SIGNAL-20M
ALARM CONTROL PANEL

User Guide

АЦДР.425513.017

2020

TABLE OF CONTEXT

This User Guide is meant for learning operation and usage principles of the **Signal 20M (2.11)** Alarm Control Panel (hereinafter referred to as the Panel)

Please read this Guide carefully before using this panel. Any maintenance, starting, configuring and running procedures must be performed in accordance with all requirements of norms and regulations at the installation site.

Acronyms:

AAD – Audible Alarm Device;

VAD –Visual Alarm Device;

ISS – Integrated Security System

PC – Personal Computer;

CMS – Central Monitoring Station;

PIN – Personal Identification Number;

RCU– Remote Control Unit.

Input circuit: an aggregation of detectors, wires and resistors (terminal, auxiliary and shunt) connected to a panel input.

Zone: an aggregation of two and more fire input circuits determining fire factors in minimal individual and monitored area of a protected site**.**

User: a person responsible for arming or/and disarming a protected site or part of it.

1. Description and Operation

1.1 General

1.1.1 The Signal-20M Intrusion and Fire Alarm Panel (hereinafter referred to as Panel) is designed to use as combined device to monitor and control alarms in the following systems:

- Fire alarm and extinguishing systems
- Evacuation and alarm system of Type 1 and Type 2
- Intrusion and panic alarm system
- Auxiliary alarm systems

The Panel can be used as a standalone device as well as an addressable device in the Orion Integrated System in combination with the network controller. The S2000M panel or workstation with the Orion Pro Suite installed can be used as a network controller

If operated with the S2000M panel (ver 3.00 or newer), in addition to audio and visual alarm control functions, the Signal M supports various fire protection equipment as described in the S2000M's User Guide.

Applications: standalone or centralized protection of building and facilities (offices, stores, banks, warehouses and production facilities) from fire and unauthorized access.

1.1.2 The Signal-20M supports conventional (nonaddressable) threshold wire-connected detectors.

1.1.3 The Signal-20M can operate as a processing module of rate-of-rise heat detectors and supports sensing elements (thermal cables) detecting temperature threshold exceedance.

1.1.4 The Panel provides the following:

- Monitors twenty (20) inputs (fire, intrusion, panic and auxiliary inputs)
- Receives signals from automatic and manual passive and active (over-input powered), four-wire fire and intrusion detectors with NO or NC internal contacts;
- Receives signals from sensing elements detecting over-threshold temperatures in addition the panel can perform functions of a processing module for rate-of-rise heat detectors
- Checks for communication faults with detectors
- Generates the Fire, Fault and Start (Activation) signals to transmit them to the fire brigade (K1, K2, K3 outputs);
- Generates the Alarm discrete signals to transmit them to the Centralized Monitoring Station (CMS) (K1, K2, K3 outputs);
- Controls audio and visual alarm devices (AAD and VAD) (K4, K5, K6 and K7outputs);
- Check for communication faults with alarm devices
- Supports multiple-detector connection to one output providing check for line faults in active and inactive conditions
- Shows the status of device elements by its own LEDs and provides audible indication on operation conditions and modes
- Stores up to 4,096 event messages in its non-volatile memory
- Interoperability with the network controller (C2000M panel or Orion Pro Suite Workstation);
- Offers credential-based (PINs and iButtons) authentication to protect its controls (buttons) against unauthorized access
- Stores up to 128 user credentials in nonvolatile memory;
- Supports iButton reading through own built-in reader (connection of external readers is not supported);

– Arming and disarming inputs through its own control tools or by commands from the network controller;
– Controls audible and visual alarm devices in the auto mode (local control);
– Controls audible and visual alarm devices in the manual mode from built-in controls and remote control devices);
– Controls fire protection equipment as instructed by the S2000M panel (centralized control);
– Monitors for power faults and tampering attempts.

WARNING!

The following Bolid-manufactured detectors and devices are recommended for the use with the Signal-20M:

– IP 212-31 DIP31 Threshold Photoelectric Smoke Detector
– IP435-8/101-04-AR1 SOnet combined threshold CO and fixed temperature and rate-of-rise detector
– IPR 513-3M Resettable Manual Call Point
– IPR 513-3M IP 67 Resettable Manual Call Point;
– UDP 513-3M Manual Release Station

The use of the above devices is guaranteed a complete compatibility with the Signal-20M in accordance with GOST R 53325-2012.

In addition, the following intrusion detection devices manufactured by Bolid company are recommended for the operation with the Signal-20M:

– ECHO-5 Ultrasonic Motion Detector
– IRBIS ver 01glass break detector

1.1.5 The panel is not scalable system.

1.1.6 The panel supports connection to PC for control and programming functions.

1.1.7 The panel is designed for 24\7 continuous operation

1.1.8 The panel is a reparable device with periodic maintenance

1.1.9 The Panel is not designed to be used in aggressive, dust, explosive and fire-hazardous environments.

1.2 Specifications

Table 1.2.1 Specifications

No	Parameter	Value
1.2.1	DC supply voltage, V	10.2 … 28.0
1.2.2	Consumption current, mA, no more * - in quiescent mode - in the FIRE mode * excluding current consumption of alarm devices	 400 650
1.2.3	Power inputs	2
1.2.4	Startup time, s	5
1.2.5	Inputs	20
1.2.6	Voltage on unloaded input terminals, V	26.5 … 27.5
1.2.7	Input short-circuit current limitation, not more than, mA	26,5
1.2.8	Resistance of input terminal resistor, kΩ	4.7±5 %
1.2.9	Max. current consumption of all detectors in quiescent mode, mA - type 1 (Fire smoke) inputs - type 2 (Fire combined) inputs	 3,0 1,2

1.2.10	Input resistance in various states	see Table 1.4.2.3.
1.2.11	Maximum allowable resistance of the sensing element of a linear heat detector (thermal cable), kΩ	1.5
1.2.12	Input communication line: - max. wire resistance (excluding terminal resistor), Ω - insulation resistance of wires, not less, mΩ	 100 50
1.2.13	Input voltage reset time, s	3,0
1.2.14	Number of outputs: - non-monitored, 'dry contact' (130 VAC / 170VDC, 0.1 A) - monitored (10.2 ... 28.0 V, 2.5 A)	 3 4
1.2.15	Rated load current of monitored output, mA	5 … 2500
1.2.16	Output terminal resistance, kΩ	4,7±5 %
1.2.17	Voltage (negative) on inactive output with the connected terminal resistor, mV	- 1100 … - 2200
1.2.18	Output line health check current (reverse), no more, mA	- 1,5
1.2.19	Ingress protection according to GOST 14254-2015	IP40
1.2.20	Mechanical tolerance according to OST 25 1099-83	Placement category 3
1.2.21	Vibration load: - Frequency range, Hz - Accelerated up to	 1 … 35; 0,5
1.2.22	Mechanical stability according to OCT 25 1099-83	O3
1.2.23	Operating temperatures, °C	– 30 … + 55
1.2.24	Air humidity , % (at + 25 °C)	98
1.2.25	Weight , kg	0,5
1.2.26	Dimensions , mm	332 x 177 x 42
1.2.27	Mean time between failures in Quiescent mode, h	- not less than 80000
1.2.28	Probability of no-failure	- 0,98758
1.2.29	Average service life , years	10

1.2.30. The Panel meets the standards of industrial radio interference established for equipment of class V in accordance with GOST R 51318.22

1.2.31. The industrial radio interference tolerance of the panel meets requirements for Severity of Third Level of GOST R500009.

1.3 Standard delivery

Table 1.3.1 Delivery Bundle

Reference No	Description	Q.ty
АЦДР.425513.017	Signal-20M Intrusion and Fire Alarm Control Panel	1 pcs.
Set of spare parts and accessories :[1]		
	Resistor 0.5 W – 4,7 kΩ (MF 1/2W-4K7±5% or MF 1/2W-4K7±1% or similar)	24 pcs
	Screw 1- 3x25.016 GOST 1144-80	4 pcs.
	Wall plug 6x30	4 pcs.
Documents:		
АЦДР.425513.017 РЭ	Signal-20M Operation Manual [2)]	1 pcs.

Note:

1) –DS1990A dongles are optional delivery.
2) – The User Guide can be downloaded at the product page at www.bolid.ru

1.4 Design and Operation

1.4.1 General Information

1.4.1.1 The Panel appearance, dimensions an installation layout are shown in 2.2.2.

1.4.1.2 The Signal-20M's enclosure has a removable cover, which can be removed to access the connectivity elements. This contains the following items:

- - terminals for connecting inputs ('IN1 +', 'IN1-' ... 'IN20 +', 'IN20-') - 40 pcs .;
- - terminals for connecting output discrete signals FIRE, 'Fault', etc., non-polar 'dry contacts' ('K1 +', 'K1-' ... 'K3 +', 'K3-') - 6 pcs.;
- - terminals for connecting sirens, actuators, etc., polar monitored outputs ('K4 +', 'K4-' ... 'K7 +', 'K7-') - 8 pcs.;
- - terminals for connecting the RS-485 interface for communication with the network controller ('A', 'B');
- - power connection terminals ('+ U1', '0V', '+ U2', '0V');
- - jumper ('jumper') XP4, connecting the 620-Ω end-of-line resistor to the RS-485 interface circuit

1.4.1.3 The Signal-20M Front View is shown in Figure 1.4.1.

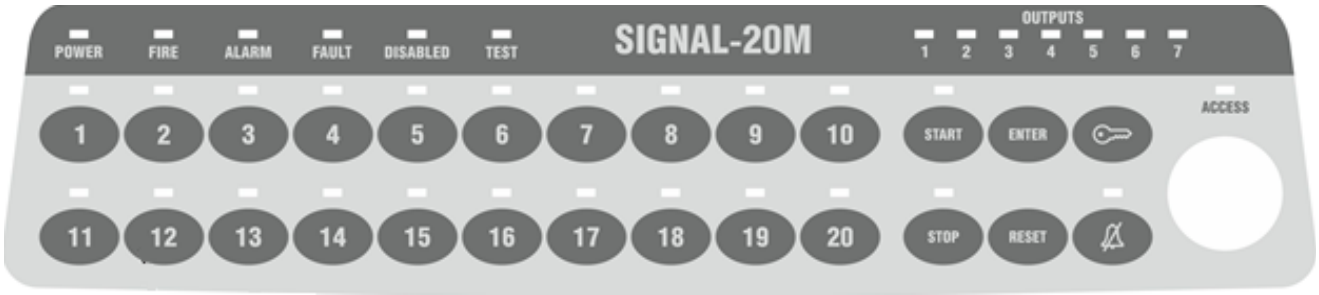

Figure.1.4.1. Signal-20M Front View

1.4.1.4 The front of the panel contains controls and indicators (see Figure 1.4.1):

- 1 … 20 input control buttons (arming / disarming)
- START, STOP output manual control buttons
- ENTER button to complete password entry
- RESET alarm reset button
- (Key) start/end control session button
- mute button
- built-in Touch Memory (iButon) reader;
- '1' ... '20' input status indicators;
- '1' ... '7' output status indicators;
- 'Power' power status system indicator;
- FIRE, 'Alarm', 'Default, 'Disabled' system indicators
- 'Test' indicator;
- 'Access' indicator
- 'Muted' indicator

1.4.2 Inputs

1.4.2.1 The control panel provides monitoring of 20 inputs for connecting fire (intrusion, alarm or auxiliary) input circuits with normally open/ closed internal contacts.
Monitoring is based on the measuring of the input circuit resistance.

1.4.2.2 Device inputs can accommodate any types of intrusion and fire detectors designed to operate at constant voltage. In this case, the internal resistance of the detector in the alarm mode ('triggering') should be:
- no more than 2.7 kΩ for normally open detectors (closed state);
- not less than 3.2 kΩ for normally closed detectors (open state).

1.4.2.3 In the quiescent mode, the panel provides inputs with a constant voltage from 19 to 24 V with an end-of-line resistor of 4.7 kΩ ± 5% and a detectors current consumption from 0 mA to 3 mA.

1.4.2.4 The effective value of the ripple voltage in the circuit is no more than 20 mV.

1.4.2.5 If one of the inputs is short-circuited, the device provides voltage at the other inputs as described 1.4.2.3. Long-term closure of more than 3 input circuits at the same time is not allowed.

1.4.2.6 The panel provides limiting the short-circuit current of the input at the level of no more than 26.5 mA.

1.4.2.7 The panel disconnects the input-circuit voltage to return automatic current-consuming detectors to the quiescent mode during arming (while resetting alarms).
The duration of the power disconnection is 3.0 s.
The panel power off each input individually.

1.4.2.8 Parameters of communication lines ensuring normal operation of fire input circuits connected to the control panel inputs are as follows:
- wire resistance without taking into account the terminal resistor is no more than 100 Ω;
- insulation resistance between the input wires is not less than 50 kΩ;
- insulation resistance between input wires and wires of other inputs is not less than 50 kΩ;
- insulation resistance between each wire and 'earth' is not less than 50 kΩ.

1.4.2.9 Parameters of communication lines ensuring normal operation of intrusion input circuits connected to the panel inputs are as follows:
- wire resistance without taking into account the terminal resistor - no more than 1 kΩ;
- insulation resistance between input wires not less than 20 kΩ;
- insulation resistance between input wires and wires of other inputs is not less than 20 kΩ;
- insulation resistance between each wire and 'earth' is not less than 20 kΩ.

1.4.2.10 The logical state of the input is defined by:
– its type;

– logic configuration parameters;
– electrical resistance;
– mode (armed (enabled) or disarmed (disabled), etc.).

1.4.2.11 In accordance with the logical state of the inputs, the panel:
– displays their status on indicators ‘1’ ... ‘20’;
– controls the built-in buzzer when the inputs go into alarm states or when a fault occurs;
– generates discrete signals FIRE, ‘Fault’, ‘Start’, ‘Alarm’;
– controls sound and light alarm devices;
– generates and sends all input state-change events to the network controller

1.4.2.12 Input Configuration Parameters
The control tactics are determined by inputs configuration parameters shown in Table 1.4.2.1

Table 1.4.2.1 Input Configuration Parameters (Input Attributes)

Parameter	Function	Acceptable values range
1	2	3
Input Type	Defines the tactics of input monitoring, class of connected detectors and possible input states	*1 – Smoke Fire (two-threshold)*
		2 – Combined Fire (one- threshold)
		3 – Heat Fire (two-threshold)
		4 – Intrusion
		5 – Intrusion and Fire
		6 – Auxiliary
		7 – Lobby
		11 – Panic
		12 – Programmable Auxiliary
		16 – Fire Manual
		17 – Flood Alarm
		18 – Manual Release
Zone Number	The zone number that includes this fire input (only for Input Type 1, 2 and 3)	*0 to 10 (0 is not included in any zone)*
Alarm Delay	Transition delay from Lobby Alarm to Intrusion Alarm status for Intrusion Input (type 7) and Transition delay to Flooding Detected status for Flood Alarm Input	*0 to 255 s*
Arming Delay	Pause between input arming command and input transition to Armed status	*0 to 255 s*
Delay Analysis after Reset	Time required for power restore process after reset within input The input is not analyzed during this time	*1 s 63 s*
Shunt Time	Time required for input restoring from Intrusion Alarm, Panic and Armed states. For Auxiliary Input: this is a transition time to Armed, Disarmed and Auxiliary Normal and any …. Restored Flood Alarm Input: this is a transition time to Flood Alarm Restored state.	*0 to 255 s*
Activation Delay for Output 1	Output activation (deactivation) delay from moment of an input status change	*0 to 255 s*
Activation Delay for Output 2		
Activation Delay for Output 3		
Activation Delay for Output 4		
Activation Delay for Output 5		
Activation Delay for Output 6		
Activation Delay for Output 7		

Never Disarm	The input can never be disarmed	*Check/Uncheck*
Rearming if Arming Failed	Automating arming after arming failed status while the input is being restored	*Check/Uncheck*
Rearming After Alarm	Automatically goes to the Arming status from the Intrusion Alarm and Panic states when the input is restored (only for intrusion inputs of types 4, 5, 7 and 11)	*Check/Uncheck*
Disarmed Input Monitoring	Sends messages about state changes of a disarmed input of type 4,5, 7 and 11 (normal / abnormal) via the interface	*Check/Uncheck*
Fire Input Requery Inhibit	Disables the function of requerying a state of fire input types 1 and 2	*Check/Uncheck*
Debounce Time 300 ms	The intrusion input goes to the Alarm status in case of violation for more than 300 ms	*Check/Uncheck*
Ignore up to 10% deviation	The intrusion input does not go into the 'Alarm' status when the resistance changes by more than 10% in 255 s	*Check/Uncheck*
Output 1	Interlinks input control with this output	*Check/Uncheck*
Output 2		*Check/Uncheck*
Output 3		*Check/Uncheck*
Output 4		*Check/Uncheck*
Output 5		*Check/Uncheck*
Output 6		*Check/Uncheck*
Output 7		*Check/Uncheck*

1.4.2.13.0. **The Input Type** is a main configuration parameter that determines an input monitoring method and the class of connected detectors. The panel supports 12 input types.

1.4.2.13.1. **Type 1: Smoke Fire Two-Threshold**

The input supports smoke fire two-threshold (normally-open) detectors

The input-circuit resistance corresponding to different physical states is shown in Table 1.4.2.3.

The boundary between the physical states *Activation of 1 smoke detector* and *Activation of 2 or more smoke detectors* is dynamic and automatically calculated by the Panel depending on the total current consumed by the detectors in the Armed status.

Possible logical states of the input:

- **ARMED** (**ARMED**, **ENABLED**) - the input is monitored, the circuit resistance is normal;
- **DISARMED** ('**DISARMED**') - the input is not monitored;
- **DISABLED** - the input is not monitored, the monitoring is disabled by the network controller;
- **ARMING DELAY** - the arming is still in progress;
- **PRE-ALARM** – triggering of one detector (when the **Fire Input Requery Inhibit** parameter is enabled);

– **FIRE** - the input switches to this state of the following occurs:

- the triggering of one detector is confirmed (after a requery);

- the triggering of two detectors occurs (the **Fire Input Requery Inhibit** parameter enabled) in one input circuit in a time not exceeding 120 s;
- the second transition to the PRE-ALRM state of different inputs of the same zone is registered in a time not exceeding 120 s provided the input that gone to the PRE-ALARM state first does not change its state

– **FIRE2 -** the input goes to this state if the following occurs:
- the triggering of two detectors (after a requery) in one input circuit is confirmed within a time not exceeding 120 s;
- the second transition to the FIRE state of different inputs of the same zone occurs in a time not exceeding 120 s and the input that gone into the FIRE state first does not change its state.

  - **SHORT CIRCUIT** - input circuit resistance is less than 100 Ω;
  - **OPEN CIRCUIT** - input resistance is more than 6 kΩ;
  - **ARMING FAILED** – the input is not normal at the moment of arming.

Algorithm of Two-Threshold Fire Smoke Input

Input disablement (transition to the DISABLED status) can be done only manually using the DISABLE command of the network controller (the S2000-M panel ver.4.13 (3.13) or newer).

When monitoring is enabled, the input goes from Disabled to one of the following states:
– **ARMING DELAY**
– **ARMED**
– **ARMING FAILED**

The input monitoring can be enabled by the following way:
- manually by ENABLE command of the network controller (S2000M panel v.4.13 (3.13) and higher);
- manually by ARM or ENABLE command of the network controller (S2000M panel v.4.12 (3.12) and lower)
- manually using the Signal-20M controls when operated in combination with the S2000M control panel v.4.12 (3.12) and lower;
- manually using the Signal-20M controls in standalone operation.

The input enablement can be done only manually using the Signal-20M own controls or by a command of the network controller.

If during attempt to arm the input, the resistance is less than normal, for example, a smoke detector triggering occurred in the input circuit, the control panel automatically resets input (turns off the power of this input for 3 seconds). This allows automatic current-consuming detectors to be returned to the quiescent mode.

The device starts evaluating the input resistance after a delay defined by the **Delay Analysis after Rese**t parameter. If after the power reset, the resistance of the input is not within the normal range, the input goes into the **ARMING FAILED** status.

Being in **ARMING FAILED** state, the input can go to the following states:

- **DISARMED** – manually using the panel controls or by the command of the network controller;
- **ARMED**:
  - manually using the panel controls or by the command of the network controller;
  - automatically when the configuration parameter **Reaming If Arming Failed** is enabled, if the input resistance is in the normal range.

In the **ARMED** state, the control panel monitors an input circuit for short-circuit and open-circuit faults, one detector triggering, two and more detectors triggering.

In case of input short circuit, the input switches from the **ARMED** state to the **SHORT CIRCUIT** (**OPEN-CIRCUIT**) state, respectively. When the input is restored (if the resistance goes into the normal range), the input automatically switches to the **ARMED** state.

Algorithm of input operation in the ARMED state with a disabled Fire Input Requery Inhibit parameter:

Upon the detector triggering, the control panel generates the Detector Signal event message and resets the input state: it powers off the input for 3 seconds. After a delay defined by the **Analysis Delay after Reset** parameter, the Panel starts evaluating the input-circuit resistance. If the detector is triggered again within 55 seconds, the input goes into the **FIRE** state, and if two or more detectors are triggered in the input circuit during this time, it goes to the **FIRE2** state. If no detector triggering is recurred within 55 seconds, the input remains in the **ARMED** state.

When in the **FIRE** state, the input is still monitored during next 120 seconds till the triggering of a second detector on this input circuit (triggering of a second detector – requery- retriggering of two detectors), the input goes to the FIRE2 status. If no second detector is triggered or its triggering is not confirmed, or it quiescent 120 seconds later after the FIRE status, the input stays in the **FIRE** status.

When switching to the **FIRE** state, the triggering of detectors on other inputs are also taken into account, provided that they belong to the same zone. If upon confirmation of the triggering of the first or second detector of this input, the other input was already in the **FIRE** state and the detector on it was triggered no more than 120 seconds ago, this input goes to the **FIRE2** state. Thus, the transition to the **FIRE2** state occur if a confirmed triggering of two fire detectors of the same input or different inputs of the same zone occurs within two minutes.

Algorithm of input operation in the ARMED state when the Fire Input Requery Inhibit parameter enabled

Upon detector triggering, the input goes to the **PRE-ALARM** state.

In the **PRE-ALARM** state, the control of the input continues, and if the triggering of the second detector of this input is registered within the next 120 seconds, the input goes to the **FIRE** state. If the second detector does not trigger, or it does occur but 120 seconds later after switching to the **PRE-ALARM**, the input will remain in the **PRE-ALARM** state.

When switching to the **PRE-ALARM** state, the triggering of detectors on other inputs are also taken into account, provided that they belong to the same zone.

When switching to the **PRE-ALARM** state, the triggering of detectors on other inputs are also taken into account provided that they belong to the same zone. If upon triggering of a first or second detector of this input, the other input is already in the **PRE-ALARM** state and the detector on it was triggered no more than 120 seconds ago, this input goes to the **FIRE** state. Thus, the transition to the **FIRE** state takes place if triggering of two fire detectors is registered without requery within two minutes in the same input or different inputs belonging to the same zone.

When switching to the **FIRE** state, the triggering of detectors on other inputs are also taken into account, provided that they belong to the same zone. When going to the Fire status, the other input was already in the **FIRE** state and the detector on it was triggered no more than 120 seconds ago, this input goes to the **FIRE2** state. Thus, the transition to the **FIRE2** state is initiated if different inputs belonging to the same zone go to the **FIRE** state twice within two minutes.

When in the **PRE-ALRM**, **FIRE**, and **FIRE2** states, the input is not monitored for short-circuit and open-circuit faults.

When in the **PRE-ALRM**, **FIRE**, or **FIRE2** states, the input can go to the **DISARMED**, **ARMED** (**ARMING FAILED** if input is or normal) only through manual and network-controller commands.

Integration Time (Debounce Time) for Input of Type 1 is defined as described in 1.4.2.29, except for:

- Integration time of transition from the **ARMINNG FAILED** state to the **ARMED** state is 3 seconds;

- Integration time of transition from the **SHORT/OPEN CIRCUIT** state to the **ARMED** state is 1 second.

The connection of fire smoke (normally open) and detectors on the Input of Type 1 is provided in 2.2.4.3.

1.4.2.13.2. **Type 2: One-Threshold Fire Combined**

The input supports fire smoke (normally open) and heat (normally closed) detectors.

The input resistance corresponding to different physical states is provided in Table 1.4.2.3.

Possible logical states of the input:

- **ARMED (ARMED, ENABLED) -** the input is monitored, the circuit resistance is normal;
- **DISARMED (DISARMED) -** the input is not monitored;
- **DISABLED -** the input is not monitored; the monitoring is disabled by the network controller;
  - **ARMING DELAY -** the arming delay is still in progress**;**
    - **PRE-ALARM** - the input goes to this state if the following occurs:
      - Triggering of one detector (when the **Fire Input Requery Inhibit** parameter is enabled)
      - Triggering of heat fire detector
  - **FIRE -** the input switches to this state in case of:
      - the triggering by one heat detector was confirmed (after a requery);
      - the second transition to the PRE-ALRM state of different inputs of the same zone was registered in a time not exceeding 120 s. In this case, the input that has gone to the **PRE-ALARM** first does not change its state

– **FIRE2** - the input goes to this state if the following occurs:
  - the second transition to the **FIRE** state of different inputs of the same zone was occurred in a time not exceeding 120 seconds provided that the input gone to the FIRE state first does not change its state.
– **SHORT CIRCUIT** - input circuit resistance is less than 100 Ω;
– **OPEN CIRCUIT** – the input resistance is more than 6 kΩ;
– **ARMING FAILED** – the input was not normal at the moment of arming.

Algorithm of One-Threshold Fire Combined Input

Input disablement (transition to the **DISABLED** status) can be done manually only using the DISABLE command of the network controller (the S2000-M panel ver.4.13 (3.13) or newer).

When enabled, the input goes from Disabled to one of the following states:
– **ARMING DELAY**
– **ARMED**
– **ARMING FAILED**

The input monitoring can be enabled by the following way:
- manually by ENABLE command of the network controller (S2000M panel v.4.13 (3.13) and higher);
- manually by ARM or ENABLE command of the network controller (S2000M panel v.4.12 (3.12) and lower)
- manually using the Signal-20M controls when operated in combination with the S2000M control panel v.4.12 (3.12) and lower;
- manually using the Signal-20M controls, in standalone operation.

The input enablement can be done manually only using the Signal-20M own controls or by a command of the network controller.

If during an arming attempt, the input resistance is less than normal, for example, a smoke detector triggering occurred in the input circuit, the control panel automatically resets input (turns off the power of this input for 3 seconds). This allows automatic current-consuming detectors to be returned to the quiescent mode.

The device starts evaluating the input resistance after a delay equal to the value of the **Delay Analysis after Rese**t parameter. If after the power reset, the resistance of the loop is not within the normal range, the input goes into the **ARMING FAILED**

If input resistance is higher than normal range at the arming attempt, the input immediately goes to the **ARMING FAILED** status.

Being in **ARMING FAILED** state, the input can go to the following states:
– - **DISARMED** - manually, using the device controls or by the command of the network controller;
– - **ARMED**:
  - manually using the device controls or by the command of the network controller;
  - automatically when the configuration parameter **Reaming If Arming Failed** is enabled, if the input resistance is in the normal range.

In the **ARMED** state, the control panel monitors input circuit for short-circuit and open-circuit faults, triggering of heat detector and triggering of smoke detector.

In case of input short/open circuit faults, the input goes to the **SHORT CIRCUIT** (**OPEN-CIRCUIT**) state, respectively. When the input is restored (if the resistance returns to the normal range), the input automatically goes to the **ARMED** state.

The triggering of heat detector switches the panel to the PRE-ALARM state

When switching to the **PRE-ALARM** state, the triggering of detectors on other inputs are also taken into account provided that they belong to the same zone. If upon triggering of a heat detector of this input, the other input is already in the **PRE-ALARM** state and the detector on it was triggered 120 seconds ago or earlier, this input goes to the **FIRE** state. Thus, the transition to the **FIRE** state occurs if triggering of two fire heat detectors is occurred within two minutes on different inputs belonging to the same zone.

When switching to the **FIRE** state, the triggering of detectors on other inputs are also taken into account, provided that they belong to the same zone. When going to the Fire status, the other input was already in the **FIRE** state and the detector on it was triggered no more than 120 seconds ago, this input goes to the **FIRE2** state. Thus, the transition to the **FIRE2** state is initiated if different inputs belonging to the same zone go the **FIRE** state second time within two minutes.

When in the PRE-ALRM, FIRE, and FIRE2 states initiated by a heat detector, the input is not monitored for short-circuit and open-circuit faults. The monitoring for smoke detector triggering is possible, if the **Fire Input Requery Inhibit** parameter is not enabled (only if requering is available).

When in the **PRE-ALRM, FIRE**, or **FIRE2** states, the input can go only to the **DISARMED**, **ARMED** (**ARMING FAILED** if input is or normal) through the manual and network controller commands.

The monitoring algorithm of smoke detector triggering in ARMED, PRE-ALARM and FIRE states if Fire Input Requery Inhibit is disabled:

Upon the smoke detector triggering, the control panel generates the Detector Signal event message and requery the input state: it powers off the input for 3 seconds. After a delay as set in the **Analysis Delay after Reset** parameter, the Panel starts evaluating the input-circuit resistance. If the detector triggers again within 55 seconds, the input goes into the **FIRE** state. If no detector triggering is recurred within 55 seconds, the input remains in the current state (**ARMED, PRE-ALARM, FIRE)**.

When switching to the **FIRE** state, the triggering of detectors on other inputs are also taken into account, provided that they belong to the same zone. When going to the Fire status, the other input was already in the **FIRE** state and the detector triggering was no more than 120 seconds ago, this input goes to the **FIRE2** state. Thus, the transition to the **FIRE2** state is initiated if different inputs belonging to the same zone go the **FIRE** state second time within two minutes.

The monitoring algorithm of smoke detector triggering in ARMED, PRE-ALARM and FIRE states if Fire Input Requery Inhibit is enabled**:**

On the detector triggering, the input goes to the **PRE-ALARM** state.

When switching to the **PRE-ALARM** state, the triggering of detectors on other inputs are also taken into account provided that they belong to the same zone. If upon smoke detector triggering on this input, the other input is already in the **PRE-ALARM** state and the detector on it was triggered no more than 120 seconds ago, this input goes to the **FIRE** state. Thus, the transition to the **FIRE** state occurs two different inputs of the same zone go to pre-alarm states within two minutes

When switching to the **FIRE** state, the triggering of detectors on other inputs are also taken into account, provided that they belong to the same zone. When going to FIRE status, the other input was already in the **FIRE** state and the detector triggering was no more than 120 seconds ago, this input goes to the **FIRE2** state. Thus, the transition to the **FIRE2** state is initiated if different inputs belonging to the same zone go the **FIRE** state second time within two minutes.

The input is not monitored for short-circuit and open-circuit faults in the PRE-ALRM, FIRE, and FIRE2 states.

When in the **PRE-ALRM**, **FIRE**, or **FIRE2** states, the input can go only to the DISARMED, ARMED (ARMING FAILED if input is not normal) through the manual and network-controller commands.

Debounce Time (Integration Time) for Input of Type 2 is defined as described in 1.4.2.29, except for:

- Debounce Time of switching from the **ARMINNG FAILED** state to the **ARMED** state is 3 seconds;

- Debounce Time of switching from the **SHORT CIRCUIT** (**OPEN-CIRCUIT**) state to the **ARMED** state is 1 second.

The connection of fire smoke (normally open) and fire heat detectors on the Input of Type 2 is provided in 2.2.4.3.

1.4.2.13.3. **Type 3: Heat Fire (Two-Threshold)**

The input supports heat fire (normally closed) detectors. The input circuit resistance corresponding to different physical states is shown in Table 1.4.2.3.

Possible logical states of the input:

- **ARMED** (**ARMED**, **ENABLED**) - the input is monitored, the circuit resistance is normal;
- **DISARMED** (**DISARMED**) - the input is not monitored;
- **DISABLED** - the input is not monitored; the monitoring is disabled by the network controller;
- **ARMING DELAY** - the arming delay is still in progress;
- **PRE-ALARM** - one detector triggered;
- **FIRE** - the input switches to this state in the following situations:
  - the triggering of two detectors of the same input occurs for the time period not exceeding 120 seconds;
  - the second transition to the PRE-ALRM state of different inputs of the same zone is registered during the time period not exceeding 120 seconds provided the input went to the **PRE-ALARM** state first does not change its state
- **FIRE2** - the input goes to this state if the following occurs:

- the second transition to the FIRE state of different inputs of the same zone was occurred in a time not exceeding 120 second. In this case, the input that has passed into the FIRE state first does not change its state.

– **SHORT CIRCUIT** - input circuit resistance is less than 100 Ω;
– **OPEN CIRCUIT** - input resistance is more than 6 kΩ;
– **ARMING FAILED** – the input is not normal at the moment of arming.

Algorithm of Two-Threshold Fire Heat Input

Input disablement (transition to the DISABLED status) can be done only manually using the DISABLE command of the network controller (the S2000-M panel ver.4.13 (3.13) or newer).

When monitoring is enabled, the input goes from Disabled to one if the following states:
– **ARMING DELAY**
– **ARMED**
– **ARMING FAILED**

The input monitoring can be enabled by the following way:
- manually by the ENABLE command of the network controller (S2000M panel v.4.13 (3.13) and higher)
- manually by the ARM or ENABLE command of the network controller (S2000M panel v.4.12 (3.12) and lower)
- manually using the Signal-20M controls when operated in combination with the S2000M control panel v.4.12 (3.12) and lower
- manually using the Signal-20M controls, in standalone operation

The input enablement can be done manually only using the Signal-20M own controls or by the command of the network controller.

If during attempt to arm the input, the resistance is beyond the normal range, the input immediately goes to the **Arming Failed** state.

Being in **ARMING FAILED** state, the input can go to the following states:
- **DISARMED** - manually, using the device controls or by the command of the network controller;
- **ARMED**:
  - manually using the device controls or by the command of the network controller;
  - automatically when the configuration parameter **Reaming If Arming Failed** is enabled, if the input resistance is in the normal range.

In the **ARMED** state, the control panel monitors input circuit for short-circuit and open-circuit faults, triggering of one detector, triggering of two and more detectors.

On the detector triggering, the input goes to the **PRE-ALARM** state.

In the **PRE-ALARM** state, the control of the input continues, and if the triggering of the second detector of this input is registered within the next 120 seconds, the input goes to the **FIRE** state. If the second detector does not trigger, or it does occur but 120 seconds later after switching to the **PRE-ALARM**, the input will remain in the **PRE-ALARM** state.

When during switching to the **PRE-ALARM** state, the triggering of detectors on other inputs are also taken into account provided that they belong to the same zone. If upon triggering of a heat detector of this input, the other input is already in the **PRE-ALARM** state and the detector of this input was triggered no more than 120 seconds ago, this input goes to the **FIRE** state. Thus, the transition to the **FIRE** state occurs if different inputs of the same zone goes to the **PRE-ALARM** state during two minutes.

When switching to the **FIRE** state, the triggering of detectors on other inputs are also taken into account, provided that they belong to the same zone. When going to the **FIRE** status, the other input was already in the **FIRE** state and the detector on it was triggered no more than 120 seconds ago, this input goes to the **FIRE2** state. Thus, the transition to the **FIRE2** state is initiated if different inputs belonging to the same zone go **FIRE** state second time within two minutes.

When in the **PRE-ALRM**, **FIRE**, and **FIRE2** states, the input is not monitored for short-circuit and open-circuit faults.

When in the **PRE-ALRM**, **FIRE**, or **FIRE2** states, the input can go only to the **DISARMED**, **ARMED** (**ARMING FAILED** if input is or normal) only through manual and network-controller commands.

Integration Time (*Debounce Time*) for Input of Type 3 is defined as described in 1.4.2.29, except for:

- Integration time of transition from the **ARMINNG FAILED** state to the **ARMED** state is 3 seconds;

- Integration time of transition from the **SHORT/OPEN CIRCUIT** state to the **ARMED** state is 1 second.

The connection of fire heat (normally closed) and detectors on the Input of Type 3 is provided in 2.2.4.3.

1.4.2.13.4. **Type 4 – Intrusion**

The input support all intrusion detectors (contacts, passive, powered over intrusion input circuit or over individual power circuit)

The input circuit resistance corresponding to different physical states is shown in Table 1.4.2.3.

Possible logical states of the input:

- **ARMED** (**ARMED**, **ENABLED**) - the input is monitored, the circuit resistance is normal;
- **DISARMED** (**DISARMED**) - the input is not monitored unless the disarmed input monitoring function is turned on; if such monitoring is enabled, the input is monitoring alarm and restoring of disarmed input see (**Disarmed Input Monitoring)**
- **DISABLED** - the input is not monitored; the monitoring is disabled by the network controller;
- **ARMING DELAY** - the arming delay is still in progress;
- **INTRUSION ALARM** – the input alarm is registered
- **ARMING FAILED** − the input is not normal at the moment of arming.

Algorithm of Intrusion Input

Input disablement (transition to the DISABLED status) can be done only manually using the DISABLE command of the network controller (the S2000-M panel ver.4.13 (3.13) or newer).

With monitoring enabled, the input goes from **DISABLED** to one if the following states:

- **ARMING DELAY**
- **ARMED**
- **ARMING FAILED**
- **DISARMED**

If the input monitoring is enabled with the **Never Disarm** parameter applied, the input is attempted to be armed, otherwise the input is disarmed.

The input monitoring can be enabled by the following way:

- manually by the ENABLE command of the network controller (S2000M panel v.4.13 (3.13) and higher)
- manually by the ARM or ENABLE command of the network controller (S2000M panel v.4.12 (3.12) and lower)
- manually using the Signal-20M controls when operated in combination with the S2000M control panel v.4.12 (3.12) and lower
- manually using the Signal-20M controls in standalone mode

The input can be armed only manually using the panel controls or from the network controller.

If input resistance is less than normal

If, when trying to arm the input, the input circuit resistance is less than normal value, for example, a current-consuming intrusion detector triggered in the circuit, the control panel automatically ‘resets’ the input (turns off the power for 3 seconds). This allows automatic current-consuming detectors to be returned to quiescent (quiescent) mode.

After a delay as set in the Input Analysis Delay after Reset parameter, the device starts evaluating the input resistance. If after power reset, the input resistance is out of the normal range, the input goes into the ARMING state.

If at input arming, the input-circuit resistance is higher than normal (open circuit), then the input immediately switches to ARMING FAILED state.

Being in the **ARMING FAILED** state, the input can go to the following states:

- **DISARMED** – manually using the device controls or by the command of the network controller;
- **ARMED**:
  - manually using the device controls or by the command of the network controller;
  - automatically, when the configuration parameter **Reaming If Arming Failed** is enabled, if the input resistance is in the normal range

In the **ARMED** state, the control panel monitors input circuit for alarms (violation of normal status).

The intrusion input-circuit is not normal, if it resistance beyond the normal range or quickly changes for more than 10 % (see **Ignore up to 10% Deviations**)

The disturbance of armed input switches it to the **INTRUSION ALARM** state.

When in the **INTRUSION ALARM** state, the input can go to the following states:

- **DISARMED** – manually using the device controls or by the command of the network controller;
- **ARMING FAILED** –manually using the device controls or by the command of the network controller (if input state is not normal /alarm)
- **ARMED**:
  - manually using the device controls or by the command of the network controller (if input circuit is normal);
  - automatically when the configuration parameter **Reaming If Arming Failed** is enabled, if the input resistance is in the normal range.

The Debounce time is defined as provided in 1.4.2.29 except for the following:

- Debounce time of transition from the **ARMINNG FAILED** state to the **ARMED** state is 3 seconds;
- Debounce time of transition from the **INTRUSION ALARM** state to the **ARMED** state is defined by the Shunt Time parameter.

The connection of intrusion detectors on the Input of Type 4 is provided in 2.2.4.3.

1.4.2.13.5. Type 5: Intrusion and Tamper

This input support one normally closed intrusion detector and normally closed tamper switch.
The input circuit resistance corresponding to different physical states is shown in Table 1.4.2.3.

Possible logical states of the input:

- **ARMED** (**ARMED**, **ENABLED**) - the input is monitored, the circuit resistance is normal;
- **DISARMED** (**DISARMED**) - the input is not monitored unless the **Disarmed Input Monitoring** function is turned on; if such monitoring is enabled, the input is monitoring alarm and restoring of disarmed input (see Disarmed Input Monitoring)
- **DISABLED** - the input is not monitored; the monitoring is disabled by the network controller;
- **ARMING DELAY** - the arming delay is still in progress;
- **INTRUSION ALARM** – the input alarm is registered
- **ARMING FAILED** − the input is not normal at the moment of arming.

In addition to the main states, the input of this type can have additional states depending on the condition of detector enclosure:

- TAMPER ALARM – the enclosure of detector is open;
- TAMPER NORMAL (TAMPER RESTORED) – the enclosure of detector is closed;

Algorithm of Intrusion and Tamper Input

Input disablement (transition to the DISABLED status) can be done only manually using the DISABLE command of the network controller (the S2000-M panel ver.4.13 (3.13) or newer).

With monitoring enabled, the input goes from **DISABLED** to one if the following states:

- **ARMING DELAY**
- **ARMED**
- **ARMING FAILED**
- **DISARMED**

If the input monitoring is enabled with the **Never Disarm** parameter applied, the input is attempted to be armed, otherwise the input is disarmed.

The input monitoring can be enabled by the following way:

- manually by the ENABLE command of the network controller (S2000M panel v.4.13 (3.13) and higher)
- manually by the ARM or ENABLE command of the network controller (S2000M panel v.4.12 (3.12) and lower)
- manually using the Signal-20M controls when operated in combination with the S2000M control panel v.4.12 (3.12) and lower
- manually using the Signal-20M controls, in the standalone mode

The input can be armed only manually using the panel controls or from the network controller.

If a time of arming, the input-circuit resistance is not within normal or detector enclosure is open, the input immediately goes to the ARMING FAILED state.

Being in the **ARMING FAILED** state, the input can be switched to the following states:

- **DISARMED** – manually using the device controls or by the command of the network controller;
- **ARMED**:
  - manually using the device controls or by the command of the network controller;
  - automatically, when the configuration parameter **Reaming If Arming Failed** is enabled provided that the input resistance is normal and tamper is restored.

In the **ARMED** state, the control panel monitors input circuit for alarms (violation of normal status).

The intrusion and tamper input input-circuit is not normal, if it resistance beyond the normal range or quickly changes for more than 10 % (see **Ignore up to 10% Deviation**)

The activation of armed input switches it to the **INTRUSION ALARM** state.

When in the **INTRUSION ALARM** state, the input can go to the following states:

- **DISARMED** – manually using the device controls or by the command of the network controller;
- **ARMING FAILED** –manually using the device controls or by the command of the network controller (if input state is not normal /alarmed)
- **ARMED**:
  - manually using the device controls or by the command of the network controller (if input circuit is normal);
  - automatically when the configuration parameter **Reaming If Arming Failed** is enabled provided that the input resistance and tamper are normal.

When the input is not armed (disarmed, arming delay or arming failed), tamper alarm and tamper restored states reflect a detector enclosure condition but they do not change the input's main status.

The Debounce time is defined as described in 1.4.2.29 except for the following:

– Debounce time of transition from the **TAMPER ALARM** to **TAMPER** is 15 seconds;
– Debounce time of transition from the **ARMINNG FAILED** state to the **ARMED** state is 3 seconds;
– Debounce time of transition from the **INTRUSION ALARM** state to the **ARMED** state is defined by the Shunt Time.

The connection of intrusion detectors on the Input of Type 4 is provided in 2.2.4.3.

Note: Debounce time countdowns from **ARMING FAILED** and **INTRUSION ALARM** states (in case of enclosure tampering) starts from its transition to the **TAMPER NORMAL** logical state rather than from the actual recovery of the enclosure

The connection of intrusion detectors on the Input of Type 5 is provided in 2.2.4.3.

1.4.2.13.6. **Type 6: Auxiliary**

The Auxiliary Input is used to monitor the state and health of fire equipment, as well as to monitor the state of detectors and alarm devices that are not directly related to the intrusion and fire alarms. The input support detectors and devices with a dry contact output (normally closed or normally open) or an open collector.

Input resistance corresponding to the states **AUX INPUT NORMAL** and **AUX INPUT ACTIVE** is described in Table 1.4.2.3.

Input possible logical states:

- **AUX INPUT NORMAL**
- **AUX INPUT ACTIVE**
- **DISABLED:** the input is not monitored; the monitoring function is disabled by the network controller.

Auxiliary input operation algorithm

Input disablement (transition to the DISABLED status) can be done only manually using the DISABLE command of the network controller (the S2000-M panel ver.4.13 (3.13) or newer).

From the Disabled status the input can go to the **AUX INPUT NORMAL** or AUX **INPUT ACTIVE states:**

- manually by the ENABLE command of the network controller (S2000M panel v.4.13 (3.13) and higher)
- manually by the ARM or ENABLE command of the network controller (S2000M panel v.4.12 (3.12) and lower)
- manually using the Signal-20M controls when operated in combination with the S2000M control panel v.4.12 (3.12) and lower
- manually using the Signal-20M controls, in the standalone mode

if the input resistance is beyond the normal range during the time longer than 3000 ms, the input goes to the **AUX INPUT ACTIVE** state. When input is restored (resistance is normal) as set in the Shunt Time parameter the input goes to the **AUX INPUT NORMAL** state.

The input is always monitored; it cannot be inhibited or disarmed. If arm/disarm commands are applied, the panel reports on the input current status.

If the auxiliary input is interlinked with an output, its activation initiates control programs as described in the par Outputs.

The connection of normally closed, normally opened detectors and other monitored circuits of dry contact type to the **Type 6 Input** is the same as for connection to Type 4 Input (see 2.2.4.3.).

1.4.2.13.7. **Type 7: Lobby Input**

The input support all intrusion detectors (contacts, passive, powered over intrusion input circuit or over individual power circuit)

The input circuit resistance corresponding to different physical states is shown in Table 1.4.2.3.

Possible logical states of the input:

- **ARMED** (**ARMED**, **ENABLED**) - the input is monitored, the circuit resistance is normal;
- **DISARMED** (**DISARMED**) - the input is not monitored unless the disarmed input monitoring function is turned on; if such monitoring is enabled, the input is monitoring alarm and restoring of disarmed input see (**Disarmed Input Monitoring)**
- **DISABLED** - the input is not monitored; the monitoring is disabled by the network controller;
- **ARMING DELAY** - the arming delay is still in progress;
- **LOBBY ALARM** – the lobby input is activated;
- **INTRUSION ALARM** – the **Arming Delay** time expired after the LOBBY ALARM activation
- **ARMING FAILED** − the input is not normal at the moment of arming.

Algorithm of Lobby Input

The logic operation and connection settings of intrusion lobby input is the same as for Type 4 Intrusion Input except for that the armed input activation switches it to the **LOBBY ALARM** state first.

If the input is not disarmed or armed during the time as set in the **Arming Delay** parameter, the input goes to the **INTRUSION ALARM** status.

While the input is in the **Lobby Alarm** status, no activation of general programs (1-8) and Siren (12) program does not occur.

The Debounce time is defined as provided in 1.4.2.29 except for the following:

- Debounce time of the transition from the **ARMINNG FAILED** state to the **ARMED** state is 3 seconds;
- Debounce time of the transition from the **LOBBY ALARM** state to the **INTRUSION ALARM** state is defined by the Shunt Time parameter.

The connection of intrusion detectors on the Input of Type 7 is the same as for the Input of Type 4; see 2.2.4.3.

1.4.2.13.8. **Type 11: Panic**

This input supports normally closed and normally opened panic buttons and similar devices.

The input circuit resistance corresponding to different physical states is shown in Table 1.4.2.3.

Possible logical states of the input:

- **ARMED** (**ARMED**, **ENABLED**) - the input is monitored, the circuit resistance is normal;
- **DISARMED** (**DISARMED**) - the input is not monitored unless the disarmed input monitoring function is turned on; if such monitoring is enabled, the input is monitoring alarm and restoring of disarmed input see (**Disarmed Input Monitoring)**
- **DISABLED** - the input is not monitored; the monitoring is disabled by the network controller;
- **ARMING DELAY** - the arming delay is still in progress;
- **PANIC ALARM (ATTACK) -** the input is activated;
- **RMING FAILED** − the input is not normal at the moment of arming.

Algorithm of Panic Input

The logic operation and connection settings of intrusion Panic Input is the same as Type 4 Intrusion Input except for activation of the armed input switches it to the **PANIC ALARM** state.

The Panic Alarm is displays on by LEDs of 1…20 inputs and impact to the relay with Alarm Output (10) and Alarm Output 2 (16) programs. The internal buzzer is muted.

The Debounce time is defined as provided in 1.4.2.29 except for the following:

- Debounce time of the transition from the **ARMINNG FAILED** state to the **ARMED** state is 3 seconds;

- Debounce time of the transition from the **PANIC ALARM** state to the **ARMED** state is defined by the Shunt Time parameter.

The connection of intrusion detectors on the Input of Type 11 is the same as for the Input of Type 4; see 2.2.4.3.

1.4.2.13.9. **Type 12: Auxiliary Programmable**

The Auxiliary Input is used to monitor the state of various devices and detectors, as well as devices that are not directly related to intrusion and fire alarms. The input support detectors output circuits of other devices with a dry contact output or an open collector.

The auxiliary programmable input can have five different states defied by the input resistance. The state and resistance threshold values are programmable. The possible states of auxiliary programmable input are provided in Table 1.4.2.2.

Table 1.4.2.2 Auxiliary Programmable Input States

No	State	No	State
1	2	1	2
1	*Mains Restored*	*18*	*Level below Limit*
2	*Mains Failed*	*19*	*Temperature Normal*
3	*Intrusion Alarm*	*20*	*Disarmed*
4	*Arming Failed*	*21*	*Lobby Alarm*
5	*Armed*	*22*	*Pump On*
6	*Aux Input Restored*	*23*	*Pump Off*
7	*Aux Input Activated*	*24*	*Tamper Alarm*
8	*Aux Input Activated 2*	*25*	*Tamper Activated*
9	*Equipment Normal*	*26*	*Power Fault*
10	*Equipment Failed*	*27*	*Power Restored*
11	*Input Open -Circuit Fault*	*28*	*Battery Restored*
12	*Panic Alarm*	*29*	*Battery Fault*
13	*Level Decreased*	*30*	*Service Required*
14	*Level Normal*	*31*	*Temperature Lower*
15	*Level Increased*	*32*	*Input Short-Circuit Fault*
16	*Level above Limit*	*33*	*Extinguishant Released*
17	*Temperature High*		

Thus, equipment with several states and, accordingly, several contact groups at the output can be controlled using one input circuit, including contact groups in an input circuit with various additional or shunt resistors. In addition, this input can be monitored for open and short circuit.

The monitoring of programmable auxiliary input can be disabled.

Input disablement (transition to the DISABLED status) can be done only manually using the DISABLE command of the network controller (the S2000M panel ver.4.13 (3.13) or newer).

From the DISABLED state the input can go a status defined by its resistance (if enabled):

- manually by the ENABLE command of the network controller (S2000M panel v.4.13 (3.13) and higher)
- manually by the ARM or ENABLE command of the network controller (S2000M panel v.4.12 (3.12) and lower)
- manually using the Signal-20M controls when operated in combination with the S2000M control panel v.4.12 (3.12) and lower
- manually using the Signal-20M controls, in the standalone mode

When enabled, states of the programmable aux input are depending on the input resistance changes and do not depend on any input parameters.

The Debounce time of transition to such states as Auxiliary Programmable Input or any …. restored is as set in the Debounce time parameter

The Debounce time for other states is 300 ms

1.4.2.13.10. **Type 16: Manual Fire (Call Point)**

This input supports fire call point both normally closed and normally opened.

The input resistance corresponding to different physical states is provided in Table 1.4.2.3.

Possible logical states of the input:

- **ARMED** (**ARMED**, **ENABLED**) - the input is monitored, the circuit resistance is normal;
- **DISARMED** - the input is not monitored;
- **DISABLED** - the input is not monitored; the monitoring is disabled by the network controller;
- **ARMING DELAY** - the arming delay is still in progress;
- **FIRE2** – the manual station was activated (operated);
- **SHORT CIRCUIT** - input circuit resistance is less than 100 Ω;
- **OPEN CIRCUIT** – the input resistance is more than 50 kΩ;
- **ARMING FAILED** – the input was not normal at the moment of arming.

Algorithm of manual fire input

Input disablement (transition to the **DISABLED** status) can be done manually only using the DISABLE command of the network controller (the S2000-M panel ver.4.13 (3.13) or newer).

When enabled in the **DISABLED** status, the input goes to one if the following states:

– **ARMING DELAY**
– **ARMED**
– **ARMING FAILED**

The input monitoring can be enabled by the following way:

- manually by ENABLE command of the network controller (S2000M panel v.4.13 (3.13) and higher);
- manually by ARM or ENABLE command of the network controller (S2000M panel v.4.12 (3.12) and lower)
- manually using the Signal-20M controls when operated in combination with the S2000M control panel v.4.12 (3.12) and lower;
- manually using the Signal-20M controls in standalone operation.

This input can be armed only manually using the panel controls or by command of the network controller.

If input resistance is beyond the normal range at the arming attempt, the input immediately goes to the **ARMING FAILED** status.

Being in **ARMING FAILED** state, the input can go to the following states:

– **DISARMED** - manually using the device controls or by the command of the network controller;
– **ARMED**:
  - manually using the device controls or by the command of the network controller;
  - automatically when the configuration parameter **Reaming if Arming Failed** is enabled, if the input resistance is in the normal range.

In the **ARMED** state, the control panel monitors input circuit for short-circuit and open-circuit faults, manual station activation.

In case of input short/open circuit faults, the input goes to the **SHORT CIRCUIT** (**OPEN-CIRCUIT**) state, respectively. When the input is restored (if the resistance returns to the normal range), the input automatically goes to the **ARMED** state.

If the call point is activated, the input goes to the **FIRE2** status,

In the **FIRE2** status, the input is not monitored for short/open-circuit fault and transition to normal status.

When in the **PRE-ALRM, FIRE**, or **FIRE2** states, the input can go only to the **DISARMED**, **ARMED** (**ARMING FAILED** if input is not normal) through manual commands only using the panel controls or a network-controller command.

Debounce Time for Input of Type 2 is defined as described in 1.4.2.29, except for:

– Debounce Time of transition from the **ARMINNG FAILED** state to the **ARMED** state is 3 seconds;

– Debounce Time of transition from the **SHORT CIRCUIT** (**OPEN-CIRCUIT**) state to the **ARMED** state is 1 second.

The connection of normally opened and normally closed fire manual station on the Input of Type 16 is described in 2.2.4.3.

1.4.2.13.11. **Type 17: Flood Alarm**

This input supports connection of Food detectors.

The input circuit resistance corresponding to physical states are provided in Table 1.4.2.3.

Possible logical states:

– **FLOOD DETECTOR NORMAL** – flood detector(s) is (are) normal, the input is monitored;
– **DISARMED** - the input is not monitored;
– **DISABLED** - the input is not monitored; the monitoring is disabled by the network controller;
– **OPEN CIRCUIT** – the input resistance is more than 6 kΩ;
– **FLOODING DETECTED** – activation of flood detector

Algorithm of flood alarm input

Input disablement (transition to the **DISABLED** status) can be done manually only using the DISABLE command of the network controller (the S2000-M panel ver.4.13 (3.13) or newer).

When enabled in the **DISABLED** status, the input goes to one if the following state:

– **FLOODING DETECTOR NORMAL**
– **FLOODING DETECTED**
– **DISARMED**

If the input monitoring is enabled with the **Never Disarm** parameter applied, the input goes to an actual state, otherwise the input is disarmed.

The input monitoring can be enabled by the following way:

- manually by the ENABLE command of the network controller (S2000M panel v.4.13 (3.13) and higher)
- manually by the ARM or ENABLE command of the network controller (S2000M panel v.4.12 (3.12) and lower)
- manually using the Signal-20M controls when operated in combination with the S2000M control panel v.4.12 (3.12) and lower
- manually using the Signal-20M controls in standalone operation

The monitoring of Input 17 can be disabled manually using panel controls or by the DISABLE command from the network controller. In this case the input goes to the **DISARMED** status and is not monitored.

The enablement of Input 17 can be down manually using panel controls or by the DISABLE command from the network controller. In this case the input goes from the **DISARMED** status to the status corresponding to the input resistance at the moment.

When the Flood Alarm input is enabled, the transition from one state to another (except for the **DISARMED** and **DISABLED**) is not curried immediately but after some period of time as defined in the Ala**rm Delay** parameter/

When the flood detector is activated, the input goes to the FLOODING DETECTED states after period of time as set in the **Shunt Time** parameter.

The Debounce Time for Input of Type 17 is defined as described in 1.4.2.29

The connection of flooding detectors to Input of Type 17 is described in 2.2.4.3.

1.4.2.13.12. **Type 18: Manual Release**

The input supports normally closed and normally opened manual release stations/remote control units RCU).

The input resistance corresponding to different physical states is provided in Table 1.4.2.3.

Possible logical states of the input:

- **DISARMED** (**DISARMED**) - the input is not monitored;
- **DISABLED** - the input is not monitored; the monitoring is disabled by the network controller;
- **RCU NORMAL** – the input is monitored, RCU is not activated;
- **RCU Activated** – RCU is activated;
- **SHORT CIRCUIT** - input circuit resistance is less than 100 Ω;
- **OPEN CIRCUIT** – the input resistance is more than 16 kΩ;

Operation algorithm of manual release input

Input disablement (transition to the **DISABLED** status) can be done manually only using the DISABLE command of the network controller (the S2000-M panel ver.4.13 (3.13) or newer).

When enabled in the DISABLED status, the input goes to one if the following states:

- **RCU NORMAL**
- **RCU Activated**
- **SHORT CIRCUIT**
- **OPEN CIRCUIT**

The input monitoring can be enabled by the following way:

- manually, by the ENABLE command of the network controller (S2000M panel v.4.13 (3.13) and higher);
- manually, by the ARM or ENABLE command of the network controller (S2000M panel v.4.12 (3.12) and lower)
- manually, using the Signal-20M controls when operated in combination with the S2000M control panel v.4.12 (3.12) and lower;
- manually, using the Signal-20M controls in standalone operation.

The monitoring of Type 18 input can be disabled manually using the panel controls or by the DISARMED command of the network controller. In this case, the input goes to the **DISARMED** status to be not monitored.

Also, the monitoring of the input can be enabled manually using the panel controls or by the ARMED command of the network controller. In this case, from the **DISARMED** status, the input goes to the status corresponding to its current resistance.

When the manual release is enabled, the input transition from one state to another (except for transition to **ARMED** and **Disarmed**) occurs in accordance with the resistance of the input at the moment.

Integration Time (Debounce Time) for Input of Type 18 is defined as described in 1.4.2.29, except for:

The RCU connection to Input of Type 18 is described in 2.2.4.3.

1.4.2.13 The **Zone Number** parameter allows you to logically combine several fire inputs used to control the same zone of the protected site. If the same **Zone Number** is assigned to several inputs, the transition of any of these inputs to the **FIRE** and **FIRE2** states takes into account the activation of detectors in all these inputs. Zero (0) value for **Zone Number** (default value) is special and means that this input is not logically combined with any other input

1.4.2.14 The Alarm Delay parameter of **Lobby Input** (Type 7) is a delay in the transition from the LOBBY state to the **INTRUSION ALARM** state (Entry Time). It is selected in such a way that the user has enough time to disarm the input after activation of lobby input

For flood alarm input (type 17) Alarm Delay parameter allows to increase the integration time of the activation of the flood sensors to protect against a false **FLOOD ALARM**, for example, during the 3 damp cleaning. If the Alarm Delay is set as 0, the Debounce Time is minimal and equals 300 ms

1.4.2.15 The **Arming Delay** (**Exit Time**) parameter defines the time (in seconds) after which the control panel attempts to arm the input after the corresponding command is received. A non-zero 'Arming Delay' is usually used for a Lobby Input when the input activation by the user (entrance door protection) is possible after a command to arm for a certain period of time. In addition, if before arming the input, it is required to turn off the control panel relay (relay control program **Turn off for a time before arming**), then the input must have a nonzero **Arming Delay**.

If at the moment of receiving the arming command the input was already armed, then the "**Arming Delay**" parameter is ignored - the input continues to be armed (arming quiescent immediately).

1.4.2.16 The **Input Analysis Delay after Rese**t parameter the pause duration before the start of the analysis of the input resistance after resetting the input power. This delay allows usage of detectors with a long start up time. The amount of delay should slightly exceed the start-up time.

Input power is restored when the control panel is turned on (reset), as well as when the input power is 'reset', for example, at input arming where a smoke detector has triggered.

In addition, the device resets an input in case of requering smoke detectors connected to Input of Type 1 and Type 2.

1.4.2.17 The parameter **Shunt Time** defines:

– the time during which the resistance of the intrusion input must be within the normal range for automatic transition from the **INTRUSION ALARM** state (**PANIC ALARM**) to the

ARMED state. This transition is possible only for intrusion inputs (types 4, 5, 7 and 11) and only if the **Reaming after Alarm** parameter is enabled;

- the time during which the resistance of the auxiliary input (type 6) must be in the range **AUX INPUT NORMAL** for automatic transition from the state **AUX INPUT ACTIVATED** to **AUX INPUT NORMAL**
- - the time during which the resistance of the flood alarm input circuit (type of input 17) must be in the 'Normal' range for automatic transition from the **FLOODING DETECTED** state to the **FLOOD DETECTOR NORMAL** state;
- the time during which the resistance of the disarmed (disabled) intrusion input must be in the 'Normal' range for automatic transition from the **DISARMED INPUT ALARM** state to the **DISARMED INPUT NORMAL** state. This transition is possible only for intrusion inputs (types 4, 5, 7 and 11) and only if the **Disarmed Input Monitoring** parameter is enabled;
- - the time during which the resistance of the programmable auxiliary input (type 12) must be in the range corresponding to such a programmed state as **AUX INPUT NORMAL** or any …**RESTORED** state for automatic transition to this state.

1.4.2.18 The **Activation Delay for 1 Output** … **Activation Delay for 7** parameters define the amount of delay to turn on/off the output interlinked with this input. The output will be turned on/off in accordance with the specific program when the input state changes. For control programs No. 9 (Lamp), 10 (Alarm Output1), 13 (Fire Output), 14 (**Fault Output**), 15 (Fire lamp) and 16 (Alarm Output2 (see Table1.4.8 **Activation Delay for X Output** is ignored and the output switches immediately after the input state changes.

The parameter is meaningful only if there is an interlink between the input and the output (enabled the **Activation Delay for X Output** parameter).

1.4.2.19 The **Never Disarm** parameter does not allow disarming the input in any way. This parameter is usually set for fire and intrusion inputs to avoid accidental disarming. If the input goes to the **INTRUSION ALARM**, **PANIC**, **FIRE PRE-ALARM**, **FIRE**, **FIRE2** or **ARMING FAILED** state, both arming and disarming will result in an arming attempt (Alarm Reset). As a result, the input will again switch to the ARMED state (the input resistance is normal), or to the **DISARMED** state (input is not normal).

1.4.2.20 The **Rearming if Arming Failed** allows automatically switching input from the **ARMING FAILED** to the **ARMED** state as soon as the input resistance is in the norm during 3 seconds.

1.4.2.21 The **Rearming after Alarm** parameter allows automatically switching input from the **INTRUSION ALARM**, **PANIC ALARM** to the **DISARMED** state as soon as the input resistance is normal during the time period as set in the **Shunt Time** parameter

1.4.2.22 The Disarmed Input Monitoring allows monitoring intrusion inputs (Types: 4,5,7 and 11) in the **DISARMED** state. If the input resistance is normal, the panel sends **Disarmed Input Normal** event to the network controller. If the input is activated, the panel send the **Disarmed Input Activated** event message. The Debounce time for **Disarmed Input Activated** is 300 ms, but the **Debounce Time** for **DISARMED INPUT NORMAL** is as set in the **Shunt Time** parameter.

1.4.2.23 The **Fire Input Requery Inhibit** parameter allows to turn off requerying of smoke detectors on the Type 1 and Type 2 inputs.

1.4.2.24 The **Debounce Time 300 ms** defines the integration time fo intrusion inputs (Type 4, 5, 7 and 11). When it is selected (checked), this time is 300 ms, and when this parameter is unselected (unchecked)) this time is 70 ms. To reduce false alarms, it is recommended to use 70 ms only in technically approved cases.

1.4.2.25 The **Ignore 10% of Deviation** parameter allows avoid analysis of quick changes in intrusion input resistance (more than 10% of average resistance) which are not beyond the normal range. This parameter is applicable for inputs (types 4, 5, 7 and 11). The parameter is recommended for inputs where detectors high pulsing voltage detectors are connected.

1.4.2.26 The Output 1 …Output 7 parameters are used to interlink inputs with the panel outputs. If the state of the input should affect the operation of any output, then the corresponding parameter must be enabled, otherwise the parameter must be disabled.

If any output of the device is to be controlled by the network controller (centralized control of the output), then the parameter 'Relay X control' must be disabled for all inputs of the block.

If an input state change is to switch an output X (in accordance with the relay control program), the switching on (off) of the output will not occur immediately but after the **X Relay Activation Delay** as set for this input.

1.4.2.27 The input circuit resistance corresponding to physical states of various type inputs are described in Table 1.4.2.3.

Table 1.4.2.3 Input Resistance in Different States

Type	**Input**				
Type 1 – Fire Smoke	Short-Circuit	Activation of two and more smoke detectors	Activation of one smoke detector	Normal	Open Circuit
	R < 100 Ω	0,15…1,56* kΩ	1,1*…2,0 kΩ	2,4…5,4 kΩ	R > 6,6 kΩ
		* – Depends on the current consumed by detectors in quiescent mode			
Type 2 – Fire Combine	Short-Circuit	Activation of smoke detector	Normal	Activation of heat detector	Open Circuit
	R < 100 Ом	0,15…1,8 kΩ	2,2…5,4 kΩ	6,6…14,4 kΩ	R > 16 kΩ
Type 3 – Fire Heat	Short-Circuit	Normal	Activation of one heat detector	Activation of two or more heat detectors	Open Circuit
	R < 1,8 kΩ	3,0…5,4 kΩ	6,6…11 kΩ	12,5…22,5 kΩ	R > 25 kΩ
Type 4 – Intrusion	Normal		Intrusion Alarm		

	2,2…10 kΩ		R < 1,8 kΩ ot R > 12 kΩ, Or resistance jump of more than 10 %
Type 5 – Intrusion and Tamper	Normal	Intrusion Alarm	Tamper Alarm
	2,2…5,4 kΩ	R < 1,8 kΩ or R > 6,6 kΩ or jump exceeding 10 %	6,6…9,0 kΩ; R > 20 kΩ; R < 100 Ом

Type 6 – Auxiliary	Aux Input Normal	Aux Input Activated
	2,2…5,4 kΩ	R < 1,8 kΩ or R > 6,6 kΩ

Type7 – Lobby	Normal	Intrusion Alarm (Lobby)
	2,2…5,4 kΩ	R < 1,8 kΩ or R > 6,6 kΩ, jump of more than 10 %

Type 11 – Panic	Normal	Panic (Attack)
	2,2…5,4 kΩ	R < 1,8 kΩ или R > 6,6 kΩ, jump of more than 10 %

Type 12 – Aux Programmable	State 1*	State 2*	State 3*	State 4*	State 5*
	Lees than R1*	R1* to R2*	R2* to R3*	R3* to R4*	More than R4*

Type 16 – Fire Manual	Short-Circuit	Fire2	Normal	Fire2	Open
	R < 100 Ом	0,15…1,8 kΩ	2,2…5,4 kΩ	6,6…14,4 kΩ	R > 16 kΩ

Type 17 – Flood Alarm	Flooding Detected	Flood Detector Normal	Open
	R < 1,8 kΩ	2,2…5,4 kΩ	R > 6 kΩ

Type 18 – Manual Release	Short-Circuit	RCU Activated	RCU Restored	RCU Activated	Open Circuit
	R < 100 Ом	0,15…1,8 kΩ	2,2…5,4 kΩ	6,6…14,4 kΩ	R > 16 kΩ

1.4.2.28 Short-term disturbance of the input for the time at which the control panel does not enter the alarm mode (Debounce Time) are:

- 50 ms and less for intrusion inputs (input types 4,5,7 and 11), if the Debounce Time 300 ms parameter is disabled;

- 250 ms and less for all other types of inputs and for intrusion inputs, if the Debounce Time 300 ms parameter is enabled.

Input disturbance for the time at which the device enters the alarm mode are:

- 70 ms and more for intrusion inputs (input types 4,5,7 and 11), if the Debounce Time 300 ms parameter is disabled;
- 300 ms and more for all other types of inputs and for intrusion inputs, if the Debounce Time 300 ms parameter is enabled.

1.4.2.29 The control panel feeds power for power-consuming two-wire fire and intrusion detectors over communication input-circuits.

The number if detectors that can be connected to one input circuit can be calculated as follows:

N = Imax / i, where:

N – number of detectors on the input-circuit;

Imax – maximum load current:

– Imax = 3 mA for input types: 1, 4, 6, 7, 11, 12;
– Imax = 1,2 mA for input type 2.

i – current consumed by a detector in quiescent mode, mA.

If Type 1 (smoke with double triggering) is used, the detectors shall be functionablle if the detector voltage drops till 12V.

1.4.3 Outputs

1.4.3.1 The panel has 7 outputs:

– 3 non-monitored outputs: K1, K2, K3;
– 4 monitored outputs: K4, K5, K6, K7.

1.4.3.2 Non-monitored outputs (K1, K2, K3) are used for the following:

– generates the Fire, Fault and Start signals and transmitting them to the fire brigade and transmitting:
– Generates the Alarm (Panic) signal to transmit to the Central Monitoring Station (CMS).

1.4.3.3 Monitored outputs K4, K5, K6, K7 are designed to control sound and light alarm devices as well as other fire protection equipment (actuators).

The panel controls the actuators by switching the supply voltage from its own terminals (‘+ U1’, ‘0V’, ‘+ U2’, ‘0V’) to the terminals of the outputs ‘K4 +’, ‘K4-’ ... ‘K7 +’, ‘K7-’ **Connecting external power supplies to the terminals of the monitored outputs is prohibited and may lead to a malfunction of the device.**

The device allows connecting several alarm devices to one output with the provision of monitoring the health of the lines in activated and deactivated conditions.

When a line is turned one, the line health is monitored by measuring the load current. The control of the serviceability of the lines if they are turned off is carried out by a small current of reverse polarity.

To monitor the circuit, the load must be connected to the output in accordance with 2.2.4.4… 2.2.4.8.

To monitor the circuit, the load must be connected to the output in accordance with 2.2.4.4 … 2.2.4.8. Most of the 12 V or 24 V light and sound sounders, which are connected with correct polarity, already have a built-in diode and no additional serial diodes are required

1.4.3.4 Electrical specifications of K1…K3 are provided in Table 1.4.3.1

Table 1.4.3.1 1 Electrical specifications of K1…K3

Description	Value
Output Type	Dry contact (photo relay)
DC switching voltage, no more, V	170
Switching voltage of alternating current, no more, V	130
Switching current (direct / alternating), no more, A	0,1

1.4.3.5 Electrical Specifications of K4…K7 are provided in Table 1.4.3.2.

Table 1.4.3.2 Electrical specifications of K4…K7

Description	Value
Output Type	transistor switch
Output voltage (from the device power supply), V	10,2 … 28
Switching current of one output, no more, A	2,5
Total current of outputs K4 ... K7, no more, A	3
Line health monitoring current, no more, mA	– 1,5

1.4.3.6 The output configuration parameters defining the monitoring and control methods are provided in Table 1.4.3.3.

Table 1.4.3.3 Output Configuration Parameter

Parameter	Function	Values
Output Type	Defines the algorithm for generating events that describe the current logical state of the output.	*Simple*
		Auxiliary
		Fire Protection
Control Program	Determines the tactics of local control of the output depending on the state of the input connected to the output.	*1 … 37, 50 … 53,* *0 –Centralized Control (Network Controller Commands)*
Start/Stop	Defines whether the output can be manually controlled in the local control mode. In centralized control mode, manual control is not possible.	*Check / Uncheck*
Operation Time, s	Duration of control programs that have a limited time of operation	*0 … 8191,750 s* *(0 … 2h 16 min 31,750 s),* *шаг 0,125 s.* *8191,875s – infinite time*
Infinitely (operation time)	Defines an infinite time to turn the output on or off	*Check/Uncheck*
Monitoring Mode	Defines the global monitoring mode of the load circuit of the monitored output both in the activated and non-activated condition s	*No Monitoring*
		Open Faults
		Short Faults
		Open and Short Faults
Activated Output Monitoring	Refines the monitoring of activated load circuits for open faults in the activated condition	*Normal*
		Programmable Open-Fault Threshold
		Regular Off-Load Check
		Output-Current Drop Check
		Off
Open Fault Threshold, mA	Defines the open fault threshold for the Programmable Open-Fault Threshold mode	*5 … 2500 mA*
Off/On Events	Defines whether the input state changes are reported	*Check/Uncheck*

1.4.3.7 **Output Type** Parameter

In the case of local control, the parameter determines the operation mode of the output state indicator (‘1’ ... ‘7’), as well as the algorithm for generating events describing the current logical state of the output. These events are generated and transmitted to the network controller for all changes in the logical state of the output.

In the case of centralized control, the parameter determines only the operation mode of the output status indicator.

The parameter can take the following values:

– *Simple;*
– *Auxiliary;*
– *Fire Protection.*

Modes of output status indicators are explained 1.4.6.

1.4.3.8 When the Output Type is set as *Simple*, events about the logical state of the output are not generated.

This type should be assigned to outputs:

– outputs used for reporting the **Fault** discrete signals;
– outputs used for the reporting other discrete signals not related to the control of fire-protection, intrusion and / or auxiliary equipment;
– outputs with centralized centrally (by the commands of the network controller).

1.4.3.9 When the Output Type parameter is set as *Auxiliary*, the output can be in the following logical states:

– **Actuator in Initial Position;**
– **Actuator in Operating Position**;
– **Actuator Failed** (a malfunction that occurred during start-up).

This type should be assigned to:

– outputs used to control auxiliary equipment;
– outputs used to control fire-protection, intrusion detection and / or auxiliary equipment, implying the activation of the actuating device in quiescent mode (for example, in the quiescent mode, the Exit board is switched on in continuous mode, in case of fire it is switched on in intermittent mode).

1.4.3.10 When the Output Type is set as Fire Protection, the output can have the following states:

– **Actuator in Initial Position**;
– **Pre-Activation Delay (relay);**
– **Output Activated (relay);**
– **Activation Failed (fault occurred when activation is attempted);**
– **Abort (the Stop button is pressed during the activation).**

This type should be assigned to:

– outputs used to control fire-protection (sign boards, sirens and other devices)
– outputs used to report Fire and Start (Activated) discreet signals
– outputs to control intrusion alarm devices (boards, sirens, lamps
– outputs to report Alarm discreet signals.

1.4.3.11 The **Control Program** parameter defines output local control tactics depending on the states output-interlinked inputs. The available control programs are described in Table 1.4.3.6.

When the No Control is selected, the output is controlled through the network controller commands over RS-485 (centralized control).

1.4.3.12 The ***START / STOP*** buttons parameter defines the possibility of output manual control in the local control mode.

When the *START* button is pressed, the Control Program is forced to start, regardless of the state of the inputs connected to the output, and when the *STOP* button is pressed, it is forced to stop.

In the centralized control mode, manual control using the '*Start*' and '*Stop*' buttons is not possible.

1.4.3.13 The ***Operation Time*** parameter defines time of activation/deactivation of outputs for control programs with limited operation time (turn on for a time…). Maximum possible time (8191,875 s) is a special one and means infinite operation time.

1.4.3.14 The **Infinitely** parameter makes it easier to enter the maximum possible value of the 'Control time' parameter (8191.875 s).

1.4.3.15 The Monitoring Mode defines the global monitoring of load circuits both in active and inactive conditions. The possible states are as follows:

- *No Monitoring*
- *Open Faults*
- *Short Faults*
- *Open and Short Faults*

The panel generate and reports on all monitored output state changes to the network controller, control the built-in light and sound indication corresponding to the current output state if this is provided by the parameter settings

Note - If a short circuit of the output is detected in the activated condition, regardless of the value of the Monitoring Mode parameter, the control command run will be interrupted. An attempt to restore the output control program will be made after 10 seconds.

The if product is used as combined alarm control panel as part of:

- **Fire alarm and auto extinguishing system**
- **Voice alarm and escape control systems of Type 1 and 2**

all outputs used for connecting alarm devices and other fire protection equipment shall be monitored for open and short circuit faults to meet the requirements of GOST **RP 53325–2012**

The state of monitored output in activated condition is determined by the voltage on **KX+** terminal relatively to the **0V** terminal as described in Table 1.4.3.4.

Table 1.4.3.4 Monitored Output States in Activated Condition

	Output State		
	Open	**Normal**	**Short Circuit**
Voltage on **KX+** terminal relatively to the **0V** terminal **V (negative)**	– 5 … – 1,125	– 1,125… – 0,15	– 0,15 … 0

The state of monitored output in the activated condition is determined the load current as described in table 1.4.3.5.

Table 1.4.3.5 Monitored Output States in Activated Condition

	Output State		
	Open Circuit	**Normal**	**Open Circuit**
Load Current, A	0 … ***'open current '****	***'open current'**** … 2,5	More than 2,5

* - the open current values are defined by the **Activated Output Monitoring** parameter**.**

1.4.3.16 The **Activated Output Monitoring** parameter specifies the monitoring of a load circuit for open-circuit fault in the activated condition. Possible values are shown in Table 1.4.3.3. The parameter is relevant only if the **Monitoring Mode** is set as monitoring for output open-circuit fault u (*Open Fault* or *Open and Short Faults*)

If the Standard(Normal) is selected for this parameter, the fixed values of 5 mA is used for "*open fault current*".

This selection is recommended if single actuators are connected.

If the Programmable Threshold is selected, the value set in the **Open Fault Threshold** is used as the "*open-fault current"* where the range from 5 to 2,500 mA can be specified.

This mode is recommended, if multiple actuators are connected to one output, and these actuators do not allow short-term power disconnection.

When the Regular Off-Load Checks parameter is selected, a fixed value of 5 mA is used as the 'open current'. In this case, the device disconnects the load for 125ms every 30 seconds, during which the integrity of the line to the terminal element is checked.

The monitoring mode is preferable when several actuating devices are connected to one output and they allow a short-term power disconnection (light and sound alarms). At the same time, the monitoring of the line integrity is ensured throughout all communication line and the number of sirens is limited only by the maximum permissible output current.

With the value of the parameter Output Current Drop Check is selected, the device accumulates the value of the average load current when the output is turned on.

If the load current is dropped down for more than 1/4 of the average value, the open fault is registered.

If the load current is jumped for more than 1/4 of the average value, a short-circuit of the output is stated.

Smooth changes in the load current due to changes in the supply voltage are taken into account in the accumulated average value.

It is recommended to use this mode when no more than four actuators with the same consumption current are connected to the output. Correct operation of this type of control with a large number of actuators is impossible.

1.4.3.17 The On/Off Events parameter defines whether it is needed to report on output operation events.

1.4.3.18 All panel outputs (monitored and non-monitored) can be controlled by two ways:

– Using standard control programs as response to the current input state and logically linked to controlled output; and by Start and Stop buttons (local control);

– By commands of the network controller over RS-485 (centralized control).

1.4.3.19 The following shall be done to set local control for Output X:

– Interlink output with required inputs (**Output X** parameter);
– Set the **Activation Delay** for Output X for each interlinked input;
– Select **Output Type** (if necessary);
– Select **Control Program** (see Table 1.4.3.6);
– Set an Operation Time (if a program with limited time is used)
– Define where **START/STOP** buttons are used);
– Select Monitoring Mode;
– Define Activated Output Monitoring mode);
– Define whether output operation(on/off) events are reported (if needed).

1.4.3.20 The local output control programs are described in table 1.4.3.6.

Table 1.4.3.6 Local Output Control Programs

No	Control Program	Description	Initial Condition
0	No Control	Centralized Control	On
1	Turn On	Turn on in case of Alarm, Flooding Alarm, or Fire*; Otherwise Turn off	On
2	Turn OFF	Turn off in case of Alarm, Flooding Alarm, or Fire*; Otherwise turn on	On
3	Turn ON for a Time	Turn on for a set period of time in case of Intrusion Alarm, Flooding Alarm or Fire*; Otherwise turn off	Off
4	Turn OFF for a Time	Turn off for a set period of time in case of Intrusion Alarm, Flooding Detected, or Fire*; Otherwise turn on.	On
5	Blink (OFF is Initial Position)	Switching (0.5s On/0.5s Off) if Intrusion Alarm, Flooding Detected or Fire*; Otherwise turn off	Off
6	Blink (ON is Initial Position)	Switching (0.5s On/0.5s Off) if Intrusion Alarm, Flooding Detected or Fire*; Otherwise turn on.	On
7	Blink for a Time (OFF is Initial Position)	Switching for a set period of time (0.5 s On/0.5 sec Off) if Intrusion Alarm, Flooding Detected or Fire*; Otherwise turn off	Off
8	Blink for a Time (ON is Initial Position)	Switching for a set period of time (0.5 s On/0.5 sec Off) if Intrusion Alarm, Flooding Detected or Fire*; Otherwise turn on.	On
9	Lamp	Switching (0.25s On/0.75s Off) If Fire Pre-Alarm*; Switching (0.5s On/0.5s Off) if Intrusion Alarm, Flooding Detected, Lobby Alarm or ARMING FAILED Switching (0.25s On/1.75s Off) if Fault, Tamper Alarm Turn On if any Input is armed; Turn off if all inputs are disarmed.	**
10	Alarm Output 1	Turn on, if all output-linked inputs are armed; Otherwise turn off.	**
12	Siren	Switching (0.5s On/0.5s Off) during a set time if Fire* Switching (0.5s On/1.5s Off) during a set period of time, if Pre-Alarm; Turn on for a set period of time if Intrusion Alarm, Flooding Detected; Otherwise turn off.	Off
13	Fire Output	Turn on if Fire* or Pre-alarm Otherwise turn off (open).	**
14	Fault Output	Turn on if any input has Fault, Tamper Alarm, Arming Failed or Disarmed status, otherwise turn off Turn off if any input has Fault state Turn off in case of device power failure; Turn off if Tamper Alarm; Otherwise turn on. (close)	**

15	Fire Lamp	Blinking (0.25s On/0.25s Off) if Fire Blinking (0.25s On/0.75s Off) if Fire Pre-Alarm Blinking (0.5s On/0.5s Off) if Intrusion Alarm, Flooding Detected, Lobby Alarm or ARMING FAILED Blinking (0.25s On/1.75s Off) if Fault Turn On if all output-interlinked inputs are armed; Otherwise turn off.	**
16	Alarm Output 2	Turn on if all output-linked inputs are Armed or Disarmed (but there is no Alarm Intrusion, Panic Alarm, Lobby Alarm, Flooding Detected, Fire*, Faults, Disarms etc Othewise turn off.	**
17	Turn On for a Time before Arming	Turn on for a set period of time if Arming is in process (Arming Delay); Otherwise turn off.	Off
18	Turn Off for a Time before Arming	Turn off for a set period of time if Arming is in process; Otherwise turn on.	On
19	Turn On for a Time upon Arming	Turn on for set period of time if any output-interlinked goes to the Armed status; Otherwise turn off.	Off
20	Turn Off for a Time upon Arming	Turn off for set period of time if any output-interlinked goes to the Armed status; Otherwise turn on.	On
21	Turn On for a Time upon Disarming	Turn on for set period of time if any output-interlinked goes to the Disarmed status; Otherwise turn off.	Off
22	Turn Off for a Time upon Disarming	Turn off for set period of time if any output-interlinked goes to the Disarmed status; Otherwise turn off.; Otherwise turn on..	On
23	Turn On for a Time if Arming Failed	Turn on for set period of time if any output-interlinked goes to the Arming Failed status; Otherwise turn off.	Off
24	Turn Off for a Time if Arming Failed	Turn off for a set period of time, if any output-linked input goes the Arming Failed status Otherwise turn On	On
25	Turn On for a Time upon Auxiliary Alarm	Turn on for a set period of time if Aux Input Activated; Otherwise turn off.	Off
26	Turn Off for a Time upon Auxiliary Alarm	Turn off for a set period of time If Aux Input Activated; Otherwise turn on.	On
27	Turn On upon Disarming	Turn on if any output-interlinked input is Disarmed; Otherwise turn off.	Off
28	Turn Off upon Disarming	Turn off if any output-interlinked input is Disarmed; Otherwise turn on..	On
29	Turn On upon Arming	Turn on if any output-interlinked input is Armed; Otherwise turn off.	Off
30	Turn Off upon Arming	Turn off if any output-interlinked input is Armed; Otherwise turn on..	On
31	Turn On upon Aux Activation	Turn on if Aux Input Activated; Otherwise turn off.	Off
32	Turn Off upon Aux Activation	Turn off if Aux Input Activated; Otherwise turn on.	On

36	Turn On if Level Increased	Turn on if the input goes to the Level Increased state***; Otherwise turn off	Off
37	Turn On if Level Decreased	Turn on if the input goes to the Level Decreased state***; Otherwise turn of	Off
50	Turn On if Fire2	Turn On for a set period of time, if Fire2; Otherwise, turn off	Off
51	Turn Off if Fire2	Turn off for a set period of time if Fire2; Otherwise turn on.	On
52	Blink if Fire2 (OFF Is Initial Position)	Switching (0.5s On/0.5s Off) for set period of time if Fire2; Otherwise turn off	Off
53	Blink if Fire2; ON Is Initial Position	Switching (0.5s On/0.5s Off) for set period of time if Fire2; Otherwise turn on.	On
54	Turn On If Attack	Turn on in case Panic; Otherwise turn Off.	On
55	Turn Off If Attack	Turn Off in case Panic; Otherwise turn on..	On

Notes:

* – The Fire means Fire, Fire2 or RCU Activated.

Activation Delay is available for Programs 1 to 8, and 12.

** - The state of the relay is determined by the state of the group of associated inputs;

*** - Only a programmable aux input (type 12) can go to the Level Increased and Level Decreased states, if the corresponding states are programmed for it.

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1.4.3.21 All control programs, except for programs No 9, 10, 13, 14, 15, 16 (see. Table 1.4.3.6) are activated (deactivated) on an output as input change response with delay as set in the **Activation Delay for Output X** parameter for each input. Thus, activation delay can be set individually for different inputs interlinked with the same output. However, the output is activated (deactivated) immediately if the input goes to the RCU Activated status.

1.4.3.22 For programs 1 to 8, and 12, the activation (deactivation) of input occurs immediately as soon as the related input goes to the Fire2 state.

1.4.3.23 The control programs based on limited operation time (Turn On/Off for a Time…), this time is defined by the **Operation Time, s** parameter. Maximal possible time ((*8191,875 c*) for this parameter is special one and means infinite operation time.

1.4.3.24 For control programs No. 1 - 8 (general purpose programs), 12 (Siren), as well as 50 - 53, alarm (activation) of auxiliary input (type 6) associated with an output inhibit the program operation according to the conditions s:

- Fire;
- Fire2;
- Intrusion Alarm;
- Flooding Detected.

The program operation under the condition RCU Activated is not inhibited in case of activation of the associated auxiliary input.

If the auxiliary input is restored but, but the output activation condition by other inputs is still in place:

– The control programs with unlimited operation time (1,2,5 and 6) are resumed;
– The control programs with limited operation time (3, 4, 7, 8, 12, 50 – 53) are not resumed;

Thus, the violation of auxiliary input of the Signal-20M suspense running general purpose programs with unlimited operation time and prohibits general purpose programs with limited operation time.

1.4.3.25 To enable the output centralized control (be network controller), settings shall be provided both for the control panel and network controller.

The Signal-20M settings:

– Select the *0- No Control* program for the **Control Program** parameter (see Table1.4.3.6);
– Select **Monitoring Mode**;
– Select the activated output monitoring mode (the **Activated Output**);
– Select Simple for **Output Type**;
– Select On/Off Event (if on/events reporting is needed).

If you select ‘Control Programs’ - ‘0 - No Control’, centralized control is enabled for the output regardless of the interlink between the output and input (Output X Control parameter).

When configured in this way, after powering the control panel, the output will be turned off until the first command from the network controller is received. It may take some time for the network controller to form a command that switching the output to the state corresponding to the current state of the sections associated with the output.

Therefore, if a centralized control program is used that assumes the initial state ‘On’ (one of the programs ‘Turn off ...), it is advisable to switch the output to the ‘On’ state immediately after turning on the power. This requires:

- select any ‘Control Program’ assuming the initial state ‘On’, for example, ‘2 - Turn off’ (see Table 1.4.3.6););
- unselect all interlinks between the output and all inputs (**Output X** /Control).

To configure the network controller, the following shall be done in the controller configuration:

- set the interlink between the output (relay) and partitions;
- assign a relay control program;
- set the delay and operation time for the relay.

For details, see the User Guide of the respective network controller

1.4.4 Credentials

1.4.4.1 The panel allows using the following types of credentials:

– -Touch Memory (iButton) electronic keys, operating on the Dallas Touch Memory interface (iButton);
– PIN codes (codes, passwords).

1.4.4.2 The number of digits for different PIN codes may be different.
The minimum is 2 digits.
The maximum is defined by the '**Maximum PIN Length** 'configuration parameter and can be up to 12 digits.

1.4.4.3 The device can store in the non-volatile memory a total of up to 128 credentials of the listed types.

1.4.4.4 Configuration parameters of credentials are shown in Table 1.4.4.

Table 1.4.4.1 Credential Parameters

Parameter	Function	Values
1	2	3
Credential Type	Defines the purpose of the credential. It can be either a PIN code or a Touch Memory key.	*Main* *Administrator* *Installer*
Input1 … Input20	Determine the rights of the main type credential for arming / disarming, individually for each input. Credentials such as Administrator and Installer cannot have rights to arm / disarm inputs	*Arm* *Disarm* *Arming/Disarming* *No Control*
STAR/STOP Buttons	Defines the rights of credentials of the Main type to control the outputs using the START and STOP buttons. Credentials of the 'Administrator' and 'Installer' type cannot have the rights to control the outputs.	*Check/Uncheck*
Suspended	The credential does not function	*Check/Uncheck*

1.4.4.5 Credentials of the Primary type (tokens / passwords) are intended for local control of inputs and outputs and allow users, if they have the appropriate rights:

– arm (switch on) individual inputs;
– arm (switch on) a group of inputs;
– disarm inputs (If **Never Disarm** parameter is disabled for this input);
– disarm a group of inputs (If N**ever Disarm** parameter disabled for these inputs);
– reset the alarms of the input group;
– control the outputs (when the c Control by **START / STOP** buttons parameter is enabled for the corresponding outputs).

1.4.4.6 Credentials of the ‘Administrator’ type are designed to manage user identifiers (keys / passwords of the ‘Main’ type) and allow responsible persons to do the following at a protected facility:

- add new user credential to non-volatile memory;
- edit the rights of existing user credential;
- suspend existing user credentials;
- restore user credentials;
- selectively delete user credentials from non-volatile memory;
- delete all user credential from non-volatile memory;
- change the current credential of the ‘Administrator’ type;
- test the light and sound indication of the device

The Administrator credential allows performing all the described actions off-line, without using a computer or other technical means (for more details, see Administrator mode).

In the default configuration, the nonvolatile memory of the device contains one credential of the Administrator type (**PIN - code ‘1234’**).

In addition, all the specified actions with user credentials can be performed using a computer with the ‘Uprog.exe’ program installed.

Using the program ‘**Uprog**.**exe**’, you can set two or more credentials of the ‘Administrator’ type.

The current version of the program ‘**Uprog**.**exe**’ is available on Bolid's website: at bolid.ru in the section ‘Software’.

To configure the credentials stored in the panel, the panel must be connected to a computer with the installed ‘Uprog.exe’ program through one of the interface converters (‘PI-GR’, ‘S2000-PI’, ‘S2000-USB’ or ‘USB-RS485’) in accordance with the operating instructions for the used converter.

In addition, the S2000M panel version 2.03 or higher can be used as an interface converter in accordance with the Operation Manual for the used panel.

1.4.4.7 Credentials of the ‘Installer’ type are intended for maintenance and adjustment of the device to allow maintenance personnel to do the following:

- reset the network address and pause the response to default values;
- reset the configuration to default values (including deleting all user credential from volatile memory and resetting a credential of the ‘Administrator’ type to the default value **(PIN - code ‘1234’)**;
- change the current credential of the ‘Installer’ type;
- carry out diagnostics of the panel (including checking the outputs);
- put the panel into bootloader mode;
- reset the panel;
- to test the light and sound indication of the panel.

The Installer type credential allows performing all the described actions autonomously without using a computer or other technical means.

In the factory configuration, the nonvolatile memory of the panel contains one credential of the Installer type **(PIN - code ‘123456’).**

In addition, all the specified actions such configuration resetting and credentials deleting can be performed using a computer with the ‘Uprog.exe’ program installed.

Using the program ‘**Uprog**.**exe**’, you can set two or more credentials of the Installer type.

The current version of the program ‘**Uprog**.**exe**’ is available on Bolid's website: at bolid.ru in the section ‘Software’.

To configure the credentials stored in the panel, the panel must be connected to a computer with the installed ‘**Uprog**.**exe**’ program through one of the interface converters (‘PI-GR’, ‘S2000-PI’, ‘S2000-USB’ or ‘USB-RS485’) in accordance with the operating instructions for the used converter.

In addition, the S2000M panel version 2.03 or higher can be used as an interface converter in accordance with the Operation Manual for the used panel.

1.4.4.8 When working together with a network controller (S2000M or Orion Pro workstation) the panel supports centralized arming and disarming of partitions using the network controller.
Credentials (PIN-codes, Touch Memory keys) intended for centralized control of partitions should be stored in the network controller database rather in the non-volatile memory of the panel.
For details, see the Operating Manual of the respective network controller.

1.4.5 Operation Modes

1.4.5.1 The Panel supports the following operation modes:

- **Quiescent Mode;**
- **PIN Entry Mode;**
- **Local Control Mode;**
- **Centralized Control Mode ;**
- **Administrator Menu;**
- **Installer Menu;**
- **Indication Test;**
- **Device Error (Bootloader).**

1.4.5.2 When powered on, the panel goes to the Quiescent mode. This can take several seconds. Switching to the Quiescent, the panel plays Awaking melody.

1.4.5.3 In the Quiescent mode the panel do the following:

- monitors the logical states of the inputs;
- monitors the status of the outputs;
- controls the outputs depending on the current state of the inputs (locally);
- monitors the state of the power inputs;
- monitors the enclosure condition;
- generates events about all changes in the state of the panel elements (inputs, outputs, housing and power inputs);
- controls visual and audible indication corresponding to the current state of the panel elements (inputs, outputs, housing and power inputs);
- allows to control (arm / disarm) inputs that are not protected by any user credential (PIN-code, or Touch Memory key);
- interacts with the network controller (if connected).

1.4.5.4 The control panel monitors the logical states of all inputs in accordance with their type, configuration parameters, resistance and mode (armed (enabled) or disarmed (disabled)).

For more information, see ‘Inputs’.

1.4.5.5 The control panel monitors the states of outputs in accordance with their type, configuration parameters and mode (on / off).

The panel controls the outputs (locally or centrally) according to their configuration parameters.

For more information, see ‘Outputs’.

1.4.5.6 The panel monitors the state of the power inputs depending on the value of the configuration parameter ‘Two Power Inputs Monitoring’.

When monitoring is active, the state of the two power inputs is analyzed separately. The power supply is normal when the voltage of both power inputs is in the range of 10.2 ... 28.0 V.

With the monitoring is not selected, the power supply is normal when the voltage at at least one of the power inputs is in the range of 10.2 ... 28.0 V

If the product is used as combined alarm control panel as part of:

– Fire alarm and auto extinguishing system
– Voice alarm and escape control systems of Type 1 and 2

The power shall be fed to both power inputs and the Two Power Inputs Monitoring parameters shall be selected to meet the requirements of GOST RP 53325–2012

1.4.5.7 The control panel monitors the condition of the enclosure using a tamper switch. The enclosure is considered if the actuation of the tamper switch is detected.

The case is considered closed (case restoration) if the tamper switch is restored for more than 15 s.

1.4.5.8 The device generates and transmits to the network controller events about all changes in inputs, outputs, power inputs and housing.

If there is communication via the RS-485 network with the network controller, the device transmits all events to in chronological order.

Events are stored in a ring buffer in the device's non-volatile memory. The buffer size is 4096 events. In case of a buffer overflow, new events are stored in place of the oldest events using the FIFO algorithm (first in, first out).

1.4.5.9 The panel controls the light indication corresponding to the current state of the device elements (inputs, outputs, housing and power inputs), moreover:

– indicators ‘1’ ... ‘20’ display the status of the inputs;
– indicators ‘Outputs’ (‘1’ ... ‘7’) display the status of the outputs;
– the ‘Power’ indicator displays the state of the power inputs;
– the Fire and Alarm indicate the alarm states of the inputs;
– the Fault indicator indicates various faults in the inputs, outputs, power supply and housing;
– the Disabled indicator indicates disabled (disarmed) inputs.

For more information on the modes of operation of indicators, see the section Light and Sound Indication.

1.4.5.10 In **Quiescent** mode the control panel allows to control (arm / disarm) inputs that are not protected by any user credential (PIN-code, or Touch Memory key).

An input is considered an unprotected by credentials if all credentials of the '*Main*' type (user credentials), stored in the panel memory in the configuration parameters, have the *No Control* attribute selected with respect to this Input **X** ('Input1' ... 'Input20') .

If at least one user credential, in relation to this input, has the rights to '*Arm*' and / or '*Disarm*', control of this input without presenting the credential is impossible. An unprotected input can be controlled by pressing the button corresponding to the input number 1 … 20

If an input has been disarmed, pressing the corresponding button attempts to arm this input.

If the input has not been disarmed, pressing the corresponding button disarms it.

If the configuration parameter **Never Disarm** is set for an input, such an input can only be re-armed if it is in a state other than **ARMED**.

1.4.5.11 In 'Quiescent mode' the control panel allows to perform group reset of unprotected input alarms.

The reset is performed by pressing the Reset button with an attempt to arm all unprotected inputs that are in alarmed (activated) states (various alarms, pre-alarms, fires) or in the **Arming Failed** state.

Control of inputs is accompanied by light and sound indication.

More detailed information on the modes of operation of light and sound indication is provided in the section Light and Sound Indication.

1.4.5.12 The Signal-20M provides interaction with a network controller (the S2000M panel or Orion Pro workstation) as follows:

- sends events to the network controller about all changes in the state of the device elements (inputs, outputs, housing and power inputs);
- to request the state of elements at any time;
- disarm inputs (except for inputs with the Never Disarm configuration parameter and process inputs of types 6 and 12);
- arms inputs (except for auxiliary inputs of types 6 and 12);
- supports centralized control of the outputs (except for locally controlled outputs);
- disables control of inputs of any type (control panel 'S2000M' v.4.13 and higher);
- disables monitoring and control of any outputs (S2000M v.4.13 and higher).

1.4.5.13 From the **Quiescent** mode, the Signal-20M can go to the following modes:

- **PIN Code Entry;**
- **Local Control Mode;**
- **Centralized Control Mode;**
- **Administrator Menu;**
- **Installer Menu.**

1.4.5.14 Pressing the button switching the panel from the Quiescent mode to the PIN Entry mode.

Switching to the PIN Code Entry is indicated by a green Access LED.

1.4.5.15 In the **PIN Code Entry mode**, the panel:

- monitors the logical states of the inputs;
- monitors the status of the outputs;
- controls the outputs, depending on the current state of the inputs (locally);

– monitors the state of the power inputs;
– monitors the condition of the enclosure;
– generates events about all changes in the device elements (inputs, outputs, housing and power inputs);
– controls the light and sound indication corresponding to the current state of the panel elements (inputs, outputs, housing and power inputs);
– allows entering a PIN-code (user, administrator or installer);
– interacts with the network controller (if connected)

1.4.5.16 In the **PIN Entry** mode, the panel, monitors states of all elements (inputs, outputs, power inputs, enclosure) and generates event messages on all state changes in the same manner as in the **Quiescent** mode.

1.4.5.17 In the **PIN Entry** mode, the panel control the light and sound indication corresponding to the current states of the panel elements in the same manner as in the **Quiescent** mode.

1.4.5.18 In the **PIN Entry** mode, the panel interacts with the network controller in the same manner as in the **Quiescent** mode.

1.4.5.19 To enter PIN code, please use 

… 

(buttons, button 10 corresponds to 0 digit.
To complete PIN code entering, press Enter button.

If the length of the entered PIN - code is maximum (as in Maximum Length the configuration parameter) the confirmation by is not required.

1.4.5.20 When PIN code is submitted, the panel compares it with credentials store in the panel memory.

When the user PIN-code (password) is entered, the device switches to the Local Control Mode.

When the administrator PIN-code (password) is entered, the device switches to the Administrator Menu mode.

When the installer PIN (password) is entered, the device switches to the Installer Menu mode.

If there is a connection with the network controller and an unknown password is entered, the device switches to the Centralized Control mode.

1.4.5.21 If an unknown password is entered and there is no communication with the network controller, the panel indicates a control failure (a long acknowledgment beep and an intermittent red light on the Access indicator for 3 seconds) and returns to the **Quiescent** mode.

1.4.5.22 If the PIN code is not entered within 30 seconds after pressing the  button (start / end of the control session), the device will return to the '**Quiescent mode**'. If within 10 seconds after dialing the last digit of the PIN – code, it is not completed by Enter button, the device will return to the Quiescent mode.

1.4.5.23 The panel can be switched to the Local Control mode in the following manner:
– Entering PIN code in the PIN code entry mode;
– Presenting a valid iButton in the Quiescent or PIN Entry mode.

The switching is indicated by the steady green Access indicator.

1.4.5.24 In the **Local Control** mode, the panel:

- monitors logical states of the inputs;
- monitors the status of the outputs;
- controls the outputs depending on the current state of the inputs (locally);
- monitors the state of the power inputs;
- monitors the condition of the enclosure;
- generates events about all changes in the device elements (inputs, outputs, housing and power inputs);
- controls the light and sound indication corresponding to the current state of the device elements (inputs, outputs, housing and power inputs);
- allows arming / disarming inputs that are not protected by any user credential (PIN-code, or Touch Memory key);
- allows arming / disarming (as well as clearing alarms) inputs protected by the presented user credential;
- allows controlling outputs using the START and STOP buttons;
- interacts with the network controller (if connected).

1.4.5.25 1.4.5.15 In the **Local Control** mode, the panel, monitors states of all elements (inputs, outputs, power inputs and enclosure) and generates event messages on all state changes in the same manner as in the **Quiescent** mode.

1.4.5.26 1.4.5.16 In the **Local Control**, the panel control the light and sound indication corresponding to the current states of the panel elements in the same manner as in the **Quiescent** mode.

1.4.5.27 1.4.5.17 In the **Local Control**, the panel interacts with the network controller in the same manner as in the **Quiescent** mode.

1.4.5.28 In the Local Control mode, the panel allows arming/disarming inputs protected by a presented user credentials (PIN or iButton) in accordance with rights of this credential.

The input is considered as protected, if the configuration parameter of presented user credential Input x has Arming and/or Disarming rights for this input.

1.4.5.29 In the Local Control mode, the control is performed in two ways:

- Individual control of each input;
- Group control of multiple inputs.

1.4.5.30 Individual control is carried out by pressing a corresponding numerical button 1 to 20.

If an input is disarmed, when the corresponding button is pressed and the presented identifier has the right to *Arm*, it attempts to arm this input. If the presented credential does not have the right to *Arm*, the control panel indicates that the control action is denied (long acknowledgment beep).

If the input in not disarmed, pressing a corresponding button and presenting a credential with the "Disarm" right, provided that the **Never Disarm** parameter is not selected.

Otherwise, if a presented credential has the right to *Arm*, an attempt is made to arm this input.

If the presented credential does not have the necessary rights, the control panel indicates that a control action is denied (long acknowledgment beep).

Thus, pressing the button corresponding to the input number:

Initiates an arming attempt, If the input is disarmed and it is possible to arm it.

Initiates an arming attempt, if the input is disarmed and it is possible Disarms an input if it is **NOT** disarmed and it is possible to disarm; otherwise, if it is possible to arm an input, an arming will be attempted.

1.4.5.31 Group control of inputs is carried out by repeated presenting of the Touch Memory key to the reader or by pressing the Enter button.

In this case, the state of all panel inputs is analyzed, namely:

If the presented credential has the right to "Disarm" one or several inputs, and this input (or several inputs) has not been disarmed, and the configuration parameter **Never Disarm** is unselected these inputs, this input (or several inputs) will be disarmed.

Otherwise, it attempts to arm all disarmed inputs which are allowed to be armed in the rights of the presented credential.

Thus, during the group control of the inputs, presenting a credential or pressing the Enter button:
Disarms all input that can be disarmed;
otherwise, attempts to arm all inputs that can be armed.

1.4.5.32 In the Local Control mode, the control panel allows performing group reset of alarms for inputs protected by the presented user credential (PIN code, or Touch Memory key) in accordance with the to "Arming" rights of this credential.

The reset is carried out by pressing the Reset button. At the same time, an attempt is made to arm all inputs which are in alarm states (various alarms, pre-alarms, fires) or in the ARMING FAILED state and protected by this credential.

1.4.5.33 Control of inputs is accompanied by light and sound indication.

More detailed information on the modes of operation of light and sound indication is provided in Light and Sound Indication.

1.4.5.34 In the **Local Control** mode, the panel allows you to control its outputs manually, using its own controls, if all of the following conditions are met simultaneously:

- the output is controlled locally (the Control Program is selected and the interlinks of the output with the inputs are defined (**Output X Control** input configuration);
- the **START / STOP** buttons control is enabled for this output;
- the Control of outputs (**START / STOP** buttons) configuration parameter of the presented credential determines the right of the credential to control the outputs.

1.4.5.35 When the Start button is pressed, all outputs with **START / STOP** configuration parameter enabled, regardless of the states of the associated inputs, will go to the active state (start running the program), in accordance with the '**Control Program**' selected for them ('Turn On ...', 'Turn Off ...', 'Blink ...', etc.), regardless of the states of the associated inputs.

In this case, if the selected '**Control Program**' implies a limited run time (for example, 'Turn On for a Time ...'), the program is terminated at the end of this time and can be resumed:

- manually by pressing the START button again;
- automatically, in accordance with state changes of the inputs associated with this output (i.e., a program start condition takes place).

If the selected '**Control Program**' implies an unlimited execution time, then it will be run until the button **STOP** is pressed.

When pressing the STOP button, all outputs with enabled START / STOP buttons parameter, regardless of the state of associated inputs, returns to the initial state defined by the 'Control Program' selected for them, i.e. the program running will be aborted.

The program is blocked (inhibited) blocked as long as the conditions for its start are preserved (corresponding to the states of the inputs associated with this output).

The program can be resumed:

- manually, by pressing the button START button again;

- automatically, after resetting the alarm states of all inputs and the subsequent repeated activation of at least one input associated with this output (i.e., the repeated occurrence of the program run condition).

1.4.5.36 In the **Local Control** mode, the panel interacts with the network controller in the same manner as in the **Quiescent** mode.

1.4.5.37 Switching to the Quiescent mode from the Local control mode is performed by the following way:

- Manual using the  button
- Automatically after 20 seconds after the last action (button presenting or credential presenting).

1.4.5.38 The panel can go to the **Centralized Control** mode, if it is connected to the network controller. This can be done in the following manners:

- from the PIN Entry mode, after entering the PIN-code (password) which is not enrolled in the non-volatile memory of the device;
- from the ‘Quiescent or PIN Entry, after presenting a credential to the reader that is not stored in the nonvolatile memory of the panel.

Switching to the Centralized Control mode is accompanied by turning off the indicators ‘1’ ... ‘20’, which emphasizes that at the moment, the panel provides the centralized control of the portion rather than its own inputs.

1.4.5.39 In Centralized Control mode, the panel:

- monitors logical states of the inputs;
- monitors the status of the outputs;
- controls the outputs depending on the current state of the inputs (locally);
- monitors the state of the power inputs;
- monitors the condition of the enclosure;
- generates events about all changes in the device elements (inputs, outputs, housing and power inputs);
- allows arming / disarming partitions under the control of the network controller
- interacts with the network controller.

1.4.5.40 In the **Centralized Control** mode, the panel monitors all element (inputs, outputs, power inputs and enclosure) in the same manner as in the **Quiescent** mode.

1.4.5.41 In the Centralized Control mode, the panel arms/disarms partitions as instructed from the controller.

For the purpose of the centralized control, user credentials are enrolled in the database of the network controller with the corresponding privileges. For more details, see the User Guide of the network controller.

1.4.5.42 When the Touch Memory credential is presented to the reader (or password is entered), the panel transmits the credential code to the network controller and waits a response about the control rights to this credential.

At this moment, the ‘Access’ indicator switches from red to green with a frequency of 4 Hz.

The process of waiting for a response can take from fractions of a second to several seconds, depending on the number of devices in the RS-485 interface

1.4.5.43 If the presented credential has no rights, the control panel indicates a Deny in access to control (long acknowledging sound signal and intermittent switching on of the Access indicator in red for 3 seconds) and returns to the Quiescent mode.

1.4.5.44 If the presented identifier has rights to control the partition, the panel will display the status of this partition on the ‘Access’ indicator, in accordance with Table 1.4.18.

1.4.5.45 Each repeated presentation of the Touch Memory credential (or pressing the Enter button), if the credential has the rights to “*Arming*” and “*Disarming*” the partition, will cause:

– an attempt to arm the partition (if the partition was disarmed);
– disarming the partition (if it was in other states).

If the credential has limited rights to control the partition, for example, only arming is allowed, the repeated presentation (as well as all subsequent ones) of this credential causes only the permitted action (arming), regardless of the current state of the partition.

1.4.5.46 In the Centralized Control mode, the panel interacts with the network controller in the same manner as in the **Quiescent** mode.

1.4.5.47 Switching to the **Quiescent** mode from the **Centralized Control** mode is performed by the following way:

– Manually using the  button
– Automatically after 20 seconds after the last action (button presenting or credential presenting).

1.4.5.48 The panel can go to the Administrator menu in the following manners:

– from the PIN Entry mode, after entering the Administrator PIN code;
– from the ‘Quiescent or PIN Entry, after presenting an administrator credential to the reader.

1.4.5.49 Switching to the Administrator Menu is accompanied by the following:

– Administrator melody;
– Turing off all indication;
– cyclical alternating turning on indicators ‘11’ ... ‘20’ in green (‘running green line’).

1.4.5.50 The Administrator can press the corresponding button to select menu items specified in Table 1.4.4.2.

Table 1.4.4.2 Administrator Menu

Menu Item	Button
Add New Credential	11
Edit Credential Rights	12
Edit Credential Rights by Number	13
Change User Credential	14
Change User Credential by Number	15

Suspend User Credential	16
Suspend User Credential by Number	17
Restore User Credential	18
Restore User Credential by Number	19
Delete User Credential	20
Delete User Credential by Number	10
View Number of User Credential	9
Test Light and Sound Indication	8
Change Administrator Credential	7
Delete All User Credentials	6

1.4.5.51 If no item is selected during 20 seconds after entering menu, the panel returns back to the **Quiescent** mode. The return is accompanied by short triple beep.

1.4.5.52 The menu item **Add New User Credential** allows you to save a new user credential in the nonvolatile memory of the device. It can be either a Touch Memory token or a PIN.

When the specified menu item is selected, the "11" indicator turns on with a continuous green color, and the "Access" indicator turns on with an intermittent green color (an invitation to enter a PIN code or present a token).

To add a Touch Memory key, you must bring the new token to the device reader.

To add a PIN-code (password) for a user, you must:

– enter the PIN-code using the buttons '1' ... '10' (button '10' corresponds to number '0');
– press the 'Enter' button;
– make sure that the 'Access' indicator within one second starts switching from red to green with a frequency of 4 Hz (PIN-code is accepted), and then turned on again with an intermittent green color;
– re-enter the PIN-code using the buttons '1' ... '10' (button '10' corresponds to number '0');
– press the 'Enter' button again.

If the length of the entered PIN-code is equal to the maximum possible, pressing the Enter button is not required. The maximum possible length of the PIN-code is determined by the 'Maximum PIN Length' configuration parameter (see 1.4.7.).

Double entry of the PIN-code eliminates a wrong entry.

In case of successful credential enrollment, indicators '11' and 'Access' are turned off.

The panel displays the number of the added credential three times by turning on the green indicators '1' ... '10' (indicator '10' corresponds to number '0') as follows:

first digit of the number - pause - second digit - pause - third digit -
long pause -
first digit of the number - pause - second digit - pause - third digit -
long pause -
first digit of number - pause - second digit - pause - third digit.

For example, when you add a credential and save it under No. 3, the number will be displayed by turning green the following indicators:

“10” - “10” - “3” —— “10” - “10” - “3” —— “10” - “10” - “3”.

And when you add a Touch Memory token (or PIN-code), and save it under No. 105, the number will be displayed by turning on the indicators in green:

“1” - “10” - “5” —— “1” - “10” - “5” —— “1” - “10” - “5”.

It is recommended to save a credential number of the credential log. It can be useful for changing a credential code / type (suspension, deleting) in case of its loss, theft or compromise.

User credentials are added to the device memory with maximum rights (rights to arm and disarm all inputs and to control outputs). Editing of credential rights is also carried out using the administrator menu (items ‘12’ and ‘13’).

When trying to add a new user credential, errors may occur. Description of errors is provided in Table 1.4.4.3.

Table 1.4.4.3 Credential Enrollment Errors

Error Description	**Error Code (Indicator #)**
Credential is already stored in the panel memory	1
Insufficient memory, maximal number of credential is already stored in the memory	2
The credential is already stored in the memory and suspend	3
Error saving credential	4
Too short PIN code (less than 2 digits)	5
The entered PIN codes do not match	6

If an error occurs while adding a credential, the indicators ‘11’ and ‘Access’ are turned off.

The panel displays an error code for 3 seconds by turning red the corresponding indicator in the intermittent mode. For example, if the error code is 2, the indicator ‘2’ will be turned red in the intermittent mode for 3 seconds.

The display of the error code is accompanied by a long beep.

After the indication of the credential number or error code, the panel returns to the ‘Administrator Menu’ mode.

If, within 20 seconds after selecting a menu item, the credential is not presented, the panel will return to the Quiescent mode. Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.53 The **Edit User Credential Rights** allows editing user credential rights for arming and disarming individual inputs.

When the specified menu item is selected, the “12” indicator turns on with a continuous green color, and the “Access” indicator turns on with an intermittent green color (an invitation to enter a PIN code or present a token).

To change the rights of the Touch Memory token, it is necessary to present it to the panel reader.

To change the rights of the user's PIN code, you must:

- enter this PIN-code using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);
- press the Enter button.

If the length of the entered PIN-code is equal to the maximum possible - pressing the Enter button is not required. The maximum possible length of the PIN-code is defined **Maximum PIN Length** parameter (see 1.4.7.)

After presenting a token (entering the PIN-code), the panel displays the rights of this credential on its indicators. The input control rights are display by corresponding indicators ‘1’ ... ‘20’, as described in Table 1.4.4.4.

Table 1.4.4.4 Input Control Rights Indication

Rights	**Indicator (LED) Illumination (‘1’ … ‘20’)**
Arming	Blinking red
Disarming	Blinking green
Arming*/Disarming*	Switching from red to green
No Control	Off

Output control rights are indicated by the START and STOP indicators in accordance with Table 1.4.4.5.

Table 1.4.4.5 Output Control Rights Indication

Rights	**Indication**	
	START	**STOP**
Output control is available (Start/Stop buttons)	Blinking red	Blinking yellow
Output control is not available (Start/Stop buttons)	Off	Off

Every pressing the corresponding button changes the input control rights in cycle:
... - ‘Arming / Disarming’ - ‘No control’ - ‘Disarming’ - ‘Arming’ - ...

Changing the rights of the token (password) to control the outputs is performed each time the START or STOP button is pressed.

To save the changed rights of the token (password) in the nonvolatile memory of the panel, press the ENTER button.

To discard changes and return to the Quiescent mode, please press  .

When trying to edit a user credential, errors may occur. Description of errors is provided in Table 1.4.4.6.

Table 1.4.4.6 Credential Rights Editing Errors

Error Description	**Error Code (Indicator #)**
The credential does not exist in the memory (not added or deleted)	1
The credential is suspended	2
Error saving a credential	3
The PIN code is too short (less than 2 digits)	5

If an error occurs while editing credential rights, the indicators ‘12’ and ‘Access’ are turned off.

The panel displays an error code for 3 seconds by turning red the corresponding indicator in the intermittent mode. For example, if the error code is 2, the indicator ‘2’ will be turned red in the intermittent mode for 3 seconds.

The display of the error code is accompanied by a long beep.

After the indication of the credential number or error code, the panel returns to the ‘Administrator Menu’ mode.

If, within 20 seconds after selecting a menu item, the credential is not presented, the panel will return to the Quiescent mode. Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.54 The **Edit User Credential by Number** allows editing user credential rights for arming and disarming individual inputs.

It differs from the Edit User Credential by need to specify the credential number to edit the its rights without presenting the credential itself.

When the specified menu item is selected, the “13” indicator turns on with a continuous green color, and the “Access” indicator is off.

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To change user credential rights, the following must be done:

– enter a credential number buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);

– press the Enter button.

The number can be entered in the format of one, two and three characters, for example, ‘7’, ‘07’ and ‘007’ mean a credential with number 7. When entering a credential number of three characters, pressing the Enter button is not required.

After entering a credential, the panel displays the rights of this credential on its indicators.

The procedures for displaying, editing and saving user credential rights are the same as described in the **Edit User Credential Rights** menu.

Errors possible during editing are similar to the errors described in the Edit **User Credential Rights** menu.

1.4.5.55 The **Replace User Credential** option allows replacing a credential without changing user rights. It may be useful if the credential is compromised.

There are no restrictions on type of credential to replace it, in other words Touch Memory (iButton) can be replaced with PIN code and vice versa.

When this menu item is selected, the “14” indicator turns on with a continuous green color, and the “Access” indicator turns on with an intermittent green color (an invitation to enter a PIN code or present a token).

To replace a Touch Memory token, it is necessary to present it to the panel reader.

To replace the rights of the user's PIN code, you must:

- enter this PIN-code using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);
- press the Enter button.

If the length of the entered PIN-code is equal to the maximum possible, pressing the Enter button is not required. The maximum possible length of the PIN-code is defined **Maximum PIN Length** parameter (see 1.4.7.)

After presenting a token (entering PIN), the ‘Access’ indicator starts switching from red to green with a frequency of 4 Hz within two seconds (PIN-code is accepted), and then turned on again an intermittent green (invitation to enter PIN or present a token). The panel is waiting for entering a new PIN code or presenting a token.

For replacing a credential with a Touch Memory token, present a new Touch Memory to the panel reader

If you need to replace the user credential with a PIN code, you must:

– enter a new PIN-code using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);

– press the Enter button;

– make sure that the ‘Access’ indicator within one second starts switching from red to green with a frequency of 4 Hz (PIN-code is accepted), and then turned on again with an intermittent green color;

– re-enter the PIN-code using the buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);

– press the ‘Enter’ button again.

If the length of the entered PIN-code is equal to the maximum possible, pressing the Enter button is not required. The maximum possible length of the PIN-code is determined by the **Maximum PIN Length** configuration parameter (see 1.4.7.).

Double entry of the PIN-code eliminates a wrong entry.

When trying to replace a user credential, errors may occur. Description of errors is provided in Table 1.4.4.7.

Table 1.4.4.7 Credential Replacement Errors

Error Description	Error Code (Indicator No)
The replaced credential does not exist in the memory (not added or deleted)	1
The replaced credential is suspended	2
The replaced credential is presented as a new one	3
The existing credential is presented as a new one	4
Too short PIN code (less than 2 digits)	5
The entered PIN codes do not match	6
Error saving credential	7

If an error occurs while replacing a credential, the indicators ‘14’ and ‘Access’ are turned off.

The panel displays an error code for 3 seconds by turning red a corresponding indicator in the intermittent mode. For example, if the error code is 2, the indicator ‘2’ will be turned red in the intermittent mode for 3 seconds.

The display of the error code is accompanied by a long beep.

The error saving credential may occur in case of attempt to replace Administrator or Installers credentials (use specific menus for that purpose) or due to hardware failures.

After successful replacement or error code indication, the panel returns to the ‘Administrator Menu’ mode.

If, within 20 seconds after selecting a menu item, the credential is not presented, the panel will return to the Quiescent mode. Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.55 The **Replace User Credential by Number** allows replacing a credential without changing user rights. It may be useful if the credential is compromised.

There is not restriction in type of credential for replacing in other words Touch Memory (iButton) can be replaced with PIN code and vice versa.

It differs from the Replace User Credential by need to specify a credential system number to replace it without presenting/entering a credential itself

When the specified menu item is selected, the “15” indicator turns on continuous green, while the “Access” indicator is off.

To replace a user credential, the following must be done:

– enter a credential number using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);

– press the Enter button.

The number can be entered in the format of one, two and three characters, for example, ‘7’, ‘07’ and ‘007’ mean a credential with number 7. When entering a credential number of three characters, pressing the Enter button is not required.

After entering a credential, the panel displays the rights of this credential on its indicators.

The procedures for displaying, editing and saving user credential rights are the same as described in the **Edit User Credential Rights** menu.

Errors possible during editing are similar to the errors described in the Edit **User Credential Rights** menu.

After entering a credential number, the Access indicator turns on intermittent green color (invitation to enter PIN or present a token). The panel is waiting for entering a new PIN code or presenting a token.

The procedure for replacing a credential with number is the same as described in the **Replace User Credential** menu.

Errors possible during editing are similar to the errors described in the **Replace User Credential** menu.

1.4.5.56 The **Suspend User Credential** allowed suspending a user credential without deleting it from the memory.

When the specified menu item is selected, the "16" indicator turns on continuous green, and the "Access" indicator turns on intermittent green (an invitation to enter a PIN code or present a token).

To suspend a Touch Memory token, it is necessary to present it to the panel reader.

To suspend a user's PIN code, you must:

– enter this PIN-code using buttons '1' ... '10' (button '10' corresponds to number '0');

– press the Enter button.

If the length of the entered PIN-code is equal to the maximum possible - pressing the Enter button is not required. The maximum possible length of the PIN-code is defined **Maximum PIN Length** parameter (see 1.4.7.)

After presenting a token (entering PIN), the 'Access' indicator turns off and the panel display the number of a presented credential. The display procedure is the same as for the adding a new code (password).

To confirm the credential suspension, press the Enter button.

When trying to suspend a user credential, errors may occur. The description of these errors is provided in Table 1.4.4.8.

Table 1.4.4.8 Credential Suspension Errors

Error Description	Error Code (Indicator Number)
The presented credential does not exist in the memory (or deleted)	1
The presented credential is already suspended	2
Error saving credential	3
Two short PIN code (less than 2 digits)	5

If an error occurs while suspending a credential, the indicators '16' and 'Access' are turned off.

The panel displays an error code for 3 seconds by turning red a corresponding indicator in the intermittent mode. For example, if the error code is 2, the indicator '2' will be turned red in the intermittent mode for 3 seconds

The display of the error code is accompanied by a long beep.

The error saving credential may occur in case of attempt to suspend Administrator or Installers credentials (use specific menus for that purpose) or due to hardware failures.

After successful suspension or error code indication, the panel returns to the ‘Administrator Menu’ mode.

If, within 20 seconds after selecting a menu item, the credential is not presented, the panel will return to the Quiescent mode. Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.57 The **Suspend User Credential by Number** allows suspending a user credential without deleting it from the memory. It can be useful in case of credential loss, theft or compromise

It differs from the **Suspend User Credential** by need to specify a credential system number to suspend it without presenting/entering a credential itself

When the specified menu item is selected, the “17” indicator turns on continuous green, while the “Access” indicator is off.

To suspend a user credential, the following must be done:

– enter a credential number using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);
– press the Enter button.

The number can be entered in the format of one, two and three characters, for example, ‘7’, ‘07’ and ‘007’ mean a credential with number 7. When entering a credential number of three characters, pressing the Enter button is not required.

After that, the panel displays a system number of this credential. The procedures for displaying a number are the same as in case of adding a new credential.

To confirm the suspension, press the Enter button.

The errors possible during suspending procedures are the same as described in the Suspend User Credential part.

1.4.5.58 The **Restore Suspended User Credential** allows restoring a user credential.

When a specified menu item is selected, the “18” indicator turns on continuous green, while the “Access” indicator turns on blinking green (invitation to enter/present a user credential):

To restore a Touch Memory token, it is necessary to present it to the panel reader.

To restore a user's PIN code, you must:

– enter this PIN-code using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);
– press the Enter button.

If the length of the entered PIN-code is equal to the maximum possible, pressing the Enter button is not required. The maximum possible length of the PIN-code is defined **Maximum PIN Length** parameter (see 1.4.7.)

When trying to restore a user credential, errors may occur. Description of these errors is provided in Table 1.4.4.9.

Table 1.4.4.9 Credential Restore Errors

Description	Error Code (Indicator No)
The presented credential does not exist in the memory (or deleted)	1
The presented credential is not suspended	2
Error saving credential	3
Two short PIN code (less than 2 digits)	5

If an error occurs while restoring a credential, the indicators ‘18’ and ‘Access’ are turned off.

The panel displays an error code for 3 seconds by turning red a corresponding indicator in the intermittent mode. For example, if the error code is 2, the indicator ‘2’ is turned intermittent red for 3 seconds

The error code display is accompanied by a long beep.

The error saving credential may occur in case of attempt to restore Administrator or Installers credentials (use specific menus for that purpose) or due to hardware failures.

After successful restoring or error code indication, the panel returns to the ‘Administrator Menu’ mode.

If, within 20 seconds after selecting a menu item, the credential is not presented, the panel will return to the Quiescent mode. Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.59 The **Restore User Credential by Number** menu item allows restoring a suspended user credential.

It differs from the **Restore User Credential** by need to specify a credential system number to restore it without presenting/entering a credential itself

When the specified menu item is selected, the “19” indicator turns on continuous green, while the “Access” indicator is off.

To restore a suspended user credential by number, the following shall be done:

– enter a credential number using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);
– press the Enter button.

The number can be entered in the format of one, two and three characters, for example, ‘7’, ‘07’ and ‘007’ mean a credential with number 7. When entering a credential number of three characters, pressing the Enter button is not required.

The errors possible during restoring procedures are the same as described in the Restore User Credential part.

1.4.5.60 The **Delete User Credential** allows deleting a user credential from the panel memory.

When a specified menu item is selected, the “20” indicator turns on continuous green, while the “Access” indicator turns on blinking green (invitation to enter/present a user credential):

To delete a Touch Memory token, it is necessary to present it to the panel reader.

To delete a user's PIN code, you must:

– enter this PIN-code using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);
– press the Enter button.

If the length of the entered PIN-code is equal to the maximum possible, pressing the Enter button is not required. The maximum possible length of the PIN-code is defined **Maximum PIN Length** parameter (see 1.4.7.)

When trying to restore a user credential, errors may occur. Description of these errors is provided in Table 1.4.4.9.

When a credential is presented (entered), the Access indicator is off, and the panel displays the system number of the presented credential. The display procedure is the same as for adding a new user credential.

To confirm deleting, please press the Enter button.

When trying to delete a user credential, errors may occur. Description of these errors is provided in Table 1.4.4.10.

Table 1.4.4.10 Credential Deleting Errors

Description	Error Code (Indicator No)
The presented credential does not exist in the memory (or deleted)	1
Error saving credential	2
Too short PIN (less than 2 digits)	5

If an error occurs while deleting a credential, the indicators ‘20’ and ‘Access’ are turned off.

The panel displays an error code for 3 seconds by turning red a corresponding indicator in the intermittent mode. For example, if the error code is 2, the indicator ‘2’ will be turned red in the intermittent mode for 3 seconds

The display of the error code is accompanied by a long beep.

The error deleting credential may occur in case of attempt to delete Administrator or Installers credentials (use specific menus for that purpose) or due to hardware failures.

After successful deleting or error code indication, the panel returns to the ‘Administrator Menu’ mode.

If, within 20 seconds after selecting a menu item, the credential is not presented, the panel will return to the Quiescent mode.

Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.61 The **Delete User Credential by Number** allows suspending a user credential from the memory. It can be useful in case of credential loss, theft or compromise

It differs from the **Delete User Credential** by the need to specify a credential system number to delete it without presenting/entering a credential itself

When the specified menu item is selected, the “10” indicator turns on continuous green, while the “Access” indicator is off.

To delete a user credential by number, the following must be done:

– enter a credential number using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);
– press the Enter button.

The number can be entered in the format of one, two and three characters, for example, ‘7’, ‘07’ and ‘007’ mean a credential with number 7. When entering a credential number of three characters, pressing the Enter button is not required.

After that, the panel displays a system number of this credential. The procedures for displaying a number is the same as in case of adding a new credential.

To confirm the deleting, press the Enter button.

The errors possible during deleting procedures are the same as described in the Delete User Credential part.

1.4.5.62 The View User Credential Number allows clarifying a credential number. It can be useful if a user credential is not registered in when added.

When this menu item is selected, the “10” indicator turns on continuous green, and the “Access” indicator turns on intermittent green (an invitation to enter a PIN code or present a token).

To view a Touch Memory number, present it to the panel reader.

To view a user's PIN number, the following shall be done:

– enter this PIN-code using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);

– press the Enter button.

If the length of the entered PIN-code is equal to the maximum possible - pressing the Enter button is not required. The maximum possible length of the PIN-code is defined **Maximum PIN Length** parameter (see 1.4.7.)

After presenting/entering a user credential, the Access indicator and indicator “9” are off.

The panel displays the number of the added credential three times by turning green indicators ‘1’ ... ‘10’ (indicator ‘10’ corresponds to number ‘0’) as follows:

first digit of the number - pause - second digit - pause - third digit -

long pause -

first digit of the number - pause - second digit - pause - third digit -

long pause -

first digit of number - pause - second digit - pause - third digit.

For example, a credential No. 3 (No 003), the number will be displayed three times by turning green the following indicators:

“10” - “10” - “3” —— “10” - “10” - “3” —— “10” - “10” - “3”.

And a credential number No. 105 will be displayed by turning indicators green tree times in following way:

“1” - “10” - “5” —— “1” - “10” - “5” —— “1” - “10” - “5”.

When trying to view a new user credential number, errors may occur. The possible errors are described in Table 1.4.4.11.

Table 1.4.4.11 Credential Viewing Errors

Description	**Error Code (Indicator No)**
The presented credential does not exist in the memory (or deleted)	1
The presented credential is suspended	2
Two short PIN (less than 2 digits)	5

If an error occurs while deleting a credential, the indicators ‘9’ and ‘Access’ are turned off.

The panel displays an error code for 3 seconds by turning red a corresponding indicator in the intermittent mode. For example, if the error code is 2, the indicator ‘2’ will be turned red in the intermittent mode for 3 seconds

The display of the error code is accompanied by a long beep.

After credential number or error code indication, the panel returns to the ‘Administrator Menu’ mode.

If, within 20 seconds after selecting a menu item, the credential is not presented, the panel will return to the Quiescent mode. Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.63 The **Replace Administrator Credential** menu item allows changing a credential of an administrator.

It is highly recommended to change a default administrator credential (PIN code) to prevent an authorized access to the panel.

In addition, the administrator credential shall be changed if it is compromised.

There are no restrictions on type of credential to replace an administrator credential, in other words it can be a Touch Memory (iButton) token or PIN code.

When this menu item is selected, "7" indicator turns continuous green, and the "Access" indicator turns on with an intermittent green color (an invitation to enter a PIN code or present a token).

To add a Touch Memory token as a new administrator credential, it shall be presented to the panel reader.

To add a PIN code as a new administrator credential, the following shall be done:

- enter new PIN-code using buttons '1' ... '10' (button '10' corresponds to number '0');
- press the Enter button.
- e-enter new PIN code using buttons '1' ... '10' (button '10' corresponds to number '0');
- Press the Enter button again

If the length of the entered PIN-code is equal to the maximum possible, pressing the Enter button is not required. The maximum possible length of the PIN-code is defined **Maximum PIN Length** (see 1.4.7.).

Double entry of the PIN-code eliminates a wrong entry.

When trying to replace an admin credential, errors may occur. Description of errors is provided in Table 1.4.4.12.

Table 1.4.4.12 Administrator Credential Replacement Errors

Description	Error Code (Indicator No)
A presented credential already exists	1
Entered PIN codes mismatches	2
Error saving an administrator credential	4
Too short PIN code (less than 2 digits)	5

If an error occurs while replacing a credential, the indicators '7' and 'Access' are turned off.

The panel displays an error code for 3 seconds by turning red a corresponding indicator in the intermittent mode. For example, if the error code is 2, the indicator '2' will be turned red in the intermittent mode for 3 seconds.

The display of the error code is accompanied by a long beep.

After successful replacement or error code indication, the panel returns to the 'Administrator Menu' mode.

If, within 20 seconds after selecting a menu item, the credential is not presented, the panel will return to the Quiescent mode.

Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.64 The **Delete All User Credentials** menu item allows deleting all user credentials from the panel memory. However, the administrator and installer credentials are not deleted and changed.

When a specified menu item is selected, the "6" indicator turns continuous green, while the "Access" indicator is off.

To delete all credentials, double-press the Enter button.

To delete a user's PIN code, you must:

– enter this PIN-code using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);

After first pressing the Enter button, indicator “6” turns blinking green.

The second pressing the Enter button deletes all user credentials.

To cancel deleting all credential and return the panel to the Quiescent mode, press the **Key** button.

When trying to delete all credentials, errors may occur. These errors are described in Table 1.4.4.13.

Table 1.4.4.13 Errors deleting all user credentials

Error Description	Error Code (Indicator Code)
Error saving credential	1

If an error occurs while deleting a credential, indicator ‘6’ is off.

The panel displays an error code for 3 seconds by turning a corresponding indicator intermittent red. For example, if the error code is 1, the indicator ‘1’ will be turned red in the intermittent mode for 3 seconds

The display of the error code is accompanied by a long beep.

After successful deleting all credentials or error code indication, the panel returns to the Installer Menu.

If, within 20 seconds after selecting a menu item, the Enter button is not pressed twice, the panel returns to the Quiescent mode.

Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.65 When the Test Indication item is selected, panel goes to the Indication Test mode.

1.4.5.66 Switching from the Administrator to the **Quiescent** menu can be done in the following way:

– manually using the Key button ();

– automatically after 20 seconds of last action (pressing button ore presenting a credential).

1.4.5.67 The Test Indication mode is meant for testing the panel LEDs and buzzer (light and sound indication).

The device can switch to the ‘Indication Test’ mode in the following ways:

– from the ‘Administrator Menu’ mode (button 8);

– from the “Installer Menu” mode (button 20);

– by the Test Indication command of the network controller;

– after punching the code combination by the () button.

When using the ‘S2000M’ panel as a network controller, to start the indication test, select the ‘INDICATION TEST’ item in the S2000M panel menu and device address (the default address is 127), see АЦДР.426469.027 РЭ

The code combination consists of three short and one long pressings (*** -) by the () button. A short press is a press within (0.1 ... 0.5) s. A long press is a press for more than 1.5 s. The pause between pressing must be at least 0.1 s and no more than 0.5 s

The switching to the **Indication Test** is accompanied by the 'Test' melody.

In this mode, all monochromatic indicators are always on, and bi-color indicators are switching from red to green.

The indication test lasts 15 s. After completion of the indication test, the device automatically returns to the **Quiescent** mod

1.4.5.68 The can be switched to the **Installer** menu by the following way:

– from the PIN Entry mode, after entering the Installer PIN-code (password;
– from the 'Quiescent or PIN Entry, after presenting the Installer credential to the panel reader

Switching to the Installer Menu is accompanied by the following:

– Installer melody;
– Turing off all indication;
– Red cyclic alternating indication by initiators "11…"20" (red running line)

1.4.5.69 The installer can be selected the following menu as specified in Table 1.4.4.14.

Table 1.4.4.14 Installer Menu

Menu Item	Button
Reset network address and response pause	11
Reset configuration. Delete all credentials	12
Set Network Address	13
Diagnostics: Output control	14
Diagnostics: Power input control	15
	16
Bootloader	17
Reboot panel	18
Change Installer credential	19
Test light and sound indication	20

1.4.5.70 If, within 20 seconds after selecting a menu item, the credential is not presented, the panel will return to the Quiescent mode. Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.71 The Reset **network address and response pause** item allows changing a current network address and response pause to default values (address -127; response pause – 1.5 s). it can be useful if in situations when network controller and configuration utilities cannot find the panel in the network.

When the menu item is selected, indicator "11" turns steady red and the "Access" indicator is off. To reset the network address and response pause, press the Enter button twice.

After the first press of the Enter button, indicator '11' will turn intermittent red.

After the second press of the Enter button, the network address and the response pause will be changed. After 5 short beeps, the panel will return to the Installer menu.

To cancel the reset of the network address, response pause and to return the panel to Quiescent mode, press the Key button.

If within 20 seconds after selecting the menu item, two presses of the 'Enter' button are is not pressed twice, the panel returns to Quiescent mode.

Return to Quiescent mode is accompanied by a short triple beep.

1.4.5.72 The **Reset configuration. Delete all credentials** menu item allows returning device to default configuration.

This Reset can be effective only if the Prohibit Default Reset is not selected.

This Reset deletes all credentials stored in the panel memory and restores two default credentials:

– Administrator credential *(***PIN – code "1234"**);
– *Installer* credential (**PIN – code "123456"**).

When the menu item is selected, indicator "12" turns steady red and the "Access" indicator is off.

To reset **the configuration and delete all credentials** press the Enter button twice.

After the first press of the Enter button, indicator '12' will turn intermittent red.

After the second press of the Enter button, the configuration is reset and all credentials are deleted. The panel will return to the Installer menu.

To cancel the deleting all credentials and to return the panel to Quiescent mode, press the Key button.

When trying to reset the configuration and all credentials, errors may occur. The possible errors are described in Table 1.4.4.15.

Table 1.4.4.15 All Credentials Reset Errors

Error Description	Error Code (Indicator No)
Error saving credential/configuration	1
The Prohibit Factory Reset parameter is enabled	2

If an error occurs while deleting all credentials, indicator '12' is off; the panel displays an error code for 3 seconds by turning a corresponding indicator intermittent red. For example, if the error code is 1, the indicator '1' will be turned intermittent red for 3 seconds

The display of the error code is accompanied by a long beep.

After successful deleting all credentials or error code indication, the panel returns to the Administrator Menu mode.

If, within 20 seconds after selecting a menu item, the Enter button is not pressed twice, the panel returns to the Quiescent mode.

Return to the Quiescent mode is accompanied by a short triple beep.

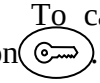
The default configuration is effective after the panel reboot.

1.4.5.73 The **Set Network Address** menu item allows you to manually change the panel address. This can be useful when it is impossible to change the device address using the network controller due to an address conflict.

When the specified menu item is selected, indicator “13” turns on steady red, and the “Access” indicator turns off.

To change the network address, the following shall be done must:

- enter a new network address (available values 1 ... 127) using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);
- press the Enter button.

To cancel network address changes and to return the device to Quiescent mode, press the button  .

When trying to change the network address, errors may occur. Description of errors is provided in Table 1.4.4.16

Table 1.4.4.16 Network Address Change Errors

Description	Error Code (Indicator No)
Invalid address is entered (beyond the range 1…127)	1
Error saving address	2

If an error occurs while changing a network address, indicator ‘13’ is off.

The panel displays an error code for 3 seconds by turning a corresponding indicator intermittent red. For example, if the error code is 1, the indicator ‘1’ will be turned red in the intermittent mode for 3 seconds

The display of the error code is accompanied by a long beep.

After successful deleting all credentials or error code indication, the panel returns to the Installer Menu.

If, within 20 seconds after selecting a menu item, the Enter button is not pressed twice, the panel returns to the Quiescent mode.

Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.74 The Diagnostics**: Output control** item allows manually enabling/disabling the panel outputs regardless of the control mode (local or centralized).

Warning!

Please, disconnect all actuating circuits from outputs, which shall not be activated during test procedure!

When this menu item is selected, indicator “14” turns steady red and the Access indicator is off.

The outputs are controlled using the corresponding buttons “1” …”7”. Each pressing changes the corresponding output state.

Activation of non-monitored outputs “1” ... “3” is indicated red by corresponding indicators “1 … 3”).

The current state of the monitored outputs (on / off; normal / open / short circuit) is displayed on the corresponding indicators (‘OUTPUTS: 4 ... 7’). The indication is described Table 1.4.4.16.1.

Table 1.4.4.16.1 "4" … "7" Output State Indication during Test Procedures

Output State		**Indicator Operation** (2 s cycle)
1		2
NORMAL	Output ON	Red R R R R R R R R R R R R R R R R
	Output OFF	OFF
OPEN CIRCUIT	Output ON	Alternating intermittent sequence: Yellow: 0.125 s – On; 0.125 s – Off; 0.125 s – On; 1.625 s – Off (0.5 Hz); and red: 0.5 s – On; 1.5 s Off (0.5 Hz) Y Y R R R R
	Output OFF	Intermittent yellow 0.125 s – On; 0.,125 s – Off; 0.125 s – On; 1.6255 s – Off (0.5 HZ) Y Y
SHORT CIRCUIT	Output OFF	Intermittent yellow 0.125 s – On; 1.875 s – Off;(0.5 Hz) Y

The panel will return to the Quiescent mode automatically 30 seconds after the last button pressing.

To exit immediately the menu and return the panel to Quiescent mode, press the button.

Return to Quiescent mode is performed through the panel reset procedure to ensure the correct state of the outputs with each of them switching to a state corresponding to the selected control tactics.

Return to Quiescent mode is accompanied by a short triple beep.

1.4.5.75 The Diagnostics: Power input control menu item allows you to manually power on on / off inputs (input-circuits) regardless of their current logical state

Attention! Powering off armed inputs may generate alarms and / or malfunctions! It is recommended to disarm the inputs before test!

When this menu item is selected, indicators "1' – '20" turns steady green and the Access indicator is off.

The input power is controlled using the corresponding buttons "1" …"20". Each pressing changes the corresponding input power state.

Powering of each input is indicated steady green illumination of corresponding indicator red by corresponding indicators "1 … '20"). When input is off, the corresponding indicator is off

The device will return to Quiescent mode automatically 30 seconds after the last button pressing.

To immediately exit the menu and return the Quiescent mode, press the button.

When returning to Quiescent mode, all inputs will be powered on.

Return to this is accompanied by a short triple beep.

1.4.5.76 The Bootloader allows you to manually switch the panel to the Device Failed mode (bootloader mode). This can be useful in case of difficulties arising when trying to update the firmware of the panel with specialized programs (‘Uprog.exe’, etc.).

When the specified menu item is selected, the “17” indicator turns on solid red, and the “Access” indicator turns off.

To switch the panel to the bootloader mode, press the Enter button twice.

After the first pressing of the ‘Enter’ button, the ‘17’ indicator will turn on with an intermittent red color.

After pressing the Enter button the second time, the device will switch to the bootloader mode.

To cancel the operation and return the device to Quiescent mode, press the  button.

If, within 20 seconds after selecting a menu item, the Enter button is not pressed twice, the panel returns to the Quiescent mode.

Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.77 The menu item ‘**Device Reboot**’ allows manually restarting the panel. When the specified menu item is selected, the “18” indicator turns on continuous red, and the “Access” indicator is off.

To restart the panel, press the Enter button twice. After the first press of the Enter button, the ‘18’ indicator will turn intermittent red . After the second pressing of the Enter button, the panel is restarted.

To cancel the reset and return the panel to **Quiescent** mode, press the  button. If within 20 seconds after selecting a menu item, the ‘Enter’ button is not pressed twice, the panel returns to the Quiescent mode. Return to the **Quiescent** mode is accompanied by a short triple beep.

1.4.5.78 The Change Installer Credential menu item allows changing a credential of an administrator.

It is highly recommended to change a default installer credential (PIN code) to prevent an authorized access to the panel.

In addition, the installer credential shall be changed if it is compromised.

There are no restrictions on type of credential to replace an administrator credential, in other words it can be a Touch Memory (iButton) token or PIN code.

When this menu item is selected, “19” indicator turns continuous red, and the “Access” indicator turns on with an intermittent green color (an invitation to enter a PIN code or present a token).

To add a Touch Memory token as a new installer credential, it shall be presented to the panel reader.

To add a PIN code as a new installer credential, the following shall be done:

- enter new PIN-code using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);
- press the Enter button.
- e-enter new PIN code using buttons ‘1’ ... ‘10’ (button ‘10’ corresponds to number ‘0’);
- Press the Enter button again

If the length of the entered PIN-code is equal to the maximum possible, pressing the Enter button is not required. The maximum possible length of the PIN-code is defined **Maximum PIN Length** (see 1.4.7.).

Double entry of the PIN-code eliminates a wrong entry.

When trying to replace an admin credential, errors may occur. Description of errors is provided in Table 1.4.4.17.

Table 1.4.4.17 Installer Credential Replacement Errors

Description	Error Code (Indicator No)
A presented credential already exists	1
Entered PIN codes mismatches	2
Error saving an installer credential	4
Too short PIN code (less than 2 digits)	5

If an error occurs while replacing a credential, the indicators ‘19’ and ‘Access’ are turned off.

The panel displays an error code for 3 seconds by turning red a corresponding indicator in the intermittent mode. For example, if the error code is 2, the indicator ‘2’ will be turned red in the intermittent mode for 3 seconds.

The display of the error code is accompanied by a long beep.

After successful replacement or error code indication, the panel returns to the ‘Installer Menu’ mode.

If, within 20 seconds after selecting a menu item, the credential is not presented, the panel will return to the Quiescent mode.

Return to the Quiescent mode is accompanied by a short triple beep.

1.4.5.79 When the Test Indication is selected, the panel goes to the Test Indication mode.

1.4.5.80 The panel can be switched from the **Installer** mode to the **Quiescent** mode in the following way:

– Manually using the  button;
– Automatically 20 sec after the last action (pressing button or token presentation).

1.4.6 Light and Sound Indication

1.4.6.1 The can control the following elements of light and sound indication:

– Input status indicators (‘1’ … ‘20’);
– Output status indicator (‘1’ … ‘7’);
– Power input system indicator (Power);
– Fire system indicator;
– Alarm system indicator;
– Fault system indicator;
– Disabled system indicator;
– Test indicator;
– Start system indicator;
– Stop system indicator;
– Access system indicator;
– Mute buzzer 
– Buzzer.

1.4.6.2 The states indication for inputs “1” … “20” is described in Table 1.4.6.1.

Table 1.4.6.1 Indicator Operation Modes “1” … “20”

Input State		**Indicator Operation Mode** (2 sec Cycle)
1		2
DIARMED[1)], ARMED[2)], RCU RESTORED[2)],PUMP OFF[3)], TAMPER NORMAL[3)]		Off
DISABLED, DISARMED, AUX INPUT ACTIVATED		Yellow ON
ARMED,RCU RESTORED,AUX INPUT ACTIVATED,FLODING DETECTOR NORMAL, MAINS NORMAL[3)], BATTERY NORMAL[3)], POWER SUPPLY NORMAL[3)], EQUIPMENT NORMAL[3)], TEMPERATURE NORMAL[3)], LEVEL NORMAL[3)], PUMP ON[3)]		Green ON
ARMING DELAY	Input Normal	Intermittent Green 0.125 s – ON; 0.125 s – OFF (4 Hz)
	Input Activated	Intermittent Yellow 0.125 s – ON; 0.125 s – OFF (4 Hz)
ARMING FAILED[3)], BUTTERY FAILED[3)], QUIPMENT FAULT[3)], OPEN /SHORT FAULT[3)], LEVEL ABOVE/BELOW LIMIT[3)], TAMPER ALARM[3)], SERVICE REQUIRED[3)]		Intermittent Yellow 1 s – ON; 1 s – OFF (0.5 Гц)
DETECTOR SIGNAL (SINGL UNCONFIRMED ACTIVATION OF SMOKE DETECTOR)		Intermittent Red Sequence 0.125 s – ON; 0.125 s – OFF; 0.125 s – ON; 1.625 s – OFF (0.5 Hz)
PRE-ALARM		Intermittent Red 1 s – ON; 1 s – OFF (0.5 Hz)
FIRE		Intermittent Red Sequence 0.25 s – ON; 0.25 s – OFF (2 Hz)
FIRE2, RCU ACTIVATED, RELEASED[3)]		Red
INTRUSION ALARM, LOBBY ALARM, PANIC ALARM, FLOODING DETECTED		Intermittent Red Sequence 0.5 s – ON; 0.5 s – OFF (1 Hz)

Table 1.4.6.1 Indicator Operation Modes "1" … "20" (continued)

Input States	**Indicator Operation Modes** (2s Cycle)
1	2
TEMPERATURE LOW[3], LEVEL DECREASED[3], AUX INPUT ACTIVATED 2	Intermittent Green Sequence 0.5 c – ON; 0.5 c – ON (1 Гц) G G G G ▯ ▯ ▯ ▯ G G G G ▯ ▯ ▯ ▯
INPUT SHORT CIRCUIT	Intermittent Yellow Sequence 0.125 s – ON; 1.875 s – OFF (0.5 Гц) Y ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯
INPUT OPEN CIRCUIT	Intermittent Yellow Sequence 0.125 s – ON; 0.125 s – OFF; 0.125 s – ON; 1.625 s – OFF (0.5 Hz) Y ▯ Y ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯
TEMPERATURE HIGH [3], LEVEL INCRESEAD[3]	Intermittent Green Sequence 0.125 s – ON; 0.125 s – OFF (4 Hz) G ▯ G ▯ G ▯ G ▯ G ▯ G ▯ G ▯ G ▯
Notes: 1) Indicator state for Intrusion input. 2) Indicator state for Fire input if the EN54 parameter is selected. 3) Only programmable Auxiliary input can have these states	

1.4.6.3 The states indication of outputs "1" … "7"is described in Table 1.4.6.2…1.4.6.7.

Table 1.4.6.2. Non-Monitored Output States Indication Modes: Outputs **"**1"… "3"

Output State		**Indicator Operation Modes** (2-second Cycle)
1		2
Output Type: 'Fire Protection'	Output Activated	Red R R R R R R R R R R R R R R R R
	Output not active	OFF ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯
Output Type: 'Simple' / 'Auxiliary'	-	OFF ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯

Table 1.4.6.3 Monitored Output States Indication Modes: *Fire Protection* Outputs **“** 4” … “7”

***Fire Protection* Output State**		**Indicator Operation Modes** (2-second Cycle)
1		2
NORMAL	Output Activated	Red R R R R R R R R R R R R R R R R
	Output not active	Off
OPEN CIRCUIT	Output Activated	Alternative intermittent Yellow: 0.125s – ON; 0.125s – OFF; 0.125s – ON; 1.625s – OFF (0.5 Hz); and Red: 0.5s – ON; 1.5s OFF (0.5 Hz) Y Y R R R R
	Output not active	Intermittent Yellow 0.125s – ON; 0.125s – OFF; 0.125s – ON; 1.6255s – OFF (0.5 Hz) Y Y
SHORT CIRCUIT	Output not active	Intermittent Yellow 0.125s – ON; 1,875s – OFF;(0.5 Hz) Y
Disabled output monitoring and control		Red Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y

Table 1.4.6.4 Monitored Output States Indication Modes: *Auxiliary Outputs* “ 4” … “7”

***Auxiliary* Output State**		**Indicator Operation Mode** (2-second Cycle
1		2
NORMAL	Output Activated	Green G G G G G G G G G G G G G G G G
	Output not active	Off
OPEN CIRCUIT	Output Activated	Alternative intermittent Yellow: 0.125s – ON; 0.125s – OFF; 0.125s – ON; 1.625s – OFF (0.5 Hz); and Green: 0.5s – ON; 1.5s OFF (0.5 Hz) Y Y G G G G
	Output not active	Intermittent Yellow 0.125 s – ON; 0.125 s – OFF; 0.125 s – ON; 1.6255 s – OFF (0.5 Hz) Y Y
SHORT CIRCUIT	Output not active	Intermittent yellow 0.125 s – ON; 1,875 s – OFF;(0.5 Hz) Y
Disabled output monitoring and control		Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y

Table 1.4.6.5 Monitored Output States Indication Modes: *Simple* Outputs “4” … “7”

***Simple* Output State**		**Indicator Operation Modes** (2-second Cycle)
1		2
NORMAL	-	Off
OPEN CIRCUIT	-	Intermittent Yellow 0.125 s – ON; 0.125 s – OFF; 0.125 s – ON; 1.6255 s – OFF (0.5 Hz)
SHORT CIRCUIT	-	Intermittent yellow 0.125 s – ON; 1,875 s – OFF;(0.5 Hz)
Disabled output monitoring and control		Yellow

1.4.6.4 Power input indicator (POWER) is described in Table 1.4.6.6.

Table 1.4.6.6 Power Inidicator Operation

Power Input States	**Indication Modes** (2-second Cycle)
1	2
POWER NORMAL	Green
POWER INPUT 1 FAULT, POWER INPUT 2 NORMAL / POWER FAULT (2 pwr inputs monitoring is disabled)	Intermittent yellow 0.125 s – ON; 1,875 s – OFF;(0.5 Hz)
INPUT NORMAL 1, POWER INPUT 2 FAULT	Intermittent Yellow 0.125 s – ON; 0.125 s – OFF; 0.125 s – ON; 1.6255 s – OFF (0.5 Hz)
POWER INPUT 1 FAULT POWER INPUT 2 FAULT	Intermittent Green 0.125 s – ON; 0.125 s – OFF; 0.125 s – ON; 0.125 s – ON; 1.375 s – OFF (0.5 Hz)
deenergized panel, panel failed	Off

1.4.6.5 The indication modes of the FIRE indicator are described in Table 1.4.6.7. the operation modes are specified in the prioritized order, in other words, FIRE2 has the highest priority and the PRE-ALRM is the lowest one.

Table 1.4.6.7 FIRE Indicator Operation

Input State	**Indicator Operation Modes** (2-second Cycle)
1	2
FIRE2	Red R R R R R R R R R R R R R R R R
FIRE	Intermittent Red 0,25 с – включен; 0,25 с – выключен (2 Гц) R R R R
PRE-ALARM	Прерывистые включения красным цветом 1 с – включен; 1 с – выключен (0,5 Гц) R R R R R R R R
No fire alarms	Off

1.4.6.6 The indication modes of the ALARM indicator are described in Table 1.4.6.8.

Table 1.4.6.8 Alarm Indicator Operation

Panel Input State	**Indicator Operation Modes** (two-second cycle)
1	2
INTIRSUIN ALARM, LOBBY ALARM, PANIC ALARM, FLOODING DETECTED	Intermittent Red Sequence 0.5 s – On; 0.5 s – Off (1 Hz) G G G G G G G G
No Alarms	Off

1.4.6.7 The indication modes of FAULT indicator are described in Table 1.4.6.9.

Table 1.4.6.9 Fault Indicator Modes

Panel Elements States	**Indicator Operation Modes** (two-second cycle)
1	2
ARMIHG FAILED, POWER FAULT[1)], BATTERY FAULT[1)], EQUIPMENT FAULT[1)], LEVEL ABOVE/BELOW LIMIT[1)], TAMPER ALARM, SERVICE REQUIRED[1)] INPUT OPEN /SHORT, POWER INPUT FAULT (2), TAMPER ALRM (panel enclosure open)	Intermittent Yellow Sequence 1s – ON; 1s – OFF (0.5 Hz) Y Y Y Y Y Y Y Y
No elements faults	Off
Notes: 1) Only programmable aux input can have these states	

1.4.6.8 The DISABLED system indicator operation modes are described in Table 1.4.6.10.

Table 1.4.6.10 DISABLED Indicator Operation Mode

Input (output) states	**Indicator Operation Modes** (two-second cycle)
1	2
DISARMED[1)], DISABLED, OUTPUT MONITORING DISABLED [2)]	Yellow Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y
No disabled inputs	Off

Notes: 1) only for Fire inputs (1, 2, 3, 16 and 18)
2) the output control and monitoring is disabled by the command from the network controller (the disablement of output monitoring in the configuration parameter does not affect the indicator operation)

1.4.6.9 The TEST indicator operation modes are described in Table 1.4.6.11.

Table 1.4.6.11 TEST Indicator Operation Modes

Panel Operation Mode	**Indicator Operation Modes** (two-second cycle)
1	2
Indication Test	Yellow Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y
Diagnostics: Output Control, Diagnostics: Input Power Control	Intermittent Yellow Sequence 0.125 s – ON; 0.125 s – OFF (4 Hz)) Y Y Y Y Y Y Y Y
Other Modes	Off

1.4.6.10 The START system indicator modes are described in Table 1.4.6.12.

Table 1.4.6.12 START Indicator Operation Modes

Panel Operation Mode	**Indicator Operation Modes** (two-second cycle)
1	2
One or more Fire Protection outputs are activated	Red R R R R R R R R R R R R R R R R
One or more Fire Protection output activation delay is counting down	Intermittent Red Sequence 0.25s – ON; 0.25s – OFF (2 Hz) R R R R
No activated Fire Protection outputs	Off

1.4.6.11 The STOP system indicator operation modes are provided in Table 1.6.13.

Table 1.4.6.13 The STOP Indicator Operation Modes

Panel Output States	**Indicator Operation Modes** (two-second cycle)															
1	2															
One or more Fire Protection outputs are deactivated manually (using the STOP button)	Yellow															
	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
No manually deactivated (by STOP) Fire Protection outputs	Off															

1.4.6.12 The ACCESS indicator operation modes are described in Table 1.4.6.14.

Table 1.4.6.14 Access Indicator Operation Modes

Panel Operation Mode	**Indicator Operation Modes** (two-second cycle)
1	2
PIN Code Entry (invitation to enter PIN)	Intermittent Green Sequence 0.125 s – ON; 0.125 s – OFF (4 Hz)
	G ▯ G ▯ G ▯ G ▯ G ▯ G ▯ G ▯ G
Local Control (Access Granted)	Green
	G G G G G G G G G G G G G G G G
Local Control, Centralized Control (Access Denied)[1)]	Intermittent Red Sequence 0.125 s – ON; 0.125 s – OFF (4 Hz)
	R ▯ R ▯ R ▯ R ▯ R ▯ R ▯ R ▯ R
Centralized Control (Requesting credential status)	Switching from Red to Green 0.125 s– Redd; 0.125s – Green (4 Hz)
	R G R G R G R G R G R G R G R G
Centralized Control (state of partition under control: ARMED)	Green
	G G G G G G G G G G G G G G G G
Centralized Control (state of partition under control: : DISARMED, DESABLED)	Yellow
	Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y
Centralized Control (state of partition under control: ARMING DELAY)	Intermittent Green Sequence 0.125 s – ON; 0.125 s – OFF (4 Hz)
	G ▯ G ▯ G ▯ G ▯ G ▯ G ▯ G ▯ G
Centralized Control (state of partition under control: ARMING FAIELD)	Intermittent Yellow Sequence 0.125 s – ON; 0.125 s – OFF (4 Hz)
	Y Y Y Y ▯ ▯ ▯ ▯ Y Y Y Y ▯ ▯ ▯ ▯
Centralized Control (state of partition under control: FAULT)	Intermittent Yellow Sequence 0.125 s – ON; 1.875 s – OFF (0.5 Hz)
	Y ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯
Centralized Control (state of partition under control: ALARM)	Intermittent Red Sequence 0.125 s – ON; 1.875 s – OFF (0.5 Hz)
	R ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯
Centralized Control (state of partition under control: FIRE)	Intermittent Red Sequence 0.5s – ON; 0.5s – OFF (1 Hz)
	R R R R ▯ ▯ ▯ ▯ R R R R ▯ ▯ ▯ ▯
Other modes	OFF
	▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯
Note: 1) Access deny indication lasts 1 seconds	

1.4.6.13
The Mute indicator operation modes are described in Table 1.4.6.15.

Table 1.4.6.15 Buzzer status indicator

Buzzer condition	**Indicator Operation Modes** (two-second cycle)															
1	2															
Muted	Yellow															
	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Muted or no sounds	Off															

1.4.6.14 The Buzzer operation modes are described in Table 1.4.6.16.

The modes are specified from highest to the lowest priority – the Awake is the highest priority mode, the Off is the lowest one.

Table 1.4.6.16 Buzzer Alarms

Status of panel/element (input, output, power, tamper, buttons)	**Buzzer Alarms**
1	2
Powering the panel	Melodic signal (Wake up)
Entering the admin menu	Melodic signal (‘Administrator)
Entering the installer menu	Melodic signal (Installer)
indication test start	Melodic signal (Test)
Button press (access to control); presenting the Touch Memory key; granting access	Short single
Button press (no access to control); denial of access	Long single
End of control timeout (end of the control session); Completion of indication test	Short triple
Fire Protection output state: Control Program Activated; Input state: RELEASED	Long two-tone continuous
Input state: FIRE2; FIRE; RCU ACTIVATED	Short two-tone continuous
Input state: INTRUSION ALARM; FLOOSING DETECTED	Short single tone intermittent
Input state: LOBBY ALARM	Abrupt two-tone
Input state: PREALARM	Short two-tone intermittent

Table 1.4.6.16 Buzzer operation modes (continued)

Status of panel/element (input, output, power, tamper, buttons)	**Busser operation modes**
1	2
Input states: INPUT OPEN/SHOR CIRCUIT; MAINS FAULURE; EQUIPEMTN FAULT; LEVEL ABOVE/BELOW LIMIT; POWER/BATTERY FAULT; TAMPER ALARM; Output states: OUTPUT OPEN/SHORT CIRCUIT; Panel power fault	Single-tone intermittent
Other states	Off

1.4.6.15 The panel allows mute the built-in buzzer.

To mute the buzzer, press the button.

The muting of buzzer is indicated by the Muted LED (see Table 1.4.19).

However, the buzzer is automatically activated if the status of elements is changed (input, output, power condition), if such changes require audible alarms.

To cancel muting, press the button.

1.4.7 Panel Configuration Parameters

1.4.7.1 The panel has four groups of configuration parameters in its non-volatile memory:

– System parameters;
– Input parameters;
– Output parameters;
– Credential parameters.

1.4.7.2 The configuration parameters can be set using the '**Uprog.exe**' program. The current version of the program '**Uprog.exe**' is available on the Bolid's website: at **www.bolid.ru** in the Software section.

To configure the product, it must be connected to a computer with installed '**Uprog.exe**' program through one of the interface converters ('PI-GR', 'S2000-PI', 'S2000-USB' or 'USB-RS485') in accordance with Instruction manual for the used converter.

In addition, the S2000M panel of version 2.03 or higher can be used as an interface converter, in accordance with the Operation Manual for the used panel.

1.4.7.3 The Panel system parameters are described in Table 1.4.7.1.

Table 1.4.7.1 Panel System Parameters

Parameter	Function	Acceptable Values
1	2	3
Maximum PIN Length	Defines maximum credential length	*2 - 12*
Prohibit Factory (default) Reset	Prohibits/Permits reset to default values	*Checked/Unchecked*
Two Power Inputs Monitoring	Defines whether both power input shall be monitored	*Checked/Unchecked*
EN-54	Allows indication of fire inputs on the panel indicators in accordance with European Norms EN54-2	*Checked/Unchecked*
Network Address	Panel address on RS-485 interface	*1 … 127*

1.4.7.4 The Maximum PIN Length parameter defines maximum credential length.

If you want to reduce this parameter, check all saved credentials to reduce their length if needed!

1.4.7.5 The **Two Power Inputs Monitoring** defines power monitoring modes, see 1.4.5.6.

1.4.7.6 The **EN-54** parameter defines how the fire inputs shall be indicated by the panel (input types: 1, 2, 3, 16, 18). See details in Table 1.4.6.1.

1.4.7.7 the configuration parameters can be changed on the Unit tab of the Uprog.exe program.

1.4.7.8 The Input configuration parameters are provided in в Table 1.4.2.1.
Changing the configuration parameters can be done on the Input tab of the Uprog.exe program.

1.4.7.9 The Output configuration parameters are provided in Table 1.4.3.3.
Changing the configuration parameters can be done on the Output tab of the Uprog.exe program.

1.4.7.10 Credential configuration parameters are provided in Table 1.4.4.1
Changing the configuration parameters can be done on the Credential tab of the Uprog.exe program.

In addition, you can edit credential parameters in the administrator menu.

1.5 Instruments, tools and accessories

During installation, commissioning and maintenance of the product, it is necessary to use instruments, tools and accessories listed in Table 1.5.1.

Table 1.5.1 Instruments, tools and accessories

Name	Description
Digital multimeter	Measurement of AC and DC voltage up to 500V, current up to 5A, resistance up to 2 MΩ
Flat screwdriver	3.0x50 mm
Phillips screwdriver	2x100 mm
Side cutter	160 mm
Pliers	160 mm

1.6 Marking and Sealing

1.6.1 Each panel has a marking at the rear part of the enclosure.

1.6.2 Marking contains: the name of the device, its decimal number, serial number, year and quarter of production, marks of product conformity.

1.6.3 The panel is sealed directly at the manufacturer's plant.

1.6.4 Sealing of the fixing screw of the panel board is made with paint at the manufacturer's plant.

1.6.5 Breaking of the seal automatically removes the panel from warranty service.

1.7 Packaging

The panel, its spare parts and operating instructions are packed in an individual cardboard box.

2. Intendent Usage

2.1 Usage Limitations

The control panel is not designed to be used in aggressive environments, dust and explosive and fire hazards premises.

2.2 Preparing for Use

2.2.1 Safety Measures before Starting:

– the product design meets the requirements of electrical and fire safety in accordance with GOST 12.2.007.0-75 and GOST 12.1.004-91;

– the product has no hazardous voltage circuits;

– the product design ensures its fire safety in emergency operation and in case of violation of operating rules in accordance with GOST 12.1.004-91;

– assembly, installation, maintenance shall be carried out with the device supply voltage disconnected;

– installation and maintenance of the panel must be carried out by persons with a safety qualification group Class II

2.2.2 Product Design

The appearance, dimensions and installation layout are shown in Figure 2.1.

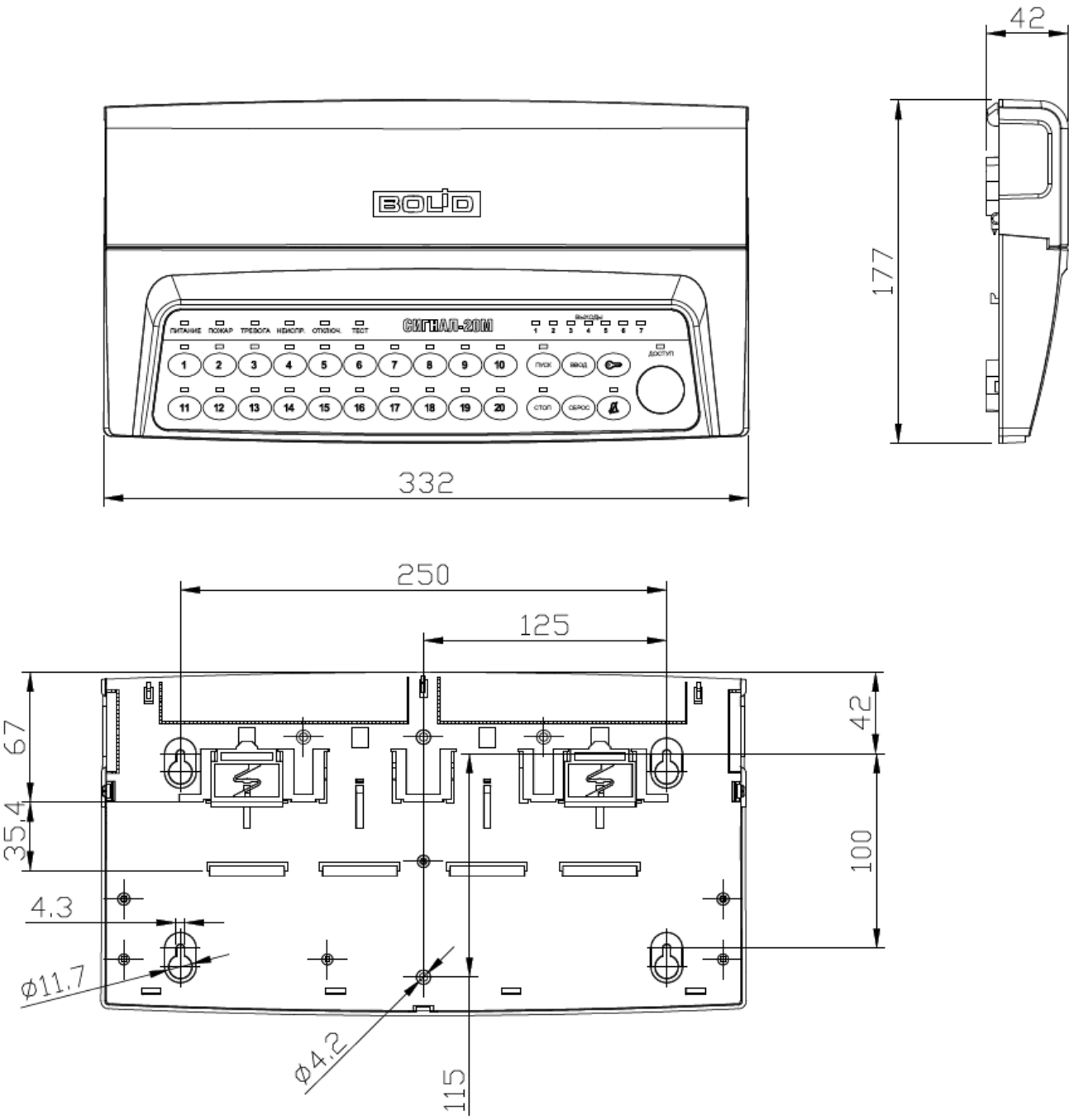


Figure 2.1 Appearance, Dimensions, and Installation Layout

2.2.3 Installation

2.2.3.1 The control panel is installed on walls or other structures of the protected premises in places protected from atmospheric precipitation and mechanical damage.

2.2.3.2 During installation, it is necessary to fix the device on the wall in a convenient place. If the device is installed in an unprotected room, it is recommended to install it at a height of at least 2.2 m from the floor.

2.2.3.3 Installation of the control panel is carried out in accordance with RD 78.145-92 “Rules for the production and acceptance of works. Installations of security, fire and security and fire alarms ‘.

2.2.3.4 Make sure the wall on which the unit is installed is solid, level, clean and dry.

2.2.3.5 Mark out and drill 4 holes according to the installation dimensions in Figure 2.1.

2.2.3.6 Install the wall plugs into the holes and screw the supplied screws into them so that the distance between the screw head and the wall is approx. 7 mm.

2.2.3.7 Remove the cover of the connectivity compartment by pulling its latches to the sides.

2.2.3.8 Hang the device on 4 screws and fix it to the wall.

2.2.3.9 After installing the panel, connect all communication lines shall be connected in accordance with 2.2.4

2.2.4 Connecting Panel

2.2.4.1. The panel connections shall be in accordance with the electric diagram provided in Figure 2.2.

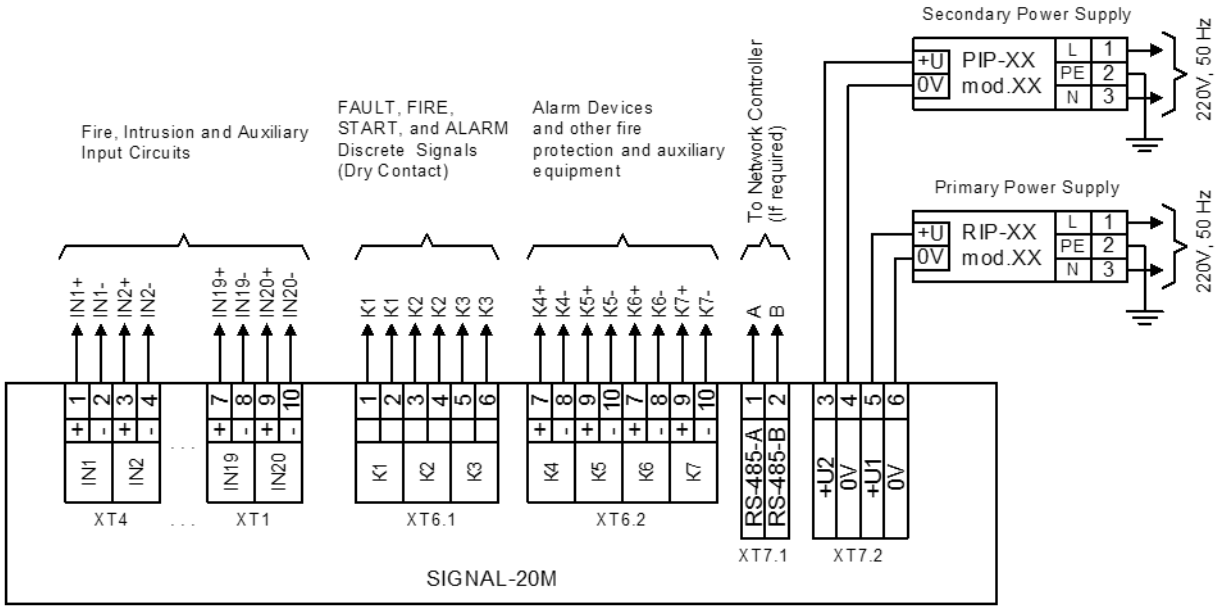


Figure 2.2 Connection Electric Diagram

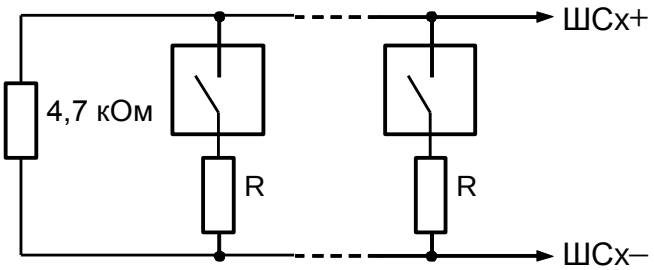
2.2.4.2. To connect the Signal-20M to the RS-485 interface line (if needed):

- contacts ‘A’ and ‘B’ are connected respectively to lines A and B of the RS-485 interface;
- connect the ‘0V’ circuit of the panel to a similar circuit of the previous and subsequent devices in the RS-485 trunk (if the devices are connected to the same power source, this is not necessary);
- if the panel is not the last or first in the interface line, remove the XP4 jumper (‘jumper’) on the panel board. The jumper is located in the immediate vicinity of pins ‘A’ and ‘B’ and connects the 620 Ω EOL resistor to the interface circuit.

When installing the RS-485 interface wire, it is recommended to comply the *bus* network configuration (chain connection). If for any reason it is required to make a branch of a considerable length (more than 50 m) from the common RS-485 trunk (for example, to reduce the cable length), it is recommended to install an “S2000-PI” interface repeater at the branch point. The number of repeaters on one RS-485 segment (number of branches) is no more than 10. The number of S2000-PI repeaters connected in series (the number of segments) is not limited.

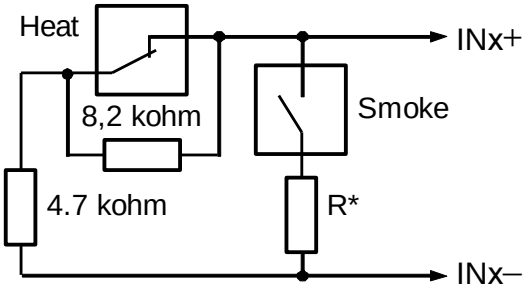
2.2.4.3. Fire, intrusion and auxiliary input-circuits (initiating devices) are connected in accordance with diagrams shown in Figure 2.3:

Connection of normally open (smoke) detectors to Type **1 Input** (Fire Smoke Two-Threshold)



The value of the additional resistor R for detectors of different manufacturers can be found in the documentation for a specific detector.

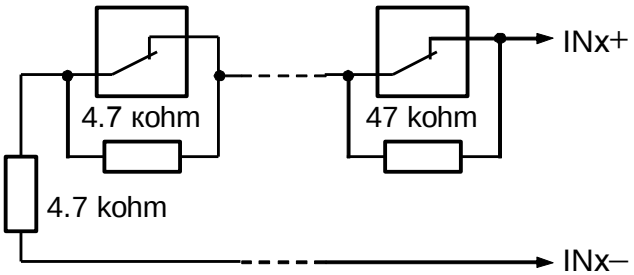
Connection of normally open (smoke) and normally closed (heat) fire detectors to Type **2** Input (Combined Fire), call points to Type **16** Input (Manual Fire), and manual stations (RCU) to Type **18** (Manual Release)



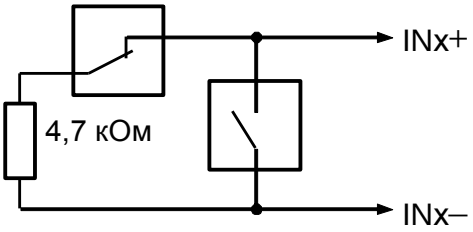
R* = 0 for DIP-3M, ДИП-3SU, DIP-U, 2100, 2151E (voltage on triggered detector > 4V)

R* = 510 ohm for IP-101A, IPR513-3 and detectors with dry contact output circuit (voltage on triggered detector > 4V)

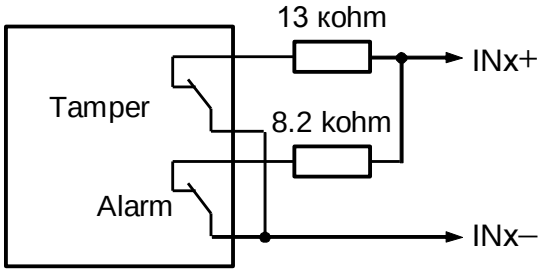
Connection of normally closed (heat) detectors to Input Type **3** (Fire Heat Two-Threshold)



Connection of normally closed and normally open intrusion detectors to Type 4 Input (Intrusion) and Type 4 Input (Lobby), and Type **11** (Panic)



Connection of intrusion detector with tamper contacts to Type **5** Input (Intrusion and Tamper)



Connection of flooding detectors to Type **17** Input (Flood Alarm)

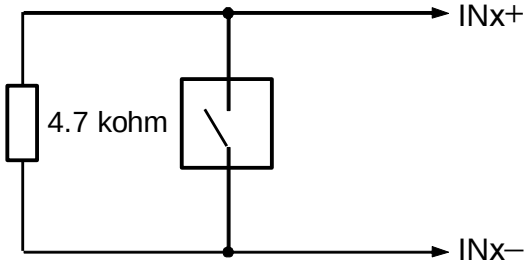
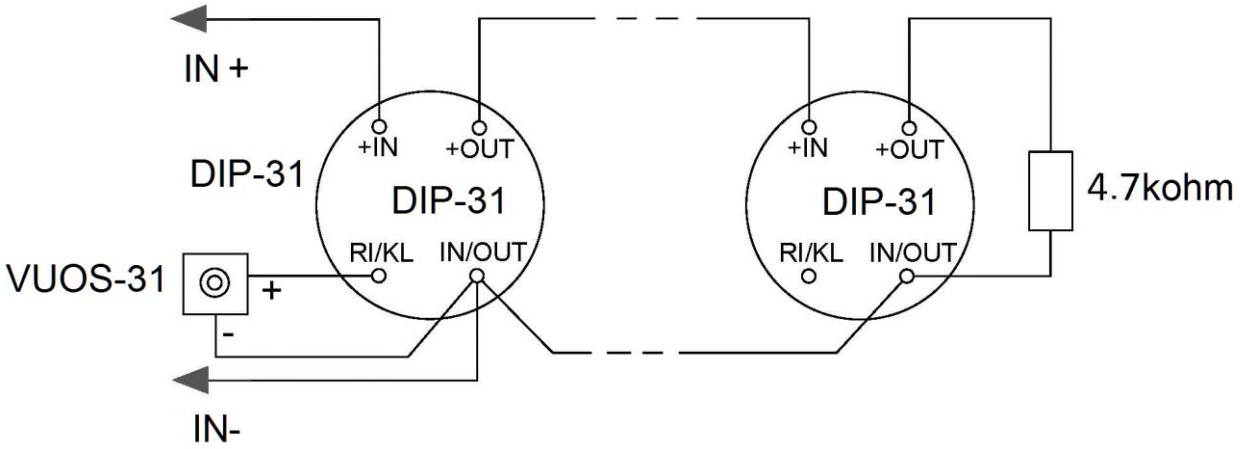
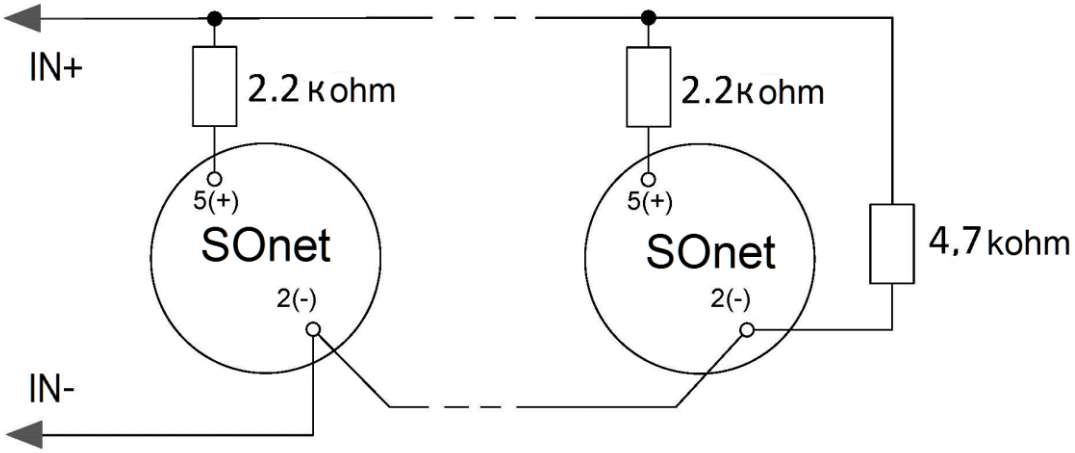
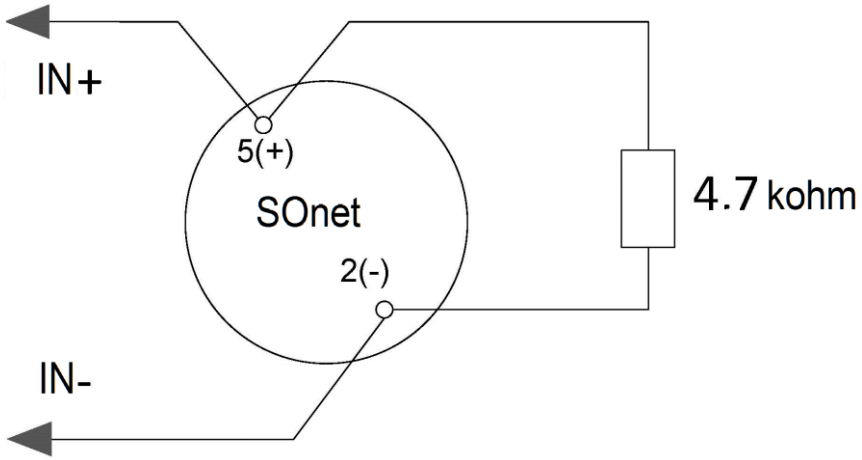


Figure 2.3 Connection of Initiating Devices to Panel Input Circuits
Connection of IP 212-31 'DIP-31' to Type 1 and 2 inputs



Connection of IP 435-8/101-04-A1R 'SOnet'
To Type 1 Input (above) and Type 2 Input (bellow)





Connection of IPR 513-3M (call points) to Type 16 Input and UDP 513-3M manual stations (RCU) to Type 18 Inputs

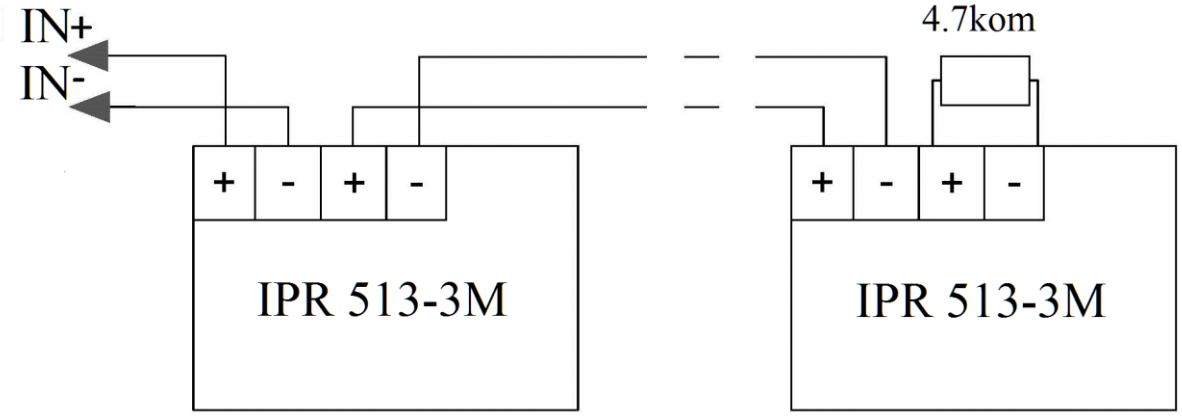
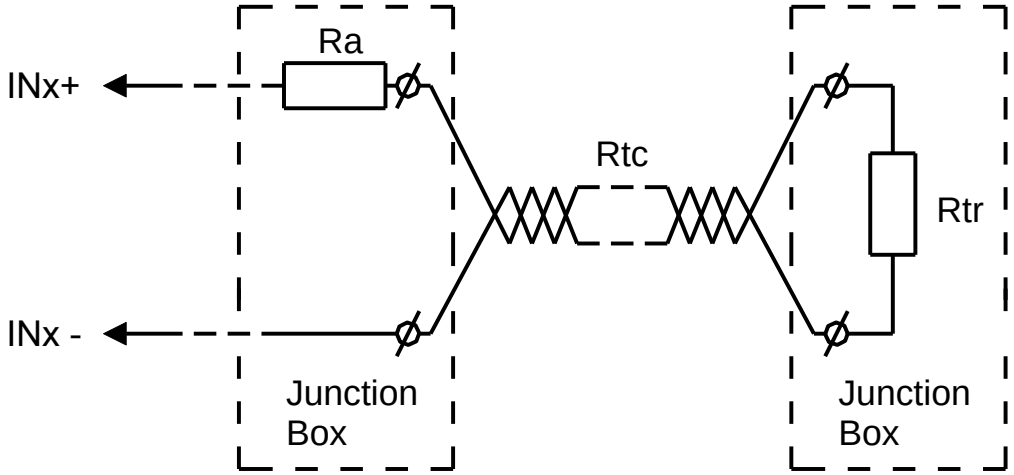


Figure 2.3. Connection of Initiating Devices to Panel Input Circuits (continued)

Connection of thermal cable to Type 2 Input



Ra – additional resistor to be connected directly to thermal cable (thermal cable connection terminals);

Rtc – thermal cable resistance as specified in its technical documents. Maximum acceptable resistance value is 1,5K Ω;

Rt – terminal resistor.

The connection of thermal cable shall be done in junction boxes.

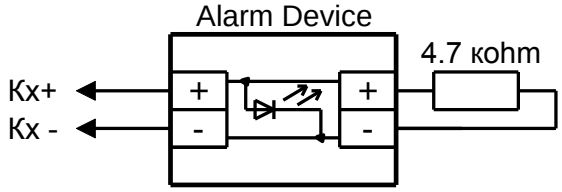
Rated Values of Resistors:

Ra = 150 Ω;
If Rtc < 450 Ωм, **Rt = 4.7 kΩ**.

If Rtc values is higher, the Rtc value shall be calculated by the formula and the nearest lower value should be chosen:

Rt = 5,15 - Rtc [kΩ].

2.2.4.4. Connection of one polar alarm device (actuator) with a built-in diode is performed in accordance with the diagram shown in Figure 2.4



, where x – Output Number (4 … 7)

Figure 2.4. Connection of One Polar Alarm Device (actuator) to Panel Output

This type of connection allows monitoring the health of the communication line with an alarm device (actuator) both in active and inactive states.

In the inactive state, the terminal element (resistor 4.7 kΩ) is monitored using a small current of reverse polarity.

In the active state, the health of the communication line and the actuator is monitored by monitoring the current consumption of the output circuit (direct polarity).

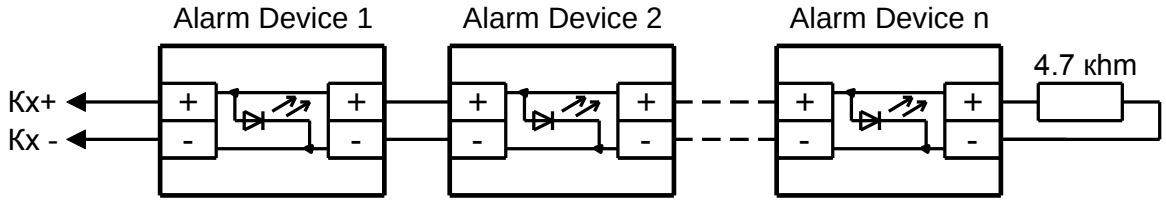
The monitoring of the communication line for open-circuit faults in the activated on state is carried out in accordance with the value of the Activated Output Monitoring configuration parameter and can be implemented in different ways:

When a terminal element is placed inside alarm device (actuator) housing, the **Activated Output Monitoring** parameter shall be set as **Normal**.

When a terminal element is placed out outside the alarm device (actuator) housing, the **Activated Output Monitoring** parameter shall be set as **Regular Off-Load Check**.

Other monitoring options are not allowed in this case.

2.2.4.5. Connection of several polar alarm devices (actuators) with a built-in diode to one panel output is performed in accordance with the diagram shown 2.5:



, where x is Output Number (4 … 7)

Figure 2.5. Connection of several polar alarm devices (actuators) to one panel output

This type of connection allows monitoring the health of the communication line with an alarm device (actuator) both in active and inactive states.

In the inactive state, the terminal element (resistor 4.7 kΩ) is monitored using a small current of reverse polarity.

In the active state, the health of the communication line and the actuator is monitored by checking the current consumption of the output circuit (direct polarity).

The monitoring of the communication line for an open-circuit faults in the activated state is carried out in accordance with the value of the **Activated Output Monitoring** configuration parameter and can be implemented in different ways:

When a terminal element (resistor 4.7 kΩ) is placed inside the last alarm device (actuator) housing, the **Activated Output Monitoring** parameter shall be set as **Regular Off-Load Check**.

When a terminal element is placed out outside the alarm device (actuator) housing, the **Activated Output Monitoring** parameter shall be set as **Regular Off-Load Check**.

Other monitoring options are not allowed in this case.

When connecting actuators for which a short-term power disconnection is not acceptable, the following values can be selected for the Activated Output Monitoring:

- *Programmable Open-Fault Threshold*;

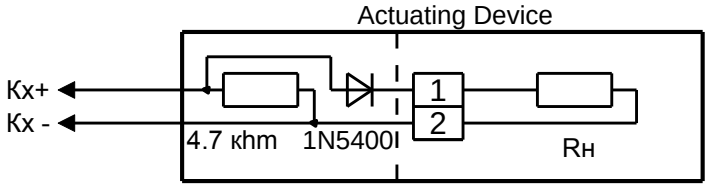
- *Output Current Drop Check.*

Other control options are not allowed.

When a terminal element (resistor 4.7 kΩ) is placed out outside the alarm device (actuator) housing, the **Activated Output Monitoring** parameter shall be set as **Regular Off-Load Check**.

Other monitoring options are not allowed in this case.

2.2.4.6. Connection of one nonpolar alarm device (actuator, except for extinguishant release circuits) without built-in diode is carried out as shown in Figure 2.6:



, where x is output number (4 … 7)

Figure 2.6. Connection of One Nonpolar Alarm Device (Actuator) To Panel Output

This connection type is not applied to extinguishant release circuits: pyrotechnical cartridges, locking devices and other devices with low resistance (single- or two- digit ohms).

With a non-polar actuator connected, the line health monitoring elements (4.7 kΩ resistor and 1N5400 type diode or similar) must be placed directly in the actuator housing.

It is allowed to place line health monitoring elements in the immediate vicinity of the actuator only for explosion-proof devices.

This type of connection allows monitoring the health of the communication line with an alarm device (actuator) both in active and inactive states.

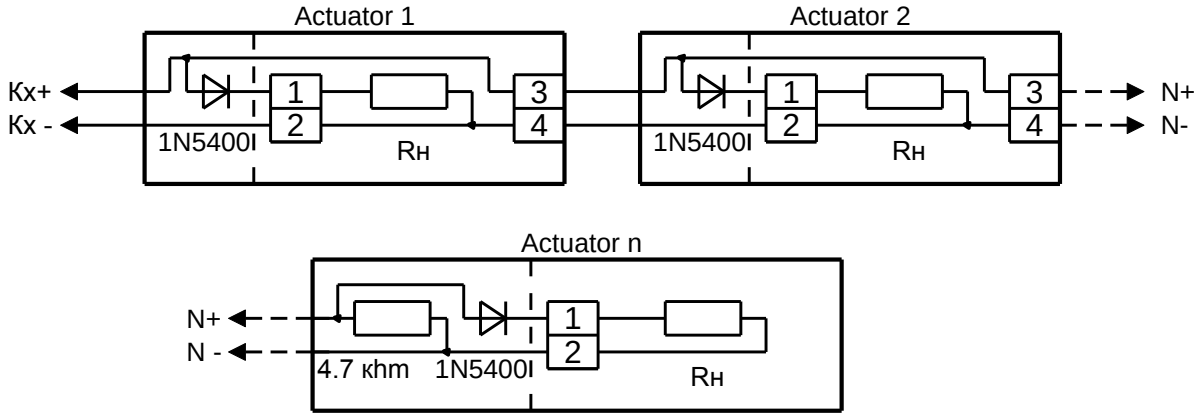
In the inactive state, the terminal element (resistor 4.7 kΩ) is monitored using a small current of reverse polarity.

In the active state, the health of the communication line and the actuator is monitored by checking the current consumption of the output circuit (direct polarity).

This connection type does not support the monitoring of alarm device (actuator) for functionality in the inactive state.

The **Activated Output Monitoring** parameter should be set as *Simple* control

2.2.4.7. Several nonpolar alarm devices (actuators, except for extinguishant release circuits) without built-in diode are connected to one output as shown in Figure 2.7:



, where x is output number (4 … 7)

Figure 2.7 Connection of several nonpolar actuators to one panel output

This connection type is not applied to extinguishant release circuits: pyrotechnical cartridges, locking devices and other devices with low resistance (single- or two- digit ohms).

With non-polar actuators connected, the line health monitoring elements (4.7 kΩ resistor and 1N5400 diode or similar) must be placed directly in the actuator housings.

It is allowed to place line health monitoring elements in the immediate vicinity of the actuator only for explosion-proof devices.

This type of connection allows monitoring the health of the communication line with an alarm device (actuator) both in active and inactive states.

In the inactive state, the terminal element (resistor 4.7 kΩ) is monitored using a small current of reverse polarity.

In the active state, the health of the communication line and actuators is monitored by checking the current consumption of the output circuit (direct polarity).

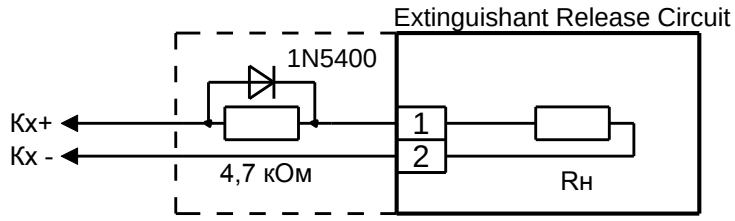
The *Regular Off-Load Check* should be select for The **Activated Output Monitoring** parameter.

When connecting actuators for which a short-term power disconnection is not acceptable, the following values can be selected for the **Activated Output Monitoring**:

- *Programmable Open-Fault Threshold*;
- *Output Current Drop Check.*

Other control options are not allowed.

2.2.4.8. The extinguishing release circuit device are connected as shown in Figure 2.8:



, where x is output number (4 … 7)

Figure 2.8. Connection of extinguishant release circuit device

The connection types allow connection of one extinguishant release circuit device: pyrotechnical cartridge, locking device or other device which has small resistance (single- or two- digit ohms).

The line health monitoring elements (4.7 kΩ resistor and 1N5400 diode or similar) must be placed directly in the actuator housings or in the interconnection compartment of the panel.

In the inactive state, the terminal element (resistor 4.7 kΩ) is monitored using a small current of reverse polarity.

In the active state, the health of the communication line and actuators is monitored by checking the current consumption of the output circuit (direct polarity).

The *Simple* value should be select for The **Activated Output Monitoring** parameter

2.2.5 Panel Settings

2.2.5.1. The Signal-20M configuration parameters are specified in Table 2.1.

Table 2.1 Signal-20M Default Configuration Parameters

	Inputs																				
Configuration Parameters (see Notes)	**№**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	19	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

a) The figures means the following parameters:

1 – **Type**
2 – **Zone #**
3 – **Alarm Delay, s**
4 – **Arming Delay, s**
5 – **Analysis Delay after Reset, s**
6 – **Shunt Time, s**
7 – **Activation Delay for Output 1**
8 – **Activation Delay for Output 2**
9 – **Activation Delay for Output 3**
10 – **Activation Delay for Output 4**
11 – **Activation Delay for Output 5**
12 – **Activation Delay for Output 6**
13 – **Activation Delay for Output 7**
14 – **Never Disarm**
15 – **Rearming after Arming Failed**
16 – **Rearming after Alarm**
17 – **Disarmed Input Monitoring**
18 – **Fire Input Requery Inhibit**
19 – **Debounce Time 300 ms**
20 – **Ignore 10 % deviation of intrusion input**
21 – **Output 1**
22 – **Output 2**
23 – **Output 3**
24 – **Output** 4
25 – **Output 5**
26 – **Output 6**
27 – **Output 7**

б) **‘+’** means that this parameter is checked (enabled); **‘-‘** means that the parameter is unchecked (disabled).

2.2.5.2. Default output configuration parameters are specified in Table 2.2.

Table 2.2 Default Output Configuration Parameters

Parameter	Values						
	Relay #						
	1	2	3	4	5	6	7
Type	*0*	*0*	*0*	*2*	*2*	*2*	*2*
Control Program	*10*	*10*	*10*	*9*	*12*	*9*	*12*
START/STOP Control	*Uncheck*	*Uncheck*	*Uncheck*	*Uncheck*	*Uncheck*	*Uncheck*	*Uncheck*
Operation Time, c	*8191,975*	*8191,975*	*8191,975*	*8191,975*	*120*	*120*	*120*
Infinitely	*Checked*	*Checked*	*Checked.*	*Checked*	*Uncheck*	*Uncheck*	*Uncheck*
Monitoring Mode	–	–	–	*3*	*3*	*3*	*3*
Activated Output Monitoring	–	–	–	*0*	*0*	*0*	*0*
Relay On/Off Events	*Uncheck*	*Uncheck*	*Uncheck*	*Uncheck*	*Uncheck*	*Uncheck*	*Uncheck*

Notes:

Type:
0 – *Standard*;
2 – *Fire Protection*;

Control Program:
9 – *Lamp*;
10 – *Alarm Output1*;
12 – *Siren*;

Monitoring Mode:
3 – *Open and Short Faults;*

Activated Output Monitoring:
0 – *Normal*

2.2.5.3. The Signal-20M default parameters are specified in Table 2.3.

Table 2.3 Default system parameters

Parameter	Value
Maximum PIN Length	*6*
Prohibit Factory Reset	*Uncheck*
Two Power Inputs Monitoring	*Uncheck*
EN-54	*Uncheck*
Network Address	*127*

2.2.5.4. The default credential parameters are specified in Table 2.4.

Table 2.4 Credential Configuration Parameters

		Credentials	
		№1	№2
Parameters	**Credential Code**	*1 2 3 4*	*1 2 3 4 5 6*
	Credential Type	*Administrator*	*Installer*
	IN1…IN20	-	-
	START/STOP Buttons	-	-
	Suspended	*Unchecked*	*Unchecked*

2.2.5.5. The panel configuration parameters can be changed if required. To do this, it must be connected to a computer through one of the interface converters (PI-GR, S2000-PI, S2000-USB or USB-RS485) or through the S2000M panel ver 2.03 or higher in accordance with the operating manual for a used converter).

The Uprog.exe utility must be installed on the computer. The current version of the Uprog.exe program is available on the Bolid's website: www.bolid.ru in the Software section.

2.2.6 Firmware Update

The device has the ability to update its built-in software (‘firmware’). The new firmware version can enhance the functionality of the device or eliminate the shortcomings of the current version. The list of available firmware, their key features and the necessity (mandatory) of updating are posted on the Internet at the bolid.ru website on the page of the Signal-20M device on the Download tab.

To update the software, the device must be connected to a computer via one of the interface converters (‘PI-GR’, ‘S2000-PI’, ‘S2000-USB’ or ‘USB-RS485’) or via the ‘S2000M’ version 2.03 or higher r (in according to the operating manual for the used converter).

The firmware update is also carried out using the Uprog.exe program. The current version of the Uprog.exe program is available on the Bolid website at www.bolid.ru in the Software section. For a description of the firmware update procedure, see the Program Help.

Firmware update can change the panel configuration, therefore, before updating, you should save the panel configuration files and key configuration using the Uprog.exe program, and after the update, the configuration and keys from the files should be written to the device.

The firmware update process takes a few minutes.

2.3 Use of Product

The product shall be used by personnel who have studied this manual and have received a certificate of confirming the knowledge of safety regulations.

2.4 Extreme Situation Action

Extreme situations include:

- product arcing;
- product burning
- appearance of smoke or a burning smell of the insulation of the wires of the product.

2.4.2 In the event of an extreme situation, it is necessary to take measures according to the instructions adopted at the specific facility.

2.5 Modification of Product

Any product modifications without the manufacturer consent is not allowed

3. Maintenance

3.1 General Instructions

The Product maintenance shall be preventive and scheduled providing for annual scheduled maintenance.

3.2 Safety

The maintenance shall be provided by persons qualified for Safety of Class II at least.

3.3 Product Maintenance Procedures

Routine maintenance activities include:

- checking the external state of the device;
- checking the reliability of the device fastening, the condition of external installation wires, contact connections;
- checking the need to update the firmware of the device (see 2.2.6).
- functionality check in accordance with clause 3.4 of this manual.
- Maintenance is recommended to be carried out using the methodological manual ‘Maintenance of fire alarm systems and SOUE type 1-2 in Orion ISS that can found at: bolid.ru.

Attention!
Removing the panel print circuit board from the enclosure will automatically void the manufacturer's warranty.

3.4 Product Functionality Test

3.4.1 To provide the annual functionally test of the product on the place without demounting it, the following shall be done:

- Run the Indication Test function (see 1.4.5.69);
- Make sure that the indicators (LEDs) and buzzer function properly;
- When the panel returns back to the Quiescent mode, check for any faults.

3.4.2 If necessary, during on-receipt inspection, a full functional check can be carried out. The full verification method is described in 3.4.2.1 - 3.4.2.22.

3.4.3 A complete check of the product's performance during the on-receipt inspection is carried out by persons who read carefully this manual, understand the principle of the product's operation, and have an electrical Safety Qualification of Class II, at least.

3.4.4 The check is carried out under normal climatic conditions in accordance with GOST 15150-69:

- ambient temperature - (25 ± 10) ° C;
- relative air humidity - (45 - 80) %;
- atmospheric pressure - (630 - 800) mmHg. (84 - 106.7) kPa.

3.4.5 The check is performed with the default configuration settings of the products.

3.4.6 The time for checking the technical condition of one product does not exceed 10 minutes (excluding the connection time).

3.4.7 The wiring diagram of the product when carrying out a complete functional check is shown in Figure 3.4.1

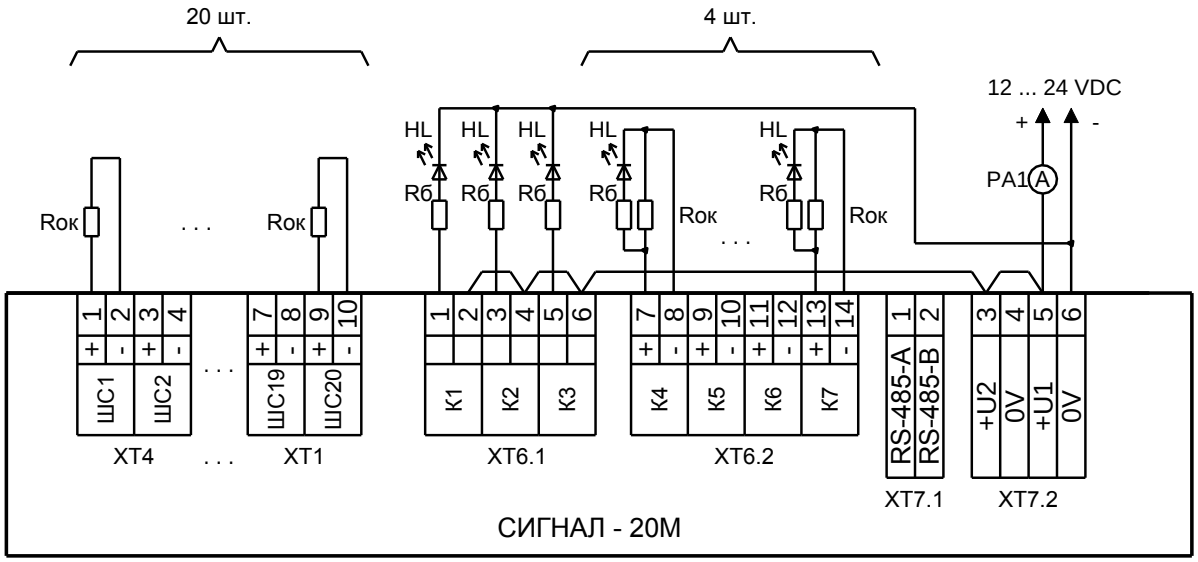


Figure 3.4.1. Connection for Complete Functional Check

Where:

- **Rt** - terminal resistor 0.5 W - 4.7 kΩ (MF 1 / 2W-4K7 ± 5% or similar) - 24 pcs., included in the delivery set;
- - **Rb** - ballast resistor limiting the LED current. With a supply voltage of 12 V, the resistors Rb are 1.0 kΩ (for example, MF 1 / 4W-1K ± 5% or similar). With a supply voltage of 24 V, the nominal resistors Rb are 2.0 kΩ (for example, MF 1 / 4W-2K ± 5% or similar) - 7 pcs .;
- **HL** - LED with a rated current of at least 20 mA (for example GNL-5012HD or similar), arbitrary color - 7 pcs. ;
- **PA1** - ammeter.

3.4.7.1 Connection and disconnection of the wires for testing purpose shall be curried only when the product is powered off.

3.4.7.2 The check is carried out in the following sequence.

3.4.7.3 Power on the product. Control the playback of the ‘Awake’ signal.

3.4.7.4 Check the current consumption of the product. It must not exceed that specified in 1.2.2.

3.4.7.5 Press the session start / end button.

3.4.7.6 Enter the Administrator password (by default **'1234'**) and press the Enter button

3.4.7.7 In the Administrator menu, select the 'Indication Test' item by pressing the 8 button .

3.4.7.8 Switching to the **'Indication Test'** is accompanied by the 'Test' melody

Make sure that all single-color LEDs are always on and bi-color LEDs are switching from red to green.

Make sure that the buzzer generates a two-tone intermittent beep.

The display test lasts 15 seconds. After completion of the indication test, the device automatically returns to the **Quiescent** mode.

3.4.7.9 By pressing buttons '1' ... '20', arm all inputs. make sure that all indicators '1' ... '20' are turned green, indicating that all inputs are armed and that there are no input faults. Any yellow indicator of '1' ... '20' indicates that there is an fault in a corresponding input.

3.4.7.10 Press the session start / end button.

3.4.7.11 Enter the Installer password (by default **'12346'**) and press the Enter button

3.4.7.12 In the Installer menu, select the item 'Diagnostics: Output Control' by pressing 14

3.4.7.13 Make sure that all outputs are deactivated (the HL indicators must be turned off) according to the state of the HL indicators (see the test scheme),

3.4.7.14 Check the status of the indicators ('OUTPUTS: 4 ... 7') to make sure that the monitored outputs correctly identify the state of the output circuits in the deactivated condition ('OUTPUTS: 4 ... 7' must be off - see Table 1.4.4.16.1).

3.4.7.15 Activate the outputs using the buttons '1'… '7'. When the corresponding HL indicators are turned on (see the Functional Check diagram), make sure that the outputs are turned on.

3.4.7.16 Check the status of the indicators ('OUTPUTS: 4 ... 7') to make sure that the monitored outputs correctly identify the state of the output circuits in the activated condition ('OUTPUTS: 4 ... 7' must be turned red - see Table 1.4.4.16.1).

3.4.7.17 Press the session start / end button. The check is over.

3.4.7.18 If necessary, when the product operates as a part of Orion ISS, the RS-485 interface can be checked during on-receipt inspection by connecting the panel to the interface (terminals 'A' and 'B') to check that the network controller receives events about finding the panel, panel reboot , etc. (see the operation manual for specific network controller used)

3.4.7.19 If the network controller or the configuration program cannot properly find the panel, you can set default values for the network address and response pause (address - 127; response pause - 1.5 ms).

To do that, please press the button , enter Installer PIN (default: '**123456**') and press Enter .

The panel will go the **Installer menu.**

After switching to the Installer menu, please press 11 . The '11' indicator turns continues pause

To change the address and pause, please press the Enter button twice.

After the first Enter press, indicator '11' turns intermittent red. The second Enter press change the network address and response pause. The panel returns back the Installer menu after five beeps

To return the device to Quiescent mode, press the button .

If within 20 seconds after selecting a menu item, two presses of the 'Enter' button are not made, the device will return to quiescent mode.

Return to quiescent mode is accompanied by a short triple beep.

3.5 Technical examination

There is no technical inspection of the product.

3.6 Preservation (de-preservation, re-preservation)

Preservation of the product is not provided.

4. Repairs

4.1 The repairs of inoperative product shall be provided in the manufacturer facilities or at repair shops authorized for that purpose. The product shall be sent for repair in the approved order.

Note!

The equipment must be handed over for repair assembled and clean, in the complete set as specified in the technical documentation.
Claims are accepted only if there is an attached claim with a description of the malfunction.

4.2 Failure of the product as a result of non-compliance by the consumer with the installation or operation rules is not a basis for a complaint and warranty repair.

4.3 Complaints should be sent to:

ZAO NVP 'Bolid', Russia, 141070, Moscow region, Korolev, st. Pionerskaya, 4.Tel./fax: +7 (495) 775-71-55 (multichannel), e-mail: **info@bolid.ru**.

4.4 If any issues are encountered during product operation, it is recommended to contact technical support by multi-line phone +7 (495) 775-71-55, or by email **support@bolid.ru.**

4.5

5. Storage

5.1 In the shipping container, it can be stored at ambient temperatures of -50 to +55 °C and relative humidity up to 95% at a temperature of +35 °C.

5.2 In consumer packaging, storage is allowed only in heated rooms at temperatures from +5 to +55 °C and relative humidity up to 80% at a temperature of +20 °C.

6. Shipment

6.1 The product can be shipped in the shipment container at ambient temperatures of -50 to +55 °C and relative humidity up to 95% at a temperature of +35 °C.

7. Disposal

7.1 The device is disposed of taking into account the absence of toxic components in it.

7.2 Content of precious materials: does not require accounting during storage, write-off and disposal (clause 1.2 of GOST 2.608-78).

7.3 Content of non-ferrous metals: does not need to be taken into account when writing off and further disposal of the product.

8. Manufacturer Warranty

8.1 The manufacturer guarantees that the Signal-20M panel meets with technical requirements if the user follows the instructions for shipment, storage, installation, and usage.

8.2 Warranty period is 18 months but no more than 24 months from the manufacturer's date of issue.

9. Certificates

9.1 The Signal-20M fire alarm control panel complies with the requirements of the 'Technical Regulations on Fire Safety Requirements' (Federal Law No. 123-FZ) and has a certificate of conformity No. RU C-RU.CHS13.V.00155 / 19 issued by the certification body OS 'POZHTEST' FGU VNIIPO EMERCOM of Russia, 143903, Moscow region, Balashiha, md. VNIIPO, 12..

9.2 The Signal-20M fire and intrusion alarm control panel meets the requirements of the Customs Union Technical Regulations ‘Electromagnetic Compatibility of Technical Means’ (TR TS 020/2011). Has a declaration of conformity: EAC No. RU D-RU.HP15.B.06633 / 20.

9.3 The Signal-20M fire and intrusion alarm control panel is a part of the Orion addressable fire alarm system which has a certificate of conformity No. BY / 112 02.01.033 00573, issued by the Institution 'Republican Center for Certification and Expertise of Licensed Activities 'Ministry of Emergency Situations of the Republic of Belarus, 220088, Minsk, st. Zakharova, 73a.

9.4 The Signal-20M fire and intrusion alarm control panel is a part of the Orion fire alarm and control system which has a certificate of conformity No. BY / 112 02.01.033 00845, issued by the Institution ‘Republican Center for Certification and Expertise of Licensed Types of Activities’ Ministry of Emergency Situations of the Republic of Belarus, 220088, Minsk, st. Zakharova, 73a.

9.5 The Signal-20M fire and intrusion alarm control panel has certificates of conformity of technical means of ensuring transport security with the requirements for their functional properties No. MVD RF.03.000036 and No. MVD RF.03.000037.

9.6 The production of devices has a certificate of conformity GOST R ISO 9001. The certificate of conformity is posted on the website bolid.ru in the section ‘ABOUT THE COMPANY’.