

# EchoBeam® LR81

80 GHz Radar Liquid and Solids Level Transmitter



## Performance

Offered in four models, EchoBeam® is the most reliable and easy-to-use non-contact level sensor. Flowline's 80 GHz radar technology is unaffected by most media, process or environmental factors, and our intuitive LevelTap™ App makes configuration simple.

	LR80	LR81	LR83	LR85
Range:	Liquid: 32.8' (10m) Solids: 16.4' (5m)	Liquid: 98.4' (30m) Solids: 49.2' (15m)	Liquid: 98.4' (30m) Solids: 49.2' (15m)	Liquid: 393.7' (120m) Solids: 196.8' (60m)
Accuracy:	±5mm	±2mm	±2mm	±2mm
Output:	4-20 mA	4-20 mA w/HART, Modbus or SDI-12	4-20 mA w/HART or Modbus	4-20 mA w/HART or Modbus
Class.:	GP	GP	GP	GP
Max Temp.:	60° C.	80° C.	100° C.	120° C.
Termination:	Cable	Cable	Conduit	Conduit
Application:	Basic	Challenging	Challenging	Extreme



LM50-3S31  
SS bracket

Offered with 32.8' (10m) PVC cable and a variety of fitting accessories.

Available with vertical and horizontal cable orientations.



IP68 PVDF enclosure for corrosive liquid and solid applications.



## Application

The LR81 general purpose 80 GHz radar sensor provides continuous level measurement up to 98.4' (30m) for liquids or 49.2' (15m) for solids, with a 4-20 mA with HART, Modbus or SDI-12 signal output. The sensor is wirelessly configured over Bluetooth via our LevelTap™ App which enables you to see the level, verify the status, and manage the settings of connected sensors from the safety of the ground or nearby catwalk. The sensor measures liquid and solids media with a dielectric constant value  $\geq 1.6$ , such as water, chemical or petroleum-based liquids, and pellet, grain, powder or aggregate solids. Select this sensor for tank, sump, lift station, weir, canal, reservoir, silo, bin, conveyor, transfer station or stockpile applications.

## Features

- 80 GHz technology provides reliable, maintenance-free operation
- Measures level height, air gap, tank volume or open channel flow
- Rugged PVDF antenna and enclosure for corrosive liquid or solids
- IP68 rated sensor for harsh outdoor or below grade installations
- Sealed 10m PVC jacketed cable for corrosive level environments
- Zero dead band maximizes the potential fill capacity of small tanks
- Optionally measures through top wall of plastic or fiberglass tanks
- Configuration via LevelTap™ App, HART communicator or Modbus
- Low 9V or 12V operation is ideal for battery powered systems

## Configuration

Download the free LevelTap™ App at the App Store, Google Play or Baidu Store, register and go to Demo Sensors. There you can view level status and step-by-step or advanced configuration examples prior to sensor purchase.



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## Specifications

**Maximum range:** Liquid: 98.4' (30m) with media dielectric  $\geq 20$  and no agitation  
Solids: 49.2' (15m) with media dielectric  $\geq 6$  and no dust

**Frequency:** 80 GHz., W-band, FMCW

**Accuracy:** 0.4m to 30m:  $\pm 2$ mm  
0.00m to 0.39m:  $\pm 10$ mm

**Dead band:** 0" (0mm)

**Beam angle:** 8°

**Min. dielectric:**  $\geq 1.6$

**Bluetooth version:** Bluetooth 5.0

**Bluetooth range:** 26.2' (8m)

**Configuration:** LevelTap™ App (IOS & Android)

**Memory:** Non-volatile

**Signal output:** 0\_\_0: 4-20 mA, two-wire, HART 7  
0\_\_1: Modbus, RS485, 9600 baud  
0\_\_2: SDI-12

**Max. signal dist.:** 0\_\_0: 1,000' (304m)  
0\_\_1: 3,937' (1200m)  
0\_\_2: 2,000' (609m) divided by number of sensors on the network

**Signal fail-safe:** Selectable high, low or hold last value

**Supply voltage:** 0\_\_0: 12-30 VDC  
0\_\_1: 9-27 VDC  
0\_\_2: 9-30 VDC

**Max. consumption:** 0\_\_0: 22.5 mA  
0\_\_1 & 2: 1.5 watt

**Process temp.:** F: -40° to 176°  
C: -40° to 80°

**Temp. comp.:** Automatic

**Storage temp.:** F: -40° to 176°  
C: -40° to 80°

**Pressure:** -14.5 to 43.5 psi (-1 to 3 bar)

**Enclosure rating:** Type 6P (IP68)

**Encl. material:** PVDF (pigmented polyvinylidene fluoride)

**Antenna material:** PVDF (natural polyvinylidene fluoride)

**Cable jacket mat.:** PVC (polyvinyl chloride)

**Cable seal mat.:** Viton GLT (fluoroelastomer)

**Cable orientation:** Vertical or horizontal

**Shielded cable:** 0\_\_0: 2-conductor  
0\_\_1: 4-conductor  
0\_\_2: 3-conductor

**Cable length:** 32.8' (10m)

**Conduit connect.:** 0\_\_0: 1" NPT  
0\_\_1: 1" G

**Process mount:** 0\_\_0: 1 1/2" NPT  
0\_\_1: 1 1/2" G

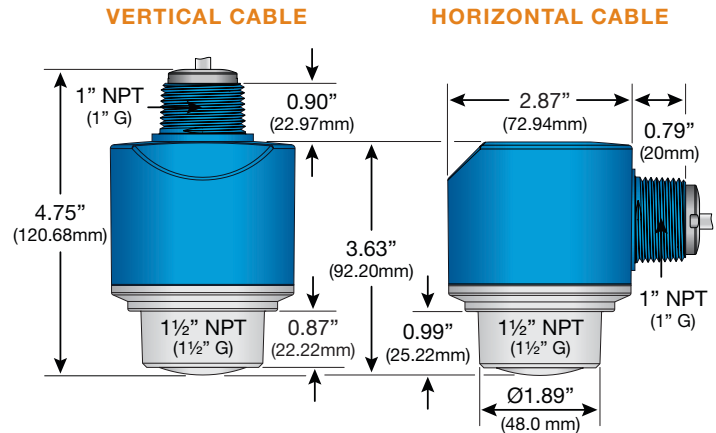
**Mount gasket:** 0\_\_0: N/a  
0\_\_1: Viton GLT (fluoroelastomer)

**Classification:** General purpose, cCSAus

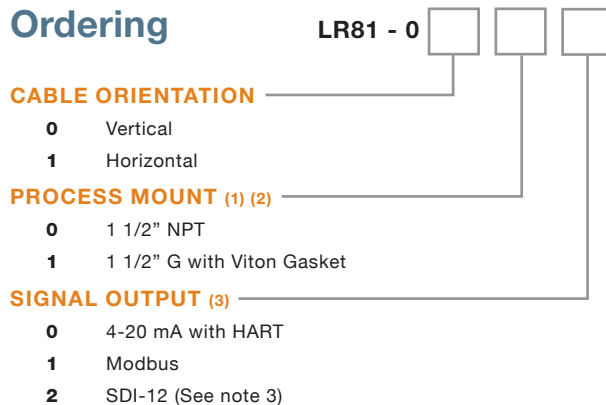
**Approvals:** C22.2 No. 61010-1-12

**Compliance:** FCC: Part 15.256, 15.209, 15C  
ISED IC: RSS-102, RSS-211, RSS-247  
UKCA RER 2017: 6(1)(a), 6(1)(b), 6(2)  
CE/RED 2014/53/EU: EN 302 372, EN 302 729, EN 301 489-1, -33, EN 300 328  
SRRC: (No. [2002] 353)  
RoHS, REACH, CRN, conflict minerals

## Dimensions



## Ordering



## NOTES

- To mount the sensor to the tank side wall or above an open sump or bin, order the appropriate 316 stainless bracket:  
Short bracket with 1" NPT lock nut = LM50-3S21  
Short bracket with 1" G lock nut = LM50-4S21  
Short bracket with 1 1/2" NPT lock nut = LM50-3S31  
Short bracket with 1 1/2" G lock nut = LM50-4S31  
Long bracket with 1" NPT lock nut = LM50-3S22  
Long bracket with 1" G lock nut = LM50-4S22  
Long bracket with 1 1/2" NPT lock nut = LM50-3S32  
Long bracket with 1 1/2" G lock nut = LM50-4S32
- If PVDF is not compatible with your application media or you need a different process mount, contact us at [info@daviscontrols.com](mailto:info@daviscontrols.com) for installation accessories.
- The sensor with SDI-12 output is available with a vertical cable orientation and either process mount thread.