for solids applications
- Precise continuous level measurement and reliable point level detection combined in one device
- Highly robust measurement due to 4-wire design and innovative signal analysis and disturbance signal suppression
- Fully modular probe design - Simple to install
- Features HART® Communication protocol
- 1.5" Dead Band
- Economically Priced

## Tracer 2000™ Application



## Specifications

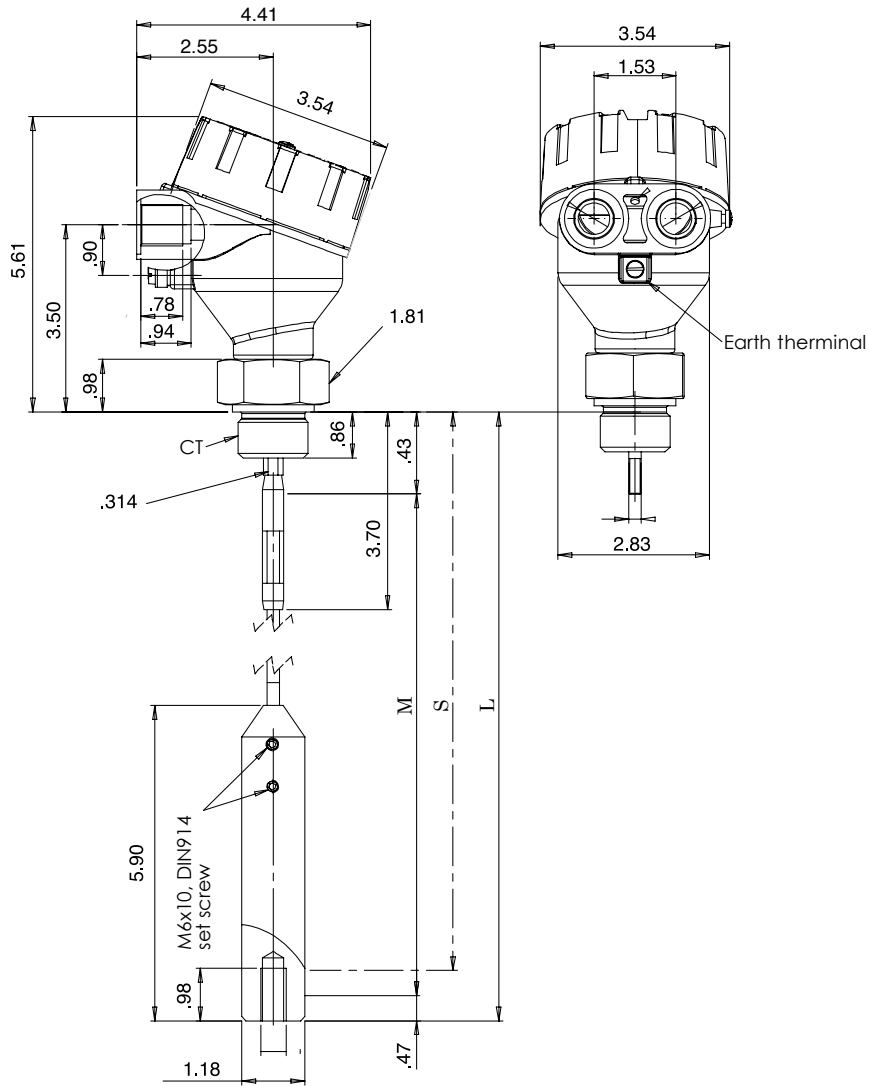
<b>Electrical Specifications</b>	
<b>Output Functions</b>	Continuous level measurement through analog output and point level detection through switching output.
<b>Analog Output (Active)</b>	Current output 4-20mA: The span between the lower range value [4mA] and the upper range value [20mA] is equal to 0-100% of the continuous level measurement reading. It is recommended that the span between those two range values stays within the measuring range [M].
<b>Total Load Resistance</b>	<500Ω: HART resistor approx. 250Ω + load resistance approx. 250Ω if the current output is connected to a device with an inner resistance of approx. 250Ω, then there is no additional, external HART resistor necessary. In that case, the HART modem is connected in parallel to the current output wires.
<b>Lower Range Value</b>	4.0mA (span 0%)
<b>Upper Range Span</b>	20.0mA (span 100%)
<b>Response Time</b>	0.5s (default), 2s 5s (selectable)
<b>Temperature Drift</b>	.0078 in/°F from 65°
<b>Switching Output DC PNP (Active)</b>	Normally Closed (NC - Short circuit protected)
<b>Current Consumption</b>	<70mA at 24 VDC (no burden)
<b>Start-Up Time</b>	<6s
<b>Cable Terminals</b>	Screwless, cage clamp terminal block for stranded and solid wires AWG 22-14 * <i>The usage of cable end sleeves with insulation collar is not recommended</i>
<b>Measurement Specifications</b>	
<b>Accuracy</b>	± 0.12" or 0.031 of measured distance
<b>Repeatability</b>	< .08"
<b>Resolution</b>	< .04"
<b>Probe Type</b>	316 SS Rod: 5/16" Dia. Wire Probe: .16", Type 7 x 19
<b>Probe Length [L]</b>	316 SS Rod: 1.5" - 240" Wire Probe: 1.5" - 780" <i>(Length must be specified when ordering - The reference point is always the sealing surface of the connection thread - See dimensional drawings)</i>
<b>Top Dead Band</b>	Configurable below 4"
<b>Bottom Dead Band</b>	Configurable above 1.5"

<b>Measuring Range [M]</b>	Probe length [L] less both inactive areas at top and bottom [I1 and I2] in this range Tracer 2000™ will have the specified measurement performance. It is recommended that the maximum and minimum solid levels to be measured in the tank are within the measuring range [M] of the sensor.
<b>Switching Point [S]</b>	Freely positionable within the measuring range [M] Hysteresis can be set by defining separate upper and lower thresholds; if those are set at the same position, the minimum hysteresis of 3mm applies
<b>Application Specifications</b>	
<b>Dielectric Constant [ε<sub>r</sub>]</b>	316 SS Rod/Wire Cable: > 1.8
<b>Conductivity</b>	No restrictions
<b>Density</b>	No restrictions
<b>Dynamic Viscosity</b>	316 SS Rod/Wire Cable: < 5.00mPa s = 5.000cP
<b>Application Temperature</b>	F: -40° to 302° C: -40 to 150°
<b>Ambient Temperature</b>	F: -13° to 176° C: -25° to 80°
<b>Application Pressure</b>	-1 bar to 40 bar
<b>Velocity of Level Change</b>	<3.2 fps
<b>Mechanical Specifications</b>	
<b>Material Exposed to Tank Atmosphere</b>	316 SS Rod: 1.4404 / 316L and PEEK Wire Cable: 1.4401 / 316 and PEEK Gasket at connection thread: Klingersil C-4400, 0.2cm thick
<b>Enclosure Material</b>	Aluminum alloy EN AC-AISI9Cu3 (DIN EN 1706), Epoxy Spray (~70µm)
<b>Enclosure Rating</b>	FM: Class I Groups A,B,C,D; Class II Groups E,F,G; Class III; Type 4X Class I, Zone 1, AEx d IIC; IP66 Class I, Zone 1, Ex d II C
<b>Cable Glands/ Screw Plugs</b>	1/2" NPT (2) or Cable Glands (2) or 1/2" NPT (1) & Cable Gland (1) or M20 (2) or M20 (1) & Cable Gland (1)
<b>Connection Thread [CT]</b>	1" NPT (US) or 1" G (Metric)
<b>Weight</b>	Aluminum housing, assembled with electronics and feedthrough: 950g Aluminum housing (empty): 650g
<b>Certification</b>	Standard: NEMA 6 (IP66 / IP68), General Purpose Optional: ATEX, Explosion Proof, Zone 1

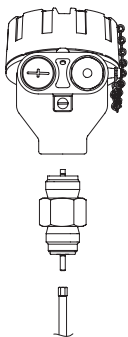
Specifications are subject to change without notice.



## Dimensions (Inches)



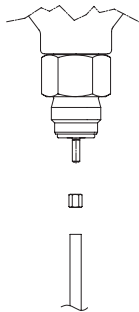
## Sensor Components



Housing

Feedthrough

Probe



Counter Nut

Rod / Cable



Ferrule

O-Ring

Lock Nut

Spacer

Tube

# Ordering Information

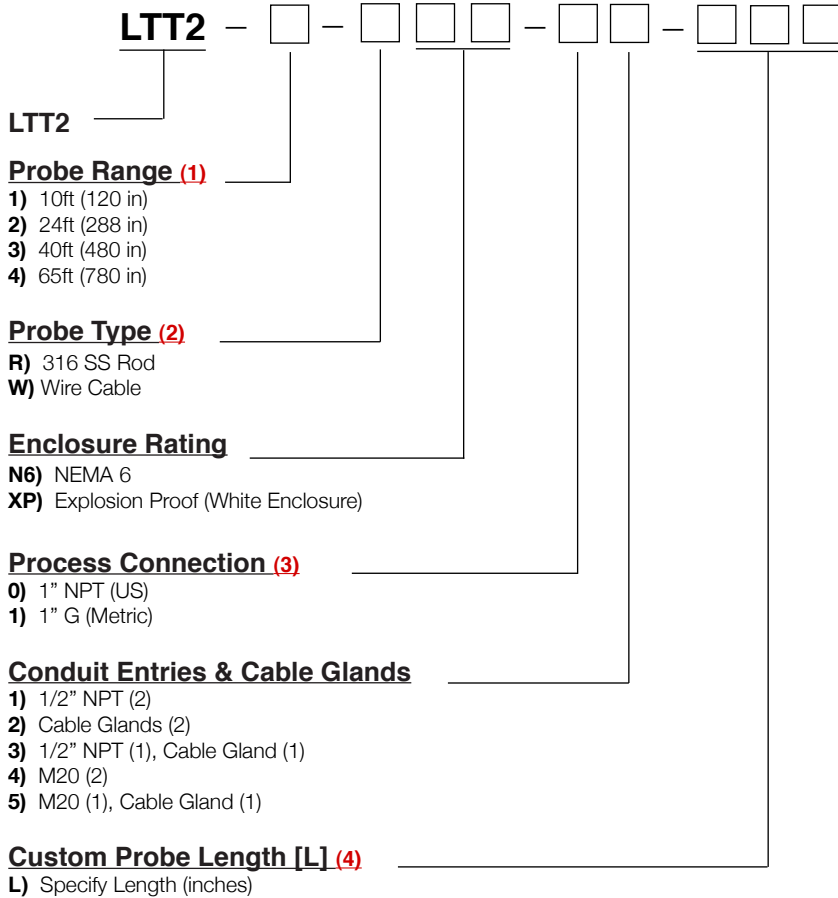
## FLO-CORP MODEL NUMBER BUILDER

For Assistance Call **877.FLO.LINE**

Use the diagram below, working from left to right to construct your FLO-Corp Model Number.

Simply match the category number to the corresponding box number.

**Example: LTT2-4-RN6-01-036"** Tracer 2000 with 65ft Probe Range, 316 SS Rod Probe Type, NEMA 6 Enclosure Rating, 1" NPT Process Connection, 1/2" NPT Conduit Entries & Cable Glands, 36" Custom Probe Length



\*Multiple configuration methods, please contact FLO-Corp to choose appropriate method



Standard



Explosion Proof

### Ordering Notes:

- (1) Select the best configuration based on your requirements
- (2) Viton O-Ring is supplied with Coaxial probe type. For additional O-Ring materials, please contact factory.
- (3) For special process connections (i.e. flange, size, connection type) please contact factory.
- (4) Specify the L-dimension at the end of the model number (ie: LTT2-1-RN6-00-120"). The L-dimension must be specified in inches (in) and fall within the 'Probe Range' selected.

\* Additional probe lengths may be available upon request - Please contact factory.