

Operating Manual

Order from: **C A Briggs Company**

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Corrosion-Free
Instrumentation Equipment

Read the user's manual carefully before starting to use the unit.
Producer reserves the right to implement changes without prior notice.

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ProScan® 3 Series

Continuous Radar Level Sensor (80GHz)



Safety Information

- ✓ De-pressurize and vent system prior to installation or removal
- ✓ Confirm chemical compatibility before use
- ✓ DO NOT exceed maximum temperature or pressure specifications
- ✓ ALWAYS wear safety goggles or face-shield during installation and/or service
- ✓ DO NOT alter product construction

Please always observe the following safety instructions!

Please pay attention to the safety instructions with the following pictograms and signal words in these operating instructions :



Warning | Caution | Danger

Indicates a potential hazard. Failure to follow all warnings may lead to equipment damage, injury, or death.



Do Not Use Tools

Over tightening may permanently damage product threads and lead to failure of the retaining nut.



Note | Technical Notes

Highlights additional information or detailed procedure.

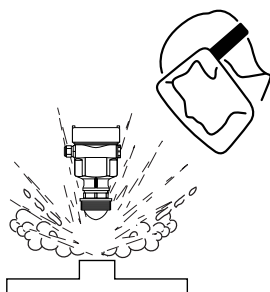


Do Not Use Tools

Use of tool(s) may damage product beyond repair and potentially void product warranty.



WARNING



Personal Protective Equipment (PPE)

Always utilize the most appropriate PPE during installation and service of Truflo products.



Pressurized System Warning

Sensor may be under pressure. Take caution to vent system prior to installation or removal. Failure to do so may result in equipment damage and/or serious injury.

Notice : Is used to lead users to helpful information not related to personal injury.

Product Description

The **ProScan® 3 Series** 80 GHz high frequency technology permits a significantly more precise transmission signal focus. This makes it easier to distinguish between actual level signals and interference signals, making the measurement more reliable coupled with a higher degree of accuracy.

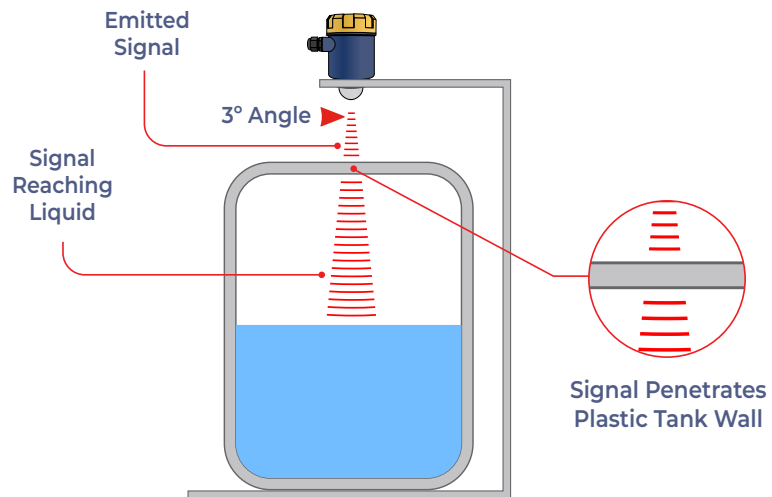
The new **ProScan® 3 Series** of compact instruments are ideally suited for more complex level applications.

The 80 GHz radar signal is capable of penetrating through the top lid of a tank, eliminating the need for a bulkhead fitting, or having the sensor subject to the conditions inside the tank.



Working Principle

The ProScan® 3 (80GHz) radar is a transmitter for continuous level measurements using fast sweep Frequency Modulated Continuous Wave (FMCW) technology. The transducer of radar continuously emits signal sweeps with a constant frequency towards the liquid surface. The reflected signal is then captured by the transducer. The time to send and receive is known as the time of flight.



Technical Specifications

| Measuring Performance | | |
|------------------------------------|--------------------------------|--------------------------------|
| Minimum Range | 0.05m | |
| Maximum Range | 10m | |
| Resolution | 1mm | |
| Azimuth Beam Width (3 dB) | 3° | |
| Elevation Beam Width (3 dB) | 3° | |
| Measurement Accuracy | ±2mm | |
| Operating Conditions | | |
| Operating Frequency Band | 76 – 81 GHz | |
| Mains Power Supply | 9 – 24 VDC | |
| Operating Average Current | 20 mA | |
| Effective Isotropic Radiated Power | 13 dBm | |
| Communication Interface | 4-20mA RS485 | |
| Enclosure Protection | NEMA 4X IP68 | |
| Operating Temperature Range | -49°F – +185°F -45°C – +85°C | |
| Housing & Mounting | | |
| Housing Material | PP+PC Body PP Transducer | 316 SS+PC Body PP Transducer |
| Weight | 280g | 770g |
| Installation | Mounting Bracket | |

Wiring Connection

The sensor power supply and current signal share the same two-wire shielded cable. The sensor supply voltage should never exceed 24 VDC. Always provide complete electrical and physical separation between the sensor supply circuit and the main circuit.

Note : Remember that the output voltage of the power supply can be lower under nominal load (with a sensor current of 20.5 mA or 22 mA) and/or with the addition of other instruments placed within the circuit. If voltage spikes or surges are expected, adequate isolation protection must also be provided.

Terminal Connections

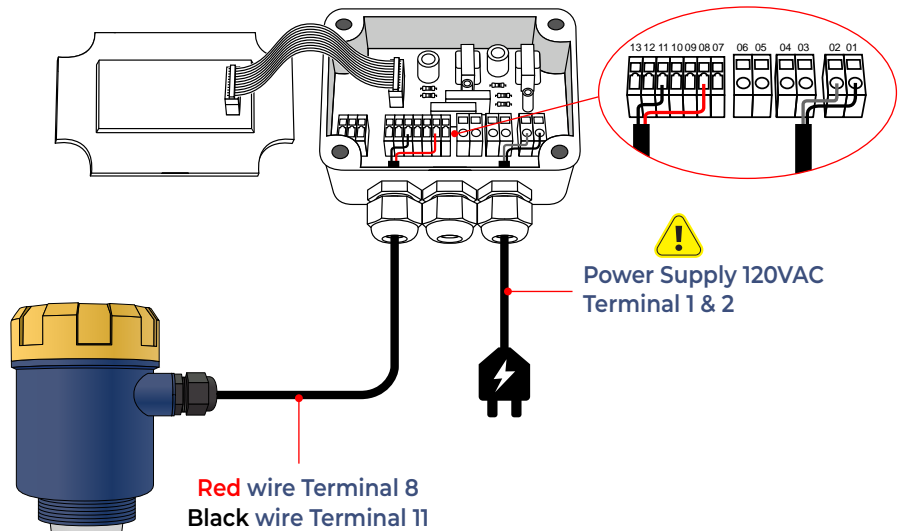
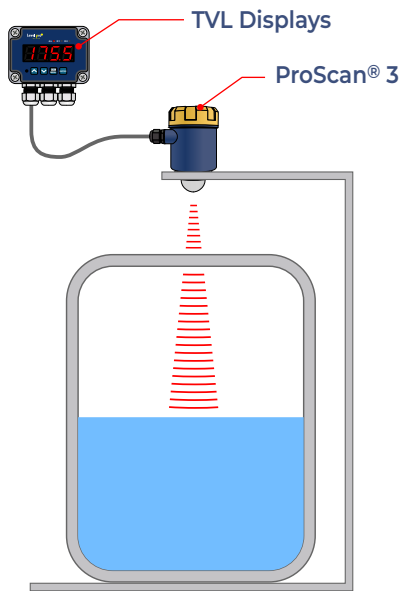
The **Positive (+)** and **Negative (-)** terminals are for connection to a 24 VDC power supply or to a 4-20 mA loop power source. The wire to the terminals can be extended up to 1,000 feet using 16-22 gauge shielded instrumentation wire

| | | |
|---|--|--|
| <p>01</p> <p>Rotate Anti-clockwise to Open Lid and Clockwise to Close Lid Do Not Use Tools!</p> | <p>02</p> <p>Open Lid</p> | <p>03</p> <p>Rotate Anti-clockwise to Open Display and clockwise to close Display.</p> |
| <p>04</p> <p>Built-in Level</p> <p>Remove Cord Grip Do Not Use Tools!</p> | <p>05</p> <p>Enter Cable in Cable Grip</p> | <p>06</p> <p>24VDC + -</p> <p>Positive (+) Negative (-)</p> <p>Positive (+) and Negative (-) terminals are for connection to a 24 VDC power supply</p> |

The sensor should be wired with shielded 2-conductor cable (16 to 22 AWG) to protect from electromagnetic interference. If using a liquid tight connector, select a cable with an outer diameter that is designed to ensure an effective seal with the connector [typically between 0.20" to 0.35" (5 to 9 mm)].

Wiring should always be done by a licensed electrician in accordance with federal, state, provincial and local codes.

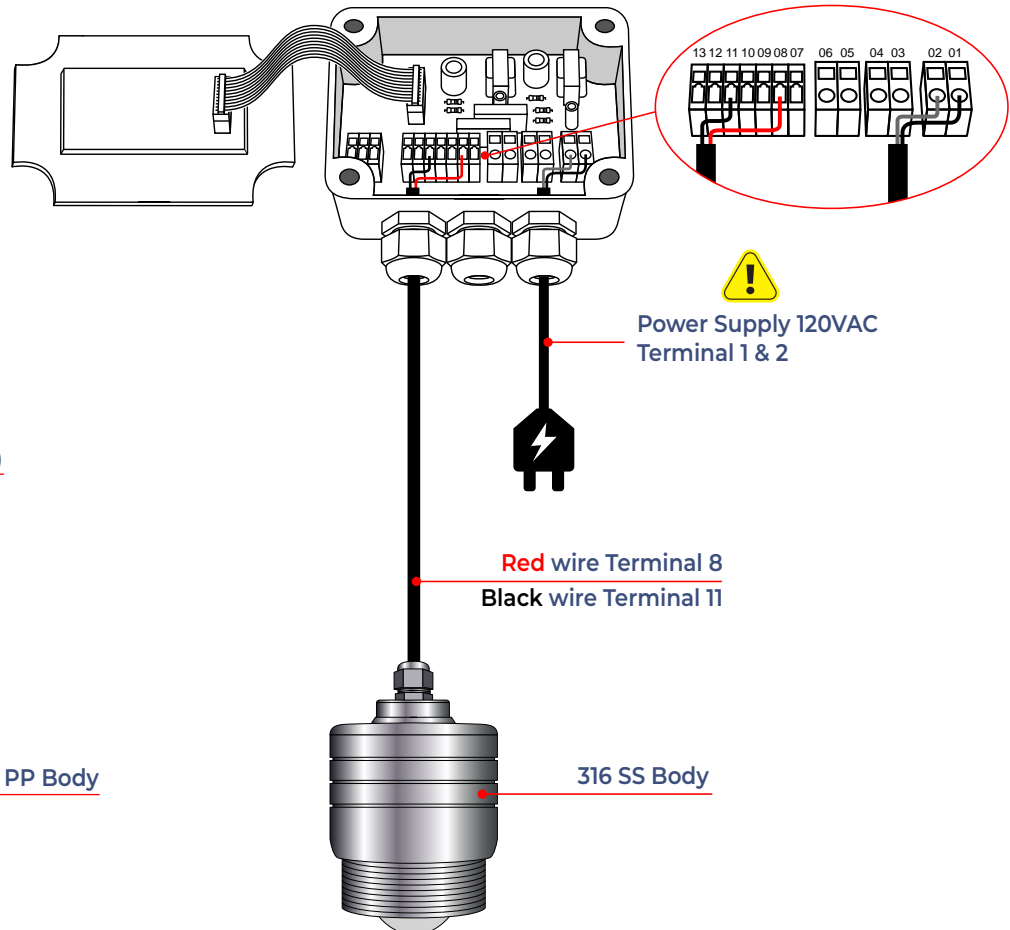
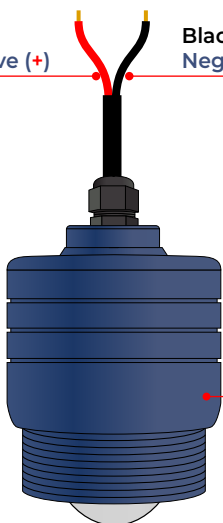
ProScan® 3 to TVL Display Connection



ProScan® 3 Blind to TVL Display Connection

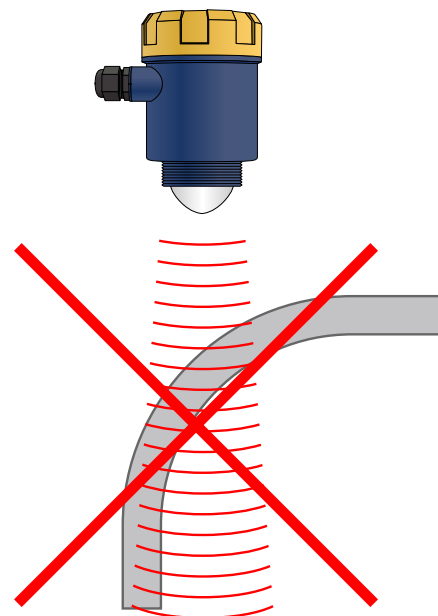
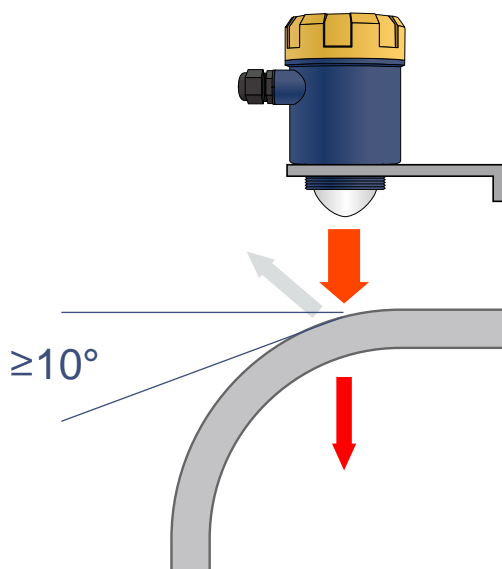
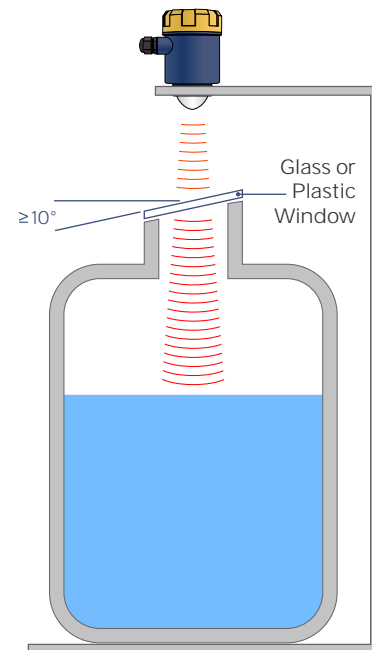
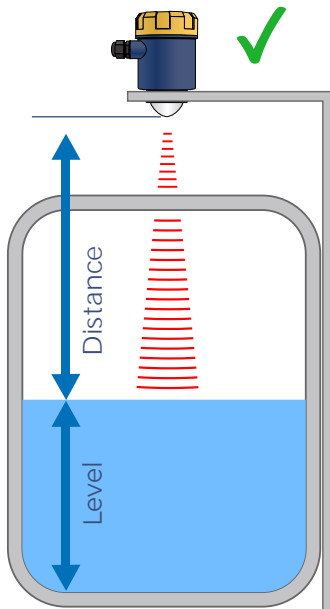
Red
Positive (+)

Black
Negative (-)



Sensor Positioning

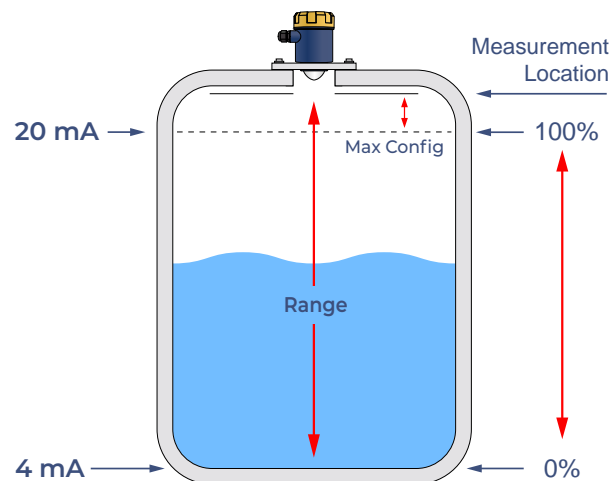
- On a plastic or FRP tanks, make sure the sensor is not too close to the sidewall. Avoid metallic objects outside of the vessel that can be detected by the sensor.
- Ensure that the radar signal strikes the surface of the liquid at a 90° angle.
- Use the bubble level to ensure 90-degree position of the sensor.
- Consider Dead band while installing the sensor.



Programming Display

Measuring the tank is one of the most important aspects in configuring the sensor. When measuring the tank, take into account the location of the sensor with respect to fittings, risers, dome tops and bottoms, and identify where the measurements are taken from the sensor.

1. The Range is the overall distance from the tip of the Sensor to the Lowest Liquid level
 - a) Min Configuration = 4mA setting.
 - b) With flat bottom tanks, the Range and Empty Configuration values can be the same.
2. Max Configuration = 20mA setting.
The distance from the tip of the sensor to the highest liquid or full level



Display Introduction

The removable display comprises a visual LCD dot matrix display with 4 separate push buttons. The bar graph at the right side of the display indicates the current level reading relative to the span - the distance between the 4mA | Empty and the 20mA | Full



Button Description & Function

| | |
|--|---|
| <div>ESC</div> <ul style="list-style-type: none"> Exit Programming Mode Return to a previous Display Echo Curve | <div>↑</div> <ul style="list-style-type: none"> Digits Edit Select Display Mode |
| <div>↓</div> <ul style="list-style-type: none"> Digits Edit Select Display Mode | <div>OK</div> <ul style="list-style-type: none"> Enter Main Menu Confirm Edit |

Factory Reset Password

(Dynamic Code x 2) + 1

Eg: If Dynamic Code is 12
Password is 25

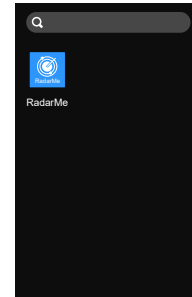
Basic Setup

Use & to change Selection / Values

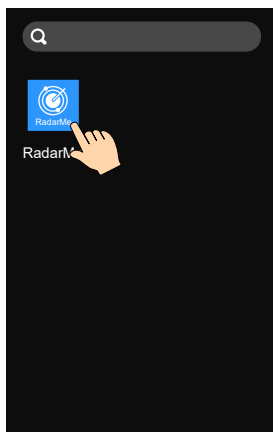
| STEPS | DISPLAY | OPERATION |
|--|---------|--|
| Home Screen Press Key | | When Power is on, Display will Show the Home Screen Press to go to Main Menu |
| Main Menu Press Key | | Select User Parameter and Press |
| User Parameters Press Key | | Select Basic Setup and Press |
| Basic Setup Press Key | | Select Range and Press |
| Range Press Key | | Change Range Value Using & and Press |
| Setting 4mA / 20mA Press Key | | Set 4mA (Low Level) & 20mA (High Level) Value and Press to confirm. |
| Blind / ShowType Press Key | | Set the Blind Distance and Press Set ShowType : Level / Distance. Press |
| Damping Time Press 3 Time | | Set the Damping time. Press to Confirm Press 3 time to Show Home Screen |

Connecting ProScan® 3 to Bluetooth Application

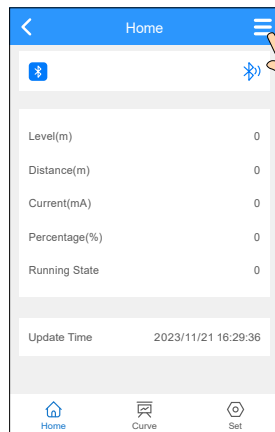
Install RadarMe App in your Device



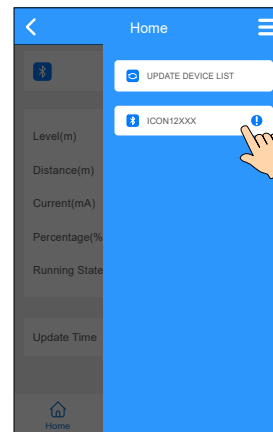
Make Sure your Device Bluetooth is ON



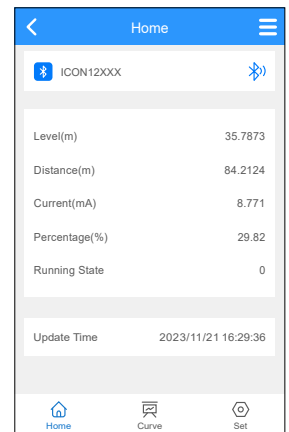
Open RadarMe App
in the Device



Click
Device List Menu

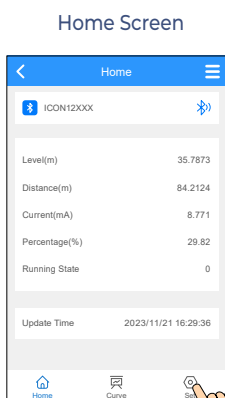


Select ICON12XXX from the List

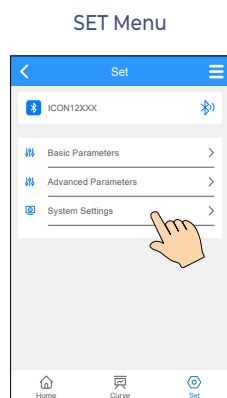


ProScan3 Connected

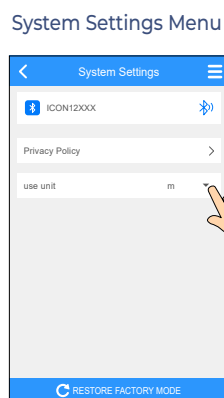
Device Unit Settings



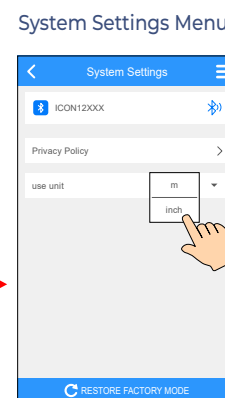
Click Set Button



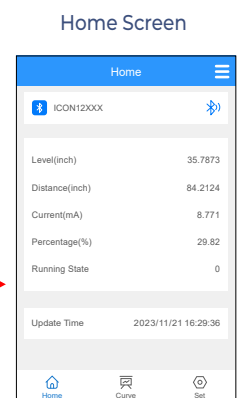
Click System Settings



Click Unit Drop
Down Arrow

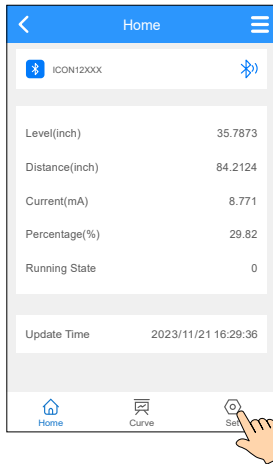


Select Unit (m/inch)

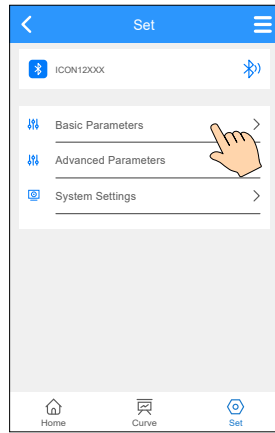


Unit Changed
Successfully!

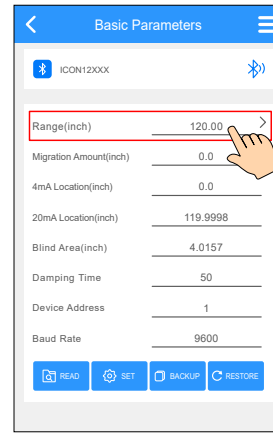
Basic Parameters Settings



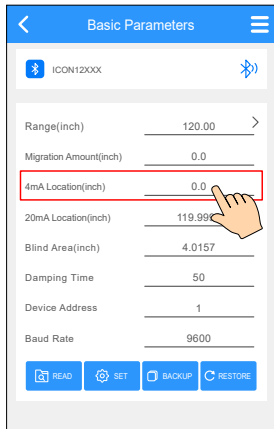
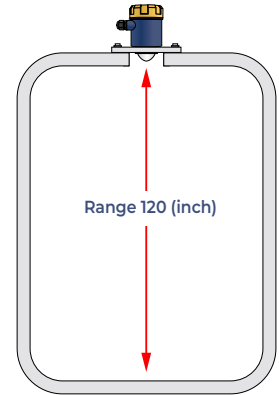
Click Set Button



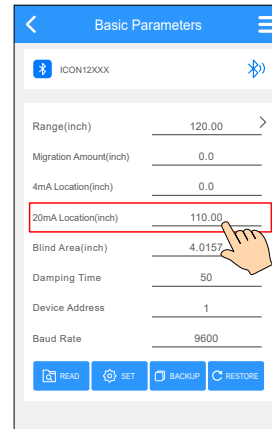
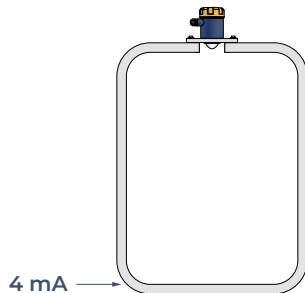
Select Basic Parameters



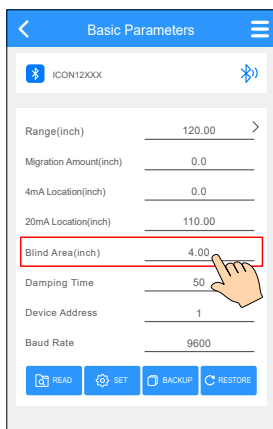
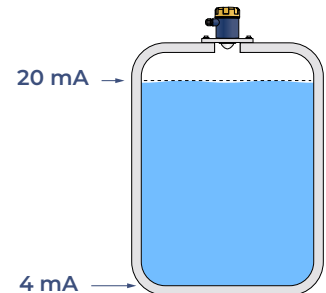
Set Range Value
E.g. Range Value = 120 (inch)



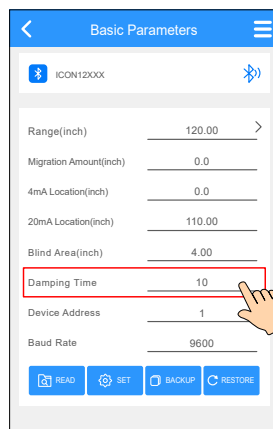
Set 4mA Location
4mA (Low Level) = 0



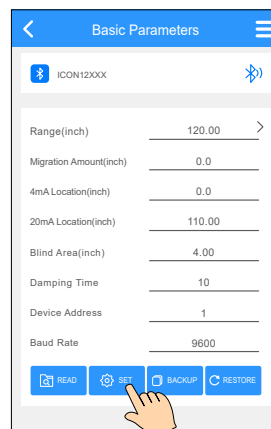
Set 20mA Location
20mA (High Level) = 110(inch)



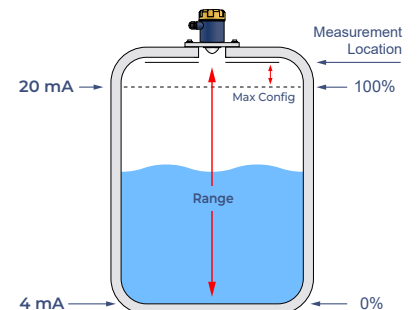
Set Blind Area
E.g. Blind Area = 4.00(Inch)



Set Damping Time
E.g. Damping Time = 10 (sec)

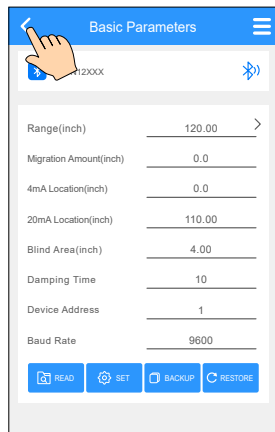


Click Set Button for
Save Parameters

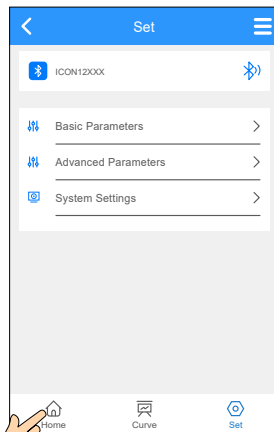


ProScan® 3 Series

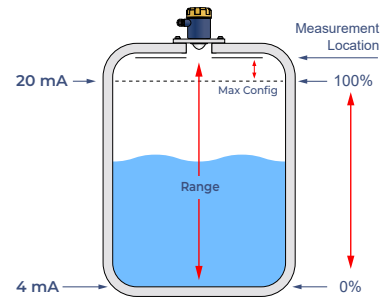
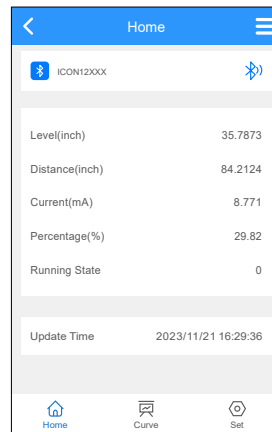
Continuous Radar Level Sensor (80GHz)



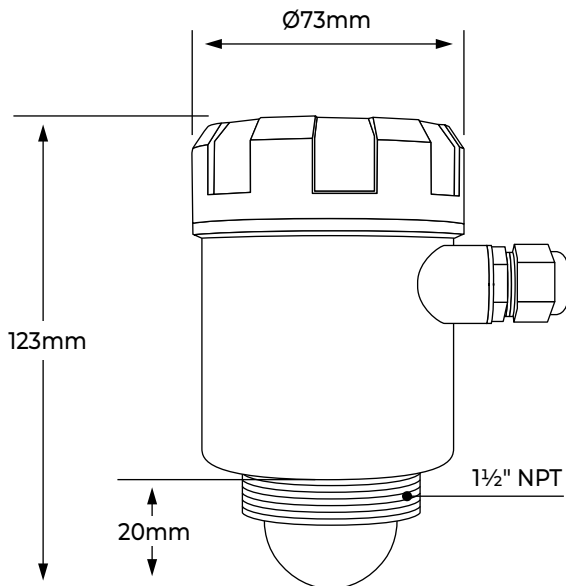
Back to
Setting Menu



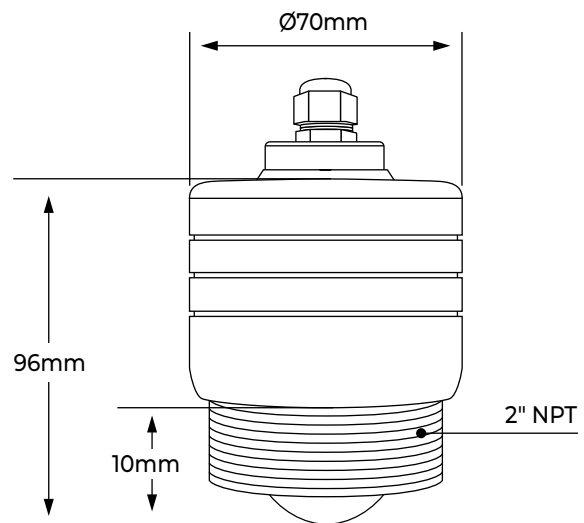
Click Home Button
to Show Home Screen



Dimensions



Display Sensor



Blind Sensor



Corrosion-Free
Instrumentation Equipment

Warranty, Returns & Limitations

Warranty

Icon Process Controls warrants to the original purchaser of its products that such products will be free from defects in materials and workmanship under normal use and service in accordance with instructions furnished by Icon Process Controls for a period of one year from the date of sale of such products. Icon Process Controls obligation under this warranty is solely and exclusively limited to the repair or replacement, at Icon's option, of the products or components, which Icon examination determines to its satisfaction to be defective in material or workmanship within the warranty period. Icon Process Controls must be notified within thirty (30) days pursuant to the instructions below of any claims of lack of conformity under this warranty. Any product repaired under this warranty will be warranted only for the remainder of the original warranty period. Any product provided as a replacement under this warranty will be warranted for the full 1 year from the data of sale.

Returns

Products cannot be returned to Icon Process Controls without Icon's prior authorization. To return a product that is thought to be defective please submit a customer return (MRA) request form and follow the instructions therein. All warranty and non-warranty product returns to Icon Process Controls must be shipped prepaid and insured. Icon will not be responsible for any products lost or damaged in shipment.

Limitations

This warranty does not apply to products which:

- 1) Are beyond the warranty period or are products for which the original purchaser does not follow the warranty procedures outlined above;
- 2) Have been subjected to electrical, mechanical or chemical damage due to improper, accidental or negligent use;
- 3) Have been modified or altered;
- 4) Anyone other than service personnel authorized by Icon have attempted to repair;
- 5) have been involved in accidents or natural disasters;
- 6) Are damaged during return shipment to Icon Process Controls.

Icon Process Controls reserves the right to unilaterally waive this warranty and dispose of any product returned to Icon where :

- 1) There is evidence of a potentially hazardous material present with the product;
- 2) The product has remained unclaimed at Truflor for more than 30 days after Icon Process Controls has dutifully requested disposition.

This warranty contains the sole express warranty made by Truflor in connection with its products. ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY DISCLAIMED. The remedies of repair or replacement as stated above are the exclusive remedies for the breach of this warranty. IN NO EVENT SHALL LEVELPRO BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND INCLUDING PERSONAL OR REAL PROPERTY OF OR INJURY TO ANY PERSON. THIS WARRANTY CONSTITUTES THE FINAL, COMPLETE AND EXCLUSIVE STATEMENT OF WARRANTY TERMS AND NO PERSON IS AUTHORIZED TO MAKE ANY OTHER WARRANTIES OR REPRESENTATIONS ON BEHALF OF Icon Process Controls.

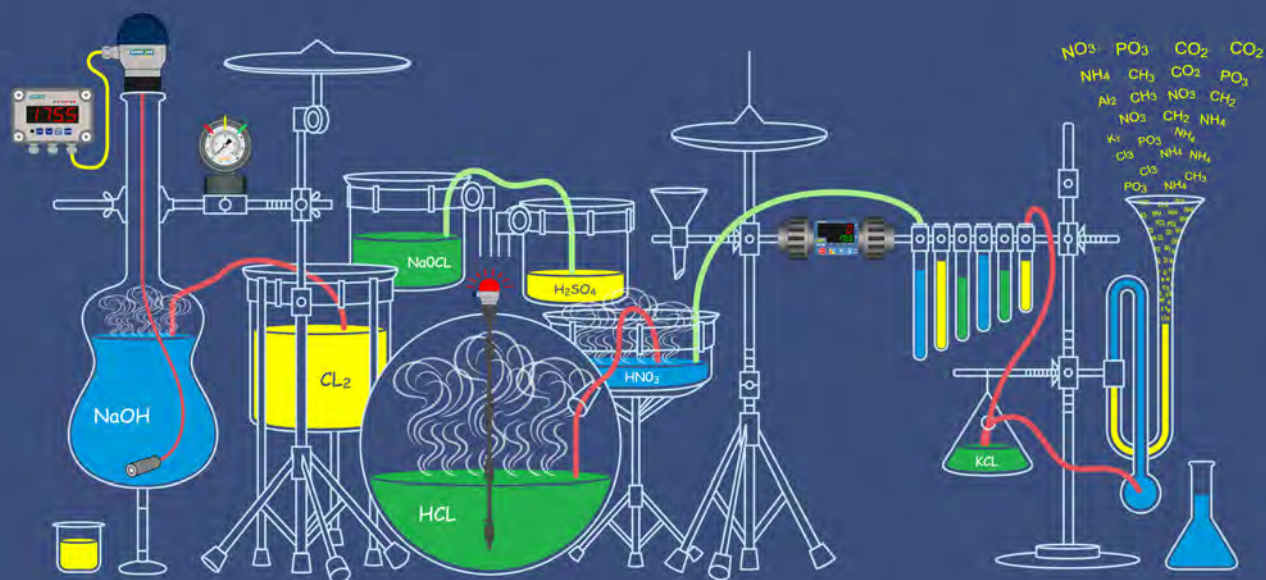
If any portion of this warranty is held to be invalid or unenforceable for any reason, such finding will not invalidate any other provision of this warranty

For additional product documentation and technical support visit www.iconprocon.com | e-mail: sales@iconprocon.com support@iconprocon.com | Ph: 905.469.9283



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