LTR53
Radar Level Sensors for Oil-Water Interface Detection Explosion Proof

Product Features

- *Explosion Proof For Class I, Div.1, Groups B, C, D*
- *Self adjusting tracking radar ideal for oil-water interface detection*
- *Programmable calibration*
- *Output 4-20 mA / 20-4 mA*
- *Output sequences between interface level and oil level*
- *Optional RS232, RS485 for communications with calibration, diagnostics & data logging software*
- *PLC compatible (Modbus RTU)*
- *3-wire DC*

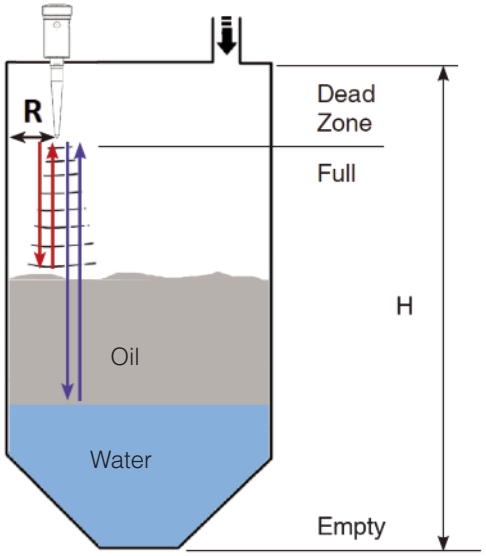
Description

When the LTR53 series radar is turned ON in a system having a clean seperation betweeen oil and water (no water droplets in the oil) , the radar gets a reflection from the oil-water interface that gives current output proportional to the oil-water interface level. The echo from the oil-water interface is masked and the radar is forced to go to higher power to detect echo from top of oil. The output current alternates between oil level and oil-water interface level. Special parameter in software changes alternating time between the two level output signals.

If water is present in the oil the radar does not penetrate oil and shows the current output proportional to the top of oil. When heat is applied and separation happens the radar starts showing two current values; one from top of oil and another one from oil-water interface.

Applications

- *Petrochemical Oil Water Interface*



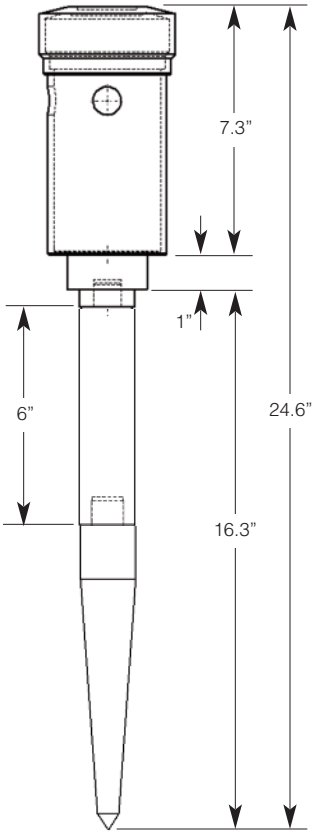
LTR53

Oil-water Interface Detection

Range Code	Range in Liquids	Resolution	Mounting
05	* - 17 ft. * - 5 m	0.08” 2.0 mm	1-1/2”, 2”, 3” NPT **
10	* - 33 ft. * - 10 m	0.15” 3.9 mm	1-1/2”, 2”, 3” NPT **
15	* - 50 ft. * - 15 m	0.22” 5.7 mm	1-1/2”, 2”, 3” NPT **
30	* - 100 ft. * - 30 m	0.44” 11 mm	1-1/2”, 2”, 3” NPT **
73	* - 240 ft. * - 73 m	1.06” 26 mm	1-1/2”, 2”, 3” NPT **

*Note - *Minimum range starts at the lower tip of the antenna or horn bottom for high dielectric materials (water). For low dielectric material allow longer minimum range.*

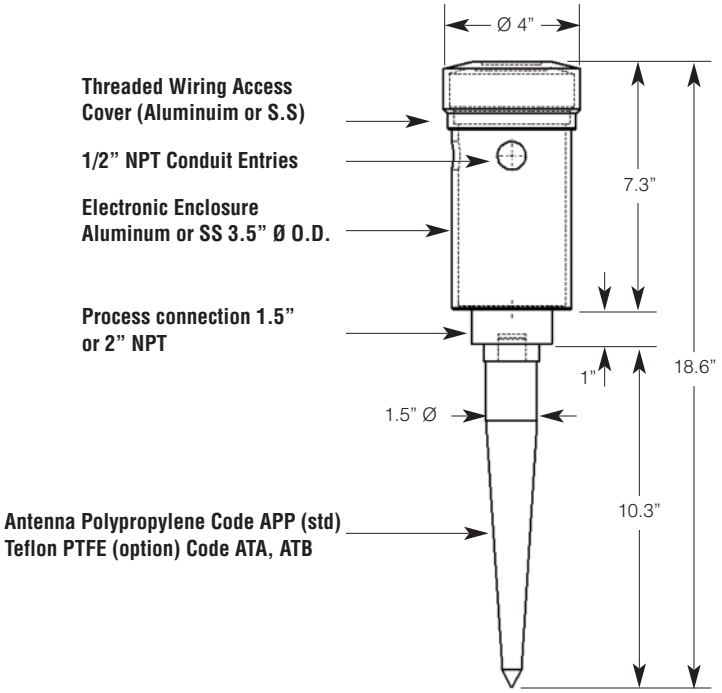
Dimensions & Mounting Options



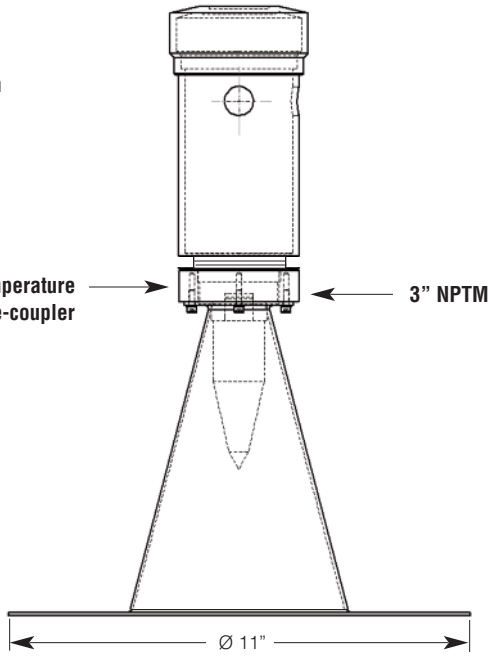
Radar with Rod Antenna Extension

Antenna Extensions
Code 2A,2B

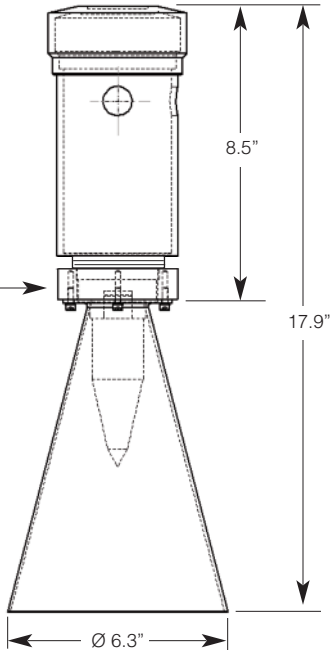
Teflon De-coupler
High Temp. Models



Radar with Rod Antenna



Very High Temp. 6”
SS316L horn
c/w Bottom Flange
Code A6C



Std. 6” SS316L
horn Antenna
Code A6A, A6B

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Radar Level Sensors for Oil-Water Interface Detection Explosion Proof

Specifications

MECHANICAL

Conduit Entry :	1/2" NPT
Enclosure :	Aluminum or S.S.
Ingress Protection :	NEMA 6 (IP67)

ENVIRONMENTAL

Approvals Hazardous:	Explosion Proof For Class I, Div.1, Groups B, C, D
Approvals FCC:	FCC Part 15 - Low Power Communication Device
Temperature :	-40 to 140 °F (- 40 to 60 °C)
Installation Category :	Class II

PROCESS

Temperature PP Rod :	-40 to 140 °F (-40 to 60 °C)
De-coupler & PTFE Rod :	-40 to 400 °F (-40 to 204 °C)
Material Dielectric :	2<Er <5
Min. Thickness of Dielectric layer to measure interface :	5 inch's (127 mm)
Max. Pressure :	5 bar (without De-coupler)

OPERATIONAL

Operation :	Pulse Radar
Accuracy :	±0.1% of max. range in ideal condition ±0.25% of max. range typically in field
Resolution:	+/- .079" (2 mm)
Response Time :	Standard Unit 2 - 3 echo's per sec. Std. with less damping 6 echo's per sec. Fast Protocol Unit 10 - 30 echo's per sec
Frequency :	5.8 GHz or 6.3 GHz.
Transmit Power :	50 uW average
Calibration :	Via communication software provided with units
Diagnostics :	(Echo Profile) via communications port
Antenna :	- Polypropylene Rod - Teflon Rod - Std. 6" SS316L horn

ELECTRICAL

Power Supply :	12 to 30 VDC , 0.07 A max @ 24 Vdc R load = (Vs - 6)/24 mA
Output :	4-20 mA output 6.1 uA resolution, 3-wire with 12-30VDC power
Communication port:	RS232 or RS485
Loop powered Display:	
Display:	-4 1/2 digit LCD 1/2" high
Temperature:	-40 to 140 °F (- 40 to 60 °C)
Voltage Drop:	0.95V @ 20mA
Accuracy:	Reading +/-0.5%
Humidity:	0-95% Non-condensing
Range:	3.5 mA to 22mA

Custom Builder

MODEL LTR53 - [1] [2] - [3] - [4] - [5] - [6] - [7] - [8]

BOX1 CODE	Supply Voltage
D1	12 to 30 VDC 0.07 A max. @ 24 VDC

BOX2 CODE	Output
A	4-20 mA/20-4 mA

BOX3 CODE	Measurement Range
05	17 ft. (5 m)
10	33 ft. (10 m)
15	50 ft. (15 m)
30	100 ft. (30 m)
73	240 ft. (73 m)

BOX4 CODE	Enclosure Type
AR2	Aluminum, 1/2" NPT x 2 conduit
SR2	Stainless, 1/2" NPT x 2 conduit

BOX5 CODE	Process Connection
P15	1-1/2 " NPT male*
P20	2 " NPT male
P30	3 " NPT male**

** Required if Teflon de-coupler is supplied.*
*** Required if horn antenna is supplied.*

BOX6 CODE	Communication
A	RS232
B	RS485

BOX7 CODE	Antenna
APP	Polypropylene Rod (Standard)
ATA	Teflon Rod
ATB	High Temp., Teflon Rod*
A6A	Std. 6" SS316L horn
A6B	High Temp., Std. 6" SS316L horn
A6C	Very High Temp., Std. 6" SS316L horn with bottom flange**

** C/w 1-1/2" to 2" NPT Teflon De-coupler.*
*** C/w 2" to 3" NPT Teflon De-coupler.*

BOX8 CODE	Options
0	None
D1	Head Mounted LCD Display
2A	Antenna Extension, 6 " long*
2B	Antenna Extension, 8 " long*

** Use with Teflon antennas only*