PM Ecology

WATER LEVEL MONITORING SYSTEM

AQUA LOGGER RDR COMPACT

MAIN FEATURES

- Ultra-low power consumption
- Non-contact measurement
- Compact housing with integrated lithium batteries
- Three protection levels available: IP67, IP68 and IP67 ATEX.
- Built-in GMS/GPRS data transmission
- Full remote configuration
- Data accessed through every web browser
- Possible data transfer directly to user's server
- Text and email notifications
- Increase of measurement and data transfer intervals when threshold values are exceeded

Aqua Logger RDR Compact is a device dedicated to water level monitoring in natural environment as well as in difficult conditions like in sewage wells or sewege pumping station. Data logger and GSM modem are integrated with a set of lithium batteries in a solid compact size housing (220x120x90mm). Such size enables easy installation in tight locations with limited access. Additionally, there are three protection levels available: IP67, IP68 and IP67 ATEX.

With typical measurement and GSM transmission settings, the device is ready to work continuously for more than 5 years on one battery set. For examaple, if the measurement is made every 10 minutes and data is updated every 2 hours, the station will work for 5 years minimum including battery self-discharging and wearing out. With the same measurement interval and GSM data transfer twice a day, the lifetime of the station will increase up to 8 years.

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

Online access to measuring and transmission intervals configuration is one the crucial features of Aqua Logger RDR Compact. It allows effective management of the station by increasing the frequency of measurement in crisis situations when quick access to data is extremely important. In order to maintain full control over Aqua Logger, immediately after a threshold value is exceeded the user receives a text mesage or an email.

Another important feature of the station is the non-contact method of measurement. This method eliminates the need to install the station's elements in water or wastewater, and that makes the process easier and additionally excludes the danger of damaging the sensing elements. Measurement is made with the use of a radar sensor. The sensor 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.

EXEMPLARY DAILY POWER CONSUMPTION FOR CHOSEN SETTINGS

Data transmission interval	Measurement Interval	Approx. daily power consumption*	Approx. operation time with battery set**
1/24h (once a day)	24/24h (every 60 minutes)	0,019Wh	>35 years
1/24h (once a day)	144/24h (every 10min)	0,065Wh	>10 years
6/24h (every 4 hours)	144/24h (every 10min)	0,085Wh	>8 years
24/24h (every 60min)	144/24h (every 10min)	0,157Wh	>4 years
144/24h (every 10min)	144/24h (every 10min)	0,636Wh	430 days
144/24h (every 10min)	1440/24h (every 1minute)	1,131Wh	240 days

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

** Approximate time assuming the use of full nominal capacity of the battery set. In reality, energetic efficiency of lithium batteries 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. It allows live monitoring and replacement of batteries before discharging.

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 (~ 26GHz)
Transmission power	1m distance: < 12 nW/cm2, 5m distance: < 0.4 nW/cm2
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
Power supply	built-in packet of lithium batteries with rated voltage 14,4V, 19Ah capacity
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
Approx. working time without battery replacement	data update – 120min, data sampling – 10min >5 years data update – 12h, data sampling – 10min >8 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 (optional)
Text alarms	Set up for medium level and chosen technical parameters
Tightness levels available	IP67, IP68 and IP67ATEX
Data logger housing	Polyester 220x120x90mm
Housing versions	IP67, IP68 and IP67 ATEX Additionally, each version has following options: - internal antenna /external wired antenna - lid opening alert

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