

**Monitoring systems
IP Power modules**

User Manual

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1. Accessories

The Monitoring System may include the following components:

•«**Monitoring master units**»:

- 19" IP Rack Unit – 5500.824.
- 19" IP Rack Unit – 5510.824.
- IP Wall Unit – 5505.824.

•«**IP power modules**»:

- 19" Power management unit 8 outlets – 5510.008.
- 19" Power Management unit 8 outlets – 5510.108.
- Power management unit 4 outlets – 5505.004.
- ZeroU Power management unit 2 outlets – 5510.024

•«**Extension units**»:

- Relay-sensor unit RS Unit (RS) – 5505.814.
- Address contacts unit (BU)– 5505.016.

•«**Analog sensors**»:

- Temperature sensor – 5500.500.
- Outdoor temperature sensor – 5500.501.
- Humidity sensor – 5500.511.
- Voltage monitor – 5500.520.
- Constant voltage monitor -5500.525
- Noncontact sensor (reed switch + magnet) – 5500.530.
- Vibration sensor – 5500.540.
- Fan rotation sensor – 5500.550.
- Smoke sensor – 5500.560.
- Motion sensor – 5500.570.
- Gas sensor — 5500.580.
- Leakage sensor – 5500.590.
- Pressure sensor — 5500.480.
- Level sensor — 5500.490.

•«**Digital sensors**»:

- Voltage monitor and temperature sensor – 5500.720.
- Humidity and temperature sensor — 5500.731.
- Smoke and temperature sensor – 5500.760.
- Motion and temperature sensor – 5500.770.

•«**Outputs**»:

- Electromagnetic relay.

•«**Readers**»:

- Proximity reader
- iButton™ reader.

•«**Passive components**»:

- Network cable UTP for connection to the local network.
- Cables RJ12 (6p6c) for connection of analog sensors and RJ9 (4P4C) for digital sensors
- UTP Cables for connection of extension units.
- Software CD.

2. Technical specification of master monitoring unit

Master unit, irrespective of its version, is intended for gathering, processing and displaying of the information, received from specialized system units (extension units), as well as from ports built in in the master unit.

2.1. Technical parameters

- Input voltage – 12 VDC +/- 20%.
- Processor: 200 MIPS AT91RM9200 with core ARM 920T.
- RAM – 32 megabyte.
- ROM – 8 megabyte FLASH.
- Interfaces: RS485 (4-wired), Ethernet 100 Mbit, USB host (2.0).
- Additional possibilities: digital Bus for connection of digital sensors, relays on switching (7A 240V AC., 10A 24V DC.) or relay outputs 220V, 8 analog inputs for connection of analog sensors, 16 dry contacts.
- Built in operating system – Linux 2.6.23.12
- Internal connector for GPRS/GSM modem.

2.2. Software

Embedded Software

- HTTP server.
- Mail (SMTP) client.
- SNMP server.
- SNMP alerts.
- Program of gathering and processing information from units.
- Processor-program of access events.

External Software (enclosed with device)

- System Installation and configuration files.
- MIB files for SNMP-browser management.
- Getif SNMP manager.

Any SNMP manager that supports protocols SNMP 1 and 2 can be used.

Software functions

The device contains built in HTTP-server, allowing the administrator to see operating states of all the system elements (sensors, relay, readers), the events occurring in system, as well as the interconnections established between them (system's decision logic) by means of any Internet-browser. Moreover,,management through HTTP-server enables to change states of elements (alarm levels), to add and delete logic circuitry of work, to alter other settings of system. HTTP-server has SSL-protection.

Built in software allows to use both static and dynamic DNS, to import map of the area, plan of an object or premises. It allows else to further use these maps and plans to display in the monitoring interface and to locate sensors, units and relay devices of the system in the area monitored, and to specifically assign each sensor or a device to a specific location on the map or plan.

The system allows connection of USB camera and sending images taken to the remote server, recording these onto a CD or DVD, import of monitoring results into CSV files, simultaneous display of graphs.

Monitoring system's software allows to change logic of its work in such a manner that at occurrence of any event (change in a sensor's state) the system will automatically warn the administrator by means of an e-mail or an SNMP-alert, or will switch the certain output (relay).

The mail client is a virtual element of system and allows to send a message on occurrence of a previously set event to a previously set addressee.

System's SNMP-server allows remote (as well as through HTTP-server) monitoring of states of sensors, the relays and system readers; in addition it allows altering some of the configuration parameters (names and alarm levels of sensors, conditions of the relays, adjustment of e-mail alerts). The administrator may use any software such as SNMP-browser ranging from elementary (getif), to multi functional (Winagents SNMP-browser, iReasoning SNMP-browser).

The built in software can be updated through USB port, as well as through FTP protocol. For this purpose it is necessary to take advantage of firmware archive located on the CD provided or by following link www.skycontrol.com.

The CD provided with Sky Control system has HTTP folder which contains several Posix Shell-scripts, they allow to monitor and to control a system from Linux console. It is possible for a developer to use control protocols by viewing the initial texts of these scripts and to develop his own interface of system control, or to use protocols for exporting signals from system units into own database or into the data display system.

2.3. Functions of LEDs on a front panel

PWR – Turns on several seconds after submission of power supply on the device.

ALRM – Turns on when a disturbing event occurs in one of the sensors.

PRG – Temporarily switches on for a period of device's reload through USB port.

ACT – Indicator of exchange with devices on RS485 Bus.

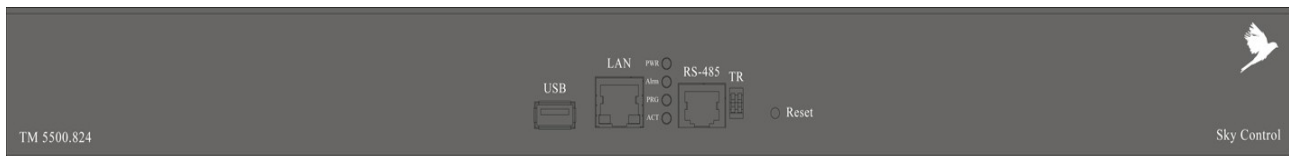
3. Monitoring master units

3.1.19" Monitoring units IP Rack unit – 5500.824, 5510.824

Compact device with dimensions 440*44*105, net weight 1 kg. Supply includes: power cable 220B/12 B, manual CD, warranty, technical data sheet and 2 cramps for fastening.

Device is used for IP monitoring and remote management or like a video server in premises and site units, for example in server rooms or telecommunication stations, in detached buildings.

It's possible connection up to 8 analog, 40 digital sensors, 16 dry contacts and up to 4 relay devices. At connection up to 30 additional extension devices, such as RS or BU the system may contain up to 1000 various sensors and devices.



Pic. 3. 1 IP monitoring unit, front view

Description of I/O on the device's front panel

The front panel of Rack system unit contains the following I/O and LEDs:

USB-port is used for restoration of factory-specific settings or updating the unit software (firmware) by means of USB flash drive or connection of USB camera.

LAN-port for 10/100 Mbit UTP Ethernet connection.

RS-485 port allows connection up to 30 extension units. Any UTP patch cable RJ45 can be used.

Switch **TR** is a load switch used for terminal device. Pressing the switch is carried out by a sharp object such as a ball pen.

Switch **Reset**. Hidden switch, used for immediate system restart. Pressing the switch is carried out by a sharp object such as a ball pen.

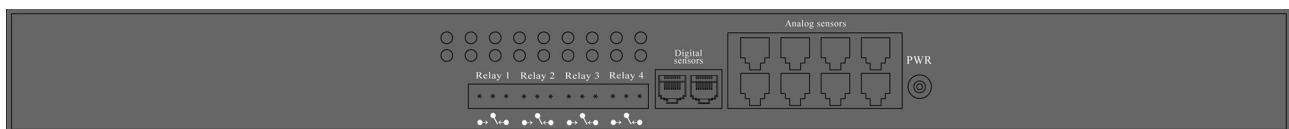
LEDs on the front panel

PWR – Turns on several seconds after submission of power supply on the device

ALRM – Turns on when a disturbing event occurs in one of the sensors.

PRG – Temporarily switches on for a period of device's reload through USB port.

ACT – Indicator of exchange with devices on RS485 Bus.



Pic. 3.2 IP monitoring unit 5500.824, on the backside

Description of I/O on the back panel of 5500.824

Back panel of master unit 5500.824 contains the following I/O:

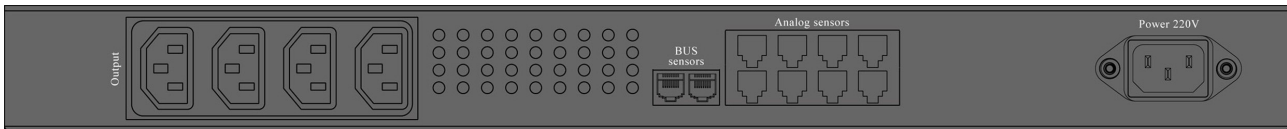
Relay 1..4. Each of the built in relays is with 'closed' and 'opened' contacts. Max. AC voltage 220V and max. DC voltage up to 24V. Max. current on the relay up to 7A. Commutation of the relay is possible on the built in logic (see Logic circuitry) or on a command.

Bus sensors. 2 sockets RJ9 4P4C are needed for connection of digital sensors to a system by means of a 2-pair UTP patch cable or flat phone cable on 4 conductors with connectors 4P4C RJ9. In order to increase connection range a UTP cable should be used.

Analog sensors. 8 sockets RJ12. Used for connection of analog sensors using cable with RJ12 6P6C connectors.

Dry contacts. 16 dry address contacts. Needed for connection of contacts to doors, windows, locks etc.

PWR jack. Connection of external network adapter for 12V. Internal output“+”, external “-“. Supply includes adapter for 12V, 1A. In case of loss of adapter, any other chargers 10-12 V with minimum power of 10 W can be used.



Pic. 3.3 IP monitoring unit 5510.824, on the backside

Description of I/O on the back panel of 5510.824

Back panel of unit 5510.824 contains the following I/O:

Output 1...4. 4 sockets 220 V with 'closed' relay contacts and with maximum switching current up to 5 A. Max. consumption of current - 10A. Commutation of the relay is possible on the built in logic or on a command.

Bus sensors. 2 sockets RJ9 are needed for connection of digital sensors to a system by means of a 2-pair UTP patch cable or flat phone cable on 4 conductors with connectors 4P4C RJ9. In order to increase connection range a UTP cable should be used.

Analog sensors. 8 sockets RJ12. Used for connection of analog sensors using cable with connectors 6P6C RJ12.

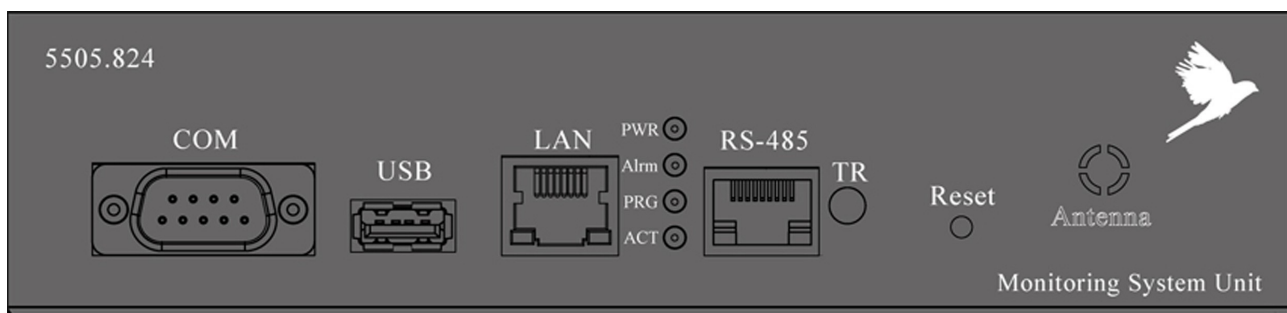
PWR connector IEC60320 C14. Power supply connection: 115-220V. Supply includes power cable 220V. In case of loss of cable, any other power cable with standard connector C13 IEC60320 can be used.

3.2. IP Wall Unit – 5505.824

Compact device with dimensions 180*44*105 mm, net weight 0,5 kg. Supply includes: power cable 220V/12V, manual CD, warranty, technical data sheet and 4 self-adhesive rubber legs.

Device is used for IP monitoring and remote management or like a video server for a room or for some small office.

On the bottom there are holes for mounting using self-tapping screws 3.5 or bolts M3, and two mounting holes for installation on din-rail.



Pic. 3.4 IP monitoring unit 5505.824, front view

Possible connection up to 8 analog, 40 digital sensors and up to 4 relay devices. At connection up to 30 additional extension devices, such as RS or BU the system may contain up to 1000 various sensors and devices.

Description of I/O on the device's front panel

The front panel of Wall unit contains the following inputs and LEDs (Pic. 3.4):

USB-port is used for restoration of factory-specific settings or updating the unit software (firmware) by means of USB flash drive or connection of USB camera.

LAN-port for 10/100 Mbit UTP Ethernet connection.

RS-485 port allows connection up to 30 extension units. Any UTP patch cable RJ45 can be used.

Switch **TR** is a load switch used for terminal device. Pressing the switch is carried out by a sharp object such as a ball pen.

Switch **Reset**. Hidden switch, used for immediate system restart. Pressing the switch is carried out by a sharp object such as a ball pen.

Input «**Antenna**». Installation of GSM or other antenna into embedded GSM-unit. The GSM-unit is sold separately.

LEDs on the front panel

PWR – Turns on several seconds after submission of power supply on the device

ALRM – Turns on when a disturbing event occurs in one of the sensors.

PRG – Temporarily switches on for a period of device's reload through USB port.

ACT – Indicator of exchange with devices on RS485 Bus.

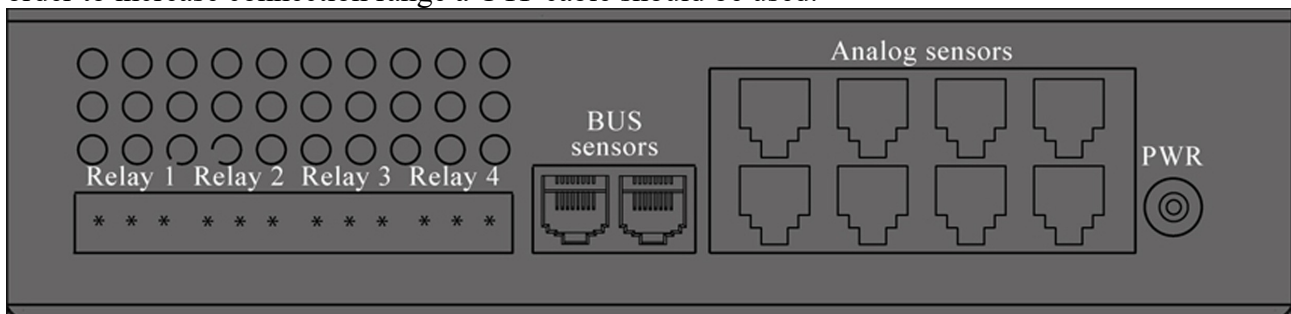
Description of I/O on the back panel

Back panel of the unit contains the following I/O:

PWR jack. Connection of external network adapter for 9-12V. Internal output“+”, external “-“. Supply includes adapter for 12V, 10 W. In case of loss of adapter any other charger with minimum power of 10 W can be used.

Analog sensors. 8 sockets RJ12. Used for connection of analog sensors using cable with connectors RJ12 6P6C.

Bus sensors. 2 sockets RJ9 4P4C are needed for connection of digital sensors to a system by means of a 2-pair UTP patch cable or flat phone cable on 4 conductors with connectors 4P4C. In order to increase connection range a UTP cable should be used.



Pic. 3.5 IP monitoring unit 5505.824, on the backside

Relay 1..4. Each of the built in relays is with 'closed' and 'opened' contacts. Max. AC voltage 220V and max. DC voltage up to 24V. Max. current on the relay up to 7A. Commutation of the relay is possible on the built in logic (see Logic circuitry) or on a command.

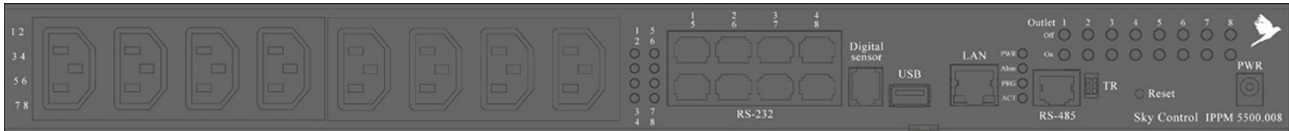
3.3. 19" IP Power unit 8 outlets – 5510.008

Compact device with dimensions 440*44*105, net weight 1kg. Supply includes: power supply 220V/12V, power cable 220V, UPS cable, adapter DB9-RJ45, manual CD, warranty, technical data sheet and 4 self-adhesive rubber legs.

The device is used for IP load switching and can be used else like a video server or a monitoring unit. Possibility to switch up to 8 stations with soft or hard shut down.

Built-in current sensors allow to monitor current consumption in each outlet and to control load of electric equipment. Switching is possible using built in logic (see Logic circuitry) or compulsory on a command.

The unit can be used for IP monitoring of up to 20 digital sensors and 1 USB Camera.



Pic. 3.6 IP power unit 5510.008, front view

Description of I/O on the device's front panel

The front panel of IP Power management unit contains the following I/O and LEDs (Pic. 3.6):

Output 1...8 are IEC60320 C13 connectors with voltage output of 115-220V from relay outlets. Used for connecting power supply consumers (for example, servers or working stations), whose power supply must be commutated remotely. Max. current consumed per one output -5A. Max. consumption current– 20A. Outputs are used for UPS - IEC60320 C14/C13 cables. Supply includes cable 220V. In case of loss of cable, any other power cable with C13/C14 IEC60320 connector can be used. If necessary, voltage given from output to server can be switched on/off remotely through Web-interface (via IP).

Buttons **Output On-Off 1...8** for manual switching of relay states. Buttons allow to control servers' power supply from the stands of communication or server racks.

COM 1...8 RJ45 ports used for connection to servers or working stations. UTP cable is connected through DB9-RJ45 adapter to RJ232 connectors of the corresponding server or PC . If necessary, commands to shut down or to restart the server remotely using web-Interface (via IP) are transmitted through these ports. After command is carried out server's power supply can be switched off. After the submission of power supply, the server automatically switches on (in the presence of corresponding internal settings).

Bus sensors. Socket RJ9 can be used for connection of digital sensors to system by means of a 2-pair UTP patch cable or flat phone cable on 4 conductors with connectors 4P4C RJ9. Or for connection of Proximity cards or iButton readers. In order to increase connection range a UTP cable is preferable.

USB-port is used for restoration of factory-specific settings or updating the unit software (firmware) by means of USB flash drive or connection of USB camera.

LAN-port for 10/100 Mbit UTP Ethernet connection.

RS-485 port allows connection up to 30 extension units. Any UTP patch cable RJ45 can be used.

Switch **TR** is a load switch used for terminal device. Pressing the switch is carried out by a sharp object such as a ball pen.

Switch **Reset.** Hidden switch, used for immediate system restart. Pressing the switch is carried out by a sharp object such as a ball pen.

PWR jack. Connection of external network adapter for 9-12V. Internal output“+”, external “-“. Supply includes adapter for 12V, 10 W. In case of loss of adapter any other charger with minimum power of 10 W can be used.

LEDs on the front panel

PWR – Turns on several seconds after submission of power supply on the device, shows presence of power.

ALRM – Turns on when a disturbing event occurs in one of the sensors.

PRG – Temporarily switches on for a period of device's reload through USB port.

ACT – Indicator of exchange with devices on RS-485 Bus.

1...8 – Indicate sockets switching on



Pic. 3.7 IP Power unit 5510.008, on the backside

Description of outlets on the back panel

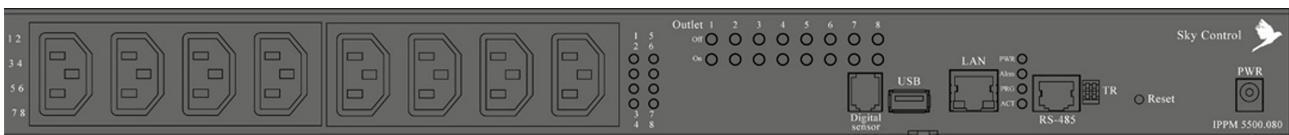
PWR connectors IEC60320 C14 with voltage connection 115-220V. Supply includes power cable 220V. In case of loss of cable any power cable with connector C13 IEC60320 can be used. There are built in fuses on each consumption line.

3.4. 19” Power unit 8 outlets – 5510.108

Compact device with dimensions 440*44*105, net weight 1kg. Supply includes: power supply 220V/12V, power cable 220V, UPS cable, manual CD, warranty, technical data sheet and 4 self-adhesive rubber legs.

The device is used for IP load switching and can be used else like a video server or a monitoring unit. Possibility to switch 8 loads.

The unit can be used for IP monitoring of up to 20 digital sensors and 1 USB Camera.



Pic. 3.8 IP power unit 5510.108, front view

Description of I/O on the device's front panel

The front panel of IPPM contains the following I/Os and LEDs (3.8):

Output 1...8 are IEC60320 C13 connectors with voltage output of 115-220V from relay outlets. Used for connecting power supply consumers (for example, servers or working stations), whose power supply must be commutated remotely. Max. current consumed per one output -5A. Max. consumption current– 20A. Outputs are used for UPS - IEC60320 C14/C13 cables. Supply includes 220V cable. In case of loss of cable, any other power cable with C13/C14 IEC60320 connector can be used. If necessary, voltage given from output to server can be switched on/off remotely through Web-interface (via IP).

Buttons **Output On-Off 1...8** for manual switching of relay states. Buttons allow to control servers' power supply from the stands of communication or server racks.

Bus sensors. Socket RJ9 can be used for connection of digital sensors to system by means of a 2-pair UTP patch cable or flat phone cable on 4 conductors with connectors 4P4C RJ9. Or for connection of Proximity cards or iButton readers. In order to increase connection range a UTP cable should be used.

USB-port is used for restoration of factory-specific settings or updating the unit software (firmware) by means of USB flash drive, or for USB camera connection.

LAN-port for 10/100 Mbit UTP Ethernet connection.

RS-485 port allows connection up to 30 extension units. Any UTP patch cable RJ45 can be used.

Switch **TR** is a load switch used for terminal device. Pressing the switch is carried out by a sharp object such as a ball pen.

Switch **Reset**. Hidden switch, used for immediate system restart. Pressing the switch is carried out by a sharp object such as a ball pen.

PWR jack. Connection of external network adapter for 9-12V. Internal output“+”, external “-“. Supply includes adapter for 12V, 10 W. In case of loss of adapter, any other charger with minimum power of 10 W can be used.

LEDs on the device's front panel

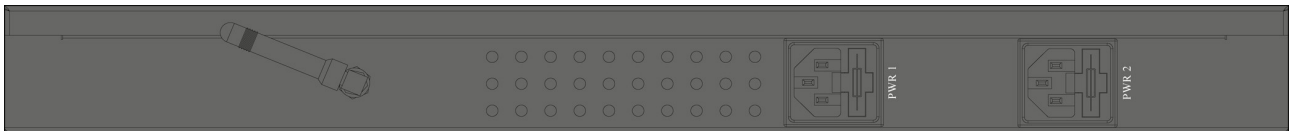
PWR – Turns on several seconds after submission of power supply on the device, shows presence of power.

ALRM – Turns on when a disturbing event occurs in one of the sensors.

PRG – Temporarily switches on for a period of device's reload through USB port.

ACT – Indicator of exchange with devices on RS-485 Bus.

1...8 – Indicate sockets switching on.



Pic. 3.9 IP power unit 5510.108, on the backside

Description of outlets on the back panel

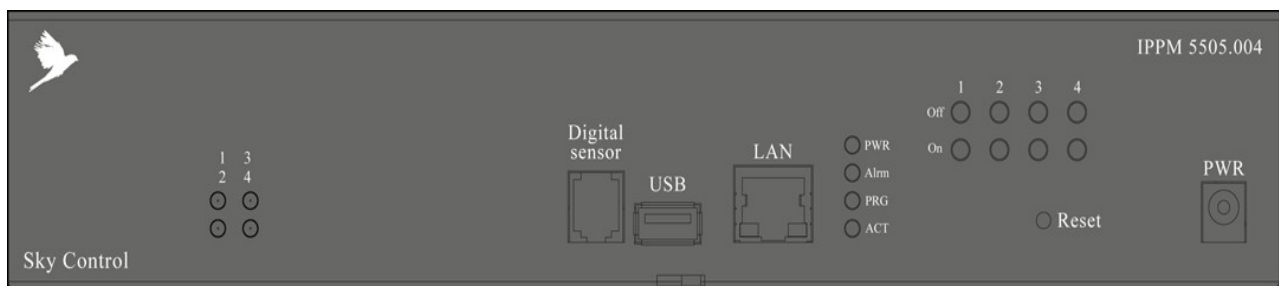
PWR connectors IEC60320 C14 with voltage connection 115-220V. Supply includes power cable 220V. In case of loss of cable any power cable with connector C13 IEC60320 can be used. There are built in fuses on each consumption line.

3.5. IP Power management unit 4 outlets – 5505.004

Compact device with dimensions 250*50*120, net weight 1kg. Supply includes: power supply 220V/12V, power cable 220V, UPS cable, manual CD, warranty, technical data sheet and 4 self-adhesive rubber legs.

The device is used for IP power switching 4 loads at small office or at home.

This unit can be used for IP monitoring of up to 20 digital sensors and 1 USB Camera.



Pic. 3.10 IP power unit 5505.004, front view

Description of I/O on the device's front panel

The front panel of IP Power management unit contains the following I/O and LEDs (Pic. 3.10):

USB-port is used for restoration of factory-specific settings or updating the unit software (firmware) by means of USB flash drive.

LAN-port for 10/100 Mbit UTP Ethernet connection using UTP cable.

Bus sensors Socket RJ9 can be used for connection of digital sensors to system by means of a 2-pair UTP patch cable or flat phone cable on 4 conductors with connectors 4P4C RJ9. Or for connection of Proximity cards or iButton readers. In order to increase connection range a UTP cable should be used.

Switch **Reset**. Hidden switch, used for immediate system restart. Pressing the switch is carried out by a sharp object such as a ball pen.

RS485 port allows connection of up to 30 extension units.

PWR jack. Connection of external network adapter for 9-12V. Internal output “+”, external “-“. Supply includes adapter for 12V, 10 W. In case of loss of adapter, any other chargers with minimum power of 10 W can be used.

LEDs on the front panel

PWR – Turns on several seconds after submission of power supply on the device, shows presence of power.

ALRM – Turns on when a disturbing event occurs in one of the sensors.

PRG – Temporarily switches on for a period of device's reload through USB port.

ACT – Indicator of exchange with devices on RS485 Bus.

1...4 – Indicate sockets switching on.



Pic. 3.11 IP Power unit 5505.004, on the backside

Description of outlets on the device's back panel

Outlets 1...4 are IEC60320 C13 connectors with voltage output of 115-220V from relay outlets. Used for connection of power supply consumers (for example, servers or working stations), whose power supply must be commutated remotely. Max. current consumed per one output -5A. Max. consumption current- 10A. Outputs are used for UPS cables - IEC60320 C14/C13. Supply includes cable 220V. In case of loss of cable, any other power cable with connector C13/C14 IEC60320 can be used. If necessary, voltage given from output to server, can be switched on/off remotely through Web-interface (via IP).

PWR outlet IEC60320 C14 with power voltage connection 115-220V. Supply includes power cable 220V. In case of loss of cable any power cable with connector C13 IEC60320 can be used. Includes built in fuse.

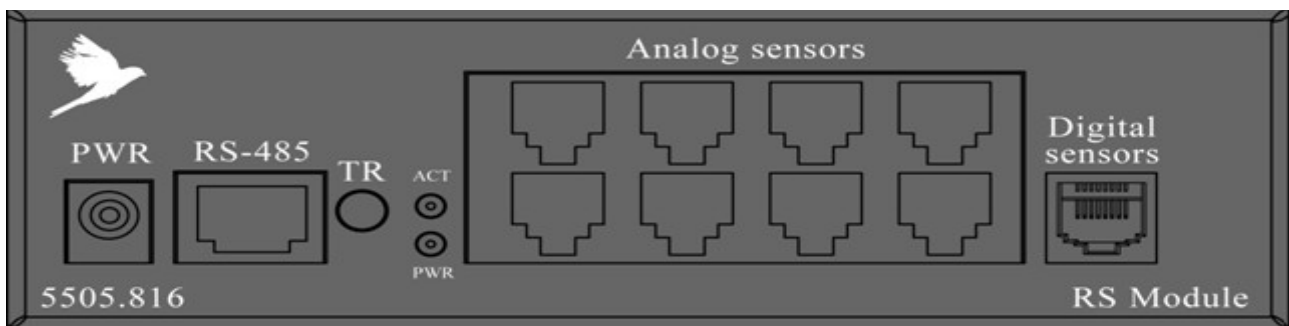
4. Extension units

4.1. Relay-sensor RS Unit (RS) – 5505.814

Compact device with dimensions 140*44*90, net weight 0,5 kg. Supply includes: warranty, technical data sheet, UTP patch cable of 1m and 4 self-adhesive rubber legs. On the bottom there are mounting holes for installation of a frame using self-tapping 3.5 screws or M3 bolts, and 2 mounting holes for installation on din-rail.

The device is used in remote premises (up to 1km from master units), for example in additional server rooms or premises for emergency power supply, or in detached buildings. Possible connection up to 8 analog sensors, 20 digital sensors and up to 4 electrical devices.

Built in temperature sensor is available.



Pic. 4.12 Relay-sensor unit, front view

Description of I/O on the device's front panel

The front panel of RS extension unit contains the following I/O and LEDs (Pic. 4.12):

PWR jack. If necessary the device can be connected to external power charger of 12V. Internal output “+”, external “-“. Any charger with minimum power of 3 W can be used as an adapter. Jack is needed to supply power to unit if it is used remotely from the master unit.

RS-485 port is used for connection to any master unit and for connection of additional extension units of monitoring system into a consistent chain. UTP RJ45 cable is used for connection.

Switch TR. Is a load switch used for terminal device. Pressing the switch is carried out by a sharp object such as a ball pen.

Analog sensors. 8 sockets RJ12 are used for connection of analog sensors using cables with RJ12 6P6C connectors.

Digital sensors. Socket RJ9 is needed for connection of digital sensors by means of a 2-pair UTP cable or flat phone cable on 4 conductors with 4P4C RJ9 connectors. In order to increase connection range UTP cable must be used.

LEDs on the device's front panel

PWR – power is supplied, the system is switched on.

ACT – signals data being communicated with master unit.

Description of outlets on the device's back panel



Pic. 4.13 Relay-sensor unit, on the backside

LEDs on the back panel of a device

Outlets 1...4 are IEC60320 C13 connectors with voltage output of 115-220V from relay outlets. Used for connection of power supply consumers (for example, servers or working stations), whose power supply must be commutated remotely. Max. current consumed per one output -5A. Max. consumption current- 10A. Outputs are used for UPS cables - IEC60320 C14/C13. Supply includes cable 220V. In case of loss of cable, any other power cable with connector C13/C14 IEC60320 can be used. If necessary, voltage given from output to server, can be switched on/off remotely through Web-interface (via IP).

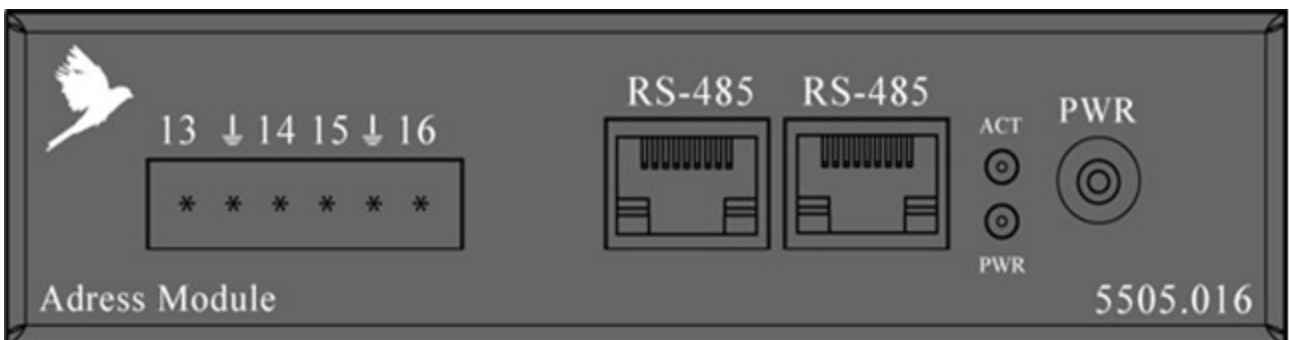
PWR outlet IEC60320 C14 with power voltage connection 115-220V. Supply includes power cable 220V. In case of loss of cable any power cable with connector C13 IEC60320 can be used. Contains built in fuse.

4.2. Addressed contacts unit (BU) – 5505.016

Compact device with dimensions 140*44*90, net weight 0,5 kg. Supply includes: warranty, technical data sheet , UTP patch cable of 1m and 4 self-adhesive rubber legs. On the bottom there are mounting holes for installation using self-tapping 3.5 screws or M3 bolts, and 2 mounting holes for installation on din-rail.

Device is used together with address contacts, for example with door's contacts, window's, various relay's contacts etc. Allows addressed correlation of button responses and permits adequate measures established by system's logic to be taken.

Built in temperature sensor is available.



Pic. 4.14 Address contacts unit, front view

Description of I/O on the front/back panels

PWR jack. If necessary the device can be connected to external power charger 12V. Internal output “+”, external “-“. Any charger with minimum power of 3 W can be used as an adapter. Jack is needed to supply power to unit if it is used remotely from the master unit.

RS-485 port is used for connection to any master unit and for connection of additional extension units of monitoring system. Any patch cable can be used for connection, most desirable is UTP RJ45 cable.



Pic. 4.15 Address contacts unit, on the backside

Jacks 1...16 16 address contacts. Possible to connect any dry contacts. Connects using any 2-wired or 3-wired cable. Cable is mounted by screw fastening. After connection contacts are determined automatically and appear in system interface.

LEDs on the back panel of a device

PWR – power is supplied, the system is switched on.

ACT – signals data being communicated with master unit.

5. Sensors

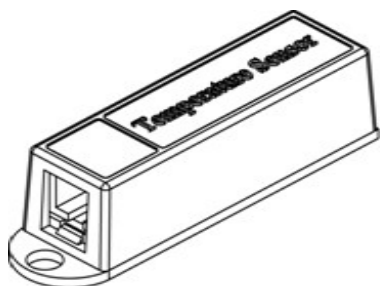
5.1. Analog Sensors

Analog sensors have one or two RJ12 (6P6C) jacks for connection to an analog input of any monitoring system's unit using RJ12 patch cable. The second jack, if present, can be used for linear connection of several identical sensors in a circuit. At linear connection the chain of sensors will be automatically defined as one sensor, however, the monitoring system will generate an event when any of them operates.

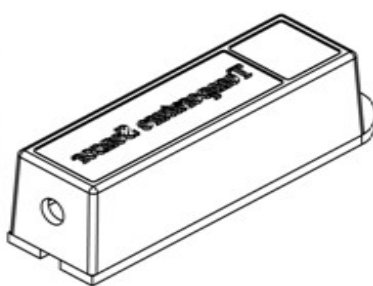
Linear connection of analog sensors can be used for smoke and non-contact sensors.

Temperature sensor – 5500.500

Compact device with dimensions 60x18x18, net weight 15g. Supply includes: warranty and RJ12 cable of length 2m. On the bottom there is a ledge \varnothing 4,5 mm and height 1mm and a mounting hole in 50mm from it for installation of sensor using self-tapping screw or bolt M5.



Pic. 5.16 Temperature sensor



Pic. 5.17 Plug RJ12, 6P6C

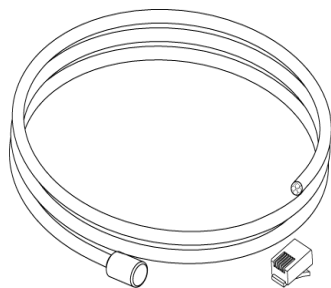
The sensor is used for measurement of temperature indoors.

Measured range of temperatures: from -20 to 60°C .

Temperature sensor contains **RJ12** jack and it is connected to an analog input of any system unit. Determination of type of sensor and connection occur automatically.

Outdoor temperature sensor – 5500.501

Device represents cylinder of \varnothing 6*20 mm from which an all-weather 2-pair UTP cable emerges (25m). Supply includes: RJ12 connector, brief manual and warranty.



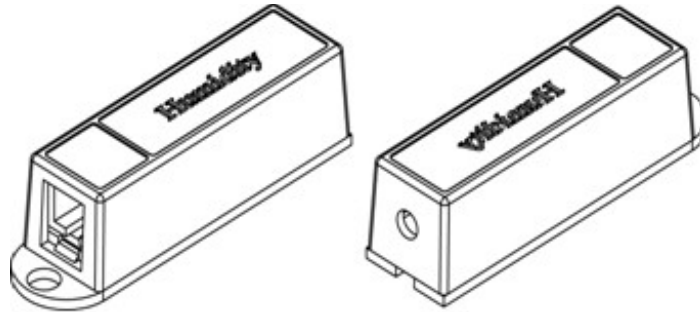
Pic. 5.18 Outdoor temperature sensor

Sensor is needed for measurement of temperature outside of premises, can be applied indoors.

After installation of cylinder outside of the building, the cable must be placed to reach the system unit. After installation RJ12 connector is connected to an analog input of any system unit. Determination of type of sensor and connection occur automatically.

Humidity sensor – 5500.511

Compact device with dimensions 60x18x18, net weight 15g. Supply includes: warranty and RJ12 patch cable of length 2m. On the bottom there is a ledge \varnothing 4,5mm and height 1mm and a mounting hole in 50mm from it for installation of sensor using self-tapping screw or bolt M5.

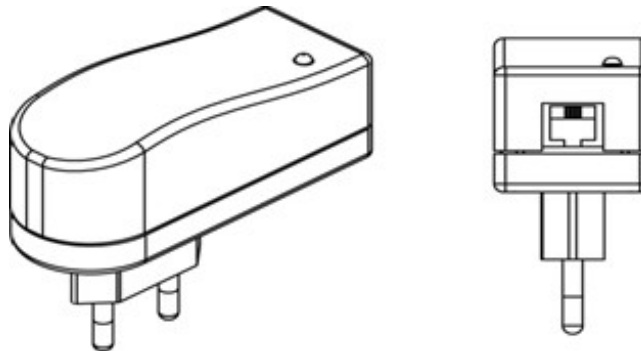


Pic. 5.19 Humidity sensor

The sensor is used for measurement of humidity 20-95% indoors with relative accuracy 5%. Humidity sensor contains **RJ12** jack and is connected to an analog input of any system unit. Determination of sensor's type and connection occur automatically.

AC voltage monitor – 5500.520

Device dimensions are 80x40x22, net weight 100g. Supply includes: warranty and USB RJ12 patch cable (1.8m).



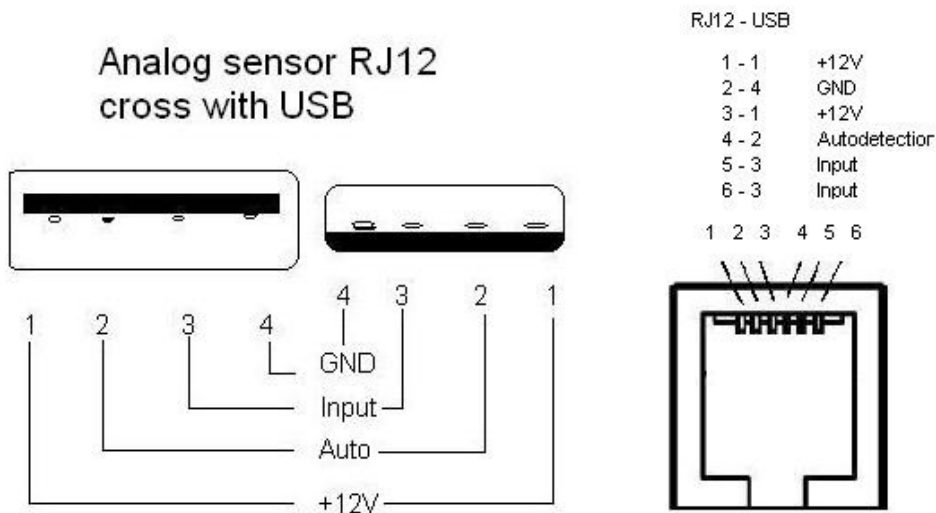
Pic. 5.20 Voltage monitor

Sensor is used for measurement of standard power supply 220V or of any other capacity in the power supply system, for example in an outlet, on the extension cord or in a rack-mountable socket strip.

Measured range of voltage: 0–250V.

Installation of AC voltage monitor

Plug **220V** is put into 220V outlet needed for measurement. Cable's USB connector must be connected to the USB output, connector RJ12 must be connected to an analog input of any system unit. Determination of sensor's type and connection occur automatically.



Pic. 5.21
RJ12 USB
patch cable
pins for

voltage monitor 5500.520.

DC voltage monitor - 5500.525

Device with dimensions 60x18x18, net weight 15g. Supply includes: warranty and USB RJ12 cable of length 1.8m.

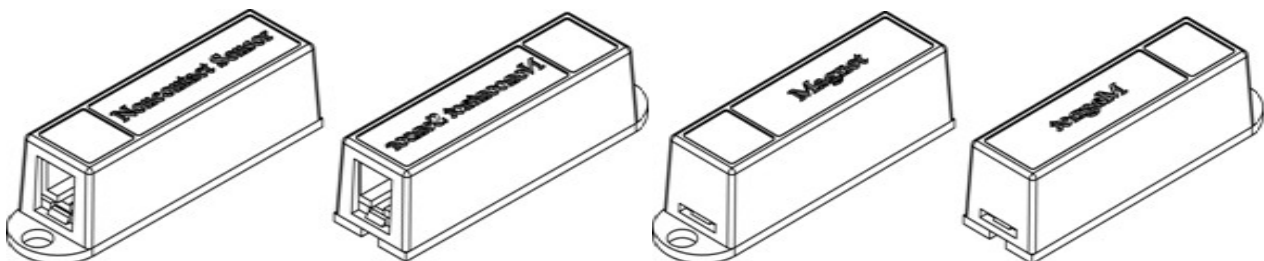
Sensor is needed for measurement of constant voltage.

Measured range of voltage: 0–100V.

Sensor is connected to analog input of any module. Determination and connection of sensor occur automatically. 2-pin terminal strip with measured voltage is connected to the jack on the sensor.

Access sensor – 5500.530

Two compact devices with dimensions 60x18x18, net weight 40g. Supply includes: contact sensor, magnet, warranty and RJ12 cable of length 2m. On the bottom there is a ledge with Ø 4,5mm and height 1mm and a mounting hole in 50mm from it for fastening sensor using self-tapping screw or bolt M5.



Pic. 5.22 Non-contact access sensor and magnet

At installation on doors, windows, etc., the sensor controls door status, window: opened or closed.

Installation of non-contact sensor

The sensor is connected to analog input of any system unit using patch cable RJ12. Determination of sensor's type and connection occur automatically. One of the devices in the kit,

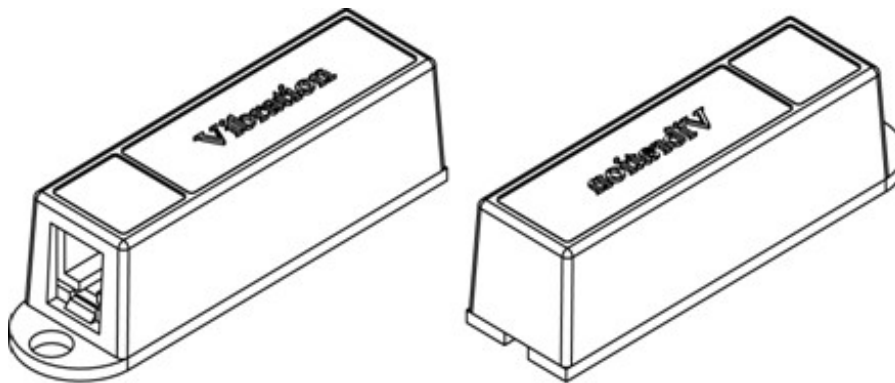
for example, magnet, is mounted on a door; the second device is installed on a door's jamb. At opening a door contact is disconnected, and the monitoring system receives the message on opening.

Monitoring system allows connection of several sensors into a linear circuit. For this purpose each access sensor has two jacks RJ12: input and output.

The first sensor is connected using RJ12 patch cable to an analog input of the system unit. The consequent sensor is connected via RJ12 patch cable to an output of the first sensor and so on.

Vibration sensor – 5500.540

Compact device with dimensions 60x18x18, net weight 15g. Supply includes: warranty and RJ12 cable of length 2m. On the bottom there is a ledge Ø 4,5mm and height 1mm and a mounting hole 50mm from it for installation of sensor using self-tapping screw or bolt M5.



Pic. 5.23 Vibration sensor

The sensor is used for installation on walls, windows etc., controls vibration of a surface.

Installation of vibration sensor

RJ12 jack is connected to an analog input of any system unit using RJ12 patch cable. Determination of sensor's type and connection occur automatically. At impact or attempts of jolting or drilling of the surface on which the sensor is installed, contacts of the system respond and the system receives the message on breaking.

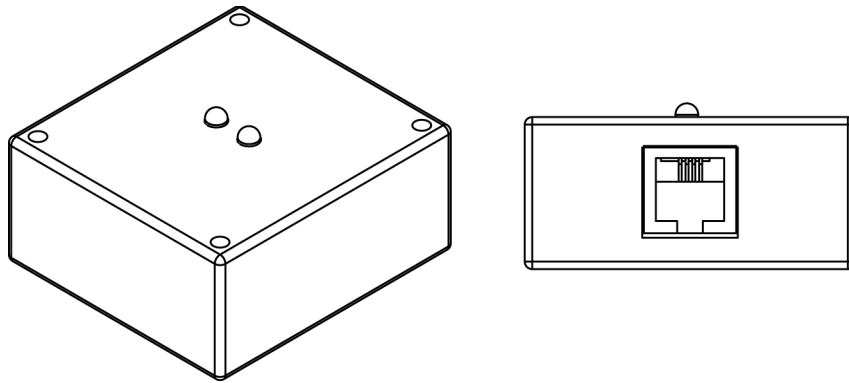
Fan rotation sensor (rotation of blades)– 5500.550

Compact device with dimensions 40x40x20, net weight 20g. Supply includes: warranty and RJ12 cable of length 2m and a sticker for fastening on the fan. On the bottom there are mounting holes for installation using self-tapping screw or bolt M5; and fixing holes for LEDs.

At installation on fan's body, supervises rotation of blades.

Installation of fan rotation sensor

RJ12 jack is connected to an analog input of any unit using RJ12 patch cable. Determination of sensor's type and connection occur automatically. The device must be installed in such a manner that the distance from rotating blades of the fan up to the holes of LEDs was max. 10mm. In addition, it is necessary to paint blades of fan or to paste a light-reflecting foil on the area where beams of LEDs fall, around 1cm².

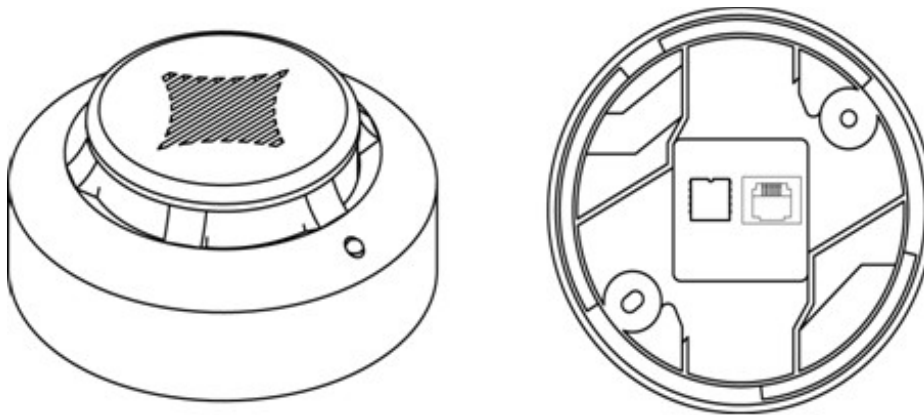


Pic. 5.24 Fan rotation sensor

Smoke sensor – 5500.560

Standard smoke sensor with dimensions Ø100x45, net weight 150g. Supply includes: warranty, RJ12 cable of length 2m and a fixture. On the bottom there are mounting holes for installation of sensor using self-tapping screw or bolt M5 to the surface.

At installation indoors, in a rack etc., the sensor controls occurrence of smoke.



Pic. 5.25 Smoke sensor

Installation of smoke sensor

Jack **RJ12** is connected to an analog input of any system unit using RJ12 patch cable. Determination of sensor's type and connection occur automatically.

Monitoring system allows connection of several smoke sensors into a linear circuit. For this purpose each sensor has 2 RJ12 jacks: input and output.

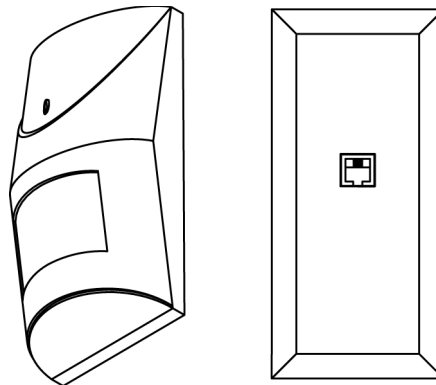
The first sensor is connected to an analog input of any system unit using RJ12 patch cable. The consequent sensor is connected via patch cable to an output of the first sensor and so on. Last smoke sensor must not necessarily be closed by terminator.

Motion sensor – 5500.570

Device with dimensions 80x50x30, net weight 100g. Supply includes: warranty and cable RJ12 of length 2m. On the bottom there are mounting holes for installation using self-tapping screw or bolt.

Sensor is needed for control of motion in an infrared range and for measurement of indoor temperature.

Sensor contains **RJ12** jack and is connected to a digital input of any system unit. Determination of sensor's type and connection occur automatically.



Pic. 5.26 Digital motion sensor

Gas sensor — 5500.580

Device with dimensions 80*75*29 net weight 110g. Supply includes: sensor, warranty and RJ12 cable (1.8m). The sensor is needed for measurement of illuminating, household or case-head gas in air. Operating temperature: 10-50°C. Max. humidity – 97%. Response at gas concentration in air: 0,1-0,5. Built-in notifications' speaker ≥ 85 db. Response time ≤ 20 sec, depends on gas concentration.

The sensor is connected to analog input of any system unit. Determination and connection of sensor occur automatically. After the connection occurs yellow LED lights up, and turns off in 3 mins. At detection of gas speaker turns on and a red LED lights up. Sensor's frame must always be clean!

It is desirable to periodically check the gas sensor using a lighter.

Leakage sensor – 5500.590

Compact device with dimensions 60*18*18 and an emerging 2-pair UTP cable 5m. Supply includes: brief instruction, warranty, RJ-12 connector and a fixture. On the bottom there is a ledge with $\varnothing 4,5$ mm and height 1 mm; and a mounting hole in 50 mm from it for fastening sensor by self-tapping screw or bolt M5. There are two metal cores on the side of device.

At installation on a floor or other surface, controls occurrence of water.

RJ12 connector is connected to an analog input of any system unit using RJ12 patch cable. Determination of sensor's type and connection occur automatically.

The sensor is needed for flood detection.

Pressure sensor – 5500.480

Compact device with dimensions 60*18*18, net weight 15g. Supply includes: sensor, warranty, RJ12 cable of length 2m. On the bottom there is a ledge $\varnothing 4,5$ mm and height 1mm and a mounting hole in 50mm from it for installation of sensor using self-tapping screw or bolt M5.

Needed for measurement of pressure in range 0 - 200 kPa or 0 -1500 mm Hg.

Installation of pressure sensor

RJ12 jack is connected to an analog input of any system unit using patch-cable RJ12. The tubes emerging from sensor's body can be connected to a pump, a certain volume or to an atmosphere. Determination of sensor's type and connection occur automatically.

Level sensor – 5500.490

Consists of two parts. The first one is a floccet sensor with a turning arm that is mounted on the side of a container containing liquid, the floccet is mounted on the arm. The second part is a transceiver with dimensions 60*18*18, net weight 15g. Supply includes: transceiver, contacts sensor, warranty and RJ12 cable (2m). On the bottom of the transceiver there is a ledge $\varnothing 4,5$ mm

and height 1mm and a mounting hole in 50mm from it for installation using self-tapping screw, bolt M5.

When turning the arm into a vertical position the sensor's contact is closed and the system receives a notification on liquid level rise through the transceiver.

Installation of level sensor

RJ12 jack is connected to an analog input of any system unit using RJ12 patch cable. The output cable of a floccet sensor is connected to two contacts of transceiver's clamp.

Determination of sensor's type and connection occur automatically.

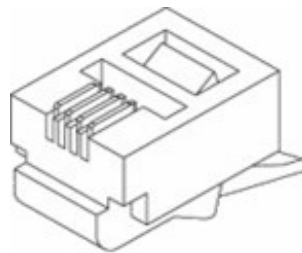
5.2. Digital Sensors

The bodies of digital sensors have two RJ9 (4P4C) jacks for connection to any monitoring system's unit (connection to a digital input) using RJ9 patch cable. Second jack can be used for connection of one or several more digital sensors into a circuit.

Attention! Possible simultaneous connection up to 20 digital sensors consistently in one digital port only.

This type of connection allows each sensor to be automatically determined, and the monitoring system will be able to distinguish them.

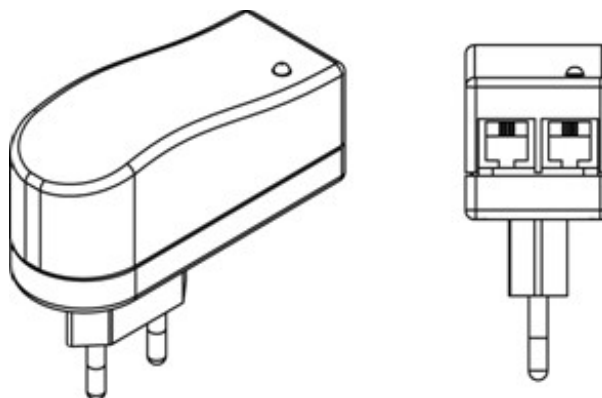
In addition monitoring system allows to connect the single iButton™ key reader to digital port of any unit. The reader will be determined and installed automatically.



Pic. 5.27 Plug RJ11 4P4C

AC voltage monitor and temperature sensor – 5500.720

Device with dimensions 80x40x22, net weight 100g. Supply includes: warranty and USB RJ9 cable of length 1,8m.



Pic. 5.28 Digital voltage monitor

Sensor is used for measurement of standard voltage 220V or of any other in power supply system, for example in an outlet, on the extension cord or in a rack-mountable socket strip.

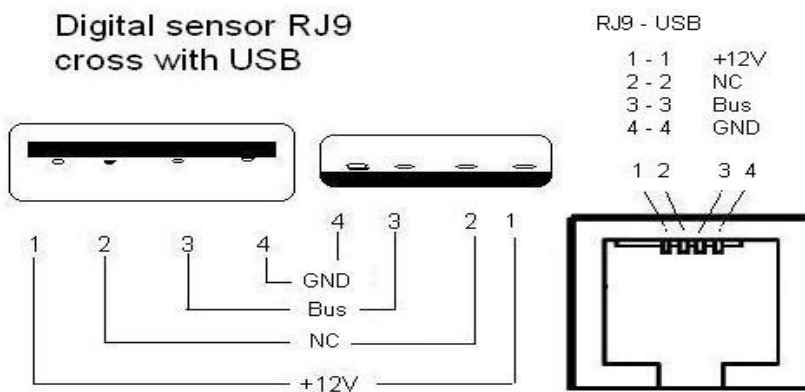
Digital voltage monitor contains built in temperature sensor.

Measured range of temperatures: from -20 to -60°C.

Measured range of voltages: 0–250V.

Installation of AC voltage monitor

Plug **220V** is put into 220V outlet needed for voltage measurement. USB connector of patch cable is connected to sensor's USB output, and patch cable's connector **RJ9** is connected to a digital input of any system unit or any other digital sensor's output. Determination of sensor's type and connection occur automatically.

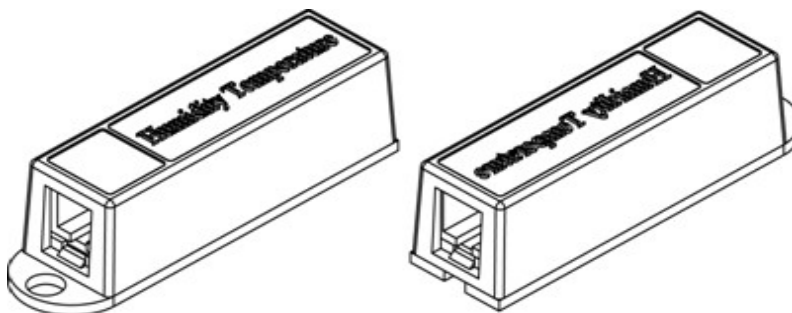


Pic. 5.29 RJ9 USB patch cable pins for voltage monitor

5500.720.

Humidity and temperature sensor– 5500.731

Compact device with dimensions 60x18x18, net weight 15g. Supply includes: warranty and RJ9 cable of length 2m. On the bottom there is a ledge Ø 4,5mm and height 1mm and a mounting hole in 50mm from it for installation of sensor using self-tapping screw or bolt M5.



Pic. 5.30 Digital humidity sensor

Digital humidity sensor contains built in temperature sensor.

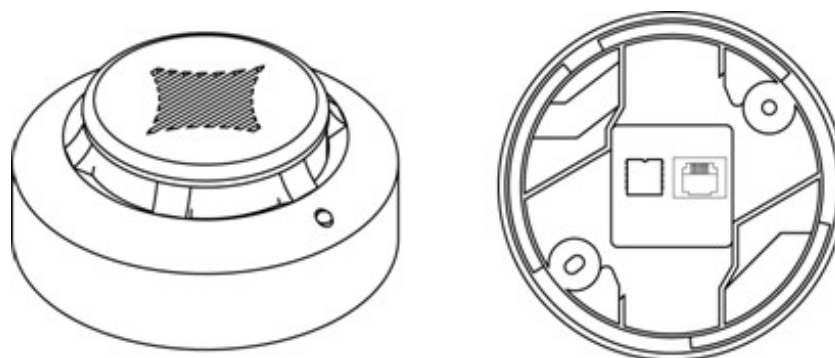
Measured range of temperatures: -20 to 60°C.

Measured range of humidity: 10-90%.

Humidity sensor contains **RJ9** jack and is connected to a digital input of any system unit or any other digital sensor's output. Determination of sensor's type and connection occur automatically. Connection of digital sensors is consistent, it is possible to connect to one digital port of any monitoring system's device up to 10 digital sensors in any order.

Smoke and temperature sensor – 5500.760

Standard smoke sensor with dimensions Ø100*45, net weight 150g. Supply includes: warranty, RJ9 cable of length 2m and a fixture. On the bottom there are mounting holes for installation of sensor using self-tapping screw or bolt M5 to surface.



Pic. 5.31 Digital smoke sensor

Digital smoke sensor contains built in temperature sensor.

Measured range of temperatures: from -20 to 60°C.

At installation indoors, in a rack etc., the sensor controls occurrence of a smoke and temperature inside the premises.

Sensor's **RJ9** jack is connected to a digital input of any system unit or any other digital sensor's output using RJ9 patch cable. Determination of sensor's type and connection occur automatically.

Motion and temperature sensor – 5500.770

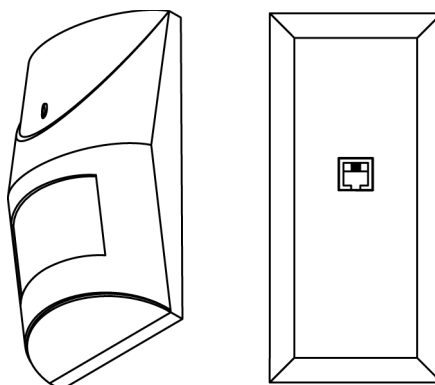
Device with dimensions 80x50x30, net weight 100g. Supply includes: warranty and USB RJ9 cable of length 2m. On the bottom there are mounting holes for installation using self-tapping screw or bolt.

Digital motion sensor contains built in temperature sensor.

Measured range of temperatures: from -20 to -60°C.

The sensor is needed for the control of movement over an infra-red range and measurement of temperature indoors.

Motion sensor contains **RJ9** jack and is connected to a digital input of any system unit or any other digital sensor's output. Determination of sensor's type and connection occur automatically.



Pic. 5.32 Digital Motion sensor

6. Readers

Monitoring system supports several types of readers. Readers of keys iButton™ are not expensive and are multi functional. Such readers are usually applied in door intercommunication systems.



Pic. 6.33 Reader iButton



Pic. 6.34 Keys iButton



Pic. 6.35 Card Reader

Proximity card readers function in a convenient non-contact mode.

Readers of iButton™ keys

Compact device of small dimensions, net weight 50g. Supply includes: reader with RJ9 cable of length 2m and RJ9 connector. Keys iButton™ are sold separately.

Reader is connected to a digital input of any monitoring unit and is automatically determined. Reader must not be connected to an output of digital sensor.

Reader allows to control access to a building, rack, other object. In order to open the door or object, the key must touch the input reader. Monitoring system will automatically determine the key code and will deny or grant access, having switched the corresponding relay.

Readers of Proximity cards

Compact device, net weight 100g. Supply includes: reader with RJ9 cable of length 2m and RJ9 connector. Cards are sold separately.

Reader is connected to digital input of any unit and will be automatically determined. Reader must not be connected to an output of digital sensor.

Reader allows to monitor access to a building, a rack, other object. In order to open the door or object, the card must touch the reader. Monitoring system will automatically determine the card code and will deny or grant access, having switched the corresponding relay.

7. Outputs

Electromagnetic relay

The monitoring system contains several relays (the quantity depends on the type of system unit), which can be switched 'on' or 'off' remotely through a Web-interface (via IP), or can be turned on/off depending on the event set by the administrator.

Each relay has a 'closed' and an 'open' contact. Possible AC voltage commutation up to 220V and DC voltage up to 24V. Commutated current up to 7A.

The quantity of the relays in monitoring system can be increased by additional extension units, containing additional relay outputs.

Relay outputs can be connected to input voltage, in such case the corresponding modules have input and output sockets. Commutated AC voltage up to 220V. Commutated current up to 5A per output socket and 10A per input socket.

8. Application of the Monitoring system

Monitoring system is a multi functional device. It is possible to construct telemetric automatic monitoring systems, for control and management on the basis of the system.

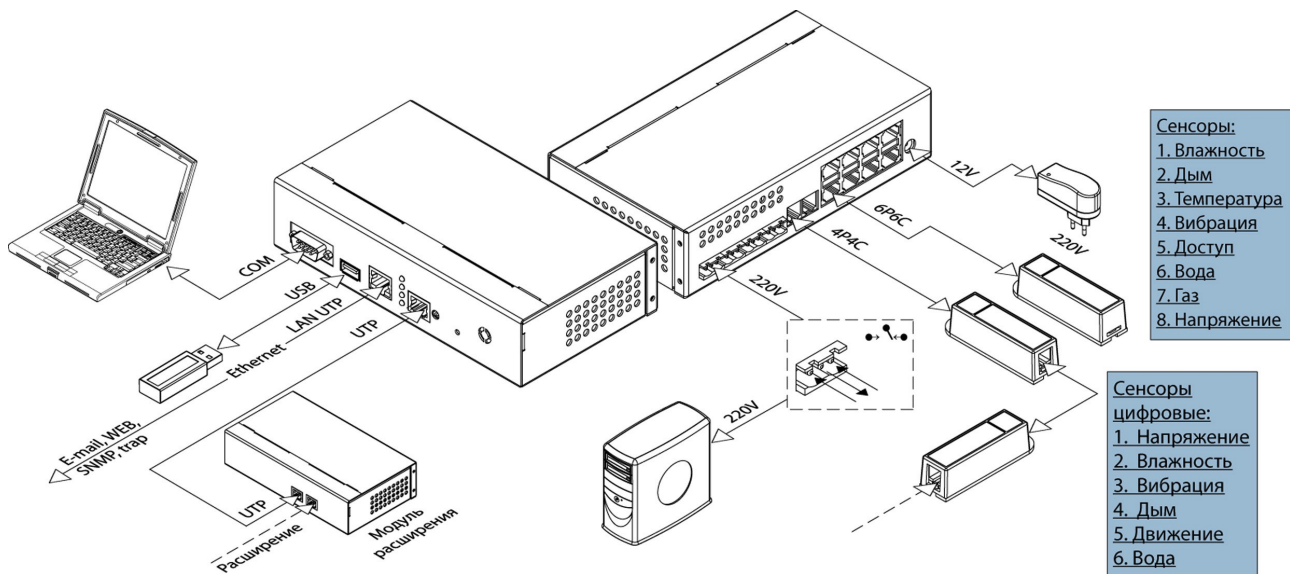


Fig. 8.36 Monitoring system

Master units 55xx.824

Master units 55xx.824 are compact devices and consume from 3W up to 10W and are convenient for mounting and installation in separate premises, for example in an apartment and office or in separate 19" telecommunication rack. In each of these master units' bodies it is possible to connect any of the system sensors, relay devices are also available. This allows to use the units as alarm systems in an apartment, the house or office, as surveillance or telemetry system, with opportunity to power from power supply line or even from accumulators for long term. For implementation of such systems it is necessary to have:

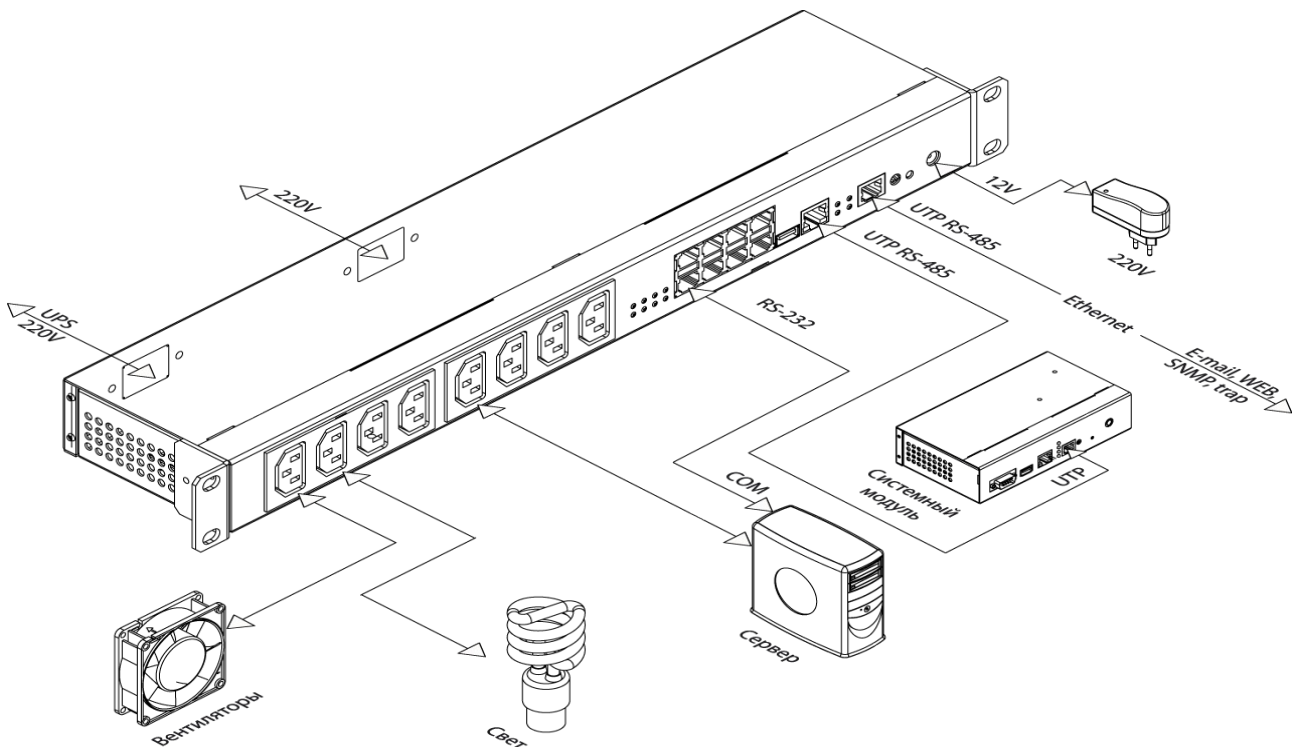
- Monitoring master unit.
- Humidity and temperature sensors.
- Non-contact access sensors of open door (by quantity of entrance doors).
- Several vibration sensors (by quantity of windows in premises), if the considered building is on the ground floor.
- Smoke sensors. Several such sensors are needed to reduce possibility of misoperation.
- If necessary water or gas leakage sensors, voltage monitors.
- Sirens, fire fighting systems
- Readers.
- Connection to Internet.

All analog sensors are connected to inputs of the master unit. In case of power cut in siren or in fire fighting systems, controlling devices of relay contacts are connected. The logic of system is installed in such a manner (see below Logic circuitry section, p. 49) that at operation of corresponding sensors, for example smoke sensors, the system's administrator receives notifications. If after a while the administrator does not take any measures and problem is still not resolved, the controlling contact switches on and the power is supplied to the siren and fire fighting system. In compliance with that, sensors, readers and relay devices can be adjusted on

joint operation, for example, for maintenance of temperature indoors or prevention of breaking in, this requires registering a corresponding logic circuitry.

IP Power Management units 5510.008, 5510.108

Often there is a necessity in the remote management of power supply in server and telecommunication rooms, and other single energy consumers. For example, in case of inability to turn off or restart a specific server in the remote server room using telnet or ssh (for example, after installation of the software remotely, the server does not respond to commands), use of IP Power Manager unit allows to resolve the situation and to cut power from the server.



Pic. 8.37 Server power management system

It is possible to have a simple server shut down or switch off with termination of all tasks and with a temporary pending shutdown. Server activation occurs when power is provided, on level that the given event is registered in the list of internal commands. For implementation of this system it is necessary to have:

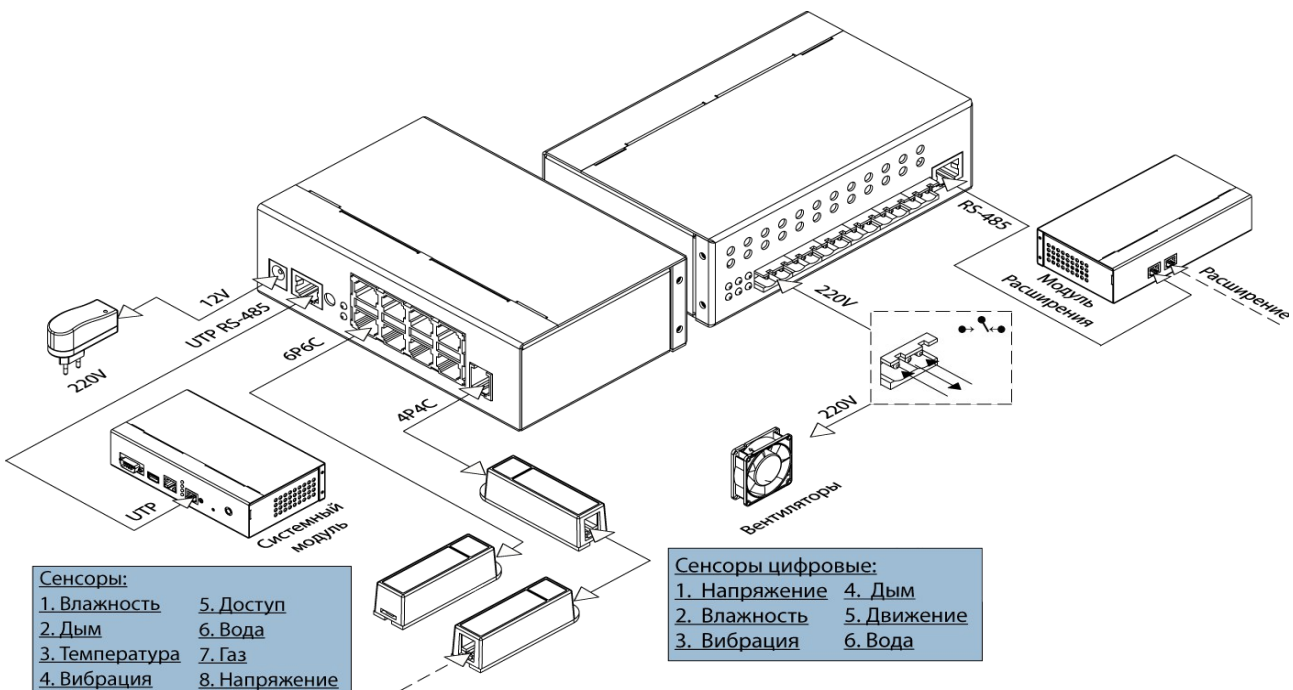
- IP Power Management unit 5510.008.
- Power cables , network and RS232 cables.

The screen of administrator's web-interface reflects the data about presence of power in each unit outlet, and depending on the unit type displays the size of current proceeding through the outlet. The administrator is able to set current cutoffs, logic of automatic or manual switching 'on' or 'off' of individual outlets or the singled out socket strip. It is possible to connect any type of extension unit to these master units, this would allow to control various additional physical parameters, as well as readers that control access to an object.

Application of the relay-sensor units (RS Extension Unit)

Functions of the system described in the previous chapter can be expanded, by connecting extension units. Additional units allow to increase quantity of connected sensors and relays to one system, as well as to increase range of system operation. Necessity for such devices can arise, for

example, in the remote building or a premise or at presence of several floors at office. Accordingly it is required to have:



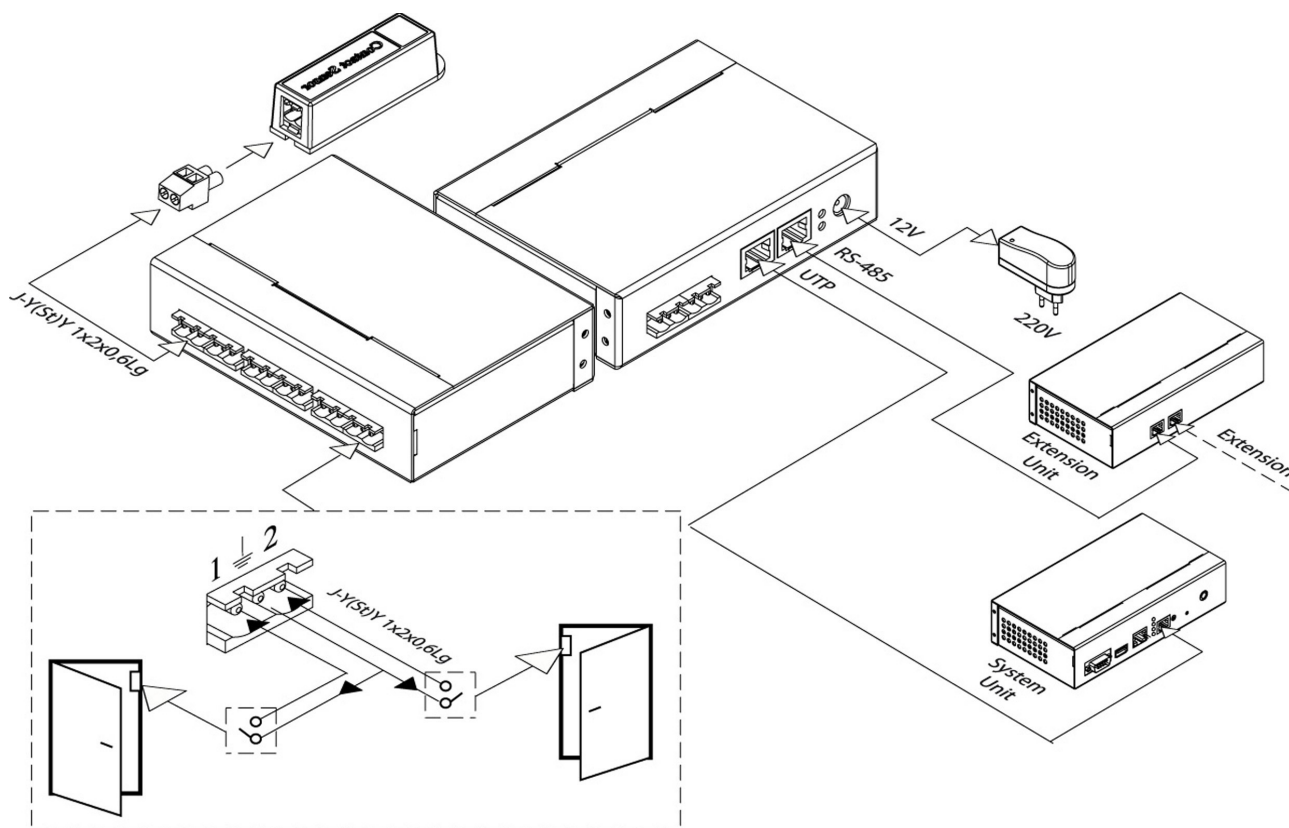
Pic. 8.38 Connection of RS Unit 5505.814

- Additional RS extension unit.
- Several sensors of physical parameters such as temperature sensor, humidity sensor, voltage monitor, contact sensors.
- Fans, cooling devices, heaters and other.
- Smoke sensors. Several such sensors are needed to reduce possibility of misoperation.
- If necessary water or gas leakage sensors, voltage monitors.
- Sirens, fire fighting systems
- Connection to Internet.

The sensors are connected to inputs of units, power consumers (fans, refrigerators etc.) are connected to relay connectors of units. The system will automatically trace processes in the given premise or in a telecommunication rack, distinguish them and automatically carry out the necessary actions registered in logic (see Logic circuitry) , for example send notifications to the administrator. Temperature sensor is embedded in the unit.

Application of the addressed modules Button Units

Sometimes there is a necessity of address tracking of a condition of doors and windows, buttons and hermetically sealed switches as "opened-closed". Normal contact sensors can be consistently installed in system of monitoring, however, it is impossible to trace, which door exactly has opened or closed. For addressed determination of a status of doors or windows you require:



Pic. 8.39 Connection of extension Button Unit 5505.016

- Additional extension Button unit BU 5505.016.
- 2-wired cables, network and power cables.

The unit automatically traces the condition of contacts, distinguishes them and contacts the master module, informing on change of contacts' status that will allow system to warn and carry out actions registered in logic, for example to send notifications to the administrator, to switch on a siren, to send messages, or to activate protecting devices. Temperature sensor is embedded in the unit.

9. System installation

The person having the maximum technical education should make installation and adjustment of system of monitoring.

9.1. Turning on the Monitoring System

Connection of master units is made in the following order:

1. Install and activate any master unit.
2. Connect power supply. For this purpose it is necessary to put in power cable's plug into the outlet 220V, and the power's pin of 12V in the connector on the back panel of unit.
3. Connect master unit to a local network by means of UTP cable. One end of a cable is connected to connector 100 Mbit on the front panel of the master unit, another in port of the network commutator.
4. Wait until the light-emitting diode 'PWR' lights up on the front panel of the unit, and light-emitting diode 'ACT' starts to blink (approximately in 30 seconds after submission of power).

If indicator **PWR** on the front panel of the master unit lights up, and indicator **ACT** blinks with frequency of 1 time per second, unit is connected correctly.

9.2. Installation of system network parameters

Network parameters of monitoring system must be installed to have an opportunity of a further system configuration, for adjustment of logic of its operation. Installation of network parameters of system can be made in three ways.

Use of factory-specific settings

To install network parameters of monitoring system, it is possible to use the system's web-interface, opening it and using initial factory settings.

Factory network settings of monitoring system:

1. IP-address: 192.168.0.193;
2. Netmask: 255.255.255.0;
3. Other parameters not set.

To get access to a web-interface of monitoring system, using factory-specific settings of a network, is possible if previous network parameters of the master unit have not been altered. Follow:

1. Make sure the master unit, whose network parameters are needed to be set, is connected to an electric network and operates (indicator **PWR** on the front panel lights up).
2. Make sure that master unit is connected to a local network by means of UTP cable.
3. On a computer which is being in subnet 192.168.0.* of your local network, open the Internet-browser, type in the address bar the IP-address "http://192.168.0.193". The web-Interface of system of monitoring will open.
4. In the opened interface select tab "**Network**".
5. In fields "**IP address**" and "**Net mask**" enter required values, press the button "**Save and close**". Configuration of network parameters of the master unit is finished.

To make sure, that network parameters of the system unit are configured, open the web-interface of the system.

After successful configuration of network parameters of the master unit, it is possible to proceed to configuration of other parameters of system, connection of extension units, operation. All other settings of system are carried out through a web-interface of the master unit.

9.3. Running web-interface

To proceed to work with web-interface it is required:

1. Make sure that master unit, whose network parameters are needed to be set, is connected to an electric network and operates (indicator **PWR** on the front panel lights up).
2. Make sure that master unit is connected to a local network by means of UTP cable. The master unit and administrator's computer must be in the same subnet .
3. Open Internet-browser on administrator's computer (Internet Explorer, Mozilla Firefox or other browser that supports Adobe Flash 8).
4. Type in the address bar the IP-address of master unit, which was set through Configurator and press button «Proceed» in the browser. A web-interface window of the master unit will open, there will be an inquiry of proceeding to an encrypted page.

Attention! It is possible, you will be need to install Adobe Flash Player on your computer for correct display of web-interface. If there will be a notification with the request to install Adobe Flash Player, follow the link ((<http://www.adobe.com/go/getflash/>, Internet connection is required). On the opened page press the button " Install now " and follow the further instructions.

5. If you need to use an encrypted connection, press button " **OK** ". The system will redirect you to an encrypted version of web-interface.
6. Next window will request to choose language of the interface. Choose preferred language and press button "**OK**". It will be possible to change the language of web-interface in tab "**Settings**".

Installation via firmware update

To install network parameters of the master unit in this way, USB flash drive is needed. Required steps:

1. Insert USB flash drive in USB-port of computer on which OS Windows is installed
2. Open folder "My computer " (usually found on desktop), find icon of the USB drive, open it.
3. Copy the script of installation of default settings from the CD, provided with the unit, into the main file system of flash drive. The file can be found under the name sky-control-firmware.sky.

Important! Do not change the name of the file.

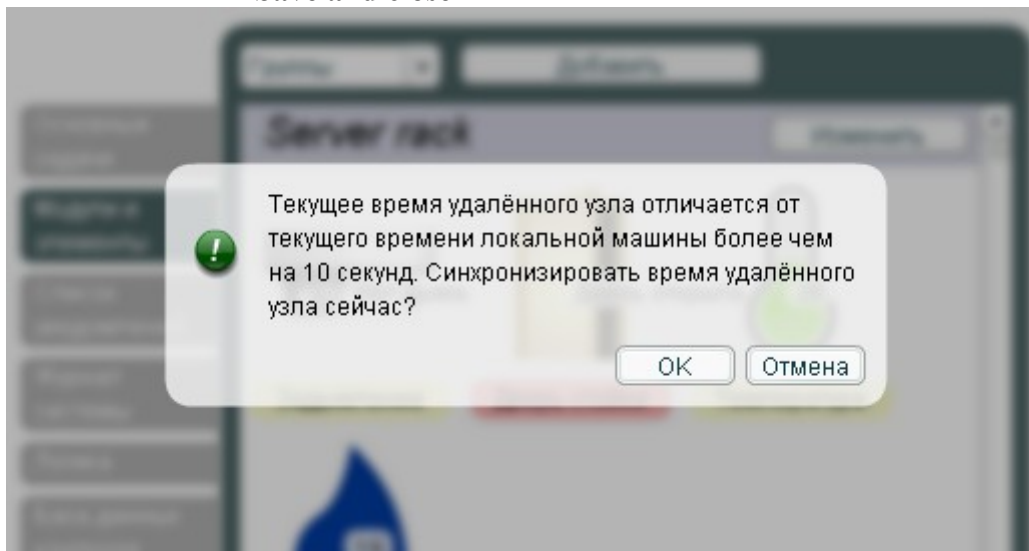
4. Remove flash drive from port of your computer and insert it in **USB** port of the master unit.
5. Make sure, that master unit, whose network parameters are needed for adjusting, is connected to electric network and operates (indicator **PWR** on the front panel lights up).
6. Indicator PRG on the front panel of unit will light up for an instant and will go out.
7. Remove flash drive. IP-address of system unit is now changed to 192.168.0.193

9.4. System time synchronization

Sky Control monitoring system has a built in opportunity of synchronization of time through Internet or a local network. At each submission of master unit to an electric network, time is synchronized with the remote HTTP-server. System time synchronization of monitoring through Internet is possible only when system unit has Internet access. Correctly adjust network settings (see above System installation).

In order to adjust the address of synchronization server, the following actions are required:

1. Open web-interface of system in the Internet browser
2. Proceed to tab «**Network**» in the web-interface.
3. Type in the field «**Time server**» the address of HTTP-server (for example, www.google.com), accessible from subnet which contains the monitoring device. It can be a local web-server.
4. Press the button «**Save and close**».



Pic. 9.40 Time synchronization

In addition, the administrator has an opportunity to synchronize time of the master unit with administrator's computer time. If time of the computer and time of the master unit do not coincide, at opening system's web-interface a notification will appear, which will ask you to synchronize time (Pic. 9.40). Press "**OK**" to synchronize it. Time can also be synchronized, having pressed button "**Synchronization**" in tab "System status" in the web-interface (Pic. 9.41).

The default time of monitoring system unit is GMT time zone (Greenwich time). The Web-interface of system when displayed will convert the default time into current time zone of administrator's computer (for example, in system log). In order to convert time of the master unit into current time zone of your district, mark option "**Use local time zone**" in tab "**Settings**" of the web-interface and synchronize time. Time of the master unit will be established in your time zone. You may need this option for displaying time in your time zone in notifications by e-mail. Otherwise time of notifications will be displayed in GMT time zone. When restarting the master unit and during automatic synchronization of its time through Internet, time again will be established in GMT time zone. Using option "**Use local time zone**" is not recommended.

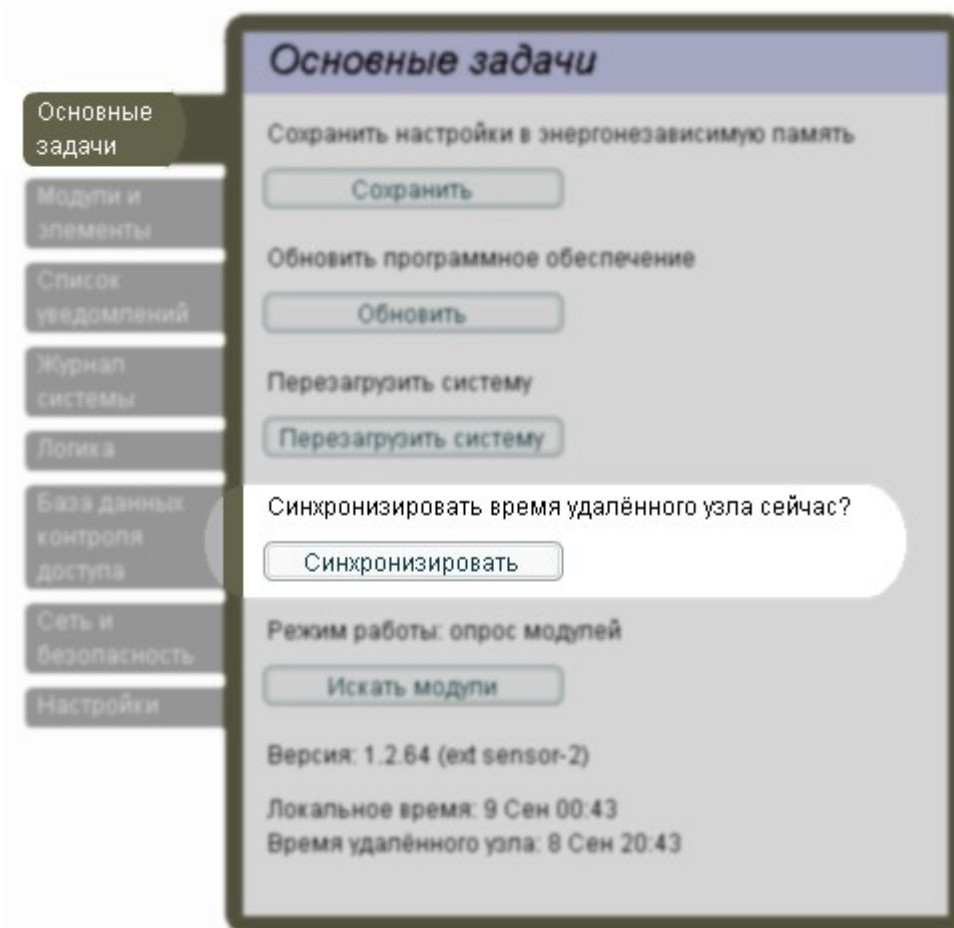


Рис. 9.41
Time

synchronization from the web-interface

9.5. Connection of extension units

Monitoring system Sky Control can expand its functions by means of additional units (see above Extension Units). Extension units are connected consistently to the master unit. In order to connect an extension unit to master unit the following instructions are required:

1. Make sure that master unit, whose network parameters are needed to be set, is connected to an electric network and operates (indicator **PWR** on the front panel lights up).
2. Open the web-interface of monitoring system in Internet browser.
3. In tab «**System status**» make sure that master unit works in "**Wait state**" if not, press the button "**Switch to wait state**" and the master unit will switch to a search mode. The operating mode in tab "**System status**" will change, indicator "**ACT**" on the front panel of the master unit will blink with the period of 1 second.
4. Connect UTP cable (included in the supply) into connector **RS-485** on the expansion unit connect the same cable into connector **RS-485** on the master unit. Indicator "**ACT**" on the expansion unit and indicator "**ACT**" on the front panel of the master unit will start to blink with the period of 1/10 sec. The Operating mode on tab "**System status**" will change to "**Ready state**".

Attention! This procedure must be repeated separately for each unit. Connection of several extension units during one iteration is inadmissible.

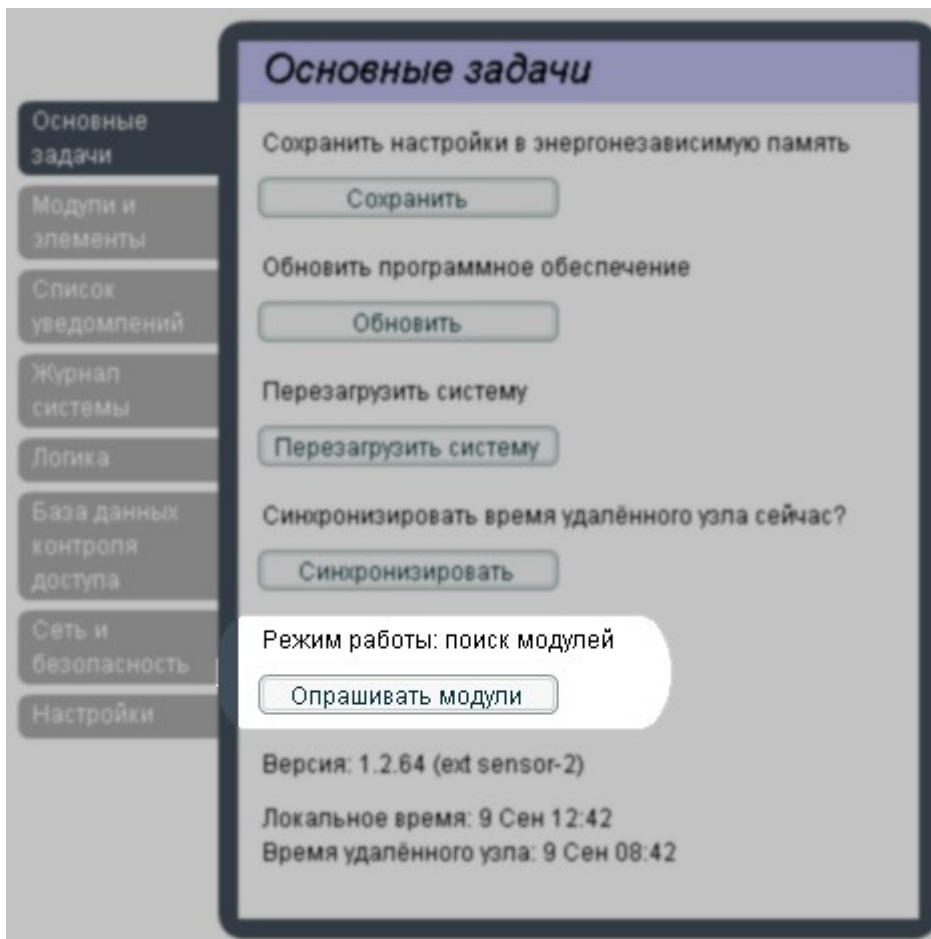
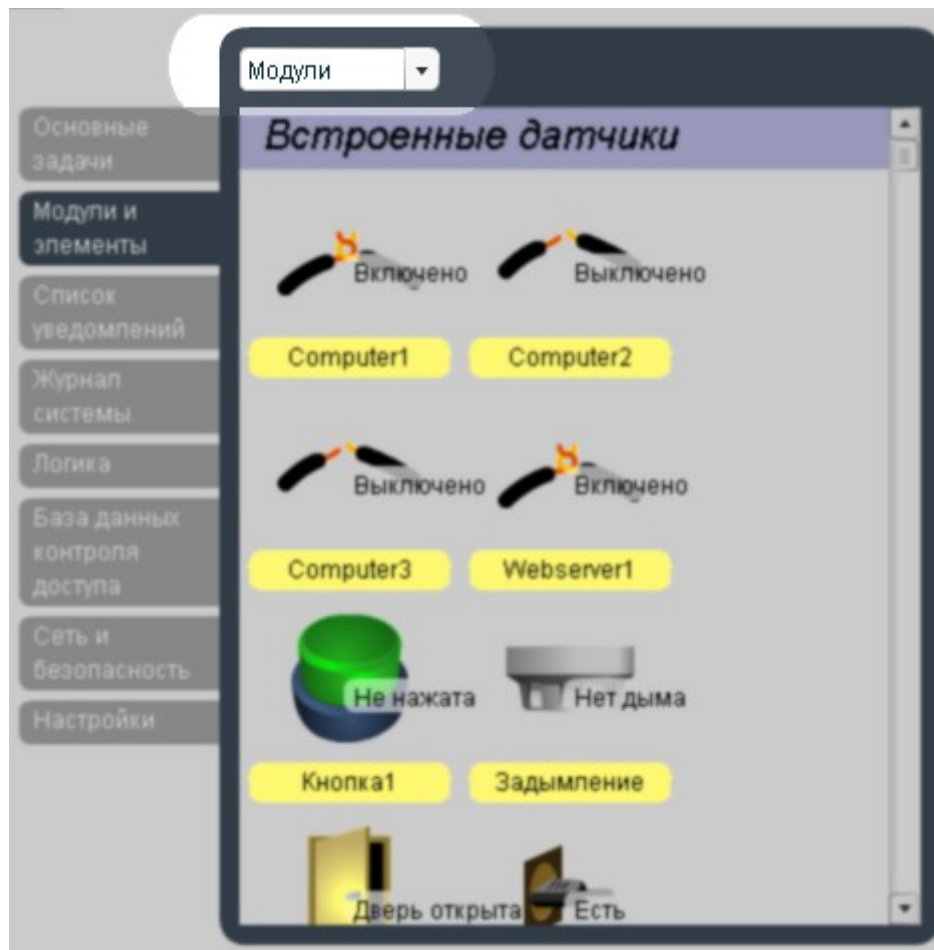


Fig. 9.42 Operating mode of system unit - searching units

5. Go to tab «**Modules**», switch the viewing mode to «**Units**» mode , make sure that newly connected unit is present in the list (Pic.9.43).



Pic. 9.43 Choosing viewing mode

6. Repeat procedures 3-5 for other extension units, connecting them in a circuit by means of cable UTP.
7. In tab "**System status**" press button "**Save**" to save data about the connected extension units in nonvolatile memory of the master unit.

Important! At power reduction and the subsequent inclusion of the monitoring master unit, search of previously connected extension units is made automatically, do not forget to save settings in nonvolatile memory, in order to do that press button "**Save**" in tab "**System status**" of web-interface of monitoring system.

For removal of extension unit, disconnect it from master unit. Unit and all the sensors connected to it will not disappear from system and will switch to "**Not connected**" mode. At successive connection of this unit it is not required to repeat searching procedure. For a complete removal of the unit, press button "**Save**" in tab "**System status**" of system web-interface; all connected sensors will be completely removed.

9.6. Connection of sensors

Connecting sensors – simple procedure.

Connecting analog sensor

The following steps are required for connection of analog sensor:

1. Connect supplied RJ12 (6P6C) cable into input of analog sensor.

2. Connect the other end of the cable in an 6P6C input (connector «**Analog sensors**») of any other system unit. Determination of sensor's type and connection occur automatically.
3. Make sure the sensor is found by the monitoring system. Go to tab «**Modules**» of system's web-interface. Find the newly connected sensor. Change settings of the sensor (see below) if necessary.
4. Repeat procedures 1-3 for the remaining analog sensors, connecting each sensor in separate analog port.
5. In tab «**System status**» press «**Save**», in order to save data about the connected units and their parameters.

Several analog sensors, such as access sensor and smoke sensor (see Error: Reference source not foundSensors above) have additional RJ12 output and can be connected consistently into a circuit. However, the system of monitoring distinguishes it and reflects it as one sensor.

Connecting digital sensor

The following steps are required for connection of digital sensor:

1. Connect supplied RJ9 (4P4C) cable in an input of digital sensor.
2. Connect the other end of the cable in a digital input (connector «**Bus sensors**») of any other system unit or in a free connector of a previously connected to the system digital unit. Determination of sensor's type and connection occur automatically.
3. Make sure the sensor is found by the system of monitoring. Go to tab «**Modules**» of system's web-interface. Find the newly connected sensor. Change settings of the sensor (see below) if necessary.
4. Repeat procedures 1-3 for the remaining digital sensors, connecting each sensor to separate digital port or to a free connector of a previously connected digital unit.

Attention! Simultaneous connection up to 20 digital sensors consistently in one digital port is possible.

5. In tab «**System status**» press «**Save**», in order to save data about the connected units and their parameters.

Removal of sensors

For removal of sensor disconnect it from unit. Sensor connected will not disappear from system and will switch to "**Not connected**" mode. At successive connection of this sensor it is not required to repeat procedure again, all the parameters will be stored in nonvolatile memory. For a complete removal of the sensor, press button "**Save**" in tab "**System status**" of system web-interface; sensor will be completely removed.

9. Connection of devices to relay outputs

For connection of devices to output relays it is required:

1. Connect commutating power to a connector of a relay output.
2. Connect electric load to a connector of a relay output.
3. Plug the connector into corresponding jack of relay output.

Attention! Devices must only be connected to relay outputs without electric load!

Because the relay is a part of unit, it is connected automatically and does not require any actions from the administrator.

9.8. Connection of reader

Reader can be connected to any digital input (connector "**Bus sensors**") of any monitoring system unit. Reader is determined automatically: specific relay of unit to which reader is connected in system of monitoring (Relay is automatically linked to specific digital bus) changes algorithm of the work as follows: when a key or a card touches the input reader, the relay switches contacts. The icon of the relay in tab "**Modules**" of system's web-interface alters (Pic. 9.45).



Pic. 9.44 Reader absent



Pic. 9.45 Reader connected

10. System setting

Setting of monitoring system consists of several separate procedures. These include:

1. setting parameters of sensors;
2. setting notifications;
3. adding user keys to access system database;
4. changing system logic;
5. creating logic groups.

10.1. Setting parameters of sensors

In a web-interface of monitoring system go to tab "**Modules**", select an element whose parameters need to be altered. (the sensor must to be connected).

Setting temperature, humidity, voltage sensors

The general view of a window for parameters setting of this type of sensors is shown on Pic. 10.46. Each such sensor has 4 logic conditions:

- **Low level**(Low) – if value of indications of the sensor is not above Low Level:

For humidity: $H \leq H_{\text{low level}}$

For temperature: $T \leq T_{\text{low level}}$

- **Norm** (Normal) – if value of indications of the sensor is in the range between Low Level and Warning Level:

For humidity: $H_{\text{low level}} < H < H_{\text{warning level}}$

For temperature: $H_{\text{low level}} < H < H_{\text{warning level}}$

- **High level** (Warning) – if value of indications of the sensor is in the range between Warning Level and Alarm Level:

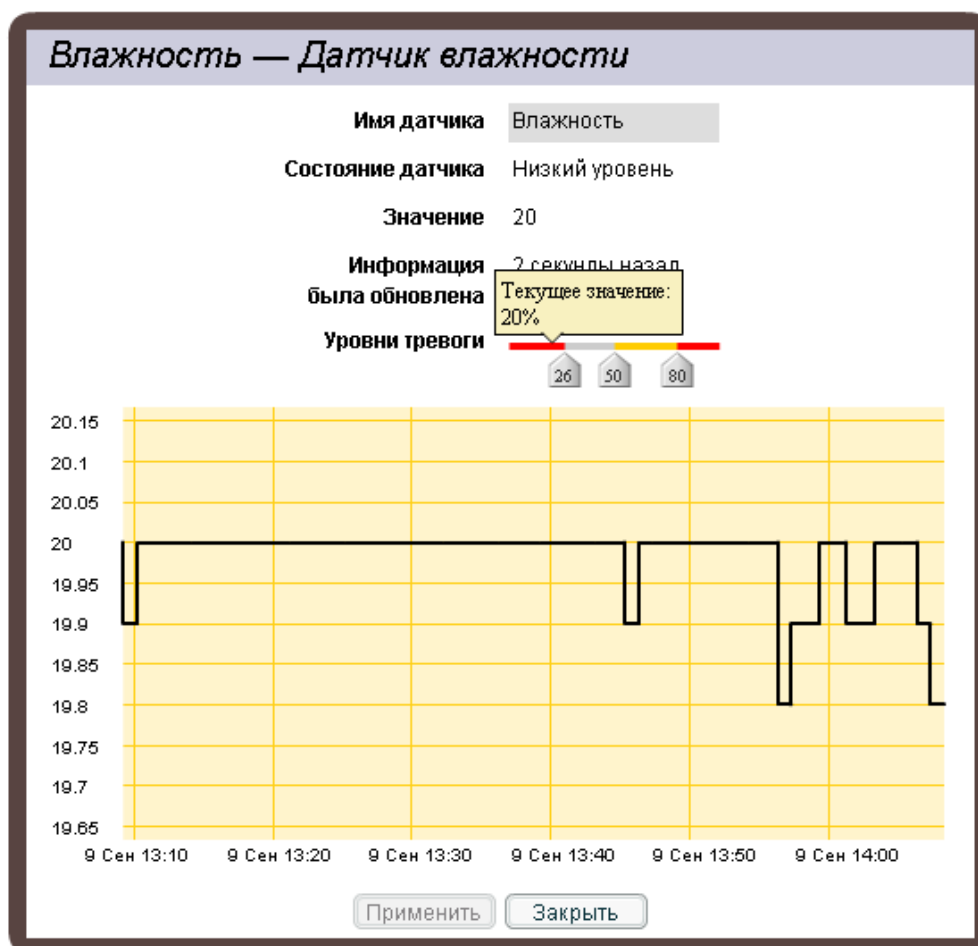
For humidity: $H_{\text{warning level}} < H < H_{\text{alarm level}}$

For temperature: $T_{\text{warning level}} < T < T_{\text{alarm level}}$

- **Alarm** (Alarm) – if value of indications of the sensor is not below Alarm Level:

For humidity: $H \geq H_{\text{alarm level}}$

For temperature: $T \geq T_{\text{alarm level}}$



Pic. 10.46 Window of changes in parameters of sensor

The administrator has an opportunity to set following parameters of the sensor:

- **Name** – the name of the sensor under which it will be displayed in the interface, in system log, etc.
- **Levels of alarm**
 - The bottom boundary (Low level). If value of indications of the sensor is not above the given boundary, the sensor switches to a logic mode "Low level".
 - Warning boundary and (Warning level). If value of indications of the sensor is above the given boundary, the sensor switches to a logic condition «High level».
 - Alarm boundary (Alarm level). If value of indications of the sensor above the given boundary, the sensor switches to a logic condition «Alarm».

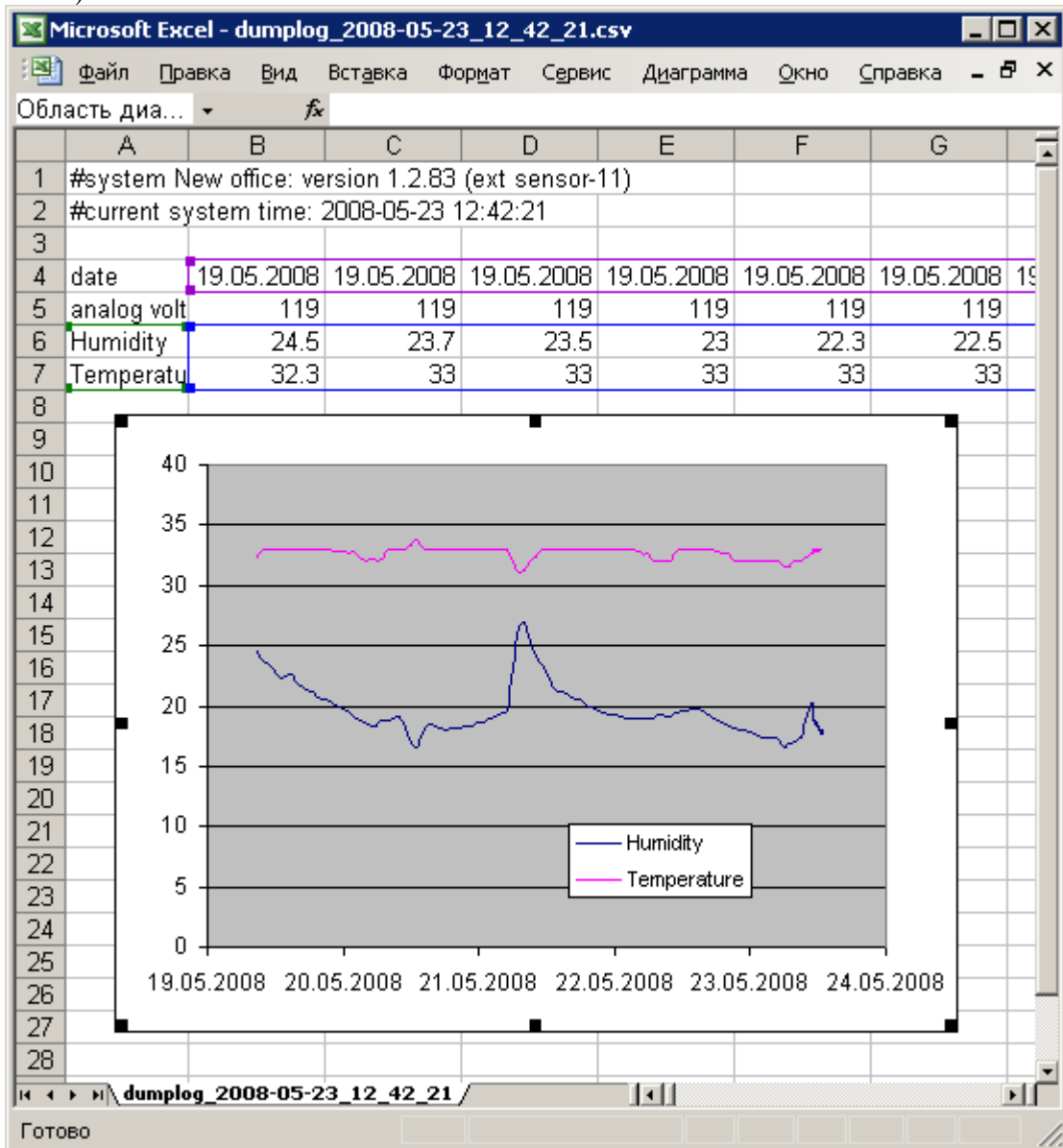
In order to transfer the changes of parameters to monitoring system it is necessary to press button "**Apply**". Saving the changes in nonvolatile memory of system therefore does not occur.

Attention! For preservation of parameters in nonvolatile memory it is necessary to press button "**Save**" in tab "**System status**" of monitoring system's web-interface.

The administrator has an opportunity to control the condition of the sensor from web-interface:

- The field «**Sensor state**» corresponds to a current logic level of an element.
- «**Value**» displays indications of the sensor. If the field contains the value «**Not connected**», the sensor is withdrawn from the connector or is defective.

- The field «**Response date**» displays time of last reading of sensor's level through a monitoring system's web-interface.
- The field «**Levels**» evidently displays the established logic levels of the sensor, as well as its current indications.
- Links “**Save current system state**” allow to export gathered sensor indications for a period of time up to 3 months in the format of CSV and XML. These exported data can be easily opened in a program that supports tables such as “Microsoft Office Excel” or “Open Office Math”, and can be used to perform required calculations or to be saved in the database (Pic. 10.47)



Pic. 10.47 Preforming calculations in Excel

- The **graph** displays dynamics of changes of sensor's indications in the last hour, last 3 days or last three months. In order to alter the graph's time period select the required period in menu “**Graph period**”.



Рис. 10.48 Selecting graph period

The graph may not be displayed, if in system of monitoring has no indications of the sensor, or their duration is less than 1 minute. Such situation can arise, if from the moment of unit's or sensor's connection no more than 1 minute has passed, or after synchronization of time.

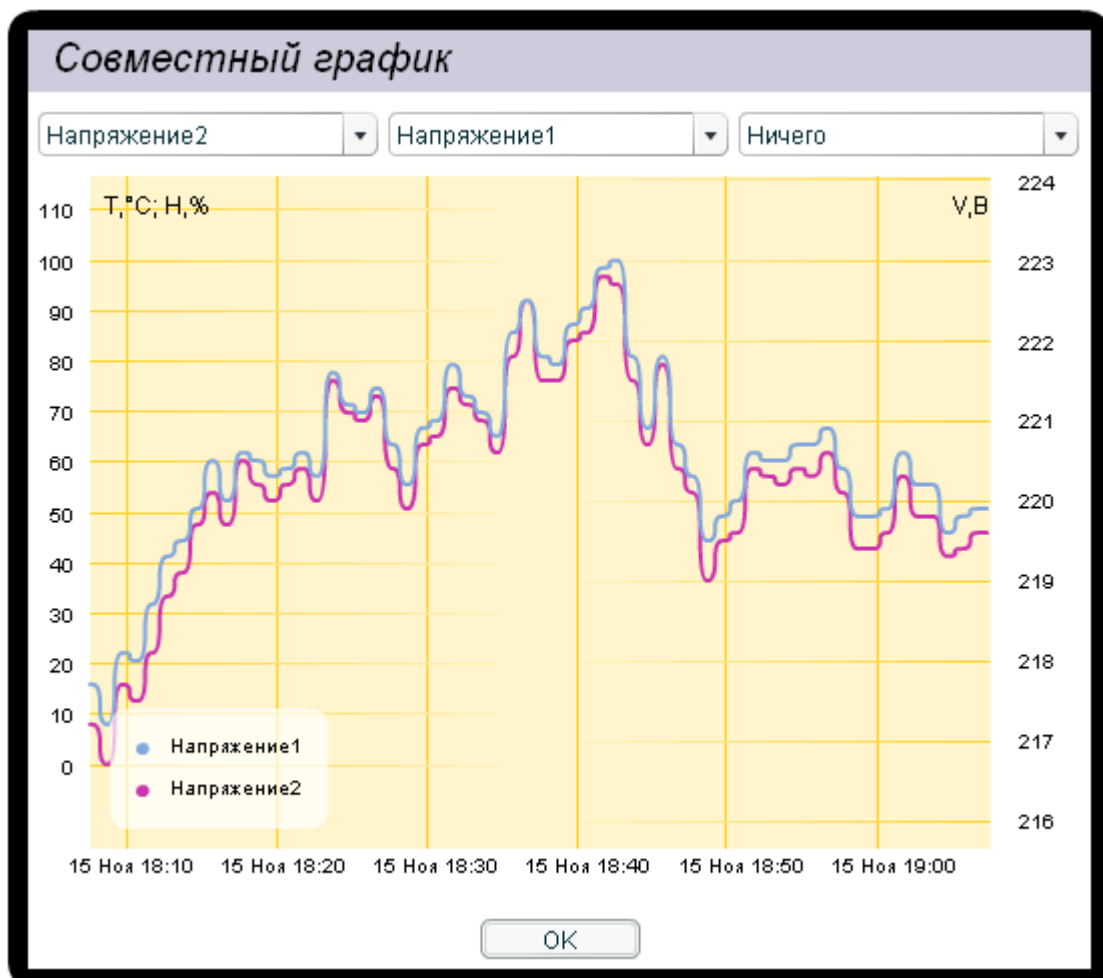


Рис. 10.49 Joint graph

The administrator has an opportunity to view the dynamic changes of several sensors. To do that press “**Multiple plot**” and select the required sensors from the list. The list of available

sensors contains only temperature, humidity and voltage. The time period of display can also change.

The multiple plot has two Y-axis. On the left there is a joint temperature (in °C) and humidity (in %) Y-axis, on the right there is a voltage (in V) Y-axis.

Setting other sensors

Sensors, not related to description in the previous section, have two levels:

- **Normal** – if the sensor operates in the normal mode, the given level corresponds to the open contact (the button is not pressed, the smoke is absent, the door is closed etc.). If the sensor operates in the reversed mode -the given level corresponds to the closed contact.
- **Alarm** – if the sensor operates in the normal mode, the given level corresponds to the closed contact (the button is pressed, the smoke is present, the door is closed etc.). If the sensor operates in the reversed mode -the given level corresponds to the open contact.

Дверь стойки — Бесконтактный датчик

Имя датчика	Дверь стойки
Состояние датчика	Тревога
Значение	Дверь открыта
Информация была обновлена	8 секунд назад
Инверсия сигнала тревоги	<input type="checkbox"/>

Недостаточно данных для их
отображения в графическом формате

Применить Заккрыть

Pic. 10.50 Window of changes in parameters of sensor

The administrator has an opportunity to set the following parameters for the given type of sensors (Pic. 10.50):

- **Name** – the name of the sensor under which it will be displayed in the interface, in system log, etc
- **Alarm reverse** – use of an inverse operating mode. At an inverse mode the sensor switches to "Alarm" level in case of the open contact (the button is not pressed, the smoke is absent).

In order to transfer the changes of parameters to monitoring system it is necessary to press button "**Apply**". Saving the changes in nonvolatile memory of system therefore does not occur.

Attention! For preservation of parameters in nonvolatile memory it is necessary to press button "**Save**" in tab "**System status**" of monitoring system's web-interface.

The administrator has an opportunity to control sensor's state from web-interface:

- The field «**Sensor state**» corresponds to a current logic level of an element.
- «**Value**» displays indications of the sensor. If the field contains value «**Not connected**», the sensor is withdrawn from connector or is defective
- The field «**Response date**» displays time of last reading of sensor's level through a monitoring system's web-interface.
- The graph displays dynamics of changes of sensor's indications in the last hour. The graph may not be displayed, if in system of monitoring there are no indications of the sensor, or their duration is less than 1 minute. Such situation can arise, if from the moment of unit's or sensor's connection no more than 1 minute has passed, or after synchronization of time.

Setting relay

Pic. 10.51 Window of changes in relay parameter settings

Each relay has two states:

- On;
- Off.

Depending on a status of the relay, certain pair of contacts of the corresponding relay is closed on the system unit's panel.

The administrator has an opportunity to set the following parameters of the relay (Pic. 10.51):

- Name** – the name of the sensor under which relay will be displayed in the interface, in system log, etc
- Pulse duration** – duration of the relay being in a condition "switched on" at submission of an impulse on the relay.
- Default state** – the condition to which the relay switches to at connection of unit and at absence of the operating logic circuitry including the given relay.

In order to transfer the changes of parameters to monitoring system it is necessary to press button "**Apply**". Saving the changes in nonvolatile memory of system therefore does not occur.

Attention! For preservation of parameters in nonvolatile memory it is necessary to press button "**Save**" in tab "**System status**" of monitoring system's web-interface.

10.2. Setting notifications

Allows to apply two types of notifications of the administrator about the occurred events:

1. Notification via e-mail;
2. Notification through UDP (SNMP Trap).

3. Notification via SMS.

E-mail alert

The element " E-mail alert " is used to notify the administrator through an e-mail about the events occurring in system.

Monitoring system by means of logic circuitry (see below) allows to describe any set of states of the sensors presented at system, of which it is necessary to inform certain administrator of system on the set e-mail address. By means of elements "E-mail alert" recipients of messages are marked, as well as parameters of server's mail from which messages will be sent by this element.

In order to create such notification:

1. Go to tab «**Mailers**» in the web-interface of monitoring system.
2. Press the button «**Add mailer**». A form of creation of a new notification will appear.
3. In the field «**Type**» select «**E-mailer**».
4. Fill in the fields of the form. All fields are obligatory for filling in.
 - **Name** – the name of the element under which it will be displayed in the interface, in system log, etc
 - **SMTP server** – mail client. Correctly adjust network parameters of master unit in order for server to be accessible.
 - **SMTP-port** – SMTP-port on a server, normally 25.
 - **Login** – a name of the user for authorization on a server.
 - **Password** – a password for authorization on a server.
 - **Mail to** - the administrator's email to which the notification will be sent.
 - **Mail from** - the email which will be in the field "From" of the message received by the administrator.
 - **Message format** - format of the email. The format of the message can be specified by the administrator. A format of the message follows: «*the Logic circuit %1 has worked out. Conditions of sensors: %2, current time %3* ». The message can contain following fields:
 - **%1** – the description of the logic scheme that has worked (see below)
 - **%2** – indications of sensors, contained in the logic scheme;
 - **%3** – time of working of the logic scheme ;
 - **%4** – name of logic scheme
5. Press the button «**Save and close**».

The created notification will appear in the list of notifications in tab "Mailers" in the web-interface.

SNMP alert

The element «SNMP alert» is used for the notification by means of the TRAP-message of protocol SNMP about the events occurring in system.

Monitoring system by means of logic circuitry (see below) allows to describe any set of conditions of the sensors present at system, of which it is necessary to inform certain SNMP-manager (through given IP). By means of this element recipients of messages are described.

In order to create such notification:

1. Go to tab «**Mailers**» in the web-interface of monitoring system
2. Press the button «**Add mailer**». A form of creation of a new notification will appear.
3. In the field «**Type**» select «**SNMP-trap**».
4. Fill in the fields of the form. All fields are obligatory for filling in.
5. Press the button «**Save and close**».

The created notification will appear in the list of notifications in tab "Mailers" in the web-interface.

Notification via SMS

The element «**SMS Notification**» is used for notification using GSM-network by sending short messages. The SMS alert is only possible if GSM unit is built into the system. If GSM unit is not installed on your system of monitoring, such notification is not possible.

In order to create such notification:

1. Go to tab «**Mailers**» in the web-interface of monitoring system.
2. Press «**Add mailer**». A form of creation of a new notification will appear.
3. In the field «Type» select «**SMS notification**».
4. Fill in the name of the notification and the phone number of the user. Because the SMS is short typing in your own message is not allowed, the default message will contain only the name of the logic circuitry and the time of submission.
5. Press button «**Save and close**»

The created notification will appear in the list of notifications in tab "**Mailers**" in the web-interface.

Removal of notifications

To remove the notification, press button "**Delete**" opposite to the notification being removed in tab "**Mailers**". Press the button "**Save**" in tab "**System status**" of system's web-interface to save changes in nonvolatile memory.

10.3. Adding user keys to access system database

Monitoring system allows to supervise access of users to the specific premises. To configure system for the control of access, you will require unit that contains connector "**Bus sensors**" and a relay output (for example, compact unit (Wall system unit) or Relay-sensor unit (RS-unit)), a reader and several keys or cards.

For configuration of the system the following actions are required:

1. Make sure that master unit is connected to an electric network and operates (indicator **PWR** on the front panel lights up).
2. Connect free end of the cable RJ12 of iButton™ reader or Proximity card reader in a digital connector «**Bus sensors**» of a unit. The cable must not be connected to a free connector of a digital sensor. The system will not find the reader.
3. Make sure the reader is found by the system. For this purpose go to tab «**Modules**» in the web-interface and find the relay where on one of its icons the key is shown.(Pic 9.45).
4. Go to tab «**User database**» in the web-interface.
5. Press the button «**Add key**». A key insertion dialogue will appear. (Pic. 10.52).
6. Touch the reader with a new key or a card. Dialog window will disappear, and in the list of keys in tab "**User database**" a new key will appear, the relay matching the input reader will switch on for several seconds (duration of inclusion is adjusted in parameters of the relay).
7. Click on newly appeared key in the list. There will be an input form of a user's name. Enter a name and press "**OK**". Now a new key or a card will match to the user.
8. Repeat procedure 5-7 for other keys or cards.
9. Connect the lock of a door to the relay, put the reader outside the door.

At a touch of a user's key to the reader, the relay will switch on contacts for several seconds, name of the user who has entered will appear in tab "**System log**" of the web-interface.

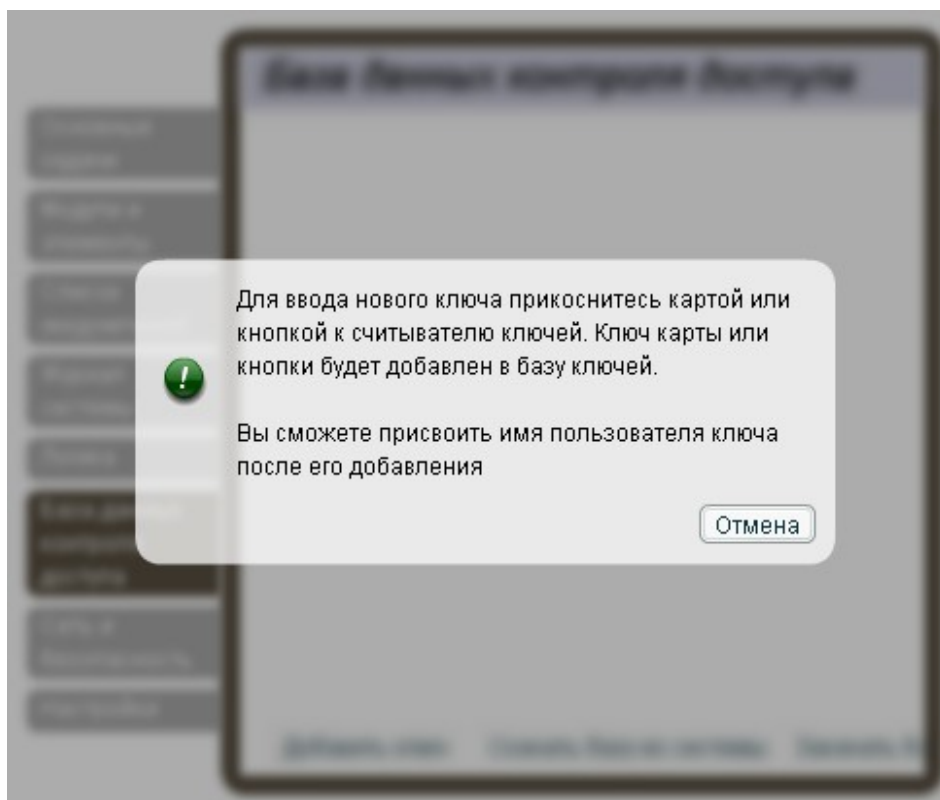


Fig. 10.52 Adding a key to database

Key database is not stored in nonvolatile memory of monitoring system, therefore at power cut all entered keys will disappear. You can save key database on your computer or other carrier by following steps:

1. Press the button «**Download user list**» in tab «**User database**». Saving file dialog window will appear.
2. Choose a folder and a file name, press the button «**Save**», memorize file name and file path.

At turning off and the subsequent inclusion of the monitoring master unit:

1. Press the button «**Upload user list**» in tab «**User database**» of the web-interface, in order to upload key database into the system of monitoring.
2. A dialog window of file choice will appear. Choose the previously saved file of key database and press "**Open**". The key database will be loaded into system of monitoring.

10.4. Application of maps and plans of object

The monitoring system gives an opportunity to virtually assign certain sensors to a certain object inside the premises or other object. This allows a quick determination of sensor's location in a room or in an office, determine the location of an alarming event simply by a quick glance on the plan/map.

Creating or changing object map.

The system of monitoring has an embedded map (plan) of object by default. In order to upload your own plan the following steps are required:

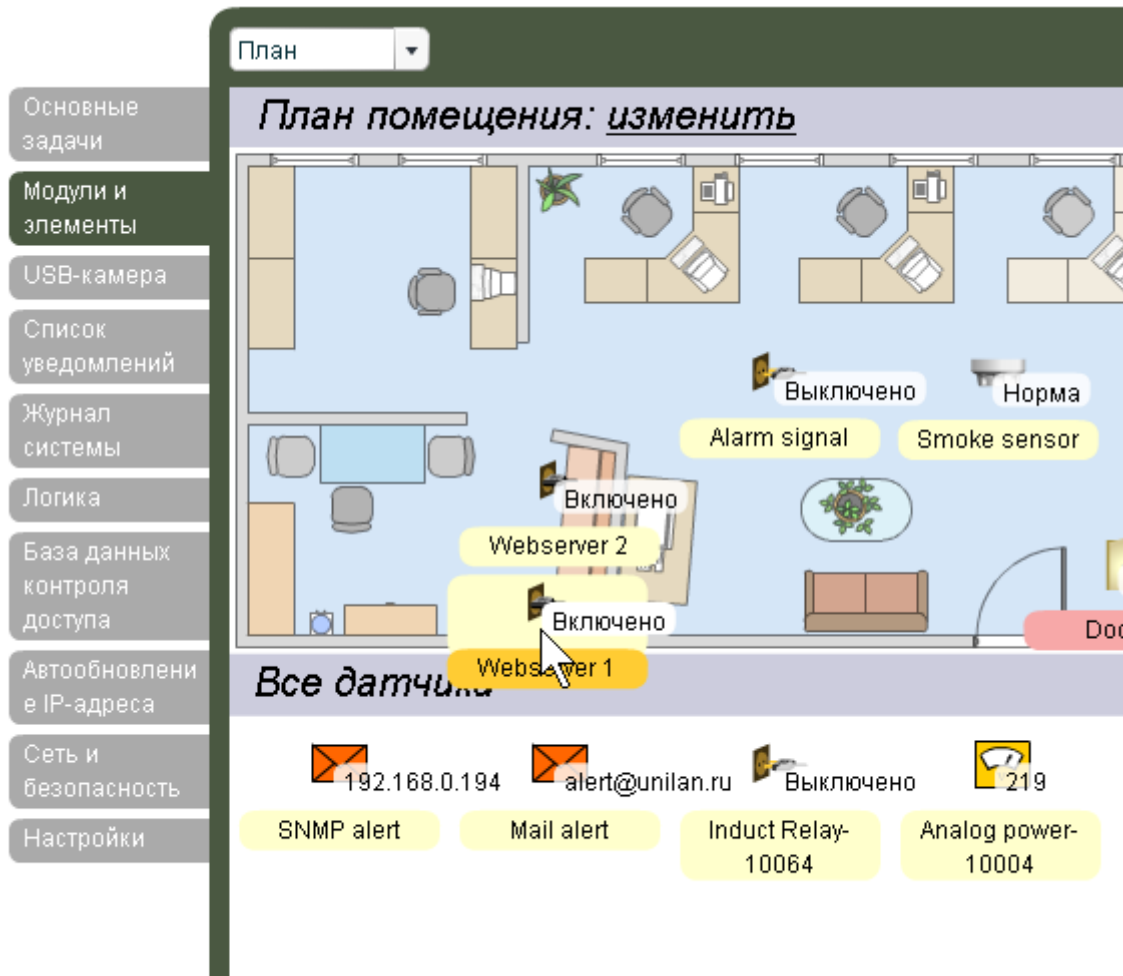
1. Go to tab «**Modules**» in monitoring system's web-interface.
2. Select viewing mode «**Map**», see Pic. this
3. Press «**Change**». In the opened window press «**Upload**».
4. «**Select file**» window will appear. Select the required image and press «**Open**».

The system only supports JPEG, PNG and GIF images which do not exceed 5 Mb.

5. Selected file will be uploaded into monitoring system. This can take time if Internet connection is slow.
6. Tab “**Modules**” of monitoring system will be automatically updated after the image upload and you will see the plan image.

Assigning sensors to location on map.

In order to assign sensor to a certain location drag one of the sensors onto the plan image. (Pic. . 10.53).



Pic. 10.53 Assigning sensor to location on plan

The location of the sensor on the plan will be saved in the monitoring system. In order to remove the sensor from the map drag it into the group «**All sensors**».

Removal of maps

In order to remove the map, press button " **Delete** " in window “**Change plan**”. After the removal of plan, all the sensors assigned to this plan are deleted.

Adding logic circuitry

Monitoring system allows the administrator to form logic of system's work: to set certain actions above the executive device (relay) and "Notification" in case of occurrence of certain combination of logic conditions of system sensors.

Logic circuitry

Logic circuitry is a set of the conditions defining an event, and a set of actions produced by system of monitoring on occurrence of event.

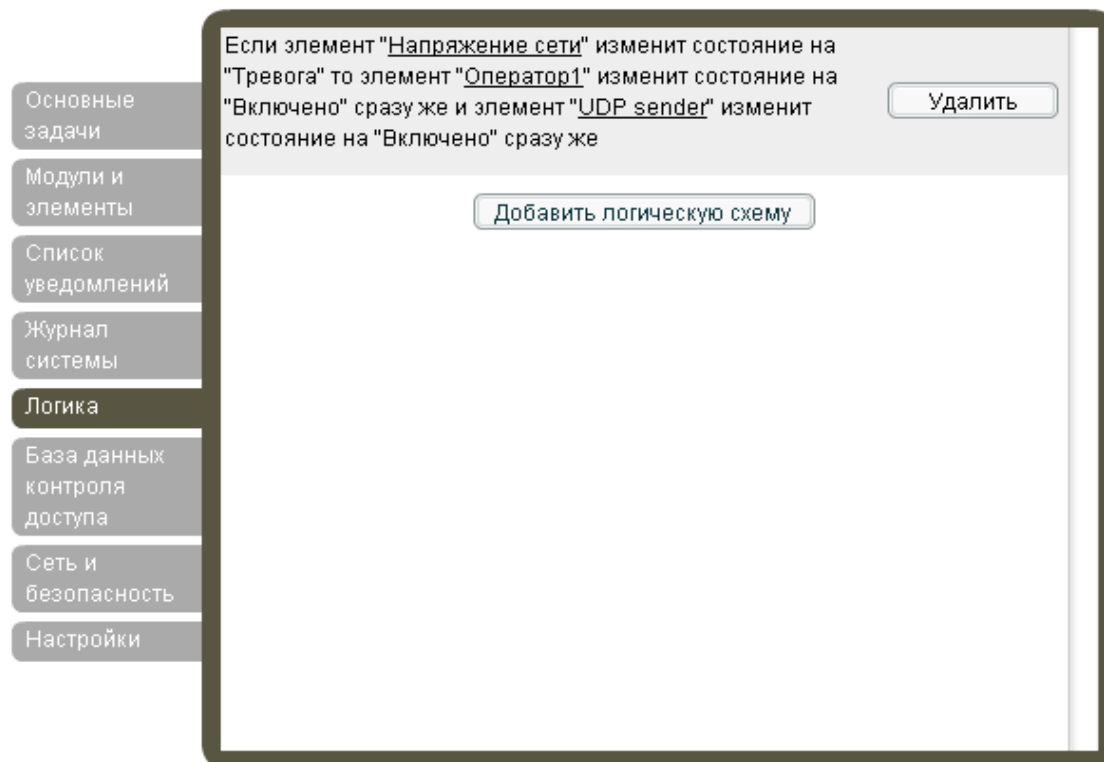
Condition is a change in a states of a specific sensor. For example, a condition can be transition of the temperature sensor with a name "Temp1" into mode "Alarm". If a set contains no more conditions, then as soon as sensor state "Temp1" will switch to a state "Alarm", an event will take place, defined by the given set of conditions. Conditions are united in a set of conditions inside of a logic block by means of logic operations AND and OR.

Action is a transition of specific executive device (relay) by the system into the given condition or actualization of the specific element from group "Notifications". Actions are united in a set of actions by means of logic operation AND.

Monitoring system allows to describe conditions and to set actions. Created logic circuitry can be found in tab "**Logic**" of system web-interface (Pic. 10.54).

The condition is met, if in last cycle of inquiry the sensor was in a mode defined by condition.

The logic circuitry is met, if in inquiry cycle, the logic expression of conditions included in it is true.



Pic. 10.54 Tab "Logic" of web-interface

Formation of a logic circuit

For formation of the logic circuit the following actions are required:

1. Go to tab «Logic» of monitoring system's web-interface.
2. Press the button «Add logic». Creation of a logic circuit form will appear (Pic. 10.55).
3. Create set of **conditions**, choosing required sensors and their **modes**, at which it is required to execute **actions**.

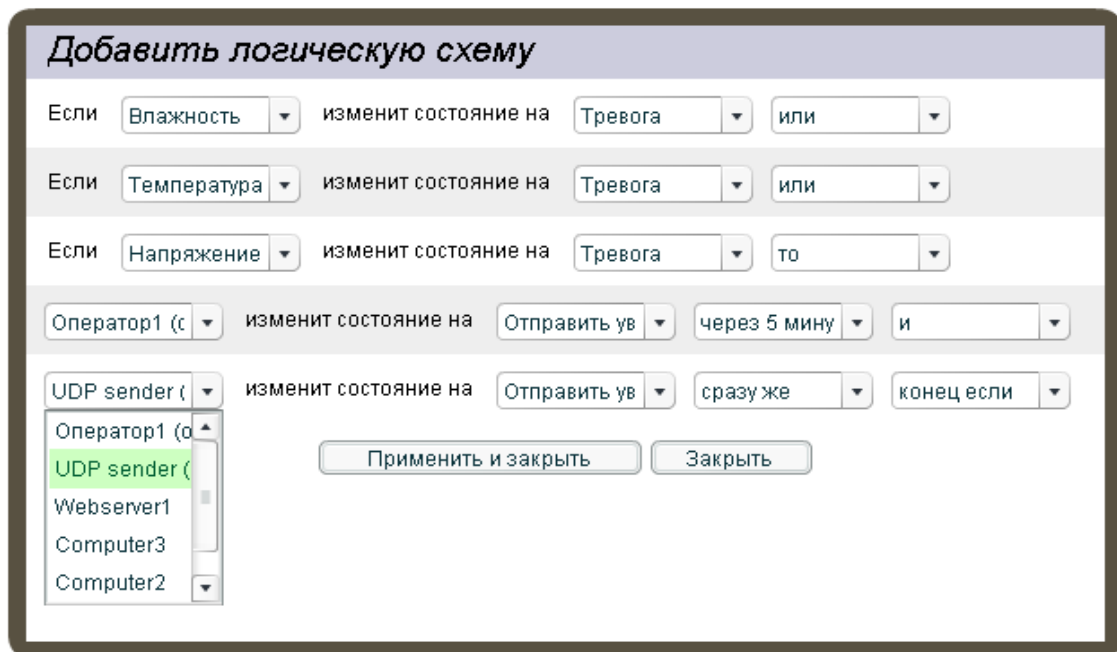


Fig. 10.55 Creation of a logic circuit

4. Create set of **actions**, choosing an executive device (relay) or notification and action produced by it that met the **conditions**.
5. Press the button «**Save and close**». Newly created logic circuit will appear in the list of logic circuitry in tab "**Logic**" of the web-interface.

Monitoring system checks the logic given by the administrator at each inquiry of the connected sensors. Checking the logic consists of examining whether the conditions of all logic circuitry are met. If all conditions that are given in the logic circuitry are met, the system forms an action that corresponds to the given logic circuit. Fulfillment of actions is carried out by system only after all logic (all logic circuitry) has been examined.

The set of actions of the logic circuitry is carried out only at the first event defined by the given logic circuit. If the same event occurs for the given logic circuit at all subsequent examinations of logic by system (at all subsequent inquiries), repeated action will not be carried out. If after another check of logic, the given event has not occurred - actions corresponding to this event will be executed again, at the next check this event will occur.

The actions produced by the system of monitoring will not be defined, if actions of different logic circuitry are mutually exclusive.

Removal of a logic circuit

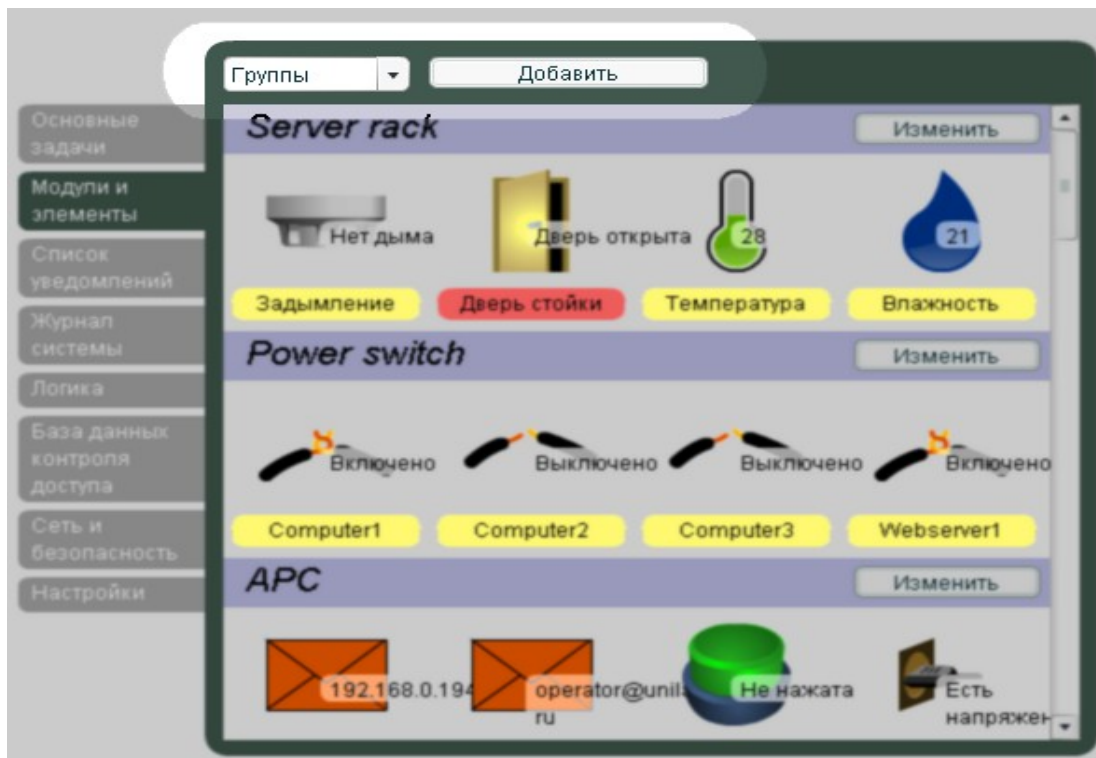
In order to remove the logic circuit, press button "**Delete**" opposite the circuit needed to be removed in tab "**Logic**". Press the button "**Save**" in tab "**System status**" of system's web-interface to save changes in nonvolatile memory.

10.5. Adding logic groups

Sometimes it is convenient to divide the elements of system into groups depending on their attributes.

For example, if one system supervises parameters of two rooms Room1 and Room2, then it is convenient to divide all the system elements into two groups depending whether they belong to the first or the second room.

In order to add a logic group the following actions are required:



Pic. 10.56 Choosing viewing mode

1. Go to tab «**Modules**» in the web-interface of system.
2. Choose view mode «**Groups**», see. Error: Reference source not foundPic.10.56
3. Press the button Add, the logic group will be created, a dialogue window will appear requesting to enter the name of group and its description. Enter the data into the form and press «**OK**».

In order to change the list of the elements belonging to certain group, drag the necessary element from one group to another using mouse (Pic. 10.57).

Attention! For preservation of parameters in nonvolatile memory it is necessary to press button "Save" in tab "System status" of monitoring system's web-interface.

In order to remove group press the button "**Edit group**" opposite to group name in tab "**Modules**". Press the button "**Delete**" in the dialog window appeared. Press the button "**Save**" in tab "**System status**" of system's web-interface in order to save changes in nonvolatile memory.

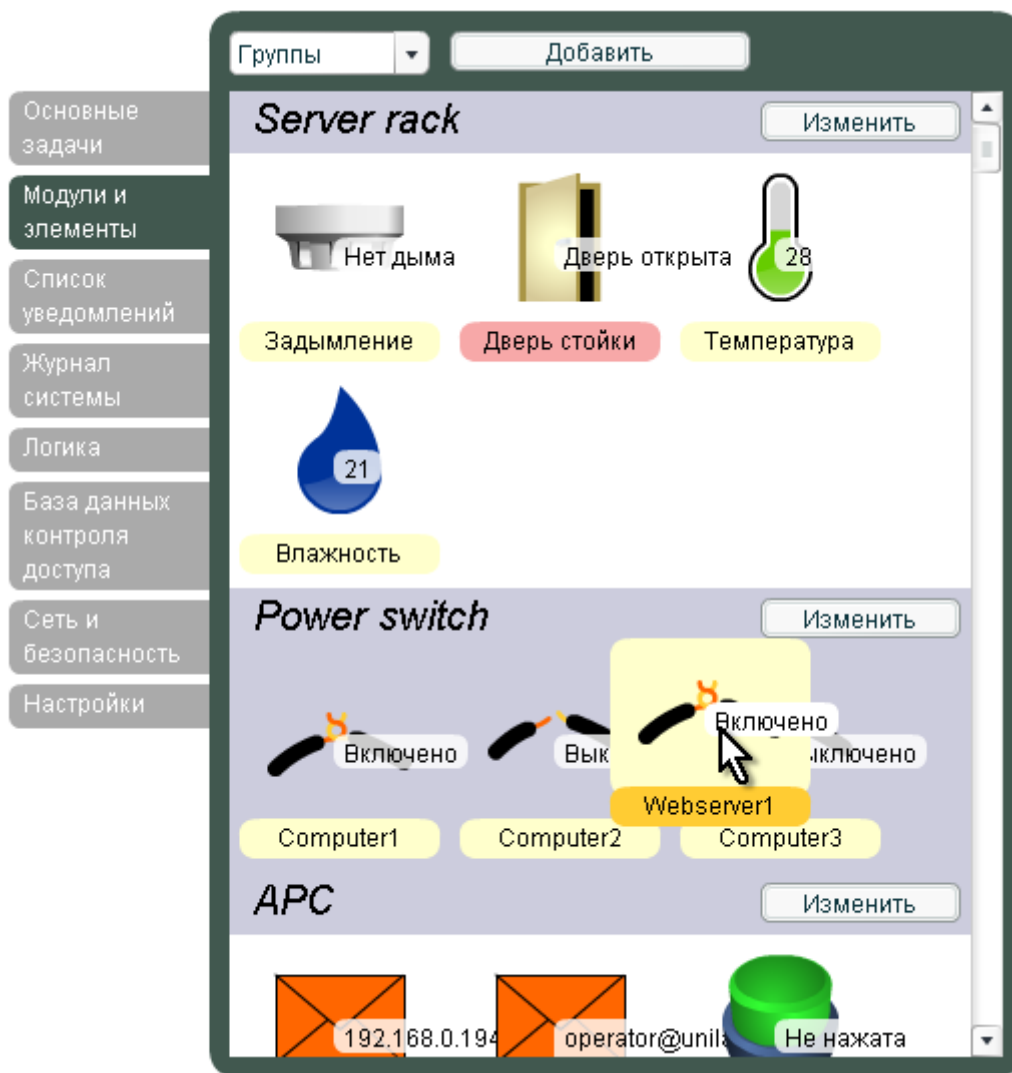


Fig. 10.57 Adding element to group

10.6. Viewing Monitoring System's log

All changes of logic modes of the system sensors, notifications on performance of actions of logic circuitry, other important events are all displayed in the system log of monitoring system. To view the log, go to tab "**System log**" in the web-interface of system.

In order to save the system log on PC hard disk, press the button "**Save**". A dialog window will appear, choose a file name and save the system log. Type of file saved - RSS 2.0 (<http://en.wikipedia.org/wiki/RSS>).

10.7. Connection of USB camera

Sky Control monitoring system allows to connect one USB camera (or web-camera). USB camera is connected to the **USB** connector on the front panel of monitoring system. After the connection of USB camera and after it is found by the system, the system log (tab "**System log**") shows "USB camera found", and in tab "**USB camera**" the image taken by camera appears. The image although relatively small (JPEG format) requires fast Internet. One such image requires from 4 to 12 Kb while the speed can reach up to 10 images per sec.

Therefore the monitoring system allows remote surveillance over the premises in which the system is located.

List of USB cameras supported by Sky Control system

3Com Home Connect Lite	Genius VideoCAM NB	Mustek DV4000 Mpeg4
3DeMON USB Capture	Genius Videocam V2	Mustek Gsmart 300
ADS Instant VCD	Genius Videocam V3	Mustek Gsmart D30 spca533
Agfa ephoto CL20	Grandtec V.cap	Mustek Gsmart LCD 2
Aiptek DV3500 Mpeg4	Hama USB Sightcam 100	Mustek Gsmart LCD 3
Aiptek mini PenCam 1.3	Hama USB Sightcam 100 (2)	Mustek Gsmart Mini
MPixels	ICM532 cam	Mustek gSmart mini 2
Aiptek Mini PenCam 2	Intel Create and Share	Mustek gSmart mini 3
MPixels	Intel Easy PC Camera	Mustek MDC3500
Aiptek Pencam SD 2 MPixels	Intel PC Camera Pro	Mustek MDC4000
Aiptek PocketCam 2Mega	Intel Pocket PC Camera	Mustek MDC5500Z
Aiptek PocketCam 3 M	Jenoptik DC 21 LCD	Mustek Wcam300A
Aiptek Pocket Cam 4M	JVC GC-A50	Mustek WCam300AN
Aiptek PocketDV	Kodak DVC-325	Mustek Wcamm300A 2
Aiptek PocketDV3100+	Kodak EZ200	Optimedia TechnoAME
Aiptek Pocket DV5100	Kowa Bs888e MicroCamera	PalmPix DC85
Aiptek Pocket DV5300	Labtec Webcam	PC-Cam350
Aiptek PocketDVII 1.3	Labtec Webcam Elch2	PetCam
MPixels	Labtec Webcam Notebook	Philips SPC200NC
Aiptek Slim3000F	Labtec Webcam Plus	Philips SPC300NC
Aiptek Slim 3200	Labtec Webcam Pro	Philips SPC600NC
ApexDigital Digitrex2110	LG LIC-200	Philips SPC700NC
spca533	LG Lic-300	Pixart PAC207-BCA
Arowana 300K CMOS	Logitech ClickSmart 310	Polaroid Ion 80
Camera	Logitech ClickSmart 820	Polaroid PDC2030
Benq DC1016	Logitech Inc. ClickSmart 420	Polaroid PDC3070
Benq DC1300	Logitech Inc. ClickSmart 510	Pure Digital Dakota
Benq DC1500	Logitech Notebook Deluxe	QCam Sangha
Benq DC3410	Logitech QCIM	QCam xxxxxx
Concord 3045 spca536a	Logitech QuickCam chat	QC Express
Creative Instant P0620	Logitech QuickCam chat	Qtec Webcam 100
Creative Instant P0620D	Logitech QuickCam	Sangha 350k
Creative Live!	Communicate STX	Smile International
Creative Mobile PD1090	Logitech QuickCam Express	Sonix Btc PC380
Creative Notebook PD1170	II	Sonix Pccam +
Creative Notebook PD1171	Logitech QuickCam for	Sonix PcCam
Creative NX	Notebook	Sonix sn9c102P Hv7131R
Creative Nx Pro	Logitech QuickCam for	Sonix sn9c10x + Pas106
Creative NX Pro FW2	Notebooks	sensor
Creative PC-CAM 300	Logitech QuickCam IM	Sonix VGA Ov7630
Creative PC-CAM 600	Logitech QuickCam Image	Speed NVC 350K
Creative PCcam750	Logitech QuickCam	Sunplus CA500C
Creative Webcam NX ULTRA	IM/Connect	Sunplus Generic spca536a
Creative Webcam Vista	Logitech QuickCam IM ftp	Sweex SIF webcam
Creative Webcam Vista	mib yur	Terratec 2 move 1.3
0x403b	Logitech QuickCam IM +	Toptro Industrial
Creative Webcam Vista Plus	sound	Typhoon Webshot II
CTX M730V built in Cam	Logitech QuickCam Traveler	Unknow Ori Camera
Digital Dream Enigma 1.3	Mars-Semi Pc-Camera	Usb Grabber PV321c
Digital Dream Epsilon 1.3	MR97311 MI0360	Veo Stingray 1
D-Link DSC-350	Maxell Compact PC PM3	Veo Stingray 2

Flexcam 100 Camera	Maxell Max Pocket LEdit. 1.3	VideoCam Messenger
FlyCam Usb 100	MPixels	sn9c101 Ov7630
Generic Vimicro 303b	Megapix V4	ViewQuest M318B
Generic Zc0305b	Mercury Cyberpix S550V	ViewQuest VQ110
Genius Dsc 1.3 Smart	Mercury Digital Pro 3.1Mp	Xcam Shanga
spca504B-P3	Mercury Peripherals Inc.	Z-star Vimicro zc0301p
Genius GF112	Micro Innovation IC200	
Genius VideoCAM Express	Micro Innovation WebCam	
V2	320	
Genius Videocam Express V2	Mustek Digicam 330K	
Firmware 2	Mustek DV 3000	
Genius VideoCam Ge111		

10.8. Network and security

The web-interface of monitoring system allows to change network parameters of its system unit and to set a password for the administrator to carry out certain tasks in the web-interface.

Choose tab "**Network**" in web-interface. Here you can change:

1. **IP address** of the master unit. This address is used for transition to web-interface.
2. **Netmask**.
3. **Gateway**.
4. **DNS servers**.
5. **Server update**. When updating software the Monitoring system will upload firmware from this domain. Default value – <ftp://ftp.skycontrol.com/>
6. **HTTP - server of time synchronization**. From this domain the monitoring system requests current time at inclusion of master unit's power. The server must be accessible for successful synchronization of time. Default value – <http://www.google.com>.

- Основные задачи
- Модули и элементы
- USB-камера
- Список уведомлений
- Журнал системы
- Логика
- База данных контроля доступа
- Автообновление IP-адреса
- Сеть и безопасность
- Настройки

Сеть и безопасность

IP адрес системы	81.222.150.148
Маска подсети	255.255.255.248
IP адрес шлюза	81.222.150.145
Основной dns-сервер	192.168.0.1
Дополнительный dns-сервер	81.222.33.9
Дополнительный dns-сервер	0.0.0.0
FTP-сервер обновлений	ftp.unilan.ru
HTTP-сервер для синхронизации времени	google.com
Community только для чтения данных SNMP	public
Community для чтения и изменения данных SNMP	public
MAC-адрес сетевой карты	3e:5d:14:07:03:7
Загрузить MIB-файл	sky-control.mib
Пароль администратора	
Защита паролем	Без защиты ▾

Рис. 10.58 Network and security

7. **Community reading only.** Input of password is required by SNMP-browser to read SNMP-data.
8. **Community saving only.** Input of password is required by SNMP-browser to save SNMP-data.
9. **MAC-address of network card.**
10. **Download MIB-file.** Link to mib-file describing possible SNMP-inquiries.
11. **Administrator's password.**

Attention! Changes of network settings take effect immediately after pressing button "Save and close". Therefore check and remember correctness of data entered.

10.9. Application of dynamic DNS

Automatic IP-address update on dynamic DNS hosting services

Automatic update of IP-address on dynamic DNS hosting services (http://en.wikipedia.org/wiki/Domain_Name_System, http://en.wikipedia.org/wiki/Dynamic_DNS) is required when using the system of monitoring in Ethernet network, which is not directly connected to Internet. Sky Control system allows to get access to Internet even when working via dynamic IP-address, which is convenient when using the system at home.

For installation and setting up the following are required: any master module (e.g. 5500.824), connection to Internet and a router with NAT support if you are using your Internet connection through one external dynamic or static IP address set up by your provider.

Setting up Router

1. Select static IP address (not used with DHCP) for monitoring system
2. Assign this address to the system of monitoring
3. Add redirection rules of NAT packets on the router in such manner that packets incoming to 80 (8008) and 443 ports were redirected to 80 and 443 ports of monitoring system in the local network:

Server name	Protocol	External port	Internal port	Server IP
HTTP	TCP	8008	80	IP-address of monitoring system in local network
SSL	TCP	443	443	

4. Application of external 8008 port instead of 80 port may be required as 80 port is commonly blocked by Internet providers

Application of dynamic DNS

Sky Control system supports the following services: <http://www.no-ip.com>, <http://www.dyndns.com>.

For automatic setting of IP update:

1. Register with one of the services. Required DNS service is provided for free. Create domain with dynamic DNS as well as:

2. When using service www.no-ip.com:

Select domain and sub-domain, e.g. example.no-ip.com.

Select host type «Port 80 redirect».

For IP-address type in the one given to you, this is your current IP-address.

For port type in the one you used when setting up NAT: 8008 or 443.

3. After successful registration adjust automatic IP-address update of monitoring system. To do that:

4. Go to local address of system web interface by typing the IP-address (192.168.1.2) given to the system in the address bar of Web-browser and pressing «Go».

5. Go to tab «Automatic IP update» in web-interface.

6. Tick «Use auto update», type in your name or your email in the field «User», the one you used when registering for the service. Type in password in the field «Password», which you used when registering. Type in registered domain name in the field «Host name», e.g. example.dyndns.com

7. Press «Apply». The following minute record of successful IP update on the service will appear in the system log. If there is a record of unsuccessful update, check the details filled in.

8. Setting up of automatic IP address is finished.

10.10. Variable web-interface settings

Tab «Settings» of the web-interface allows to set the following:

1. Web-interface language;
2. Type of time synchronization through web-interface;
3. Speed of updating data.

11. Operating monitoring system with use of HTTP protocol

Sky Control system of monitoring is controlled through web-interface by HTTP protocol. That is why creating your own mechanism of viewing system's status or controlling it is not difficult. All you need is to know the control protocol.

The CD provided with Sky Control system has HTTP folder which contains several Posix Shell-scripts, they allow to monitor and to control Sky Control system from Linux console. It is possible to find out the control protocol of the system by viewing the initial texts of these scripts.

12. Server SNMP of monitoring system

12.1. Description

Monitoring and partial configuration of the system can be carried out by protocol SNMP, versions 1 (RFC 1157) and 2 (RFC 1902..1907) are supported. Moreover, the system contains element Trap, which can be used as a notification in logic blocks.

12.2. MIB

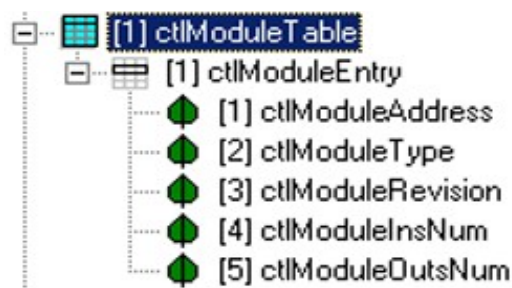
The database of the operating information of system ECS is connected to point of MIB tree with OID=iso.org.dod.internet.private.enterprises.unilan.ctlUnit (.1.3.6.1.4.1.7788.1).

MIB systems represent the following list of tables:

- ctlModuleTable (.1.3.6.1.4.1.7788.1.1) – table of system units;
- ctlAllElementTable (.1.3.6.1.4.1.7788.1.2) – table of all system elements;
- ctlAnalogElementTable (.1.3.6.1.4.1.7788.1.3) – table of analog system elements ;
- ctlDigitalElementTable (.1.3.6.1.4.1.7788.1.4) – table of digital system elements;
- ctlActuatorElementTable (.1.3.6.1.4.1.7788.1.5) – table of output elements of the system;
- ctlReaderElementTable (.1.3.6.1.4.1.7788.1.6) – table of system readers;
- ctlMailElementTable (.1.3.6.1.4.1.7788.1.7) – table of system mail clients;
- ctlLogicGroupTable (.1.3.6.1.4.1.7788.1.8) – table of system containers;
- ctlLogicTable (.1.3.6.1.4.1.7788.1.9) – table of system logic;

12.3. ctlModuleTable

The table ctlModuleTable contains information on all units functioning in the system at present. The quantity of columns in the table corresponds to quantity of units present in system. Each line of the table corresponds to a specific characteristic of units. The table is indexed via variable ctlModuleAddress.



Pic. 12.59 ctlModuleTable

ctlModuleAddress

Type: Unsigned32.

Access: Reading only.

Description: Address of unit on RS-485 Bus.

OID: 1.3.6.1.4.1.7788.1.1.1.1.x/

ctlModuleType

Type: Integer.

Access: Reading only.

Description: Type of unit.

OID: 1.3.6.1.4.1.7788.1.1.1.2.x

ctlModuleRevision**Type:** Unsigned32.**Access:** Reading only.**Description:** Program version carried out by unit.**OID:** 1.3.6.1.4.1.7788.1.1.1.3.x**ctlModuleInsNum****Type:** Unsigned32.**Access:** Reading only.**Description:** Maximum quantity of elements of type "Sensors" which unit can maintain.**OID:** 1.3.6.1.4.1.7788.1.1.1.4.x**ctlModuleOutsNum****Type:** Unsigned32.**Access:** Reading only.**Description:** Maximum quantity of elements of type "Outputs" which unit can maintain.**OID:** 1.3.6.1.4.1.7788.1.1.1.5.x

12.4. ctlAllElementTable

The table ctlModuleTable contains information on each element present in system at the moment. The quantity of columns in the table corresponds to quantity of the elements present in the system. Each line of the table corresponds to a specific characteristic of an element. The table is indexed via variable ctlAllElementUid.

Each element is described by the following characteristics:

ctlAllElementUid**Type:** Unsigned32.**Access:** Reading only.**Description:** Unique identifier of an element (UID).**OID:** 1.3.6.1.4.1.7788.1.2.1.1.x**ctlAllElementGid****Type:** Unsigned32.**Access:** Reading and saving.**Description:** Unique identifier of container to which the given element belongs.**OID:** 1.3.6.1.4.1.7788.1.2.1.2.x**ctlAllElementModAddr****Type:** Unsigned32.**Access:** Reading only.**Description:** The address of unit on RS-485 Bus, to which the given element is connected.

For elements from group «Notifications» and elements that are in mode NC (Not connected), this variable is set to 0.

OID: 1.3.6.1.4.1.7788.1.2.1.3.x**ctlAllElementType****Type:** Integer.**Access:** Reading only.**Description:** Type of element. Variable can take the following values:

- nosens(0) – Unsupported type of element;
- temperature(1) – Temperature sensor;
- humidity(2) – Humidity sensor;

- airflow(3) – Fan rotation sensor;
 - power(4) – Voltage monitor;
 - motion(5) – Motion sensor;
 - magnet(6) – Access sensor;
 - button(7) – Button sensor;
 - smoke(8) – Smoke sensor;
 - shock(9) – Vibration sensor;
 - water(10) – Leakage sensor;
 - inductrelay(65) – Electromagnetic relay;
 - mail(80) – Mail client;
 - reader(128) - Reader.
- OID:** 1.3.6.1.4.1.7788.1.2.1.4.x

ctlAllElementName

Type: OCTET STRING (SIZE(0,32)).

Access: Reading and saving.

Description: Name of the element.

OID: 1.3.6.1.4.1.7788.1.2.1.5.x

ctlAllElementCurrentState

Type: Integer.

Access: Reading only.

Description: Condition of element. Variable can take the following values (modes are described in sections corresponding to the given type of element in the present manual):

- normal(1) – Normal mode of element «>»;
- low(2) – The element is in mode «Low»;
- warning(3) – The element is in mode «Warning»;
- alarm(4) – The element is in mode «Alarm»;
- on(5) – The element is in mode «On»;
- off(6) – The element is in mode «Off»;
- notconnected(7) – The element is in mode «Not connected»;
- pulse(8) – The element is in mode «Pulse».

OID: 1.3.6.1.4.1.7788.1.2.1.6.x

12.5. ctlAnalogElementTable

The table `ctlAnalogElementTable` contains the information and controlling fields on all elements of the system from analog «Sensors» group. The quantity of columns in the table corresponds to quantity of such elements present in system. Each line of the table corresponds to a specific characteristic of an element. The table is indexed via variable `ctlAnalogElementUid`.

Each analog element of the system is described by the following characteristics:

ctlAnalogElementUid

Type: Unsigned32.

Access: Reading only.

Description: Unique identifier of an element (UID).

OID: 1.3.6.1.4.1.7788.1.3.1.1.x

ctlAnalogElementGid

Type: Unsigned32.

Access: Reading and saving.

Description: Unique identifier of container, to which the given element belongs.

OID: 1.3.6.1.4.1.7788.1.3.1.2.x

ctlAnalogElementModAddr

Type: Unsigned32.

Access: Reading only.

Description: Address of unit on RS-485 Bus, to which the given element is connected. For elements in mode NC (Not connected), this variable is set to 0.

OID: 1.3.6.1.4.1.7788.1.3.1.3.x

ctlAnalogElementType

Type: Integer.

Access: Reading only.

Description: Type of element. The variable can take the following values:

- temperature(1) – temperature sensor;
- humidity(2) – humidity sensor;

OID: 1.3.6.1.4.1.7788.1.3.1.4.x

ctlAnalogElementName

Type: OCTET STRING (SIZE(0,32)).

Access: Reading and saving.

Description: Name of the element.

OID: 1.3.6.1.4.1.7788.1.3.1.5.x

ctlAnalogElementOldState

Type: Integer.

Access: Reading only.

Description: Condition of element in the previous cycle of inquiry. The variable can take the following values (modes are described in sections corresponding to the given type of element in the present manual):

- normal(1) – Normal mode of element;
- low(2) – The element is in mode «Low»;
- warning(3) – The element is in mode «Warning»;
- alarm(4) – The element is in mode «Alarm»;
- notconnected(7) – The element is in mode «Not connected»;

OID: 1.3.6.1.4.1.7788.1.3.1.6.x

ctlAnalogElementCurrentState

Type: Integer.

Access: Reading only.

Description: Condition of element in the last cycle of inquiry. The variable can take the following values (modes are described in sections corresponding to the given type of element in the present Manual):

- normal(1) – Normal mode of element;
- low(2) – The element is in mode «Low»;
- warning(3) – The element is in mode «Warning»;
- alarm(4) – The element is in mode «Alarm»;
- notconnected(7) – The element is in mode «Not connected»;

OID: 1.3.6.1.4.1.7788.1.3.1.7.x

ctlAnalogElementVal

Type: Integer32.

Access: Reading only.

Description: Indications of element (Temperature values are in degrees of Celsius, if the element is - temperature sensor; the value of relative humidity is in percentage, if the element is - humidity sensor, etc.).

OID: 1.3.6.1.4.1.7788.1.3.1.8.x

ctlAnalogElementLLvl

Type: Integer32.

Access: Reading and saving.

Description: Level «Low level» of element (levels are described in sections corresponding to the given type of element in the present Manual).

OID: 1.3.6.1.4.1.7788.1.3.1.9.x

ctlAnalogElementWLvl

Type: Integer32.

Access: Reading and saving.

Description: Level «Warning level» of element (levels are described in sections corresponding to the given type of element in the present Manual).

OID: 1.3.6.1.4.1.7788.1.3.1.10.x

ctlAnalogElementALvl

Type: Integer32.

Access: Reading and saving.

Description: Level «Alarm level» of element (levels are described in sections corresponding to the given type of element in the present Manual).

OID: 1.3.6.1.4.1.7788.1.3.1.11.x

12.6. ctlDigitalElementTable

The table `ctlDigitalElementTable` contains the information and controlling fields on all elements of the system from digital «Sensors» group . The quantity of columns in the table corresponds to quantity of such elements present in system. Each line of the table corresponds to a specific characteristic of an element. The table is indexed via variable `ctlDigitalElementUid`.

Each digital element of the system is described by the following characteristics:

ctlDigitalElementUid

Type: Unsigned32.

Access: Reading only.

Description: Unique identifier of an element (UID).

OID: 1.3.6.1.4.1.7788.1.4.1.1.x

ctlDigitalElementGid

Type: Unsigned32.

Access: Reading and saving.

Description: Unique identifier of container to which the given element belongs.

OID: 1.3.6.1.4.1.7788.1.4.1.2.x

ctlDigitalElementModAddr

Type: Unsigned32.

Access: Reading only.

Description: Address of unit on RS-485 Bus to which the given element is connected. For elements that are in mode NC (Not connected), this variable is set to 0.

OID: 1.3.6.1.4.1.7788.1.4.1.3.x

ctlDigitalElementType

Type: Integer.

Access: Reading only.

Description: Type of element. Variable can take the following values:

- airflow(3) – Fan rotation sensor;
- power(4) – Voltage monitor;
- motion(5) – Motion sensor;
- magnet(6) – Access sensor;
- button(7) – Button sensor;
- smoke(8) – Smoke sensor;
- shock(9) – Vibration sensor;
- water(10) – Leakage sensor;

OID: 1.3.6.1.4.1.7788.1.4.1.4.x

ctlDigitalElementName

Type: OCTET STRING (SIZE(0,32)).

Access: Reading and saving.

Description: Name of the element.

OID: 1.3.6.1.4.1.7788.1.4.1.5.x

ctlDigitalElementOldState

Type: Integer.

Access: Reading only.

Description: Condition of element in the previous cycle of inquiry. Variable can take the following values (modes are described in sections corresponding to the given type of element in the present Manual):

- normal(1) – Normal mode of element;
- alarm(4) – The element is in mode «Alarm»;
- notconnected(7) – The element is in mode «Not connected»;

OID: 1.3.6.1.4.1.7788.1.4.1.6.x

ctlDigitalElementCurrentState

Type: Integer.

Access: Reading only.

Description: Condition of element in the last cycle of inquiry. The variable can take the following values (modes are described in sections corresponding to the given type of element in the present Manual):

- normal(1) – Normal mode of element;
- alarm(4) – The element is in mode «Alarm»;
- notconnected(7) – The element is in mode «Not connected»;

OID: 1.3.6.1.4.1.7788.1.4.1.7.x

ctlDigitalElementVal

Type: Integer.

Access: Reading only.

Description: Indications of element. Can take the following values:

- open(1) – open normally;
- close(2) – closed normally;
- grounded(3) – short circuit (for further use);
- break(4) – rupture (for further use);

OID: 1.3.6.1.4.1.7788.1.4.1.8.x

ctlDigitalElementAlarmRvs

Type: Integer.

Access: Reading and saving.

Description: Agreement between the indication and the mode of the digital sensor (described in sections corresponding to the given type of element in the present Manual). Can take the following values:

•notreversed(0) – normal mode;

•reversed(1) – reversed mode;

OID: 1.3.6.1.4.1.7788.1.4.1.9.x

ctlDigitalElementAnalogControl

Type: Integer.

Access: Reading only.

Description: (for further use). Support of analog control by the given element. Can take the following values:

•on(1) – analog control is implemented in an element;

•off(2) – analog control is not implemented in an element;

OID: 1.3.6.1.4.1.7788.1.4.1.10.x

12.7. ctlActuatorElementTable

The table ctlActuatorElementTable contains the information and controlling fields on all elements of the system from «Outputs» group. The quantity of columns in the table corresponds to quantity of such elements present in system. Each line of the table corresponds to a specific characteristic of an element. The table is indexed via variable ctlActuatorElementUid.

Each digital element of the system from group «Outputs» is described by the following characteristics:

ctlActuatorElementUid

Type: Unsigned32.

Access: Reading only.

Description: Unique identifier of an element (UID).

OID: 1.3.6.1.4.1.7788.1.5.1.1.x

ctlActuatorElementGid

Type: Unsigned32.

Access: Reading and saving.

Description: Unique identifier of container to which the given element belongs.

OID: 1.3.6.1.4.1.7788.1.5.1.2.x

ctlActuatorElementModAddr

Type: Unsigned32.

Access: Reading only.

Description: Address of unit on RS-485 Bus, to which the given element is connected. For elements that are in mode NC (Not connected), this variable is set to 0.

OID: 1.3.6.1.4.1.7788.1.5.1.3.x

ctlActuatorElementType

Type: Integer.

Access: Reading only.

Description: Type of element. Variable can take the following values:

•inductrelay(65) – Electromagnetic relay;

OID: 1.3.6.1.4.1.7788.1.5.1.4.x

ctlActuatorElementName

Type: OCTET STRING (SIZE(0,32)).

Access: Reading and saving.

Description: Name of the element.

OID: 1.3.6.1.4.1.7788.1.5.1.5.x

ctlActuatorElementOldState

Type: Integer.

Access: Reading only.

Description: Condition of element in the previous cycle of inquiry. The variable can take the following values (modes are described in sections corresponding to the given type of element in the present Manual):

- on(5) – The element is in mode «On»;
- off(6) – The element is in mode «Off»;
- notconnected(7) – The element is in mode «Not connected»;
- pulse(8) – The element is in mode «Pulse»;

OID: 1.3.6.1.4.1.7788.1.5.1.6.x

ctlActuatorElementCurrentState

Type: Integer.

Access: Reading only.

Description: Condition of element in the last cycle of inquiry. Variable can take the following values (modes are described in sections corresponding to the given type of element in the present Manual):

- on(5) – The element is in mode «On»;
- off(6) – The element is in mode «Off»;
- notconnected(7) – The element is in mode «Not connected»;
- pulse(8) – The element is in mode «Pulse»;

OID: 1.3.6.1.4.1.7788.1.5.1.7.x

ctlActuatorElementWantState

Type: Integer.

Access: Reading and saving.

Description: Initially established mode of element. Variable can take the following values (modes are described in sections corresponding to the given type of element in the present Manual):

- on(5) – The element is in mode «On»;
- off(6) – The element is in mode «Off»;
- notconnected(7) – The element is in mode «Not connected»;
- pulse(8) – The element is in mode «Pulse»;

OID: 1.3.6.1.4.1.7788.1.5.1.8.x

ctlActuatorElementControlType

Type: Integer.

Access: Reading and saving.

Description: Type of element control (described in sections corresponding to the given type of element in the present Manual):

- logic(1) – The element is controlled by system logic;
- manual(2) – Manual management of element's mode;

OID: 1.3.6.1.4.1.7788.1.5.1.9.x

ctlActuatorElementSulseDuration

Type: Unsigned32.

Access: Reading and saving.

Description: Duration of impulse in seconds when element is switching into mode «Pulse».

OID: 1.3.6.1.4.1.7788.1.5.1.10.x

12.8. ctlMailElementTable

The table ctlMailElementTable contains the information and controlling fields on all mail client-elements of the system (Group «Notifications»). The quantity of columns in the table corresponds to quantity of such elements present in system. Each line of the table corresponds to a specific characteristic of an element. The table is indexed via variable ctlMailElementUid.

Each mail client element of the system has the following characteristics:

ctlMailElementUid

Type: Unsigned32.

Access: Reading only.

Description: Unique identifier of an element (UID).

OID: 1.3.6.1.4.1.7788.1.7.1.1.x

ctlMailElementGid

Type: Unsigned32.

Access: Reading and saving.

Description: Unique identifier of container to which the given element belongs.

OID: 1.3.6.1.4.1.7788.1.7.1.2.x

ctlMailElementName

Type: OCTET STRING (SIZE(0.32)).

Access: Reading and saving.

Description: Name of the element.

OID: 1.3.6.1.4.1.7788.1.7.1.3.x

ctlMailElementTo

Type: OCTET STRING (SIZE(0.64)).

Access: Reading and saving.

Description: E-mail address of the recipient.

OID: 1.3.6.1.4.1.7788.1.7.1.4.x

ctlMailElementFrom

Type: OCTET STRING (SIZE(0.64)).

Access: Reading and saving.

Description: E-mail address of the sender.

OID: 1.3.6.1.4.1.7788.1.7.1.5.x

ctlMailElementLogin

Type: OCTET STRING (SIZE(0.64)).

Access: Reading and saving.

Description: Login for authorization on a mail server.

OID: 1.3.6.1.4.1.7788.1.7.1.6.x

ctlMailElementXLogin

Type: OCTET STRING (SIZE(0.64)).

Access: Reading and saving.

Description: Encrypted login for authorization on a mail server.

OID: 1.3.6.1.4.1.7788.1.7.1.7.x

ctlMailElementPassword

Type: OCTET STRING (SIZE(0.64)).

Access: Reading and saving.

Description: Password for authorization on a mail server (used together with Login).

OID: 1.3.6.1.4.1.7788.1.7.1.8.x

ctlMailElementXPassword

Type: OCTET STRING (SIZE(0.64)).

Access: Reading and saving.

Description: Encrypted password for authorization on a mail server (used together with XLogin).

OID: 1.3.6.1.4.1.7788.1.7.1.9.x

ctlMailElementSMTPServer

Type: OCTET STRING (SIZE(0.64)).

Access: Reading and saving.

Description: Address (name) of mail server.

OID: 1.3.6.1.4.1.7788.1.7.1.10.x

ctlMailElementSMTPPort

Type: Unsigned32.

Access: Reading and saving.

Description: SMTP port, through which the access to SMTP server is conducted.

OID: 1.3.6.1.4.1.7788.1.7.1.11.x

ctlMailElementCommand

Type: Integer.

Access: Reading and saving.

Description: Command to the mail client. Can take the following values:

- delete(0) – remove mail client;

OID: 1.3.6.1.4.1.7788.1.7.1.12.x

12.9. ctlLogicGroupTable

The table `ctlLogicGroupTable` contains information and operating fields for all containers of system. The quantity of columns in the table corresponds to quantity of containers in system. Each line of the table corresponds to certain characteristic of the container. The table is indexed via variable `ctlLogicGroupGid`.

Each container of system possesses following characteristics.

ctlLogicGroupLevel

Type: Unsigned32.

Access: Reading only.

Description: Nesting level of container inside other containers (Level relative to a root).

OID: 1.3.6.1.4.1.7788.1.8.1.1.x

ctlLogicGroupParentGid

Type: Unsigned32.

Access: Reading only.

Description: Identifier of the parent container containing the given container.

OID: 1.3.6.1.4.1.7788.1.8.1.2.x

ctlLogicGroupGid

Type: Unsigned32.
Access: Reading only.
Description: Unique identifier of container.
OID: 1.3.6.1.4.1.7788.1.8.1.3.x

ctlLogicGroupState

Type: Unsigned32.
Access: Reading only.
Description: Logic state of container.
OID: 1.3.6.1.4.1.7788.1.8.1.4.x

ctlLogicGroupName

Type: OCTET STRING (SIZE(0.32)).
Access: Reading and saving.
Description: Name of container.
OID: 1.3.6.1.4.1.7788.1.8.1.5.x

ctlLogicGroupDescription

Type: OCTET STRING (SIZE(0.128)).
Access: Reading and saving.
Description: Description of container.
OID: 1.3.6.1.4.1.7788.1.8.1.6.x

ctlLogicGroupImagePath

Type: OCTET STRING (SIZE(0.128)).
Access: Reading and saving.
Description: Path to a picture for container (path in system).
OID: 1.3.6.1.4.1.7788.1.8.1.7.x

ctlLogicGroupCommand

Type: Integer.
Access: Reading and saving.
Description: Command of container removal, described by a column with number x (x is not equal to 0). A variable `ctlLogicGroupCommand` can take the following values:
•delete(0) – remove container;
OID: 1.3.6.1.4.1.7788.1.8.1.9.x

12.10. ctlLogicTable

The table `ctlLogicTable` contains the information and controlling variables for work of system logic. The quantity of columns in the table corresponds to quantity of logic blocks present in system. Each line of the table corresponds to a specific characteristic (or a command) of a logic block. The table is indexed via variable `ctlLogicBlockID` (for example, the logic block with ID equal to 5 - is described by variables 1.3.6.1.4.1.7788.1.9.1.y.5, where y = 1 (`ctlLogicBlockID == 5`), 2 (`ctlLogicIfThen`), 3 (`ctlLogicCommand`)).

Each logic block of system possesses the following characteristics:

ctlLogicBlockID

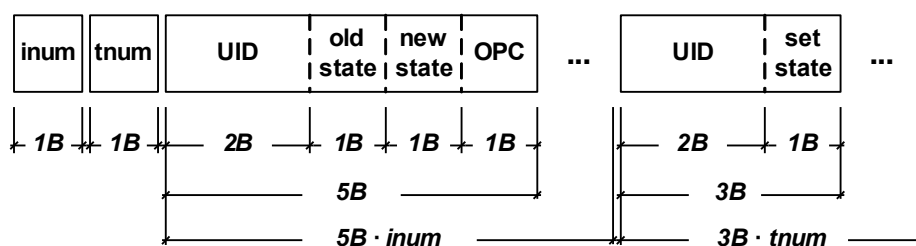
Type: Unsigned32.
Access: Reading only.
Description: Unique identifier of logic block.
OID: 1.3.6.1.4.1.7788.1.9.1.1.x

ctlLogicIfThen

Type: OCTET STRING (SIZE(0..250)).

Access: Reading and creation.

Description: Line-descriptor of logic block. Has the following format (Pic. 9.2):



Pic. 12.60 Description of logic element

- inum – quantity of conditions (IFs number) in the given logic block;
- tnum – quantity of actions (THENs number) in the given logic block;
- UID – identifier of element, used for setting condition (in IF) or action (in THEN);
- old state – condition of element from which transition into condition "new state" in order to meet condition should be carried out;
- new state – condition of element into which transition from condition "old state" in order to meet condition should be carried out;
- OPC – logic operation (Operation Code), uniting the given condition with the following condition;
- set state – condition into which it is necessary to transfer the element by the event described in set of conditions IFs;

Possible values of fields "old state ", "new state " and "set state " that describe the state of elements:

- 0x1: normal – Normal mode of element;
- 0x2: low – The element is in mode «Low»;
- 0x3: warning – The element is in mode «Warning»;
- 0x4: alarm – The element is in mode «Alarm»;
- 0x5: on – The element is in mode «On»;
- 0x6: off – The element is in mode «Off»;
- 0x7: notconnected – The element is in mode «Not connected»;
- 0x8: Pulse – The element is in mode «Pulse».

Possible values of field OPC that describes logic operation:

- 0x0: NOP – there is no operation - the given condition is the last in set of conditions of given logic block;
- 0x1: AND – operation AND with a following condition in a set;
- 0x2: OR – operation OR with a following condition in a set;

For creation of a new logic block it is necessary to execute installation of a variable ctlIfThen from a zero column, i.e. to save line of the format described above as a variable with OID = 1.3.6.1.4.1.7788.1.9.1.2.0.

OID: 1.3.6.1.4.1.7788.1.9.1.2.x

ctlLogicCommand

Type: Integer.

Access: Reading and saving.

Description: Removal command of logic block, described by column with number x (x is not equal to 0). Variable ctlLogicCommand can take the following values:

- delete(0) – remove logic block;

OID: 1.3.6.1.4.1.7788.1.9.1.3.x

ctlLogElementStateBefore

Type: Integer.

Access: Reading only.

Description: Condition of element, transition from which is reflected in logic record. Can take the following values:

- normal(1) – Normal mode of element;
- low(2) – The element is in mode «Low»;
- warning(3) – The element is in mode «Warning»;
- alarm(4) – The element is in mode «Alarm»;
- on(5) – The element is in mode «On»;
- off(6) – The element is in mode «Off»;
- notconnected(7) – The element is in mode «Not connected»;
- pulse(8) – The element is in mode «Pulse».

OID: 1.3.6.1.4.1.7788.1.10.1.3.x

ctlLogElementStateAfter

Type: Unsigned32.

Access: Reading only.

Description: Condition of element, transition from which is reflected in logic record. Can take the following values:

- normal(1) – Normal mode of element;
- low(2) – The element is in mode «Low»;
- warning(3) – The element is in mode «Warning»;
- alarm(4) – The element is in mode «Alarm»;
- on(5) – The element is in mode «On»;
- off(6) – The element is in mode «Off»;
- notconnected(7) – The element is in mode «Not connected»;
- pulse(8) – The element is in mode «Pulse».

OID: 1.3.6.1.4.1.7788.1.10.1.4.x

12.11. TRAP notification

By means of Configurator it is possible to add to the system the element "Trap" (The element from group "Notifications") and to use it in set of actions of logic blocks. If a set of conditions of logic block (contains the set of actions of the element "Trap") is met, the SNMP-agent of system sends TRAP message to the SNMP-manager, whose IP is given by the user of a configurator at creation of element "Trap". The TRAP-message represents pair "variable-value" where the variable ctlEventNotification is described in 7.13.1, and value is the unique identifier of logic block, whose set of conditions was executed, and the set of actions contains element TRAP.

The manager having received the TRAP-message from the ID logic block, can receive description of this logic block by means of SNMP-inquiries, can extract identifiers UID of the elements included in a set of conditions of given logic block, and then by means of SNMP-inquiries receive states of each of elements, which in sum have led to actuation of the logic block.

ctlEventNotification

Description: The variable contains the unique identifier of (ID) logic block, whose set of conditions has been met, and whose set of actions is contained in element «Trap».

OID: 1.3.6.1.4.1.7788.1.11.