

Product Features

- *Revolutionary TDR (Time Domain Reflectometry) Technology*
- *Auto Calibration to any dielectric*
- *Precise continuous level measurement*
- *Measures liquids, slurries, and solids*
- *Highly robust radar measurement due to a 4-wire design and innovative signal analysis and disturbance signal suppression*
- *Features RS485 Modbus communication and LTR01 software*
- *Measures up to 65 feet*
- *Pre-calibrated from factory for easy installation*
- *High temperature applications*
- *Programmable fail safe mode*
- *Economically Priced*

Description

Featuring TDR (Time Domain Reflectometry) technology, the LTR01 Guided Wave Radar level transmitter provides continuous level measurement in liquids, slurries, and solids up to 65 feet with isolated analog output. This innovative device has almost no installation restrictions - it can be mounted in small tanks, tall and narrow nozzles and it measures precisely even with difficult tank geometries or close to interfering structures. The LTR01 is ideal for various types of processing and storage applications and has an exceptional performance in liquids with low reflectivity such as oils and hydrocarbons. TDR technology is not affected by pressure, temperature, viscosity, vacuum, foam, and dust changes in dielectric constant or coating of the probe. The LTR01 can measure virtually any product with a dielectric constant greater than 1.3. The LTR01 ships pre-calibrated precisely for the customer's application for quick installation and setup. If the customer chooses to calibrate on their own in the field, the LTR01 settings may be configured via RS485 Modbus communicator and its software.

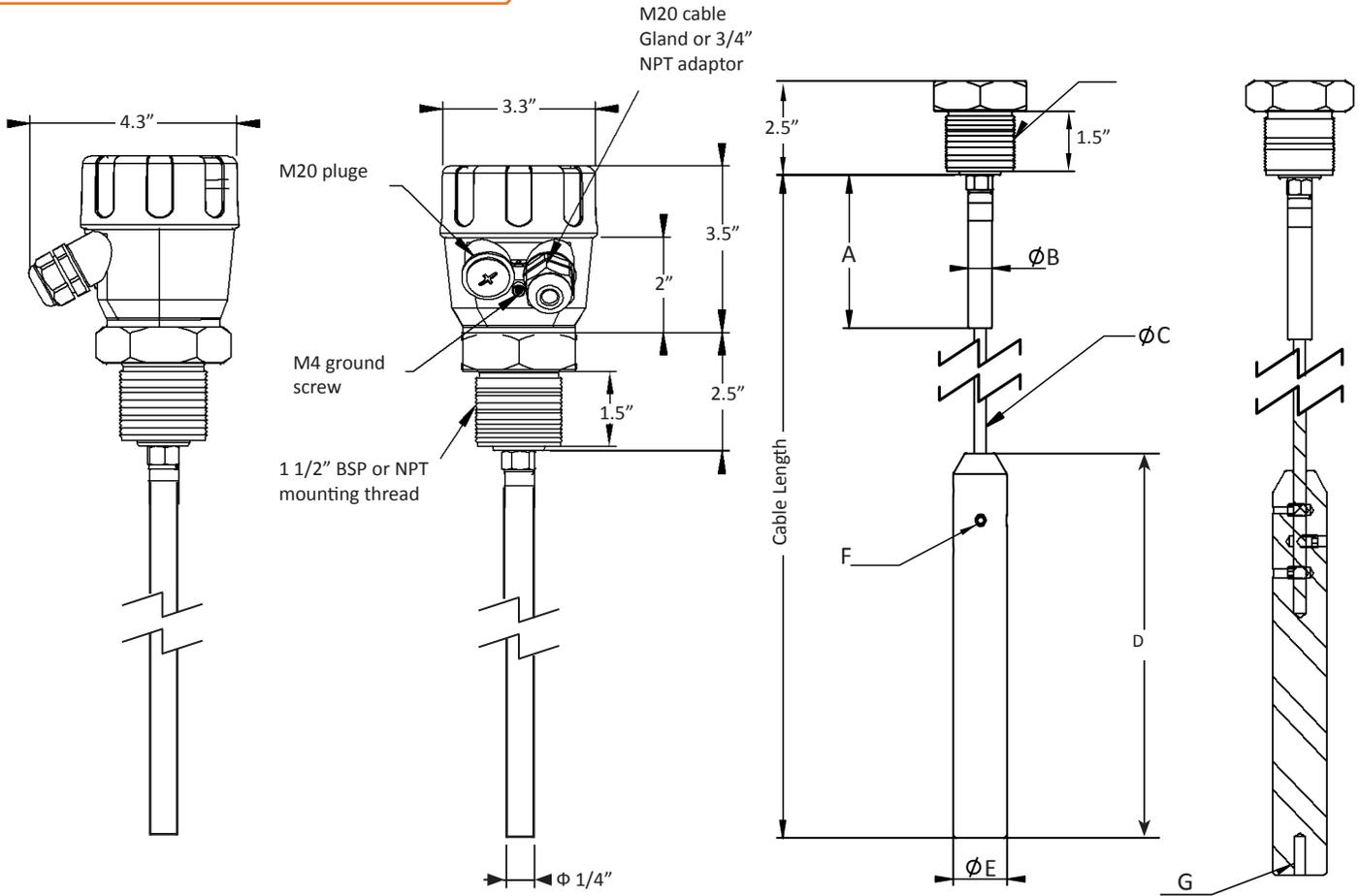
Application / Process Notes

- | | |
|------------------------------|-------------------------------|
| • <i>Chemicals</i> | • <i>Food & Beverages</i> |
| • <i>Petrochemicals</i> | • <i>Oil & Gas</i> |
| • <i>Cement</i> | • <i>Pharmaceutical</i> |
| • <i>Building Aggregates</i> | • <i>Pulp & Paper</i> |
| • <i>Energy</i> | • <i>Wastewater</i> |



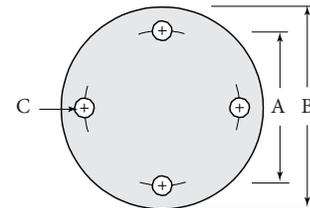
LTR01 LEVEL SENSORS

Guided Wave Radar Level Transducer



PROBE / CABLE DIMENSIONS												
	A		B		C		D		E		F	G
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
4mm version	2.6	67	0.4	10	0.15	4	5.3	143	1.2	30	M6x1 set screw	M8x1.25, 20mm deep internal thread
8mm version	4.0	10.25	0.6	16	0.3	8	10.0	258	1.4	36	M8x1 set screw	M8x1.25, 20mm deep internal thread

STANDARD FLANGE / CONNECTION DIMENSIONS							
	Standard	A		B		C	
		in.	mm	in.	mm	in.	mm
FA2	ANSI (Class 150)	4.75	120.7	6	152.4	0.75	19.1
FD2	ANSI (Class 150)	4.9	125	6.5	165	0.7	18



Custom Builder

MODEL 1 2 3 4 5 6 7

LTR01 - [] - [] - [] - [] - [] - [] - []

BOX1 CODE	Electronic Module (output)
A	Isolated 4-20 mA (750 ohms @24Vdc User Voltage Supply, 250 ohms internally driven)

BOX2 CODE	Enclosure
2	Alum. 1/2" NPT (2) Conduit, NEMA 6 Std.
3	Alum. Cable Gland (2) Conduit, NEMA 6 Std.
4	Alum. 1/2" NPT (1) & Cable Gland (1) Conduit, NEMA 6 Std.
5	Alum. M20 (2) Conduit, NEMA 6 Std.
6	Alum. M20 (1) & Cable Gland (1) Conduit, NEMA 6

BOX3 CODE	Certificates of Compliance
X	None, for non-hazardous areas

BOX4 CODE	Process Connection
P64S	1.5" NPT, 316 SS
F15S	1.5" ANSI 150 lb Flange, 316 SS

BOX5 CODE	Probe Type
A3	316 SS PTFE Coated Rod
B3	316 SS Rod
R3	Wire Cable, 316 SS
J3	PTFE Coated Wire Cable, 316 SS

BOX6 CODE	Probe Length
xxx	Specify in inches (up to 780")

BOX7 CODE	Options
N	None
A	PTFE Isolation Gasket (4" Diameter)
B	<i>i-sense</i> RS485 modem

Specifications

Electrical Specifications

Signal Output:	Isolated 4-20 mA (750 ohms @24Vdc User Voltage Supply, 250 ohms internally driven)
Fail Safe Output:	3.8 mA, 4 mA, Last Known, 20 mA, 20.2 mA
Operating Voltage:	12-30 Vdc (residual ripple no greater than 100 mV)
Power Consumption:	<3W @ 24 Vdc
Communications:	RS485 Modbus
Signal Wiring:	Recommended Signal Output and Communications Output is twisted shielded pairs, 20-18 AWG
Measurement Range:	0.87' to 65' with minimum dielectric constant of 1.0
Resolution:	0.0008"
Accuracy:	+/- 0.039" (1 mm) or 0.02% of measured distance, whichever is greatest.
Update Interval:	100 samples/sec/updated <100 millisc.

Mechanical Specifications

Ambient Temp. Effect:	+/- 0.005"/K of measured value
Repeatability:	+/- 0.02" (0.5mm)
Maximum Operating Temperature:	Electronics: -40° to 158°F (-40 to 70°C) Process/Probe: -40° to 398°F standard -50° to 593°F with Temperature Extender Option
Maximum Operating Pressure:	-14.50 PSI to 580 PSI
Process Connection/ Type:	Standard: 1.50" MNPT Option: 1.50" ANSI 150lb. Flange
Probe Type/ Diameter:	Rod Probe: 316 Stainless Steel, 0.25" diameter Wire Cable Probe: 316 Stainless Steel, 0.195" diameter Weighted Assembly: 0.75" diameter
Tensile Load:	4,270 lbs
Enclosure:	Coated Epoxy Aluminum with IP67 Sealing
Cable Entries:	(2) 1/2" NPT Conduit Entries
Approvals:	CE Pending Approvals: CSA Class 1 Div. 1

LTR01 LEVEL SENSORS

Guided Wave Radar Level Transducer

Dielectric Examples

Material	Dielectric Constant	Material	Dielectric Constant	Material	Dielectric Constant	Material	Dielectric Constant
Acetal	3.6	Castor Oil	2.6	Glycerine	47.0	Palmitic Acid	2.3
Acetic Acid	6.1	Camphene	2.3	Glycerol	43.0	Pentane	1.8
Acetone	17.7	Cement	2.1	Glycol	35.6	Phenol	9.9
Acetyl Acetone	23.1	Chloroacetic acid	12.3	Heptane	1.9	Phenol Acetate	6.9
Acetyl Bromide	16.5	Chlorine	2.0	Heptanoic Acid	2.5	Phosgene	4.7
Allyl Alcohol	21.0	Chloroform	5.5	Hexane	1.9	Phosphorus	4.1
Allyl Bromide	7.0	Creosol	10.6	Hydrogen Bromide	3.8	Polyethylene chips	1.3
Allyl Chloride	8.2	Cyclohexane	2.0	Hydrogen Chloride	4.6	Polyethylene powder	1.4
Allyl Iodide	6.1	Deuterium	1.3	Hydrogen Cyanide	95.4	Propyl Acetate	6.3
Ammonia	15.5	Deuterium Oxide	78.3	Hydrogen Fluoride	84.0	Propyl Alcohol	21.8
Amyl Alcohol	11.2	Dichloroacetone	14.0	Hydrogen Iodide	2.9	Propyl Benzene	2.4
Amyl Bromide	6.3	Dichlorobenzene	2.8	Hydrogen Peroxide	84.2	Pyridine	12.5
Amyl Chloride	6.6	Dichloroethane	16.7	Hydrogen Sulfide	5.8	Reburned Lime	2.2
Amyl Ether	3.1	Diethyl Sulfide	7.2	Hydrazine	52.9	Sand (Dry)	4.8
Amyl Iodide	6.9	Dimethyl Ethyl	11.7	Iodine	118.0	Sodium Chloride	6.1
Amyl Nitrate	9.1	Dimethyl Sulfide	6.3	Isobutyl Alcohol	18.7	Sodium Oleate	2.7
Arsenic Tribromide	9.0	Dimethyl Sulfate	55.0	Kerosene	1.8	Succinic Acid	2.4
Arsenic Trichloride	12.4	Dowtherm	3.3	Lead Oleate	3.2	Sodium Chloride	6.1
Arsenic Triiodide	7.0	Ethanol	24.3	Lonone	10.0	Sulphur	3.4
Asphalt	2.65	Ethyl Acetate	6.4	Menthol	3.95	Sulphur Dioxide	17.6
Benzene	2.3	Ethyl Amyl Ether	4.0	Mesityl Oxide	15.4	Sulfuryl Chloride	10.0
Benzil	13.0	Ethyl Benzene	2.5	Methanol	33.6	Sulphur Trioxide	3.6
Benzoyl Chloride	22.1	Ethyl Benzoate	6.0	Methyl Alcohol	33.0	Teflon Powder	1.3
Benzyl Alcohol	13.0	Ethyl Cyclobutane	1.9	Methyl Ether	5.0	Teterabromiethane	7.1
Benzyl Chloride	6.4	Ethylene Chloride	10.5	Methyl Ether Ketone	18.4	Thionyl Bromide	9.1
Boron Bromide	2.6	Ethylene Cyanide	58.3	Mineral Oil	2.1	Thionyl Chloride	9.3
Bromine	3.1	Ethylene Glycol	37.0	Nephthyl Ethyl Ether	3.2	Titanium Tetrachloride	2.8
Butane	1.4	Ethylene Oxide	13.9	Nitroethane	19.7	Toluene	2.4
Butyl Chloride	9.6	Ethyl Iodide	7.4	Nitromethane	39.4	Trichloroxoluene	6.9
N Butyl Iodide	6.1	Ethyl Nitrate	19.7	Octane	1.96	Trimethylbenzene	2.2
Iso Butyl Iodide	5.8	Ethyl Silicate	4.1	Octyl Alcohol	3.4	Trimethyl Borate	8.2
Cable Oil	2.2	Fly Ash	2.6	Octylene	4.1	Urethane	3.2
Camphene	2.7	Formic Acid	58.5	Oleic Acid	2.46	Valeric Acid	2.6
Carbon Dioxide	1.6	Freon 12	2.4	Oil, Olive	3.1	Vinyl Ether	3.9
Carbon Disulphide	2.6	Freon 11	3.1	Oil, Peanut	2.2	Water	80.0
Carbon Tetrachloride	2.2	Freon 113	2.6	Oil, Transformer	2.2	Xylene	2.4