

CR-L 80GHz FMCW Liquid Level Radar

Datasheet

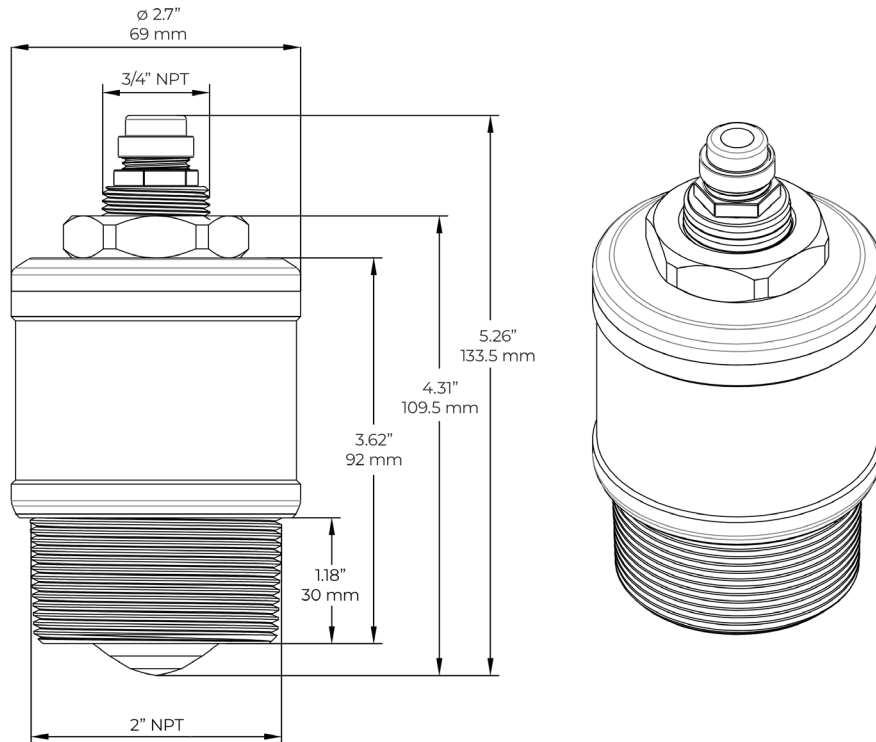


The TRUE ECHO® CR-L brings the accurate level readings of 80 GHz radar sensors to industrial liquid measurements. It can accurately measure in many adverse environments. The radar's narrow beam can detect small targets and achieve precise positioning with high resolution. It has a maximum measuring range of 49.2 feet (15 m) and a minimum blind zone of 4 inches (0.1 m). All TRUE ECHO CR-L sensors can be easily set up and field adjusted via the TRUE ECHO app.

Features

- Simple to install
- 4-20mA and RS-485 Outputs
- Measurement accuracy up to ± 3 mm
- Material dielectric constant ≥ 2
- Chemical resistant
- False echo suppression
- Accurate level measurements in adverse environmental conditions
- Mobile communication for on-site maintenance work.
- CSA Intrinsically Safe Class I Div 1, Zone 0 Hazard rating

DIMENSIONS



SPECIFICATIONS

PERFORMANCE

- **Range:**
4 in. to 49.21 ft (0.1 m to 15 m)
- **Measuring Frequency:**
W Band, 76 to 81GHz, 5 GHz FMCW bandwidth
- **Update Rate:**
4-20 mA: Automatic adjustment 1 to 3 Hz
RS-485: Approximately 1 Hz
- **Power on to 1st reading:** 5 seconds, depending on setting
- **Accuracy:** ± 3 mm
- **Beam Angle:** 8° (4° half angle)

ENVIRONMENTAL

- **Process Temperature:**
-40° to 158°F (-40° to 70°C)
- **Process Pressure:**
-14.5 to 43.51 psi
- **Dielectric Constant of Measured Medium:**
 ≥ 2
- **Protection Rating:** IP67

ELECTRICAL

- **Operating Voltage:**
4-20 mA: 12-28 VDC
RS-485: 12-28 VDC (9-20 mA RMS @ 24 VDC)
- **Reverse Voltage Protection:** ≤ 30 V
- **Spike Protection:** < 3 kV
- **Cable:** Polyurethane jacket with shielded 22 awg wires

CONNECTIVITY

- **Output Signal:**
4-20 mA: 2-wire + shield
RS-485: 4-wire + shield
- **Fault Output (4-20 mA only):**
3.8 mA, 3.9 mA, 4 mA, 20 mA, 22 mA, or Last Value

PHYSICAL

- **Housing:** PVDF or HDPE
- **Process Fitting:** 2" NPT
- **Diameter:** 2.72 in (69 mm)
- **Height:** 5.39 in (137 mm)
- **Weight:**
Radar with 16 ft (5 m) cable: 18.87 oz (535 g)

CERTIFICATION

- FCC
- ISED
- CE
- **CSA (Intrinsically Safe)**
Class I Div 1 Groups A, B, C, D T4
Ex ia IIC T4 Ga
Class I Zone 0, AEx ia IIC T4 Ga

MODEL CONFIGURATION OPTIONS

MODEL NUMBER: CR - $\frac{L}{A}$ - $\frac{B}{B}$ - $\frac{49}{C}$ - $\frac{D}{D}$ - $\frac{E}{E}$ - $\frac{E5}{F}$ - $\frac{G}{G}$ - $\frac{P2}{H}$ - $\frac{B0}{I}$

A. Application

☐ **L** 80 GHz FMCW Radar for Liquid

B. Hazard Rating

☐ **GP** General Purpose (no ratings)

☐ **IS** Intrinsically Safe

C. Measuring Range

☐ **49** 49 ft (15 m)

D. Output

☐ **L1** 4-20 mA

☐ **L31** RS-485 Modbus RTU

E. Housing Material

☐ **P** HDPE Orange (for protected environments)

☐ **K** PVDF Natural (for protected environments)

☐ **KU** PVDF UL Natural (Type 4/4x, for harsh environments)

F. Electrical Connection

☐ **E5** Cable with pigtail

G. Cable Length

☐ **16** 16 ft (5 m)

☐ **40** 40 ft (12 m)

☐ **60** 60 ft (18)

H. Process Connection

☐ **P2** Top Threaded NPT 3/4" / Bottom Threaded NPT 2"

I. Customer Label

☐ **B0** APG

COMMON MODEL CONFIGURATIONS

Model Number	Model Description
CR-L-GP-49-L1-P-E5-16-P2-B0	Liquid, general purpose, 49 ft range, 4-20 mA , HDPE , pigtail, 16 ft cable
CR-L-GP-49-L1-K-E5-16-P2-B0	Liquid, general purpose, 49 ft range, 4-20 mA , PVDF , pigtail, 16 ft cable
CR-L-GP-49-L31-P-E5-16-P2-B0	Liquid, general purpose, 49 ft range, RS-485 , HDPE , pigtail, 16 ft cable
CR-L-GP-49-L31-K-E5-16-P2-B0	Liquid, general purpose, 49 ft range, RS-485 , PVDF , pigtail, 16 ft cable
CR-L-IS-49-L1-P-E5-16-P2-B0	Liquid, Intrinsically Safe, 49 ft range, 4-20 mA , HDPE , pigtail, 16 ft cable
CR-L-IS-49-L1-K-E5-16-P2-B0	Liquid, Intrinsically Safe, 49 ft range, 4-20 mA , PVDF , pigtail, 16 ft cable
CR-L-IS-49-L31-P-E5-16-P2-B0	Liquid, Intrinsically Safe, 49 ft range, RS-485 , HDPE , pigtail, 16 ft cable
CR-L-IS-49-L31-K-E5-16-P2-B0	Liquid, Intrinsically Safe, 49 ft range, RS-485 , PVDF , pigtail, 16 ft cable

ACCESSORIES

Description	Part Number
Mounting Bracket, Adjustable Angle SS, Wall to Radar Mount; 8.5 in	201150
Mounting Bracket, Adjustable Angle SS, Wall to Radar Mount; 3 in	201151
Weight: 316L Threaded SS Weight. Used when suspending radar by cable.	201215
IS Barrier: RS-485 Communication (2 wire)	200186
IS Barrier: 24 VDC (2 wire)	200187



3" Mounting Bracket Accessory



8" Mounting Bracket Accessory



316L SS Threaded Weight



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