



**76-81GHz Continuous
Frequency Modulation Radar
water level gauge**

TxRLs Series

User Manual



1. Feature

The radar water level gauge TxRLs series features advanced frequency-modulated continuous wave (FMCW) radar technology operating at 76-81GHz. These devices offer a maximum measurement range of up to 65 meters, with a minimal blind spot of just 10 centimeters. With a higher operating frequency, wider bandwidth, and enhanced measurement accuracy, these gauges deliver reliable and precise performance. Additionally, the product is designed with a convenient bracket mounting system, eliminating the need for on-site wiring and ensuring a quick and straightforward installation process.

The main advantages of TxRLs:

- The millimeter-wave RF chip enables a more compact RF architecture, providing a higher signal-to-noise ratio and minimizing blind spots.
- The 5GHz working bandwidth enhances measurement resolution and accuracy. A narrow antenna beam angle of just 6° reduces environmental interference during installation, ensuring greater convenience.
- Features an integrated lens design for a compact and streamlined form factor.
- The display control and water level gauge are designed separately, offering customization options.
- Operates with low power consumption, ensuring a service life of over three years.
- Supports Bluetooth debugging via mobile devices, simplifying maintenance tasks for field personnel.

2. Technical Specifications

Parameter	Specification
Transmission Frequency	76 GHz – 81 GHz
Measuring Range	65 m
Measurement Accuracy	±1 mm
Beam Angle	6°
Power Supply Range	18 – 28 VDC
Output Signal	4 – 20 mA
Operating Temperature	-30°C to 75°C
Shell Material	PP / Aluminum Alloy / Stainless Steel
Antenna Type	Lens Antenna
Recommended Cable	0.5 mm ²
Protection Grade	IP67
Installation Method	Bracket / Thread

3. Dimension

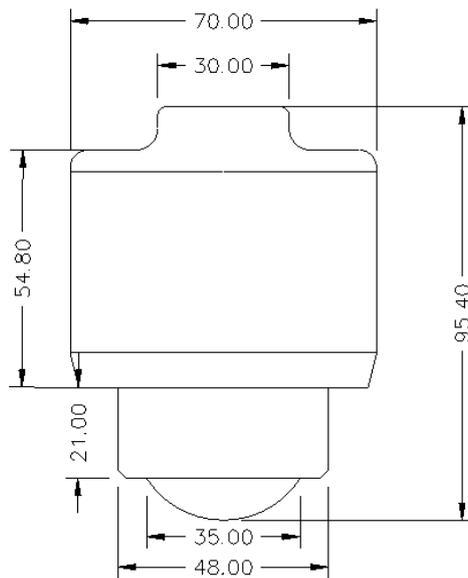


Figure 3-1 Schematic diagram of a 1.5 inch water level gauge

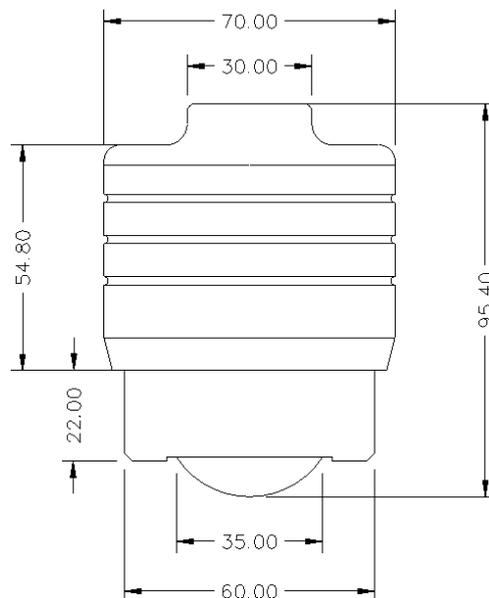
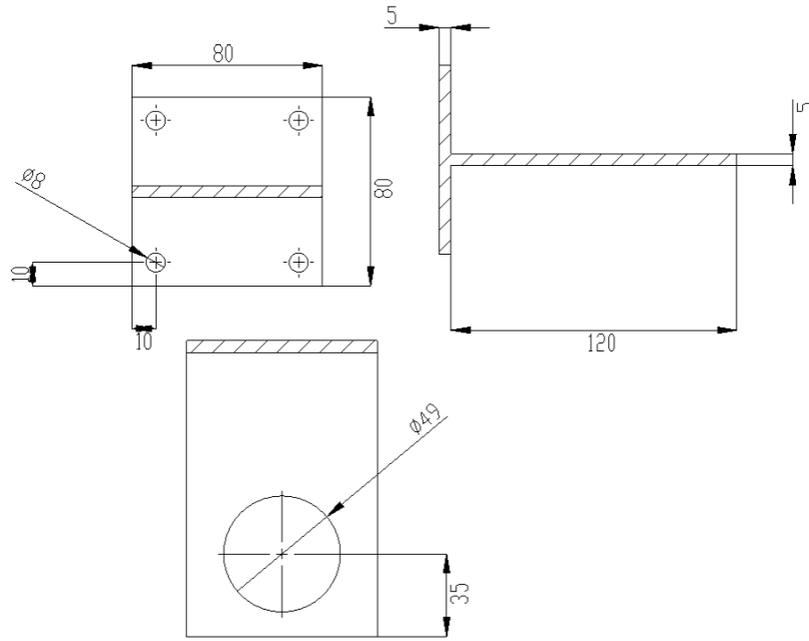
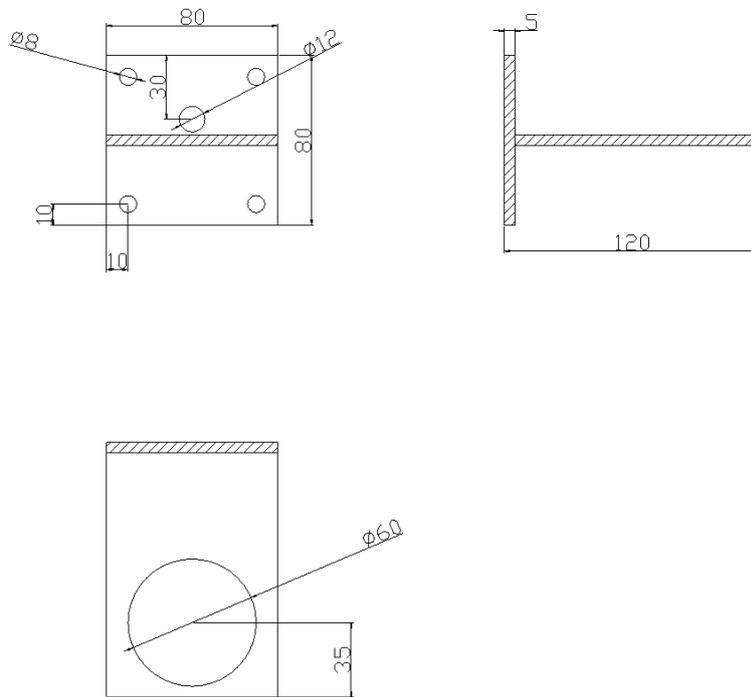


Figure 3-2 Schematic diagram of a 2 inch water level gauge



3-3 Figure 1.5 inch T shaped bracket schematic diagram



3-4 Figure 2 inch T shaped bracket schematic diagram

4. Installation Instructions

When installing the water level gauge, please ensure the following:

- Proper Alignment:

Ensure that the instrument is installed perpendicular to the water surface. A tilted installation can weaken signal strength and impact measurement accuracy.

- Avoid Interference:

Ensure the radar beam does not illuminate interfering objects that could generate false echoes. Refer to the recommended installation guidelines for typical operating conditions to prevent such issues.

By adhering to these points, you can achieve optimal performance and accurate readings.

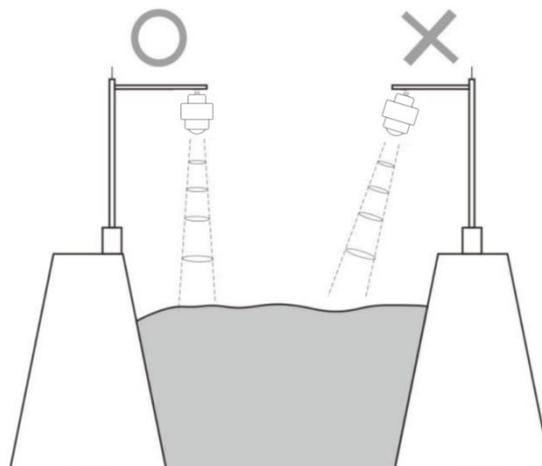


Figure 4-1 Schematic diagram of instrument installation location

- Ensure that no interfering objects, such as riverbanks or other obstacles, are present within the radar beam's range, as these may cause false readings or signal interference.

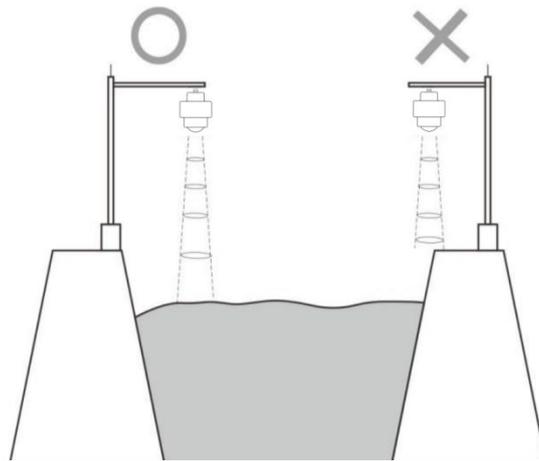


Figure 4-2 Schematic diagram of instrument installation location

- The instrument should be installed at least 20 cm away from the side wall. For underground pipeline networks, it is recommended to position the installation as close as possible to the center of the well. Failure to do so may result in interference signals generated by the well wall, potentially impacting measurement accuracy.

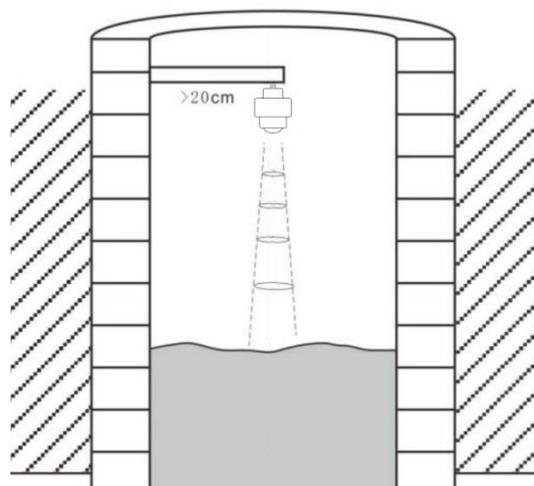


Figure 4-3 Installation at least 20cm away from the container wall

5. Connection



Figure 5-1 Wiring Diagram

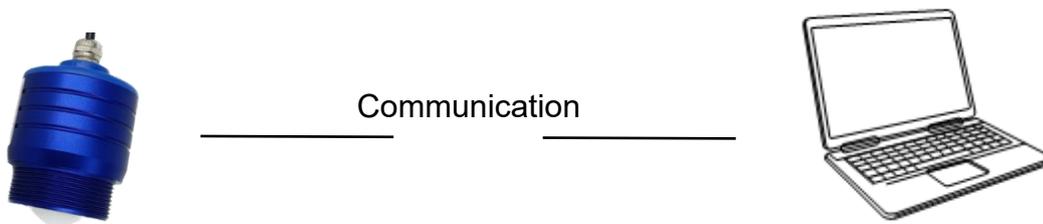


Figure 5-2 S computer connection

1. Connect the Device: Properly connect the device following the interface definitions provided above. Ensure the power supply voltage is within the range of 18–28V.
2. Establish Communication: Use a HART-to-USB modulator to connect the device to the computer.
3. Power Up and Debug: Connect a 24V power supply, turn on the software on the computer, and proceed with device debugging.