

WATER LEVEL MONITORING SYSTEM

AQUA LOGGER RDR



Aqua Logger RDR measuring station is a device dedicated to water level monitoring in natural environment and in changing weather conditions. Measurement is made with the use of a radar sensor. It emits high frequency electromagnetic waves which reflect from the water surface because of the dielectric constant change. The time of the wave's reflection is proportional to the distance it covers. On this basis the surface of the water level is determined. All measured data is sent to data server via GSM. In standard configuration, the station is powered with a 12V 55Ah AGM battery.

The most important feature of such method is the non-contact measurement. Thanks to it, there is no need to install any of the station's elements in water and that makes the process easier and faster, and additionally eliminates the danger of damaging the sensor by ice layer.

MAIN FEATURES

Ultra-low power consumption

Non-contact measurement

Built-in GSM/GPRS data transmission

Full remote configuration

Data access through every web browser

Possible data transfer directly to user's server

Text and email notifications

Cabinet door open text alerts

Increase of measurement and data transfer intervals when threshold values are exceeded

Embedded solar charger and optional PV panel installation

Ultra-low power consumption of the station marks it out among similar devices used for water level measurement.

In most operating modes this application is ready to work continuously for several years without battery charging or replacing. For example, if the measurement is made every 10 minutes and data is updated every 60 minutes, the station will work for 5 years minimum.

One battery set provides long working time which excludes other than standard maintenance of the station. In comparison with grid powered solutions, Aqua Logger RDR generates significantly lower installation cost. Online access to measuring and transmission intervals configuration as well as the wide range of adjustable email and text alerts enable professional and economic measurements campaigns. Aqua Logger RDR is recommended as a reliable and easy-to-install alternative to standard water level stations which are grid powered or use large PV panels.

EXEMPLARY DAILY POWER CONSUMPTION FOR CHOSEN SETTINGS

Data transmission interval	Measurement Interval	Approx. daily power consumption*	Approx. operation time with AGM 12V 55Ah**
1/24h (once a day)	24/24h (every 60 minutes)	0,019 Wh	> 90 years
1/24h (once a day)	144/24h (every 10min)	0,065Wh	> 25 years
6/24h (every 4 hours)	144/24h (every 10min)	0,085 Wh	> 20 years
24/24h (every 60min)	144/24h (every 10min)	0,157 Wh	> 11 years
144/24h (every 10min)	144/24h (every 10min)	0,636 Wh	1036 days
144/24h (every 10min)	1440/24h (every 1minute)	1,131 Wh	583 days

* Calculation for good GSM signal and low network usage conditions. When weak GSM signal or BTS overload, the given values will be higher.

** Approximate time assuming the use of full nominal capacity of the battery. In reality, energetic efficiency of a battery is lower than the nominal capacity given by manufacturer. It depends on working temperature, self-discharging and process of wearing out. Together with level measurement, the logger always measures power supply voltage. The voltage should not drop below 11,5V.

SPECIFICATION

Measurement range	0 8m	
Probe type	FMR10 with beam narrowing cover, producer: Endress+Hauser	
Sensor output signal	4 ... 20mA	
Accuracy	range 0,0-0,1m - max. error: 20mm range 0,1-0,5m - max. error:10mm remaining range - max. error: 5mm	
Sensor working temperature	-40°....+60°C	
Working frequency	K-band (~ 26 GHz)	
Transmission power	1m distance: < 12 nW/cm ² , 5m distance: < 0.4 nW/cm ²	
Configuration	with any Android or Mac OS X System and Bluetooth transmission	
Data transfer type	GSM / GPRS	
Data logger working temperature	-40°....+60°C	
Power supply	10 - 30V DC	
Standby power consumption	<250µW	
GPRS transfer power consumption	~360mW	
Measurement power consumption	~100mW	
Single measurement time	18 ... 23s	
Average data transfer modem activity time	18 ... 22s typically	
Battery	55 Ah, 12V AGM or 24 Ah, 12V AGM with PV panel	
Optional PV panel	Built-in solar charger enables direct connection of a PV panel	
Approx. working time without battery (55Ah) replacement/recharging	data update – 60min, data sampling – 10min	>5 years
	data update – 10min, data sampling – 10min	>2 years
Data transfer interval	in range: (1min)....(24h)	
Measurement interval	in range: (1min)....(24h)	
Internal memory	50 000 records	
Registered technical parameters	Electronics' temperature, power supply voltage, GSM signal, modem activity during last data transfer, cabinet door open	
Text alarms	Set up for medium level and chosen technical parameters	
Data logger housing	ABS, IP67, 195x125x60 mm	
Cabinet material	polyester thermoset fortified with fiberglass, non- hygroscopic material	
Cabinet parameters	IP66, 400x300x200 mm, IK 10 - mechanical impacts scale, second class of protection	
Cabinet door locking method	patent key (lower) , padlock (upper)	
Cabinet foundation dimensions (optional)	height 500x750x1000 x width 265 x depth 170	