Thank You

Thanks for purchasing a TRUE ECHO® Plus Dual Sensor from APG! We appreciate your business and your trust. Please take a moment to familiarize yourself with the product and this manual before installation. If you have any questions, don't hesitate to call us at 888-525-7300.

You can find the TRUE ECHO Plus manual at: apgsensors.com/product/dual-sensor-plus

TRUE ECHO®)(+

Radar and Pressure Dual Sensor

Installation Guide

APG

Table of Contents

① Description

The TRUE ECHO Plus combines the accurate level readings of the CR-L radar with the precision PT-400 pressure transducer. Together, they form a versatile dual sensor that is uniquely engineered for detecting and measuring overfill or flood conditions so you don't have to operate in the dark when systems overflow.

② How To Read Your Label

Each sensor comes with a label on the body with a full model number, a part number, and a serial number. The model number for the TRUE ECHO Plus will look something like this:

> SAMPLE: CR-L-DGP-49-L31-P-E5-16-P2-B0

The model number correlates with all the configurable options and tells you exactly what you have. Compare the model number to the options on the datasheet to identify your exact configuration. You can also call us with the model, part, or the serial number and we can help you.

③ Warranty and Return Information

This product is covered by APG's warranty to be free from defects in material and workmanship under normal use and service of the product for 24 months. For a full explanation of our Warranty, please visit https://apgsensors.com/warranty-returns/. Contact Technical Support to receive a Return Material Authorization (RMA) before shipping your product back.
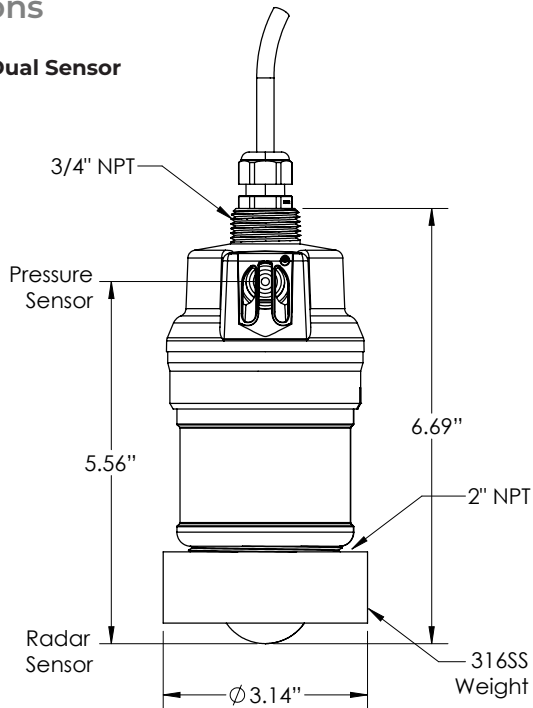
If your sensor needs to be returned for evaluation, contact us via email, phone, or on-line chat on our website. We will issue you an RMA number with instructions. You can also find the form on our website by clicking "RMA" in the web footer, or go to apgsensors.com/RMA-Form

- Phone: 888-525-7300
- Email: sales@apgsensors.com
- Online chat at www.apgsensors.com

Please have your radar part number and serial number available.

④ Dimensions

TRUE ECHO Plus Dual Sensor

3/4" NPT
Pressure Sensor
6.69"
5.56"
2" NPT
Radar Sensor
316SS Weight
Ø 3.14"

⑤ Installation Instructions

Installation Notes

- The material to be measured must have a dielectric constant greater than 2.
- In areas with direct sunlight, it is recommended to install the instrument in a cool place or use a sun visor to avoid excessive temperature and to provide good ventilation and heat dissipation.
- Mount your TRUE ECHO Plus sensor so that it has a clear, perpendicular path to the surface being monitored.
- Install at least 8 inches from a side wall.
- The radar path should be free from obstructions and as open as possible for the 4° off axis beam pattern. Mount the sensor away from tank or vessel inlets.
- Be careful not to scratch or damage the radar face.
- Do not touch the pressure sensor diaphragm. Contact with the diaphragm can permanently damage the sensor.
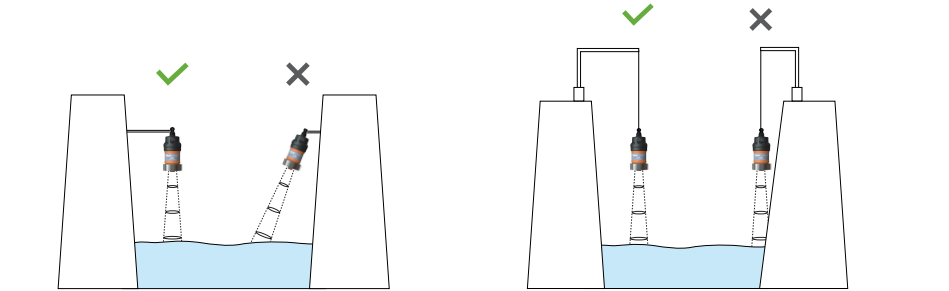
Ensure the radar is installed **perpendicular** to the measured surface. Ensure there are no interferences within the beam angle, such as walls, steps, ladders, river banks, etc.

Install the radar at least 8" (20 cm) away from side walls. When installing in wells or pipes, place the radar as close to the center as possible to avoid interference from side walls.
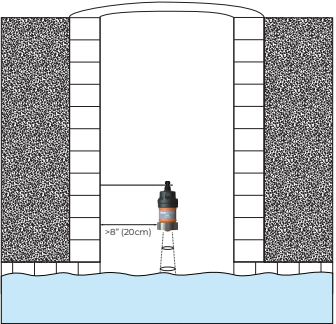
Mounting Instructions

STEP 1: Attach the wires to your control system according to the Wiring Diagrams..

STEP 2: Install the TRUE ECHO Plus, either by suspending by the cable (see below) or mounting the radar using the 2 inch NPT bottom threads or the 3/4 inch NPT top threads and nut. **Do not overtighten.**

STEP 3: Power on the TRUE ECHO Plus.

STEP 4: Program the radar settings using RS485 Modbus or the TRUE ECHO app to connect to the radar via Bluetooth. For more information about programming the TRUE ECHO Plus Radar using the TRUE ECHO App, check out the TRUE ECHO User Manual. Find it at: apgsensors.com/product/dual-sensor-plus

STEP 5: Note the atmospheric pressure reading from the pressure sensor (Modbus ID 2) for future reference.
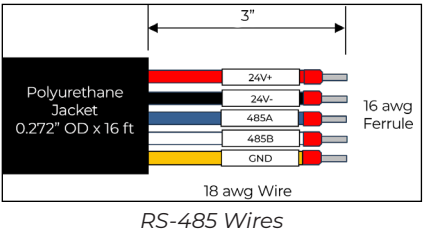
To suspend by cable:

STEP 1: Ensure the weight is installed on the 2" NPT threads.

STEP 2: Set the sensor to the desired height above the fluid to be monitored.

STEP 3: Using an appropriate cable clamp or gland, secure the cable to prevent it from sliding out of position.
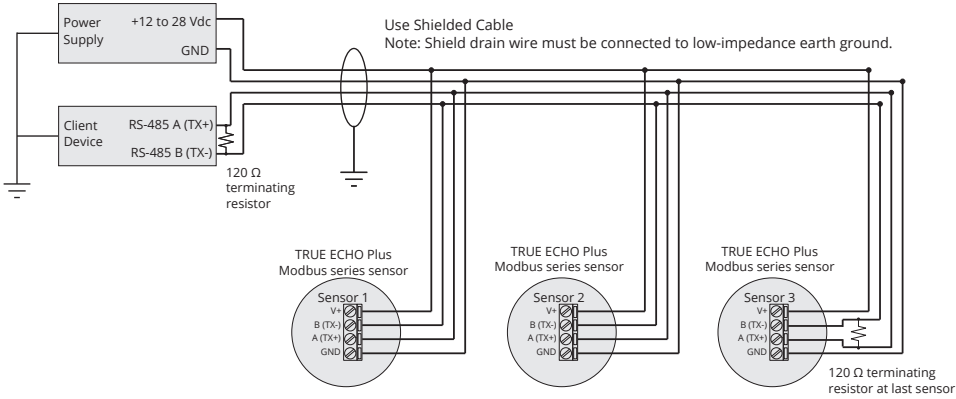
6 Wiring Information

Pin Out Tables

	RS-485
Red	VDC 12 to 28+
Black	VDC Gnd
Blue	RS-485 A
White	RS-485 B
Yellow	Earth Ground

Power Supply Table

	RS-485
Power Supply	12-28 VDC

Polyurethane Jacket 0.272" OD x 16 ft — 3" — 24V+ / 24V- / 485A / 485B / GND — 16 awg Ferrule — 18 awg Wire

RS-485 Wires

Modbus Wiring Diagram

Power Supply +12 to 28 Vdc / GND

Use Shielded Cable
Note: Shield drain wire must be connected to low-impedance earth ground.

Client Device RS-485 A (TX+) / RS-485 B (TX-)

120 Ω terminating resistor

TRUE ECHO Plus Modbus series sensor — Sensor 1 — V+ / B (TX-) / A (TX+) / GND

TRUE ECHO Plus Modbus series sensor — Sensor 2 — V+ / B (TX-) / A (TX+) / GND

TRUE ECHO Plus Modbus series sensor — Sensor 3 — V+ / B (TX-) / A (TX+) / GND

120 Ω terminating resistor at last sensor

> **NOTE**:
> By default, the Radar Sensor is Modbus ID 1. By default, the Pressure Sensor is Modbus ID 2.

7 General Care

Your TRUE ECHO Plus is very low maintenance and will need little care as long as it is installed correctly. However, in general, you should:

- Avoid applications for which the sensor was not designed, such as extreme temperatures, contact with incompatible corrosive chemicals, or other damaging environments.
- Inspect the threads whenever you remove the sensor from duty or change its location.
- Clean the diaphragm with extreme care. If using a tool is required, make sure it does not touch the diaphragm.
- It is recommended to inspect and clean the sensor after a flood to remove debris and check for damage.

8 FCC Information

FCC regulations require 75-85 GHz radars to be installed to ensure a vertically downward orientation at fixed locations only. They must not operate while being moved or while inside a moving container. Hand-held applications are prohibited as well as marketing to residential consumers.

> FCC ID: VPKAPGTRUEEC80
> Contains Transmitter Module FCC ID: 2ABN2-BG22A3

9 Removal Instructions

Removing your radar from service must be done with care.

STEP 1: Ensure power is turned off.
STEP 2: Disconnect the radar wires.
STEP 3: Remove the radar from its mount.
STEP 4: Store it in a dry place, at a temperature between -40° to 158°F (-40° to 70°C).

10 Bluetooth App

Use Bluetooth to connect wirelessly to your TRUE ECHO Radar, change radar parameters, and view the echo waveform graph.

STEP 1: Install the TRUE ECHO app from the app store.
STEP 2: Turn on your mobile device's Bluetooth.
STEP 3: Open the TRUE ECHO app. On the Select Device screen, press "Water Level Gauge."
STEP 4: Select the desired radar.
STEP 5: Select the parameter to change. Press "Read" to view current settings in each tab. Press "Write" to save changes.

The Distance, Level, and mA readings (for 4-20 units only) will appear in a banner at the top of the screen.

> NOTE: If a Location Service prompt is displayed, please select "While using the app". If a Relative Position prompt is displayed, please select "Allow" These are required to connect the True Echo App to the radar.