

# Radar Level Recorder RLR-0001



## Overview

The Radar Level Recorder (aka RLR) allows users to precisely measure stage (water level) without direct contact with the water's surface. With its integrated antenna, this unit is ideal for monitoring rivers, streams, reservoirs, tidal areas & industrial areas. Using a pulse-echo measurement technique, the radar has an accuracy of 0.01 feet & a range of 60 ft. Sutron has two primary RLR models: FCC licensed and NTIA licensed.

RLR-0001 is Sutron's NTIA (National Telecommunications & Information Administration) approved model available only to US government agencies and for use outside the US. US government agencies that use this version must have it approved for operation by their own frequency coordinators.

## Features

- ▶ Special pulse-echo technique with 0.001 ft resolution & 0.01 ft accuracy
- ▶ Not affected by air temperature & humidity
- ▶ Internal memory of 32 MB (>300,000 reading)
- ▶ SDI-12 & RS232 interfaces
- ▶ Powerful data processing modes including averaging & NOAA DQAP
- ▶ Diagnostic tools include recording of signal strength & standard deviation.
- ▶ Integrated antenna
- ▶ Operates as stand-alone station or with other DCPs
- ▶ Connects to a SatLink2 Transmitter/Logger & IridiumLink for satellite communications & GPRSLink & CDMALink for cell modem communications.
- ▶ Compared to the FCC approved RLR, the NTIA version has increased signal to noise for quicker measurements and better performance with rough water.

## Applications

- ▶ Tides, Oceans, Coastal
- ▶ Surface Water
- ▶ Lock Monitoring
- ▶ Flood Monitoring, Warning
- ▶ Canals
- ▶ Bridge Mounted Monitoring
- ▶ Rapid Deployment Gauge Replacement
- ▶ Bubbler System Alternative
- ▶ Shaft Encoder with Stilling Well Alternative



The RLR-0001-1 packages the following components within a single sealed case (picture above): radar, antenna, keypad, display, permanent log, SDI-12 interface and RS232 interface. Although the casing is sealed, it is not rugged enough to be installed outdoors unless it is within additional protection from the elements such as a NEMA enclosure, etc.



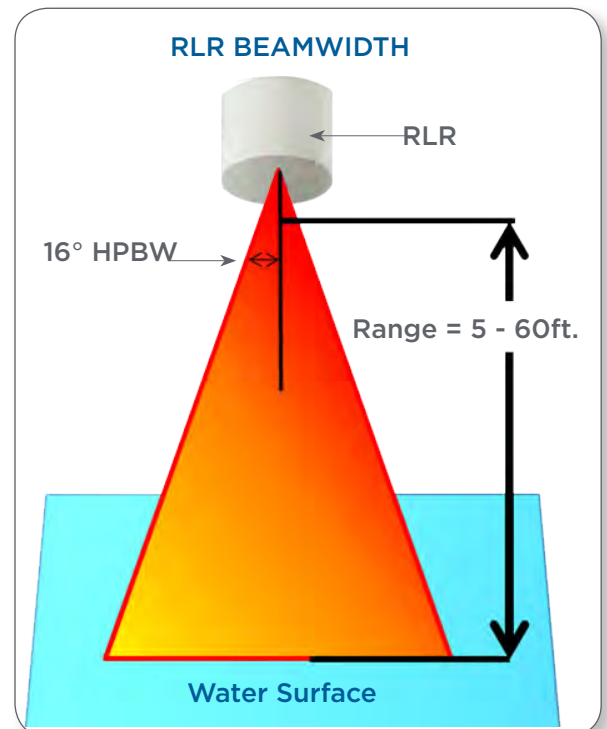
**SPECIFICATIONS**

*Specifications subject to change without notice*

<b>Measurements</b>	Stage/Level measurements, Battery.
<b>Automeasure Interval</b>	1 second to 24 hours
<b>Measurement Technique</b>	Pulse-echo technique operating about 6GHz with beamwidth of +/- 16 degrees
<b>Log/Averaging Intervals</b>	User selectable
<b>Radar Type (NTIA)</b>	6.2 GHz pulse echo
<b>Beamwidth</b>	±16° HPBW
<b>Stage/Level Accuracy</b>	0.05% reading, 0.01 ft (3mm) minimum 0.05% above 20 ft
<b>Stage/Level Range</b>	60 feet (18.3 meters)
<b>Calculations</b>	Discharge can be calculated using Parshall Flume & Broad Crested Weir equations or general purpose equation with user entered constants. Calculation of daily volume and daily average stage.
<b>Casing (Enclosure)</b>	NEMA 4X Resists dripping water and spray RLR-0001-1 is not suitable for outdoor installation without additional appropriate enclosure.
<b>Communication Ports</b>	SDI-12, RS232
<b>Operating Temperature</b>	-40°C to +60°C
<b>Display/Keypad</b>	2x20 LCD available only on RLR-0001-1
<b>Status lights</b>	2 on front panel - provide "heartbeat" and run/error status (RLR-0001-1 only)
<b>Sampling Rate</b>	10 Hz
<b>Memory</b>	
<b>Built-In Flash</b>	>300,000 readings
<b>SD/MMC Card</b>	no
<b>USB</b>	no
<b>Ethernet</b>	no
<b>Clock Accuracy</b>	2 minutes per month (at 0C - 40°C)
<b>Power Requirements</b>	5.5 to 16 VDC
<b>Current Drain</b>	<1mA @12 VDC standby <0.90 mA @ 12 VDC standby, RS232 disconnected <12 mA @ 12 VDC standby, RS232 connected <36-40 mA @ 12 VDC active measurement
<b>Communication Protocols</b>	MODBUS, SDI-12
<b>Programming</b>	via RS232, SDI-12
<b>Device Dimensions</b>	
<b>Height</b>	7 in. (17.8 cm)
<b>Length</b>	6 in. (15.3 cm)
<b>Width</b>	6 in. (15.3 cm)
<b>Weight</b>	2.9 lbs. (1.4 Kg)

**ORDERING**

Part #	Description
RLR-0001-1*	Radar Level Recorder including Integrated Antenna, NTIA, display, 10 foot SDI-12 cable.
* Do not install the RLR-0001-1 outdoors without an enclosure such as the 6661-1265-2.	
6661-1265-2	NEMA-4 enclosure for RLR-0001-1. Order separately.
SHIPPING	
<b>Shipping Height</b>	14 in. (35.6 cm)
<b>Shipping Length</b>	14 in. (35.6 cm)
<b>Shipping Width</b>	9 in. (22.9 cm)
<b>Shipping Weight</b>	7.9 lbs. (3.6 Kg)



- ▶ 0.05% accuracy (±0.01 ft. at less than 20 ft.)
- ▶ 6.2 GHz pulse echo (NTIA)
- ▶ 6.6 GHz pulse echo
- ▶ 16° Half-Power Beam Width (HPBW)

Distance to Water	Beamwidth (Radius in Feet)
10	3
20	6
30	9
40	12
50	15
60	18