



# ROSSMA™

## MEASURING AND SWITCHING DEVICE ROSSMA IIOT-AMS Smoke Detector

### OPERATION MANUAL

ROSSMA IIOT-AMS Smoke Detector is used for autonomous wireless operation of the smoke sensor ИП212-50М manufactured by LLC "RUBEZH" and is designed to monitor and record the change in the state of the smoke sensor, as well as to transmit an alarm event when switching to "Fire" mode in LoRaWAN or NB-IoT network.

**DATA ON THE DOCUMENT**

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THIS DOCUMENT IS VALID FOR THE FOLLOWING DEVICES

<b>LINE NAME</b>	<b>DEVICE NAME</b>
ROSSMA IIOT-AMS Smoke Detector	ROSSMA IIOT-AMS Smoke Detector LoRaWAN®
ROSSMA IIOT-AMS Smoke Detector	ROSSMA IIOT-AMS Smoke Detector NBiOT

**HISTORY OF DOCUMENT EDITION**

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## INTRODUCTION

This manual applies to autonomous measuring and switching device ROSSMA IIOT-AMS Smoke Detector manufactured by "ROSSMA" LLC and defines installation and connection procedure, as well as control commands and functional description.

The manual is intended for specialists familiar with the installation rules in the field of various electronic and electrical equipment.



To ensure proper functioning, the switching device must be installed and adjusted by qualified personnel.

## 1. DESCRIPTION AND OPERATION PRINCIPLE

### DESCRIPTION

The device is built into the housing of the smoke sensor ИП212-50M manufactured by LLC "RUBEZH" (<http://td.rubezh.ru/products/detail.php?ID=1694>) and is designed to record the change of smoke sensor state and to initialize the communication session with the transmission of the alarm event when switching to the "Fire" mode.

The switching device can be used in industrial enterprises, infrastructure of housing and communal facilities, in hard-to-reach places (wells, basements).

### DATA COLLECTION AND TRANSMISSION ALGORITHM

The device monitors the current state of the smoke sensor and transmits data according to predetermined frequency communication session in LoRaWAN network.

The transmission period of the current state can be set from 1 minute. By default, the manufacturer sets the data transmission frequency to 1time a day.

If the Request Confirmation parameter is enabled, the switching device will send the next package only after receiving delivery confirmation of the previous package. If you do not receive such an acknowledgement after three replays, the switching device ends the session until the next scheduled session. At the same time, the switching device stores the untransmitted data to the memory. Non-transmitted packages remain in the switching device memory and are sent during the next communication session.

If the Request Confirmation parameter is disabled, the switching device sends the current data to the network with the specified frequency. There is no package delivery check in this mode. Untransferred packages do not remain in the switching device memory.

The communication time of the switching device is controlled by the LoRaWAN network server and can be adjusted by command.

The smoke detector ИП212-50M is powered by 9 V Krona power supply and the switching device is powered by 3.6V power supply.

### FUNCTIONALITY

The switching device can be class A device (according to LoRaWAN classification) and provides the following functionality:

- ADR (Adaptive Data Rate) support
- Wireless configurable LoRaWAN activation type in LoRaWAN network - OTAA, AVP;
- Configurable communication period from 1 minute and more (configured remotely in LoRaWAN network). The default value is 1 time a day;

- Support for sending confirmation packages (configurable)
- Frequency plan: EU-868\RU-868 (to switch remotely in LoRaWAN network). Default is RU- 868;
- Temperature measurement;

## MARKING

The switching device marking is made in the form of application on the housing, which contains information on the product name.

There is a label with the device number for its identification from the manufacturer in the housing. This number also serves as ID with the ratings of a particular switching device.

The switching device certificate contains the following information:

- Product name;
- Product version information;
- Keys required to log in the switching device in the network;
- DevEUI;
- Month and year of production.

The label with the device number is located in three places - on the switching device housing, on the electronic board inside the housing and on the packing box (the first digits before the separator: the device number - XXXXXXXXXXXX).

It is possible to identify the device certificate by the device number in the column "identifier" - the last digits in the number after the separator.

The ID is XXXXXXXXXXXXXXXXXXXXXXXXXX - XXXXXX. The first part of the identifier is the part number and the second part is the serial number of the switching device. Interpretation of part number:



**LPWAN standard:** LW – LoRaWAN, NB – NbiOT, 6LP-6LoWPAN, LWNB - both standards.

**Switching device model ROSSMA IIOT-AMS:** AN-Analog, MB-Modbus, MU-Modbus Utility, Pulse-P0, DC-Dry Contact, LD-Leak Detector, SD-Smoke Detector, AB-Alarm Button, CN-Can, UC-Universal Controller.

**Degree of enclosure protection:** IP56-0056, EX IP66-EX66, EX IP68- EX68, etc.

**Number of inputs:** X1-single channel, X4-four inputs, etc.

**Switching device version:** specifies the hardware platform and firmware version.

**Manufacturer OUI:** Unique identifier of ROSSMA in IEEE.

**Region of delivery:** RU-Russian Federation, EU-European Union.

## DATA ON CERTIFICATION

Manufactured according to УАБИ.001.83301259.2017 TY specification.

Certificate of compliance No. POCC RU.0001.21AB90

Declaration EAЭС N RU Д-РУ.АБ93.В.08697 on Compliance with the Technical Regulation Requirements of the Customs Union TP TC 020/2011 "Electromagnetic Compatibility of Technical Means"

Meets industrial safety requirements. Certificate of conformity NoC-  
RU.МТЭ.ОС.001.Н.0003

Smoke detector ИП212-50М produced by LLC "BORDER" has a certificate of compliance № С-  
РУ.ПБ01.В.03111 valid until 18.05.2020. Issued by the certification body ОС «ПОЖТЕСТ» ФГБУ  
ВНИИПО of Ministry of Emergency Situations of Russia, 143903, Russia, Moscow region,  
Balashikha, m.VIИPO, 12.

## 2. TECHNICAL CHARACTERISTICS

### THE MAIN

<b>Connection interface</b>	To outputs on the ИП212-50M board
<b>Operation temperature range</b>	-10...+55°C
<b>Built-in temperature sensor</b>	Yes (sends data every time you connect)
<b>Built-in power supply charge measuring</b>	Yes (sends data every time you connect)

### LoRaWAN

<b>Class of LoRaWAN device</b>	A
<b>Frequency plan</b>	RU868, EU868, IN865, AS923, AU915, KR920, US915, KZ865, any (on the basis of EU868)
<b>Activation method in LoRaWAN network</b>	ABP или OTAA (adjustable)
<b>Communication Period</b>	Adjustable in LoRaWAN network
<b>LoRa antenna type</b>	internal
<b>Sensitivity</b>	-138 dBm
<b>Radio communication range in dense development</b>	Up to 5 km
<b>Radio communication range in non-urban area</b>	Up to 15 km
<b>Default transmitter power</b>	25 milliwatt (adjustable)
<b>Maximum transmitter power</b>	100 milliwatt

### POWER SUPPLY

<b>Built-in battery</b>	using replaced battery 3.6 V
<b>External power supply capability</b>	yes



### 3. WORKING WITH THE SWITCHING DEVICE

#### CONTACTS DESCRIPTION

1. The device is powered by a 3.6 V power supply. Power supply is connected to "power" connector
2. Supplied cable is used to connect to the smoke detector terminals
3. Antenna is soldered directly on the board
4. The device is equipped with an internal temperature sensor

#### INDICATORS AND BUTTONS

There are indicators LED1 (power supply), LED2 (sending data in LoRaWAN network) in the switching device

#### INITIAL START-UP

The switching device supports two methods of activation in LoRaWAN network - ABP and OTAA. By default, the manufacturer sets the activation method to ABP. You can specify a method by using a special command sent to the switching device in LoRaWAN network.

## 4. COMMUNICATIONS PROTOCOL

### DATA PACKAGE FORMAT

#### Data package format for the ROSSMA IIOT-AMS MODBUS switching device:

The total amount of transmitted data in one package = 5 byte (if package is normal) and = 4 byte (if package is alarm)

Package format for the SMOKE DETECTOR:

example: cc000b5816

where:

cc - periodic data package (aa - alarm package)

00 - sensor status- not enabled (01 - sensor enabled)

0b58 - battery voltage in HEX (0b58 = 2904/1000=2.904 V)

16 - temperature in HEX (16 = 22 Celsius degrees)

When the sensor is triggered, the packet format is as follows:

Example: aa0df316

where:

aa – alarm data package

0df3 – battery voltage в hex (0df3 = 2573/1000 - 2.57B)

16 – temperature in HEX (16 = 22 Celsius degrees)

### SWITCHING DEVICE CONFIGURATION AND PROGRAMMING

The switching device is supplied with built-in firmware that enables the switching device to operate with the characteristics specified in this document. The switching device is programmed using a special input for the programmer.

The switching device is configured using special control commands that are sent to the switching device in LoRaWAN network.

## 5. STORAGE AND TRANSPORTATION RULES

ROSSMA IIOT-AMS switching devices shall be stored in the factory package in heated rooms at temperature from 5 ° C to 40 ° C and with relative humidity not more than 85%.

The switching devices can be transported in covered cargo compartments of all types for any distances at temperature from -40 ° C to 85 ° C.

## 6. DELIVERY SET

The The standard delivery set ROSSMA IIOT-AMS includes:

- ROSSMA IIOT-AMS Smoke Detector installed inside the ИП212-50M sensor - 1 pc.
- Certificate - 1 pc.

## 7. WARRANTY

The warranty period for the switching device is 12 months after the start of operation or 18 months from the date of delivery, whichever of these periods expires earlier (the "Warranty Period").

The Manufacturer will correct (by repair or supply of replacement parts) any defect which will appear in the Goods and which will be reported to the Manufacturer within the Warranty Period.

The manufacturer is obliged to provide repair services or replace the failed switching device within the entire warranty period.

The consumer is obliged to observe the conditions and rules of transportation, storage and operation specified in this user manual.

The Manufacturer shall not be liable for defects caused by normal wear, non-compliance with the Manufacturer 's requirements in terms of storage, installation, operation or operating conditions; inadequate usage; any changes or repairs not previously authorized by the Manufacturer in writing.

Warranty is not subject to:

- Switching device power cells that have sent more than 80,000 packages
- switching devices with the mechanical, electric and/or other damages and defects which arose at violation of transportations, storage and operation condition;
- Switching devices with repair traces outside the manufacturer 's service center;
- Switching devices with traces of oxidation or other signs of liquids ingress into the device housing.

If a warranty case occurs, contact the service center of the ROSSMA manufacturer at:

614064, Perm, Chkalova Str., 9 Lit. "И".

Phone: 7 (342) 233-93-99.

Or fill out the form on the support page: <https://rossma.ru/support/>



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