

MANUAL

RADIO EXTENDER MODULE RE-1 «RUBETEK»



Complies with:
EN 54-17,
EN 54-18,
EN 54-25.

Hardware version: RE-1 REV.2
Software version: 2023-9-1
Document version: 2023-09-01

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Introduction

This Manual is intended to describe the operating principle, configuration, installation and operation of the Radio Extender Module RE-1 «RUBETEK» (hereinafter extender).

Configuration and linking of the device are described using the Addressable Fire Alarm Control Panel CP-1.

You must read the instructions in the Manual before linking, configuring, operating or maintaining the extender.

Installation and operation of the extender must be carried out by technical personnel after reading this Manual.

List of abbreviations used:

- SC - short circuit;
- SW - software;
- CP-1 - Addressable Fire Alarm Control Panel;
- Extender - Radio Extender Module RE-1 «RUBETEK»;
- LED - light emitting diode;
- PLC - power line communication.

1. Description and operation

1.1. Function

Radio Extender Module RE-1 «RUBETEK» is designed to extend the range of radio communication between the Addressable Fire Alarm Control Panel CP-1 and radio fire alarm devices «RUBETEK».

The extender module is designed for continuous operation and is a renewable, periodically serviced product.

The extender module is equipped with a built-in short-circuit isolator.



ATTENTION! *The use of extenders in the system does not increase the number of devices linked to the CP-1.*

1.2. Technical data

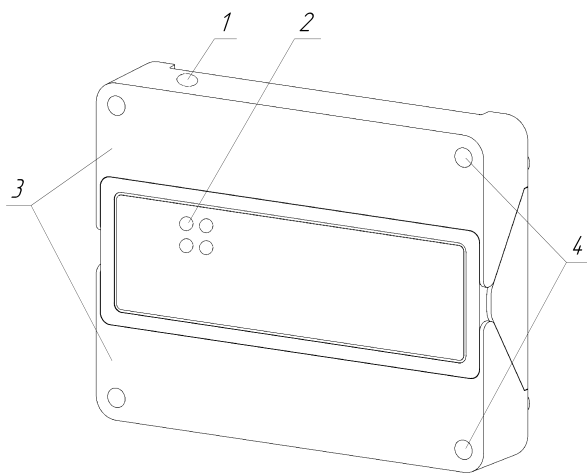
Table 1 – The main parameters of the extender module

Parameter	Value
Voltage supply	main: DC 24 ± 20% backup: DC 24 ± 20%
Current consumption, mA, max	14
Link interface	PLC
Number of occupied address slots	1
Quantity of the extenders, linked to PLC interface, ea.	15
Built-in PLC isolator	available
Communication interface with detectors	RF 868 MHz
Maximum communication range (in open area), m	900
Signal encryption	XTEA 128bit
Number of channels within the frequency range, pcs.	5
Max radiation power, mW	25
Tamper detector (enclosure opening)	available
Tamper detector (sensor removal)	available
Operation temperature range, °C	from -10 to + 55
Relative air humidity, %	up to 93 % at 40 ° C
The degree of protection for the case	IP20
Dimensions, mm	160 × 125 × 36
Weight, kg, max	0,2
Average lifetime, years	10
Average time between failures, h	60000
Probability of failure-free operation per 1000 h	0,98

Table 2 – PLC Built-in isolator parameters

Parameter	Value
Maximum voltage, V	24
Minimum voltage, V	12
Maximum current when the switch is closed, A	1
Maximum impedance, Ohm	0,12
Maximum leakage current, mA	1
Isolator activation, V	10
Recovery of the isolator, V	3

1.3. Appearance of the extender module

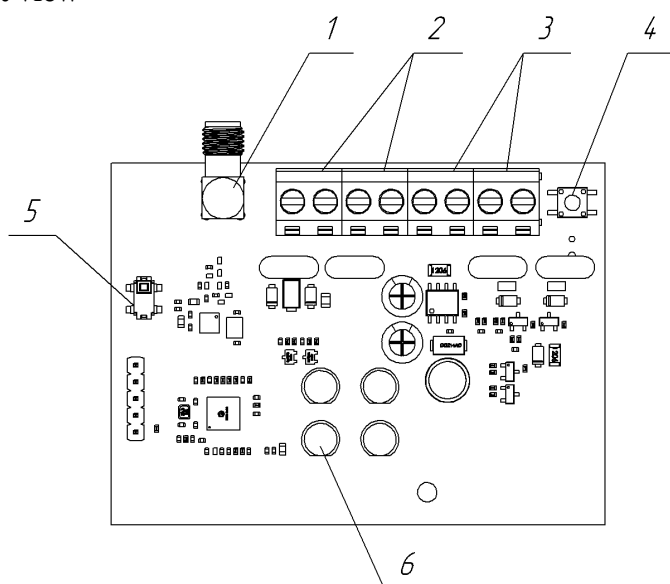


- 1 - SMA to connect an antenna
- 2 - LED indicators
- 3 - Housing covers
- 4 - Holes for fixing the lid

Figure 1 – Appearance of the extender module

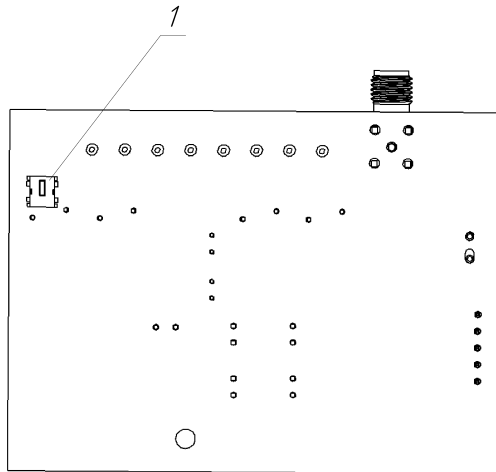
1.4. Internal design of the extender

Front view



- 1 - SMA connector for antenna connection
- 2 - Terminal blocks of the power supply line -24V
- 3 - PLC interface terminal blocks
- 4 - «Test» button
- 5 - Tamper detector (enclosure opening)
- 6 - Light indicators

Rear view



1 - Tamper detector (sensor removal)

Figure 2 – Internal design of the extender

1.5. Complete set

Table 3 – Complete set of the extender

Item	Quantity, pcs.	Remarks
Radio Extender Module RE-1 «RUBETEK»	1	
Antenna 868 MHz	1	
Mounting kit	1	
Datasheet	1	
Individual packing	1	
Group packaging	1*	

* Per shipping lot.

2. Intended use

2.1. Preparation for use



ATTENTION! If extender was in conditions of negative temperature, keep it at least 4 hours at room temperature ($25 \pm 10 \text{ }^\circ\text{C}$) to prevent moisture condensation.

2.1.1 Open the package, make sure that the completeness of the extender corresponds to table 2.

2.1.2 Conduct an external visual inspection, make sure that there are no visible mechanical damages (chips, cracks, dents) and traces of moisture.

2.2. Extender location



ATTENTION! The extender receives a signal from radio devices installed within its range. The maximum communication range in open areas is up to 900 meters. It should be noted that obstacles between the radio devices and the extender module can interfere or block the signal.

Extender should be mounted:

- as close as possible to the center of a radio devices zone that will transmit data to the CP-1 via it;
- on a vertical surface with the vertical direction of the antenna. When mounted on a horizontal surface, the extender antenna must be directed at a 45° angle to the vertical;
- so that the total length of the PLC interface line does not exceed 800 m, taking into account the cable cross-section.

Do not mount extender:

- outdoors, in places where there is a possibility of water getting on the extender case, as well as in a room with a high content of dust, suspensions of building materials in the air, vapors and aerosols that cause corrosion;
- in places of exposure to powerful electromagnetic interference and heat radiation, on metal structures, inside them and closer than 1 m from them;
- near high-frequency communications, power cables, routes.

Basic requirements for the organization of PLC and power lines:

- cable lines must be made with using fire-resistant cables with copper cores, flame retardant for group laying, low-smoke fire-resistant (LSFR) or halogen-free (HFFR);
- the maximum length of the PLC from the control panel to the end device should be no more than 800 meters with a nominal wire cross section of 0.35 to 1 mm²;
- nominal cross section of the power line wire up to 1.5 mm².

2.3. Recommendations for the organization of the PLC interface and power line



ATTENTION! It is recommended to lay power supply and PLC interface wires no closer than 1 m from power and high-frequency cables.

The PLC interface is used to transfer information between CP-1 and extenders and implies a bus-type network layout.

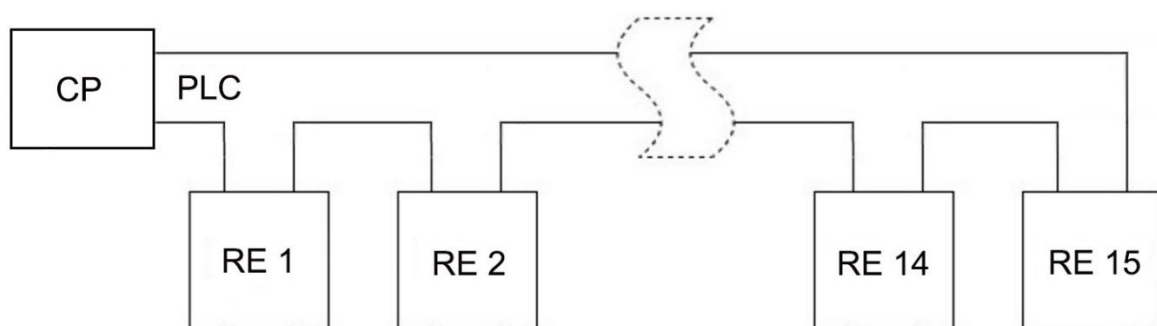


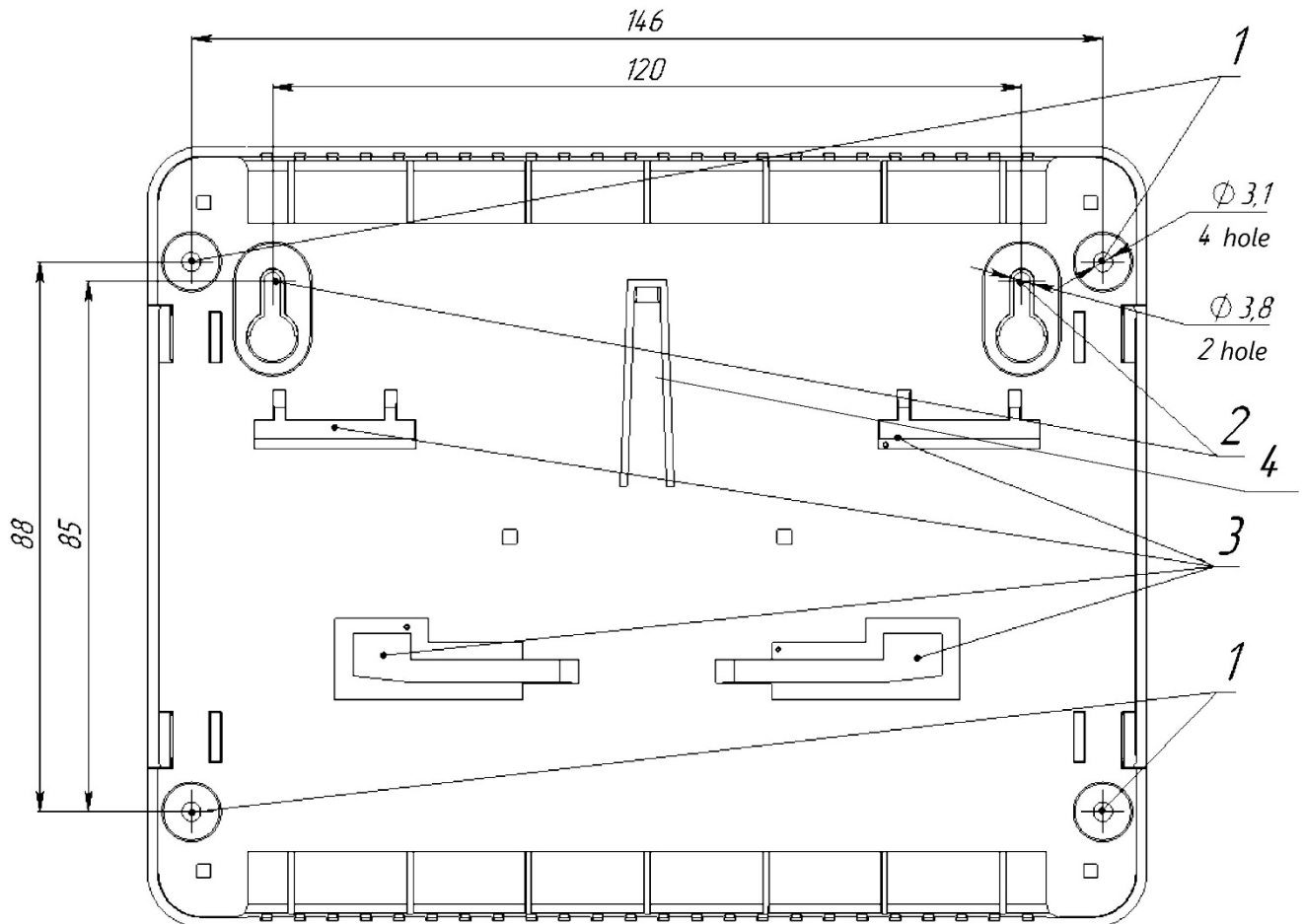
Figure 3 – Typical connection diagram for extenders



ATTENTION! The terminal blocks of the device are designed for a cable cross section of no more than 2.5 mm².

2.4. Installation of the extender

2.4.1 The expander housing has mounting holes for mounting it on a wall and a mount for mounting on a DIN rail. To install the expander on the wall, make markings at the installation site. Installation dimensions are shown in Figure 4.



- 1 – mounting holes for screws DIN7981 2,9 × 25;
- 2 – DIN rail mount;
- 3 – suspension mounts;
- 4 – the «Tamper» button.

Figure 4 – Mounting dimensions



ATTENTION! Make sure that the tear-off tamper is tightly clamped between the wall and the back cover.

2.4.2 Installing the expander on the surface:

- make a marking at the installation site;
- drill holes with a diameter of 5 mm and a depth of 30 mm to install dowels;
- unscrew the 4 locking screws and open the two hinged covers on the expander body to gain access to the mounting holes;
- fix the expander to the surface using dowels and screws from the expander kit.

2.5. Connection of the extender

Connect the wires of the PLC interface to the corresponding terminals of the extender.
Connect the wires of the power line to the corresponding terminals of the extender.

! ***ATTENTION!** The power line of the device «+24V» is disconnected first, and connected last.*

! ***ATTENTION!** Incorrect connection may damage the device.*

Mount the antenna.

Connect the wires of the PLC interface to the corresponding terminals of the CP-1.

Close extender case.

! ***ATTENTION!** Do not connect more than fifteen extenders to the power terminals of CP-1.*

After connecting and supplying power, it is necessary to pair the extender module and check the light indication according to Table 4. The location of the LEDs is shown in Figure 1.

Table 4 – Light indication

LED №	Status	Value
Power	continuous light	voltage is normal
Link	intermittent flashing	receiving/transmitting data via RF/PLC
PLC 1 fault	continuous light	SC on the plot of the PLC 1
	no light	working mode PLC 1
PLC 2 fault	continuous light	SC on the plot of the PLC 2
	no light	working mode PLC 2

2.6. Pairing and configuration of the extender

Device pairing

In the Main menu of CP-1 select **3.DEVs** and press **OK**

- select **3.Device pairing** in the submenu. Press **OK**.

- select **2.Wired DEVs** in the submenu. Press **OK**.

CP-1 will go to automatic devices search.

After the search is completed, the CP-1 will display a list of found devices.

Main menu	DEV
1.Information	1.Devices list
2.Configuration	2.Device zones
3.DEVs	3.Device pairing
4.Events and reactions	4.Configuration
5.Firefighting	5.Expanders

Select the required device. Press **OK**. The name of the device is followed by its serial number. The CP-1 automatically pairs a new wired device to the first free slot. The device configuration menu will open.

Device pairing	Device pairing
1.Wired DEVs	1.12345 RE-1
2.Wireless DEVs	

Device configuration

If you are making configurations for a previously paired and configured device, you must:

- select item **3.DEVs** and press **OK**
- select submenu **1.Devices list**. Press **OK**.
- select submenu **2.Wired DEVs**. Press **OK**.
- select the desired slot. Press **OK**.

If configurations are made during pairing, the configuration menu will be available immediately.

Main menu	DEV
1.Information	1.Devices list
2.Configuration	2.Device zones
3.DEVs	3.Device pairing
4.Events and reactions	4.Configuration
5.Firefighting	5.Expanders
Devices list	Wired devices
1.By zone	T:667s ID:pls-type-40
2.Wired DEVs	#22: pls-type-43
3.Wireless DEVs	T:667s ID:pls-type-43
	#23: pls-type-44
	T:667s ID:pls-type-44

The following options are available in the list that opens.

- **Name** - device name;
- **Zone** - will allow you to combine devices of one fire zone.
- **Device type*** - determined automatically;
- **Status*** - current status of the detector (normal, link fault);
- **Bypass mode** - bypass mode on/off;
- **Link*** - time since last link;
- **Wired line*** - external power line voltage;
- **PLC Line*** - PLC line voltage;
- **LI status** - current status of the PLC Built-in isolator (normal, PLC1 powered, PLC2 powered)
- **Serial number*** - device serial number;
- **Firmware version*** - device firmware version;

DEV #23	DEV #23
Name: pls-type-44	RE
Zone: No zone	Status: link fault
Device type:	Bypass mode: no
DEV #23	DEV #23
Link: T:752s	0.0 V
External supply: 0.0 V	LI status: normal
PLC line:	Serial number: 123416
DEV #23	#3: pls-type-3
123416	Device configuration
Firmware version: ---	Reaction configuration
Device menu	Send test
Delete	

- **Device menu** - device submenu;
 - **Device configuration** - advanced device configuration (inactive for SD);
 - **Reaction configuration** - device reaction configuration;
 - **Send test** - sending test command to device.
- **Delete** - device deleting from CP.



ATTENTION! Options marked with * are not configurable and are for informational purposes only.

Reaction configuration (Reaction configuration menu)

List of required active reactions for extender module:

- **Test button** - delivery of a message to the CP-1 when «Test» mode is activated with saving it in the archive.
- **Tamper** - delivery of a message to the CP-1 when case is opened with saving it in the archive.


To activate menu items, use arrows ← → on the CP-1 keyboard. Press **OK** to save changes.

Reactions	
<input type="checkbox"/>	Fire 1 from DEV
<input type="checkbox"/>	Fire 2 from DEV
<input checked="" type="checkbox"/>	Tamper
<input checked="" type="checkbox"/>	Test button
<input type="checkbox"/>	Main low

2.7. View connected extenders

To view the connected extenders, select **3.DEVs** in the main menu. Press **OK**.
Select **5.Expanders**.

Main menu	DEV
1.Information	3.Device pairing
2.Configuration	4.Configuration
3.DEVs	5.Expanders
4.Events and reactions	6.PLS status:
5.Firefighting	ring

 **ATTENTION!** The slot number for the extender module is selected automatically.

The list that opens displays the extenders connected to the CP-1. The serial number and status is displayed for each extender module.

3. Maintenance

3.1. Safety precautions

- 3.1.1. When operating the device, you must be guided by the requirements hereof.
- 3.1.2. During the repair work in the room where the extender, is installed, protection against mechanical damage and ingress of building materials (whitewash, paint, dust, etc.) must be provided.

3.2. Functional test

- 3.2.1. Extenders functional test should be carried out during scheduled or other functional checks, but at least once every 6 months.
- 3.2.2. Functional test of the extenders includes:
 - Checking the list of connected extenders to the CP.
 - Checking there are no messages «No link», «Fault» or «Case opened» from extenders, compliance of the supply voltage with the parameters of the extender module (see table 1).
 - Checking the reliability of contact with the connected wires. If necessary, tighten the screws of the terminal blocks and replace the faulty wires.
 - Checking the LED indication, which must correspond to the values «power» and «link» in accordance with table 4.

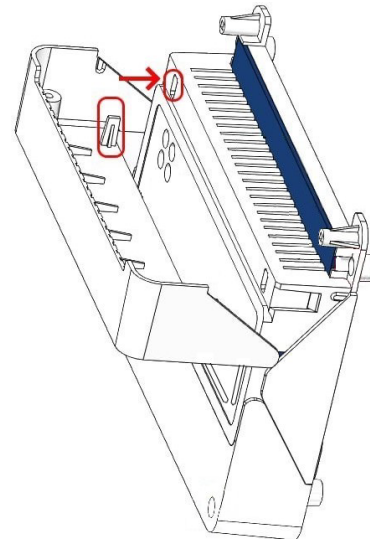
3.2.3. Checking the reaction of the device

The expander controls the opening of the case and the separation from the wall.

If the expander detaches from the wall, the device will transmit a «Fault» message to the CP. This state will last until the former position of the expander is restored.

To check the reaction of the device to opening the case, it is necessary to unscrew the screws fixing the front cover of the device.
Carefully lift the hinged parts of the upper case cover.

A message about opening the case should be displayed on the display of the CP.
Lower the hinged parts of the device cover into place and fasten with fixing screws.



4. Storage

- 4.1. Storage conditions of the extender must meet the following requirements:
 - ambient temperature from plus 5 °C to plus 40 °C;
 - relative air humidity up to 80% at a temperature of plus 25 °C.
- 4.2. Store the extender on racks in a packaged form.
- 4.3. The distance from the walls and floor of the storage to the detector packages must be at least 0.1 m.
- 4.4. The distance between the heaters and the detector packages must be at least 0.5 m.
- 4.5. The room must be free of vapors of aggressive substances and conductive dust.

5. Transportation

- 5.1. The packaged extender can be transported by all means of transport in covered vehicles and in pressurized aircraft compartments.
- 5.2. The conditions of transportation must comply with the following conditions:
 - ambient air temperature from minus 50 °C to plus 50 °C;
 - relative air humidity up to 95% at a temperature of plus 40 °C.
- 5.3. The period of transportation and intermediate storage should not exceed 3 months. It is allowed to increase the period of transportation and intermediate storage of the detector during transportation due to the storability time in stationary conditions.

6. Disposal

- 6.1. All materials used in the extender do not pose a danger to human life, health or the environment. After the end of their use, they must be disposed of in accordance with the regulations in force.
- 6.2. The content of precious materials does not require record during storage, issue, disposal.

7. Manufacturer's warranty

- 7.1. The manufacturer guarantees the compliance of the extender with the technical specifications, provided that the consumer observes the rules of transportation, storage, installation and operation.
- 7.2. Warranty period of operation is 12 months from the date of commissioning, but not more

than 24 months from the date of manufacture.

- 7.3. During the warranty period, the replacement of failed detectors is carried out by the manufacturer free of charge, provided that the consumer observes the instructions for installation and operation.
- 7.4. When sending the extender for repair, it must be accompanied by an act describing its malfunctions.
- 7.5. The warranty does not take effect in the following cases:
 - non-compliance with this User Manual;
 - mechanical damage of the extender;
 - repair of the extender by a person other than Manufacturer.
- 7.6. The warranty applies only to the extender. All third-party equipment used in conjunction with the extender is covered by their own warranties.

8. Claims

- 8.1. Warranty claims are made to the supplier in case the defects and malfunctions are detected which lead to the failure of the extender within the warranty period.
- 8.2. In the certificate of defect indicate: device type, defects and malfunctions, conditions under which they were detected, time since the start of operation of the extender.
- 8.3. A copy of the payment document for the extender must be attached to the act.

9. Certification

- 9.1. Radio Extender Module RE-1 «RUBETEK» complies with the European standard EN 54-17 «Fire detection and fire alarm systems. Part 17: Short-circuit isolators», EN 54-18 «Fire detection and fire alarm systems. Part 18: Input/output devices», EN 54-25 «Fire detection and fire alarm systems. Part 25: Components using radio links.

10. Manufacturer

- 10.1. Name of the manufacturer's organization: DEVICE FACTORY L.L.C
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