APATOR TELEMETRIA

RF module
AT-WMBUS-04
with pulse input

Operation and maintenance documentation

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1. INTRODUCTION

The AT-WMBUS-04 RF module with pulse input is used both in the stationary Wireless M-Bus reading system, as well as in the drive-by system, to record indications of the water meter connected to it, by counting individual pulses and transmitting them over the radio in the band of 868.95 MHz, in accordance with EN13757-4.

2. STRUCTURE

The housing of the AT-WMBUS-04 module is made of non-combustible ABS plastic and has been adapted for mounting with screws and wall plugs. A two-wire conduit used to connect to the water meter is led from the device through a cable gland.

In addition, the module is equipped with an internal wire antenna and a built-in lithium battery 3.6 V, allowing the device to operate for a maximum of 144 months. However, depending on the type of saved profile, this period can be significantly shortened. Moreover, there is a reed switch inside the module that acts as a magnet position sensor.

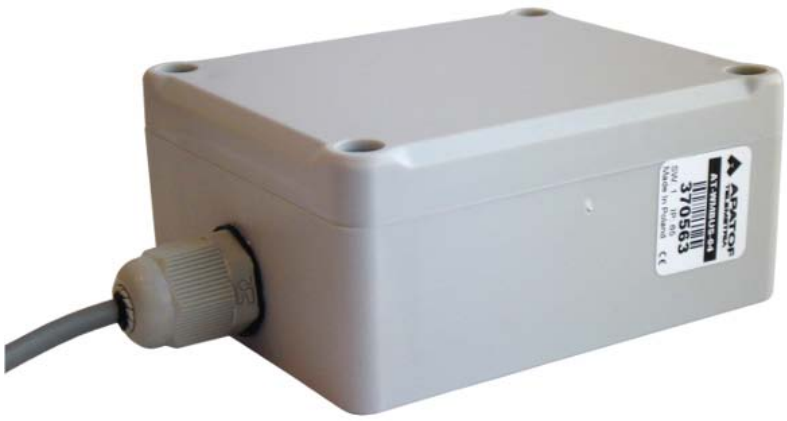

Figure 1. AT-WMBUS-04 RF module

3. DESCRIPTION OF THE OPERATION

The AT-WMBUS-04 RF module with pulse input is used to record the indications of the water meter connected to it and to transfer them over the WM-Bus radio interface in the band of 868.95 MHz.

The number of pulses counted by the module is stored in an internal buffer, whose capacity allows to count up to 999999999 pulses. The data is then transmitted over the radio, in accordance with the saved profile. It is also possible to remember the state of counted pulses on a given day of the month, with up to 12 such states (for each month) before the oldest data will be overwritten by the latest one. The profile, according to which the module works, can be saved at the production stage, or changed at a later date using PDA, with full freedom of the device configuration.

Each module has its own unique radio number (ID), allowing for unambiguous identification of the device in the telemetric system.

Parameters that can be set in the profile for the AT-WMBUS-04 module:

- Water meter number,
- Date and time,
- Access code,
- Time of transmission (from - to),
- Day of monthly volumes,
- Days of work (transmitting),
- Pulse:
  1; 2,5; 10; 25; 100; 250; 1000 l/imp,
- Current volume,
- Minimum flow threshold,
- Maximum flow threshold,
- Defined number of leaks,
- Shut-down threshold,
- Maximum number of stop days,
- The period of transmitting of the configuration frame,
- The period of transmitting of the WMBus frame,
- Configuration frame power,
- WMBus frame power,
- RSSI threshold,
- WMBus frame configuration.

Configuration of the WMBus frame of the AT-WMBUS-04 module:

- History of max. flow breakdowns,
- History of water leak breakdowns,
- History of the magnetic field application breakdowns,
- Time of the magnetic field application breakdown,
- Voltage,
- Battery in days,
- Volume history,
- Monthly volume,
- Water meter number,
- Overlay time.

Alarms reported by the AT-WMBUS-04 module:

- Stop of the water meter,
- Magnet application.

4. INSTALLATION

The AT-WMBUS-04 RF module with pulse input is assembled with two mounting holes using screws and wall plugs. Access to the mounting holes is possible after removing the housing lid. Before installing the device on the wall, check the radio signal level. The device does not require an external power source and after installation, it is immediately ready for operation.

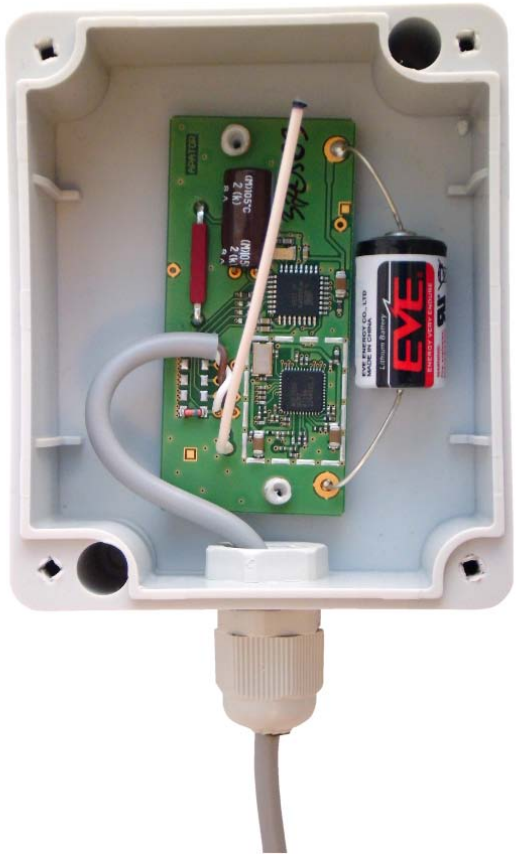

Figure 2. AT-WMBUS-04 RF module

The module can cooperate with many measuring devices equipped with an open collector pulse output or reed switch and generating pulses with a minimum duration of the short circuit (breaking) equal to 65 ms. The test voltage at the pulse input of the module is 3 V and the test current falls in the range of 0.5 mA to 1 mA. When connecting the module to a measuring device with an open collector pulse output, it is important to maintain the correct polarity of the connection cables. In this case, connect the module with the measuring device as described in the figure below.

Measuring device output	Module input	Wire colour
collector	+3V	white
emitter	GND	brown

Figure 3. Connection of the module with the open collector pulse output

5. TECHNICAL PARAMETERS

Data transmission protocol:	Wireless M-Bus
Operating frequency:	868.95 MHz band
Transmission type (data reading):	One-way
Transmission type (configuration):	Two-way
Transmission rate:	100 kbit/s
Power output:	10 mW
Power output level stability:	+1 dB / -3 dB
Antenna:	internal, wire type, 1/4 λ
Modulation:	FSK, frequency deviation: ±50 kHz
Receiver sensitivity:	-105 dBm
Power supply:	Lithium battery, 3.6 V; 1/2 x AA
Battery life:	depending on the profile (maximum 144 months)
Operating temperature range:	0°C to +55°C
EM immunity:	according to EN 1434
Ingress protection rating:	IP 65
Dimensions (L x W x H):	89 x 75 x 42 mm

6. ENVIRONMENTAL PROTECTION

DO NOT DISPOSE OF WASTE BATTERIES, ELECTRONIC OR ELECTRICAL EQUIPMENT TO HOUSEHOLD WASTE COLLECTION BINS UNDER THE PAIN OF FINE.

Batteries and electronic and electrical equipment contain many substances hazardous to the environment; they must be disposed of and processed by a licensed disposal facility according to local laws. Ask your local authorities or city waste management for further information.