



KMA-15

MODEM MODBUS-ALARM (SNMP)

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# USER MANUAL

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## 1. Purpose

The KMA-15 MODBUS-ALARM (SNMP) modem is designed for use in systems for monitoring, dispatching, status control, and management of equipment modes at a remote facility.

The devices are housed in a durable plastic case. Inside the case is a circuit board with a microcontroller, a memory device, an RS-485, RS-232, and Ethernet interface unit, and a modem. On the outside of the case are connectors for interface cables, LED indicators for power and the current device status.

Configuration and control of the device's operation are possible both locally and remotely via the WEB interface over ETHERNET.

The following communication interfaces can be used to connect external equipment to the device and communicate with it remotely: RS-485, RS-232, ETHERNET.

The device's design allows it to be installed in electrical cabinets with DIN rail mounting options. The main technical specifications are presented in Table 1.

Table 1 – Main technical characteristics

<b>Name of the characteristic</b>	<b>Meaning of the characteristic</b>
Power supply of the device	12..60 VDC
Power consumption	no more than 10W
Voltage for powering external devices	12VDC, 8VDC, 5VDC
operating system	Linux
User interface for customization	WEB interface
Ethernet interface	2 ports
Interface data transfer rate 10\100 Base-T	up to 100 Mbit/s
Number of RS485 interfaces with galvanic denouement	1 piece
Number of RS232 interfaces with galvanic denouement	1 piece
Galvanic isolation voltage for RS485, RS232 interfaces	1000 VDC
Data transfer rate via interfaces (RS485, RS232)	1200-115200 bps
Temperature sensor support with 1-wire digital interface	+
Indication (LEDs)	nutrition, statuses
Operating temperature range	-40 to + 55 °C
Built-in hardware watchdog circuit	+
Type of power supply connectors, interfaces, sensors	Screw terminal connectors
Ethernet connector types	RJ45
Frame	Plastic
Installation	on a 35 mm DIN rail
Overall dimensions	105x51x65
Weight of the device, no more than	0.8 kg
Mean time between failures	at least 150,000 hours
Service life	20 years

## **2. Main functions of the KMA-15 MODBUS-ALARM (SNMP) Modem**

The device performs the following functions:

1. Converter functions RS-232, RS-485/UDP, TCP/IP.
2. Ambient temperature control functions using sensors connected to the device with a 1-wire interface
3. SNMP gateway functions for monitoring and managing various devices with the MODBUS-RTU protocol.

Using it as an SNMP gateway allows you to:

- parameter polling (SNMP request/response support);
- control via SMNP;
- SNMP TRAP support.

### **Additional functionality**

- Setting up and sending TRAP to multiple IP addresses.
- displaying parameters of connected devices in the WEB interface.

## **3. Mechanism for generating TRAPs and responses to the GET command**

All registers (including alarms/statuses) can be forcibly polled using the command (GET).

To avoid delays when polling devices via SNMP, the operating mechanism is as follows:

- The KMA-15 device continuously polls the connected device, so current data is always ready to be sent via SNMP (buffering).
- If no data is available, KMA-15 will respond to your request with dashes. You will need to repeat the request.

Mechanism of TRAP formation:

Polled every 10 seconds

- all alarm registers of the connected device (if the device has alarm registers),
- Registers containing information about the state of dry or potential contacts. Afterwards, whenever the state of any of these registers changes, a TRAP with a description is generated. Each TRAP includes the register, its value, a brief text description, and the severity level of the event.

Each TRAP can be assigned a severity level:

- 1 - critical
- 2 - major
- 3 - minor
- 4 - warning

#### 4. Appearance of the device

Figure 1 shows the appearance of the device.



Figure 1 – appearance of the device

#### 5. Indicator lights

The device body contains the following indicator lights that display the status and operating modes:

- Power – always on after power is applied. Indicates that the device is powered.
- Status – turns on after the device begins booting. The indicator turns off after the device completes booting. It also displays an indication that the watchdog timer has been activated.

**Note:**

*The device is designed to operate at low temperatures.*

*To ensure normal environmental conditions for the processor, the device has a built-in heating system. When the device heats up, no functions are available. Once the required temperature is reached, the processor inside the device turns on, turning off the heating, and all functions become available.*

## 6. Connection diagrams

A typical connection diagram to the device is given in Appendix 1.

## 7. Preparation for use, connecting external devices

### 7.1. Preparing the device for installation on site

Before installing the device, perform a visual inspection to detect any mechanical damage to the housing. If the device has been exposed to conditions other than its intended operating conditions, allow it to remain in these conditions for 2 hours before connecting power.

When selecting an installation location, the following criteria should be followed: the device should not be installed in places where dust or aggressive gases may be present, located near powerful sources of electromagnetic and thermal radiation, or in places subject to shaking, vibration, or exposure to water.

The mounting points on the rear of the device allow it to be mounted on a 35mm DIN rail.

### 7.2. Getting ready for work

According to the design, interface cables are connected to connectors located on the side of the device's housing when the device is powered off. The device is turned on after power is applied through the power connector.

After power is supplied, the “Power” indicator should turn on – the device is powered. After turning on the power, the settings are loaded and the device is prepared for operation.

## 8. SNMP gateway mode for USDD-24.01 (ICBCOM)

The SNMP gateway mode is designed to monitor the states of discrete inputs connected to the USDD-24.01 (ICBCOM)

Table 3

ModBus parameters for USDD-24.01 (ICBCOM)				SNMP functions		
Parameter	Values	Type	ModBus Address	TRAP*	GET	SET
ID - device type	02	Int16 (Reading)	0000		+	
ModBus-Device Address	1..255	Int16 (Read/Write)	0002		+	
Firmware	1000..65535	Int16 (Reading)	0002		+	
DI_1..DI_10 Bitwise state of 10 discrete inputs	0..1	Int16 (Read/Write)	0100	+	+	+
DI_11..DI_26 Bitwise state of 16 potential inputs	0..1	Int16 (Read/Write)	0101	+	+	+

MDI_1..MDI_10 Bitwise mask of discrete input inversions	0..1	Int16 (Read/Write)	0102		+	+
MDI_11..MDI_26 Bitwise mask of potential input inversions	0..1	Int16 (Read/Write)	0103		+	+

\* When the state of any of these registers changes, a TRAP with a description is generated. Each TRAP includes the register, its value, a brief text description, and the severity level of the event.

\* Each TRAP can be assigned a severity level

- 1 – critical
- 2 – major
- 3 – minor
- 4 – warning

## 9. RS-232/UDP, TCP/IP converter mode for working with devices in transparent mode.

For monitoring and managing devices in transparent mode, you can use TCP or SRV mode. This feature allows you to connect to devices directly using the factory software or other software that supports a specific endpoint for configuration or reading data into the monitoring system.

## 10. Completeness

Table 4 - Completeness

Name	Quantity
Device “KMA-15” Modem MODBUS-ALARM (SNMP)	1 pc.
User manual	1 piece/lot.
Label	1 pc.
Package	1 piece/lot.

Note: The batch size is determined by the company.

## 11. Warranty obligations

The warranty period for the device is 12 months from the date of delivery to the customer. During the warranty period, the manufacturer will provide free repairs to the device. The warranty does not cover defects resulting from improper handling, maintenance, storage, or transportation.

12. Appendix 1. Connection diagram of KMA-15 to USDD-24.01 (ICBCOM)

