



IR TRANSMITTER

USER MANUAL

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1. Purpose

The transmitter is designed to control air conditioners in an unattended facility. It is controlled via the RS485 interface using the Modbus protocol and, upon request from the main unit, transmits an on/off command. Commands can also be transmitted by pressing the control buttons. The Modbus register table is provided in Appendix 1.

The transmitter is a universal programmable device, meaning it receives and records a command from a master remote control in its memory during the learning process and transmits it to the air conditioner.

2. Appearance and description of the device

The emitter is an infrared LED with a wavelength of 940 nm and a photodetector used for training. They are located at the end of the transmitter and covered with a dark red filter. The end of the transmitter should be aimed at the air conditioner's photodetector.

The transmitter has an operating mode indicator, a digital indicator and three control buttons for sending on/off commands and for entering programming mode.

A Dallas DS18B20 temperature sensor is connected to the transmitter. The temperature value is displayed on a digital display and can also be read by the head unit via a Modbus register. This temperature value is used to monitor the actual operation of the air conditioner, so the sensor should be placed in the air flow coming from the air conditioner.

The transmitter is powered by a DC source with a voltage of 8-15 volts. When powered by 12 volts, the current consumption is no more than 50 mA.

The appearance of the device is shown in Figure 1.

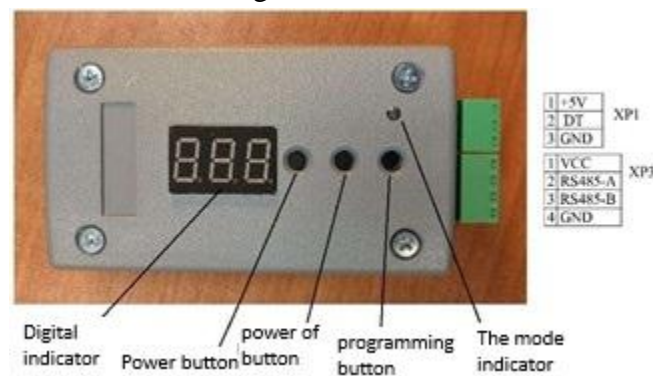


Figure 1 – External appearance of the IR transmitter



Figure 2 – Mounting the bracket

3. Description of the device operation algorithm and settings

When turned on, the transmitter performs a self-test for 2.5 seconds. The digital display sequentially displays "8.8.8," then "123," followed by the device's set RS485 address. During the self-test, the mode indicator flashes rapidly. After completing the self-test, the transmitter enters operating mode. The mode indicator flashes briefly every 1.25 seconds, and the digital display displays the temperature value or "---" if the temperature sensor is not connected.

When the "ON" button is pressed, the switch-on command is transmitted; when the button is pressed, "OFF" is the command to turn off the power. Command transmission is accompanied by the mode indicator lighting for one second. The on command is also indicated by a dot in the left digit of the digital display, and the off command is indicated by a dot in the middle digit.

A new transmitter or when setting up the system for a different type of air conditioner requires training. All required parameters should be pre-set on the reference remote control.

1) Press the "PRG" button to enter programming/training mode. The mode indicator lights continuously, and the digital display shows "PRG." The transmitter is ready to receive a command from the remote control. You can exit the mode by pressing the "PRG" button again; no changes will be made to the stored commands. If a command was received but not saved, it will be lost. The transmitter will automatically exit programming mode after 1 minute. If training is not completed by this time, you will need to re-enter programming mode.

2) Point the reference remote control at the end of the transmitter and send the power-on command. Once the command is received, the mode indicator will go out and the digital indicator will flash. Press the "ON" button and store the received command in the transmitter's non-volatile memory. Once stored, the transmitter will be ready to receive the next command.

3) If the command is given incorrectly, there is no need to remember it; you should exit the programming mode, re-enter it and give the correct command.

- 4) Send and remember the shutdown command in the same way and by pressing the button "OFF".
- 5) Exit the programming mode by pressing the "PRG" button or wait for automatic exit.
- 6) Check the transmitter's learning process by issuing commands by pressing the "ON" and "OFF" buttons and monitoring their execution. If necessary, relearn the transmitter. There's no need to rewrite both commands; rewrite only the command that was incorrectly received.

When programming, avoid direct exposure to pulsed light sources, such as fluorescent lamps. Such exposure is indicated by a false signal being received when no command was sent. In this case, remove the exposure, exit programming mode, and re-enter.

It is also not recommended to train a transmitter from another previously programmed transmitter.

Using a configurator program running on the head unit, on/off commands can be downloaded from one transmitter, stored in the configurator's database, and loaded into another transmitter. Please refer to the instructions for this configurator.

Connecting the power lines and the RS485 interface is done in the usual way and does not require any special features. If the connecting wires are long (several meters), the load jumper on the transmitter board should be shorted.

A system may consist of two or more air conditioners. In this case, the transmitters should be positioned so that commands for one air conditioner are not received by the other air conditioners. You can also reduce the emitter's intensity by applying a piece of electrical tape to the glass.

In a system with multiple air conditioners, the transmitters are powered in parallel from a single power source. The RS485 interface lines are also shared. The transmitters are connected in a chain, one after another, with the load jumper closed only on the last transmitter in the chain.

When installing multiple transmitters, to avoid conflicts, you must set different Modbus addresses using the configuration software. The address must be set before connecting the transmitter to the shared network.

Receipt of Modbus commands is indicated by a brief illumination of the mode indicator and a dot in the right digit of the digital display. Execution of on/off commands is indicated in the same way as when pressing the corresponding buttons (item 8).

You can update the firmware using the UIC configuration program (select the "Recorder" device) according to the program's instructions. You must specify the device ID as 23 (0x17) and the configured Modbus address. During the firmware update, the mode indicator flashes, and the digital display shows "UPd." After the download is successfully completed, the transmitter automatically reboots. Commands and parameters stored in memory are not lost. The digital display may flicker during the firmware download. This is due to the transmitter's operating characteristics and does not indicate a malfunction.

4. Maintenance

The device is maintenance-free and designed to operate indefinitely under the following operating conditions: stable power supply within the specified voltage range, proper humidity and temperature, non-aggressive gas environment, and absence of shock and vibration. There are no parts inside the device's housing that require periodic inspection and/or maintenance.

5. Storage and transportation rules

Climatic conditions for transportation must meet the following conditions:

- ambient air temperature from minus 40°C to plus 55°C;
- relative air humidity up to 98% at 25°C;
- atmospheric pressure from 84.0 to 107.0 kPa (from 630 to 800 mmHg).

The device can be transported by all types of transport (in covered wagons, closed vehicles, containers).

The device must be stored only in the manufacturer's packaging in heated rooms at temperatures ranging from -40°C to +55°C and relative humidity no more than 80%. Storage areas must be free of aggressive impurities (acid or alkali vapors) that could cause corrosion.

6. Guarantees manufacturer (supplier)

The manufacturer guarantees that the device complies with the technical specifications, subject to the conditions of transportation, storage, installation and operation.

The warranty period for the device is set at 2 years, counting from the date the device is put into operation.

During the warranty period of the device, the manufacturer has the right to supervise its correct operation in order to improve the quality and efficiency of operation.

Device components that fail during the warranty period are subject to replacement or repair by the manufacturer at the manufacturer's expense.

The user loses the right to free repairs during the warranty period in the event of broken seals, mechanical damage by the user, if the elimination

The malfunction of the device was carried out by a person who does not have the right to perform repairs and maintenance.

Note:

Jcom-IoT reserves the right to make changes to the manual without prior notice to reflect improvements to hardware and software, as well as to correct typos and inaccuracies.

Appendix 1

MODBUS register table for remote control transceiver

Parameter	Address	Access	Meaning when reading	Reading Team	Recording value	Record command	Default value niyu	Note
ID devices	0x0000	reading	23 (0x17)	03				unchangeable
Device address	0x0001	full	2 bytes, 0...255	03	except 0 and 0x3A	06	25 (0x19)	
Microcode version	0x0002	reading	2 bytes	03				
Opening hours	0x0003	reading	2 bytes	03				
Interval waiting for byte reception	0x0004	full	2 bytes	03	5...6000 (0x1770)	06	10 (0x0A)	V milliseconds ah
Modulation frequency	0x0005	full	2 bytes	03	30,33,36,38,40,56	06	38 (0x26)	in kilohertz
On/off command	0x0100	recording			0 or 0xFF00	05		0 - off, 0xFF00 - on.
Enable Command Registers	0x0100-0x017B	full	2 bytes	03	2 bytes	06		when reading - 124 registers, or 125 registers with K.S., when recording - each register separately
CRC16 checksum	0x017C	full	2 bytes	03	2 bytes	06		
Shutdown command registers	0x0200-0x027B	full	2 bytes	03	2 bytes	06		
Control CRC16 sum	0x027C	full	2 bytes	03	2 bytes	06		
Temperature sensor 1 in discharge grid DS18B20, with familiar	0x0900	reading	2 bytes	03				in 1/16th of a degree for both types sensors DS1820 and DS18B20, or 0xF800 if there is no sensor
Temperature sensor 2 in discharge grid DS18B20, with familiar	0x0901	reading	2 bytes	03				
Initiated no updates	0x9999	recording			0x00FF	06		