



Technology Solutions

# TEK-WAVE 4300B

FMCW Bluetooth Radar Level Transmitter



LEVEL



## Introduction

Tek-Wave 4300B FMCW Bluetooth Radar Level Transmitter continuously measures various types of liquid and solid levels in simple applications that demand lower pressure and temperature ranges. It also offers continuous non-contact level measurement and is a perfect application fit for water treatment, storage tanks, open basins, pump / lift stations or sewer management, rain over flow basins, and level monitoring. In bulk solids applications, the sensors are used in small bulk solids silos or open containers. This non-contact 80GHz radar transmitter includes Bluetooth technology for commissioning, operation and maintenance, which helps you to get data on your fingertips and it also helps in terms of saving money and time.

Every Bluetooth®-enabled smartphone or tablet can display output signal through an app (Android). Bluetooth Radar Level Transmitter is simple, safe, secure and can be accessed remotely via Bluetooth. Its unique radar chip design makes it the most compact radar that perfectly fits in space-limited applications. Full PVDF body can withstand outdoor conditions, sealed wiring and fully encapsulated electronics can prevent water from entering and allows operation in harsh environmental conditions. Perfect application fit for water & wastewater and utilities in all industries.



Fig 1: Tek-Wave 4300B  
FMCW Bluetooth Radar  
Level Transmitter

## Measuring Principle

The Tek-Wave 4300B FMCW Bluetooth Radar Level Transmitter uses 80GHz Frequency Modulated Continuous Wave. The FMCW radar emits a high-frequency signal that increases linearly during the measurement phase (called the frequency sweep). The signal is emitted, reflected from the measuring surface and received with a time delay (t).

$$\text{Delay Time (t)} = 2D/C$$

Where,

1. D is the distance to the product surface.
2. C is the speed of light in the gas above the product.
3. The difference if is calculated from the actual transmit frequency and the receive frequency for further signal processing. This difference is directly proportional to the distance.

## Benefits

- Bluetooth® commissioning.
- Maintenance-free.
- Isolated emitting and receiving signals enable full range measurement without dead zone.
- Unaffected by the build-up of condensation near the sensor.
- Real-time self-monitoring
- Alert when an abnormality is present.
- Storages echo automatically.
- Easy to install and operate.
- Resist outdoor conditions.
- Eliminates water ingress.
- Suitable for harsh environments.

## Applications

- Water treatment.
- Pumping stations.
- Rain overflow basins.
- Storage tanks.
- Wastewater treatment.
- Utility networks.

## Specifications

|                                |   |
|--------------------------------|---|
| <b>Accuracy</b>                | ±2mm  |
| <b>Measuring Range</b>         | 45ft  |
| <b>Repeatability</b>           | ±1mm  |
| <b>Frequency</b>               | 76 to 81GHz   |
| <b>Resolution</b>              | 1mm   |
| <b>Response Time</b>           | <2S   |
| <b>Process Temperature</b>     | -40°F to 176°F (-40°C to 80°C)                        |
| <b>Process Pressure</b>        | -14.5 to 40psi (-1 to 3bar)                           |
| <b>Beam Angle</b>              | 8°  |
| <b>Process Connection</b>      | 1-1/2" Male NPT                                       |
| <b>Electrical Connection</b>   | 3/4" Male NPT with 15' lead wire                      |
| <b>Digital Output</b>          | Bluetooth, HART, Modbus RS-485                        |
| <b>Power</b>                   | <0.5W (Power supply required 24VDC with minimum 25mA) |
| <b>Analog Output</b>           | 4-20mA (2- wire)                                      |
| <b>Enclosure &amp; Ratings</b> | IP68  |
| <b>Approvals</b>               | CE  |

## Dimensional Drawings

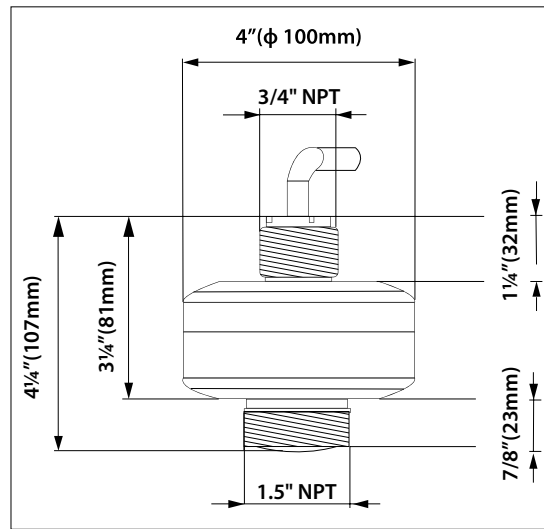


Fig 1: Dimensional Drawing

- Mounting Brackets

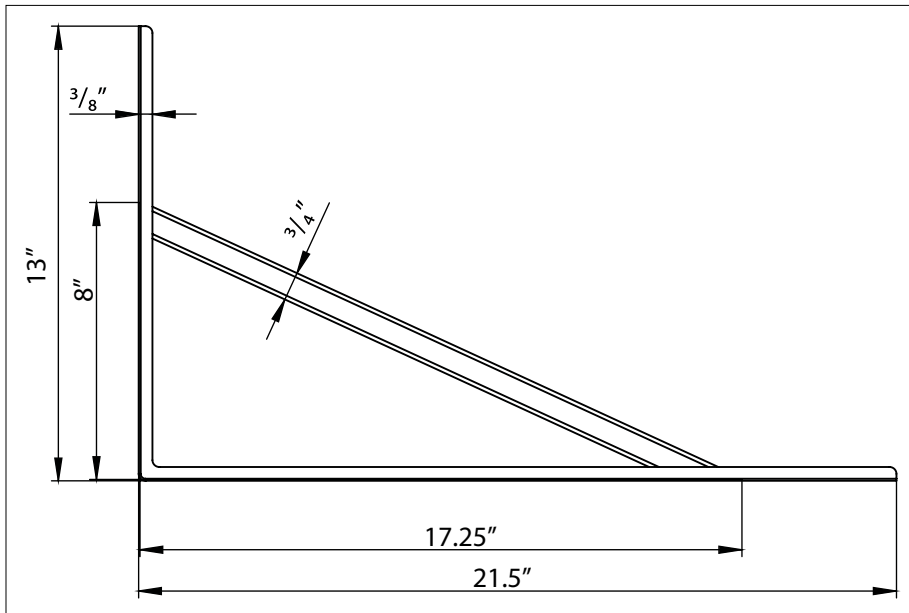


Fig 2: Mounting Bracket Side Angle

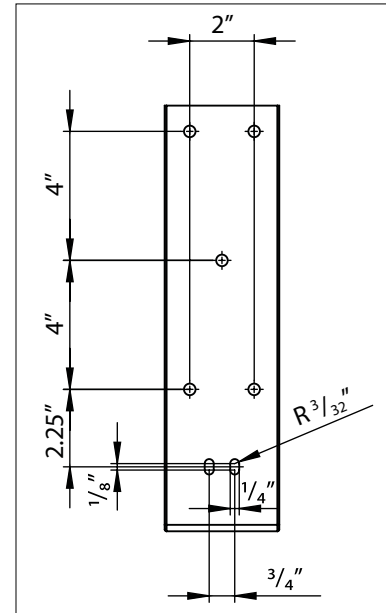


Fig 3: Mounting Bracket Back Angle

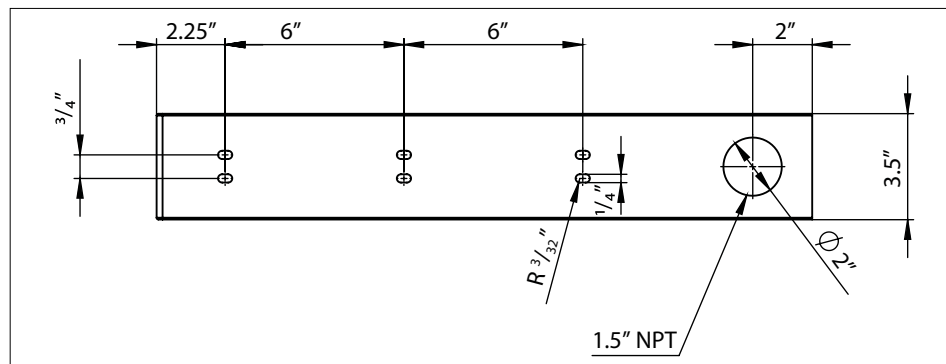


Fig 4: Mounting Bracket Top Angle

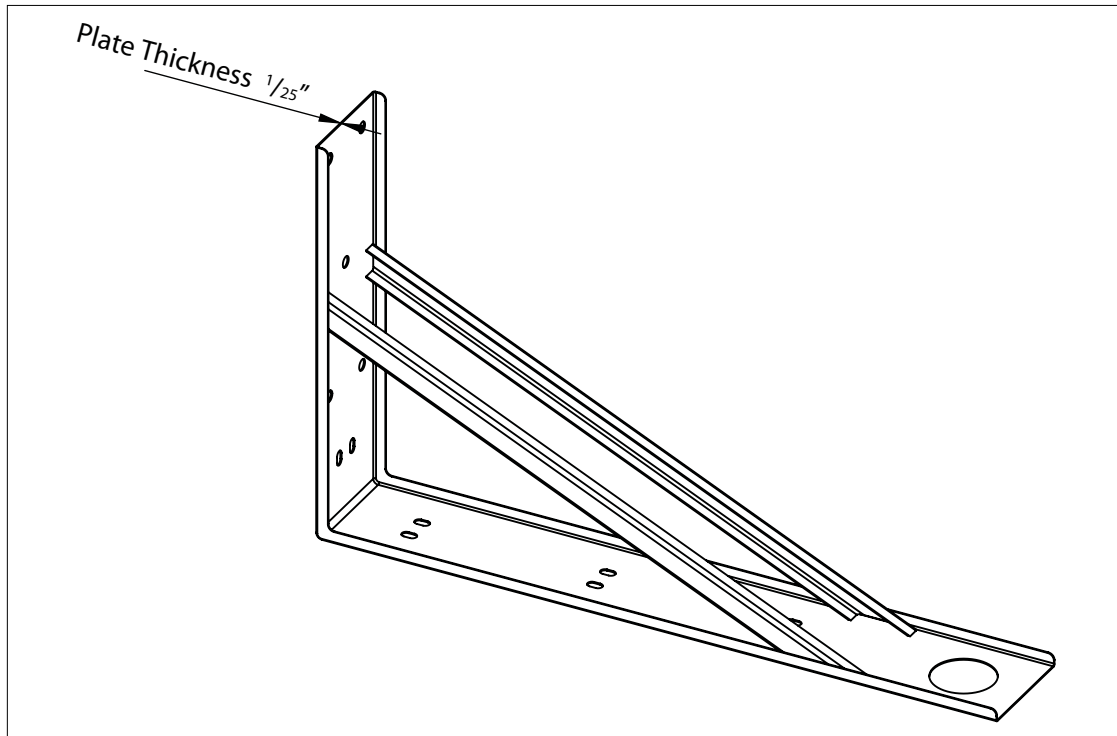


Fig 5: Mounting Bracket

## Installations

- *Mounting Position*

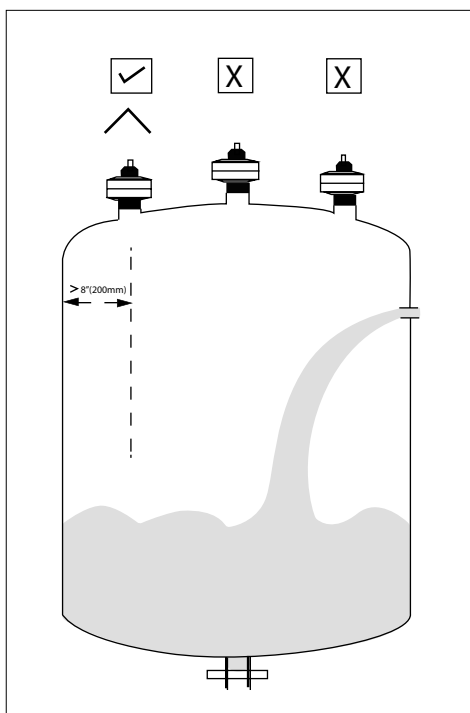


Fig 6: Mounting Position

- *Stirring Fan in Vessel*

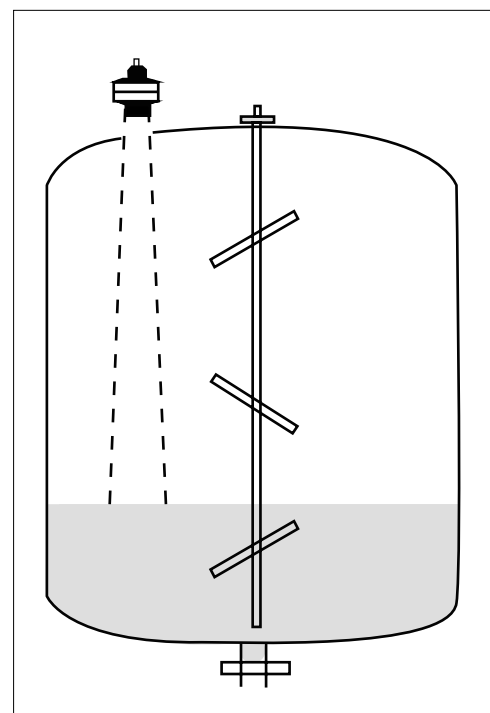


Fig 7: Stirring Fan in Vessel

- Reduction of Interference Echoes

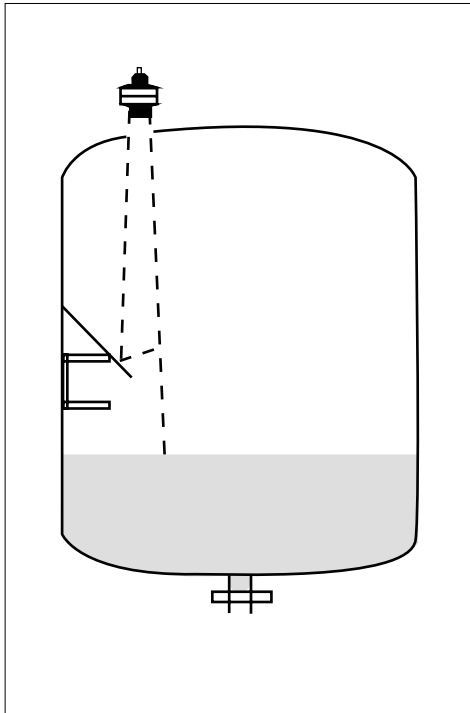


Fig 8: Reduction of Interference Echoes

- Mounting With Bracket

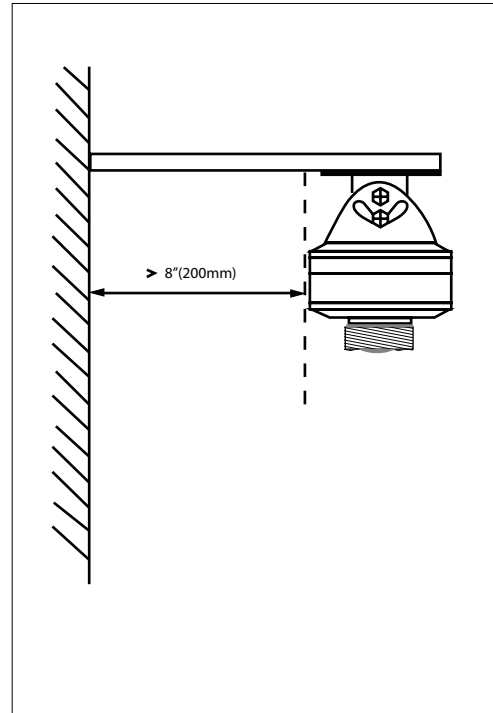


Fig 9: Mounting With Bracket

## Model Chart

| Example               | Tek-Wave 4300B | 01 | A      | 01 | B | 015 | A | 01 | A | #                | Tek-Wave 4300B-01-A-01-B-015-A-01-A              |
|-----------------------|----------------|----|--------|----|---|-----|---|----|---|------------------|--|
| Series                | Tek-Wave 4300B |    |        |    |   |     |   |    |   |                  | FMCW Bluetooth Radar Level Transmitter           |
| Power Supply          |                | 01 |        |    |   |     |   |    |   |                  | 18 to 36 VDC                                     |
| Process Connection    |                |    | A<br>X |    |   |     |   |    |   |                  | 1-1/2" Male NPT<br>Special                       |
| Electrical Connection |                |    |        | 01 |   |     |   |    |   |                  | 3/4" Male NPT                                    |
| Range                 |                |    |        |    | B |     |   |    |   |                  | 45 Feet  |
| Cable Length          |                |    |        |    |   | 015 |   |    |   |                  | 15' Cable  |
| Analog Output         |                |    |        |    |   |     | A |    |   |                  | 4 to 20mA  |
| Digital Output        |                |    |        |    |   |     |   | 01 |   |                  | Bluetooth, HART, Modbus RS-485                   |
| Enclosure & Ratings   |                |    |        |    |   |     |   |    | A |                  | IP68   |
| Options               |                |    |        |    |   |     |   |    |   | TAG<br>FC<br>BKT | Tag<br>Factory Configuration<br>Mounting Bracket |

## Popular Models

| Model Number               | Description  |
|----------------------------|--|
| 4300B-01-A-01-B-015-A-01-A | 0.5 to 45 Feet FMCW Radar Level Transmitter with Bluetooth |

# Customer Service & Support



TEK-TROL LLC reserves the right to change the designs and/or materials of its products without notice. The contents of this publication are the property of TEK-TROL LLC and cannot be reproduced by any other party without written permission. All rights reserved. Copyright © 2022 TEK-TROL LLC  
TEK-TROL LLC  
DOC # TEK-PO/CA/220323/43008/r00.1



[www.tek-trol.com](http://www.tek-trol.com)

## **Tek-Trol LLC**

796 Tek Drive Crystal Lake, IL 60014,  
USA  
Sales: +1 847-857-6076

## **Tek-DPro Flow Solutions**

PO Box 121 Windsor, Colorado 80550,  
USA  
Sales: +1 847-857-6076

## **Tek-Trol Solutions BV**

Florijnstraat 18, 4879 AH Etten-Leur,  
Netherlands  
Sales: +31 76-2031908

## **Tek-Trol Middle East FZE**

SAIF Zone, Y1-067, PO BOX No.  
21125, Sharjah, UAE  
Sales: +971-6526-8344

Support: +1 847-857-6076

Email: [tektrol@tek-trol.com](mailto:tektrol@tek-trol.com)

[www.tek-trol.com](http://www.tek-trol.com)

Tek-Trol is a fully owned subsidiary of TEKMATON LLC. We offer our customers a comprehensive range of products and solutions for process, power and oil & gas industries. Tek-Trol provides process measurement and control products for Flow, Level, Temperature & Pressure measurement, Control valves & Analyzer systems. We are present in 15 locations globally and are known for our knowledge, innovative solutions, reliable products and global presence.