**JSC "STC "SOYUZTEHNOPROEKT"**

**ZAO "PROINFOTEK"**

**RECON-SX Controller**

**Instruction Manual**

**V.15.16**

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1. Table of Contents
2. [1 Main features 4](#_Toc290474127)
3. [2 Set Content 4](#_Toc290474128)
4. [3 Specifications 4](#_Toc290474129)
5. [4 Description of the RECON-SX controller 5](#_Toc290474130)

[4.1 LAYOUT 6](#_Toc290474131)

[4.2 Functionality 7](#_Toc290474132)

[4.2.1 Sensors control 7](#_Toc290474133)

[4.2.2 Actuators Management 7](#_Toc290474134)

[4.2.3 Power supply control 8](#_Toc290474135)

[4.2.4 Object status control 8](#_Toc290474136)

[4.2.5 Access Control 8](#_Toc290474137)

[4.2.6 Poll of the controller in the switching channels mode 8](#_Toc290474138)

[4.3 LCD screen 8](#_Toc290474139)

1. [5 Application 9](#_Toc290474140)

[5.1 Operational restrictions 9](#_Toc290474141)

[5.2 Safety measures 9](#_Toc290474142)

[5.3 Installing the RECON-SX controller 9](#_Toc290474143)

[5.4 Connecting the power supply and battery 10](#_Toc290474144)

[5.5 Sensor connection 11](#_Toc290474145)

[5.5.1. Connection of contact sensors 11](#_Toc290474146)

[5.5.2. Connecting parametric sensors 12](#_Toc290474147)

[5.5.3. Connection of analog sensors 13](#_Toc290474148)

[5.5.4. Connecting Devices via RS-485/232/SPI interfaces 14](#_Toc290474149)

[5.5.4. Connecting the electronic key reader 15](#_Toc290474150)

[5.6 Connection of actuators 16](#_Toc290474151)

[5.7 Connecting the modem or PC 17](#_Toc290474152)

1. [6 Fault diagnostics 18](#_Toc290474153)
2. [7 Modes of Operation 19](#_Toc290474154)
3. [8 CONFIGURATION 20](#_Toc290474155)
4. [9 Normal operation mode 21](#_Toc290474156)

[9.1 Formation of the message to events 21](#_Toc290474157)

[9.2 Issuance of control actions through messages 21](#_Toc290474158)

[9.3 Object status query 21](#_Toc290474159)

[9.4 Query the value of parametric sensors 22](#_Toc290474160)

[9.5 Direct relay control command 23](#_Toc290474161)

[9.6 Security mode change command 23](#_Toc290474162)

[9.7 Command to set the current date / time 23](#_Toc290474163)

[9.8 The procedure for programming Touch Memory keys 23](#_Toc290474164)

[9.9 The procedure for changing the mode of security 24](#_Toc290474165)

1. [10 Maintenance 25](#_Toc290474166)
2. [11 Storage 25](#_Toc290474167)
3. [12 Transportation 25](#_Toc290474168)
4. [13 Technical Support 26](#_Toc290474169)
5. [14 Manufacturer's warranty 26](#_Toc290474170)
6. [Annex 1 27](#_Toc290474171)

This manual contains information on the design, operation and performance of the controller RECON-SX, necessary for its proper operation, transportation, storage and maintenance, as well as information confirming the manufacturer's warranty.

# Main features

RECON-SX Controller is designed for:

* Remote monitoring the status of various objects using digital, parametric and analog sensors;
* Send alerts on certain modes of operation of equipment, changes in climate and other parameters, attempts of unauthorized access;
* Read and transfer to the control center data from meters and other devices connected to the interface RS-485/232;
* Control actuators using relay circuits (automatically or on command from the outside).

RECON-SX Controller can be used in the automation systems for housing facilities (heat and water), energy facilities, gas supply of residential and office buildings and industry, as well as systems of remote monitoring and control (SCADA-systems).

# Set Content

RECON-SX Controller supplied set content is shown in Table 1.

Table 1:

Supplied

|  |  |
| --- | --- |
| Item | Quantity |
| RECON-SX Controller | 1 pc. |
| Documentation set | 1 pc. |

# Specifications

Specifications of RECON-SX controller are listed in Table 2.

Table 2

Specifications

|  |  |
| --- | --- |
| Details | Value |
| Overall dimensions | 260х180х20 mm |
| Weight (without additional devices) | not more than 0,5 kg |
| Number of contact sensor inputs | 8 |
| Number of analog sensor inputs | 8 (0-20 V, 0-20 mA) |
| Number of parametric sensors (air temperature, coolant temperature, pulse counters) | Up to 8 |
| Number of relay outputs | 8 |
| Load characteristics of outputs | 220 V, 5 A |
| Serial Interfaces | RS-232 (2), RS-485, SPI, mLan, Touch Memory |
| Power supply voltage | 12 V |
| Current consumption (at 12 V supply) | 170-900 mA |
| Display and indicators | LCD (text, 2 lines x 16 characters),  LEDs |

# Description of the RECON-SX controller

RECON-SX controller processes the information from contacts, analog and parametric digital sensors and flow meters, produces executive commands, and transmits information on the status of sensors via cellular, satellite and VHF communications. In addition, the controller can accept control commands and queries about its state.

Controller RECON-SX is a device that has a flexible configuration. The algorithm of the controller RECON-SX under different regimes is determined by its configuration with the help of special software REconfig, supplied with the controller.

Appearance of controller RECON-SX is shown in Fig.1.

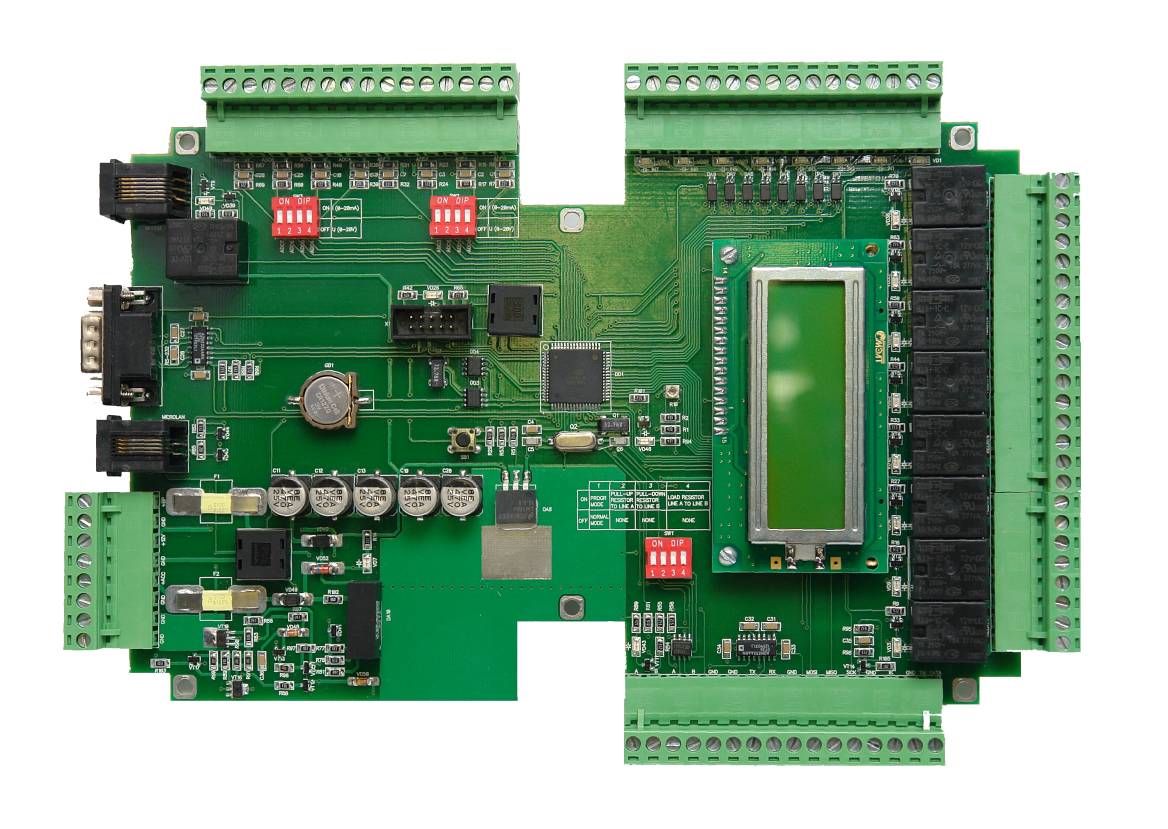


Fig. 1.RECON-SX Controller

## LAYOUT

RECON-SX Controller is a printed circuit board on which are placed electrical interface connectors. PCB Layout and interface connectors are shown in Fig. 2.

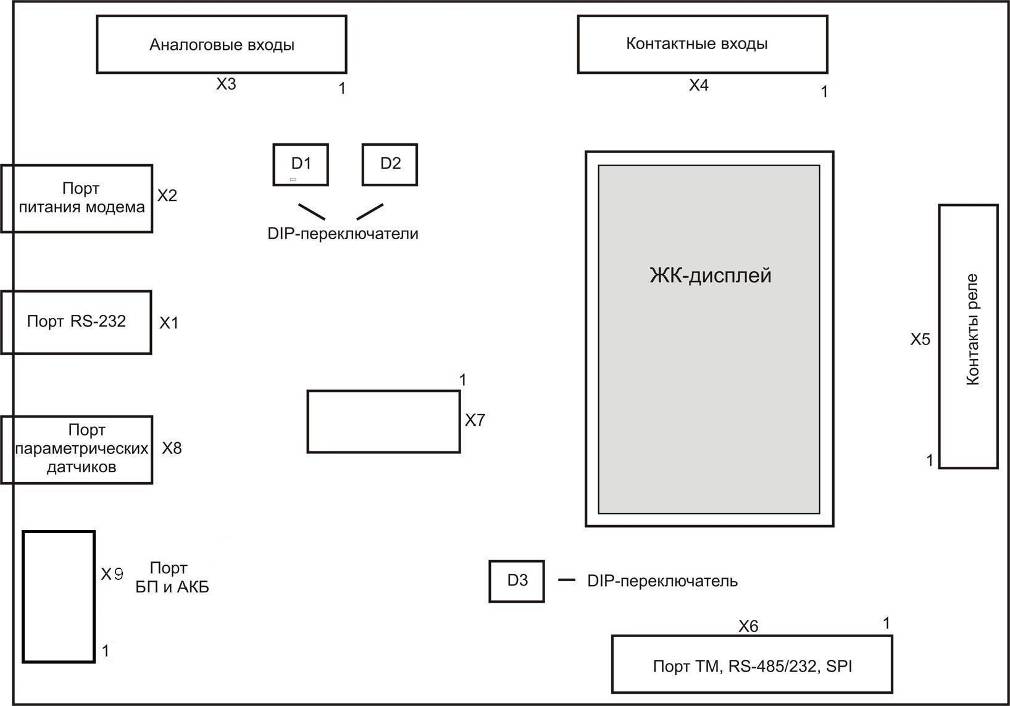


Fig. 2. The location of the interface connectors

## Functionality

### Sensors control

RECON-SX controller receives signals from sensors of different types:

* different types of analog sensors with an output signal (0-20 V, 0-20 mA).
* sensors with potential-free contact interface, for example:
* magnetic probes of opening / closing doors and windows;
* motion sensors;
* glass break sensors;
* maximum allowable concentrations of various gases exceeding sensors;
* sensors with an open collector interface, for example:
* smoke detectors;
* sensors of water leakage;
* sensors with TTL interface, including signaling circuits of manufacturing equipment;
* air or coolant temperature sensors;
* humidity sensors.

### Actuators Management

RECON-SX controller can manage via the relays different actuators and systems, such as:

* solenoid valves of water / gas overlap;
* electromagnetic locks;
* electric motors;
* electrical actuators;
* sirens;
* lighting.

Switching of controller’s relays is within user-defined algorithms, as well as by commands from a terminal, a GSM or a dispatch center.

### Power supply control

RECON-SX controller monitors the availability of the supply voltage of 12 V, and at its failure automatically switches to battery life. Information about the change of power mode is handled on a par with the sensor signals.

### Object status control

The controller continuously analyzes the state of any attached sensors. In case where the status of any sensor changed, the controller will run for this change is in accordance with its recorded algorithm.

If disturbing event or a change of security mode by Touch Memory key occurres, controller itself carries out sending messages to the GSM-terminals (phones) of users, and / or messages to the control center. In addition, the controller status can be controlled by sending a special command requests.

### Access Control

When an electronic key reader is connected to the X6 connector (Fig. 10), RECON-SX controller can serve as an access control system.

### Poll of the controller in the switching channels mode

Controller RECON-SX has the ability to transmit information about its state and data from meters and other devices connected to interfaces SPI, RS-485/232, in the mode of connection via a modem (CSD).The connection is made only at the initiative of the slave device. Communication protocol is described in Appendix 5.

## LCD screen

Recon-SX controller comes with an LCD screen. LCD screen is to display modes of the controller, parameter sensor readings, the values of the analog input signal (in volts or milliamps), the signal strength of GSM network, the results of attempts to send messages, as well as failures or loss of communication with the modem.

LCD screen is a LCD module MT-16S2H (or equivalent) and consists of a controller and an LCD panel. The module allows you to display 2 lines of 16 characters and can not be two versions: with LED backlight or without it.

After Recon-SX controller starts the message "The system RECON-SX version xxx" appears on the screen. After controller initialized the message "Search" is shown, stating that the controller turns on the search for connected devices (modem or PC).

In the event that within minutes a connection to the program REconfig running on the PC is detected, the screen displays the message "Configuration".

If within a minute a modem connection is detected, the screen displays the message "Found a modem" and the controller continues to work normally.

In the event that within a few minutes neither a modem nor REconfig program connection is detected, the screen displays the message "Stand-alone mode" and controller continues to work offline.

When operating in normal or off-line mode the screen in turn displays information about the indications of parametric and analog sensors (levels of the ADC in volts / milliamps), the GSM signal level, system time, and also about possible malfunctions. In addition, in case of outside requests to the controller the screen displays a message about the arrival of the query and the results of a query.

# Application

## Operational restrictions

RECON-SX controller is designed with the possibility of interfacing with GSM 900/1800 networks, satellite or VHF communications. One of the main conditions for use of the controller RECON-SX is the availability of appropriate communication infrastructure. In the absence of coverage controller can be used as part of local automation systems

Controller RECON-SX is designed for operation under the following conditions:

* operating temperature range, ° C: -35 ÷ +35;
* relative humidity up to 98% at + 25 ° C without condensation;
* power supply, V: 11,5 ÷ 12,5.

## Safety measures

To install or repair equipment are allowed only by qualified professionals.

When operating the RECON-SX controller use the power supply and rechargeable battery only of types approved by the manufacturer.

Before connecting to any other device, read the manual for its use with detailed instructions to ensure safety.

When repairing, testing, installation and operation must be implement security measures in accordance with the "Rules of technical operation" and "Rules of safety."

## Installing the RECON-SX controller

The controller is supplied as a card or set forth in the enclosure in assembled form.

The place for installing the controller must provide:

* excluding the possibility of water splashing on the hull and its wicking inside the housing;
* minimum vibration of building structures;
* maximum distance from sources of electromagnetic interference and thermal instruments;
* maximum convenience for the installation of subsequent maintenance of the controller.

Wires from the controller to the sensors to be installed in remote locations, ensuring their invisibility and distance from sources of electromagnetic interference.

## Connecting the power supply and battery

Power supply (12) and a battery connected to the controller through the connector X9 (see Fig.3).

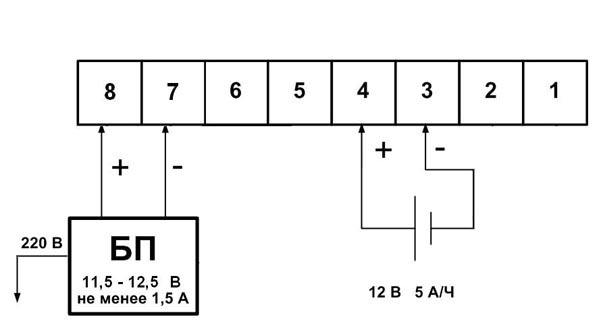


Fig. 3. Connector X9 wiring diagram - power supply and battery connections

Таблица 3

Connector X9 (connects the power supply and battery)

|  |  |
| --- | --- |
| Circuit | Contact |
| Ground (GND) | 1 |
| Ground (GND) | 2 |
| Accumulator (-) | 3 |
| Accumulator (+) | 4 |
| Guaranteed power supply point (-) | 5 |
| Guaranteed power supply point (+) | 6 |
| Power supply (-) | 7 |
| Power supply (+12 V) | 8 |

Contacts 6 and 5 provide an uninterrupted power supply for other devices, with voltage of 11.3 V and current of less than 300 mA. The voltage on these contacts is always present when controller is powered from a power supply or battery.

The power source of 12 V with a maximum load current of at least 1.5 A should be used.

12 V accumulator batteries should be used. When connecting to a controller battery must be fully charged.

In the case of the power supply failure, the controller switches to the battery.

After resumption of the power supply controller charges the battery.

**Attention!** ***Observe polarity when connecting the power supply and battery. Failure to comply with the polarity may lead to damage of the controller.***

## Sensor connection

### 5.5.1. Connection of contact sensors

To connect the contact sensor RECON-SX controller has 8 independent inputs launched into the connector X4.Each input can be connected to individual sensors or groups of sensors, combined in parallel (zonal connection). The sensors should have an output of "NC dry contact" or "NO dry contact" type.

Current status of the inputs is displayed on the LEDs located on the PCB of the controller in close proximity to connector X4.

All inputs of contact sensors work simultaneously in a galvanic isolation mode. A galvanic isolation is used to avoid the effects of electromagnetic interference on the operation of the controller.

Sensor with the NC - normally closed (NO - normally open) dry contact output is a sensor that when triggered opens (closes) a couple (or more pairs) of their free contacts. A typical sensor with the dry contact is a reed switch, which opens its contacts in the presence of the magnet.

For example, the following types of sensors can be used:

* magnetic contact sensors (sensors of doors / windows);
* motion sensors (Recommended - Bravo 2 & 3 PIR / DSC);
* glass break sensors (Recommended - DG-50 / DSC);
* alarm buttons, etc.

Connecting the contact sensor with galvanic isolation requires an external power supply.

Wiring diagram for probe with galvanic isolation is shown in Fig. 4.

**Attention!** Maximum voltage 24 V, current in the circuit - no more than 15 mA.

Contact sensors circuits may also be fed from the controller. In this case there is no need for an external power source, but there is no galvanic isolation between sensor circuits and the controller.

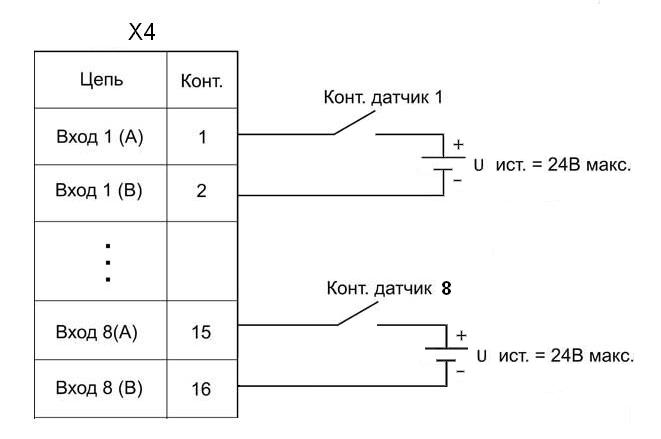


Fig. 4. Wiring diagram of contact sensors

### 5.5.2. Connecting parametric sensors

RECON-SX controller allows to connect up to 8 parametric sensors (temperature of air and coolant, humidity, pulse counters, etc.).These parametric sensors are connected via the serial digital bus. The maximum length of the total connections - 30 meters. **Attention!** *This type of sensor runs on its own digital protocol (Mlan).Sensors can be connected only in series. You can use sensors, purchased only at the manufacturer or from authorized dealers.*

Parametric transducers with total number of no more than 8 are connected to the connector X8 (RJ-11 (TP6C4C)).

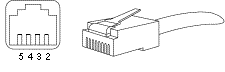


Fig. 5. Connector X 2 (RJ-11 (TP6C4C))

Таблица 4

Connector X8 (connecting parametric sensors)

|  |  |
| --- | --- |
| Circuit | Contact |
| VDD | 2 |
| DATA | 3 |
| Common | 4 |
| Not used | 5 |

A standard 4-wire cable, crimped inverted (Fig. 6), can be used for this connection.

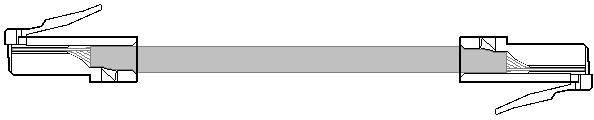
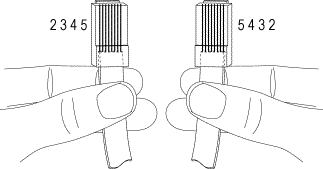


Figure 6. 4-wire cable crimping inverted

### 5.5.3. Connection of analog sensors

RECON-SX controller allows to connect up to 8 analog sensors with output of 0-20 V or 0-20 mA. These sensors are connected to the connector X3. Type of measured value (current or voltage) is determined for each input individually using the on/off DIP-switches (D1, D2 in Figure 2), located next to the contacts of the inputs. If the corresponding DIP-switch is set to OFF (disabled), then on the input voltage is measured in the range of 0-20 V. When the corresponding DIP-switch is set to ON (enabled) on the input current is measured in the range 0 - 20 mA. Measuring 0-20 mA current is produced by the inclusion in the measurement circuit of 220 ohms resistor. The measurement gap of ADC is equal to 0.2 V, or 0.2 mA. Connecting of the sensors is shown in Figure 7. **Attention!** *Improper connection or connection to sensors with other level of the output signal can cause damage to the device.*

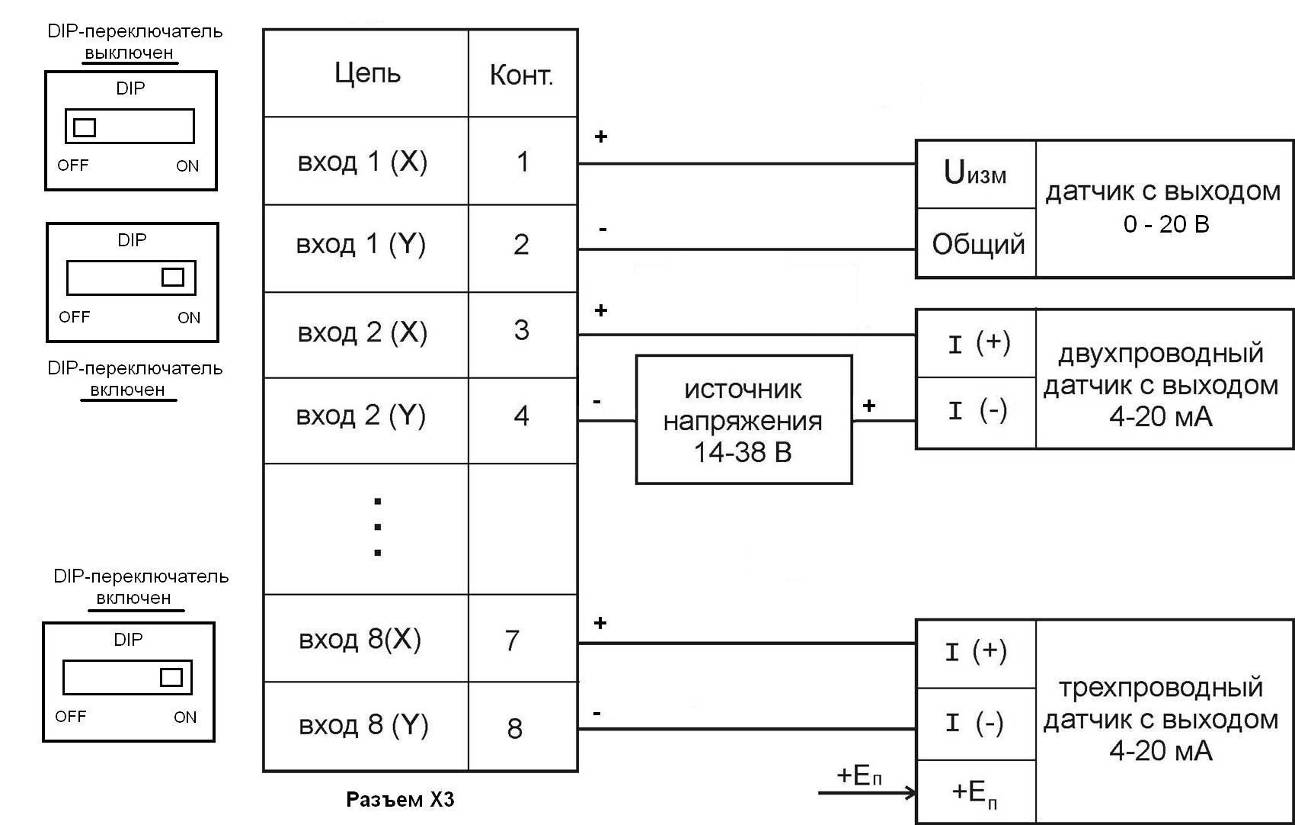


Fig. 7.Wiring diagram of analog sensors connection.

### 5.5.4. Connecting Devices via RS-485/232/SPI interfaces

RECON-SX controller allows connecting devices with RS-485 interface (meters, counters, etc.).Such devices are connected to the connector X6. Devices with RS-232 interface are connected using a standard method to pins 8 (GND), 9 (RX), 10 (TX).Devices with RS-485 interface connected to pins 12 (GND), 13, 15 (channel B), 14, 16 (channel A). Contacts 13 and 15 are short-circuited, as well as contacts 14 and 16. Connection diagram is shown in Fig. 8.

To increase the range of communication and enhance interference immunity, it is possible to connect "pull-up" resistors and the terminating resistors. Connecting of resistors is made by using DIP-switch D 3.Inclusion of the second key switch D3 "pulls" the channel A through the resistance of 51 ohms to the potential of +5 V. The inclusion of the third key switch D3 "pulls" the channel through the resistance of 51 ohms to the ground. The fourth key connects the 120-ohm terminating resistor between the channels A and B.

In addition to RS-232 and RS-485, the controller has a SPI interface (Contacts 5, 6, 7). In this version of the controller it is not used.

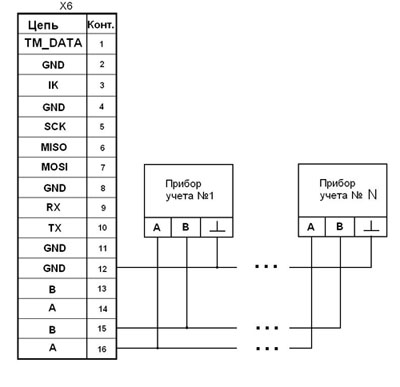


Fig. 8.The scheme of connecting devices via RS-485.

### 5.5.4. Connecting the electronic key reader

Fig. 9 shows the wiring diagram for Touch Memory dongles reader (pin 1,2) and LED (pins 2,3).

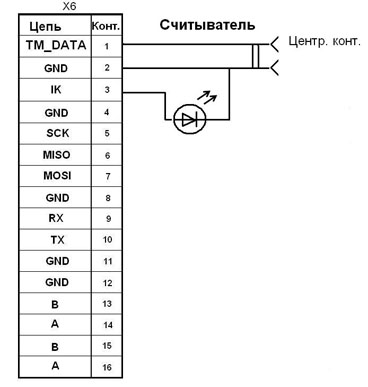


Fig. 9.Wiring diagram for electronic key reader and LED.

## Connection of actuators

Controller Recon-SX has 8 independent relays. Chain actuators are connected to the relay with connector X5 (Table 5).

Table 5

Connection of the actuators to the relay.

|  |  |
| --- | --- |
| Circuit | Contact |
| Normally open contact of relay 1 | 1 |
| Relay 1 common | 2 |
| Normally closed contact of relay 1 | 3 |
| Normally open contact of relay 2 | 4 |
| Relay 2 common | 5 |
| Normally closed contact of relay 2 | 6 |
| Normally open contact of relay 3 | 7 |
| Relay 3 common | 8 |
| Normally closed contact of relay 3 | 9 |
| Normally open contact of relay 4 | 10 |
| Relay 4 common | 11 |
| Normally closed contact of relay 4 | 12 |
| Normally open contact of relay 5 | 13 |
| Relay 5 common | 14 |
| Normally closed contact of relay 5 | 15 |
| Normally open contact of relay 6 | 16 |
| Relay 6 common | 17 |
| Normally closed contact of relay 6 | 18 |
| Normally open contact of relay 7 | 19 |
| Relay 7 common | 20 |
| Normally closed contact of relay 7 | 21 |
| Normally open contact of relay 8 | 22 |
| Relay 8 common | 23 |
| Normally closed contact of relay 8 | 24 |

Load characteristics of each relay: 220 V, 5 A.

Each relay has a switching contact group. Initially, the normally closed relay contact connected to a central relay contact. When activated (switched on) relay its central contact is connected to the normally open contacts. Switching the relay on and off corresponds to the respective LEDs glow.

## Connecting the modem or PC

Modem or PC connects to the RECON-SX controller via the serial RS-232 connector (X 1).To connect a GSM-modem is necessary to use a modem cable. To connect the PC a null modem cable is used.

To connect the power supply and GSM-modem hardware control circuits RECON-SX controller features a special connector X2.

The power is supplied to the modem via a 6-wire cable with inverted crimping. One side of the cable connects to the modem, the other to the terminal X5 of the controller. Description of the modem can be found on the manufacturer's website.

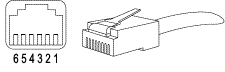


Fig. 10.X5 connector (RJ-11 (TP6C6C))

Table 6

Connector X5 (connect the modem's power)

|  |  |
| --- | --- |
| Circuit | Contact |
| VСС | 1 |
| n/c | 2 |
| HR\_IN | 3 |
| TO\_IN | 4 |
| n/c | 5 |
| GND | 6 |

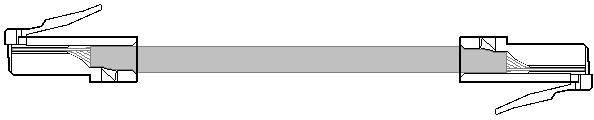
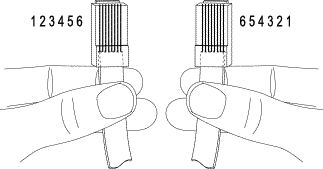


Fig. 11.Modem power supply cable.

**Attention!** Before connecting the GSM-modem to the controller Recon-SX you should remove all SMS-messages stored to a SIM-card, and to the memory of the GSM-modem.

**Attention!** Before using the SIM-card, always turn off the check of pin-code.

# Fault diagnostics

Controller RECON-SX has a built-n self-diagnostic. In case of malfunction the controller displays corresponding message on the LCD screen.

# Modes of Operation

RECON-SX controller can operate in the following modes:

* configuration mode;
* normal operation mode;
* emergency mode;
* standalone mode

In configuration mode controller RECON-SX allows you to:

* reading the array of configuration information from the Recon-SX controller in a PC;
* writes the configuration information array from the PC to the Recon-SX controller ;
* Set time and date of the controller according to the system timer of PC;
* Read ID of connected digital sensors;
* query the current state of the inputs and sensors;
* control relays.

In normal operation mode RECON-SX controller:

* controls actuators, connected to the relay output;
* receives messages from the modem;
* sends messages to the modem;
* controls modem status and the presence of a signal;
* provides circuit switching and exchange with connected devices.

Messaging and actuators control is carried out according to the algorithm of the functioning based on analysis of the following information:

* parametric values of sensors,
* state of contact sensors,
* state of analog sensors
* commands contained in incoming messages.

In normal operation mode it's also possible to perform the procedure of programming the working Touch Memory keys, and to change a security mode - unsecured / secured.

Controller goes into offline mode, if the communication with a connected modem or PC is missing. This saves all the settings on the relay reactions to the readings of sensors that are specified in configuration mode.

Controller goes into emergency mode, if its storage device is missing or array of configuration information is corrupt (for example as the result of interruption of communication between the controller and the PC while transmitting the array in configuration mode).

The name of the current mode of operation of the controller is displayed on the LCD.

# CONFIGURATION

In this mode the exchange of information between the RECON-SX controller and the PC is managed by REconfig program.

REconfig User Manual is delivered on CD-ROM supplied with the RECON-SX controller.

To switch controller that operates in normal operation mode to configuration mode, you should perform the following steps

* turn off the controller;
* disconnect the modem cable
* connect the RECON-SX controller using a null modem cable to the RS-232 port of switched off PC;
* switch on the PC;
* After loading the operating system run the REconfig program;
* turn on the controller.

After that, the controller RECON-SX will go into configuration mode.

To switch the RECON-SX controller that operates in configuration mode to normal operation mode, follow these steps:

* turn off the personal computer connected to the RECON-SX controller;
* turn off the controller;
* disconnect the null-modem cable from the RECON-SX controller serial port RS-232;
* connect modem cable to the serial port RS-232 of RECON-SX controller
* turn on the controller;

After that, the controller RECON-SX will switch to normal operation.

# Normal operation mode

Once the user form and upload to the controller configuration information array, the controller will operate on a user-defined algorithm.

## Formation of the message to events

In operation, the RECON-SX controller can generate and send messages upon the occurrence of conditions set by the configuration program. These messages are as follows

XXXX\*31-12-03 23:59:38\* EVENT: "message template"

where XXXX - object identification number,

\*- separator,

31-12-03 23:59:38 - day, month, year, time of event fixation,

"Message template" - text message, specified by the user using REsonfig.

## Issuance of control actions through messages

Controller RECON-SX can handle three types of control messages:

* request for object full status (contact inputs, analog inputs, parametric sensors, relays, signal level, mode of security);
* query the value of a single parametric sensor;
* direct control of the relay;
* command to set the date / time;
* command to change the security mode.

## Object status query

This query is a message of the next structure:

1234567\*СТАТУС

or

1234567\*STATUS

where 1234567 is a password specified by using REconfig, \* is used to separate the password and the command code (can be used any other symbol).

In reply to this message to the requesting subscriber number is sent up to three response messages (number is indicated by REconfig program), which displays the current state of the object. The first type of message is as follows:

XXXX \*21-09-03 21:00:38\*00010001\* ЗЗЗЗРРРР\*CSQ\* ТО/ОХРАНА

where XXXX - object identification number,

21-09-03 21:00:38 – day, month, year, time of event fixation,

00010001 – state of the input (the first symbol corresponds to the input 8).

ЗЗЗЗРРРР – relay state (Р - OFF (open), З - ON (closed)),

CSQ - GSM signal level at the controller location,

ТО/ОХРАНА – controller operation mode.

The second type of message is as follows:

XXXX \*21-09-03 21:00:38\*АЦП1\*...\*АЦП8

where XXXX – object identification number,

21-09-03 21:00:38 – day, month, year, time of event fixation,

АЦП№N - value of the ADC#N in volts and tenths of a volt

The third type of message is as follows:

XXXX \*21-09-03 21:00:38\*DAT1\*...\*DAT8

where XXXX - object identification number,

21-09-03 21:00:38 - day, month, year, time of event fixation,

DAT № N - the value of a parametric sensor № N

## Query the value of parametric sensors

This query is a message of the next structure:

1234567\*DATn

or

1234567\*ДАТn

where 1234567 is a password specified by using REconfig, \* - used to separate the password and the command code (can be used any other symbol), n - number of parametric probe (1 to 16), the value of which the user wants to get at the moment.

If the system uses the combined temperature and humidity sensors (2in1), then within the system they are treated as separate (see REconfig User Manual).To obtain current information about temperature and humidity of this sensor, you need to send 2 requests, indicating the appropriate number configured in the program REconfig. For example: 1234567 \* DATx - for temperature, 1234567 \* DATy - for the value of humidity, where X and Y - the numbers assigned to the sensor when you configure controller with the REconfig program.

## Direct relay control command

This command manages the controller's outputs (relays). The command is as follows:

1234567\* РЗННЗЗРР

where 1234567 - password,

\* - used to separate the password and relay status (can be used any other symbol).

The next 8 characters indicate management team relay (З - enable (connect), P - off (off), Н - do not change state).

In response to a direct control of the relay command RECON-SX controller sends a receipt message. A receipt is a status message of the first type described above in p.9.3

## Security mode change command

This command is intended to change the security mode (TO - maintenance (disarmed), ОХРАНА - the object is protected). This command is a message like:

1234567\* ОХРАНА ДА

1234567\* ОХРАНА НЕТ

where 1234567 is a password.

## Command to set the current date / time

This command is intended to set the internal clock of RECON-SX controller. The message looks as follows:

1234567\* CLOCK DATA TIME

where 1234567 - password,

CLOCK - the team changing the date / time,

DATA - the current date format dd-mm-yy

TIME - current time in hh: mm: ss.

## The procedure for programming Touch Memory keys

The procedure for programming keys Touch Memory can be implemented **only in normal operation mode.**

To go to the procedure of programming the working keys you should bring the master key to the Touch Memory reader (specified by the REconfig software).After that, the LED on the reader goes off.

The user can start working on programming the keys bringing them one after another to the Touch Memory reader. After the bringing the key LED lights for 2 seconds and the LCD screen will display the recorded key number. Only after this time, we can bring the next working key to the reader. *The duration of each contact of the key with a reader should not be less than 0.5 seconds.* Total can be programmed up to 8 working keys. If a working key is already programmed into the system and is brought to the Touch Memory reader for a second time, the LED does not light up. If the number of working keys for programming is less than 7 to exit the procedure of programming the working keys you should bring a master key to the Touch Memory reader for the second time. The system goes back to regular mode of operation. Exit the programming procedure can take place automatically when the Touch Memory reader will be successively handed out 8 different working keys. After the transition to regular operation mode LED either lit steadily (TO mode), or flashes at intervals 0.5 sec (ARM). **Attention!**

1. The master key is used only for the transition to the procedure and exit of procedure for programming Touch Memory keys and cannot be used as a working key!
2. If you lose one of the working key it is recommended to reprogram all the working keys. In this case, use the lost keys will be impossible.
3. If you lose the master key you need to configure the RECON-SX controller using REconfig, to fix at the program an identifier of the new master key.
4. Any working TOUCH MEMORY key can become a master key when entering its ID in the REconfig program. The use of such a key as a worker becomes impossible.
5. You can use the Touch Memory keys, whose types are approved by the manufacturer. The manufacturer is not responsible for the functionality of third-party Touch Memory Keys.

## The procedure for changing the mode of security

The procedure for changing the security mode can be carried out in the normal operation mode.

To change the mode (arm / disarm), you must bring a working key to the Touch Memory reader. The mode change can be controlled by the LED (see Attachment 2.).

The security mode change can be carried also by sending a message of the following content:

1234567\*охрана да

1234567\*охрана нет

where 1234567 is a password

# Maintenance

The user needs to periodically check the tightness of the terminals and connections with external circuits of the Recon-SX controller's contacts.

Post-warranty repair of the controller is recommended to be done by manufacturer or authorized organizations with the necessary technical base.

# Storage

Transportation of controller in package should be made by all kinds of private and public transport under the following conditions:

Controllers in manufacturer's packaging must be stacked not higher than 25 packages

Unpacked controllers should be stored in clean closed boxes to protect against dust and dirt.

# Transportation

Transportation of controller in package should be made by all kinds of private and public transport under the following conditions:

* transportation of controllers by rail must be performed in closed clean cars;
* when transporting by open-top transport the boxes with controllers should be covered with waterproof material;
* when transporting by water transport the boxes with controllers should be placed in the hold.

Values of climatic influences during transportation must be:

* temperatures from minus 35 to plus 55 °C;
* relative humidity less than 98% at a temperature of 25 ° C without condensation;

Placement and mounting of boxes with controllers in vehicles must ensure their stable position, to exclude the possibility of displacement and attacks against each other or the walls of the vehicles.

The warning label precautions should be followed at all stages of the path from the shipper to the consignee.

# Technical Support

Technical support is provided free of charge by e-mail: recon-sx@stpro.ru.

# Manufacturer's warranty

The warranty period for the controller RECON-SX is 12 months from the date of sale at retail, but not exceeding 18 months from the date of wholesale shipment.

During the warranty period a manufacturer produces a free repair or replacement of a faulty controller.

Warranty does not apply in case of:

* violation of the rules of transportation, storage, installation and operation, established in the technical specifications and operational documentation;
* the presence of mechanical damage;
* interference in an electrical circuit of controller;
* using a controller not for original purposes.

# Annex 1

**INDICATION OF SECURITY MODE BY LED  
located on Touch Memory Reader panel**

|  |  |
| --- | --- |
| Periodic blinking (0,5 sec in a series of 1 sec.) | The controller is "secured"  (Mode "security armed") |
| LED is constantly on. | Controller "disarmed"  (maintenance mode) |
| LED is off | The controller is in Touch Memory keys programming mode, or it's a delay while arming |
| LED is on for 2 sec. | The controller writes data to the working key |

Valid when completed

**Warranty Card**

The company "Proinfotek" undertakes warranty repair within 12 months from the date of sale. Warranty does not apply in case of:

* violation of the rules of transportation, storage, installation and operation, established in the technical specifications and operational documentation;
* the presence of mechanical damage;
* using a controller not for original purposes.

Issues relating to the return and exchange of items, should be addressed to the seller, in accordance with the law "On Protection of Consumer Rights.

Questions on servicing the controller must be addressed to the point of purchase or installation, and if it is not possible, then to the manufacturer's warranty service.

|  |  |
| --- | --- |
| **Completed by a manufacturer:** |  |
| Product number, date of manufacture | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| The representative of the manufacturer's quality control department | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | TCI Stamp |
| **Completed dy the seller:** |  |
| Date of sale | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | year, month, day |
| Seller | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | signature, a shop stamp |

Postal address: 111141, Moscow, st. Plekhanov, 7, ZAO "Proinfotek"

Tel.(495) 305-41-50 Fax: (495) 305-41-50

E-mail: info@recon-pro.ru

Website: [www.recon-pro.ru](http://www.recon-pro.ru)