

# Wireless Level Guard

## User & Installation Guide

### Tank-Check RF-431



## User Guide

The wireless level guard Tank-Check RF-431 consists of two parts:

- Transmitter (1D) mounted in the tank or pumphouse with a sensor (1A) monitoring the liquid level (Figure 1).
- Receiver unit installed at any suitable location in the building, giving an audible and visible alarm (Figure 2).

Every few minutes the receiver is updated with the latest level information from the transmitter. Normally only the green **OK** lamp (2B) is lit continually.

### LEVEL ALARM

If the level rises and the liquid reaches the sensor electrodes, the level alarm is activated after a 2 min delay. The red **Alarm** lamp (2A) on the display starts flashing. The internal buzzer and relay 1 (3A) activates.

### NO CONNECTION ALARM

If the receiver unit has not received an update for about 30 minutes, the orange **No connection** lamp (2E) starts flashing, the warning buzzer, and Relay 2 (3B) activate. If this happens, make sure the transmitter is mechanically undamaged and the radio signal is not obstructed.

The same alarm also warns if the battery in the transmitter unit is low. Normal battery life is up to ten years. The Installation Guide describes how to replace the battery.

### ALARM RESET

All alarms are reset by pressing the **Reset** button (2D). The buzzer switches off, and the alarm lamp remains continually lit. When the cause of the alarm has been eliminated, the receiver unit automatically returns to **OK** status (2B).

Tank-Check RF-431 has a special test mode for testing the

range of the radio link and the sensor operation (read more in the Installation Guide).

## Installation Guide

The package includes a transmitter unit with a level sensor (1) and a receiver unit (2) with a DC adapter. Each receiver unit only reacts on alarms from its own transmitter unit.

### RADIO LINK AND SENSOR TEST

Normally, the **Alarm** (2A) reacts with a delay of around 2 minutes. A transmitter test mode can be activated to test the radio link and the sensor. In this mode, data is transmitted without pauses.

A link test is recommended if the distance between the transmitter (1) and receiver (2) exceeds 70 m or the radio link is obstructed by buildings, etc.

### TEST PROGRAM ACTIVATION

1. Open the transmitter casing (4). Insert the supplied battery in the holder. Note the polarity!
2. Press the button (4A) on the transmitter board and hold it down until the indicator lamp (4B) has flashed at least three times. The lamp continues flashing at regular intervals as the unit transmits data to the receiver (2). In Power Boost mode (read more in Settings), the lamp double flashes.
3. Place the transmitter unit (1) near the final installation location with the sensor connected.
4. Move the display unit (2) to the installation location in the building.
5. Connect the receiver to the power outlet via the AC adapter (2F).

If the green **OK** lamp (2B) flashes at a rate of about once per second, a good connection has been established. If the radio link is weak, the lamp flashes unevenly or remains either off or on.

Check the sensor's (1A) operation by immersing it in water or by short-circuiting the electrodes with a metal object while the test program is active. The **Alarm** lamp (2A), the buzzer, and Relay 1 (3A) of the receiver should then immediately activate.

The test program is terminated automatically after about 10 minutes or manually by pressing the button on the transmitter unit (4A) for about 1 second.

### TRANSMITTER INSTALLATION

Make sure the cable gland (1C) is tightened. Install the transmitter unit (1D) as high as possible in the tank or pump well, if possible above ground level and not under a metal lid.

### SENSOR POSITION ADJUSTMENT

The sensor (1A) is suspended by the cable in the tank. When the sensor electrodes touch the liquid, the level alarm is activated.

The vertical position of the sensor is set by changing the length of the cable loop of the adjuster (1B).

Adjust the position of the sensor tips to the desired alarm level.

### RECEIVER INSTALLATION

1. Install the receiver unit (2) at the intended location indoors, preferably in the part of the building facing the transmitter. Avoid the vicinity of large metallic surfaces.
2. Open the front cover of the receiver and fasten the rear of the casing to the wall using the screws supplied.
3. Close the cover of the display unit and connect it to a power outlet, using the AC adapter (2F).

### EXTERNAL ALARM

The receiver has two relays with potential free poles for connecting external alarm devices. Relay 1 (3A) is activated

by the level alarm, and Relay 2 (3B) is activated if no connection with the transmitter is present.

Use terminal block positions marked NO and COM for normally open functions, and NC and COM for normally closed functions (3C).

### TRANSMITTER'S BATTERY REPLACEMENT

Open the transmitter unit (Figure 4). Replace the battery (4C). Note the polarity!

## Settings

In most cases, the default settings for the TankCheck RF-431 transmitter are recommended. Some settings can be modified as follows:

1. Remove the transmitter battery (4B). Reinsert the battery while holding down the button (4A) on the circuit board.
2. Release the button when the indicator lamp (4B) has flashed as many times as indicated in the table for the function you want to activate:

Flashes	Function
3	Transmitter and receiver pair coding
10	Sensor sensitivity setting
15	Transmitter power boost

### TRANSMITTER AND RECEIVER PAIR CODING

Transmitters and receivers come coded in pairs that communicate only with each other. The pair coding function is used to pair a transmitter with another receiver than the original one.

1. Activate transmitter-receiver pair coding using the procedure and table above.
2. The transmitter acknowledges with two short flashes of the indicator lamp (4B) on the circuit board.
3. Disconnect the power from the receiver by pulling the DC power plug (2F).
4. Press the **Reset** (2D) on the receiver and hold it while reconnecting the DC power plug.
5. After the normal audible and visible startup indicator sequence, the **Alarm** (2A) and **OK** (2B) lamps remain lit.

6. Reset the button.

The receiver confirms the pair coding with the normal audible and visible startup indicator sequence. The **OK** lamp (2B) continues to be lit. The receiver is in normal mode and will receive alarms from the transmitter.

### SETTING SENSOR SENSITIVITY

When using the sensor in very clean water, a higher sensitivity mode sometimes needs to be set as follows:

1. Connect the power to the receiver (2F). Activate the sensor sensitivity setting using the procedure and table above.
  2. The transmitter acknowledges by two short flashes of the indicator lamp (4B) on the circuit board.
  3. The receiver acknowledges with the normal audible and visible startup indicator sequence.
- To return to the default setting, repeat the operation.

### TRANSMITTER POWER BOOST

In most cases, the default transmitter power setting provides a stable connection with the receiver. If the connection is unstable, a transmitter power boost mode can be activated. **NOTE!** The battery life will be significantly reduced in this mode, which is why we recommend using the default power setting when possible. The power boost mode is activated as follows:

1. Connect the power to the receiver (2F). Activate the transmitter power boost using the procedure and table above.
  2. The transmitter acknowledges with two short flashes of the indicator lamp (4B) on the circuit board.
  3. The receiver acknowledges with the normal audible and visible startup indicator sequence.
- To return to the default power setting, repeat the operation.

### TRANSMITTER SETTINGS CHECK

The receiver indicates the last received transmitter settings if the button **Reset** (2D) is pressed while the receiver is showing **OK** status (2B). The **Alarm** lamp (2A) is lit for 2 seconds if the high sensor sensitivity mode of the is activated. The **No Connection** lamp (2E) is lit if transmitter power boost mode is activated.

If only the **OK** lamp (2B) is lit, the transmitter is in default mode.

## Specifications

### TRANSMITTER

**Enclosure:** polycarbonate, IP65, 65x115x40 mm  
**Transmission frequency:** 433,7 Mhz LoRa  
**Range:** 100 m  
**Battery:** 3,6 V, AA lithium battery  
**Current:** 2 µA  
**Sensor:** Conductive  
**Cable:** 2x0,5 mm<sup>2</sup> / 1,5 m

### RECEIVER

**Enclosure:** 80x120x38 mm  
**Relays:** N.O./N.C. Max 24V, 3A DC  
**Adapter:** 230V AC, Output 12V, DC 450 mA

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