



Water Level Measurement
OTT RLS
Efficient radar technology
for non-contact water level
measurement

OTT RLS

Radar Level Sensor

The OTT RLS is a radar level sensor for non-contact water level measurement at surface water locations. The sensor uses impulse radar technology to determine the water level. This energy-efficient, non-contact measurement method means the OTT RLS operates with no effect from temperature gradients, water pollution or sediment load and ensures exact measurements.

Its extremely low energy consumption, the large power supply range and standardized interfaces make the OTT RLS very flexible for different applications. It can easily be connected to any data logger and remote transmission system.

With a measurement range of up to a maximum of 35 m the RLS also allows the measurement of large ranges. The OTT RLS is mounted directly above the water surface to be measured, e.g. on bridges or auxiliary constructions. Its solid, relatively light and water-proof housing is easy to install. There is no requirement for complex construction, such as stilling wells or float shafts, as the OTT RLS determines the water level measurements in a measurement cycle that compensates for wave or other rapid water level movements.

The OTT RLS is specifically designed for use in open air locations. The flat antenna construction, its minimal energy consumption and its compact, water-proof housing offer the user a system that is optimised for use at sites that have no requirement for mains power supply.

Quantitative
Hydrology

Water level measurement

Practical and reliable with the OTT RLS



Advantages

- Light, compact housing
- Easy to rotate swivel mount – easy alignment of the front plate (antenna side)
- Sensor is away from the water, making the installation safer to achieve
- Influence of waves are compensated mathematically – no requirement for the use of structures
- Standard interfaces for communication with data loggers and other peripheral devices (SDI-12 and RS-485 interface plus 4 - 20 mA signal output)
- Extremely low power consumption – can be easily used at remote locations
- Diagnostic data for QA/QC, including signal-to-noise ratio, number of detected targets and number of completed measurements.
- Non-contact measurement – ideal for flood measurement
- Flat antenna means that insect and spider infestation is not a problem
- Compact and solid design – long sensor life with minimal maintenance
- RS-485 interface – allows a connection cable length of up to 1,000 m, allowing data logger and power source to be situated further away
- Wide range of power supply from 5.4 - 28 V (typically 12/24 V) – allows differing power supplies such as solar panel, battery or grid



Applications

- Channels that suffer from high levels of flotsam and sediment load
- Locations that have high levels of in-channel weed growth
- Isolated, remote sites that are powered using alternative energy supplies
- Areas subject to flooding (in addition to existing sensors)



Technical data

Water level measurement

- Measuring range: 0.4 ... 35 m
- Accuracy (SDI-12):
 - 0.4 ... 2.0 m: ±10 mm;
 - 2.0 ... 30 m: ±3 mm;
 - 30 ... 35 m: ±10 mm
- Average temperature coefficient (range: -20 ... +60 °C): 0.01 % full scale/10 K
- Accuracy (4 ... 20 mA):
 - ±0.1 % full scale
 - Average temperature coefficient: 10 ppm full scale/°C (at 20 °C)
- Measuring time: 20 seconds
- Beam angle of antenna (width of beam): 12 °
- Transmit frequency:
 - CE Version: 24 GHz
 - FCC Version: 25 GHz

Electrical Data

- Power supply: 5.4 ... 28 V DC, typically 12 / 24 V DC
- Power Consumption (at 12 V)
 - CE version active: <15 mA
 - CE version sleep: <0.05 mA
 - FCC version active: <15 mA
 - FCC version sleep: <0.05 mA

Interfaces

4 ... 20 mA; SDI-12; RS-485, two-wire (SDI-12 protocol)

Dimensions and weight

- L x W x H: 222 mm x 152 mm x 190 mm
- Weight (including mounting): approx. 2.1 kg

Operational environment

- Operating temperature: -40 ... +60 °C
- Storage temperature: -40 ... +85 °C
- Relative humidity: 0 ... 100 %

Materials

- Housing: ASA (UV-stabilized ABS)
- Radom (front plate): TFM PTFE
- Mounting: 1,4301 (V2A)

Rotation range of swivel mount

- Lateral axis: ±90 °
- Longitudinal axis: ±15 °

Cable gland sealing range

- With inlet (min. Ø ... max. Ø): 4.0 ... 7.0 mm
- Without inlet (min. Ø ... max. Ø): 7.0 ... 11.0 mm

Connection capacity of screw terminal strip

- Solid conductor: 0.25 ... 2.5 mm² (AWG 24 to 12)
- Wire with end sleeve and plastic collar: 0.25 ... 1.5 mm²

Type of protection

With horizontal mounting IP67 (submersion depth max. 1 m; submersion duration max. 48 h)

EMV limits and radio approvals

- Version CE: EMV for low power radio devices ETSI EN 301 489-3
- Low-voltage device safety EN 60950-1
- Radio approval for low power radio devices*; Europe ETSI EN 300 440
- Radio approval for low power radio devices*; Canada RSS 210 Issue 7
- FCC Version: Radio approval for low power radio devices*; USA FCC 47 CFR Part 15

* Short Range Device (SRD)