

ISO 9001



S2000M
Monitoring and Control Panel for Fire and Intrusion Alarm System

User's Guide

2018

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Terms and definitions:

Loop of alarm control unit: electrical circuit for power and control of none-addressable detectors (alarm initiating devices).

Polling Loop: digital transmission path between an S2000-KDL controller and addressable detectors (input points) or/and **expansion modules**. Power supply, status monitoring, and control of detectors are provided over the Polling Loop.

Element: minimal individually monitored or controlled system item. In terms of the 2000M panel, a controllable element can be a loop, supervised circuit of addressable expansion modules, addressable detector, output/relay circuit, actuator, **notification routing link**, and any virtual element supervising/monitoring specific operating conditions of the RS485-connected unit/device.

Input: element to supervise (monitor) and control detectors and addressable units.

Output: element to control actuators and appliances (such as a relay or electronic switch).

Zone (Partition): system elements grouped together to be monitored and controlled as a single unit. Most common, it is a protected room of facility (group of detectors) or a group of actuators/appliances controlled identically (voice alarm, smoke removal, or flooding zone).

Abbreviations:

PIN – Personal Identification Number (Code);

LCD –Liquid Cristal Display;

ISS – Integrated Security System;

PI – Interface Converter (Russian-based abbreviation);

PC – Personal Computer;

VA – Voice Alarm;

ACS – Access Control System

RCU – Remote Control Unit

PL- Polling Loop

1 Product Description

1.1 Application

1.1.1 The S2000M Monitoring and Control Panel is designed to work as part of the intrusion detection, fire alarm and extinguishing control systems. Combined with units of Orion Integrated Security System (ISS), the S2000M can operate as a modular intrusion and fire alarm panel to control audible, visible and voice alarms, as well as gas, powder and water extinguishing systems, smoke removal and building utilities. The communication between system units is based on the RS-485 interface. The device functions can be extended with additional units and modules.

1.1.2 As a part of a modular system, the S2000M provides the following:

- Receives information on the states of addressable detectors, loops, actuators/appliances, and modules;
- Provides visible and audible indication of conditions such as **Alarm, Fire, Start, Stop, Fault, and Disabled;**
- Controls operation conditions of intrusion detection, fire alarm and fire protection systems (these functions are protected from unauthorized access);
- Controls actuators / appliances such as visible / audible and voice alarms, smoke removal and fire extinguishing systems, as well as Fire, Alarm, Fault and Start/Activation signal outputs;
- Logs events in the Event Log;
- Provides data exchange and communications between modules;
- Checks for communication faults.

1.1.3 The S2000M does not have any circuits to accommodate detectors and outputs to control output devices and communicate with other systems. Such functions are provided through the units connected to the RS-485 (RS485-connected units/device):

- S2000-KDL and S2000-KDL-2I: controllers responsible for monitoring addressable fire detectors such as IP212-34A, S2000-IP, IPR513-3AM, addressable expansion modules such as S2000-AR1, S2000-AR2, S2000-AR8, intrusion detectors such as S2000-SMK, S2000-IK, S2000-PIK, S2000-SHIK, S2000-PIRON, S2000-PIRON-SH, S2000-STIK, S2000-PIK-ST, S2000-ST, S2000-V, S2000-KT panic buttons, S2000-VT humidity meters, S2000-DZ flood detectors; they also operate S2000-SP2 notification and control modules (with two non-monitoring dry-contact outputs), S2000-SP2 ver.02 relay expansion module with outputs monitoring circuits for open and short faults), S2000-SP4 (damper/valve control modules);
- Signal-20P, Signal-20M, and S2000-4: monitoring of conventional fire and intrusion detectors, control of load circuit outputs with monitoring for open-circuit and short-circuit faults, operation of dry-contact outputs;
- Signal-20: monitoring of conventional intrusion detectors;
- Signal-10: monitoring of conventional fire and intrusion detectors, or addressable threshold detectors such as IP212-34PA (DIP-34PA), S2000-IP-PA, IPR513-3PA, control of outputs with monitoring for open-circuit and short-circuit faults, control of relay outputs;
- S2000-ASPT: monitoring of conventional detectors and control of gas, powder, and aerosol extinguishing systems;
- Potok-3N: water extinguishing control panel;

- S2000-KPB : output expansion module with monitoring for short- and open-circuit faults;
- S2000-SP1: relay expansion module (no circuits monitoring);
- S2000-Perimeter: monitoring of Anchar-40, Tantal-200, and Tantal-600 addressable perimeter detectors;
- S2000-Adem: monitoring of RF link intrusion detectors of Ademco58xx series.

1.1.4 Visual indication for Fire, Start (Activation), Stop (Abort), Fault, and Disabled conditions are provided through the following:

- FIRE, START individual red LEDs, and STOP, FAULT, DISABLED individual yellow LEDs indicate fire alarms, activated(start) and aborted(stop) condition of fire protection equipment, as well as failures and disablements respectively;
- Alphanumerical LCD shows information on detected fires, activated/aborted fire protection components, failures and disablements.

The Alarm mode is indicated on the LCD display.

The built-in buzzer provides audible indication of Alarm, Fire, Activation, and Fault states.

Additional zone status indication can be implementable using S2000-BI and S2000-BKI units, S2000-KS panel, and S2000-K keypad.

Flooding zone states of powder, gas, or aerosol extinguishing systems must be indicated by the S2000-PT units (they are also necessary for remote control of fire extinguishing). Each S2000-PT can provide indication of Fire, Fault, Disabled, Pre-Discharge, Discharge, Abort, and Auto OFF states individually for each of **four** Flooding Zones or as system-wide status indications. It is also recommended using these units for status indication and manual control of voice alarm, smoke/gas removal systems, and for control of auxiliary equipment so that each individual system can have its individual status indicators and manual controls. Visual and audible indications of water-based extinguishing systems are provided by Potok-BKI units.

1.1.5 The S2000M provides Fire, Alarm, Start/Activation, and Fault signals to the Alarm Reception Center or other system via relay outputs. Fire and Start/Activation are initiated by closing contacts, and Alarm and Fault are initiated by opening contacts. It is recommended using S2000-SP1 units for transmitting Alarm and Fault as system-wide signals. Fire and Start/Activation can be also transmitted via S2000-SP2 units and unused relay outputs of Signal-20P, Signal-20M, Signal-10 and S2000-4 units. A transmission line from a relay output to a recipient unit shall be monitored for open-circuit and short-circuit faults by the recipient unit. The transmission of Fire, Alarm, Activation, and Fault signals can be indicated on S2000-BI and S2000-BKI units.

The S2000M allows transmitting events of fire and intrusion alarm systems (including Fire, Alarm, and Fault) to the alarm reception center (Central Monitoring Station) via S2000-PGE and UO-4S communicators, S2000-IT units and over radio links of transmitters such as RS-202TD-RR (LONTA-202 system), ATS100 (LARS radio system), and TRX-150 (TRX-450) (Orion-Radio RSPI).

1.1.6 The control of fire alarm system can be provided using the following facilities:

- Controls of the S2000M;
- Controls of the S2000-BKI indication unit.

Commands from the S2000M:

- Reset of zone (partition) alarms, reset of active (alarmed detectors);

- Enablement/disablement of zones (partitions) or their individual elements (inputs, detectors, fire protection control outputs);
- Enablement/disablement of the Detector Test Mode (applying test measures such as a laser pointer or pressing a light emitter).

Commands offered by S2000-BKI:

- Reset of zone (partition) alarms;
- Disablement of zone (partition);
- Enablement of zone (partition).

1.1.7 The control of intrusion detection system can be provided using the following:

- Controls of S2000M panel;
- Controls of S2000-BKI control and indication units;
- S2000-KS and S2000-K;
- Credentials: Touch Memory buttons and Proximity cards;
- SMS messages to S2000-PGE and UO-4S.

Commands offered by S2000M:

- Reset of alarms in a partition, reset of detectors;
- Arming and disarming a partition or its individual elements (inputs, loops, detectors);
- Enablement/disablement of a zone (partition) or its individual elements (inputs, detectors, control outputs).

Commands offered by S2000-BKI:

- Reset of partition alarms;
- Partition arming/disarming.

Commands issued from S2000-KS or S2000-K keypads by presenting tokens, or initiated by sending SMS messages to S2000-PGE and UO-4S:

- Arming and disarming.

1.1.8 Visual / audible alarm handling can be provided using S2000-KPB and S2000-SP2 ver.02 units. This function can be also provided using Signal-20P, Signal-20M, Signal-10, and S2000-4 units, utilizing their available outputs capable to monitor notification appliance circuits for open- and short-circuit faults. Voice alarms in an emergency notification system of 3 to 5 classes are provided using the Rupor units. S2000M is able to provide the activation of notification appliances as response to the following:

- When one or more automatic fire detectors are activated;
- When a manual call point is activated;
- When an extinguishing (activation signal) is initiated;
- Manual control command from S2000M;
- Manual control command from S2000-PT;
- Manual activation of the EDU 513-3AM remote control point.

The notification appliances can be aborted manually using controls of S2000M and S2000-PT units. The S2000-PT allows activating and aborting all notification appliances in a zone, while the S2000M allows controlling individual devices either.

1.1.9 The control (operation) of smoke dampers and fire dampers of HVAC system is provided using S2000-SP4 units. The control of smoke removal fans shall be provided using outputs of S2000-KPB and S2000-SP2 mod.02, or via available monitored outputs of Signal-20P, Signal 20M, Signal 10, and S2000-4 in combination with control boxes such as ShKP-4, ShKP-10, ShKP-18, ShKP-30, ShKP-45, ShKP-75, ShKP-110, ShKP-250 and others.

1.1.10 To control auxiliary and utility systems used for fire protection purposes, outputs capable to monitor connected actuator circuits for open and short-circuit faults can be used: outputs of S2000-KPB, S2000-SP2 mod.02, or monitored outputs of Signal-20P, Signal-20M, Signal-10, and S2000-4 units. When connecting output devices (actuator circuits) or fire control equipment of third party manufactures, please observe the electrical connectivity – output voltage of the above units must comply with the connected equipment control voltage.

1.1.11 To unlock doors for evacuation in case of fire, the S2000M can automatically turn on the Free Access mode in an access control system based on S2000-2 controllers.

1.1.12 Control of gas / powder / aerosol extinguishing facilities must be provided using S2000-ASPT units. An S2000-ASPT is able to protect one flooding zone with the following functions:

- Monitoring of conventional two/four-wire detectors within three loops (detection circuits);
- Monitoring of manual call points;
- Monitoring of window/ door position status in protected areas;
- Monitoring of a fire extinguishing installation and extinguishant released switch (pressure switch);
- Initiation of extinguishant release by automatic detectors, manual call points, remote control commands taking into account an extinguishing mode (auto / manual) and door / window position circuit status;
- Control of visual and audible alarm notification appliances (visual alarm devices and sounders);
- Transmission of the Fire and Fault signal to the alarm reception center / central monitoring station;
- Abort of extinguishing, reset of Fire condition, and enablement / disablement of auto extinguishing mode using the product's keypad controls;
- Enablement and disablement of input and outputs using panel control buttons;
- Status indications such as Extinguishant Released (activation), Auto Mode Off (general for entire flooding zone), Fire, Fault, Disablement (totally for flooding zone and individually for inputs and outputs).

The S2000M can control a notification as common for multiple flooding zones, initiate extinguishant release to the main fire pipe when receiving the S2000-ASPT's release signal – S2000-ASPT controls extinguishant release from the main pipe to its flooding zone.

One S2000-PT for each four zones must be installed in a duty staff room to indicate flooding zone status and to provide remote manual control of fire extinguishing. In this case, each flooding zone will have independent visual indications and dedicated controls to ensure visual indications and simple control. The S2000-PT offers the following control functions (individual for each zone):

- Control of extinguishing modes (auto / manual);
- Manual activation of extinguishing installation;
- Control of pre-discharge delay*: pre-discharge time hold and resuming, as well as immediate activation (pre-discharge delay overriding);
- Extinguishing abort;
- Fire reset.

The S2000M supports the indication of release / abort activation (including the display of pre-discharge time countdown on the LCD) and manual control of a fire extinguishing installation by

manual command from keypad. However these capabilities must be deemed as supplementary to the S2000-PT due to less illustrative indication and more complicated manual control actions.

***Note:** Pre-discharge countdown indication, as well as emergency hold and countdown resuming commands are available only if the S2000-ASPT ver.3.5 or higher is used. The pre-discharge countdown indication, emergency hold and countdown continuation are supported by S2000-PP of version 2.50 or higher. If a lower version of S2000-PT is used, these functions can be provided via the S2000M panel only.

1.1.13 To control a water-based extinguishing installation, please use the Potok-3N control unit and Potok-BKI indication unit. The Potok-BKI provides manual activation/abort of fire extinguishing systems, selection between auto (Auto ON) and manual (Auto OFF) extinguishing modes. It provides indication of operation and activation status of extinguishing system and its units.

1.1.14 The S2000M supports disablements of monitored elements (inputs and outputs) for maintenance and repair purposes.

1.1.15 The S2000M allows viewing the measurements of addressable units and detectors: input/loop or detection circuit resistance, smoke and dust condition within DIP-34A, voltage, battery capacity, and temperature, humidity, and pulse counter values.

1.1.16 S2000M can operate within the Orion Pro System as integrated via RS-232 interface.

1.2 Specifications

1.2.1 The S2000M must be operated indoor in protected premises where it cannot be exposed to atmospheric precipitation and physical damage. It is NOT designed to be used in aggressive, dust, explosive and fire-hazardous environments. The ingress protection rating is IP30 according to GOST 14254-96 (IEC 529-89) if it is mounted on a wall.

1.2.2 The S2000M is designed for 24/7 continuous operation.

1.2.3 In terms of climate immunity, the product complies with Design Category O4 of OST 25 1099-83 Russian Industry Standard for the operation in temperature range of 263 to 328 K (-10 to +55°C). Humidity is 93% with no condensation at temperature 313 K (40°C).

1.2.4 In terms of mechanical stability, the panel complies with Placement Category 4 of OST 25 1099-83 (vibration load accelerated up 0.5 g in the range of 1-35 Hz).

1.2.5 The S2000M is rated for DC power to be supplied from one interruptible power supply or two (primary and backup) power supplies with voltage rated 12V and 24V. The acceptable voltage range is 10.2 – 28.4 V. It is recommended using RIP-12 and RIP-24 battery backup power supplies manufactured by Bolid Company.

1.2.6 Average current consumption in the quiescent mode (keypad illumination off, no audible and visual indications): 60mA at 12V; 35 mA at 24 V.

1.2.7 Average current consumption in the alarm condition (keypad illumination off, with active audible and visual indication of the Fire and Start states): 80mA at 12V and 45mA at 24V.

1.2.8 Maximum current consumption in the alarm condition (with keypad illumination, Fire or Start audible indication, and Fire, Start, Stop, Fault, Disabled, Silenced visual indications): up to 120 mA at 12V; 65 mA at 24V.

1.2.9 Real time clock battery: CR2032 button cell lithium battery rated at 3.0 V. The RTC battery life is 5 years at least.

1.2.10 The industrial radio interference tolerance of the panel meets requirements of GOST R P 50009-2000 GOST P 53325-2012 Russian Standards for Severity of Third Level. The flawless operation of the panel is not guaranteed if the electromagnetic environment is not in compliance with operation requirements.

1.2.11 The industrial interferences do not exceed the requirements of GOST R 51318.22 for Class B equipment.

1.2.12 The MTBF is 20,000 hours that corresponds to 0.95 failure-free operation probabilities per 1,000 hours.

1.2.13 The S2000M is a serviceable and repairable product. The average service life is 10 years at least. The replacement of the keyboard buttons may be required within this period because of wear-out.

1.2.14 Weight: no more than 0.3 kg.

1.2.15 Dimensions: no more than 140×114×25 mm.

1.2.16 In case of malfunction and misuse, the S2000M provides fire safe operation according to GOST 12.1.004-91.

1.2.17 The maximum length of RS485 communication line: up to 3,000 m.

1.2.18 The S2000M panel supports up to 127 addressable units connected to RS485 interface. No S2000M can be connected to another S2000M.

1.2.19 RS232 communication line: up to 20 meters. Supported PC communication rates: 9,600/19,200/38,400/57,600/115,200 bps.

1.2.20 Monitored elements (input/loops, addressable detectors, supervised circuits, addressable unit outputs): up to 2,048.

1.2.21 Controlled elements (relays of addressable units): up to 256.

1.2.22 Groups of elements: up to 511 zones (partitions), up to 128 partition groups.

1.2.23 Capacity of a non-volatile buffer (event log): up to 8,000 events. The buffer is based on a cycle recording principle – the newest events replace the oldest as received. The events can be viewed on the LCD, transmitted to the Orion Pro Suite, and printed on a printer.

1.2.24 Users: Up to 2,047.

The following credentials (authentication factors) are supported:

- PIN codes of 1 to 8 digits for S2000M, and 4 digits for S2000-K and S2000-KS;
- Tokens: Touch Memory buttons and Proximity cards.

Installer password: 1

User codes (credentials): 2,046

Control rights (access levels): 255, where 252 of them have configurable zone (partition) control rights.

1.2.25 The names of elements, zones (partitions), and users cannot exceed 16 characters.

1.3 Product Bundle

1.3.1 The product is supplied as specified in Table 1.

Table 1 *S2000M Delivery Bundle*

Part Number	Description	Qty.	Note
ACDR.426469.027	S2000M Monitoring and Control Panel	1	
ACDR.426469.027 UM	User's Manual (CD disc)	1	
ACDR.426469.027 DS	Data Sheet	1	
ACDR.426469.027 IM	Installation Manual	1	
	Screw 4 x30	3	
	Wall Plug 8x30 S	3	

Optional:

- 1) Printer cable to connect a printer to S2000M
- 2) PC cable to connect S2000M to a computer

1.4 Design and Operation

1.4.1 Design

The S2000M consists of a plastic enclosure with a built-in keypad, alphanumeric LCD (two lines, 16 characters), and individual LEDs. The enclosure houses a PCB and components. The PCB has a holder for CR2032 battery to provide backup power for the real time clock, and a screw terminal for external connections:

- 0 V, +U1: primary power input;
- 0 V, +U2: backup power input;
- A, B: RS485 inputs;
- TxD, RxD, GND: RS232 inputs to connect a personal computer, printer (with RS232 serial interface), or radio transmitters.

The product is shown in Figure 1. Dimensions and installation diagrams are provided in Appendix A. External circuit terminals are described in Appendix B.



Figure 1. Front View

1.4.2 Controls and Indications

Individual LED Indicators:

FIRE: Indicates fire-related alarms such as Pre-Alarm, Fire, Fire2. Color: Red;

START: Indicates the activation of fire protection facilities. Color: Red;

STOP: Indicates aborted operation of fire protection facilities. Color: Yellow;

FAULT: Indicates faulty status of system components. Color: Yellow;

DISABLED: Indicates disablement of a system element. Color: Yellow;

SILENCED: Indicates the silenced internal buzzer. Color: Yellow.

POWER: Indicates the product power status. Color: Green.

Table 2 **Individual LED Indications**

LED	Indication
FIRE	Steady in the Fire2 condition Pulsing: ON for 0.25 sec, OFF for 0.25 sec in the Fire condition Pulsing: ON for 0.25 sec, OFF for 1.75 sec in the Pre-Alarm condition OFF if no fire alarms
START	Steady , if any fire protection equipment is active Pulsing: ON for 0.25 sec, OFF for 0.25 sec when fire protection equipment is in pre-activation delay status. OFF when all fire protection devices are in an initial (quiescent) condition
STOP	Steady when fire protection equipment in Abort condition OFF when no fire protection equipment in Abort condition
FAULT	Pulsing: ON for 0.25 sec, OFF for 1.75 sec if monitored elements are in fault conditions or disconnected Pulsing: ON for 0.5 sec, OFF for 0.5 sec in case of failed arming (when attempting to arm a loop / input or detector which is not in normal status at the moment) OFF in case of no fault conditions
DISABLED	Steady when relevant elements are disabled OFF when no elements are disabled
SILENCED	Steady when internal alarm and fault indication (buzzer) is silenced by the  button OFF in normal operation with no alarms and faults. Also OFF when silenced buzzer resumes audible indication after reception of new alarm or fault warning signal
POWER	Steady if the power supply of S2000M is normal Pulsing: ON for 0.25 sec, OFF for 1.75 sec in case of power failure

Function Buttons:

: The button silences the internal buzzer during alarms and faults. A new alarm or fault will restart the buzzer.

RESET: Initiates the Alarm Reset command.

START: Initiates the operation of fire protection facilities.

STOP: Aborts active processes of fire protection facilities.

: Opens main menus: **Event Log, Control, Indication Test, Users, and Settings.**

: Acts as a contextual menu button (currently available action items).

, : Navigation buttons to navigate a menu, event log, partition (zone) menu, and other items:  - previous,  - next.

: Used to cancel the current actions and entered characters, or return to the item or menu of the previous level.

: Used to confirm a selected action, to save entered characters, and to go to the item or menu of the next level.

0 – 9: used for entering PIN codes and other digits, also these button are used to view additional parameters in the log viewing mode.

Internal Buzzer

The internal buzzer provides Start, Fire, Alarm, and Fault audible status indications. These signals are described in Table 3. An audible indication is silenced when the system returns to a quiescent mode after resetting alarms, repairing faults, or pressing the  button.

Single beeps indicate button pressing and user action results. These beeps are described in Table 4.

Table 3 *Internal Buzzer: Alarm and Fault Signaling*

Status	Sound Signaling
Normal	Buzzer Off
Start/Activation	Audible indication of Activation. A periodic audio signal with alternating frequency: 1-sec period with low frequency followed by 1sec period with higher frequency
Fire Alarm	Audible indication of Fire Alarm: Intermittent audible signal with a long beep and short pause
Pre-Alarm	Audible indication of Fire Pre-Alarm. Recurrent sequence of short and long beeps
Intrusion Alarm, Panic Alarm, Lobby Alarm	Audible indication of Alarm: Intermittent audible signal every 0.5 second
Fault	Short beeps every 2.5 seconds

Table 4 *Internal Buzzer: Single beeps*

Status	Sound Signal
Button pressing	Short beep
Successful operation	Two short beeps (Success, Confirmation)
Failed operation	Long beep (Error)

1.4.3 System Conditions

The S2000M can be in the following operating conditions depending on the status of monitored elements:

- Quiescent (Normal)
- Fire
- Start
- Alarm
- Stop
- Fault
- Disabled

In addition, the S2000M has the **Program** and **Update** configuring modes used to modify a configuration, update the firmware, and reset the password.

1.4.3.1 Fire

The S2000M goes into the **Fire** condition if a relevant system element has one of the following states: Pre-Alarm, Fire, Fire2. The Fire2 signal is usually used for activation a fire extinguishing system. It can be initiated by input / output devices in the following cases:

- If two or more **Fire** signals are received from detectors of the same zone with an interval of 120 second or less;
- If the **Fire** signal is received from a manual call point.

The Fire2 signal, as in above cases can be issued by the S2000M; this can be useful if an input / output device does not have this function. The Fire2 logic as the reception of several Fire signals from detectors of the same zone can be configurable in the following manner: one can define a number of triggering (alarmed) detectors and a maximum interval between the signals of detectors.

1.4.3.2 Start (Activation)

S2000M goes into **Start conditions** in the following cases:

- When S2000-ASPT and Potok-3N units initiate the activation of extinguishing equipment;
- When the S2000M activates "**Fire Protection**" and "**Extinguishing**" outputs controlling fire protection equipment.

1.4.3.3 Stop (Abort)

The device goes into the **Stop** condition in the following cases:

- If the automated release of extinguishant is aborted / stopped manually during the pre-discharge delay count down;
- If a manually activated process of fire protection unit is aborted by a manual command.

The **Stop** condition is active until the reset of fire extinguishing conditions (e.g. fire alarm reset).

1.4.3.4 Fault

The S2000M goes into the **Fault** conditions in the following cases:

- If any of monitored components is failed (short circuit or disconnection, power failures, tampering, as well as troubles inside addressable detectors);
- If communication faults occur with addressable detectors and units;
- In the **Arming Failed** status – input (detector or loop) is not normal when attempted to be armed.

The **Fault** condition is active until fault is repaired. In case of Arming Failed, it can be reset by the **Alarm Reset** manual command, if **Auto Rearming after Arming Failed** function is disabled. The **Fault** condition is inhibited when failed elements are disabled by the **Disable** command.

1.4.3.5 Disabled

The monitored elements and devices can be manually switched to the Disabled condition by the **Disable** manual command. When disabled, the elements are not monitored for abnormal conditions (alarms, fires), the control of disabled outputs is inhibited, and the faults of disabled elements are ignored. Disabling a monitored input (loop, addressable detector) or output (relay, damper / valve) will generate Input Disabled or Output Disabled message accordingly.

Note: Disablement of output control is effective only for S2000M-controlled outputs. Outputs controlled locally (by internal logic of addressable units) cannot be disabled using the S2000M panel.

1.4.3.6 Other Conditions

Auto OFF - automatic fire protection control is disabled, only manual control is possible.

Armed - armed mode is enabled; input (loop or detector) is monitored for alarms.

Disarmed – armed mode is disabled, input (loop or detector) is not monitored except for some faults (enclosure tampering, disconnection).

Test - mode for testing fire alarms of addressable fire detectors as activated by a special test action, a test mode for testing alarms of addressable intrusion detectors, a test mode for testing dampers by the Test button.

When a test action (pointing a laser beam or pressing a light emitter) is applied to DIP-34A or S2000-IP fire detectors in normal operation, the **Detector Test** event will be generated. The same action in the Test mode will cause the generation of a Fire signal to allow testing automatic control of the fire protection equipment. This mode does not affect any detectors' functionality to detect fire factors (smoke, heat) and generate Fire signals.

In case of intrusion detectors, the Test mode can be used to test detectors without generating Alarm. The IR detectors can be tested to monitor their detection areas. This function is also known as Walk Test. Disarmed detectors also can be switched to the Test mode where their internal LEDs indicate alarms, and this provides monitoring detectors visually for triggering an alarm signal, and generating Detector Test events for logging them in the S2000M's Event Log.

The Test mode for dampers/valves controlled by S2000-SP4 is meant for authorized manual test using Test Buttons connected to the S2000-SP4. When the **Lock Test Button** parameter is selected in the S2000-KDL configuration, the Test button can control a damper/valve in this mode only.

1.4.3.7 Configuring Modes

The Configuring modes are used to modify the configuration of a protected site with help of the PProg utility. Main functions of the S2000M are not available in these modes.

1) The Programming mode is used for the configuration can be loaded from and saved to the S2000M panel using PProg via the Orion protocol with bitrate of 9,600 bps. To enter this mode, please enter the Installer Password using S2000M keypad.

2) The Configuration Update mode is turned on automatically when a configuration is saved via Orion Pro protocol; as soon as the configuration has been saved the S2000M exits the mode. The Installer Password granting access to the S2000M configuration is entered using the PProg software.

1.4.4 Monitoring and Control of System Elements

The S2000M uses two approaches to obtain status of addressable units and their elements:

- Polling for Status;
- Receiving events as states change within units and elements.

The polling for device status starts as soon as a device is found (reconnected) within the system. When the S2000M is powered up, it starts polling to determine the status of each connected (online) device. This this process is also known as *initialization*.

Elements controlled and monitored by the S2000M should be added to its configuration using the PProg utility. In this case, it stores their states to control fire protection equipment, indication units, and display their current conditions/status (alarm, faults, etc.). The S2000M can have the following types of elements as determined by its functions:

- 1) Input (loop)

- 2) Output
- 3) Actuator (appliances)
- 4) Device Status
- 5) Notification Link
- 6) Reader (Door)

The attributes assigned to the elements of the S2000M configuration can be as follows:

- Partition Number
- Description
- Contact ID Zone Number
- Type of input (loop) and output (relay)

Partition Number defines what a partition (zone) this element belongs to. The element can belong to one partition (zone) only.

Description is a text string of up to 16 characters displayed on the LCD when viewing states and events.

Contact ID Zone Number is used to form events in the format of Ademco Contact ID and LARS protocols.

A selected **Input/Output Type** defines available range of states and control commands for outputs and inputs. In some cases (e.g. S2000-ASPT), types of inputs/outputs are selected in the PProg utility, in most other cases, when configuring S2000M, replace the default input type with **Intrusion**, **Fire** or **Aux** as required, and define output types responsible for fire protection control.

1.4.4.1 Input/Loop

This Input (Loop) element is used to monitor a none-addressable loop, addressable detector, and addressable expansion module; in turn, they are used to monitor the S2000-ASPT and Potok-3N extinguishing control panels. This element is represented as  in the PProg app. The inputs are monitored for alarm conditions (fire, intrusion alarms, and various auxiliary alerts), faults, and other states related to equipment conditions (armed, disarmed, etc.). The input type defines the input/loop control features.

➤ **Default, Intrusion, and Lobby** are used to operate with intrusion detectors. This type of input supports the following control commands:

- Arm
- Disarm
- Reset
- Disable

➤ **Panic**: used to connect a panic button. It supports the following commands:

- Reset
- Disable

➤ **Fire, Analog-Addressable Smoke, Analog-Addressable Heat** inputs/loops are used to operate with automatic fire detectors, none-addressable loops with automatic detectors, fault monitoring circuits. They support the following commands:

- Reset
- Disable

➤ **Manual Call Point** input type is used to operate with manual call points. It functions similarly as a **Fire** input but in case of a fire alarm it goes into the **Fire2** status.

➤ **Auto Mode Status** (Automatic Extinguishing Mode) input is used to monitor the extinguish control of S2000-ASPT and Potok-3N. It can have the following states:

- Auto ON (automatic extinguishing control is enabled)
- Auto OFF (manual extinguishing control);
- Fault (Communication Fault).

This element supports the following manual control commands:

- Auto ON;
- Auto OFF;
- Disable.

➤ **Remote Release** - The input of this type is used to monitor an extinguishing activation process of S2000-ASPT and Potok-3N. It can have the following states:

- Pre-Discharge Delay
- Emergency Hold
- Discharge Signal
- Extinguishant Released
- No-Pulse Release
- Extinguishant Release Failed
- Discharge Inhibited
- Emergency Abort
- Fault (Communication Fault)

This element supports the following manual control commands:

- Start / Release
- Stop / Abort
- Emergency Hold
- Immediate Activation
- Disable

➤ **Auxiliary** or **Door Status** is used to monitor auxiliary inputs or input points, that are not latched in abnormal conditions (alarms) and do not require the user's attention to be reset to normal status. In other words an auxiliary input returns to a normal status when a related monitored circuit restores after alarm, while the Fire and Intrusion inputs require a user attention to be reset to Normal Status after alarms.

This elements support the following manual control commands:

- Disable

➤ **Manual Control** is used for remote control devices (EDU 513-3AM) to release/activate fire protection equipment (fire extinguishing, smoke removal, visual and audible alarms)

This element supports the following manual control commands:

- Disable

➤ **Manual Abort** is used for remote activation points to abort/stop fire protection equipment (extinguishing, smoke removal, voice alarm).

This element supports the following manual control commands:

- Disable

1.4.4.2 Output

The element of this type is meant to monitor an output controlling actuating/output devices. It supports the monitoring of startups of actuator/actuating devices and open and short faults of transmission path to an actuating control module. This element is called **Output** in the PProg

utility and represented graphically by the  icon. The outputs support manual control commands (start/activate and stop / abort) and disablement of monitoring and control functions (see 1.4.3.5 and the function limitation note).

The output can be of the following types:

➤ **Relay** (default). The outputs of this type are used to control devices that do not require indication when activated or started. Such outputs can have the following attributes:

States: Faults of actuator (output) circuits and transmission paths to output modules (e.g. Short-circuit and communication faults).

Manual control commands: Disable.

Automatic control: Standard control commands or scenarios.

➤ **General Fault, General Fire, General Activation**. These types can be used to create system-wide Fault, Fire, and Activation/Release outputs. The functioning algorithm of such outputs is completely determined by their type, they monitor status of each monitored element of the unit (in other words, you do not have to define auto response/control commands, scenarios, and associations to partitions). These faults can have the following states:

- Actuator in Operating Position (Activate)
- Actuator in Initial Position (Deactivate)
- Actuator Failed (output activation failed)
- Communication Fault

This element supports the following manual control commands:

- Switch to Operating Position (Activate)
- Switch to Initial Position (Deactivate)
- Disable

➤ **Auxiliary Equipment**. Auxiliary Equipment outputs are used to control auxiliary equipment and utilities that are not used directly for fire protection. These outputs can have the following states:

- Actuator in Operating Position (Activate)
- Actuator in Initial Position (Deactivate)
- Actuator Failed (output activation failed)
- Communication Fault

This element supports the following manual control commands:

- Switch to Operating Position (Activate)
- Switch to Initial Position (Deactivate)
- Disable

Automatic controls: standard presets and scenarios

➤ **Fire Protection Equipment** is used to control fire protection equipment (except for extinguishing): evacuation systems, smoke and gas removal systems, utility systems used in the fire protection system. The activated status of this output is indicated by the Start / Activation signal (activation of fire protection equipment). The output can have the following status:

- Pre-activation Delay
- Activated
- Failed (failed attempt to activate/an actuating device)
- Abort/Stop
- Communications faults

This element supports the following manual control commands:

- Start
- Stop
- Disable

➤ **Extinguishing:** In the current version of the S2000M panel, this output is the same as **Fire Protection Equipment**.

1.4.4.3 Actuator (Actuating Device)

This element is used to monitor air vent dumper as operated by S2000-SP4. This element is called Actuator (Actuating Device) and marked as  in the PProg software. It can have the following states:

- **Device in Operating Position**
- **Device in Initial Position**
- **Actuator Failure** (an actuating device failed to go into an operating/initial position in due time);
- **Actuator Circuit Error** (incorrect combination of states of circuits monitoring the dumper position, S2000-SP4 power outage, or internal faults)
- Other faults (e.g. Communication Fault)

This element supports the following manual control commands:

- Switch to Operating Position (Activate)
- Switch to Initial Position (Deactivate)
- Disable

1.4.4.4 Device Status

This element is designed to monitor addressable units for the following faults:

- Communication faults;
- Primary power failure (220V), secondary power failure, backup power failures (backup battery, cell battery);
- Unit enclosure tamper;
- Failures of S2000-KDL polling loop unit

The element supports the following commands:

- Disable

In the PProg utility, this elements is called **Status of Device with Address...** and represented as the  icon.

1.4.4.5 Notification Routing Link

This element is used to monitor functionality of a message link between a protected site and the central monitoring station or the user's phone. It can have the following states:

- Normal
- Fault (in case of a transmission link failure);
- Communication Fault (when a message communicator is not reachable (disconnected).

This element does not support manual control.

In the PProg utility this element is called **Message Link**, the icon  representing it graphically.

1.4.4.6 Reader (Door/Access Point)

This element is used to monitor door states as operated by S2000-4 and S2000-2 access controllers, and also to control access through doors of escape routes in case of fire emergency. In the PProg, this element is called **Reader** and represented graphically as .

The Door/Access Point element supports the following states:

- Door Open
- Door Closed
- Door Forced Open (opening with no access granted)
- Door Held Open

The access mode used for Door can be as follows:

- Normal Access Mode
- Free Access (Free Access is allowed through a door)
- Access Locked/Lockdown (no access is allowed through a door)

When a duress code is used for access, the Duress status is generated.

The Reader element supports access control commands: enablement of Free Access and restore to normal access control condition. These commands can be executed automatically as a part of control scenarios in case of a fire. The Reader also supports the Alarm Reset command for resetting the Duress alarm.

1.4.4.7 Relay

The Relays are elements meant to provide automatic control by standard control programs and scenarios. In the S2000M ver.3.0, the Relay is functionally the same as the Output element but for the following: the maximum number of automatically controlled elements (Relays) is up to 256, whereas the number of monitored elements (Outputs) is up to 2,048. Graphically, it is represented by the  icon.

1.4.5 Partitions, Zones, and Partition Groups

The Partition is a logical group of elements. This term is equivalent of the Zone used in the fire protection terminology. Partitions (Zones) are used to display cumulative states of protected site areas and to control the group of elements as a single unit. Usually, a partition (zone) includes detectors located within one protected area, alarm control outputs of one voice alarm zone, detectors and controls of one flooding zone. For status indication units and keypads, the partition is a minimal structural element at a protected site that can be individually controlled and indicated.

Partitions can be grouped into a larger element called a **Partition Group**. Partition groups are comparable to partitions in terms of control and indication. Partition groups are usually used to control large parts of a protected site as well as the whole site (e.g. to reset general fire alarms, to arm the entire store of the building at the lobby area. Partition groups can overlap – the same partition can be included in up to 128 partition groups. In field operation, including the same partitions into too many groups may affect system performance. A partition group can include up to 511 partitions.

Partitions and partition groups can have the following attributes:

- **Partition Number** (ID)
- **Description**

The **Partition Number** is a numerical identifier of partition in the system. Available range is from 1 to 9,999.

Description is a 16-character partition name as displayed on the LCD when viewing corresponding states and events.

1.4.6 Accessing S2000M Functions: Users, Credentials, and Access Levels

The S2000M provides the following functions:

- 1) Viewing a current status (alarms, fires, faults, and disablements). The access to this function has no restrictions;
- 2) Control functions: arming, disarming, alarm resetting, enabling and disabling auto mode, activation and deactivation of actuating devices, pre-activation time hold (emergency hold). **Note:** These functions are protected from unauthorized access;
- 3) Viewing the event log. The access to this function can be free or restricted depending on the settings;
- 4) Adding and removing users, editing user rights (operation/control rights). This function is accessible through installer password;
- 5) Configuring S2000M and other units. This function is accessible by the installer password.

Access to the protected functions requires user authentication by credentials. An authentication procedure can be based on the following factors:

- PIN Codes
- Tokens: Touch Memory buttons (iButtons) and Proximity

If the control functions are carried out by SMS commands sent to UO-4S units, authentication is provided by a sender's phone number.

The installer password is a credential under number 1. The installer password privileges cannot be delegated to other credentials. The default value of installer password is <123456>. Credentials with IDs from 2 to 2047 can have configurable control permissions. The permissions (rights) are defined by assigning an access level. The panel supports up to 252 configurable access levels. These access levels define partitions (partition groups) that can be accessed and/or controlled by a user as well as control permissions for individual partitions (partition groups). Control permissions include the following:

- **Test Mode** access permission allows enabling/disabling the detector test mode;
- **Arming:** Allows arming/disarming, alarm resetting;
- **Disarming:** Allows disarming and disabling;
- **Control Actuator:** Allows remote manual activation and enablement of actuators (appliances);
- **Auto ON:** Allows enabling automatic extinguishing mode;
- **Auto OFF:** Allows disabling automatic extinguishing mode (switching to the manual only mode).

Configurable access levels are created using the PProg application when the S2000M panel is being configured.

In addition to configurable access levels, there are three default "**access levels**" under numbers 253, 254, and 255 that grant permissions for the direct control of addressable units. Credentials with such permissions are not meant for **field operations** but can be useful for installation and maintenance activities.

These "access levels" provide the following permissions:

- 254 Arming:** Arming, alarm resetting, inquiry for an input status;

253 Arming and Disarming: Arming, disarming, alarm resetting, and inquiry for an input status relay manual control;

255 All Functions: Arming, disarming, resetting alarms, relay manual control, input status querying, input ADC querying, time setting, enablement/disablement of the addressable detector test mode, testing addressable unit indication, clearing unsent outgoing messages, printing event log.

Out of box, the S2000M has "1234" PIN code stored under number **2** with the **255 All Functions** access level.

An authentication success generates the **User Authentication** event. An unauthorized access attempt is indicated by access deny events and the Fault sound signal. Possible indications are as follows:

Wrong Code: wrong code entered (PIN or token);

Access Denied: a user entering code's privileges are insufficient for requested actions.

The S2000M is protected from PIN guessing: after entering a wrong code 3 times, the keypad will be locked for 30 seconds with the **Guessing** message generated to indicate this event. Each further entering a wrong code will increase this time.

1.4.7 Manual Control

Paras 1.1.6 – 1.1.14 describe control commands available from S2000M panel, S2000-BKI, S2000-PT, Potok-BKI status indication units, S2000-K and S2000-KS keypads by presenting tokens to readers and sending SMS messages to UO-4S and S2000-PGE devices. The above devices and units support control of partitions and partition groups, whereas the S2000M allows user to control individual elements within a partition. Commands to start the detector test and enable/disable system elements (loops, detectors, and actuator control outputs) can be issued from the S2000M panel only. The exceptions are fire detection inputs (loops and detectors) that can be disabled/enabled by disarming/arming partitions (partition groups) using the S2000M panel, indication units, auxiliary keypads, the Orion Pro Suite software, security tokens, and SMSs.

The user must go through the authentication procedure (see 1.4.6) to get access to control functions (commands). The access to control commands is granted in the following case:

- 1) A user is authorized to control a partition, and
- 2) A unit used to control partitions is authorized to do that with this particular partition.

The first condition is met by associating a user to an "access level" authorizing control of this partition (zone). The access levels granting permissions are created using the PProg utility in the Access Levels tab. The second condition is met by assigning partitions to each unit (device) to be responsible for controlling these partitions. Permissions (rights) are configured in the Control Association in the PProg utility. This tab is also used for assigning the S2000M or S2000-K to a reader.

When control commands are issued from S2000M and S2000-K, the authentication is based on a PIN entered from a keyboard. The S2000M and S2000-K can be associated with readers. In this case, authentication is taken place via a reader, whereas control is provided via S2000M and S2000-K. The control procedure is as follows: enter a PIN (or present a token) to a relevant reader, select a partition, and select a control command.

The control procedure initiated from S2000M and S2000-K depends on selected Control Style for the access level. If the **Show Status before Control** style is selected, the S2000M and S2000-K will show the partition status when the PIN Code entered or token is presented. A user

can select another partition if he/she has rights to control multiple partitions. Then a control command can be selected. When the command is executed, the S2000M (S2000-K) will show the result. In addition to partition control, the S2000M panel allows control of partition individual elements and use of the **RESET**, **START** and **STOP** buttons for control commands.

In case of the **Immediate Control** style, when a PIN Code is entered to the S2000M, or token is presented to a reader associated with the S2000M, it offers a partition control command to be confirmed by pressing . This control style is quite useful, if a user has permissions to control a single partition only. When such a code will be entered on the S2000-K, the control command will be executed immediately without requesting any confirmation.

When control commands are initiated from indication units, the authentication is provided using a token applied to a built-in reader. The control procedures via indication units are as follows: authentication by presenting a token to the reader of an indication unit and pressing a relevant partition button (S2000-BKI) or partition-relevant command button (S2000-PT, Potok-BKI).

The functions of S2000-PT's and Potok-BKI's buttons are fixed, whereas S2000-BKI buttons are configurable. If you need to have a set of different control function buttons for a partition, you can set several pairs: **Indicator + Button**. If a unit is installed in an area accessed by authorized persons only, the control functions can be accessed without presenting a token to the reader. For this purpose, a PIN code with assigned permissions should be added to the unit configuration to control its partitions. In this case, the control style must be Show Status before Control.

Using a reader connected to the controller (input/output device) or S2000-BKI unit, a user can control only one partition or partition group. It is reasonable to configure rights and permissions in a way that grants a user with permissions to control a single partition (or partition group) from the given reader (unit). It should be also taken into account, that only arming and disarming commands are available for this purpose. The control process depends on what is selected for the Control Style parameter in the PProg application. If the Show Status before Control style is selected, the first presentation of a credential to the reader will cause to display the current status of the partition, further credential presentation initiates the arming control command, if a partition is in the disarmed status; or disarming, if it is in the armed, alarm, or fault status. The command process is indicated by the reader buzzer, the partition status is indicated by an LED indicator. A user quits the system automatically after being idle during 20—30 seconds (depending on a unit). If the Immediate Control style is selected, the control command will be initiated immediately after presenting a token. That may be quite useful if a partition status is indicated by the S2000-BI devices.

1.4.8 Automatic and Manual Control of Actuating Devices

The S2000M can control the following actuating devices (appliances):

- Visual and audible alarms, and utility systems via outputs of S2000-KPB, S2000-SP2 mod.02 and unused outputs of alarm panels that can monitor actuator circuits for open and short faults;
- Vent dampers via the S2000-SP4;
- Alarm, Fire, Activation (Activated), Fault, Armed, Disarmed and other signal outputs via S2000-SP1 and S2000-SP2 units (for the Alarm and Fault system general outputs, the S2000-SP1 is recommended);
- Voice alarm devices via the Rupor units.

Note: Vacant outputs are outputs of a unit that are not controlled locally by the unit itself.

The S2000M supports three output control approaches:

- 1) Outputs transmitting Fire, Start/Activation, and Fault signals
- 2) Outputs controlled by standard control programs
- 3) Outputs controlled by scenarios

1.4.8.1 System Outputs: Fire, Start/Activation and Fault

These are set by association of outputs with specific types: General Fire, General Activation and General Fault. The Status of a general output is defined by the states of all S2000M-controlled elements included in a partition. The logic of the system outputs is the following:

- The Fire output circuit is closed, if at least one of the S2000M-controlled elements has a Pre-Alarm, Fire or Fire2 status. The output is normally open.
- The Start output is closed if at least one of the elements has a **Discharge Signal, Extinguishant Released, Voice Alarm Activated, Output Activated, or Release Failed** status. The output is normally open.
- The Fault output is in the closed position, if there are no faulty elements. It goes in the opened position when a fault or communication fault has occurred.

1.4.8.2 Standard Control Programs

Standard control programs are used for automatic control of outputs as conditioned by status of the assigned monitored elements: Inputs (loops, addressable detectors), monitored outputs, "unit status", and notification routing links. The association between an output and monitored elements is created by assigning the output to a partition containing these elements. An output control action is initiated by event affecting an associated partition status. The status of a partition is the set of states of all elements included in the partition. The status is changed when an included element is changed providing there are no other elements already having the same status. For example, the first Alarm in a partition results in the Alarm status in the partition, which initiates control action in respect to the outputs having the Alarm status in the control program conditions. The Alarm of another element of this partition will neither change its status, nor reinitiate output control actions.

A control program determines output behavior as a response to the status of an assigned element. Table 5 describes 57 standard programs supported by the S2000M. Each control program (see Table 5) is a sequence of conditions. An output control condition is satisfied, if at least one condition-assigned element has a conditioned status (All element states are described in Appendix D). If there are no such elements, the condition is not satisfied. The conditions are checked starting from the first condition, the one with the highest priority in the program. If the condition is not satisfied, the next lower priority condition will be checked, and so on. The last condition of the program defines the initial (inactive) status of the output, if no condition of a higher priority is satisfied. If a condition is satisfied, the output will be operated (controlled) as specified in its control parameters. Conditions may have the following control parameters: a command (Turn ON, Turn OFF, Blink, Turn ON for a Time, Turn OFF for a Time, and Blink for a Time), *blinking* type, and a *delay action* sign. Each output has individually configurable parameters such as Activation Delay and (Control) Action Time parameters.

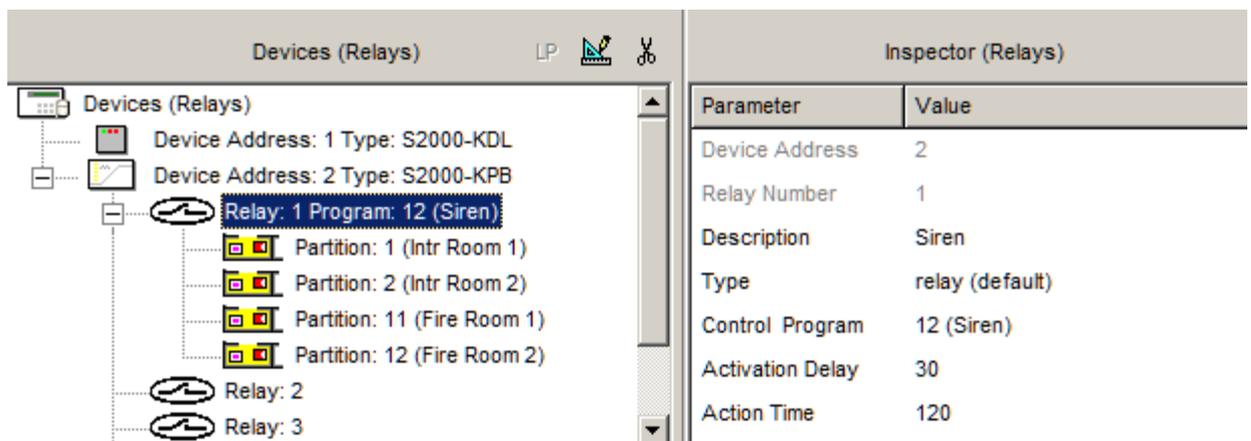
Control Action Time defines the operation duration of control program such as Turn On for a Time, Turn Off for a Time, and Blink for a Time. When this time ends an output returns to its inactive (initial status). The control program duration (control action time) can be unlimited if this parameter value is set as 8,191.875 seconds (maximum possible value for this parameter). If control action time is not restricted, the output will be in the active position as long as the condition is effective. The (Control) Activation Delay parameter defines the delay period before control action if the program condition requires a delayed control action.

Each control program can be initiated manually. If controlled manually, an output is activated by the first condition of the program. Example, the output controlled by **Program 1 TURN ON** is activated without a delay when controlled (activated) manually, and the output controlled by **Program 2 TURN OFF** is deactivated without a delay in case of manual control. When manual abort is activated, the output is switched to the initial position (inactive status). The initial status of **Program 1 Turn ON** is the **OFF** position; the initial status of **Program 2 Turn OFF** is the **ON** position.

The logic of automatic control with Activation Delay and Action Time options depends on a control program condition. The output will be activated with a set delay and for a set time, when a condition- specified status appears in the partition assigned with the output; when the control action time ends, the output will come back to the initial status: OFF, if it is switched on for a time, or ON, if it is switched off for a time. The output will be activated again (with a delay and for a set time) if the following occurs: 1) another status specified in the condition appears in the partition; 2) a specified condition appears in another partition associated with the output. Event not affecting the partition status (e.g. Alarm from an input, if there is Alarm on other inputs of the partition) will not activate recurrently such outputs. If the active condition of the program is changed because of a higher priority condition (as a result of alarm reset or recovery after failure) the output will be switched to the status where it is expected to be when the delay time and control action time ends (for the **Turn On for a Time** commands it is the OFF position, for the **Turn On** commands it is the ON position).

The associations of outputs with partitions, control programs, activation delay and control action time are defined during configuring the S2000M panel (see para 2.3.4). Any output (totally up to 256) can be associated with up to 51 partitions.

Further, here is an example of how **Program 12 (Siren)** controls an output associated with intrusion and fire partitions. The relay settings in the PProg utility would be as follows: Partitions 1 and 2 are intrusion detection; Partitions 11 and 12 are fire detection; activation delay is 30 seconds, and (control) action time is 120 seconds.



Parameter	Value
Device Address	2
Relay Number	1
Description	Siren
Type	relay (default)
Control Program	12 (Siren)
Activation Delay	30
Action Time	120

When an addressable detector (loop) of Partition 1 initiates the Alarm signal, Output 1 of Device 2 is switched ON for a set period of time (120 sec) with a delay (30 sec) as specified in Table 5. When the activation delay time (30 sec) and action time (120 sec) end, the output is switched OFF. When another detector (loop) of Partition 1 initiates Alarm, Output 1 will not be activated again since this event does not affect the status of Partition 1. However, when the Alarm signal is received from Partition 2, the output will be activated again (with a delay). Further, if a fire detector of Partition 11 initiates a Fire signal, the output will be activated for 120 sec after a 30s delay in the pulsing mode as **ON for 1.5 sec-OFF for 0.5 sec**. This is due to the higher priority of the Fire control condition over the Alarm control condition. The Fire signal from another detector of Partition 11 will not cause second activation of the output, but in case of the **Fire2** signal, the output will be immediately activated (without any delay) for 120 seconds in the intermittent mode as **ON for 1.5 sec-OFF for 0.5 sec** (the first and highest priority condition will be satisfied). After reset of **Fire** and **Fire2**, the program returns to the condition of control by the Alarm signal in Partitions 1 and 2. But the Alarm control condition includes activation for a set time (**Turn On for a Time** command), so that the output will be off (it corresponds to the status of an output activated by the **Turn On for a Time** when a control action time ends). If a control action time is set as "unlimited" (8,191.875 sec) in the relay settings, the relay will be activated (ON) without any delay in the same situation (when returning to the Alarm control condition).

Table 5 **Standard Output Control Programs**

Program No.	Program Name	Description
1	Turn ON	Turn on immediately in case of manual activation; Turn on immediately or with a preset delay ¹⁾ in case of Fire2 ; Turn on after a preset delay in case of Alarm, Fire, or Flooding Alarm events; Turn off if no elements have such states
2	Turn OFF	Turn off immediately in case of manual activation; Turn off immediately or after a preset delay ¹⁾ in case of Fire2 ; Turn off with a preset delay in case of Alarm, Fire, or Flooding Alarm ; Turn on if no elements have such states
3	Turn ON for a Time	Turn on immediately for a set period of time in case of manual activation; Turn on immediately or after a preset delay for a set period of time in case of Fire2 ; Turn on for a set period of time after a specified delay in case of Alarm, Fire Flooding Alarm ; Turn off upon the end of a control action time if no elements have such states
4	Turn OFF for a Time	Turn off immediately for a set period of time in case of manual activation; Turn off immediately or after a preset delay for a set period of time ¹⁾ in case of Fire2 ; Turn off for a set period of time after a specified delay in case of Alarm, Fire Flooding Alarm ; Turn on upon the end of control action time if no elements have such states

Program No.	Program Name	Description
5	Blink (OFF is Initial Position)	Turn on immediately in the intermittent mode of 0.5sec On - 0.5sec Off in case of manual activation; Turn on immediately or with a set delay in the intermittent mode of 0.5sec On - 0.5sec Off in case of Fire2 ; Turn on with a set delay in the intermittent mode of 0.5sec On - 0.5sec Off in case of Alarm, Fire, or Flooding Alarm ; Turn off, if there are no elements with such states
6	Blink (ON is Initial Position)	Turn on immediately in the intermittent mode of 0.5sec On - 0.5sec Off in case of manual activation; Turn on immediately or with a specified delay in the intermittent mode of 0.5sec On - 0.5sec Off in case of Fire 2 ; Turn on with a set delay in the intermittent mode of 0.5sec On - 0.5sec Off in case of Alarm, Fire, or Flooding Alarm ; Turn on steady, if there are not elements with the above states
7	Blink for a Time (OFF is Initial Position)	Turn on immediately for a set period of time in intermittent mode of 0.5s On - 0.5s Off in case of manual activation; Turn on immediately or with a specified delay for a set period of time in intermittent mode of 0.5s On - 0.5s Off in case of Fire 2 ; Turn on with a specified delay for set period of time in the intermittent mode of 0.5sec On - 0.5sec Off in case of Alarm, Fire, or Flooding Alarm ; Turn on steady, if there are not elements with the above states
8	Blink for a Time (ON is Initial Position)	Turn on immediately for a set period of time in intermittent mode of 0.5s On - 0.5s Off in case of manual activation; Turn on immediately or with specified delay for a set period of time in intermittent mode of 0.5s On - 0.5s Off in case of Fire 2 ; Turn on with a specified delay for set period of time in the intermittent mode of 0.5sec On - 0.5sec Off in case of Alarm, Fire, or Flooding Alarm ; Turn off, if there are no elements with the above states
9	Lamp	Turn on in the intermittent mode of 0.5s On - 0.5s Off in case of Fire2, Fire, Fire Pre-Alarm, Alarm, Lobby Alarm, Flooding Alarm, or Alarm Failed ; Pulsing (0.25s On - 1.75s Off) in case of any fault ²⁾ ; Turn On in case of Armed Input; Otherwise, Off
10	Alarm Output 1	Turn off (open), if at least one element has an alarm status (Fire2, Fire, Fire Pre-Alarm, Alarm, Lobby Alarm, Flooding Alarm), or fault status ²⁾ except for power faults, or if any input has Failed Arming or Disarmed status, or in case of communication fault between a relay expansion module ³⁾ and the S2000M unit; Otherwise, On (close)
11	ASPT	Turn on (Activate) with a set delay for a set period of time in case of Fire2 or manual activation, and if the partition has no inhibiting conditions: Auxiliary Input Alarm, Output Disabled, Output Open-Circuit Fault, Output Short-Circuit Fault. When occurred, an inhibiting condition will turn the output off. The output will be also disabled upon the end of program runtime. The output will be again ON with the delay if the inhibiting condition is removed while the Fire 2 status is still active

Program No.	Program Name	Description
12	Siren	Turn on (Activate) for a set period of time with the sequence of 1.5s On - 0.5s Off without a delay in case of Fire2 or manual activation; Activate with a delay for a set period of time in the mode of 1.5s On - 0.5s Off in case of Fire ; Turn on with a delay for a set period of time in the mode of 0.5s On - 1.5s Off in case of Pre-Alarm ; Turn on steady with a delay for a set period of time in case of Alarm ; Turn on immediately steady for a set period of time in case of Flood Alarm ; Turn off upon the end of control runtime if no elements have the above states
13	Fire Output	Turn on (close) in case of Fire 2, Fire, Fire Pre-Alarm ; Otherwise, turn off (open)
14	Fault Output	Turn off (open) in case of a fault ²⁾ , Arming Failed or lost communication with the S2000M ³⁾ , otherwise Turn on (closed)
15	Fire Lamp	Blink (0.5s On – 0.5s Off) in case of Fire 2, Fire, Fire Pre-Alarm, Alarm, Lobby Alarm or Arming Failed ; Blink (0.25s On – 1.75 Off) in case of Fault ¹⁾ ; Turn On if all outputs are Armed and no one is Disarmed (Disarmed) Otherwise, turn off
16	Alarm Output 2	Turn off (open), if any of the elements has an alarm status (Fire2, Fire, Pre-Alarm, Alarm, Lobby Alarm, Flooding Alarm), or in case of any fault ¹⁾ except for power faults, or if any input has the Failed Alarm or Disarmed status; Otherwise, turn on
17	Turn On for a Time before Arming	Turn on for a set period of time, if Arming Delay occurs in a partition; Turn off upon the end of control runtime or if there are no elements with the Arming Delay status
18	Turn Off for a Time before Arming	Turn off for a set period of time, if Arming Delay occurs within a partition; Turn on upon the end of control action or if there are no elements with the Arming Delay status
19	Turn On for a Time upon Arming	Turn on for a set period of time in case of Armed or Flood Detector Normal status within a partition; Turn off upon the end of control action or if there is no Armed or Flood Detector Normal status within a partition
20	Turn Off for a Time upon Arming	Turn off for a set period of time if Armed or Flood Detector Normal status occurs in a partition; Turn on upon the end of control runtime or if there is no Armed or Flood Detector Normal status in a partition
21	Turn On for a Time upon Disarming	Turn on for a set time period if an element has been disarmed within a partition; Turn off upon the end of control action or if there is no disarmed elements
22	Turn Off for a Time upon Disarming	Turn off for a set time period if a partition element is disarmed; Turn on upon the end of control action or if there is no disarmed elements
23	Turn On for a Time if Arming Failed	Turn on for a set time period in case of Arming Failed within a partition Turn off upon the end of control action or if there is Arming Failed status within a partition

Program No.	Program Name	Description
24	Turn Off for a Time if Arming Failed	Turn off for a set time period in case of Arming Failed within a partition Turn on upon the end of control action or if there is an Arming Failed status within a partition
25	Turn On for a Time upon Auxiliary Alarm	Turn on for a set period of time if the Auxiliary Input Activated status occurs in a partition; Turn off upon the end of control action or if there is no Auxiliary Input Activated within a partition
26	Turn Off for a Time upon Auxiliary Alarm	Turn off for a set period of time in case of the Auxiliary Input Activated status occurs in a partition; Turn on upon the end of control runtime or if there is no Auxiliary Input Alarm within a partition
27	Turn On upon Disarming	Turn on in case of a disarmed element; Otherwise, turn off
28	Turn Off upon Disarming	Turn off in case of a disarmed element; Otherwise turn on
29	Turn On upon Arming	Turn on, if there is an armed element (Armed or Flood Detector Normal status); Otherwise, turn off
30	Turn Off upon Arming	Turn off, if there is an armed element (Armed , Flood Detector Normal); Otherwise, turn on
31	Turn On upon Aux Activation	Turn on in case of Aux Input Activated ; Otherwise, turn off
32	Turn Off upon Aux Activation	Turn off in case of Aux Input Activated ; Otherwise, turn on
33	ASPT-1	Turn on for a set period of time with a set delay in a case of the Fire status (a Fire input or fire detector gone into the Fire or Fire2 status) or manual activation within a partition (zone) provided that no output inhibiting conditions exist in a output-associated partition: Aux Input Activated; Input Communication Fault, Input Short-Circuit Fault, or Input Open-Circuit Fault status. When inhibiting conditions are appeared, the output will be turned off. When inhibiting conditions are removed, the output will be turned on again with a delay countdown restarted if the Fire status still active
34	ASPT-A	Turn on for a set period of time with a set delay in a case of the Fire2 status or manual release command in a partition (zone), providing that no inhibiting condition exists in a partition associated with the output: Aux Input Activated; Input Communication Fault, Input Short-Circuit Fault, Input Open-Circuit Fault . When inhibiting conditions are appeared, the output will be switched off. When inhibiting conditions are removed, the output remains in the Off status
35	ASPT-A1	Turn on for a set period of time with a set delay in a case of the Fire or Fire2 status, or a manual release command in a partition (zone), providing that no inhibiting states exist in a output-associated partition: Aux Input Activated; Input Communication Fault, Input Short-Circuit Fault, Input Open-Circuit Fault . When inhibiting conditions are appeared, the output will be switched off. When inhibiting conditions are removed, the output remains in the turn-off position

Program No.	Program Name	Description
36	Turn On if Level Increased	Turn on for a set period of time when temperature goes above Temperature Increase Limit (Temperature Increased), or if humidity or tank water level goes above a defined high limit (Level Increased), otherwise, turn off
37	Turn On if Level Decreased	Switch on for a set period of time when temperatures goes below Temperature Decreased Limit (Temperature Decreased), or if humidity or tank water level drops below a defined lower level (Level Decreased status); otherwise, turn off
38	Turn On if Pre-Activation Delay	Turn on for a set period of time, in case of pre-activation delay before issuing a pulse (signal) to activate fire extinguishing installation or other fire protection equipment (Pre-Discharge Delay, Voice Alarm Delay, Output Pre-Activation Delay, or Emergency Hold status occurs within the partition); Turn off upon the end of control action time or if there is no Pre-Discharge Delay, Voice Alarm Delay, Output Pre-Activation Time, or Emergency Hold status at the moment
39	Turn On if Activated	Turn on for a set period of time when a fire extinguishing installation or other fire protection equipment is activated (the Discharge Signal, Voice Alarm Activated, or Output Activated occurs within a relevant partition); Turn off when then control action ends or there is no Discharge Signal, Voice Alarm Activated, or Output Activated status at the moment
40	Turn On if Extinguishant Released	Turn off for a set period of time if a successful discharge signal is confirmed (When Extinguishant Released appears in a relevant partition); Turn off upon the end of control runtime or if there is no Extinguishant Release status
41	Turn On if Extinguishant Release Failed	Turn on for a set period of time in case of extinguishant release failure (Extinguishant Release Failed has been received), Turn off upon the end of control time or if there is no Extinguishant Release Failed status
42	Turn On if Auto Mode Enabled	Turn on for a set period of time if case of the Auto Mode On status within a partition Turn off upon the end of control action or if there is no the Auto Mode Off status.
43	Turn Off if Auto Mode Enabled	Turn off for a set period of time in case of the Auto Mode On status within a partition; Turn on upon the end of control runtime or if there is no Auto Mode On
44	Turn On if Auto Mode Disabled	Turn on for a set period of time in case of the Auto Mode Off status within a partition; Turn off when the control action time ends or if there is no Auto Mode Off status
45	Turn Off if Auto Mode Disabled	Turn off for a set period of time in case of the Auto Mode Off status within a partition; Turn on at the end of control runtime or if there is no Auto Mode Off
46	Turn On if Actuator in Operating Position	Turn on for a set period of time if an Actuator goes into the Operating Position ; Turn off when the control action time ends or if there are no Actuators in Operating Position

Program No.	Program Name	Description
47	Turn Off if Actuator in Operating Position	Turn off for a set period of time if an Actuator goes into the Operating Position ; Turn on when the control time is out or if there are no Actuators in Operative Position
48	Turn On if Actuator in Initial Position	Turn on for a set period of time if an Actuator goes into the Initial Position ; Turn off when the control action time ends or if there are no Actuators in Initial Position
49	Turn Off if Actuator in Initial Position	Turn off for a set period of time if an Actuator goes into the Initial Position ; Turn on when the control time is out, or if there are no Actuators in Initial Position
50	Turn On if Fire2	Turn on for a set period of time in case of Fire2 in a relevant partition; Turn off when a control action ends or if there are no partitions with the Fire2 status
51	Turn Off if Fire2	Turn off for a set period of time in case of Fire2 within a relevant partition; Turn on when a control action time ends or if there are no partitions with Fire2 status
52	Blink if Fire2 (OFF Is Initial Position)	Turn on in the intermittent mode (ON for 0.5 sec, OFF for 0.5 sec) for a set period of time in case of Fire2 within a relevant partition; Turn off when the control action time ends or there is no Fire 2 in any partition
53	Blink if Fire2; ON Is Initial Position	Turn on in the intermittent mode (ON for 0.5 sec, OFF for 0.5 sec) for a set period of time if Fire2 occurs in a relevant partition; Turn off the control runtime is out, or there is no Fire2 in any partition
54	Turn On If Attack	Turn on for a set period of time in case of Panic Alarm, Duress or manual activation; Otherwise is off
55	Turn Off If Attack	Turn off for a set period of time in case of Panic Alarm, Duress or manual activation; Otherwise turn on
56	Lamp 2	Turn on in the intermittent mode w/o a delay (ON for 0.5 sec, OFF for 0.5 sec) in case of Fire2, Fire, Fire Pre-Alarm, Alarm, Lobby Alarm, or Flood Alarm ; Turn on in the intermittent mode w/o a delay (ON for 0.5 sec, OFF for 0.5 sec) for 60 seconds in case of Failed Arming ; Turn on in the intermittent mode (ON for 0.25 sec, OFF for 0.25 sec, ON for 0.25, Off for 3.25 sec) w/o a delay during an Arming Delay ; Turn off in case of Disarmed ; Turn on for 10 sec w/o a delay when input or detector has been Armed ; Otherwise, turn off

Program No.	Program Name	Description
57	Siren 2	Turn on in the intermittent mode (ON for 1.5 sec, OFF for 0.5 sec) for a set period in case of Fire2 or manual activation; Turn on with a set delay in the intermittent mode (ON for 1.5 sec, OFF for 0.5 sec) for a set period of time in case of Fire ; Turn on with a delay in the intermittent mode (ON for 0.5 sec, OFF for 1.5 sec) for a set period of time in case of Pre-Alarm ; Turn on steady with a set delay for a set period of time in case of Alarm , or Flood Alarm ; Turn off in case of Disarmed, Failed Arming or Arming Delay Turn on immediately for 0.25 sec upon arming; Otherwise, turn off

- 1) The control action delay is defined by the **Ctrl w/ Delay if Fire2** parameter (see 3.17.3);
- 2) The complete list of faults is provided in Appendix D. The faults include the following:
 - Communication faults with addressable units, detectors, expansion modules, and actuators (appliances);
 - Inputs (loops) and addressable detector faults: Input Open-Circuit and Short-Circuit Faults, Fault, Configuration Error, Noise, and Tampering;
 - Output faults and actuator faults: Output Open-Circuit Fault, Output Short-Circuit Fault, Actuator Fault, Actuator Failure;
 - Faults and failures related to system units (controllers) : Tamper, PL Short-Circuit Fault, Polling Loop Overvoltage;
 - Power supply faults: Power Supply Failure, Mains Failure, Battery Failure;
- 3) S2000M communication is monitored using S2000-SP1 unit.

1.4.8.3 Control Scenarios

The **Control Scenarios** serve as complementary tools to control relay outputs, inputs (loops), voice alarms, access control modes of the S2000-2 and S2000-4 controllers, and device inputs. There are four types of control scenarios: relay output, voice alarm, access control, and input (loop) scenarios.

The relay output scenarios are practically the same as standard control programs but offer more flexibility such as customizable conditions and relevant control commands. The scenarios can be used to complement the standard programs (see 1.4.8.2) when their functions are not enough. The voice alarm scenarios are used to control Ruper-based public address systems. They can be used to control voice alarms and evacuation systems at a protected site. The access control scenarios are used to instruct the S2000-2 and S2000-4 controllers to turn on the free access mode (without authentication by tokens), and/or to restore the normal access mode (authentication by tokens). The access control scenarios turn on automatically free access at access points on evacuation routes when emergencies occur. The input control scenarios can issue the following control commands to inputs: arming/disarming, enabling/disabling auto extinguishing mode (Auto On/Auto Off), discharge/start and abort/stop commands, and enabling/disabling the detector test mode. These scenarios can be used to control inputs and addressable detectors (arming/disarming, enabling/disabling Test Mode), fire protection devices (Auto On and Auto Off extinguishing modes) using buttons and switches monitored by aux inputs.

The control scenarios function as a response to status changes in the condition-specified partitions (zones). The set of states of all elements included in the partition is called a partition

total status. For example, if a partition includes the **Input** element with the **Fire** status, and some **Inputs** with the **Armed** status, the **Total** status of the partition is "Fire and Armed ". The Total status of a partition is changed when an included element changes its status, if there are no other elements with the same status. For example, the first **Alarm** in the partition results in the **Alarm** status in the partition that causes initiation of relevant scenarios. The Alarm of another element in this partition neither changes its status nor launches a scenario.

A control scenario includes the list of *Steps*. The Step is a combination of a condition and relevant control command with parameters. Each scenario can consist of up to 254 **steps**. When scenarios run up, all steps are checked one by one starting from the first step (one with the highest priority) until a satisfied condition step is found. The found satisfied condition will define control action parameters. Access control and relay control scenarios have parameters for *initial* (inactive) mode, which define control parameters if no scenario condition is true. The initial status of voice alarm scenarios is always **OFF**.

A scenario step condition consists of two parts: a permitting condition (launch condition) and an inhibiting condition. The entire condition is true when the permitting condition is true while the inhibiting condition is false. A step can include a permitting condition alone (without an inhibiting condition). In this case, a scenario condition is satisfied when the permitting condition is true. Permitting and inhibiting conditions are assigned in the following way: one defines one or more partitions and one or more states. The permitting condition of a relay control scenario, voice alarm scenario, or access control scenario is true, if any of partitions specified in the condition has any of states specified in the condition. The permitting condition of the input (loop) control scenarios have some peculiarity and described separately.

A scenario of any type is launched by a partition status change, if this status is evolved in its conditions (permitting and inhibiting). First, the step has to be found, where the entire condition is satisfied (launch condition is true, but inhibiting condition is false). The search is carried out from the first step toward the last one, so the steps with a lower number have higher priority. The found step includes a control command and its parameters. The further action depends on the type of scenario, so that the actions are described separately for each type: Relay, Voice Alarm, Access Control, and Inputs (loops):

1. Relay Control:

- A relay is operated (activated) with definable parameters (command, delay, action time, and blinking pattern), if a status occurred in a partition is specified as permitting condition in the scenario step. When other states (specified as permitting conditions) appear in the partition, the relay control command will be initiated again (this is relevant for relays controlled by "...for a time" commands, with time-limited control actions). Also, the control command will be initiated again, if the specified states appear in other partitions of the permitting condition;
- A relay operation is the same when the change of a partition status makes an inhibiting condition ineffective;
- A relay is operated (activated) immediately, if a scenario step is changed by an event overriding the previous condition of a higher priority. If a relay has to be operated by a "...for a time" command as defined in step parameters, the relay will be switched over to the status it shall have when a delay and control action time is out.

- No relay control action is initiated, if a partition status change does not result in a condition change;
- If no scenario step is satisfied, a relay switches to the initial position defined by the Initial Control Program and Initial Blinking Pattern parameters (a command is not initiated if a relay is already in the initial position).

Scenario **Steps** have the **Status** parameters that can be *Active* or *Inactive*. When a control command is initiated on condition with the Active status, the **Fire Protection** and **Fire Extinguishing** outputs switch to the **Output Activated** status in case of immediate activation (without delay) or to the **Input Pre-Activation Delay** in case of a delayed activation. Control Scenarios can be assigned to various outputs such as relays, supervised (monitored) outputs, and dampers.

2. Voice Alarm Control:

- If a step changes, a voice alarm activation command is initiated according to the step control parameters. A voice alarm activation command includes the number of a voice alarm scenario (as programmed in the Rupor module, including a preamble and a voiced message), an activation delay, and a control action time.

- If no scenario step is satisfied, the voice alarm is turned off (if it is currently active). The Voice Alarm scenario has internal means to synchronize activation of Rupor devices. These scenarios are assigned to Rupors' output (relay) #1. It is recommended setting these outputs as the Fire Protection Equipment type. When the voice alarm is activated with a delay, the **Output Pre-Activation Delay** status is generated; the immediate activation of the voice alarm will result in the **Output Activated** status.

3. Access Control:

- If a step changes, the access mode control command is initiated;
- If no scenario step is satisfied, an access control command is initiated as defined in Initial Status parameter (only if one changes the access mode, i.e. it is not initiated before);
- Access control scenarios can be assigned to the S2000-4 and S2000-2 controllers.

4. Input Control:

The scenario step condition is satisfied in two cases:

- An event happened in a partition of the permitting condition, which caused a status specified in the permitting condition while the partitions of inhibiting conditions do not have any states specified in the inhibiting condition.
- An event happened in the partition of the inhibiting condition, and this cancelled this condition (there are no inhibiting states in the partitions of the inhibiting condition) and at least one partition of the inhibiting condition has a status specified in the permitting condition.

If the input control scenario step condition is satisfied, the step-specified control command is issued to all inputs with this assigned scenario, and this is the scenario completion. If the condition is not satisfied, the next step condition will be analyzed. In case of the input control scenario, the existence of permitting states in partitions of the permitting condition with the absence of satisfied inhibiting condition does not mean that the current step condition is satisfied and does not stop analyzing the scenario steps, unlike other scenario types.

To make manual control possible for a relay or voice alarm, please add the **Manual Activation** status to launch conditions of relevant scenarios. Manual Activation is a controllable output status, so that it does not require association with partitions. Manual control is allowed only for aux, fire protection, and fire extinguishing outputs. Manual control of the fire protection and fire extinguishing outputs can be provided via an S2000M panel, S2000-PT panel, and

remote control point; the Aux outputs can be controlled manually using an S2000M, S2000-BKI, and remote control point.

1.4.8.4 Fire Protection and Alarm Equipment Activation Events

The S2000M generates activation events depending on the outputs types:

1. Fire Protection Control Outputs. To control fire protection and alarm equipment (fire extinguishing, smoke removal, visual and audible alarm subsystems, etc.) the following outputs are used: **Fire Protection** and **Fire Extinguishing**. When such outputs are manually or automatically activated, the S2000M generates Pre-Activation/Pre-Discharge Delay (unless a zero pre-activation delay is set), and Discharge/Activation. These alarms require the responses of relevant authorized personnel. In case of pre-activation and activation, the S2000M generates the Start/Activation buzzer signal, illuminates general START indicator, and its LCD displays how many zones have activated states including the first zone with activation delay (with time left to activation) or activated. In case of manual abort/deactivation of automatically activated fire protection and alarm equipment, the S2000M generates the Abort/Stop event. The aborted/stopped functions are indicated by the STOP system general LED; the number of zones with aborted/stopped devices is displayed on the LCD, one can view zones with stopped devices as well as stopped devices themselves. Also, S2000-PT units can be used to monitor and control fire protection and alarm outputs.

2. Outputs generating non-alarm events. These outputs include relay outputs set as Auxiliary type, general Fire, Start, and Fault outputs, as well as ventilation and smoke removal control outputs. If such outputs are activated manually or automatically, the S2000M generates the **Operating Position** event, and when the outputs go back to the normal (quiescent) condition it generates the **Initial Position** events. These events are not alarms. Activation of these outputs is not indicated by the individual Start indicator. To indicate such an output status, the S2000-BKI unit can be used.

3. Outputs not generating activation events. These outputs belong to a relay type (by default).

2 Preparing to Install

2.1 Installation Safety Measures

The panel design meets the electrical and fire safety requirements according to GOST 12.2.007.0-75 and GOST 12.1.004-91, and provides its fire safety in case of malfunctioning and misuse according to GOST 12.1.004-91.

Installation, connection, and maintenance shall be provided for the de-energized panel by qualified personnel only. The panel does not contain circuits exposing hazardous voltage; however the hazardous voltage can come to the panel terminals from external connections due to installation faults and lightning discharges. Installation work is not allowed during the storm lightning.

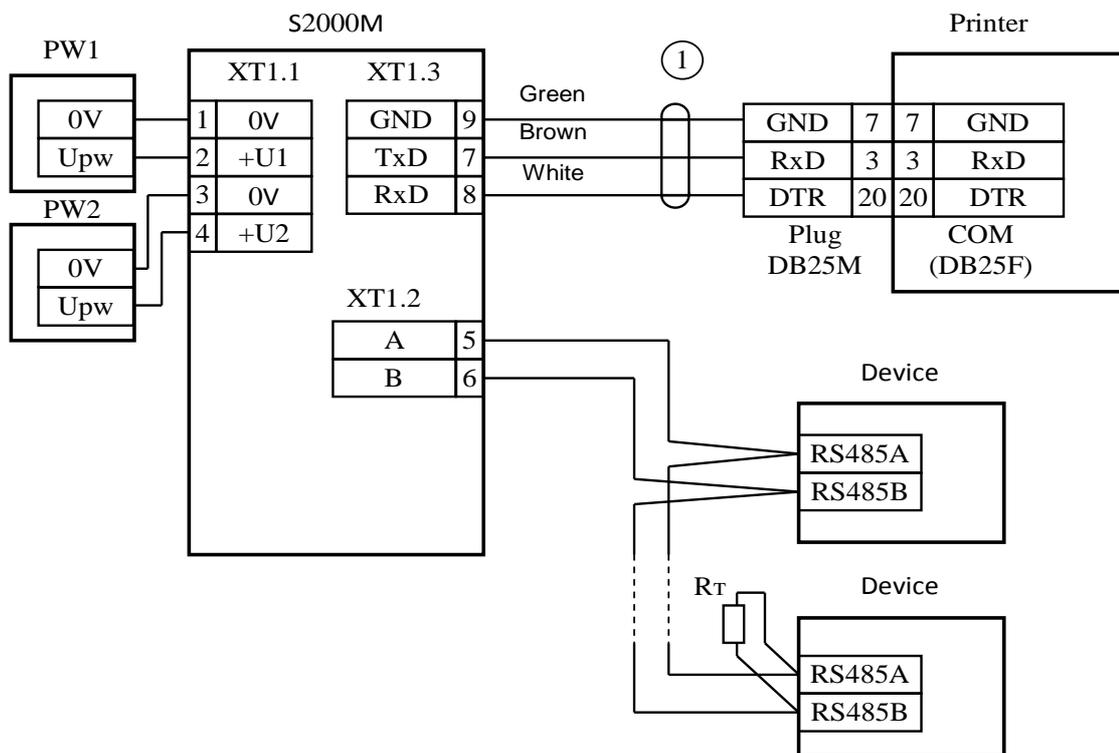
2.2 System Installation

2.2.1 Panel Installation

The panel shall be installed in protected areas in easy-for-use locations. The installation environment shall be dry and clean. It is not recommended installing the panel in places where it can be exposed to the direct sunlight. Usually, it is installed on a vertical surface (wall) at height of 1.4-1.5 meter above the floor. To fix the panel, please use the supplied screws. The panel view, dimensions, and installation layouts are provided in Appendix A.

External connections to the panel are completed on the terminal block installed on the circuit board. The diameter of connection wiring conductor shall be 0.5mm (0.2 mm²) at least. The terminal block allows connecting wires of 1.5mm². The primary power cable is connected to **0V** and **+U1** terminals, the secondary power supply cable is connected to **0V** and **+U2** terminals. Terminals A and B are used to connect RS 485 lines A and B. TxD, RxD and GND terminal are used to connect a printer with the RS-232 interface or a personal computer with installed Orion Pro software (usually via an interface converter with galvanic isolation). Cables to connect a printer and Orion Pro are optional. The most used connection scheme is shown in Figure 2.

Warning: The Installation of S2000M shall be carried out when the power supply is turned off and the power supply backup battery is disconnected. Do not allow external connection wires to be contacted with the components on the printed circuit board of the S2000M panel.



S2000M: S2000M Monitoring and Control Panel;
Device: RS485-Connected Units of Orion Integrated Security System
Printer: a printer with RS-232 interface (e.g. Epson LX-300 or LX-300+)
1: Panel-Printer cable (ACDR. 685611.015)
R_T: RS-485 Termination Resistance;
PW1: Primary power supply (RIP-12 or RIP-24);
PW2: Secondary power supply.

Figure 2. S2000M Most Common Connection Diagram

2.2.2 Recommendations for RS485 Connection

To connect addressable units and panel to RS485 interface, please connect lines A and B of RS485 interface to Terminals A and B of units and panel. Connection between devices within the RS485 interface is provided using the BUS connection where all devices are connected by two-wire cable (conductors A and B) with termination resistors placed at both ends (Figure 3). Termination resistors are used to provide line impedance matching. They are installed in the first and last devices on the line. The S2000M can be installed in any point of the RS485 line. If the S2000M is the first unit on the line, no termination resistor is required (it is built in the panel). Most addressable units have built-in termination resistor of 620 Ohm that can be turned on by inserting jumpers on the panel's motherboard. The jumpers are inserted by default; they must be removed in all units except for the first and the last ones on the RS485 line. In case of S2000-PI converter, the termination impedance for each RS485 output is turned on by switches. S2000-K and S2000-KS units do not have such termination impedance and switches. If a device of such type is first or the last one on RS485 line, a supplied resistor of 620 Ohm must be installed between terminals A and B. If RS485 line is wired by a low-loss cable (wire cross-section of 0.5 mm² at least), acceptable termination resistance is lower than 620 Ohm to 120 Ohm. The resistors of 0.5 W to 1W installed between A and B terminals of the first and last device on the line can be used as termination resistors. Stubs should be as short as possible to avoid signal degradation. Practically allowed stub length is no longer than 50 meters. Termination resistors are not installed on individual stubs. The S2000-PI interface converters must be used for branching RS485 line as shown in Figure 5.

In case of a distributed system where the S2000M panel and devices are connected to the same RS485 line but powered from different power supplies, **0V** circuits of all devices and panel shall be interconnected. Ignoring this recommendation may result in an unstable linkage between the panel and devices. If you use a twisted pair cable, one twisted pair can be used as a common circuit. Also, the shield of cable can be used for this purpose **providing that the shield is not grounded**. The circuit diagram showing connection of a panel and devices to RS485 line are provided in Figure 3.

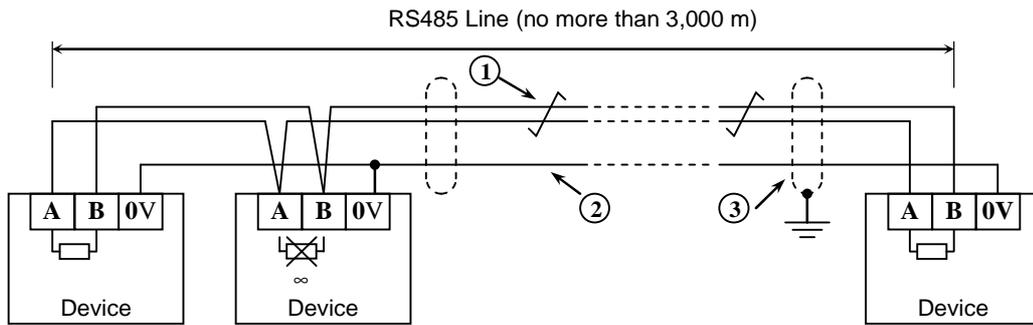
Warning: Usually, the current running over a common conductor is very low. However, if the **0V** circuits of devices or power supplies are connected to different ground buses, the potential difference between the **0V** circuits may cause large current flow over a common conductor. This may cause communication errors or even device damage. Please avoid grounding the **0V** circuits, or if the grounding is necessary, provide single point grounding. Please consider possibilities of crosstalk between **0V** circuit and protective grounding circuit in the equipment of a fire and intrusion protection system. The connection between the panel's **0V** line and protective grounding circuit can occur when a printer or personal computer is connected to the panel. The noise current flow may appear because of leakage between devices' external circuits (RS485, loops, etc.) and ground (usually through building metal structures). The problem may arise in large systems where the panel and devices are located in different buildings and linked with the RS-485 interface. In such systems, RS485 line segments linking buildings must be isolated using the S2000-PI interface converter/repeater with a galvanic isolation.

The maximum operating length of RS-485 line is determined by cable properties and electromagnetic environment at a protected site. If a cable with conductors of 0.2mm^2 (0.5mm diameter) is used, the recommended length of the RS485 line is no longer than 1,200 meters, and in case of 0.5mm^2 the line must not be longer than 3,000 meters. It is strongly recommended using a symmetrical twisted pair cable to increase line tolerance to electromagnetic noise and to reduce noise emission. Such cable must be used when the length of RS485 line is 100 meters or longer. Using a special industrial cable for RS485 transmission lines is not necessary, also other types of symmetrical cable can be used, e.g. cable specifically designed for intrusion detection and fire alarm systems.

A shielded twisted pair cable can be used for RS485 lines in hard electromagnetic environments. The use of such cable can reduce the transmission range because of the cable's higher capacity. The shield must be grounded in one point only (see Figure 3).

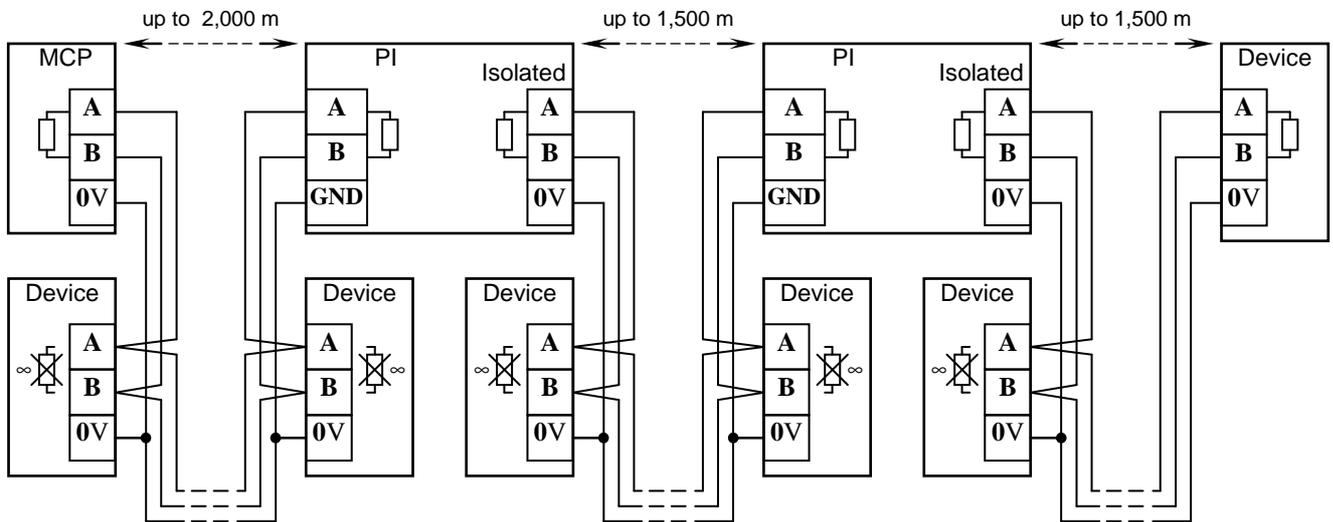
To extend a transmission line, you can use RS-485 repeaters with automatic switch of transmission direction (Figure 4). The S2000-PI converter/repeater with galvanic isolation extends a line up to 1,500 meters and provides galvanic isolation between line segments and turns off automatically short-circuited segments of the RS485 interface. No interconnection is provided between the 0V circuits of line-isolated segments. In addition, isolated devices must not be powered for a common power supply to avoid galvanic coupling via power supply circuits. Make sure that termination resistors are turned on in each segment of the RS485 line: they must be turned on with switchers in S2000-PI repeaters rather than jumpers in devices since the switchers not only turn on matching impedance but provide the RS485 line with shifting voltage needed for proper operations of the S2000-PI repeaters.

The S2000-PI repeaters can be used to connect long stubs to the main RS485 line when building a star-topology transmission system (Figure 5). Up to 127 stubs can be created. The main RS485 line shall be terminated on both ends. Switches of other S2000-PI must be set in position " ∞ ".



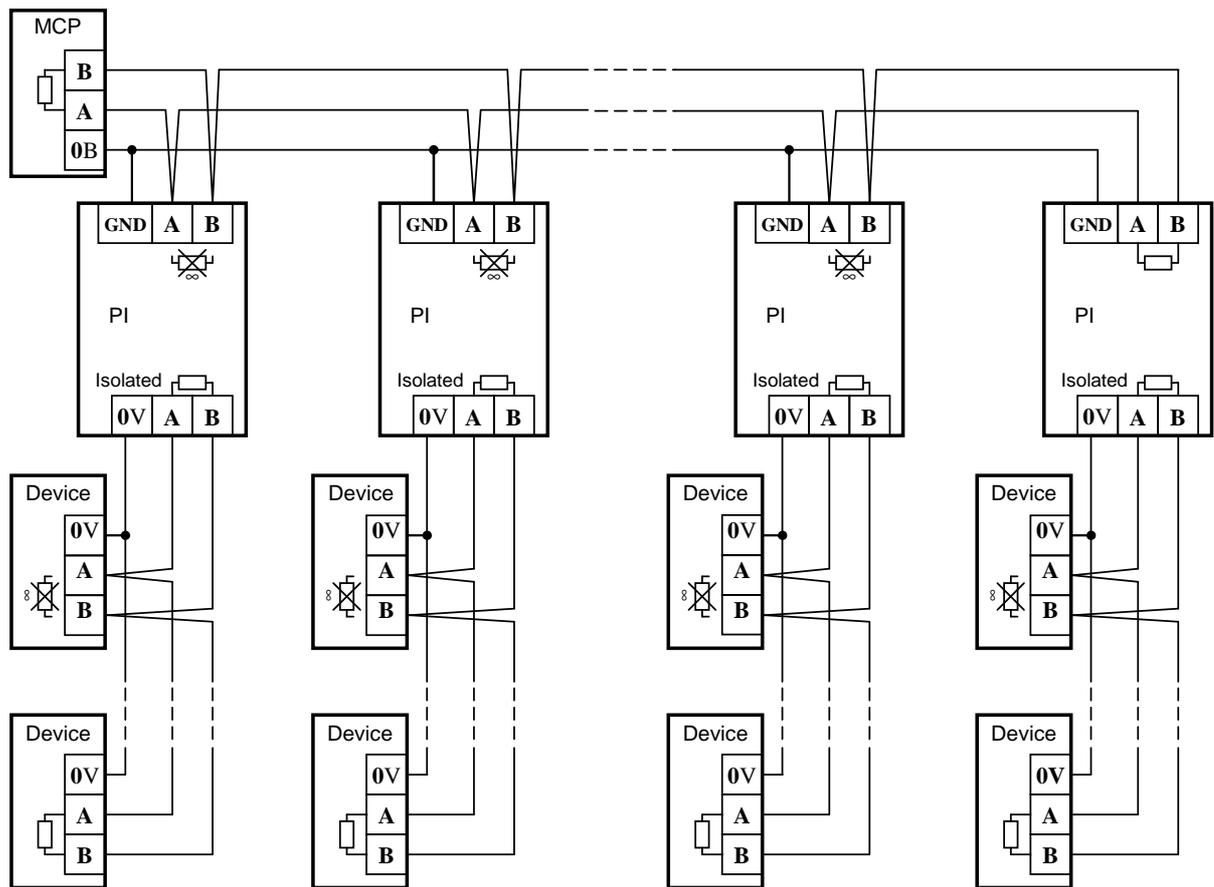
Device: Orion system device supported by the S2000M (up to 127 units) or a single S2000M panel
 1: RS485 signal line (twisted pair);
 2: Potential equalization conductor;
 3: Screen (if a screened cable is used).

Figure 3. Connection to RS485 Line



MCP: The S2000M Monitoring and Control Panel;
Device: Orion system unit;
PI: RS-485 Interface Repeater with galvanic isolation (S2000-PI).

Figure 4. RS-485 Extension with S2000-PI Interface Repeater



MCP: S2000M Panel;
Device: Orion System Device;
PI: RS-485 Interface Repeater with galvanic isolation (S2000-PI).

Figure 5. Star Topology RS-485 Network Based on Repeaters

Each RS485 device connected to the panel shall have a unique network address. This network address is stored in the device's non-volatile memory. The default address is 127. When connecting a device to a panel, this address must be replaced with another unique address. The range of available address is from 1 to 127. To assign address please do the following:

- a) Connect one device to the panel;
- b) When the panel finds the device, assign a personal address to it by an assignment command (see 3.17.2). Addresses are selected from the range of 1 to 127;
- c) Connect another device and assign an address the same way, the address shall be unique and different from one of the first device;
- d) Connect the rest of devices the same way by assigning a unique address to each one.

Sometimes, a device has to be connected to a panel over a digital link (e.g. Ethernet, radio link, fiber-optic). To provide connection between the RS485 interface and a communication link, you can use hardware with a RS232 or RS485 input with the following data transmission parameters: 9,600 bit/s, 8-bit word length, no parity check, and one-stop bit. When RS232output device is used, RS485 signals must be converted to the RS232 signals by a **RS232-RS485** converter automatically detecting data flow direction (S2000-PI). Similarly, the RS232 signal must be converted to RS485 signals. Usually the equipment adds its latency during data exchange. In addition, switching between transmissions and receiving modes can take considerable time. If these latencies exceed an acceptable level, the panel cannot find devices or communications will be unstable. For example, if a driver (device) adds 10ms latency, the panel receives signal only

20ms after the end of polling. With default response timeout, such a device will not be found. To resolve such issues, some RS485 communication parameters are configurable. These parameters include: device response timeouts during polling, in device search process, and after a command, as well as some definable delays before transmission to a device. If equipment-caused distortions include only transmission latencies, it will be enough to increase a device response delay for device search polling. In more challenging cases, if it takes long to switch over between transmitting and receiving modes, response delays for devices and the panel should be increased. The **RS485 Response Delay** parameters are configured using the **UProg** utility, the panel's communication parameters being configured with the **RS485Settings** utility. The **UProg** and **RS485Settings** can be downloaded at: <http://bolid.ru>.

Warning: If all devices are interconnected by the RS485 wired line without additional data transmission hardware, it is strongly recommended using default communications settings.

2.2.3 Preparing for Installation of Addressable Devices connected to S2000-KDL Polling Loop

When a S2000-KDL controller is used in the system, a unique address must be assigned to each addressable device connected to its Polling Loop. Addresses shall be assigned before installation of devices, ignoring this recommendation could make this procedure quite complicated. Addresses can be assigned using either the panel or the **UProg** utility. The process of address programming for detectors and expansion modules is described in 3.17.2.

2.2.4 Connecting Printer to Panel

To be connected to the panel, a printer must comply with the following:

- 1) RS232 interface;
- 2) Support of PC866 symbol coding;
- 3) Printing at least 80 symbols in one row;
- 4) Recommended support of roll paper printing.

Epson-LX300+II, Epson-LX350 are met these prerequisites.

The printer must have the following settings:

Parameter	Values
Interface	Serial or auto
Rate	1,200 bit/sec
Data length (bits)	8 bits
Parity check	No (not available)
Code page	PC 866
Auto Line Feed	Disabled

Please, use ACDR.685611.015 cable to connect a printer to the S2000M. Please follow instructions of Figure 2 to connect a printer. Select **Printer** in the RS-232 output settings (see 3.17.5). The panel displays the **Printer ON** event message during four seconds after turning on the printer or the panel, and the printer starts printing messages, if there is printing paper in printing feeder. Then it will print all previously unprinted messages of the event log. If needed, you can print all messages including already printed ones (see 3.133.18.5).

By default, the panel sends all messages for printing as the default configuration has no partition included but has permission to print events not related to partitions (these partitions are called Free Zones in **PProg**). Elements can be assigned to partitions by **PProg** while programming the

panel. To print messages from these elements, one should permit printing events of their partitions. The same way, one can block printing events from individual partitions. . For example, one can allow printing **Alarms** and **Fires** only excluding all access-related events. Such settings are provided in the **Event Transmission** tab of the PProg utility (see 2.3.6).

The event log can be sent to a PC. The free PKUEventReader utility or a terminal control program such as Hyper Terminal (Windows) can be used for this purpose. With the terminal control program used, the parameters of COM Port will be as follows: baud rate 1,200 bit/s, 8 bit, no parity check. The panel is connected to 9-pin COM Port in the following way: the panel's TxD output to output 2 of a comport connector, RxD output to output 4, GND output to output 5. The panel is configured the same way as for operation with a printer. When configuring events transmission (2.3.6), it is recommended permitting the transmission of all events by partitions and free zones (free elements).

2.2.5 Connecting Panel to Orion Pro Suite Workstation

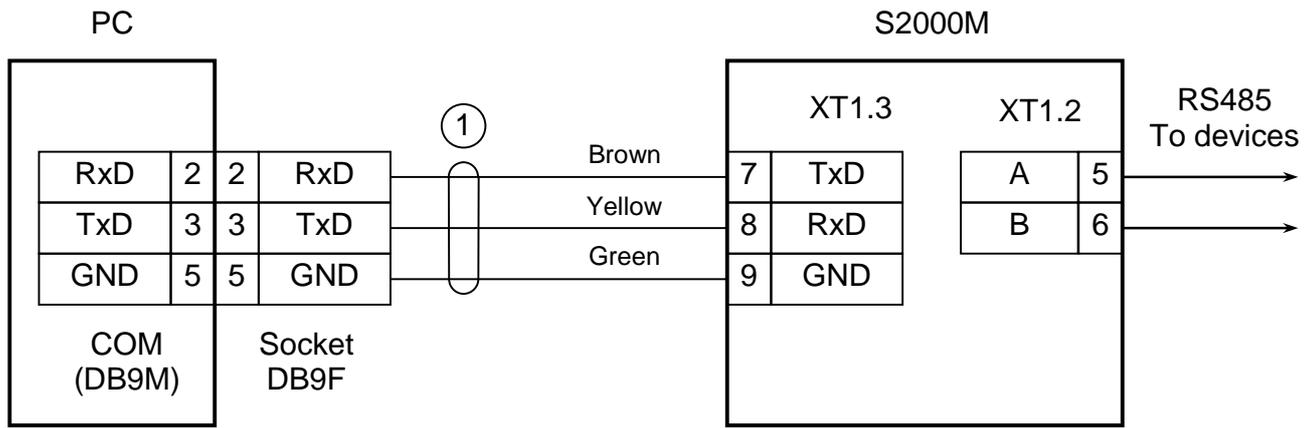
The S2000M's interaction principle with Orion and Orion Pro software systems is as follows:

- 1) The S2000M performs its functions independently from Orion Pro Suite;
- 2) The (workstation) PC with installed Orion Pro polls S2000M panels and receives events. The non-volatile event log (buffer) allows shutting down and restarting Orion Pro without the loss of events (within the buffer volume);
- 3) Orion Pro can control and obtain information from individual modules operating with the S2000M;
- 4) Events and states received from the S2000M are used to display a protected site status.

To operate in the Orion Pro System, please select the Orion **Pro** mode in the RS232 interface settings, then define a panel address for this operation mode, select a required RS232 speed value from the following: 9,600; 19,200; 38,400; 57,600 or 115,200 bps. The panel's RS-232 bit rate must be the same as set in the Orion Pro. The settings of these parameters are described in 3.17.5. Orion Pro connection wiring diagrams are shown in Figure 6 - Figure 9. If a panel is connected to a computer via the S2000-PI interface converters, the bit rate set in interface converters shall be the same as in Orion Pro and the panel.

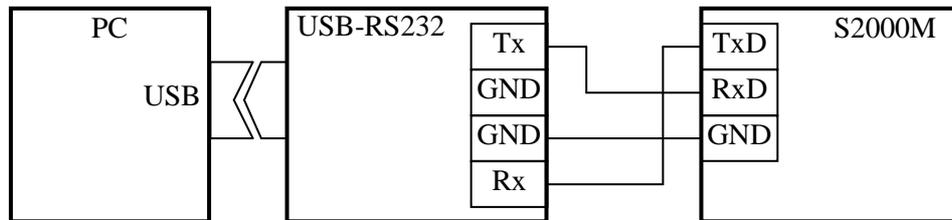
Figure 6 shows the simplest type of one panel connection to the Orion Pro workstation. The drawback of this type: the galvanic coupling of a computer with system devices over the RS232 line. This makes a computer vulnerable to noises that are picked up by device loops and RS485 interface (e.g. during lighting weather), and can lead to the damage of the system operational integrity by parasite current flows over a grounding bus. This kind of connection is not recommended for normal 24/4 application. For normal 24/7 operation, the galvanic isolation (e.g. S2000-PI) is recommended. Figure 7 shows wiring diagram for panel-to-computer connection using USB-RS232 interface adapter with RS-232 output isolated from USB.

The alternative approach is to isolate alarm and control units from the panel. The RS485 line can be isolated using the RS485 repeaters with galvanic isolation (e.g. S2000-PI). This type of connection is shown in Figure 8. When using this connection scheme, make sure that S2000M and S2000-PI are powered from an individual power supply not shared by RS485-connected devices. Circuit **0V** of this supply must be isolated from **0V** circuit of devices to prevent galvanic link between computer and devices over power supply circuits.



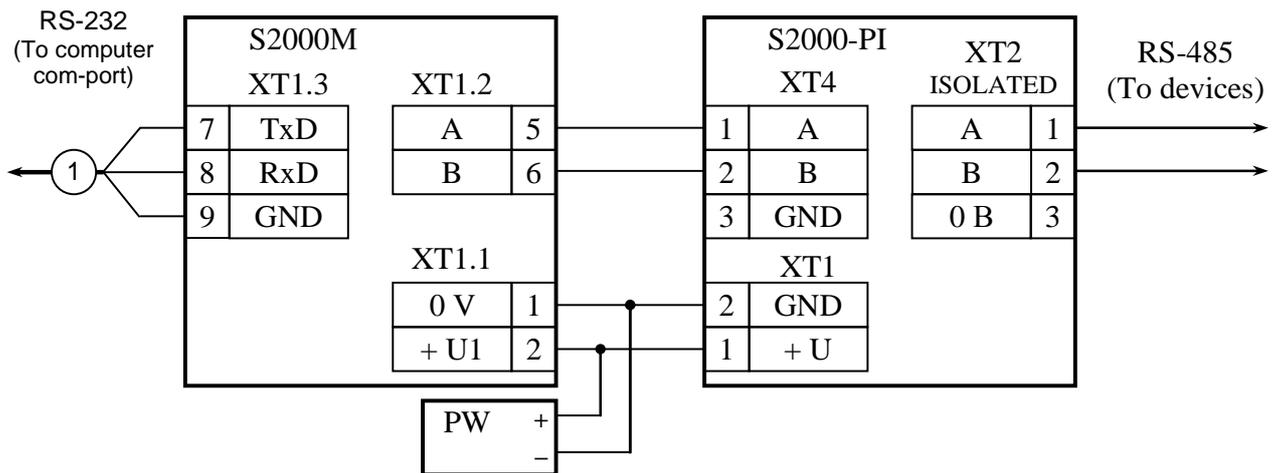
PC: Personal Computer;
S2000M: S2000M monitoring and control panel;
1: Panel-Computer cable (ACDR.685611.066).

Figure 6. The Simple Wiring Diagram for S2000M Connection with Computer-based Programming via RS232 Interface and for Using the Panel as RS232 – RS485 Adapter



PC: Personal computer with USB port;
USB-RS232: USB-RS232 interface converter with galvanic isolation;
S2000M: S2000M panel.

Figure 7. S2000M - PC Connection via Galvanic Isolation USB - RS232 Converter



S2000M: S2000M monitoring and control panel
S2000-PI: S2000-PI interface converter/repeater
PW: Backup battery power supply

Figure 8. S2000M - Workstation Connection via RS485 Interface Galvanic Isolation

To be used effectively in the combination with the Orion Pro system, the panel database configuration must fully match the Orion Pro database configuration defined in the Database Administrator application. The database of the S2000M panel is quite restricted in size as compared to one of Orion Pro that prevents a failover support to systems with more than 2,048 loops and 511 partitions. The possible solution is to use more S2000M panels in the system. To connect several panels to one RS232 interface of computer, a computer's RS232 interface must be converted to RS485 using S2000-PI. The RS485 can accommodate multiple S2000M panels. The S2000-PI converters are used to connect the panels' RS232 outputs to the computer's RS485. The Orion devices are connected to RS485 interface. The wiring diagram in Figure 9 shows how multiple S2000M panels are connected to one computer com-port. In addition to the multiple connections to one COM Port, S2000-PI converters provide galvanic isolation between a computer and panels.

In theory, each PC com-port can accommodate up to 127 monitoring and control panels, where up to 127 devices can be connected to each panel. With many panels used in the system, their connection to several com-ports can increase the Orion Pro performance. In practice, the scale of a system is restricted by a license. When working with multiple panels in the system, the Orion Pro workstation can interact with devices connected to different panels. When a computer goes offline the system will fall into individual subsystems, where each panel operates devices connected to its RS485 output only. This should be taken in consideration when designing a system. The most critical system functions must be implemented using alarm control units (input/output devices) and monitoring and control panels.

While the panel offers great functionality to control its connected devices in the Orion Pro system, a number of tasks can be implemented only by the Orion Pro workstations. The centralized (on-line) access system is a good example of providing access control functions using the Orion Pro applications rather than S2000-2 and S2000-4 controllers. To grant or deny access, the Orion Pro System must receive a report on presenting electronic credentials (tokens) to readers. To make the Orion Pro receive reports from the panel on presenting tokens to the readers of S2000-2 and S2000-4 controllers, the following must be ensured:

- 1) The Control **via Orion Pro** parameter must be selected in the panel (see 3.17.5);
- 2) No credentials must be stored in S2000-2 and S2000-4 controllers, and S2000M panels.

Further is another example of usefulness of centralized control.

The Orion Pro Suite software controls multiple subsystems based on fire and intrusion units and panels (see Figure 9). The task is to implement the possibility of arming / disarming a partition assigned to one panel with the help of a reader connected to a device of another system panel or a keypad (S2000-K or S2000-KS). Such control functions can be available only using Orion Pro 1.11 or later. To implement this task the following requirements must be met:

- 1) The **Control via Orion Pro** parameter must be selected in the panel (see 3.17.5);
- 2) To provide control functions via panels (using PIN codes) and readers of S2000-2 and S2000-4 (using tokens), pass-codes shall be saved in the Orion Pro software only (No codes shall be stored in controllers and panels).
- 3) To enable control functions via S2000-K and S2000-KS keypads, the use of this keypad for partition control shall not be permitted. To do that, please do not assign any permission to control partitions in Control Assignment in the PProg utility.

Please take into account that when implemented, these functions can be available only if the Orion Pro Suite is running.

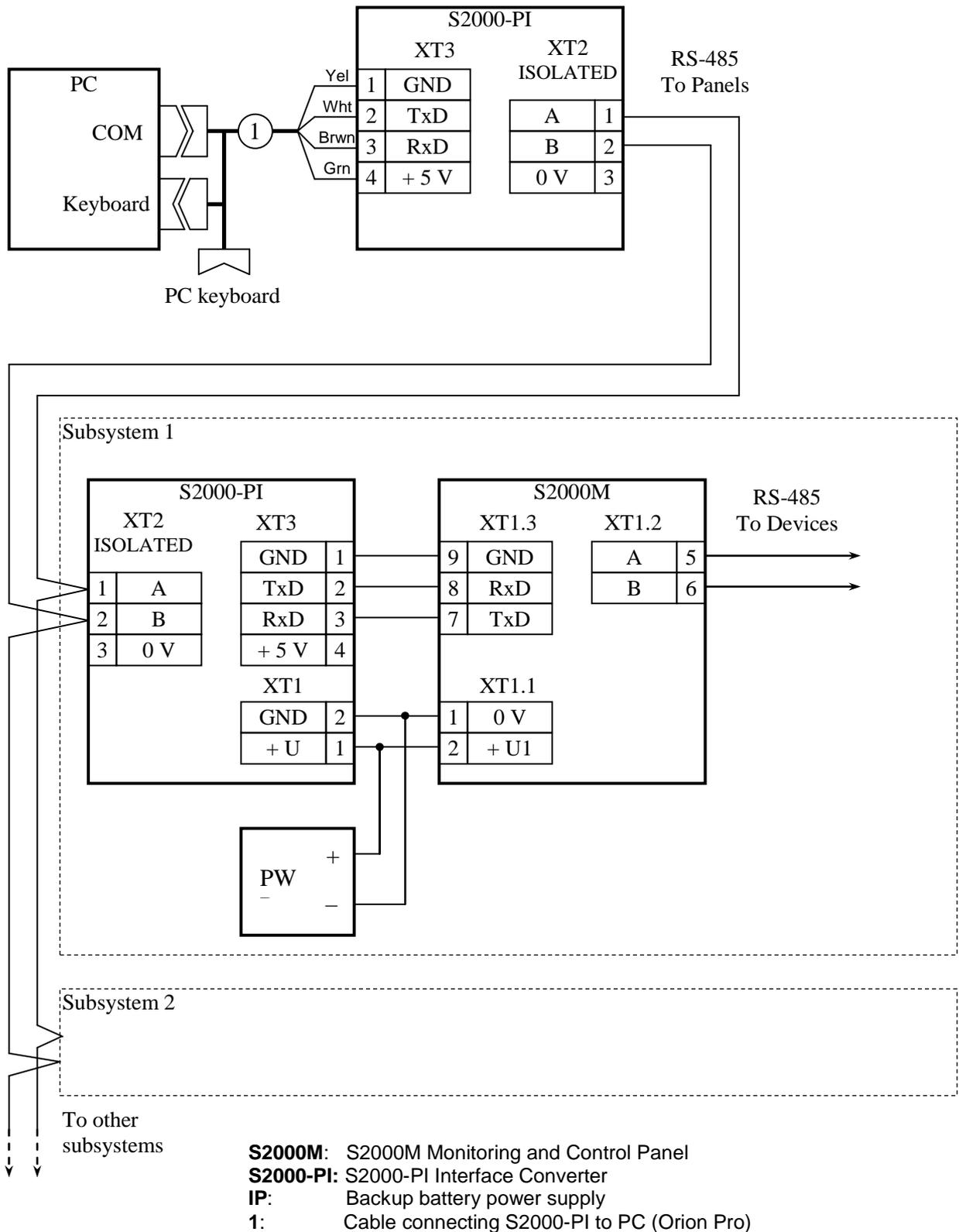


Figure 9. Connection of Several S2000M Panels to Orion Pro Workstation (RS-485 Galvanic Isolation)

2.2.6 Connecting Rif String RS-202TD-RR (removed for this version)

2.3 Configuring Device

Configuring a (system) device is setting up parameters of device elements and their interaction to ensure implementation of required functions at a protected site. The S2000M and addressable units shall be configured. The configurational parameters are stored in non-volatile memory and cannot be lost after shutdown.

Addressable units are programmed using the **UProg** utility installed on a personal computer. Configuring addressable alarm control units, first you should define input monitoring parameters. The main parameter responsible for input monitoring tactics is **Loop/Input Type**. When configuring the S2000-KDL controller, one should define the types of address points (detectors). If you are going to use the capability of some input/output devices to control their outputs in the system, the following shall be defined: the output-input links (interaction) and the control parameters such as control programs, control action delays, and control action time. In case of output control modules (expansion modules), the algorithm of monitoring output (actuator) circuits for short and open faults shall be defined. Enabling the relay event function provides "feedback" from relays that allow the S2000M to generate events upon fire protection activation, on the relay status basis. In case of indicating units and S2000-KS keypads, please define displayed partition numbers and indicating tactics (security, fire, or auxiliary) for each LED. In case of the S2000-BKI keypad, please assign functions to buttons. The S2000-IT, UO-4S, and S2000-PGE communicators require that recipient addresses and event filters to be configured to report messages and filter out events.

Configuring is performed using **PProg** utility. The main steps to configure and program are as follows:

- 1) Add units used in the system to the panel database. Define properly types of inputs - **Intrusion** for intrusion inputs/loops, **Fire** for fire inputs/loops and **Auxiliary** for auxiliary inputs/loops. Assign types to outputs to be controlled by the S2000M:

Fire Protection Equipment and **Fire Extinguishing** to fire protection and extinguishing control outputs which require activation/abort indication as well as manual control capabilities.

Auxiliary Equipment to auxiliary outputs responsible for control of other equipment not involved in fire protection and extinguishing one, that require none-alarm indication and manual control option.

General Fault, General Fire, General Activation to system general outputs such as Fault, Fire, and Activation.

Relay (default) to other outputs which does not require manual control and operator's attention if activated.

- 2) Create partitions or partition groups (if necessary). Include the elements of devices (inputs/loops/address points and outputs) to partitions, and partitions to partition groups. Add descriptions (names) of elements (inputs, outputs, and devices), names of partitions and partition groups (see 2.3.2). If you plan to report messages in Ademco ContactID or LARS format, please specify number of "ContactID Zones"

- 3) Add users and define the users' control rights (create and assign access levels) in systems where manual control is required (arming/disarming, Auto ON/Auto OFF,

enabling/disabling). The rights shall be assign to a relevant devices used to exercise the control actions (see 2.3.3).

4) Set up automatic control of visual and audible alarm devices, outputs transmitting signals to the Central Monitoring Center, extinguishing control units, and other fire protection equipment. Outputs for Fault, Fire and Activation signals should be created by assigning specific output types **General Fault**, **General Fire**, **General Activation**. Similar local outputs (reporting from a part of a system only) can be implemented using standard control programs: No. 14 **Fault Output**, No 13 **Fire Output** and No 39 **Switch On upon Activation**. To control system appliances, please use standard relay control programs (n. 2.3.4) or control scenarios (2.3.5.1), if standard programs are not enough. To control the RUPOR voice alarm system, please set up voice alarm scenarios (2.3.12). Please pay your attention to the types assigned to outputs, since such a type defines how the activation of fire protection equipment is indicated (1.4.8).

5) Set up parameters for event reporting, if there are devices in the system to transmit Orion's events to other systems or to report them as voice messages (S2000-IT, UO-4S mod 2, S2000-PGE). The events can be sent to S2000-K keypads to display them on the keypad display. Setting up event reporting is required when a printer or RS-202TD, ATS100, and TRX-150 is connected to the panel (see 2.3.6).

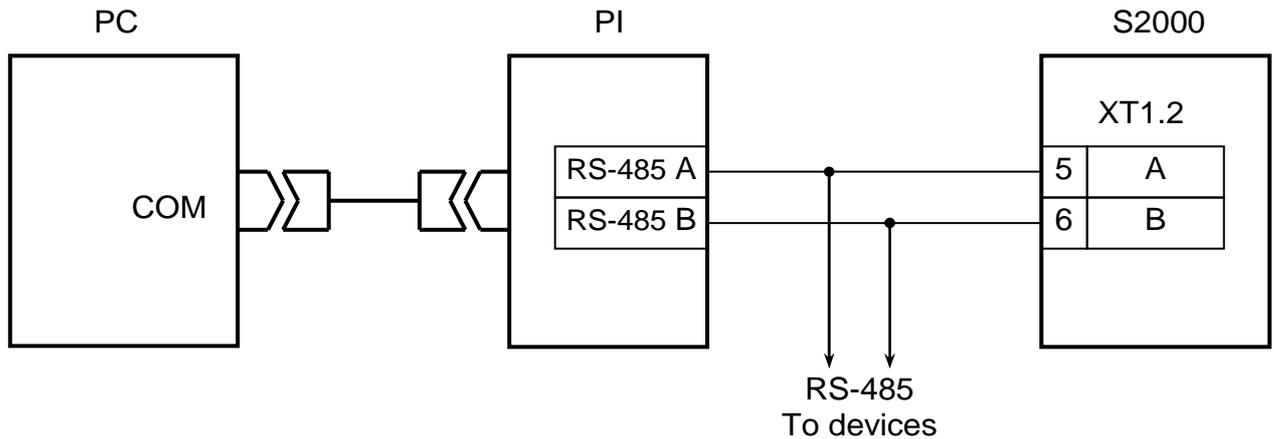
6) In case of intrusion detection systems, you may need to set up Lobby Input – inputs delaying the triggering alarm signal after entry for the set period of time. Since many alarm control units have Lobby Inputs, it is recommended implementing the Lobby Inputs through the control facilities of these units. But if that functions are not available in the units, it can be set up in the panel configuration. (see 2.3.7).

7) Evacuation systems may require functions of operating access controllers. Access control scenarios allow enabling the Free Access Mode during emergency evacuation in case of fire.

2.3.1 Connecting S2000M for Configuring, Reading and Writing Configurations

The Orion addressable units are configured via the RS485 interface. To connect the addressable units to a personal computer, please use an RS232-RS484 converter (PI-GR, S2000-PI) or USB-RS485 converter (S2000-USB, USB-RS485). Switched to the Programming mode, the S2000M can serve as in interface converter. Figure 6 shows the connection diagram for the S2000M used as a converter. The alternative connection for configuring is shown in Figure 7 - Figure 9. When multiple panels connected as shown in Figure 9, only one of them shall be in the Programming mode.

Configuring the S2000M can be provided using a personal computer with the PProg utility of **3.03 build 1** version or later. This software can be downloaded free at: www.bolid.ru. The software is provided with a user guide. Configuration can be read and saved via either RS232 or RS485 interfaces. Figure 6 - Figure 9 show the RS232 connection, the RS485 connection is shown in Figure 10. Configuring via RS232 is provided in the Orion or Orion Pro protocol, configuring via RS485 can be done using the Orion protocol only. The feature of configuring in the Orion protocol is that the panel shall be switched to the specific programming mode by entering the installer password/code and selecting the mode using the panel's own keypad, in case of the Orion Pro protocol this mode can be enabled from the PProg utility. In both cases, configuring options can be accessed only by the owner of installer password/code.



PC: Personal Computer
PI: RS232 – RS485 Interface Converter (e.g. PI, PI-GR, S2000-PI)
S2000M: S2000M Monitoring and Control Panel

Figure 10. Connecting PC to S2000M's RS485 Interface

To read or write a configuration via the Orion protocol using the PProg, navigate the **Options** menu, select **Serial Port**, select **Orion** in the dropdown menu for the **Protocol** parameter. You may have to change the panel address in the panel settings (see 3.17.4) to make it different from the addresses of devices connected to the panel. To set the panel in the programming mode, please do the following (also see 3.17.6):

- Press button ;
- Select menu  **Settings**;
- Enter the installer code (by default: <123456>);
- Select  **Programming**;
- The LCD will display the **Programming mode** message and the panel will go to the remote programming mode via RS485 and RS232 interfaces using the Orion protocol.

To select the Orion Pro protocol to load or save configurations, please navigate the **Options** menu, select **Serial Port**, select **Orion Pro** in the drop-box for the **Protocol** parameter and select your required Port Speed (9,600, 19,200, 38,400, 57600, or 115,200 bps for the **Port Speed** parameter. The RS232 settings in the panel shall be the following: Operation Mode is Computer; Bit Rate is the same as for Port Speed in the PProg (9,600 by default); Control via Orion Pro set as ON (Enabled). If more than one panel is connected to a computer (Figure 9), each panel shall have a unique address. See 3.17.5 for how to set the specified parameters.

After the PProg startup, first the search of all system connected panels and devices shall be provided. Select the number of COM Port and click the Start Search button  in the Search box on the Devices tab. The app will start searching for connected devices and will show the addresses and types of found devices. When the panel is found, the  icon will show the panel status . Hovering over this icon will display the panel's address and version. Further reading and writing operations will be carried out for this particular panel. To select another panel, please move the Panel Status to the dust bin, and repeat the search again, or drag your required panel from the found devices list to the  icon.

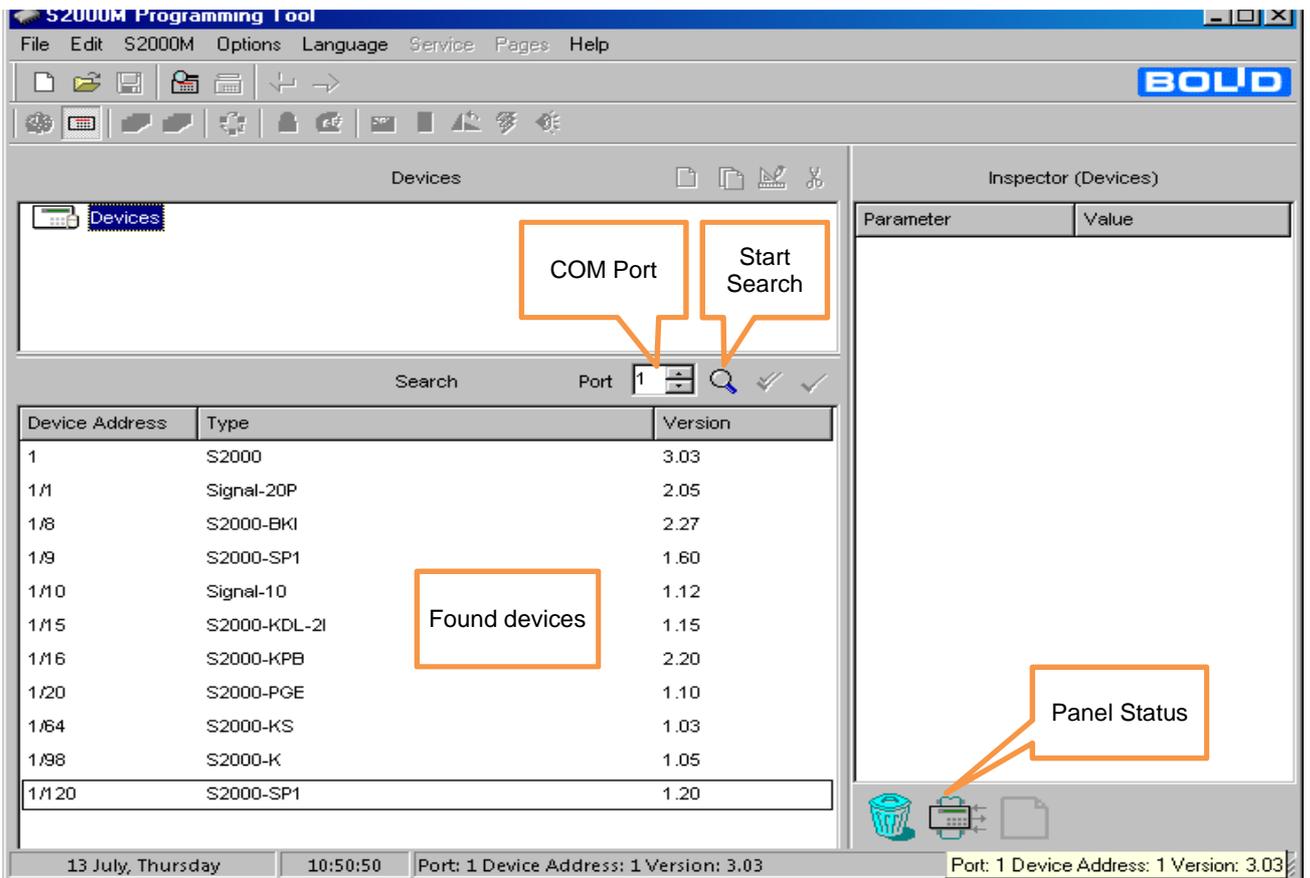


Figure 11. Search for Connected Panels and Devices

When a panel found, you can instruct the program to readout its configuration. To read the panel's configuration from the panel, select the **Read Configuration** item in the S2000M menu, and click the  button. If the Orion Pro protocol is used, PProg will ask to enter the installer code to confirm the rights for reading. If a panel is new and no configuration has ever been written to it, it is recommended creating a new configuration rather than trying to read it. To create a new configuration, select **New** in the File menu or click the  button. Further, select the panel version you want to create a configuration, and click **OK**. A new blank (default) configuration will be created that can be edited as required. The configuration may be loaded from a file. To load a configuration file, select **Open** in the File menu or click the  button. The Open window will appear, select a type of configuration file: Text file (*.txt) or Encrypted file (*.gpc). Keeping a configuration in the encrypted format protects it from unauthorized access. When reading an encrypted file, PProg will ask to enter the Installer code (relevant to a loaded configuration).

Further, you can edit your new or loaded configuration. The completed configuration can be saved to the panel or as a file. To save a configuration as a file, please select **Save** or **Save As...** in the File menu, or click the  button. A configuration can be saved either in a text file or encrypted file. To save configuration to the panel, please select the **Write Configuration** command in the S2000M menu or press the  button.

With configuration completed, the panel can be switched from programming to operation mode by pressing the **CLR** button if the Orion protocol is used. If the Orion Pro protocol is used the panel goes to the operation mode automatically with the startup initialization – search of all

available devices, polling connected devices for status of each input/ loop, and setup of system outputs (relays) status. Initialization may takes from seconds to minutes depending on the number of inputs (loops). After the initialization is completed, the panel is ready for operation.

Notes:

- 1) Do not power off a panel or leave the Programming mode during a configuration writing procedure to avoid corrupting configuration data. Should it happens you will have to repeat the writing procedures.
- 2) Configuration is written down as a whole if it is loaded from file or another computer. After editing, only modified data is written to the panel. Writing configuration changes only is quite faster than writing the whole configuration.
- 3) Read and write speeds depend on a selected protocol, bit rate (Orion Pro), read and write data block lengths. The block lengths can be set up on **Compatibility** tab in the Options menu: **Block Length to Read** and **Block Length to Write**. The maximum read/write rate is obtained with the block length of 128 bites. If such length results in problems during configuration write/read, the length of block should be reduced till 64 bites. The configuration read/write rates may be slow down when interface converters are used in the system. If configuring is carried out using the Orion Pro protocol, especially at high rates of the RS232 interface, the read/write time is significantly dependent on how the S2000M panel is busy with other tasks. For example, this time is significantly increased during the S2000M initialization when devices are found on the RS485 line.

2.3.2 Adding RS485-Connected Devices, Setting Parameters of Elements Monitored, Creating Partitions and Partition Groups

Adding Unis to S2000M Configuration

The devices are added on the Devices tab in the PProg software. Two options are available to add a device: manually or from the list of devices. If units are connected to S2000M, you can navigate the Search window and click the  (Search) button. The application will find units connected to the computer. The found devices can be added to the panel data base by dragging them to the Devices window pane. To add a device manually, click the  (Add Device) in the Device box. Enter a device address, select its type from the list, and specify the version. Also you can enter a device name. The panel can store and display the first 16 characters of a device name. When adding a unit, select a Default Loop/Input. When a unit is added, the type selected here will be set for all inputs of this device, so that a type specified properly this way will greatly facilitate further setting types for the device's inputs. The **Fire** type is recommended for fire alarm units, the **Intrusion** type is recommended for intrusion alarm units. When certain units (S2000-ASPT and Potok-3N) are added, their inputs types are defined automatically.

It can be impossible to select a standard type if a device does not have a standard set of inputs and outputs. This situation is possible when S2000-ASPT is used where the number of circuits and supervised outputs depends on the number of S2000-KPB units connected to it. A new type of device can be added on the Device Type in the PProg utility. PProg offers three templates: Standard, S2000-KDL, and S2000-ASPT. A custom device template is called **Base Template** in PProg. In terms of S2000M, the Standard template is useful only for possibility of describing a PProg-unknown device type adding manually a set of inputs and outputs (loops and relays). The S2000-KDL template is not relevant for S2000M since there are more flexible options to select a "device" for each of 127 addresses of S2000-KDL. The S2000-ASPT template allows describing

the S2000-ASPT devices with connected S2000-KPB. When creating a device type on the S2000-ASPT template, specify a number of "slave" S2000-KPBs. Each S2000-KPB provides the S2000-ASPT with two loops, one S2000-KPB status input, and six supervised outputs. Totally up to 16 S2000-KPB can be connected to the S2000-ASPT controller. The first connected S2000-KPB adds Input 20, Loops 21, 22 and Relays 21-26, the second one adds Input 30, Loops 31, 32 and Relays 31-36, etc. When S2000-ASPT units are used without slave S2000-KPB, they are added to a panel configuration as a standard type.

It is recommended adding S2000-KDL (S2000-KDL-2I) to a panel configuration as Standard with further setup as required in accordance with addressable devices used. Added as Standard, the S2000-KDL has 127 inputs (Loops) and does not have any outputs (Relays). Inputs-loops are used to control detectors and addressable expansion modules.

If S2000-SP2 (S2000-SP2 mod 02) addressable module is used, **Input** shall be converted to **Output**. This can be done in PProg, in the Partitions tab, in the Device (Inputs) window pane: Expand the S2000-KDL's Inputs list, select a required (input) loop where the S2000-SP2' relay is connected and click the **SP2** button. This conversion must be done for all the used relays of the S2000-SP2.

If S2000-SP4 (S2000-SP4 mod 02) damper addressable modules are used, element types shall be converted for their occupied addresses. This can be done in PProg, in the Partitions tab, in the Device (Inputs) window pane (see Figure 12). Select a required Loop with a number according to the first address occupied by S2000-SP4 in S2000-KDL address array, click the **SP4** button. The selected loop will be transformed into elements: Actuator and Relay, the next two inputs (loops) will be converted into Outputs, and another two loops to that of the auxiliary type.

The Actuator element (see Figure 12 -  Actuator: 123) informs on an air damper general status and can be controlled with the S2000M or S2000-BKI commands. It can have the following states: **Actuator in Operating Position**, **Actuator in Initial Position**, **Actuator Failed** (when it fails to go to the operating or initial position), and **Actuator Error** (wrong combination of states of circuits monitoring the air damper position). Also it reports on the S2000-SP4 status and Test button status.

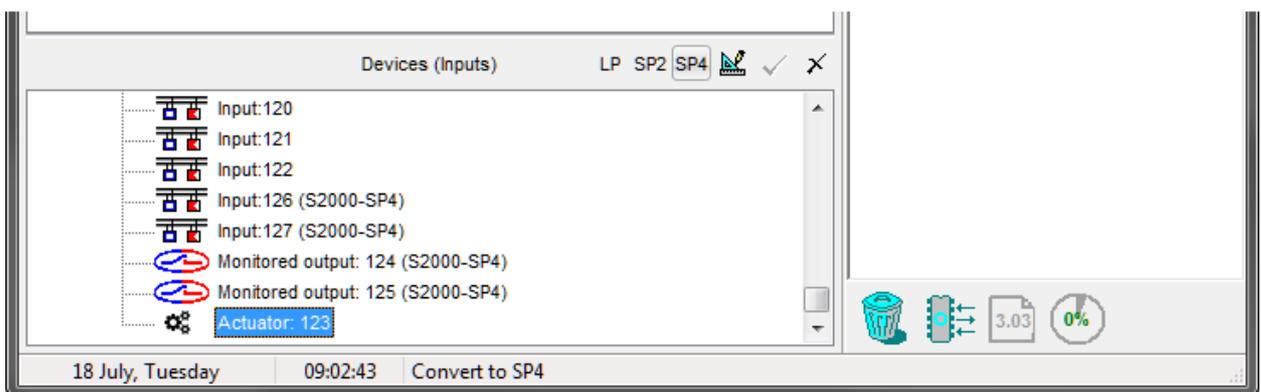


Figure 12. Adding S2000-SP4 to S2000M Configuration

The Relay (it also has 123 # in the above example, it can be found on the Relay tab) can be used for automatic control of a damper using standard control programs and control scenarios of S2000M. The damper goes to the operation position or initial one upon the Turn On or Turn Off command respectively. The Control Delay and Action Time parameters of the command are ignored.

The next elements (124 and 125) are converted to Outputs that reflect the states of the B1 operating position output and B2 initial position output of the S2000-SP4 unit. They can have the following states: Output Normal, Output Open-Circuit Fault, and Output Short-Circuit Fault and can be used to obtain more details on output malfunctions in addition to general information on actuator (damper) faults.

The next two elements (126 and 127) converted to auxiliary loops inform on the states of KB1 operating position limit switch and KB2 initial position limit switch, as well as switch circuit faults. The limit switch status includes normal, auxiliary loop activations, circuit fault status such as Input Open-Circuit Fault, Input Short-Circuit Fault, and Input Disabled. This can be useful as additional details to general information on the application equipment status. Please keep in mind, that S2000-KDL (S2000-KDL-2I) reports on states of limit switch circuits, if the Monitored (Supervision) parameter for these circuits is enabled in the damper settings in this device configuration.

Creating Partitions (Zones)

Partitions can be created on the Partitions tab. This tab page includes two window boxes. The Partitions (Loops) upper window includes the tree of partitions with elements in each. The Devices (Loops) box at the bottom includes the tree of partitions with their monitored elements in each: loops, outputs, device status monitored elements, "readers", notification routing links. To add a new partition, click the Add Partition button  (in the Partitions pane). The maximum number of partitions is 511. A unique number (1 to 4 digits) shall be entered in the Inspector box. The Description field is used to add a custom name for partitions. Please, keep in mind, the panel's LCD can display no more than 16 characters of a partition's name.

Notes: If reporting is based on the Ademco Contact ID protocol by the S2000-IT or UO-4S devices, a partition number shall not be more than 99. The restriction of a partition maximum number is in place for messages transmitted by the RS-202TD and ATS100 radio transmitters.

To add elements to partitions, please drag them from the Device (Loops) tree to the relevant partition of the Partitions (Loops) tree. You can drag single or multiple elements at a time. To drag multiple elements use the mouse left button in combination with the <Shift> or <Ctrl> keyboard keys. The Shift key is used for a range selection, the Ctrl key is used for individual multiple selection. If a device is moved to a partition, all its elements (inputs and outputs) will be added to this partition. Here, you can also assign the following parameters to the elements: type, number, and description. Select a required element in the Devices (Inputs) tree and set required parameter values in the Inspector box. You can specify a required name of element in the Description field. The Contact ID Zone field is used to specify – numerical ID used for transmitting messages via the S2000-IT and UO-4S devices and RS-202TD and ATS100 radio

transmitters. Consideration should be taken that UO-4S has restrictions in respect to a maximum number for the Contact ID Zones.

The type of element is selected in the Input/Loop Type drop menu. The Fire type shall be selected for inputs responsible for automatic fire detectors, the Manual Call Point shall be selected for inputs monitoring manual call points, if Fire2 event is required to report the activation of a manual call point. If an input is responsible for manual release point (EDU513-3AM), the Manual Release shall be selected. In this case, the manual release point will activate fire protection equipment in the partition (zones) where this point is included in.

Elements not included in partitions are usually not saved to the panel configuration but for elements with their parameters defined (types, descriptions, Contact ID Zones) or elements used in the event rename scenarios. They are saved in the panel configuration, if the **Write Free Element Parameters** is enabled in the **Options>Compatibility**.

Creating Partition Groups

Partition Groups are created in the Partition Group tab in the PProg application. The tab window includes two panes: the upper pane (Partition Groups) showing partition groups with included partitions, and the low pane (Partition) showing the list of system partitions. To create a new partition group, please select the  button (Add Partition Group), enter a number consisting of up to 4 digits (it shall not coincide with numbers of partitions), type your required name in the Description field (no more than 16 characters). Further, add partitions to your created partition group by dragging them from bottom part of the window. You can add a single partition or multiple partitions. To select multiple partitions, you can use the left mouse button in a combination with Shift or Ctrl. When the root of a partition tree moved to a group, all system partitions will be added to this group. A partition group can have any number of partitions; each partition can be included in more than one group at a time. The panel supports up to 128 partition groups.

Notes: An operating action (e.g. arming/disarming) in respect to a group-included partition takes longer than that with a partition not included in any group. The more groups a partition is included in, the longer time it takes to arm/disarm the partition. Therefore, the partition should not be included in many groups simultaneously, unless absolutely needed.

2.3.3 Setting Control Permissions for Partitions and Partition Groups, Programming User Codes (Credentials)

Information defining rights to control partitions includes access levels, codes and device "right" (aka control associations). Access levels and device permissions can be programmed with PProg only, credentials (codes) can be programmed using the PProg utility or the panel's menu.

Access Levels are created in the Access Levels tab. The tab page is divided into two panes. The **Access Levels** upper pane includes the **Access Levels** tree. Each access level includes partitions and permissions to control. The **Partitions** pane includes all panel partitions. To create an access level, please click the  (**Add Access Level**) button. Go to **Inspector** and specify an

access level number in the **Number** field (1 to 252), and its name in the **Description** field (optional). Then include required partitions to the new access level giving permissions to control them. Please note that a partition can be regulated by no more than eight access levels. A partition can be added to an access level by dragging it from the **Partitions** pane to a required access level in the Access Levels pane. Then select a partition in this access level to define permissions for control commands: Arm/Enable, Disarm/Disable, Auto On, Auto Off, Start (Activate), Stop (Abort), Activate/Deactivate, and Test On. When no access actions are permitted within an access level, it can only allow viewing accessible partitions.

The Access Level has a Control Style parameter. The **Show Status before Control** should be assigned to users authorized to control multiple partitions via S2000M and S2000-K. This style should be also selected for the control operation using the S2000-KS keypad, S2000-BKI and S2000-PT control and indication units. After entering a PIN code (presenting a token) with this access level assigned, the devices will show a partition status on the LCD of S2000M / S2000-K, or on a reader's remote LED indicator if devices with readers are used. To control from the keyboard of S2000M or S2000-K, select a partition and command; to control from indication unit, press a relevant button; if a reader is used for this, present a token once again. The **Immediate Control** style is mostly suitable when iButtons and/or Proximity card tokens are used, especially when S2000-BI or other means are used for partition status indication. Presenting these tokens will result in arming/disarming a partition depending on its status. This style can be helpful for control via S2000M, when a user is authorized to control a single partition. When a PIN code with such an access level is entered via S2000M, a relevant control command is offered to be simply confirmed. Thus it requires less user actions to control a partition.

Codes (credentials) can be added and edited in the Users tab. When entering a code, specify its number, code value, access level, and user name. These parameters are defined in the Inspector box. To add a new code (credential), click the  button, enter ID number in the Number field, a credential code in the Code field, a user name in the User field, and an access level in the Access Level field. The Duress Code parameter is meant for special credentials used by a user coerced into disarming. To edit the parameters, double click a relevant field and enter or select new data.

A user number can range from 1 to 2,047 to identify a user in the system along with a user name. This number identifies user in messages reported via S2000-IT, UO-4S, and S2000-PGE units and RS-202TD and ATS100 transmitters (maximum number of transmittable user ID is limited for these devices). Code No.1 is always a main code (installer code). This is a PIN code of 1 to 8 digits. The user codes can be numbered by 2 to 2,047. The user name is any textual string of up to 16 characters. This is more informative than a user ID number to identify a user in messages displayed on a panel LCD or when printed.

The type of credentials (codes) is defined automatically and may be the Code (any PIN codes) or Token (iButton or Proximity card) type for user codes. Codes for S2000-K keypads must contain four digits. If codes are to be presented via S2000M panel they may contain from 1 to 8 digits each. The acceptable code length for the S2000M is defined by the Code Length menu item. The panel automatically accepts a code after entering the number of characters as set in the menu item. The Code Length parameter is changeable in the range of 1 to 8 characters. When accessing partitions by SMS messages using UO-4S, the authentication is based on the phone

number added to the panel configuration as a PIN code. If a phone number is too long, only the last 12 digits are used. When partitions are controlled using SMS via S2000-PGE, the authentication is provided by the PIN code specified in an SMS message.

An authentication code may be enrolled to a panel configuration manually using a PC keyboard or directly from devices during polling by PProg. A PIN code can be entered from S2000-K and S2000-KS. Tokens (iButton and Proximity card) can be enrolled using readers connected to system units. Reading authentication codes from polled devices are especially relevant during enrollment of Proximity card with no authentication code specified. Authentication codes can be retrieved from a device, only if it is polled by PProg. If a device is not polled by PProg, it has to be found in the Search pane of the Devices tab page. When the device is found, please click the  button in the Codes tab and present a token (iButton or card) to the reader. The code value will appear in the Code field. In case of a PIN code, enter four digits of a PIN code on the S2000-KS or S2000-K keypads. The authentication codes can be programmed without PProg from the S2000M keyboard (see 3.16).

To assign partition control permissions to RS485 Devices, go to the Assignment tab. The upper part of the tab page shows devices included to the database with each device having partitions authorized to be controlled from the device's keypad or reader. The lower Partitions pane shows the list of partitions. To authorize control of a partition by a relevant RS485 device, move this partition onto this device's icon in the Assignment pane.

Token-based authentication can be configured to allow further control commands from the S2000M panel or S2000-K. Select the Assignment tab in the PProg utility; select a controller with a connected reader where a token will be presented to allow further control commands initiated from the S2000M and S2000-K. The attributes of this device will appear in the Inspector box with the Reader Assignment item accessible only. Double click this item to see the list of devices. Select the S2000-K keyboard to be used after presenting a token to the reader. If the control commands shall be initiated from the panel, please select the S2000M. If "No" selected, the control will be provided by the second presentation of the same token to the reader. When partitions are operated (armed/disarmed, etc.) using the S2000-K keypad (or S2000M), the permissions of the keypad (panel) are prioritized over a reader's permissions where a token is presented.

Notes:

- 1) The Token's access level should have rights to control one partition only, since the option to select controllable partitions is provided only by panels and keypads (S2000-K and S2000-KS). Such a token may have rights to control multiple partitions but the privileges of devices (controllers such as S2000-4) should be defined in a way that when presented to a specific reader, a token can control only one partition from this reader. This allows using one token to control several partitions but through different readers only. In other words, a specific token can be applied to a reader to control one partition only.
- 2) The S2000K keypad of version **1.01** and S2000-4 controller of versions **1.01** and **1.02** are not supported by the panel for partition control.

2.3.4 Setting Relay Control

This chapter discusses settings of the relay outputs controlled by the S2000M panel.

Available automatic control of relay outputs is described in 1.4.8.

It is desirable to create general signal outputs such as **Fault**, **Fire**, and **Start** by assigning special output types: **General Fault**, **General Fire**, and **General Activation**. Same local outputs (reporting only from the part of the system) can be implemented with help of standard control programs such as **No. 14 Fault**, **No.13 Fire Output**, and **No.39 Turn On If Activated**. It is highly recommended implementing Faults and No.10 Alarm Outputs with help of the S2000-SP1 as this device monitors the communications to S2000M and opens an output in case of disconnection. In case of general **Fault** outputs, the period of disconnection (timeout before sending a Fault signal) is defined by the Control Action Time parameter in the S2000-SP1 configuration. When Fault and Alarm Output are implemented using the standard control programs, this time is specified by the Control Action Time (Relay Action Time) parameter in the S2000M's configuration (relay control parameters/settings).

To control system appliances (fire protection equipment, voice alarm devices, etc.), the standard control programs shall be used (see 2.3.4); alternatively, relay control scenarios (2.3.5.1) can be used if the capabilities of standard control programs are not enough. It is important to specify output types corresponding to the connected equipment since the type defines how activation of system appliances is indicated (see 1.4.8). If outputs (relay or voice alarms) of Fire Protection Equipment and Extinguishing types are to be activated with a delay, the Generate Relay Event attribute shall be enabled for these relay in the configuration of relay control units.

To use manual control functions the following should be met:

- 1) The output types shall be other than the **Relay (default)** type. The **Relay (default)** output supports only automatic control;
- 2) The **Auxiliary**, **Fire Protection**, and **Extinguishing** outputs shall be associated with control programs or scenarios that define relay status, if manual activation occurs. The control programs set strict control parameters for manual activation – they correspond to the first (the highest priority) condition of the automatic activation (see 1.4.8.2). For example, if the program *No. 3 Turn On for a Time* is selected, the relay will be turned ON without a delay when manual activation occurs; if the program *No. 2 Turn Off* is selected, the relay will be turned off in this case. If scenarios are used to control relays, the Manual Activation condition shall be included in a scenario step launch condition. In this case, when activated manually, the relay will be turned on with the parameters of this step. The Manual Activation status relates to the controlled relays so that there is no need for specifying partitions where this status will appear.
- 3) Outputs shall be included in partitions (zones). If remote control point EDU 513-3AM is used for manual activation of outputs (relays, voice alarm outputs), it must be included in the partition (zone) with controlled outputs.
- 4) It is necessary to add codes (credentials) with access levels authorizing manual activation and abortion. If fire protection equipment is to be controlled manually using the S2000M's **START** and **STOP** control buttons or the S2000-PT's manual controls, the **Start** (Activation) and **Stop** (Abort) permissions shall be applied. To enable control of other outputs using the S2000M and S2000-BKI, the permission (Yes) for the Control Actuator item shall be applied.

The Relay tab provides settings for relay output control. The tab window has two panes. The **Partitions (Relays)** upper pane shows the partition tree with the list of relays associated for each partition. The **Devices (Relays)** pane shows the tree of all system devices with relays. To associate a relay output to any partition, drag the relay from the **Devices (Relays)** pane to the corresponding partition in the **Partitions (Relays)** pane. The view can be changed. Alternatively, the **Devices (Relays)** pane shows devices with relays, where each relay shows the list of associated partitions; the **Partitions (Relays)** lower level will include the list of partitions that can be associated with relays. In this case, the "associations" of partitions with relays are done by dragging a partition to a device relay. If outputs are to be controlled by several partitions it can be associated with these partitions the same way. The process of associating can be simplified in the following way: select several partitions or relays, use "Shift + left mouse button" (range selection) or "Ctrl + left mouse button" (multiple selection), then you can drag the entire selection. When an output or multiple outputs are dragged to the root of the Partition tree, they will be associated with all system partitions. If alternative view is used, the same is provided by dragging the root of the Partition tree to an output. When a device is dragged to a partition (alternatively, a partition to a device), all device outputs will be associated with the partition.

The following relay output parameters shall be defined: **control programs**, **activation delay**, and **control action time**. Select a relay in the **Devices (Relays)** pane, the Inspector box will show all current values for the parameters. You can change them as required. Control Action Time and Activation Delay can be set in range of 0 to 8,191.875 with increment of 1/8 second. If Control Time is set as 8,191.875 sec, an output will be ON for an unlimited amount of time.

In addition to settings by the PProg utility, configuring device outputs by UProg may be required. The outputs of relay expansion modules have the following attributes: **Initial Status**, **Control Time**, and **Output Event**. The **Initial Status** parameter defines the status an output goes first right after a device is powered on. This status can be ON or OFF depending on the panel's control program applied to the output. If an output is controlled by activation control programs (Turn On, Turn On for a Time, Siren, ASPT), the Initial Status Control Program parameter has to be set as OFF. The Control Action Time shall be used only for S2000-SP's output reporting a general **Fault** signal. The outputs of S2000-KPB unit have the Output Event parameter (or Relay Event). If the output event is enabled, the relay's switching ON/OFF will be reported by the event messages respectively. The event reporting is enabled for outputs controlling fire protection equipment – the S2000M uses them as a confirmation signal of output activation to generate the **Output Activated** event.

When the centralized (on-line) control of relay outputs of other devices is configured, it is necessary to disable local (standby) control for these outputs, since the outputs used in a device's internal tactics ignore commands received over the RS485 interface. For units such as S2000-4, Signal-20P, Signal-20, Signal-10, this is achieved by removing loop-outputs associations in the units' configuration. In case of the S2000-KDL controller, the local (standby) control is disabled by selecting No Control as a control program for an output. In case of the Signal-20 series 02, the Control Action Time parameter shall be defined in the device configuration as this device ignores the control time set in the panel configuration.

2.3.5 Setting Control Scenarios

(Removed for this version)

2.3.6 Setting Event Reporting

2.3.6.1 General Information on Event Reporting

The event reporting is configured on the Event Sharing tab in the PProg utility. This tab is used to select events to be shared for printing on a S2000M-connected printer and transmitting them to ATS-100, Rif String RS-202TD-RR, TRX-150 (TRX-450) radio transmitter, S2000-IT communicator, UO-4S/2 GSM communication device, S2000-PGE system (Phone-GSM-Ethernet communication system), and S2000-K keypad.

To set event reporting, one has to define recipient devices and events to be shared with these devices.

The recipients are shown in the upper pane of the Event Sharing tab. The Printer element is included by default. Report settings provided for **Printer** are applicable to devices connected to the Panel's RS232 interface such as printer, radio transmitters, and workstation with installed event reading applications such as **PKUEventReader** or **HyperTerminal**. RS485 units can be added to recipients from the **Devices** pane. If the **To All Devices** item is added to the list, the events are reported to all RS485-connected devices. The To-All-Device reporting has some disadvantages over to the targeted transmission: the same event selection for all devices, limited amount of information; however it is faster than the targeted transmission if there are more than five target devices.

Each recipient can have an individual event filter. The filter defines what event messages are shared with a recipient. Filtering is carried out by category and source. The messages are grouped into the following categories: Fires, Alarms, Faults, Arming/Disarming, Loop Arming/Disarming, Service, Auxiliary, Access, Relay. Each category may be banned or allowed with respect to all events related to the category. The category-related list of all events supported by the panel is provided in Appendix E. Each category can be allowed or banned with respect to all events related to the category. The original sources of events are partitions, partition groups, and system elements (loops, inputs, addressable detectors, relays, device status outputs, readers). A recipient device shall be associated with Partitions or Partition Groups originating events reported to the recipient device. To allow event transmission from an element, add a partition or a partition group where this element belongs. To add an out-of-partition element, add the **Free (Individual) Elements** item to the list of device partitions. To report on partition (partition group) arming/disarming, add this partition (partition group) to the list of partitions of the recipient device.

To configure the event transmissions as described above, please do the following in the Event Sharing tab:

1. Select a recipient device in the Event Transmission upper pane. If a required device is not available, add it from the Devices pane.
2. The Inspector (Events) box will show event categories with selectable **Yes** and **No** next to each. The **Yes** value allows sharing events of related categories, the **No** value inhibits it.
3. Switch the Partition view by clicking the  button in the upper-right corner. The list of devices will be replaced with partitions and partition groups. Move required partitions and partition groups from this list to the icon of the recipient device. The device will show the list of partitions. If no event transmission from some partition to this device is

required, these partitions shall not be included to this list. To transmit events from off-partition elements, please move the Free Elements (Free Inputs) to the list of partitions. To return back to the Devices pane view, click the  button.

Warning:

1) The event reporting/sharing can overload the RS485 interface to affect system performance. To have the system not overloaded, the event sharing can be limited by critical events only such as alarms, fires, and faults. To report events to many S2000-K keypads, you can use the **To All Devices** option.

2) To make the S2000-K keypads show panel-reported events, the Event Indication and Alarm Indication parameters must be set. Setting transmission to keypads is optional. In case of keypads, the events reports are required for event display and audible alarms only, and they are not used for arming and disarming. The S2000-K keypads may not support some panel's event reports. In this case, such events will be indicated by the keypads. See the User's Manual for S2000-K for the list of the unsupported events.

3) Settings of the **S2000M** recipient define what event messages are to be shown on the S2000M. The unselected messages are not reported to the S2000M's event log. This option does not affect the event transmission to the Orion Pro System, other devices, and log printing.

2.3.6.2 Setting Event Transmission to S2000-IT, UO-4S ver.2, and S2000-PGE

Combined with the S2000M panel, system units such as S2000-IT, UO-4S ver 2, and S2000-PGE shall operate in the Slave mode. The reports of S2000M (ver.2.0 and later), UO-4S mod.2 and S2000-PGE can include numbers of partitions, Contact ID Zones and User. This option must be configured in the panel. The code number in the panel is sent as **User Number**. Zone Number for the Contact ID protocol is an element parameter known as ID Contact Zone in the PProg utility. This parameter can be set within the range of 1 to 999. The details for the related settings are provided in 2.3.2, settings for user code are described in 2.3.3. The S2000-IT ver. 2.00 and higher can receive zone numbers in reports from the panel, if the version of S2000-IT is specified on the Devices tab, when the S2000-IT is added to the panel. **If sharing is set as To All Devices, Zone Numbers are not reported in the event messages.**

S2000-IT communication over phone lines is quite slow. So it is recommended selecting most critical events (alarms and fires) to be sent to the communicator. When the message buffer is overflowed it can be cleared manually (see 3.13.5).

2.3.7 Setting Lobby Alarm Inputs

The settings for the Lobby Inputs are provided on the **Lobby Inputs** tab in the PProg utility. The Lobby Inputs pane includes the list of inputs set to be alarmed after an exit delay. There can be up to 32 lobby inputs for each S2000M panel. The Devices (Inputs) pane includes the entire list of system devices and related inputs. To create the Lobby Input, move a required input from the Devices (Inputs) pane to the Lobby Inputs pane, set seconds for delay (0-254 sec) before switching from **Lobby Alarm** to the **Alarm** status.

Note: All latest input/output controllers (Signals, S2000-4, and S2000-KDL) support the Lobby Alarm tactics. To use this input, please select **Input # 7 Lobby Input** and define seconds for the alarm delay. To implement Lobby Inputs, it is recommended using capabilities of RS485 input/output units rather than the S2000M panel.

2.3.8 Setting Custom Event Messages

Customizing event messages allows messages to be renamed for printing and display and on the S2000M panel instead of standard system messages.

User can rename messages of monitored elements only: inputs /loops, addressable detectors and expansion modules, output-actuator transmission path monitoring circuits, status monitoring circuits.

The standard messages supported by the panel are described in Appendix E. The user can create up to 32 renaming scenarios. You can rename up to four standard event messages within one renaming scenario. In addition to new name, you can change an event category. The name of event is an arbitrary string of 16 characters. The event category is used in settings of event reports to communication units. This renaming function is mostly relevant for auxiliary input/loops usually monitoring the status of some appliances and equipment. For example this function allows replacing standard **Aux Input Restored** and **Aux Input Active** with other messages such as **Damper Open** and **Damper Closed** respectively.

Warning: This renaming mechanism does not change the status of an element thus it does not affect relay control and zone (partition) status as indicated by indication units.

To set up a renaming function, please navigate to the Rename Events tab in the PProg utility. Create a renaming scenario, select an original standard message, specify a new name, and select a category for a new event. You can add other three renaming rules, if required. The new scenario is assigned to elements (outputs and inputs) it will be applicable to.

2.3.9 Indication Units Control

Indication appliances such S2000-BI, S2000-BKI, S2000-PT, and Potok-BKI show the status of the S2000M's partitions (zones). The partitions must be added to the S2000M configuration in the PProg utility. The indication units are programmed by the UProg utility. This procedure includes setting a partition number for each LED, selecting a type of indication and duration of sound signal. Those settings are enough to display the current status of partition when the units are connected to the panel.

Arming and disarming are performed by pressing the corresponding key on the S2000-BKI. Key-assigned actions are set for each partition individually. Any version of S2000-BKI supports Arm, Disarm, Arm/Disarm, and Unused. In case of S2000-BKI (ver.2.25 and later), the following available: Reset, Activate (Actuator), Deactivate (Actuator), Activate/Deactivate (Actuator). Since in the Orion system partitions are controlled only with authentication by PIN codes and tokens, they shall be added to the panel configuration, their permissions for required partitions shall be defined by creating and assigning access levels in the PProg utility. The Control Style parameter must be set as Display Status before Control.

Also relevant partitions shall be assigned to the S2000-BKI on the Assignment tab. The S2000-BKI has an input to connect a reader to use tokens to gain access to S2000-BKI control buttons. When a location of the S2000-BKI excludes unauthorized access to the unit's controls, PIN code with control permissions can be written to the configuration. This can provide access to S2000-

BKI control buttons without presenting tokens to the reader. Please see 2.3.3 for more details on PProg settings for partition control permissions.

2.3.10 Building S2000-ASPT Extinguishing Control System

To build a fire extinguishing control system based on the S2000-ASPT, the following components are required:

- One S2000M panel;
- One S2000-ASPT unit for each flooding zone;
- One S2000-PT for each four flooding zones;
- One S2000-SP1 for sending Fire, Release, and Fault signals to the alarm receiving station.

Such system configuration ensures that each flooding zone has its own status indication and controls on the S2000-PT units. The S2000-PT also provides general indication of a protected site status. The S2000-SP1 transmits Fire and Release, Fault signal to the alarm monitoring center. Also the system functions may be enhanced with the help of other units. For example, adding S2000-KPB to the system, you can control other fire protection subsystems such as audible and visual alarm devices, etc.

Compatible versions:

- S2000-ASPT ver.3.50 or later. The version 3.xx of S2000-KPB can be updated to 3.50;
- S2000-PT ver.2.00 or later. To show pre-activation countdown, it is recommended using the S2000-PT ver.2.5 or higher. If S2000-PT of older than version 2.5 is used, the pre-activation time countdown will be indicated on the S2000M only.
- S2000-SP1 ver.1.20 or newer.

Recommended process of configuring S2000M:

1. Add units to a configuration.
2. Create a partition for a flooding zone. Specify its name. Include all elements of one S2000-ASPT to this partition. Specify elements names, if required.
3. Create an access level (or multiple ones) to control flooding zones using S2000M and S2000-PT. The access level shall accommodate flooding zone partitions; and permissions or bans for various control functions shall be defined for each flooding zone:
 - Arm/Enable: Resets alarms
 - Disarm/Enable: Disables monitoring of fire inputs/outputs (the function is available on the S2000M panel only and unavailable on the S2000-PT.)
 - Auto On: Enables the Automatic Extinguishing Mode
 - Auto Off: Disables the Automatic Extinguishing Mode (Enables the Manual Extinguishing Mode)
 - Start/Release: Manual Activation of fire extinguishing installations
 - Stop /Abort: Inhibits manual activation of fire extinguishing installations
4. Add tokens (Touch-Memory) for S2000-PT's controls and PIN codes (optionally) for S2000M's controls. Assign access levels and user names to the tokens and PIN codes.

5. Go to the (Control) Assignment tab for the S2000M and all S2000-PT units and choose partitions (zones) to be controlled by them.
6. Create **General Fire**, **General Activation**, and **General Fault** system outputs by selecting **General Fire**, **General Activation**, and **General Fault** types for the S2000-SP1 outputs in the PProg utility. The **Fire** output closes when any monitored elements go into the **Fire Pre-Alarm**, **Fire**, or **Fire2** states; the **Activation** output closes when any of monitored elements goes into the **Activated** status. These outputs are normally open. The **Fault** output is normally closed. It opens, if any of elements is in faulty condition or communication fails between S2000M and S2000-SP1. The communication fault timeout of **General Fault** output is defined by setting the Relay Control Action Time parameter for the S2000-SP1 configuration in the UProg utility.

A partition (zone) number for each flooding zone and general indicators operation shall be defined for each S2000-PT configuration in the UProg utility. When the **Device** option is selected, the general indicators show the general status of flooding zones as indicated by S2000-PT. If the **Partition** option is selected and partition (group) number is specified, the general indicators show the status of this partition (group). This option allows creating general status indicators for all flooding zones, if they are grouped into a single partition group indicated by general indicators of the S2000-PT unit.

The S2000M has a set of standard relay control programs to control fire extinguishing installations. The **Switch ON/OFF When the Auto Mode Enabled/Disabled** control programs supervise an extinguishant release mode and can be used to control the **Auto Off** warning light. The **Switch ON If Extinguishant Released** control program can be used for initiating an activation signal to one extinguishing installation for all flooding zones. **Switch ON If Extinguishant Release Failed** can be used for starting a secondary extinguishing installation. If extinguishing automatic control cannot be achieved using the standard control programs, control scenarios can be used.

2.3.11 Setting Water Extinguishing Control System

The S2000M's key function for the Potok-3N extinguishing control system is to show the status of system extinguishing units on the Potok-BKI display units. Also, the panel allows a user to enable /disable the automatic extinguishing control mode and activate/abort extinguishant release. The Potok-BKI indication unit shows states of one pump station and four water extinguishing (pump/valve) units. The actual number of pump/valve units is determined by the configuration of the Potok-3N system, in turn, the configuration is determined by the type of water extinguishing installation. The Potok-3N system has inputs to monitor control modes (Auto or local), On and Off states of pump/valve units, power status and faults. These monitoring inputs of one pump/valve unit shall be grouped into one partition to indicate status of the unit. Similarly, monitoring inputs of each pump/valve unit shall be grouped into individual partitions. Also, an individual partition shall be created to monitor a pump station status. The partition can include inputs monitoring the status of Potok-3N as well as system status monitoring inputs. The status of Potok-3N is monitored by the following inputs: device status input (Armed or Fire status), control mode input (automated or local), release/start or fault supervise circuits, mains and backup power states. The system status inputs include: manual release inputs, system pressure inputs, operation mode inputs, and fire tank water level inputs.

Some configurations allow the Potok-3N unit to select the extinguishing control mode (auto or manual release) and to activate/abort remotely release of extinguishant. It can be achieved via two approaches: by user manual commands or automatically by event changing an input status (e.g. by Fire or Fire2 signal received from a detection system or manual call point).

The operation mode can be auto start or local (manual) release. It can be monitored and controlled via an input supervising the operation mode of Potok-3N. The number of this input is 26 for Potok-3N units. The input can be included to a partition to control Potok-3N's release operation mode and to monitor the mode status. To add this input to a partition in the PProg utility, please set the type of input as **Operation Mode** (Release Mode). The remote release (start) input is used to activate and abort manually the extinguishant release. The number of this input is 32. To add this input to a partition in the PProg utility, please set the type of input as **Remote Release**.

To operate the Potok-3N manually using the S2000M panel and the Potok-BKI module, the following privileges shall be provided:

- 1) Create an access levels with permissions to control a partition containing Potok-3N's **Operation Mode** and **Manual Release** inputs. Provide permissions for commands to be available for users to operate Potok-3N. The following commands are possible: **Auto On**, **Auto Off**, **Release**, and **Abort Release**.
- 2) Add a user authorization code (credentials such as PIN-code and token code), assign an access level, and enter a description (name).
- 3) Provide permissions allowing user to operate a partition from the Potok-BKI or S2000M units.

Details for programming user codes (credentials) and partition control permissions are described in 2.3.3.

2.3.12 Setting Rupor Voice Alarm System

Auto (usually by Fire signal) or manual control commands are initiated with the help of voice alarm scenarios. Multi-option notification is possible when a Fire-driven voice alarm and activation delay may depend on the conditions of other site areas. A scenario has a set of conditions for initiation of various scenario versions in one area depending on the status (Fire signal) of fire detectors located in various areas of a protected site. Voice alarm versions are determined by the activation parameters set for each scenario condition: number of a voice alarm message (actually, it is number of VA scenario containing voice message), activation delay, and control action time).

The voice alarm scenarios are programmed in the Rupor device. Each scenario includes preamble (ear catching audio fragment), voice alarm message, pauses between voice fragments, audio play delay, and clip duration. Up to five scenarios can be created for one Rupor device.

Scenario conditions are based on the check for elements with specific states in defined partitions. A condition is deemed true (satisfied), if at least one of elements goes to one of the states as specified in the condition. Conditions are grouped into steps. Each step includes a permitting condition and inhibiting condition. The total condition is satisfied, if the permitting condition is

true but inhibiting condition is false. Each step has attributes defining voice alarm initiation if the total condition is true, they include the following: VA scenario number, (control) activation delay, and control action time. Thus each scenario step is one option of voice alarm notification that may be different from other options by activation delay, voice message, and message duration. A scenario may have associations with multiple Rupor devices. In this case, they are controlled identically and synchronously.

In respect to the actual operation of the voice alarm system, these capabilities will be used as follows. First, voice alarm target zones shall be identified at a site. Further, create a control scenario for each zone. Assign the scenario to the outputs (Relay#1) of the Rupor devices of this voice alarm zone. Before describing control scenario, the following has to be clarified: what voice messages and activation delay shall be applied depending on the fire location: how a voice alarm message and activation delay shall be varied depending on which escape routes are free and which are blocked by fire. The scenario steps usually include both permitting and inhibiting conditions. These conditions usually include **Fire** or **Two Fires** states. The permitting condition describes a site area (list of partitions) where a fire signal triggers a voice alarm message with an activation delay and duration period, whereas an inhibiting condition includes a site area, where a voice alarm message with such parameters cannot be activated (if another message should be played under these conditions or another parameters should be applied). A scenario can include up to 254 step-conditions. The panel checks scenario conditions (steps) one by one till satisfied condition is found or all scenario conditions are processed.

A voice alarm scenario is created on the Control Scenarios tab in the PProg utilities. To create a scenario, click the Add Scenario () button in the Control Scenario box. Select the **Voice Alarm** scenario type in the appeared box and click OK. Click the **Add Scenario Step** button. Go to the Related States and Partitions pane, select permitting condition an inhibiting one, if required. The condition is created by adding partitions and satisfying status to this condition (Usually **Fire** for VA). A manual activation condition is created by adding the Manual Activation status. Then define step parameters: number of voice message, activation delay, and control action time (in seconds). If required, you can add more scenario steps, totally up to 254. Further, you have to associate an available scenario with Relay #1 of Rupor unit. Select the created scenario in the Control Scenario pane, select Rupor in the Devices (scenario assignment), and select the **Scenario** parameter in the Inspector panel, and select a required scenario in the drop down menu. A control scenario is assigned to all Rupor devices in a voice alarm target zone. The Rupor's Output 1 shall be set as Fire Protection in the Devices (Inputs/Outputs) pane of the Partitions tab area.

2.4 Getting Started

Before starting the panel, please make sure the panel is mounted properly as designed.

When the panel is powered on, the LCD is illuminated and the power LED is on. When RS485 devices are connected to the panel interface, the panel generates a message reporting on found devices. The following messages can be seen: **Device Reboot** (generated by a device when turned on) and **Power Failure** (generated by some devices in low-voltage conditions). The RS485 unit may generate the **Power Fault** message when it is cut off, and when it is further connected to the panel, the panel can retrieve this event message to show on the LCD. When a printer is on, it starts printing messages related to the panel startup and reset, printer's startup, found devices, etc. When turned on, the panel starts polling each system unit and element to obtain info on their status, this may take several minutes. The panel response to a user action may take more time during this process.

It is recommended that you change the installer code to prevent unauthorized access to programming functions. You can enter one or more user codes authorizing control of devices (see 3.16). You may have to change the following parameters: **Buzzer, Event Log Protection, Indication Test Protection, User Access to Code Change, and Code Length**. The Buzzer parameter is responsible for audible indication of alarm messages. Set it ON, if you want the panel to indicate audibly alarms or faults as received. The parameter can be set OFF, if the panel cannot be easily accessible by user to respond alarms, or indication is provided using other equipment. When used in Orion Pro, you may find it is useful to use the **ON if Offline** function - audible indication and alarm acknowledgments will be provided by means of the Orion Pro Suite, however, if the Orion Pro workstation goes offline, the panel take responsibility for these functions. The Event Log Protection defines whether code entering is required to view the Event Log. The Indication Test Protection parameter defines whether entering code is required to access indication test functions. The User Access to Code Changer parameter defines whether the user is allowed to change his/her authentication codes by his/her own. The Code Length parameter defines the number of characters the PIN codes must contain. This works for entering PIN codes using the S2000M panel, but is not applicable for the Installer Code. If more than four digits have to be used for PIN codes, this parameter value shall be increased.

When then panel is powered on, please check and/or set system date and time. The date and time is used for event logging and system reference time. When used in Orion Pro, the system time is automatic. The time clock offset can be automatically corrected, if required. Date and time setting and time clock tuning are described in 3.17.1.

3 Product Usage

3.1 Main Menu

To enter the main menu, please press the button . The menu includes the following items:

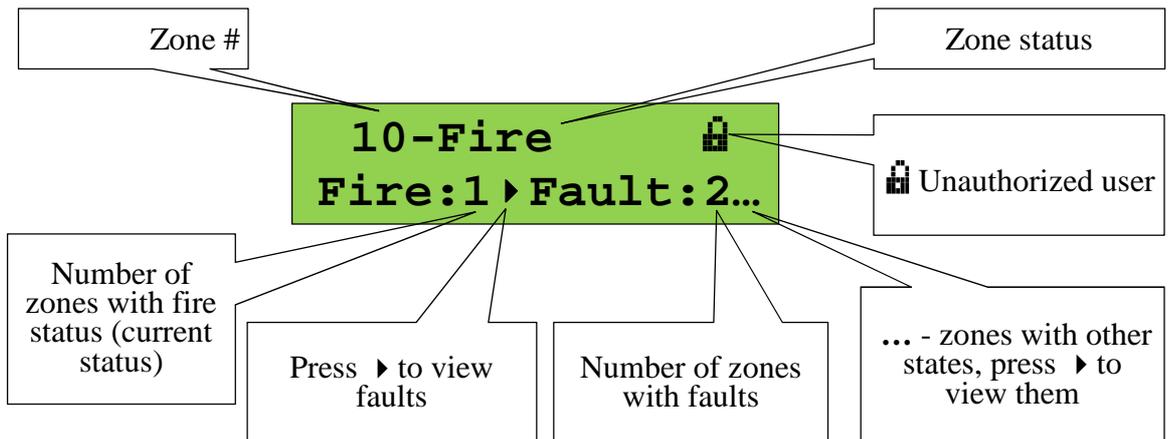
- ◆ **Event Log:** Opens the event log;
- ◆ **Control:** Opens menu to control partitions (zones) and system elements and view their states;
- ◆ **Indication Test:** Enables the test mode to testing the S2000M's indication, buzzer, and its other components;
- ◆ **Users:** Opens menu to add, delete or replace user credentials (PIN codes and tokens) and control permissions;
- ◆ **Settings:** Settings for S2000M parameters and other components, entry to PC programming.

Appendix C1 shows the menu for an operator authorized to control zones (partitions); Appendix C2 shows privileges for the direct control of units; Appendix C3 includes the installer privileges.

3.2 Indication of Panel Conditions

The panel's conditions are indicated by individual LEDs such as FIRE, START, STOP, FAULT, DISABLED (refer to 1.4.2) and alphanumeric LCD. The main LCD field indicates Fire, Start, Alarm, and Stop, and Disabled conditions; this field is displayed automatically after being 20 sec idle in any menu in Fire, Start, and Alarm condition or after 100 seconds in non-alarm conditions.

The current condition field (current status) looks like the following (as in the Fire conditions):



The lower line shows the number of partitions (zones) with fire alarms (**Fire:1**), intrusion alarms (**Alarm:1**), activated fire protection equipment (**Start:1**), as well as aborted (**Stop:1**), inhibited (**Inhib:1**), manually controlled (**Manual:1**) fire protection equipment, failed (**Fault:2**) and disabled (**Dsbl:1**) elements. The first (left) is the current status.

When in the Fire, Alarm or Start condition, the upper line shows the partition (zone) first gone to an alarm status and status description. If there are elements having different alarm conditions,

those with highest priority will be shown. The priority of alarms is as follows (from higher to lower):

- 1) Start of fire extinguishing system (extinguishant release)
- 2) Fire
- 3) Start (activation) of fire protection system (except for extinguishing system)
- 4) Alarm

The indication of Fire, Alarm, and Start modes is active till the reset of fire and intrusion alarms, and transition of fire protection equipment to the initial status.

The  icon (Unauthorized User) means that an authentication code is required to access partition (zone) control functions. After completing the control action, the user shall quit the system to prevent using his code to control the system.

To quit the panel, please go to the current status screen and click the **X** button. The  icon will appear indicating that there are no active users there.

Control Button Functions:

 –Enters the list of partitions (zones) accessible by the current user

RESET– Resets alarms in the partition (zone)

START– Starts fire protection equipment in the zone

STOP– Aborts the fire protection equipment in the zone

  –Viewing partitions in other states (other partitions in Fire, Start, Alarm, Aborted, Fault, Disabled states)

 – Switches to viewing states of partition and individual elements (Zone Info View)

0 ... 9 – Numerical keys for entering PIN codes.

Control functions are accessible for authorized users only. Pressing the , reset, start, and stop buttons, an unauthorized user will be requested to enter his/her authentication code.

To view items having states such as **Fire, Activated, Aborted, Alarm, Fault, Locked, Manual Control and Disabled**, please use   to select the required status (a selected status is the first in the lower field on the screen. The upper field shows the partition gone first to this status. To view further details on the partition, please press . The partition view field will be displayed. To view other partitions with the same status, please use  

The Partition View Field shows a partition name and status:



The description of states is specified in Appendix D. If partition elements have different states, the one with highest priority will be displayed. There are some special partition (zone) states:

- Disarmed (partly): There are some disarmed and armed inputs in the partition
- Armed (partly): There are disabled inputs in an armed partition
- Empty: There are no elements (inputs and/or outputs) in a partition
- Querying ... Status querying in the processes.

The field control buttons:

 – Opens the menu of commands to control the current partition (zone);

RESET – Resets alarms in the partition (zone)

START – Activates fire protection equipment;

STOP – Aborts active fire protection procedures in the partition (zone);

◀, ▶ – Selects to view other partitions (zones) in this condition (other partitions in the status such Fire, Start, and Alarm)

 – Transition to smaller items of a protected target. If the partition status is displayed at the moment, the key will take you to the individual elements of the partition (loops, address points (detectors), outputs). If a partition group is displayed, press the key to go to the partitions of the group.

✕ Returns to the condition mode view.

Depending on user rights, element type and status in a partition, the following control command can be available:

◆ **Arm** – Arms

◆ **Disarm** – Disarms

◆ **Reset Alarms** – Resets to a quiescent mode (arms all activated detectors/inputs in a partition); the same function can be performed with the **RESET** button

◆ **Auto ON** – Turns on automatic extinguishing mode

◆ **Auto OFF** – Turns off automatic extinguishing mode with the manual control functions mode being still available

◆ **Start** – Activates fire extinguishing system or any fire protection equipment. This command can be used for manual activation of other systems not related to fire protection. The **START** button offers the same functions

◆ **Stop** – Stops (aborts) active fire extinguishing or other fire protection systems. The **STOP** button offers the same functions (double pressing is required, if a controlled device supports pre-activation delay function)

◆ **Hold»** – Pauses pre-activation delay countdown of fire extinguishing. The first press on the **STOP** button can perform the same function

◆ **Immediate Start** – Activates fire extinguishing system without pre-discharged time countdown

◆ **Activate** – Switch an actuator (appliance) to the operating position

◆ **Deactivate** – Switch an actuator to the initial position

◆ **Disable** – Disables monitoring and control functions for an element

◆ **Enable** – Enables monitoring and control functions for an element

◆ **Test ON** – Turns on the Test Mode. For more information see 1.4.3.6

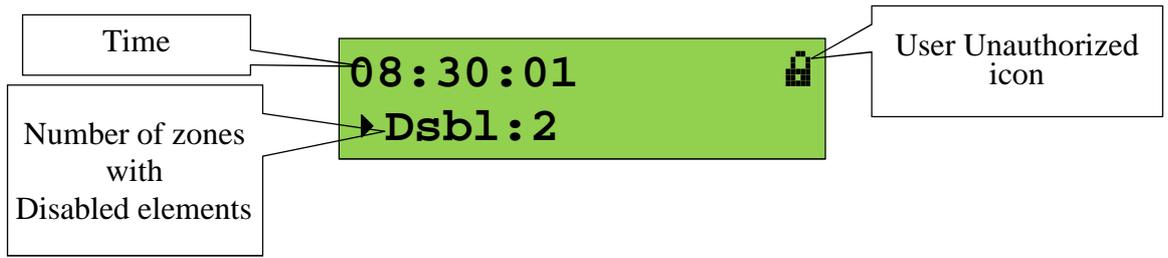
◆ **Test OFF** – Turns off the Test Mode

◆ **Details ...** – Provides more details on the partition status

◆ **Refresh** – Initiates another request for a unit status.

3.3 Normal Mode

The system is in the Normal mode when there are no alarms (intrusion and fire), activations, and faults. In this mode, the panel displays the system time, also it can display the current system events if displaying events is not disabled in the S2000M's configuration. If any element is disabled, the **Disabled** LED is on, and the LCD shows how many zones have disabled elements:



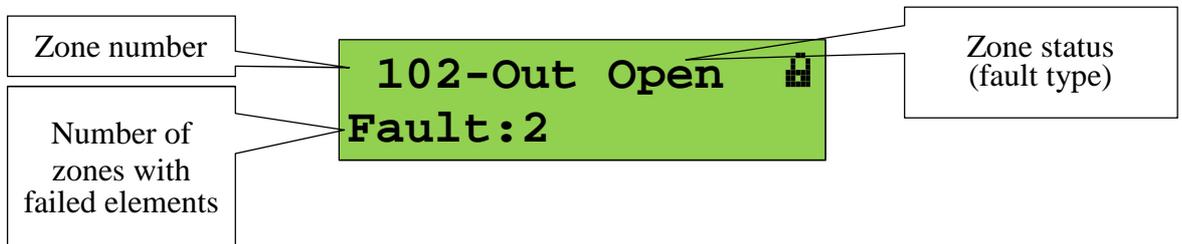
To view the first partition with a disabled element, please select a disabled partition using the **▶** button and press **↶**. The information of the first partition with disabled elements will be displayed. To view other partitions with disabled elements, please use the **◀ ▶** buttons. To view disabled elements press **↶** and use **◀ ▶**.

3.4 Fault Conditions

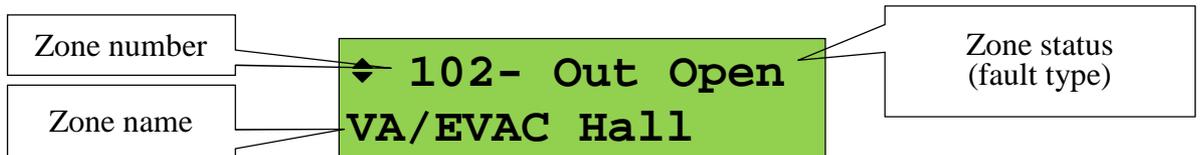
The panel goes to this condition when failures occur with elements such as addressable fire detectors, inputs, outputs, device states, links, and readers), included in system partitions (zones). The entire list of faults is specified in the Appendix D. The Fault condition is indicated by an individual Fault LED (see table 2) and Fault buzzer signal. When received, a fault message is displayed for short period of time on the panel's LCD, further it shows how many partitions are in the fault status, with no additional details on the faulty partitions:



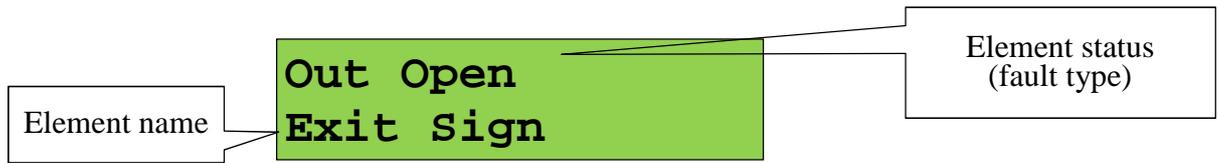
To view faulty elements, please press the **▶** button (**◀ ▶** are used to select to view Starts, Faults, Alarms, Stops, Faults, and Disablements). It will show info on the partition first gone to the fault status:



Further, press **↶**. The info on the first faulty partition (zone) will be displayed



To view other faulty partitions (zones) use the ◀ ▶ selection buttons. Press the ↵ button to view faulty elements of the partition (individual inputs, addressable detectors, outputs, etc.):



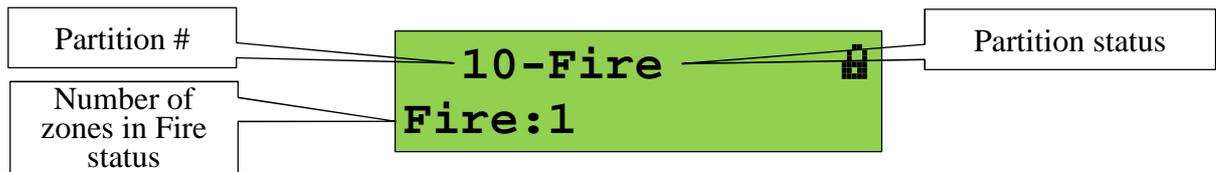
To view other failed elements, please use ◀ ▶ selection buttons. Pressing the 1 key displays the unit address and unit element number (ID):



Press ↵ to see the list of all states of the selected elements. To select between states, use ◀ ▶.

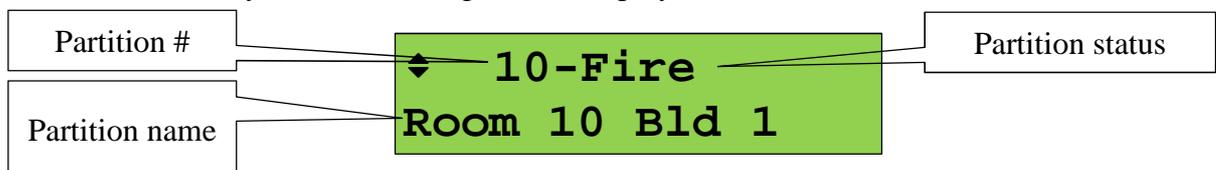
3.5 Fire Condition

The S2000M panel goes to this condition if some elements (addressable detectors or inputs/loops) are in a fire alarm status: Pre-Alarm, Fire, or Fire2. The Fire condition is indicated by the **Fire** LED (refer to Table 1) and the **Fire Alarm** buzzer. The LCD displays the first partition (zone) where the fire is detected and the number of partitions under the Fire status:

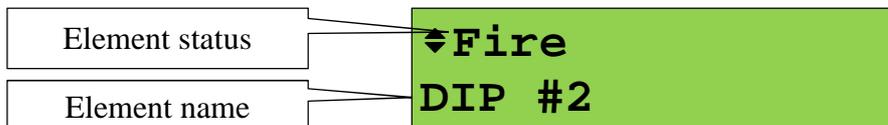


The following states can be displayed: Pre-Alarm, Fire or Fire 2. The buzzer alarm can be silenced by the 🔇 button. To reset a fire alarm in a partition, press the **RESET** button, or press ≡↵ to open the contextual menu and select a required reset item. Resetting a fire alarm restores the initial status of activated detectors and automatically activated fire protection equipment.

To view additional information on fire in this partition and other partitions in Fire conditions, press the ↵ key. The following will be displayed:



To review other partitions (zones or premises) where fire is detected, use the **▶ ◀** keys. The key **▶** pages partitions in the order as their data received, the **◀** is the backward key. To find the alarmed elements (detectors or loops) in the partition, please press the **↶** button. The screen shows detail on the first-alarmed element:



Press and hold **<0>** to see the date and time of the fire. Press **<1>** to see the unit address and address point number. Use the **▶ ◀** buttons to view other fire-alarmed elements. To reset an alarmed element, please press the **Reset** button or use the contextual menu by pressing **≡◊**.

Press **↶** once more, to see all states of selected element (the Fire status will be shown with date and time). To navigate between the states, use **▶ ◀** keys.

3.6 Start Condition

The panel goes into this condition when a fire protection is activated or pre-activation status is in place. The Start condition is indicated visually by the individual Start LED (see Table 2) and built-in Start buzzer alarm. In case of coincident Fire and Start events, the extinguishant release (start of extinguishing installation) will have the highest priority while the Fire event has lower priority, and the activation of voice alarms, smoke removal, and similar equipment is the lowest priority. In the Start condition, the panel's LCD displays the first partition (zone) where the activation occurred:



In case of pre-activation, the display shows the Start countdown for the zone where the activation will happen first.



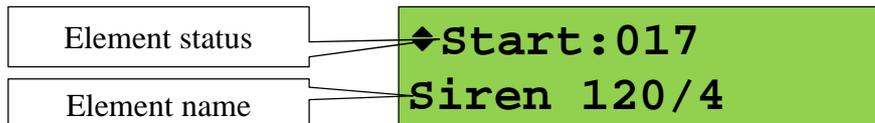
An activation signal in the zone (e.g VA immediate manual activation) can be initiated manually by pressing the **START** button, the abortion of the activated system can be done by pressing the **STOP** button. These operations as well as other available commands can be committed through the contextual menu. To open this menu, please press **≡◊**.

To view additional details about activated systems in this partition or other Start-related partitions, press the **↶** button. The following information will appear:



To navigate between zones where release/start signal is activated, please use \blacktriangleright \blacktriangleleft . The \blacktriangleright key pages partitions in the order they were activated, the \blacktriangleleft button does it in the reverse order.

To identify activated/started elements, please press the \blackleftarrow button. In case of delays, it will show the device that will be activated first.



To view other activated elements, use the \blacktriangleright and \blacktriangleleft buttons.

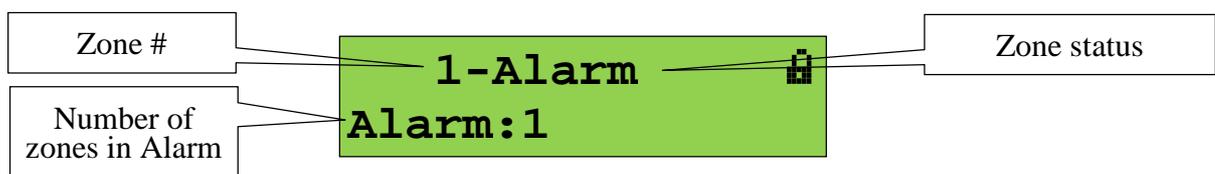
Press and hold the <0> key to see event date and time. To see a module address and output number, press <1>. Press \blackleftarrow once more to see all states of the selected element. Use the \blacktriangleright \blacktriangleleft keys to navigate between states.

To monitor and control flooding zones, please use the S2000-PT units. The flooding zone states are indicated by the DISCHARGE DELAY, DISCHARGE, EXTINGUISHING, HOLD, and ABORT indicators of the S2000-PT unit. The Control mode is indicated by the AUTO OFF LED. Fires, faults, and disablements are indicated by the FIRE, TROUBLE, and DISABLED LEDs. The Manual Release is activated by the DISCHARGE button, the ABORT button operation activates the abort of the extinguishing procedure. To switch between control modes, use the AUTO OFF and AUTO ON buttons. The RESET button is used to reset Fire in a partition and to turn the device onto the initial status. To access the above functions, please present iButton to the S2000-PT's built-in reader.

3.7 Alarm Condition

The panel goes into this condition if any of the system elements goes in the Intrusion Alarm, Lobby Alarm, Panic Alarm, Duress, or Flooding Alarm status. The indication of Panic Alarm, Duress, and Flooding Alarm is optional. These states can be indicated as non-alarms or as silent alarms (see 3.17.3).

The Alarm condition is indicated by the Alarm buzzer signal. The display shows the first partition (zone) where an alarm occurred, and how many partitions are in the Alarm status.

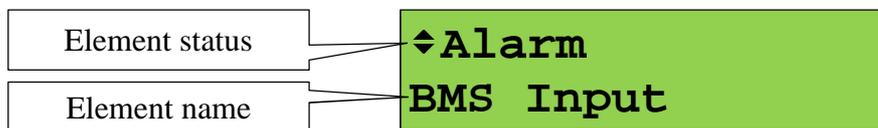


To view other alarms in this and other alarmed partitions, please press . The following screen will appear:



To view other zones (rooms) where alarms occurred, please use or . The button navigates zones in the order as they gone to the Alarm status; the button does it in the reverse order.

To find the alarmed elements in the zone (detectors or inputs), please press . The screen field will show the first element in the Alarm status:



To view other alarmed elements, please use , (the button is used to view elements in the order as they occurred, the button does it in the reverse order). To view an alarm date and time, please press and hold **0**. When pressing **1** it will show a module address and detector/ input ID (#). If the button is pressed again, the status of a selected element can be viewed (the Alarm status will be displayed with time and date). Please use , to view other states.

Most frequently, when an element is in the Alarm status, the disarming is required (see 3.8). It can be required to reset an alarm without disarming (see 3.9).

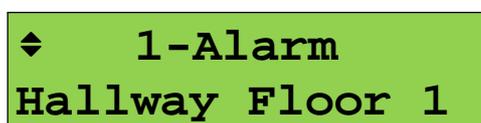
3.8 Arming and Disarming

Arming or disarming process from the quiescent or Alarm condition is started by user's entering PIN code using **0...9** numerical buttons:



The access to control rights can be obtained by presenting an access token to a reader assigned to the S2000M panel. If a user has been authorized for the system, he can press instead of entering PIN.

After authorization (pressing) is completed the panel display shows the first user accessible partition:



The  button opens the control menu. The **Disarm** command is available for the zones in Alarm, Armed or faulty states; the **Arm** command is available for disarmed zones:



A green rectangular LCD display showing the text "Disarm" on the first line and "Hallway Floor 1" on the second line. A small diamond-shaped cursor is positioned to the left of the "D" in "Disarm".

This example illustrates the use of the **Disarm** command. Usually, an offered command corresponds to the currently required action. If it is not suitable, a proper command can be selected using the   buttons. To execute a command please press the  button. When the **Disarm** command is launched, the **Arming** and **In Progress** event messages are displayed. When the disarming command is succeeded, the **Success** beep is generated, and the status of the disarmed zone will be shown on the display.



A green rectangular LCD display showing the text "1-Disarmed" on the first line and "Hallway Floor 1" on the second line. A small diamond-shaped cursor is positioned to the left of the "1" in "1-Disarmed".

The arming is completed in the same way but selecting the **Arm** command.

The panel supports the control of individual elements included in a partition. To perform a control action, please press the  button when a partition status is shown on the display. The partition element list will appear (inputs, detectors, etc.) to be controlled individually. Individual elements are controlled in the same manner as partitions.

The above disarming/arming procedure is related to the case when a user's access level is assigned with **Show Status before Control**. If the **Immediate Control** style is selected, a partition and offered command will be displayed immediately after entering a code:



A green rectangular LCD display showing the text "Disarm" on the first line and "Hallway Floor 1" on the second line. A small diamond-shaped cursor is positioned to the left of the "D" in "Disarm".

To start the offered command, please press  .

When viewing events (alarms, fires, etc.), an authorized user can execute a control command for the currently viewed partition by pressing . If a user is not authorized yet, an authorization code entering is required. Further, a command will be offered on the display to be initiated by the  button or another command can be selected for initiation using  . For example, let the **Alarm** event is displayed on LCD first:



A green rectangular LCD display showing the text "1-Alarm" on the first line and "Alarm:1" on the second line. A small diamond-shaped cursor is positioned to the left of the "1" in "1-Alarm". A lock icon is visible to the right of "1-Alarm".

Press  to invoke the control function. The  icon illustrates that the user is not authorized. Therefore, the authorization code will be requested after pressing :



A green rectangular LCD display showing the text "Code: *" on the first line.

Please enter a PIN code using the S2000M's keyboard or present a token to a S2000M-associated reader. When the code is accepted, the S2000M offers a command to control the selected partition (if authorized):

◆ Disarm
Hallway Floor 1

Press  to start the command or use   to select a required command and press  to start it.

Alternatively, the Control mode can be accessed through the main menu. While this way requires more user actions, the control can be provided in any other menu (setting, event log, etc.) This can be done as follows:

- Enter main menu by pressing ;
- Select the **Control** submenu;
- The S2000M panel will request to enter user authentication code (credential).

3.9 Alarm Reset

The Alarm Reset command switches partition elements to the quiescent mode (arming), when these elements are in fire, intrusion, flooding alarm or in Arming Failed status. Here, the manual explains resetting alarms using the Reset button; alarm resets can be completed using the control menu the same way as arming (see.3.8), but selecting the **Reset Alarm** in the menu.

The procedures to reset an alarm can be as follows:

- 1) Enter PIN code or present a token to a reader, select a required partition and press the RESET button;
- 2) Select a partition where an alarm has to be reset (in display or viewing mode), press the RESET button, enter PIN code or present a token to the reader (if authorization is required)

If a PIN code is entered first, the S2000M will display the first partition (zone) of user available partition. Select a required partition using   and press the RESET button. The S2000M asks to confirm the Alarm Reset in the selected partition (zone):

◆ Reset Alarm?
Room 10 Bld 1

To reset an alarm, please press  . You can also select a global reset (an alarm reset in all user accessible partitions) using   :

◆ Reset Alarm?
Total

The alternative version is to select a partition where you want to reset an alarm and press the RESET button. The selected partition is a partition with its status displayed on the LCD at the moment of pressing the RESET button. For example, when the Fire condition is active, it is the first partition where the fire alarm occurred:



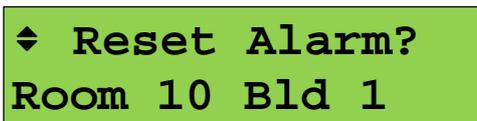
10-FIRE 🔒
Fire:1

This is a currently viewed partition, when viewing partitions in the Fire condition:



◆ 10-Fire
Room 10 Bld 1

After pressing RESET and entering PIN code (if not authorized before), the S2000M requests confirmation of the Reset Alarm command for the selected partition (zone):



◆ Reset Alarm?
Room 10 Bld 1

To complete reset, press  .

3.10 Start and Stop

Start (activation) and stop (abort) function buttons on the S2000M are primarily meant to provide manual control of the following fire protection: voice alarm, smoke removal, and support utilities. They also can be used to control systems not related to fire protection. The S2000-PT and Potok-BKI units should be used as main fire extinguishing control facilities.

The **START** button is used to start (activate) devices. To hold, abort, and stop an activated device or systems (e.g, activated voice alarm system), the **STOP** button is used. The possible sequences of user actions are as follows:

- 1) Enter a PIN code or present a token to a reader, select a partition using   and present the START / STOP button. Doing this way, all user accessible partitions are selectable using  .
- 2) In the quiescent mode, when a partition is not selected, first select a command using the START / STOP button, enter PIN code or present a token to a reader (if authorization is required), select a required partition and press START / STOP button to issue a corresponding command to the selected partition. Unlike the first version, a user is allowed selecting accessible partitions only that include devices to be started or stopped.
- 3) Select a partition where you want to start/stop devices, press the START / STOP button, enter PIN code or token (if required). The command will be applied to the selected partition only. The selected partition can be the first partition included active devices and displayed on the S2000M LCD, or the currently viewed partition with Start/ /Activated, Stop /Abort or Fire status.

In all cases above, confirmation will be requested before issuing a control command (start, stop, etc.):

◆ Start?
VA Hallway

Press  to confirm or press  to cancel.

3.11 Disabling

The maintenance of intrusion and fire detection system may require the following:

- 1) Temporary disabling of addressable units and detectors to avoid false faults if their replacement and/or transmission path relocation are required.
- 2) Temporary disabling of individual control inputs points for maintenance of fire detectors.

It may be necessary to arm all detectors at a site excluding failed detectors (Arm with Bypass). This function may be used simply to disable malfunctioning detectors

The disabling is carried out in the following way:

- Enter your PIN
- Use the   buttons to select a partition (zones) to disable:

◆ 1021-Lost
VA 2-floor

- To disable all elements, press  and select **Disable**:

◆ Disable

When all partition elements are disabled, the partition will have the **Disabled** status:

◆ 1021-Disabled
VA 2-floor

- If an individual element of a partition have to be disabled, press  to go to the menu with elements, then use   to select a required element:

◆ Lost
Siren hallway

- To disable the element, please press the  button and select **Disable**:

◆ Disable

When disabled, an element has the **Disabled** status:

◆ Disabled
Siren hallway

Enabling is provided the same way.

3.12 Viewing Measurable Parameters

This function is used to view measurement values resulted from addressable units and detectors.

The measurements of temperature, humidity, and pulse counting can be useful for field monitoring.

Thus the values that can be seen as following:

- Temperatures
- Humidity
- Pulse counter data
- Counting data reliability

For the system tune-up and maintenance, the following may be required:

- Dust content inside DIP-34A;
- Input circuit resistance (both measurement values and data stability)
- Voltage of backup batteries
- Polling Loop voltage at address point
- Smoke content (DIP-34A) and heat (S2000-IP)

To assess the measurable values, please switch to the partition control:

Press the  button, select **Control** and enter your password.

When a partition current status is displayed, you can immediately start entering PIN code. The first user accessible partition will appear. Select a partition containing a required element (loop/input, addressable detector/address point):



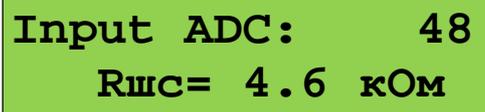
◆ 5-Armed
Room 5 Bld 1

Press  to view the partition elements. Use   to select required elements:



Armed
IR1 Room 5

Press  to open contextual menu, select  **Measurements** , press  . The value of measurable parameter will be displayed:



Input ADC: 48
RИC= 4.6 КОМ

To view other measurement parameters, use   . Measurement data and their views may vary depending on the source device.

3.13 Testing Indication and Buzzer

Test of visual and audible indication of the modules is provided in the following way:

- Pressing the TEST button on the front of a module (e.g. S2000-PT) or pressing the sequence of keys (e.g. S2000-BI and S2000-BKI)

- Initiating a test command from the S2000M to test the S2000M's indication as well as other modules that don't have a Test button.

3.13.1 Testing S2000M's Indication

The test of S2000M indicators and buzzer includes the check of a buzzer signal, individual LEDs, and LCD. To start the test, proceed with the following:

- Press  to open the main menu
- Select **Indication Test**
- If authorization is requested, enter any acceptable PIN code
- Select **This Device**

The beginning of the test will be indicated by three short beeps. During this mode, the individual LED's will flash sequentially: FIRE and START (red); STOP, FAULT, DISABLED, and SILENCED (yellow), POWER (green).

The LCD test checks character cells of the upper and lower lines. First, a tested line shall be cleared to be filled up gradually with the  symbols. When an LCD is malfunctioning, it may not be cleared completely or filled properly. Below see the example test of LCD's upper and lower lines:



Pressing any button during the test is accompanied by a short beep and this button name (or symbol) appeared on the LCD.

The test ends up automatically after 10 seconds. The end of test will be indicated by three short beeps.

3.13.2 Testing Visual and Audible Indication of Other Units

To launch tests of indicators and buzzers of RS485 devices connected to S2000M:

- Press  to open the main menu;
- Select **Indication Test**
- If authorization is requested, enter any acceptable PIN code
- Select **Other Device**
- Enter a device address when **_Address_** request appears

3.14 Viewing Event Log

To view the Event Log, please press  and select **Event Log**. If the Event Log Protection item is set as + (enabled), authorization is required to access the event log (any acceptable PIN code or token provided access to the event log).

To look through the events, use the  and  keys. When the display shows the last event (the newest), pressing  will show the **End of Log** message. When it shows the first event (the oldest), pressing  will show the **Beginning of Log** message. The **<0>** key is used to view

an event date and time. The <1> key is used to view event source details in the numerical format. Varied by a message type, it will show the following information: partition number, device address, loop (input), reader or relay number, power input or line number, user number. When <2> is pressed, the display will show the descriptions (names) of a partition and loop (input). If no name is defined, the panel will show a partition number, device address, and loop number. When <3> is pressed, the panel will show a user name. If no user name is defined, the panel will show a reference number of the user's code (credential) as recorded in the database. To view a ContactID zone number in messages from system elements (loop/input, relay, status supervision input), please press <5>. If a number is not defined, the panel will show Zone #: Not Set. Holding down <9>, you can see a message number as in the event log. The most recent message has number 1; the oldest message has number 8191.

To view the events occurred in some period of time or at a certain site area, please apply corresponding filters. They can refine events by the following categories:

- By event type: fires, starts (activations), stops (aborts), alarms, faults, disablements, holds, as well as auto off and normal
- By time (between dates)
- By partition (zone)
- By element (input/output) included in the partition (zone)
- By event from a device or circuit (loop, relay, reader)

The filters can be combined, for example for viewing all events occurred within a period of time in a certain partition.

Entering the log viewing mode, you can view all events. To set filters, please press the  contextual menu key. The menu with current settings will be displayed. Using this menu you can select a required item to edit corresponding settings:

- ◆ **View All Events**
- ◆ **Event Type: All**
- ◆ **Date: 01.01.00 to 31.12.99**
- ◆ **Zone: All**
- ◆ **Element: All**
- ◆ **Device: All**

The **◆ View All Events** item discards all filters to view all messages in the event log. This can be helpful if used as follows: first search for required events using filters, then select **View All Events** for the detailed assessment of this event log part.

The **◆ Event Type:** item is used to select events of certain type. To change a type, press  and select the required event type using the  and  buttons. The following types can be available: **All** (all types of events), **Fires**, **Alarms**, **Start (Activate)**, **Stop/Abort**, **Disablements**, **Auto OFF**, and **Normal**. To confirm your selection, press . Types of events can be found in Appendix D.

The **◆ Date:** submenu is used to select events within a set period of time. This period is defined by start and finish dates. To define these dates, press .

The **◆ Zone:** submenu is used to select events occurred in a certain zone. To define a required zone, please press . The following options will be offered:

- ◆ **Enter Number..** - Enter a zone (partition) number using a keyboard;

◆ **Select..** – Use **▶** and **◀** to select from a list of zones set in the S2000M configuration. Confirm your selection by pressing **↵**. The selected zone will be displayed as follows:

◆ **Zone: 14**
Hallway,

Where "14" is a partition number and "Hallway" is a partition name;

◆ **Select All** – Allow messages from all partitions (discards the Zone filter). With such a selection, the filter will be displayed as follows: ◆ **Zone: All.**

◆ **Element:** is used to select events received from a specific element of the system (input, reader, notification routing link). Press **↵** to choose from two available options:

◆ **Select..** - Selects an element from the S2000M configuration. If the zone filter is applied, the more compact list of elements related to the selected zone will be suggested. When selected, the element will look as follows:

◆ **Element: z.14**
MCP Hallway,

Where 'z.14' is a zone number and 'MCP Hallway' is an element name;

◆ **Select All** – Allows messages from all elements. With this selection, the filter will look as follows:

◆ **Device:** is used to select events coming from a certain RS485 device. You can enter a device address to display event from that device only or device address with a circuit number (loop, output, reader) to display events occurred on that circuit only.

To edit, press **↵**. Select **Enter Device Address** and enter a required device address, and press **↵**.

After entering an address (e.g 1), the filter value will be as follows: **Device: 001**. With such settings, the events received from a device with address 001 will be shown in the event log. Using **Enter Input/Output No.** you can select number of circuit(input, output, or reader). For example, when circuit No. 4 is entered, the filter value will be as follows: ◆ **Device: 001/004**. These settings allow displaying events from the circuit No. 4 of the device with address 1 only. To discard these settings, please select ◆ **Select All**.

3.15 Message Display and Print Formats

Each event message contains a name, source data, time, and date. All system messages are described in Appendix E. Source data can be a partition number or name, unit address or name, input/output/ detector address or name. The date format is 'DD MM' where 'DD' is a day of month, 'MM' is a month. The time format is 'HH:MM:SS' where 'HH' is hours in 24 format, 'MM' is minutes, and 'SS' is seconds. If a considerable time passed from the event occurrence till it was received by the panel (e.g a source unit worked as standalone), the event is displayed with a time stamp in accordance with the source unit's time clock. The mark of this is <*> instead of <.> as separator for the date displayed, or no date can be displayed in case of older version units.

The LCD's upper line shows a message name, the lower line shows the source details. Usually source details include the partition where an element belongs to – event source or user name. If events come from devices (addressable units) and some events from inputs/loops (arming/disarming), the second line shows the element name (device or input/loop name).

The event log is printed as one event message in each line. The following information is printed: event time and date, message name, message source (device address, and input, reader, or relay number), partition number and description, and user name. The Event Log is printed as a table. The table head is printed every other 50 messages with the following attributes included:

Date	Time	Event	Device	Zone#	Description	User
------	------	-------	--------	-------	-------------	------

The format of message display depends on its type. When displayed, the input events (alarm, fires, input faults, etc.), relay and supervised output messages include partition data (details) where a message source belongs to. The formats of displayed and printed events are as follows:

LCD:

Alarm

Hallway 1 floor , Where Hall 1floor is a partition name.

Press the <0> button, to see the date of the event:

20.12 17:41:11, where **20.12** is day and month (December 20), **17:41:11** is time (17 h, 41 min, 11 sec).

When <1> is pressed, the name of event, the event source data are displayed in the following numerical way:

Alarm

100 002/007, where **100** is a partition number, **002** is a device address, **007** is an input/output address.

When <2> is pressed, the description of partition or input/output is displayed:

Hallway 1 floor

Entrance Door, if **Hallway 1 floor** is a partition name, the Entrance Door is an input name

Zone: 100

Dev 002 Loop 007, when a partition and input are unnamed

Zone: 100

Dev.002 Relay 001 , in case of event relay, if a partition (zone) and relay are unnamed

When <5> is pressed, the name and number of Contact ID Zone is displayed

Entrance Door

Zone #: 207 , where **207** – the number of Contact ID Zone

or

Zone #: Not Set, when a Zone Number is not set.

When printed the message will in the following format:

Date	Time	Event	Device	Zone#	Description	User
20.12	17:41:11	ALARM	2/7	100	Hallway 1 floor	

In case of events related to arming, disarming, arming delay, failed arming, auto off/ on, testing, the LCD displays an input name, rather than a partition name:

Disarmed

Entrance Door - disarming of the Entrance Door input.

When <1> is pressed:

Disarmed

100 002/007, where **100** is partition number, **002** is a device, and **007** is an input number.

When <2> is pressed:

Hallway 1 floor

Entrance Door, where Hallway 1 floor is a partition name and Entrance Door is an input name

When <3> is pressed, the LCD shows the name of a user operated this input:

Smith, where Smith is a user's name (textual description)

or

User#: 80, where 80 is a user number, if no name is provided.

A displayed device event contains device info (name or address), partition info (if the monitored element is included in a partition):

Power Fault

Signal-20#2, where Signal-20#2 is a device name.

When the <1> key is pressed:

Power Fault

Device 002, where 002 is a device address.

When the <2> is pressed:

Devices 1 - 4

Signal--20P#2, where the Signal-20P#2 is a device name, the Devices 1-4 is the name of a partition containing the device status monitoring element.

When <5> is pressed, the display will show the number assigned to a device status monitoring element (a zone number for Ademco ContactID protocol)

Some devices have two power inputs, two PL lines or two RS485 lines (when a ring topology is used). These circuits are monitored for faults and can be the source of events. Message source data includes a device address, line number, device name, as well as the name of a partition including a device status monitoring element. The example of a message as displayed on the LCD:

Power Failed 1

Signal Signal-20P#2, where "Signal-20P#2" is a device name.

When <1> is pressed:

Power Failed

P002 L1, where 002 is a device address, L1 is a unit's first power input.

When the <2> key is pressed the device name and partition name will be displayed. When <5> is pressed, a device assigned number will be displayed.

The following example shows a S2000-PGE related message about a communication problem between the S2000-PGE with address 18 and Recipient 2:

Link Failed

Recipient 2, where Recipient 2 is the name of element – notification routing link

When <1> is pressed:

Link Failure

D018 L2, where 018 is a device address, and L2 is the second recipient.

A message related to recovery of the main (first) communication link to recipient 2 will look as follows:

Link Restored

Recipient 2 , where Recipient 2 is an element name - notification routing link.

When <1> is pressed:

Link Restored

D018 L2/1, where 018 is a device address, L2/1 is a second recipient/ first communication link.

Such event messages as **Zone Armed**, **Zone Disarmed**, **Arming**, and **Disarming** include a zone number, and a current user number. When a message is printed, it will additionally contain a device address and the number of a reader used to control this partition (zone). If a partition (zone) is controlled from the S2000M panel, the unit device will not be shown.

As shown on the LCD:

Zone Armed

Hallway 1-Store- zone "**Hallway 1-store**" is armed.

When <3> is pressed, you can see a user name that armed this zone:

Smith J., where "Smith J." is a user name,

Or

User#: 80, where "80" is a user number if other is not defined.

When <1> is pressed:

Armed

100 U 80, where "100" is a zone number, and 80 is user number.

As printed:

Date	Time	Event	Device	Zone (No and name)	User
20.12	18:26:59	Zone Armed	10 C1	100 Hallway 1 floor	Smith J

– Zone 100 Hallway 1 floor armed on December 20 at 18:26:59 from Reader 1 of Device with address 10 by User "Smith J".

Access related events (granted access or recorded transaction) informs on who (user name) and where (access zone) is granted access or committed transaction (passage). Additionally, the message would contain a device address and number of reader used. The LCD shows these messages as follows (the example includes the **Access Granted** event):

Access Granted

Smith J., where "Smith J." is a user name granted with access permission:

When <1> is pressed:

Access Granted

D004 R1 U 80, where "D004" and "R1" means that a user has been authorized from Reader 1 (**R1**) of device with address 4 (**D004**); and (**U80**) is a user number.

When <2> is pressed, the access zone number will be displayed:

ZONE: 10

When <3> is pressed, you will see a user name or a user number, if no user name is defined.

The printed message looks as follows:

Date	Time	Event	Device	Zone (No. and name)	User
21.12	08:34:15	Access Granted	4 R1	10	Smith J.
If no user name is defined:					
21.12	08:34:15	Access Granted	4 R1	10	User #: 80

3.16 Setting Codes (Credentials)

The user codes (credentials) can be added to the panel, edited there or deleted from it. This function can be accessed using the installer code.

This menu can be accessed from the main menu:

- Press ;
 - Select  **Users**;
 - Enter the installer code when requested: **Enter Code**;
 - The **User Number:**_ item will appear requesting the number of a code you want to add, delete or edit. Enter required number (from 1 to 2047) and press 
 - Editing menu will appear:
 - 1)  **Add New** – Add a new code (credential)
 - 2)  **Edit** - Edit an existing code
 - 3)  **Delete** – Delete an existing code
- The Installer Code (# 1) can be edited only.

When adding or editing, the following will be requested:

New Code – If it's the first attempt of code entry.

Confirm: - Confirm your entry.

To enter PIN codes, use 0-9 keys of the S2000M keypad. When entered, the digits will be shown as the <*> symbol each. If a token (iButton or proximity card) is required as credential, it can be added by presenting a token to a reader.

Note: The Fault beep in the end of the code entry procedure indicates that this code already assigned to other number.

Further, user rights (permissions) for the code will be requested:

- 1)  **Unit Direct Control** – permissions to control RS devices (units connected via RS 485);
- 2)  **Zone Control** – permission to control partitions (zones) and included elements.

The duty personnel shall have permissions to control zones. When selecting Zone Control, the **Access #:**_ will appear requesting to enter an access level (1 – 252) created for you configuration in the PProg utility.

Permissions for unit direct control may be required during the system installation and startup operations. Select  Unit Direct Control, then choose a required option from the following:  **Arming and Disarming**,  **Arming**,  **All Functions**. Refer to 1.4.6 for the description of access levels in detail.

Note – tokens cannot be read by the S2000M panel, if they are saved to the device which is used for reading!

3.17 Settings of the Panel and Addressable Units

This function is used to set S2000M's individual parameters, program addresses for addressable units, input point, and expansion modules. The Settings menu item can be accessed with the Installer Code only. To enter the Settings menu:

- Press ;
- Select  **Settings**;
- **Enter Coder**: enter your code to be authorized in the system.

The Settings menu has the following structure:

- 1)  **1 Time and Date** – Settings of time and date, and calibration of time clock;
- 2)  **2 Unit Address** - Programming addresses;
- 3)  **3 S2000M Settings** - Settings of S2000M such as: panel buzzer mode, function access restrictions, settings of FIRE 2 alarm tactics, selection of Fault signaling tactics.
- 4)  **4 RS-485** – Settings of S2000M operation over RS-485
- 5)  **5 RS-232** - Settings of S2000M operation over RS-232
- 6)  **6 Programing** – Programming S2000M via RS-485

3.17.1 Setting Time and Date

To set time and date, enter **Time and Date**.

The following will be available:

- 1)  **Set Time**;
- 2)  **Set Date**;
- 3)  **Tune Clock**.

Setting Time

The system time has the following format: hh:mm:ss. When the system time is changed by user, the following events are saved to event log:

- 1) Time Changed – Informs that the system time has been changed by a user
- 2) System Time – Shows new system time as set by the user.

Setting Date

The system date has the following format: dd.mm.yy. When the system date is changed by a user the following events are saved to the event log:

DD.MM.YY : when date is modified the following event are stored in the event log:

- 1) Date Changed – Informed on the date modified by the user;
- 2) Date: DD.MM.YY - New system date as set by the user.

Tune Clock

This option provides tuning up real time clock by setting up offset correction value to be added to clock time regularly. Available values range from -21 to + 21 sec/day with increment of 0.176 sec/day. For example, if the panel clock is behind 4 sec per day, the offset correction value should be +4.04 seconds.

3.17.2 Programming Addresses

To set addresses for units, detectors, and addressable modules, please select  **2 Device Address**.

When the **Address:**_ is requested, please provide a unit address. The device details will be shown (example include the S2000-KDL-2I unit/v 1.10 with address 15)

Device 15: S2000-KDL-2Iv110
--

The address specified being not related to any device, the following message will be generated: **No Device**.

Then press  to select from the following:

- 1)  **Edit RS485 Address** – Changes the address of a RS485 unit;
- 2)  **Set Address Point** – Programming and changing addresses of address points (detectors and expansion modules) monitored by the S2000-KDL;
- 3)  **Reboot** - Reboots an addressable unit.

Changing Unit Address

Select Edit RS485 Address, the **New Address**_ request will appear. Enter a new address for the device.

Programming Address Points Monitored by S2000-KDL

Select the **Set Point Address** menu. Select the **Set New Address** item, the **New Address**_ request will appear. Enter an address you want to assign to the point. The **Setting Addr...** line will appear indicating that the address programming mode is enabled. While the S2000-KDL controller is in this mode, all required actions shall be applied to the addressable point to program it. When the address has been assigned to an address point, S2000-KDL will quit the programming mode, and the panel will pulse the **Success** buzzer signal and display the status of device with the new programmed address. Failures are indicated by the following messages:

Unsupported Command or **Wrong Command** - the command is not supported (most probably it was applied to other device rather than S2000-KDL)

Address Already Used – Attempts to program an address already used by other addressable points

Fault – Failed to complete

To quit the programming mode, press **X**.

Changing address of address point monitored by the S2000-KDL

Select the **Set Point Address** Menu. Select **Edit Address**. When the **Current Addr:**_ appears, enter an address you want to replace. When the **New Address:**_ request will appear, enter a new address for the address point. The **Applying...** line will appear. After successful address changing, the device's status events will be displayed. Faults are indicated by the following messages:

Unsupported Command or **Wrong Command** - the command is not supported (it is likely applied to other device rather than S2000-KDL).

Address Already Used – Attempts to program an address already used by other addressable point

Fault – Failed to complete

Rebooting an addressable unit

Select **Reboot**. The software reset of the current selected unit will be completed.

3.17.3 S2000M Settings

The **◆ 3 S2000M Settings** have the following options:

- ◆ **Alarms**
- ◆ **Access to Functions**
- ◆ **Power Monitoring**
- ◆ **Fire2 Algorithm Setup**
- ◆ **Relay Program Settings**
- ◆ **Default Settings.**

Setting Buzzer Alarms

The **Alarms** menu has the following options: **Buzzer**, **Panic**, and **Lobby Alarm**.

- 1) The **Buzzer** parameter defines whether the alarm states are indicated by the buzzer pulses. It includes the following options:
 - ON**: the buzzer is on (default)
 - OFF**: the buzzer is muted. This can be useful if audible alarms are provided through other capabilities such as indication units
 - ON if Offline**: the audible alarms are disabled when the panel is online within the Orion Pro System, the audible buzzer alarms will be enabled when the panel goes Offline. This can be useful in the Orion Pro-based security and access control systems where audible alarms are provided using Orion Pro capabilities.
- 2) The **Panic** option defines the indication of the Silent Alarm and Duress states. The available options are as follows:
 - Audible Alarm**: Silent Alarm and Duress states are indicated on the display as intrusion alarms with the buzzer issuing the Alarm sound
 - Silent Alarm**: Silent Alarm and Duress states are indicated on the display as intrusion alarms but do not affect the buzzer.
 - Not Alarm**: the Silent Alarm is indicated as a non-alarm one, the Duress is not indicated. If this option is selected, the Duress Code and the Disarmed by the Duress Code events are not displayed.
- 3) The **Lobby Alarm** defines the indication for the Lobby Alarm status. The available options are as follows:
 - Audible Alarm** (default): indicated on the display as an intrusion alarm with buzzer issuing an Alarm sound
 - Silent Alarm**: indicated on the display as an intrusion alarm but does not affect the buzzer
 - Not Alarm**: indicated as a non-alarm status.

Access to Functions

Access to functions is defined as:

- 1) **“Code Length =4”**: The maximum number of digits allowed in a user code. When the specified number of digits is entered, the code entry is completed automatically. To enter shorter codes, please press  . The code can consist of 1 to 8 digits. The default value is 4.
- 2) **“Event Log Protection:-”**: Restricts access to the event log viewing . When "-" (by default) is selected, no authorization code is required to access the event log. When "+" is selected, a code entry is required to view the event log.
- 3) **“Indication Test Protection: +”**: Restricts access to the indication test of S2000M and other units (see 3.13). When "-" is selected no authorization is required to access this function. When "+" is selected, the password has be entered to access the indication test function.
- 4) **“Changing Code by User: -”**: With this function enabled, users can change their own codes (credentials). When "-" is selected (default), the codes (credentials) can be replaced by the installer code owner.
- 5) **“Config Reset Protection: -”**: This function protects from the unauthorized reset of codes (credentials) to default. When this parameter is set as "+" the function prevents reset of codes to default (the reset procedure is described in. 3.19).

Setting Power Monitoring

Power monitoring algorithm is defined by the **Backup Power** parameter. This parameter has two options:

"+" – Backup power monitoring is enabled (default);

"-" – Backup power monitoring is disabled.

The Backup Power Monitoring is a feature meant for monitoring both power inputs. With the Backup Power monitoring enabled (+), the S2000M generates the **Power Failed** fault, if the voltage goes beyond normal on any of the two power inputs. With the Backup Power monitoring disabled, the S2000M generates the **Power Failed** fault message, if the voltage is not normal on both power inputs (primary and secondary).

Setting Fire2 Algorithm

This is used to set up the generation algorithm of the S2000M's of Fire2 signal in response to **Fire2** signals from two or more detectors of protected area (zone/partition) with a time between signals taken into account. This is a global option that affects **Fire2** signal function in all zones (partitions) of a protected site. In terms of purpose, the same functionality can be found in the S2000-KDL and Signal-10 addressable units (input/output devices), thus it is important to decide whether S2000M or addressable units would generate the **Fire2** signals. It is not recommended using them both.

The setting of S2000M's **Fire2** algorithm has two options:

1) The number of input points (detectors) in a partition, which are to go in the Fire status within the set period of time. The **Fire2** signal generation algorithm uses the following inputs only: Fire, Heat Analog Addressable, and Smoke Analog Addressable (the types are defined when the S2000M is configured).

2) The period of time within which the detectors shall trigger signals.

The adjustable parameters are as follows:

Detectors=0: Defines how many detectors in a zone shall go to the Fire status to trigger the Fire2 signal. If value is 0, the S2000M will never generate the Fire2 signal. The recommended value is 2;

Confirm Period, min = 2: Defines minutes during which the detectors shall go the alarm status. The default period is 2 minutes. This time is acceptable for using detectors of the same

types installed quite near each other. In other cases including the chance of a slowly developing fire the time period shall be increased.

Relay Program Settings

The parameter affecting operation of standard relay control programs:

FIRE2 DELAY: –: defines whether a relay control delay is effective with the control programs of #1 - #8 in case of the Fire2 event. If this parameter is disabled, the relay is controlled without a delay, when Fire2 occurs (as for S2000M of versions 3.00 – 3.02). If this parameter is enabled, the relay is controlled with a delay (as for the S2000M of version 2.07).

Reset to Defaults

This function is available in two options:

- 1) **Reset Settings**
- 2) **Reset Settings & Configuration**

The Reset Settings function restores default settings of RS232 (see 3.17.5) and RS485 (see 3.17.4), access to functions, power monitoring, buzzer, **Fire2** algorithm (see 3.17.3). The **Reset Settings & Configuration** command resets all settings above and restores default empty configuration and codes (credentials).

3.17.4 RS485 Settings

S2000 Address=127: The S2000M Orion protocol address in the programming mode. The default address is 127;

The parameters of RS485 circular interface with S2000-SP1 switching:

Ring Topology: Turns On/Off the RS485 ring topology. It can be "+" (ON) or "-" (OFF). The default is "-";

S2000-SP1 Address: The address of the S2000-SP1 responsible for switching the panel periodically between two ends of the interface line. The default value is 126;

Normal Switch Period =240: the interval of switching between the RS485 line ends in the flawless operation of RS485 interface. The value can be selected from 1 to 255 minutes. The default value is 240 minutes.

Fault Switch Period =2: the interval of switching between RS485 line ends in case of failure (open-circuit fault on RS485 ring line). The value can be selected from 1 to 255 seconds. The default value is 2 seconds.

3.17.5 RS232 Settings

The RS232 Settings includes selection of a device to be connected to this interface and parameters to work with devices.

- **Mode:** This parameter defines a device the S2000M works with via RS-232 interface. The available options are as follows:

- 1) **Printer** – Used to send the event log to printer connected to a comport or a printer emulator installed on PC (PKUEventReader or Hyper Terminal, to TRX150 (TRX-450) transmitter used in Orion -radio system (Bolid Orion (1200 bps));
- 2) **Orion Pro** – This mode is used to work in combination with Orion Pro Suit and PProg software (Orion Pro protocol));
- 3) **Converter** – In this mode the panel works as RS232-RS485 converter with automatic switchover to active mode (operation with units and modules) when Orion Pro stops polling. It can be used for failover support of the old versions of Orion software by the S2000M panels

- 4) **RS-202TD** – This is used for routing messages to Rif String RS-202TD transmitter ;
- 5) **ATS100 (LARS)** – This mode is used for routing messages ATS100 (KP Electronic Systems LTD);
- 6) **TRX-150 (CID)** - This is used for transmitting messages to TRX-150 (TRX-450) transmitter in the Contact ID format.

The default mode is **Printer**.

-S2000 Address: This parameter defines the address of S2000M when it is used in combination with PC in the Orion Pro protocol (the **Orion Pro** mode).

-Com Monitoring: This mode allows monitoring communications between the S2000M and devices connected to the S2000M's RS232 interface: the Orion Pro Suit workstation, RS-202TD, ATS100 or TRX-150 radio transmitter, and printer. If "+" is selected (monitoring enabled), the panel may have the following communication states:

- **Unit Communication Fault:** If RS232 communication is lost
- **Unit Communication Normal:** RS232 communication is OK

The Panel Status element can be included to the partition to display the communication fault status on the S2000M and a status indication unit, to control the Fault output and other outputs that can be controlled with control programs and scenarios.

The default value is "-" (disabled).

-Com Fault Timeout = 20 - the maximum timeout period during which the loss of communication between the panel and RS232-connected device (workstation or radio transmitter) is not deemed as a fault. When this time is exceeded, the fault is stated. The communication with the Orion Pro Suit, printer, and RS-202T is monitored continuously, but in case of ATS100 and TRX-150, it is monitored only if messages are to be transmitted over the radio link;

- **Control via Orion Pro:** - Allows centralized (online) control using the Orion Pro Suite. When it is enabled, the S2000M redirects unknown user control commands to the Orion Pro Suite (if connected). When this option is disabled, the S2000M denies access in respect to such users. As enabled, this parameter can be useful in the following cases:

- 1) When the centralized (online) access control is used (Orion Pro is responsible for access decisions);
- 2) If it is necessary to use a S2000M panel to control partitions monitored by another S2000M panel. In this case, the communications is provided by Orion Pro as well;
- 3) When configuring the S2000M in the Orion Pro mode (Orion Pro protocol) by the PProg software, if tokens have to be enrolled to the configuration using readers.

- **Bit Rate: 9600 bps:** is RS232 speed when working with computer via Orion Pro protocol (the Orion Pro mode). Available selections: 9600, 19200, 38400, 57600 and 115200 bps;

- **Account: 1234** is a subscriber number (account) of intrusion alarm panel for reporting in ContactID. It is used to work with a radio transmitter in the **TRX-150 (CID)** mode. The Account consists of four digits (0-9). Entry of hexadecimal characters B-F is not supported.

- **LARS Events** is the menu with settings for converting Orion system events to LARS event codes.

3.17.6 Programming Mode

When this mode is selected, the S2000M goes to the programming (configuring) mode in the Orion protocol (configuration in this mode is available only for RS485 and RS232 interfaces). In this mode, the panel does not support its main functions. When connected to a PC's RS232

port, it works as an interface converter for devices connected to the RS484 line; the LCD shows the following in this mode:

PROGRAMMING MODE

To quit this mode, please press **✕**.

3.18 Direct Control Functions

These functions are used during installation and commissioning. They allow issuing commands to any connected unit with no preliminary configuration of the S2000M in PProg. Full access to these functions is provided by codes with access level #225 All Functions; restricted access with access levels: #253 Arming/Disarming and #254 Arming. The default access authorization code is "1234" with access level #255 All Functions. We recommend changing this code for more security.

Block chart of the direct control menu is provided in the Appendix C2.

The direct control menu is as follows:

- «**◆1 Arm**
- «**◆2 Disarm**
- «**◆3 Reset Alarm**
- «**◆4 Control Outputs**
- «**◆5 View Input Status**
- «**◆6 Service**

3.18.1. The **◆1 Arm** menu includes the following commands:

- **◆11 Input**: Arms an input of a unit (RS485 device). To issue a command, enter a unit address and input point number;
- **◆12 Input Group**: Arms a group of inputs (as defined in the unit configuration). This is a legacy function not supported in new developments. To issue a command, enter a unit address;
- **◆13 All Inputs**: Arms all inputs of a unit. To issue a command, enter a unit address.

The **◆2 Disarm** menu includes the following:

- **◆21 Input** – Disarms an input of a unit (RS485 device). To issue a command, enter a unit address and input point number;
- **◆22 Input Group** – Disarms a group of inputs (as defined in the unit configuration). This is a legacy function unsupported in new developments. To issue a command, enter a unit address;
- **◆23 All Inputs»** - Disarms all inputs of a unit. To issue a command, enter a unit address.

3.18.2. **◆3 Reset Alarm**: Resets all inputs and input points of a unit. To issue the command, enter unit address.

3.18.3. The **◆4 Control Outputs** menu includes the **◆41 Relay** and **◆42 S2000-ASPT** submenus.

The **◆41 Relay** submenu allows issuing output control manual command. To issue the command, please enter an input address when the “**Address: _**” request appears and then enter an output number when the **Relay#** request appears (0 –control of all unit outputs) and the

number of a control program when requested **Command#**. The following commands are available:

- 0 – Return to Initial Status
- 1 – Turn On;
- 2 – Turn Off;
- 3 – Turn On for a Time;
- 4 – Turn Off for a Time;
- 5 – Blink (OFF is Initial Position);
- 6 – Blink (ON is Initial Position);
- 7 – Blink for a Time (OFF is Initial Position);
- 8 – Blink for a Time (ON is Initial Position).

In case of the time limited (“*for a time*”) commands, the control action time of a relay is defined by the Control Time parameter of an output unit. The output is activated immediately. The exceptions are outputs of S2000-SP2 and S2000-SP2 mod.02 relay modules where the activation delay is defined in the configuration of S2000-KDL controller.

◆ **42 S2000-ASPT** allows controlling S2000-ASPT-connected units: toggles between auto and manual modes of extinguishing control (◆ **Auto ON/ OFF**), initiates and aborts extinguishing process (◆ **Release/Abort**).

When **Auto ON/OFF** is selected, the input address will be requested and “**Address:_**” will appear. Enter the S2000-ASPT's address. The current selection will be displayed (e.g. Auto ON). To change the mode, press **←**, and select Auto ON or Auto OFF as required.

When the ◆ **Release/Abort** is selected, the “**Address:_**” request will appear, enter the address of S2000-ASPT. The device's current status will be displayed (Armed, if the device is in quiescent mode): “**ASPT Status: Armed**”. To initiate the extinguishant release, press **←**, select **Release**, and confirm your selection. With selection confirmed, the S2000M sends the control commands to the S2000-ASPT and displays the new release status (“**ASPT Status: PreDis**”).

3.18.4. The ◆ **5 View Input Status** menu includes ◆ **51 Input Status** and ◆ **52 Input ADC**.

The ◆ **51 Input Status**: allows viewing the status of a unit (device), input (loop), or addressable detector. To view a status, select the Input Status item, then enter a unit address (**Address:_**), then enter an input number (**Input#**) or detector address (0 for viewing a unit status). The status will be displayed in the format as follows:

◆ **001/003: Armed**, where **001** is a unit address, **003** is an input number or detector address. Please use the **▶** and **◀** keys to view other input (detector) states monitored by the unit.

◆ **52 Input ADC**: Allows viewing values measured by units, loops (inputs), and addressable detectors. To view such values, enter an input address when requested (**Address:_**), enter an input number (**Input#:_**) or detector address (0 is to view a unit status). The measurements are displayed as follows:

◆ **002/017: 47**
Rшс = 4.7 κОм

All input/output devices allow requesting conditional measurements by requesting ADC readings. They are displayed in the upper line of the LCD. Most of system input/output devices (I/O devices) can report variable values in physical units (κОм, °C, %) with numerals

representing measured parameters. Such data are displayed in the lower line. To view measurements on other inputs use the ▶ ◀ keys.

A measured parameter of inputs (loops) is usually resistance, but this of addressable detectors is temperature, humidity, or smoke level. Many devices can measure voltages of power supply and battery (if any). The RIP-RS backup power supplies can measure mains voltage, output voltage, load current and backup battery voltages. They also can provide details on backup battery conditions: battery charge percentage, actual battery capacity as measured in testing, and estimated backup time. For measured parameters of each unit, see related manuals.

3.18.5. The **◆ 6 Service** menu includes the following:

◆ 61 Set Time

◆ 62 Set Date

◆ 63 Test System Components

◆ 64 Indication Test

◆ 65 Print Log

◆ 66 Clear S2000-IT Reports.

◆ 61 Set Time and **◆ 62 Set Date** – used to set time and date of the system. Time format is hh:mm:ss, date is set as dd:mm:yy.

◆ 63 Test System Components: Places the selected circuits into the test mode during which specific procedures are applied to tested detectors.

Turning the mode On:

Select **◆ Test ON;**

Enter a unit address (**Address: _**)

Further, enter the number or address of a tested component (**Component #: _**)

Next, specify in minutes how long the test mode will be effective (**Time, min: _**).

To return back to a normal operative mode:

Select **◆ Test OFF;**

Enter a unit address (**Address: _**)

Enter a tested component address or number (**Component #: _**).

This function can be used for initiation of the Fire signal after applying test procedures (using a light emitter button or laser beam) to the DIP-34A during the test of automatic fire extinguishing control. For a group of addressable detectors, partition (zone) control mechanisms are recommended for testing.

This test function can be used to launch test of backup battery capacity in a RIP-12RS power supply (ver 1.1 and higher). When starting, enter address **0** as a detector address, and **0** as a test time. Further, the test is completed automatically.

◆ 64 Indication Test: Toggles the test mode for checking the indications of the S2000M panel or other units. It is recommended using the similar function as described in 3.13.2.

◆ 65 Print Log: Allows printing event logs. It can be useful if one needs to print an already printed log again.

◆ 66 Clear S2000-IT Reports: Clear the queue of messages reported by the S2000-IT communicator over the phone line. Due to the low speed of the phone line transmission, the

queue can be quickly overflowed with further slow clearing. This function allows cancelling all messages.

3.19 Resetting Defaults

This can be used if you cannot access the settings menu (e.g. if your installer code is lost). There are two alternatives for this function:

- 1) **◆ Reset User Codes;**
- 2) **◆ Reset Codes and Configuration.**

The **Reset User Codes** command deletes all user codes and restores default "123456" - Installer Code(#1) and 1234 - Control Code (#2). In addition to the user codes, the **Reset Codes and Configuration** command restores default (empty) configuration and local default settings (including RS232 and RS485 settings). However, it does not reset the event log.

Resetting defaults is accessible only if this is not protected (**Config Reset Protection** is set as <-> see 3.17.3). With this parameter protected, the access to the panel can be restored by the manufacturer in case of lost or forgotten codes.

Reset the S2000M codes to defaults, please proceed as follows:

- 1) Power off the S2000M panel
- 2) Open the enclosure and remove the RTC cell (CR2032 cell) from the holder
- 3) Wait for the 5 sec, press the **RESET** button, power on the S2000M panel holding the **RESET** button. The enclosure must be kept open. After the reset confirmation, the 20-second countdown timer is started. During this countdown the reset command can be cancelled by pressing the **X** key at any moment.

4 Firmware Update (Upgrading the S2000M Firmware)

This option can be useful for obtaining capabilities of a new version and fixing issues of the current one. The firmware version can be updated via RS232 or RS485 interface. In case of RS485, no device with address 127 must be connected. (It is recommended to disconnect other devices before updating firmware).

You need the following to update the firmware: PC/ Windows OS, the **ORION_PROG** firmware update utility, and firmware library file for various versions of S2000M (*.chp). To update firmware over RS232, you will need a cable to connect the panel to a computer. In this case, the panel is connected to a computer as shown in Figure 6. This cable can be purchased in Bolid offices or its distributors, or made by oneself as shown in Figure 6. When updated over RS485 interface, the panel must be connected as shown in Figure 10. With this way of updating chosen, there must not be any devices with address 127. The **ORION_PROG** utility is available at <http://bolid.ru/>. Firmware files are available at the same site on the S2000M product's page. You can also request a required firmware by applying to info@bolid.ru.

When you are ready, please proceed with firmware update in the following way. Turn on the programming mode on the panel. Launch the ORION_PROG.exe. Select the COM Port where the panel is connected. Start the search of devices by pressing the Poll button. The utility will find the S2000M panel (it will be shown as S2000 ver 3.00, 3.01 or 3.02) and probably some RS485-connected devices. Select the panel from the list of found devices, and press the Firmware button. Open the firmware library file (*.chp). The software will show all compatible

firmware versions. If no versions are shown, this library file does not contain any compatible firmware. Select a required version, and click the **Write** button. Wait for some seconds while the program prepares data for writing, then it will write your selected version. During the process, the LCD display shows “**Loading Firmware...**”

5 Routine System Maintenance

The routine system maintenance is provided on regular monthly basis.

The maintenance shall be carried out by maintenance company personnel and includes the following:

- a. Exterior check of the panel for mechanical damage and dirty conditions; visual check of circuits and terminals; check of fasteners
- b. Test of backup battery power supply (RIP): testing supply voltage and checking the panel functionality when RIP is powered by primary and secondary power supplies. The voltage shall be measured on the panel's power inputs.
- c. On-site functionality: check of keypad condition and key-pressing beeps, visual check for LCD data display, LCD and keys illumination; and check of the status indication of the Power and Fault LEDs; test of indication facilities according to 3.13.1. Check of receiving events from system devices, check of printing event messages on the printer, or displaying them in the Prion Pro Operative Task if the panel is used as a part of the Orion Pro system.
- d. Check of the intrusion and fire protection system for the following faults: short-circuit and open-circuit faults, communication faults of RS485 devices and polling loop-connected detectors. The general status monitoring is carried out with the help of the General Fault LED. To locate an indicated fault, please monitor the status of partitions on the Orion Pro Suite, indication units, or using S2000M tools. To search for a faulty partition using the panel, one must have a permission to view all partitions. When a faulty partition is selected, you view all faulty elements as describe in in 3.2. You can request for the dust level in DIP-34A, voltage value of power supply and backup battery as described in 3.12 and 3.18.4.

***Note:** Functionality test for detectors and detection circuits using a testing activation may result in to the activation of voice alarms, auxiliary system, and extinguishing installations. If required, you should disable appliances before test procedures. To disable S2000M-controlled outputs, please use the Disable function as described in 3.11. Other outputs require appliances (fire protection equipment) to be disconnected from control circuits.*

6 Product Functionality Check

6.1 This guide is developed for intrusion and fire system maintenance personnel responsible for on-receipt inspection, and includes panel functionality test aimed at finding defects and assessing fire and security system facilities. The product incompliance with the guide requirements can serve as a ground for claims to the manufacturer.

6.2 The product functionally check is carried out by repair labs of guard force and performed by the service personnel well acquainted with the panel operation and this guide, and qualified as fire and intrusion system electricians of Level III or higher.

6.3 The test shall be conducted in normal climate environment according to GOST 15150-69:

1. Air temperature : (25 ± 10) °C;
2. Air humidity: 45 – 80 %;
3. Atmospheric pressure: 630 – 800 mm of mercury (84-106.7 kPa).

6.4 The testing is provided as shown in Figure 13. The total testing time is no more than 20 minutes per each panel.

Note: The panel shall be powered OFF before connecting or disconnecting the panel's circuits for testing.

The testing procedures shall be carried out as follows:

- a. Check the package before unpacking the panel
- b. Check the contents of delivery in accordance with the User Guide
- c. Check the panel for defects
- d. Check the panel visually and shake it for the foreign items inside the panel;
- e. Check the tightness of the terminals;
- f. Check to see that the Panel's number and manufactured date are the same as specified in the User's Guide.

6.5 Testing the S2000M Panel

Before powering the S2000M on, please inspect visually the panel for any short circuits, track discontinuity, and defects on the PCB.

Set the power supply output voltage A1 as (10.2 ± 0.3) V.

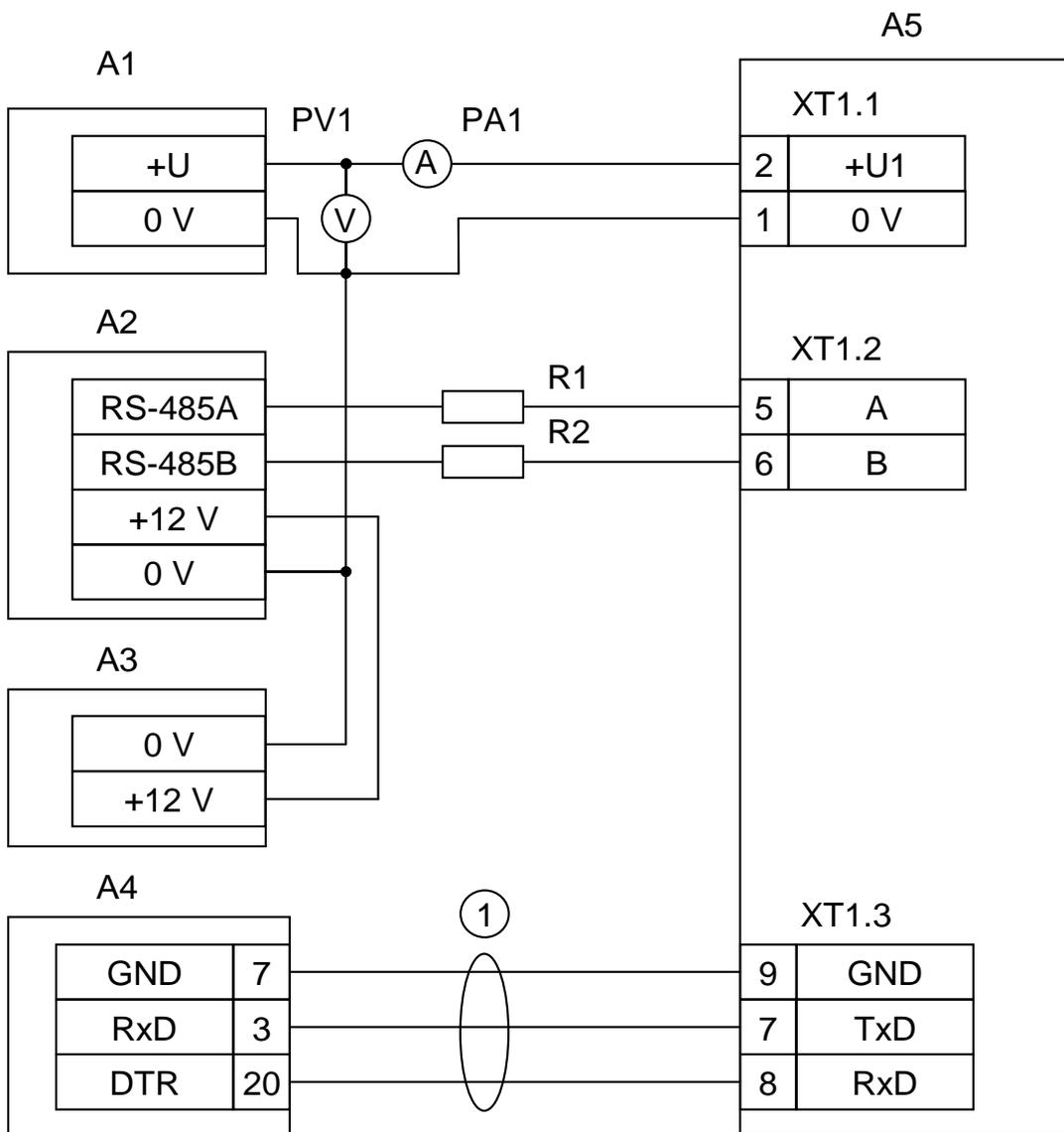
Assemble the testing system as shown in Figure 13.

Power the panel on. The LCD will illuminate and the **Power On** message will appear. The panel will find a connected device during the several seconds and report on found devices, device rebooting, and power failure (if any) on the LCD. Carry out the test of visual and audio indications as described in 3.13.1.

Turn the printer on or launch the PKUEventReader applications. The printer is to print events with the last ones reporting on powering panel and printer, and finding devices. Press any key of the panel. The keyboard will illuminate (visible in the low light condition). Measure the consumption current using an ammeter (PA1). The measured value shall not exceed 110 mA. Press each key of the panel. Key pressing shall be accompanied by a short beep.

Turn off the devices. Set the output voltage of A1 power supply as (28.4 ± 0.6) V. Repeat the above test actions. The measured current consumption shall not exceed 45 mA.

Disconnect A1 power supply from the first power input (+U1) and connect it to the second one (+U2). Repeat the actions.



- A1** – Power Supply 12 V: 0.2 A;
A2 – Signal-20 (Signal-20P, S2000-4);
A3 – Power Supply 12 V, 1 A (RIP-12);
A4 – Epson LX-300+ printer or PC with installed PKUEventReader;
A5 – S2000M;
1 - CS2000M-Printer cable;
R1, R2 – Resistors 220 Ohm, 0.125 W (for fading between S2000M and its connected device);
PV1 – L4355 combined device;
PA1 – L4355 combined device.

Figure 13. S2000M Testing Connection

7 Routine Maintenance

7.1 The table includes system troubleshooting and repairs.

Table 6 *Troubleshooting and Repair*

Failure Descriptions	Possible Cause	Repair Actions
1 No indication on LCD, when the panel is powered on	No power	Check the panel's power supply
2 When powered on, the panel does not respond to user actions, button pressing is not accompanied with beeps and LCD indication, the Fault LED is blinking	Program code error during initial test	Recover the panel firmware as described in article 4 Updating Panel Firmware
3 When powered on, the panel shows one of the following messages: "SYSTEM FAULT: EEPROM in D1" "SYSTEM FAULT: Int. Flash in D1" "SYSTEM FAULT: EEPROM (D5)" "SYSTEM FAULT: Flash (D4)"»	Hardware failure	If the message does not disappear or reappears, please submit the S2000M panel for repair
4 The following message is displayed "SYSTEM ERROR:XXX»	Program error, microcontroller error or hardware failure	If the message is reappeared, please submit the S2000M for repair. In case of occasional errors, the S2000M is restored automatically.
5 Panel works, while the Fault indicator is blinking	There is at least one failed element in the system	Find fault device or element to repair. To troubleshoot the fault, assess states of all partitions and included element as per 3.1
6 All connected devices cannot be found	Disconnection between the panel and devices	Restore connection
	Wrong polarity of RS485 line in the panel	Swap lines A and B of RS485 interface on the panel
7 One of the devices cannot be found	The network address of this device is the same as one of the other devices in the system	Use another address for the device
	Wrong polarity of RS485 line in the device	Swap lines A and B of RS485 interface in the device
8 The printer cannot print messages. When the printer is powered on, the Panel does not show the Printer On message during 10 seconds	Lost connection between the panel and printer on the «RxD» or «GND» line	Restore connection
	The printer is not configured to work with a serial port	Set the printer parameter responsible for selection of active interface (I/F Mode for Epson-LX300+) as , Serial» or Auto
	Print pause is turned on the printer (in case of Epson-LX300+, the orange PAUSE indicator is on	If Epson-LX300+ is used: press the PAUSE button
9 The printer cannot print messages. When the printer is powered on, the panel shows the Printer On message	Disconnection between the panel and printer on the TxD line	Restore the failed connection
10 Poor response to key pressing	Worn-out keypad conductive surface	Replace the old keypad with a new one

7.2 The panel may be repaired by authorized personnel qualified as Grade IV or higher. During repair work, please take care and meet requirements on protection of integrated circuits from static electricity according to OST 11 073.062-84.

8 Marking and Sealing

8.1 The product marking shall be in accordance to the design documentation and Russian Norms (GOST R 50775-95).

8.2 The plate on the panel cover contains the following

1. Trade mark or manufacturer name
2. Name or model of the device
3. Serial number

4. Year and quarter of product manufacture
 5. Conformity Mark
- 8.3 PCB has an external connection diagram near terminals as specified in the panel electrical diagram.
- 8.4 Marking of shipment package is in accordance with GOST 14192-77 and has the following handling signs N 1, N 3, N 11, main, additional, and information notes

9 Packing

- 9.1 The product is deemed ready to be used when the panel is provided with corresponding manuals, accepted by quality control department, and packed in a consumer package.
- 9.2 The panel and User's Guide are packed in a consumer package – cardboard box of Type III-I. The panel is packed in a plastic bag GOST 10354-82.

10 Storage

- 10.1 The panel storage in a consumer package must be provided in accordance with Storage Conditions of Class 1 in accordance with GOST 15150
- 10.2 The storage facilities must be free from acid and alkaline fumes, aggressive gas, and other corrosive-hazardous substances.

11 Shipment

- 11.1 The shipment of packaged panels must be provided in covered vehicles in accordance with following documents:
- 1) Shipping Rules / Ministry of Transportation , USSR – M. Transport , 1985;
 - 2) Technical requirements for cargo handling and fastening / Ministry of Transportation , USSR, M.Transport, 1988
 - 3) Shipping Rules / Ministry of River Fleet, RSFSR – M.: Transport, 1989;
- 11.2 The shipment conditions must be in accordance with Storage Conditions of Class 5 as per GOST 15150.

12 Disposal

- 12.1 The S2000M does not expose any life and health hazards and does not require specific environment safety measures in case of disposal.

13 Manufacturer (Supplier) Warranty

The manufacturer guarantees that the S2000M panel meets with technical requirements specified in the manuals if the user follows the instructions for shipment, storage, installation, and usage. Warranty period is 18 months but no more than 24 months from the manufacturer's date of issue. In case of failed product it shall be sent to the manufacture for repair. When submitting the panel for repair, it shall be accompanied with descriptions of possible fault. In case of any issue related to setting and use of the product, please contact with the technical support: (495) 775-71-55 or e-mail: support@bolid.ru.

14 Certification

- 14.1 The S2000M Intrusion and Fire Monitoring and Control Panel meets the Technical Regulations on Fire Safety Requirements (Federal Law No. 123-FZ) and has Certificate of Conformity No. C-RU.4C13.B.00251 issued by OS POHZTEST FGU VNIPO, Ministry of Emergency, Russia, Balashikha 12, Moscow Region, Russia
- 14.2 The S2000M Intrusion and Fire Monitoring Panel complies with requirements of Technical Regulations of Customs Union TR CU 020/2012 and has the Declaration of Conformity No. RU Д-RU.ME61.B.00318.
- 14.3 The S2000M Intrusion and Fire Monitoring and Control Panel is a part of the ORION Fire Alarm System that has the Certificate of Conformity No. BY/112 02.01.033.00251 issued by Certification and Survey Body of Ministry of Emergency of the Republic of the Belarus, 220088, Minsk, Zaharova Str.

14.4 The panel production is certified with Certificate of Conformity to GOST ISO 9001–2011 (ISO 9001:2008) No. ROSS RU.ИК32.K00153 issued by Standard-Cert, Nauchnyi lane 6, Moscow 117246

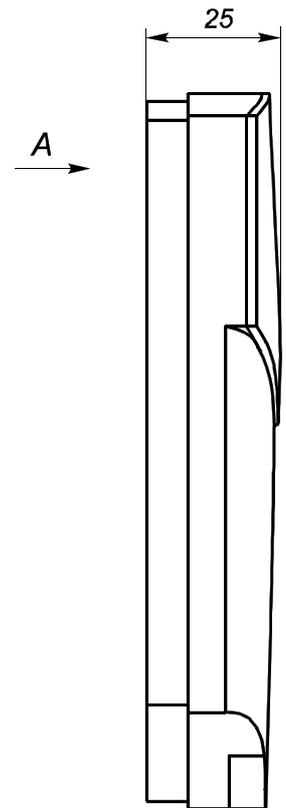
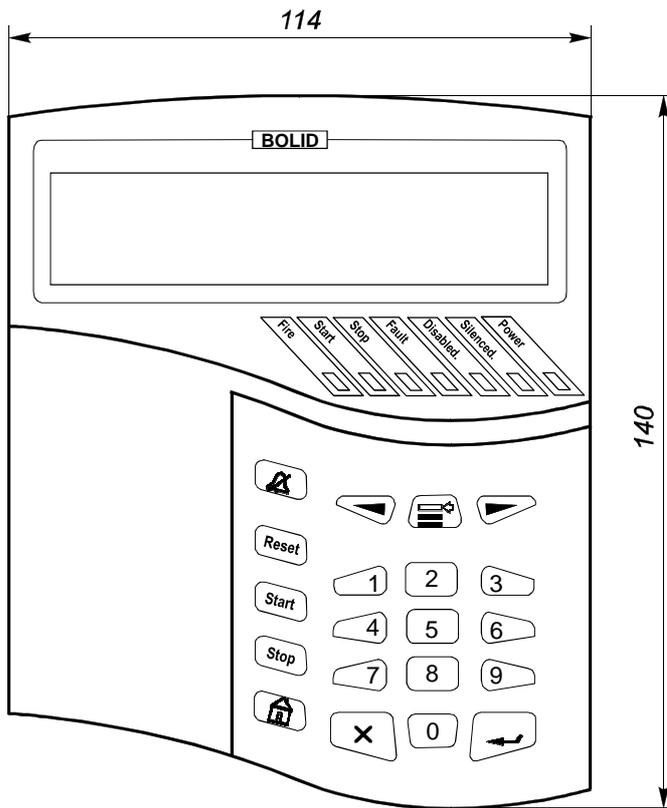
15 Manufacturer Contacts

Bolid Company, 4 Pionerskaya Str., Korolyov, Moscow Region, 141070, Russia

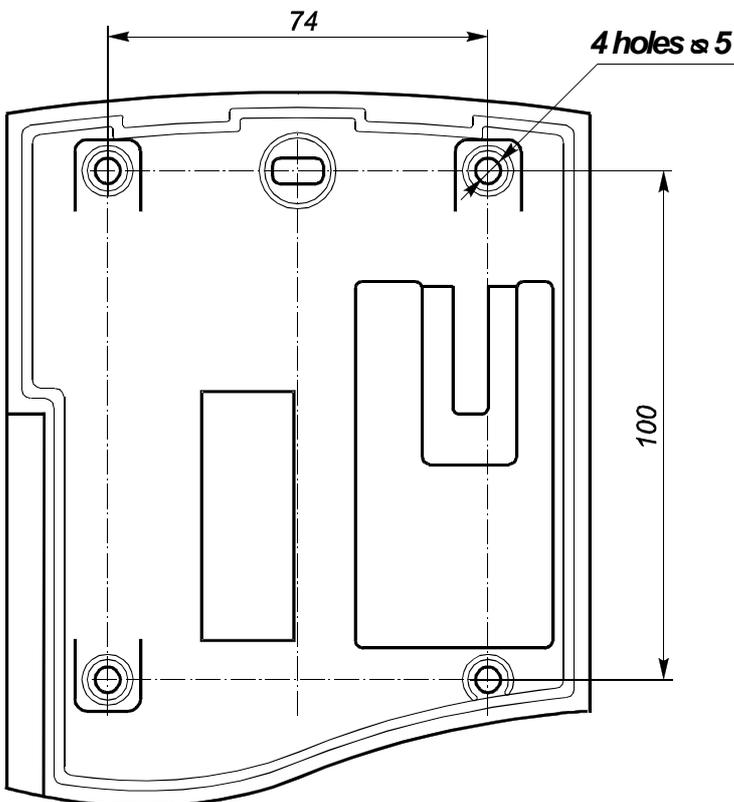
tel./fax: (495) 775-71-55 (multiline), 777-40-20.

E-mail: info@bolid.ru; <http://bolid.ru>

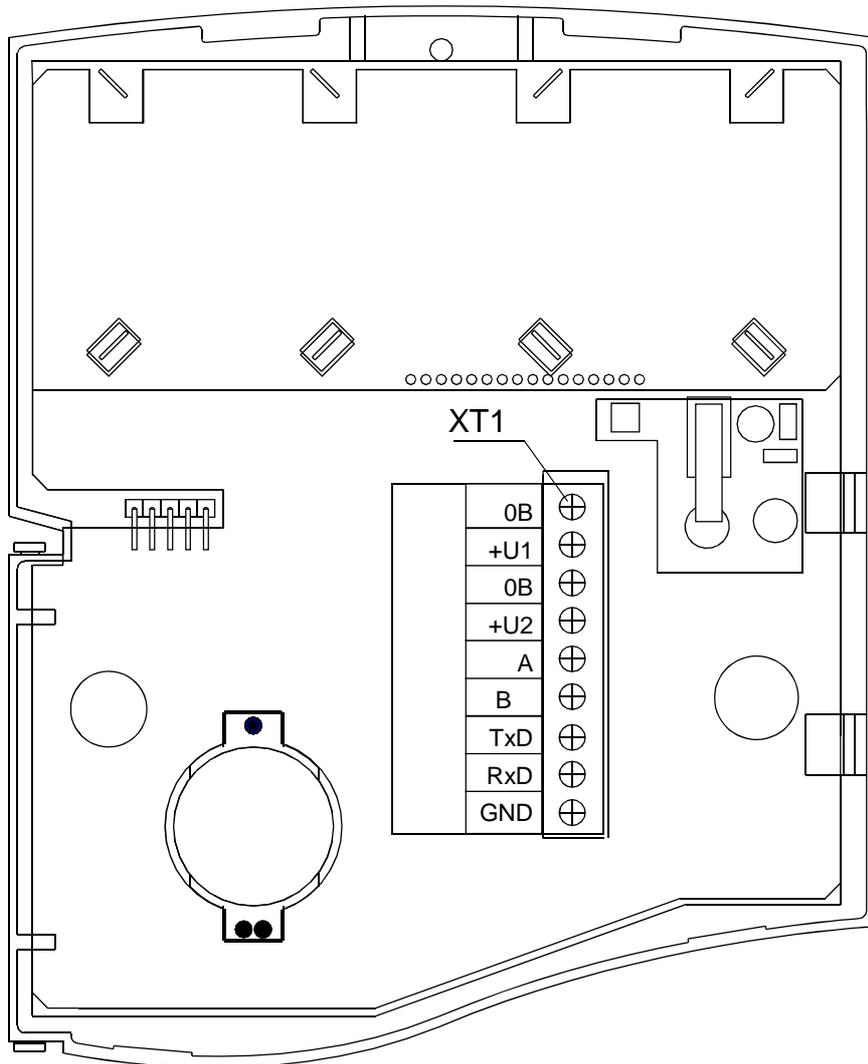
Appendix A. S2000M Dimensions and Installation Layout



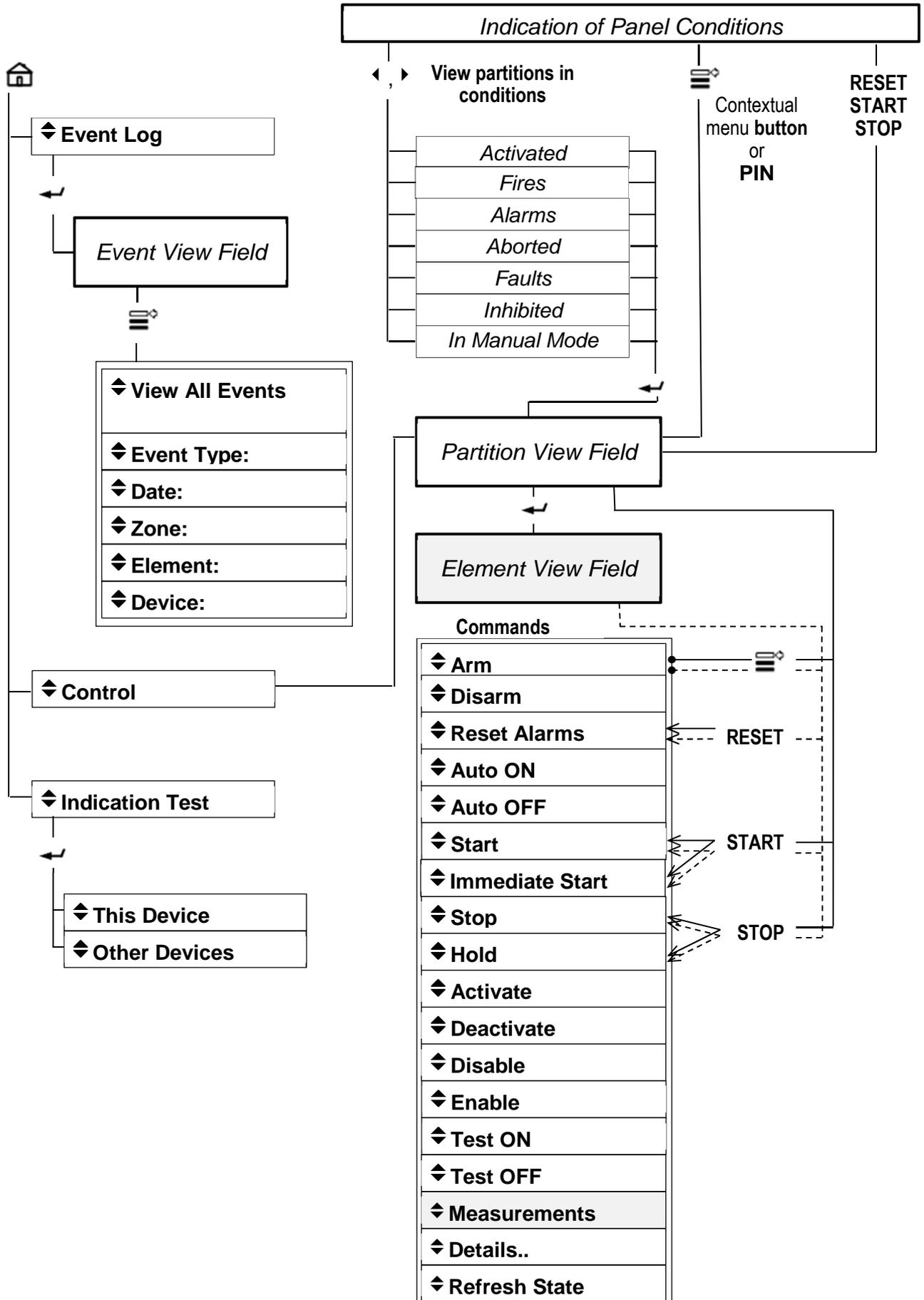
View A



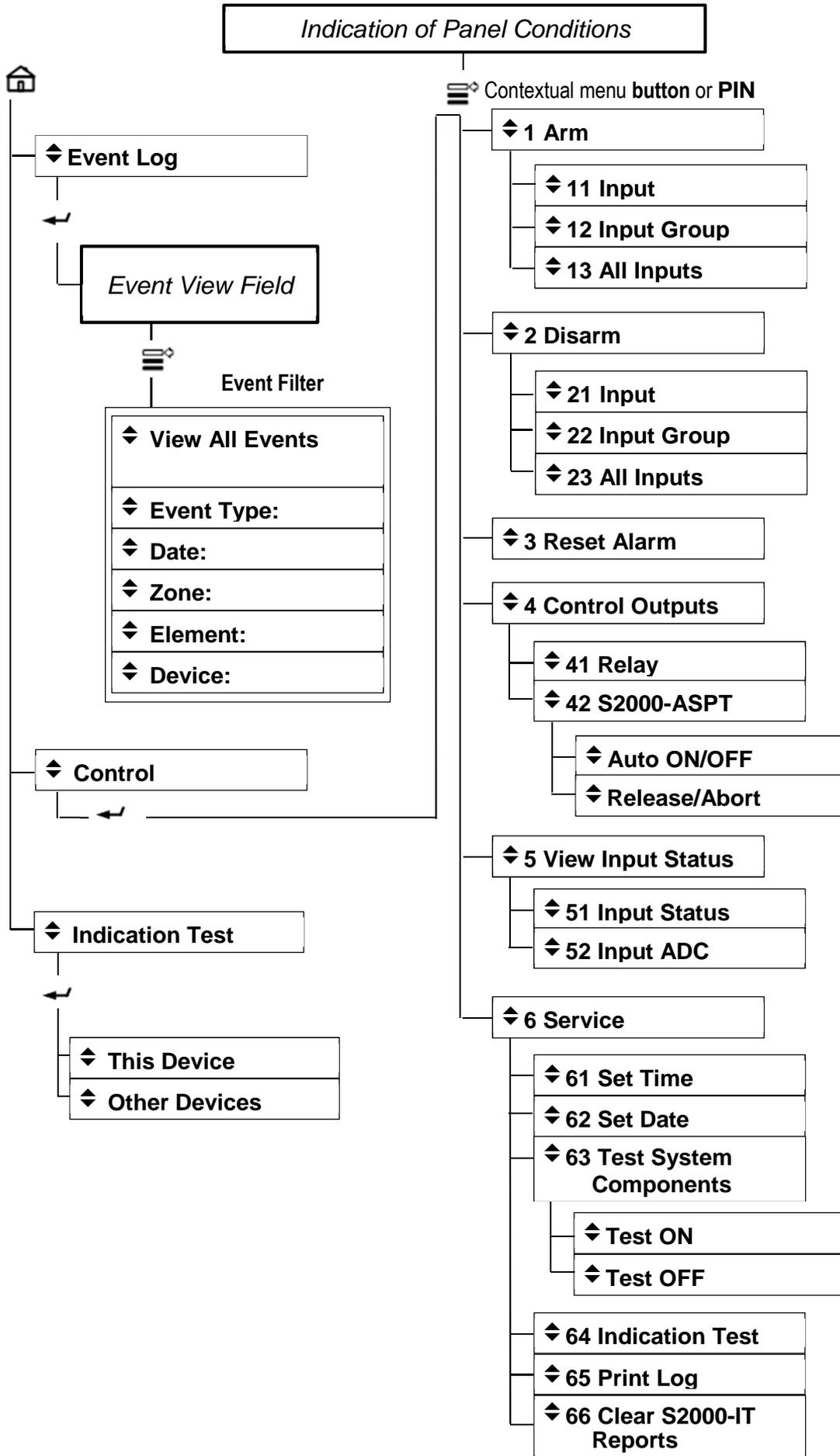
Appendix B. External Circuits Connection Terminals



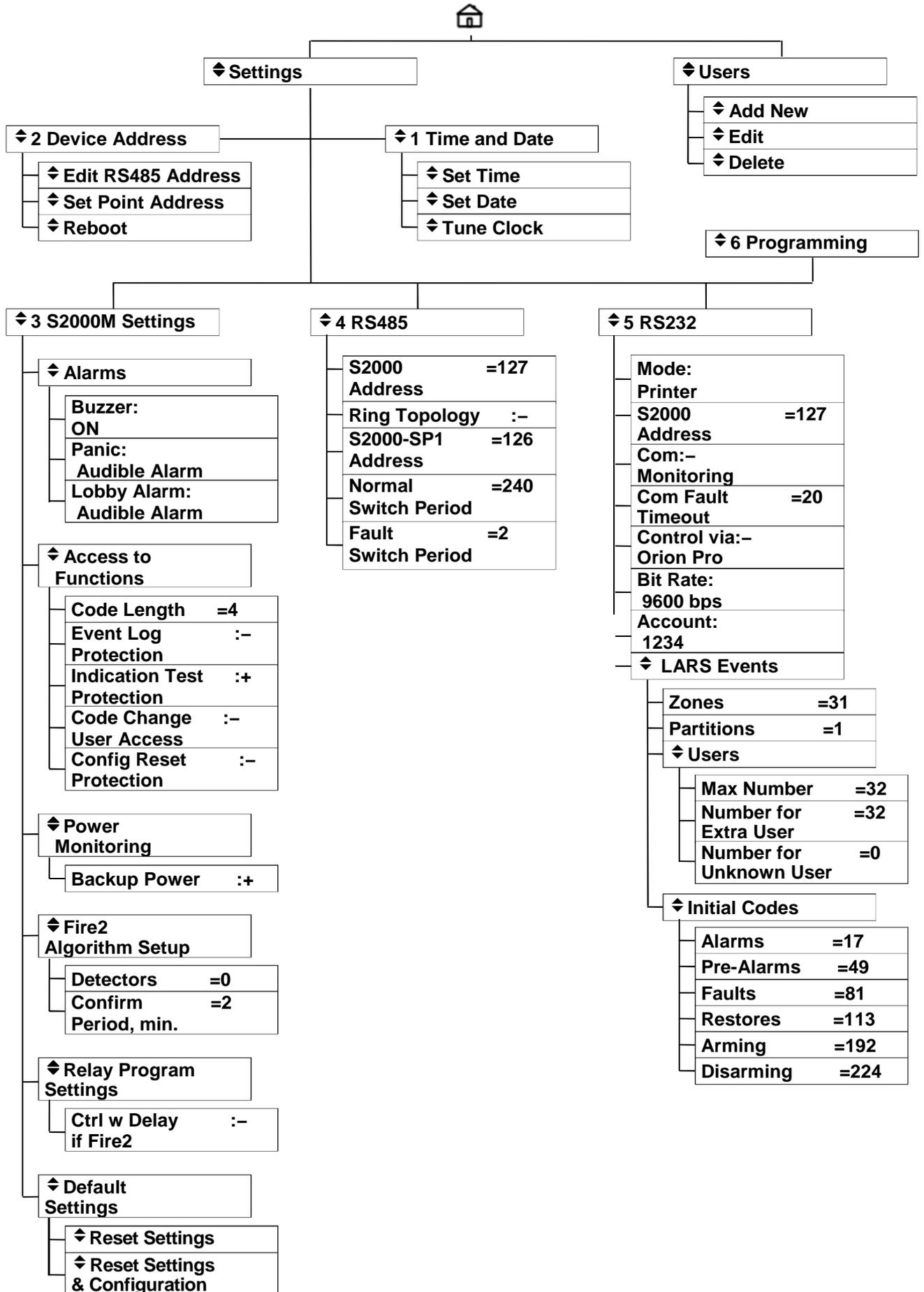
Appendix C.1 Main Controls



Appendix C.2 Input / Output Units Direct Control



Appendix C.3 Settings



APPENDIX D States

Table D.1

States	Description	As Displayed on LCD
Activation of Fire Protection Facilities		
Extinguishant Released	Successful release of extinguishing agent (extinguishant) after issuing discharge signal	Released
No-Pulse Release	Discharge Signal was not initiated, but the extinguishing agent release is detected	NP Release
Discharge Signal	Signal to initiate fire extinguishing is transmitted to fire extinguishing installation. Discharge Signal is initiated	Discharge
Pre-Discharge Delay	Count down of pre-discharge delay time (xxx: seconds to Discharge).	PreDis:XXX
Emergency Hold	The pre-discharged delay timer has been hold. (XXX: seconds left till the discharged signal).	Hold:XXX
Voice Alarm Activated	The Voice Alarm system has been activated (started)	Activated
Voice Alarm Delay	The delay before Voice Alarm activation	Delay
Output Activated	A fire protection system (but for extinguishing one) is activated. E.g a smoke removal system	Activated
Pre-Activation Delay	The delay time to activate fire protection (but for extinguishing) equipment starts counting down XXX: time left to activate	Start:XXX
Extinguishant Release Failed	The system has failed to release extinguishant	FldRelease
Fire Alarms		
Fire 2	The Fire status (signal) from at least two loops/inputs or addressable detectors within one protected area (partition); or the Fire status from a manual call point	Fire2
Fire	Two fire detectors of one input triggers an alarm signal; the second fire alarm signal from a threshold fire detector; a fire factor value (temperature and smoke) measured by a detector exceeds the fire threshold	Fire
Fire Pre-Alarm	Preliminary fire alarm (threat of fire) Usually, it is an alarm from a single threshold heat detector, or unverified alarm from a threshold smoke detector, or fire factor value measured by a fire addressable analogue detector exceeds the Pre-Alarm threshold	Pre-Alarm
Intrusion and other alarms		
Panic Alarm	An alarm from an intrusion input (loop) or manual addressable alarm device (panic button)	Panic
Alarm or Intrusion Alarm	An alarm from intrusion input (loop), activation of addressable intrusion detector	Alarm
Lobby Alarm	An alarm from a Lobby Alarm input; the Entry Delay (alarm delay) has not been expired yet	LobbyAlarm
Flooding Detected	Activation of a flood detector	Flood

States	Description	As Displayed on LCD
Aborts and Stops		
Emergency Abort	The Extinguishant Release(d) procedure is aborted (stopped)	Abort/Stop
Voice Alarm Abort	The Voice Alarm play is aborted	Abort/Stop
Input Abort/Stop	Fire protection equipment stopped	Abort/Stop
Faults		
Pressure Switch Signal Failed	The initiation pulse is released, but no expected pressure switch signal is activated as expected	Press Fail
Output Activation Failed	The S2000M failed to instruct an output control unit to activate the output controlling fire protection equipment	Failure
Error Authenticating Device	Use of unauthorized equipment in the Orion system	Err Auth
Unit Communication Fault	Failure to communicate with an addressable unit	Com Fault
Input Communication Fault	No communication with expansion unit or addressable detector	Com Fault
Output Communication Fault	No communication with relay output (addressable relay unit)	Com Fault
PL Point Communication Error	Address point response error on the Polling Loop circuit	Com Error
PL Point Communication Unstable	Unstable communication with an address point on the polling loop	Com Unstable
Actuator Failure	Actuator failed to go to a required position (operating or initial) position	Failure
Actuator Circuit Error	The actuator monitoring circuit in the wrong condition	Error
Noise	Noise level in a detector exceeds the limit	Noise
Input Open-Circuit Fault	Open circuit fault on a detection circuit or supervision circuit of an addressable expansion unit	In Open
Input Short-Circuit Fault	Short-circuit fault on a detection or supervision circuit of an addressable expansion unit	In Short
Configuration Error	System element misconfiguration affecting its proper operation. Usually, it happens when an addressable device type defined in the S2000-KDL configuration does not match a physical device connected to a polling loop device; or mismatching between a loop type and addressable device (S2000-KDL); or mismatching between an element specified in the panel configuration and actually connected element	Config Err
Equipment Fault	It can be a fault inside an addressable detector (e.g. faults of DIP-34A optic system), faults in weight and pressure monitoring circuits of S2000-KPB	Fault
Temperature Sensor Fault	Failure of temperature sensor	Sensor Fit

States	Description	As Displayed on LCD
Level Above Limit	A water or pressure level is above the high critical limit (Potok-3N)	AboveLimit
Level Below Limit	A water or pressure level is below the low critical limit (Potok-3N)	BelowLimit
Output Open-Circuit Fault	An open-circuit fault within a transmission path connected to the output	Out Open
Output Short-Open Fault	An short-circuit fault within a transmission path connected to the output	Out Short
Door Forced Open	A door is opened without access granting	DoorForced
Door Held Alarm	A door is left open	Door Held
Communication Link Failure	Failure of subscriber communication link (UO-4S, S2000-PGE)	Link Fail
Self-Test Error	An addressable unit failed the Self-Test. procedure	Test Error
Polling Loop Short-Circuit Fault	Short circuit occurred on the S2000-KDL's polling loop	PL Short
Polling Loop Overvoltage	Overvoltage on the S2000-KDL's polling loop	PL Overvoltage
Arming Failed	Failure of arming a monitored input (loop, detector)	Arm Failed
Power Supply DC Output OFF	DC power output is turned off	DC OFF
Power Supply Overload	Power supply is overloaded	Overload
Failed Charger	Failure of a backup battery charger	Failed Charger
Power Supply Fault	Device voltage is out of acceptable range (the device is powered from the secondary power supply)	Pwr Fault
Mains Fault	The failure of a primary power supply (AC 220V) in units with a backup support	MainsFault
Backup Battery Fault or Battery Fault	Failure of backup power supply/backup battery; backup battery is missing or low	Bat Fault
Backup Battery Test Error	A backup battery fails a battery test and cannot be used further (RIP-RS)	Bat Error
Battery Low	Battery is low (RIP-RS)	Bat Low
Backup Battery Low	Detector backup battery is low	Bat 2 Low
Tamper Alarm	Tamper Switch detects tampering of addressable unit, detector or expansion (input/output) module	Tamper
PL1 Communication Fault	Missing communication with an addressable detector on Polling Loop 1	PL1 ComFlt
PL2 Communication Fault	Missing communication with an addressable detector on Polling Loop 2	PL2 ComFlt
<i>Discharge Inhibited</i>		
Discharge Inhibited	Discharge Signal is inhibited	Inhibited

States	Description	As Displayed on LCD
<i>Automatic Extinguishing Mode OFF</i>		
Auto Extinguishing Mode OFF	Automatic fire extinguishing mode is disabled	Auto OFF
<i>Normal States</i>		
Not Initialized	The S2000M is unaware of an element status, it will be requested from the addressable unit as soon as possible After powering the panel on, this status can be in effect for some time till it finds all system units and requests their status, or decides whether they are disconnected. The more addressable units and panel-controlled elements are in the system the longer time period is.	Querying...
Pressure Switch Activated	A pressure switch detected the release of an extinguishing agent	Pressure
Disarmed Input Activated	The input is not armed. The monitored circuit reports violation (only for intrusion inputs monitored when disarmed)	Disarmed/Active
Disarmed	The input is not armed (its status is not monitored)	Disarmed
Disarmed Input Normal	The input is not armed. The monitored circuit is normal (applicable for intrusion inputs monitored in disarmed status)	Disarmed/Normal
Arming Delay	Input arming is in progress (an arming command has been initiated, but the result is still unknown), or the arming delay is on place at the moment	Arming...
Pump ON	The pump is turned on	Pump ON
Level Increased	The increased level of water or pressure (Potok-3N)	Increased
Temperature High	The temperature is higher than the high temperature threshold (the S2000-KDI's temperature input)	t°High
Actuator in Operating Position	An actuating device (e.g. damper) is activated and turned to the operating position	Operating
Remote Control Unit Activated	A remote control unit (e.g. manual release point) is activated	RCU Active
Level Decreased	Water or pressure leveled down (Potok-3N)	Decreased
Temperature Low	Temperature is lower than the temperature low drop threshold (temperature input of S2000-KDL lower than the temperature drop threshold (S2000-KDL temperature input)	t°Low
Door Open	A monitored door is open	Door Open
Flood Detector Normal	The Flooding Detector is in the normal status (no flooding)	Normal
Armed	The input is armed and in normal status (for intrusion detectors); the input is monitored and in normal status (for other types of inputs and detectors including fire ones)	Armed

States	Description	As Displayed on LCD
Pump Off	Pump is off	Pump OFF
Automatic Extinguishing Mode ON	Auto extinguishing control mode is enabled	Auto ON
Level Normal	Water or pressure level is normal (Potok-3N)	Lvl Normal
Temperature Normal	The temperature is within acceptable limits (the Temperature input of the S2000KDL)	t° Normal
Door Closed	The monitored door is closed	Door Closed
Actuator (Application) in Initial Position	Actuating device (application/appliance) is in an (initial) status (position)	Initial
RCU in Initial Position	Remote control unit (RCU) is in initial (Normal) position	RCU Normal
Aux Input Active2	Activation 2 on the programmable auxiliary input	AuxActiv2
Aux Input Active	Activation on the programmable auxiliary input	Aux Active
Aux Input Normal	The auxiliary input is normal (not activated)	Aux Normal
Equipment Normal	Monitored equipment functions properly	Normal
Output Normal	The monitored output circuit is normal	Out Normal
Power Output On	RIP power output is turned on	DC ON
Load Normal	The RIP overload is removed	Load Normal
Charger Normal	Backup Battery Charger is in good condition	Charger OK
Power Supply Normal	The power supply voltage of the unit is normal	Pwr Normal
Mains Normal	The main power supply (220V/AC) is normal	Mains Normal
Backup Power Normal or Battery Normal	The backup power supply (e.g. battery) is normal	Bat Normal
Secondary Backup Battery Normal	The secondary backup battery is normal	Bat 2 Normal
Polling Loop Normal	The polling loop circuit functions properly	PL Normal
Unit Communication Normal	An addressable alarm control unit is contacted and reachable	Com Normal
Input Communication Normal	An addressable detector or expansion unit communicates properly	Com Normal
Output Communication Normal	The output of an addressable unit communicates properly. The output communication is OK.	Com Normal
Disablements		
Input Disabled	Input status monitoring is disabled	Disabled
Output Disabled	Output status monitoring is disabled	Disabled.

APPENDIX E. Event Messages

Table E.1

Description	Events as displayed on LCD	Category ¹⁾	Code CID ²⁾	Event LARS ³⁾
Pre-discharge timer countdown has been started	Pre-Dis Delay	7	–	–
Pre-activation timer countdown has been started before activation of a fire protection system (but for a fire extinguishing system)	Start Delay	7	–	–
Pre-Activation timer count down has been hold	Pre-Dis Hold	7	–	–
Immediate activation avoiding pre-activation condition	Immediate Activ	7	–	–
A fire extinguishing installation has been activated	Discharge	7	–	–
A fire protection system (but for extinguishing system) has been activated/started. (E.g. smoke removal system)	Activated(Start)	7	–	–
A voice alarm system (Rupor) has been activated	VA Activated	7	–	–
A successful activation of fire extinguishing installation (the S2000-ASPT discharge signal was followed by extinguishant release) Extinguishant Released	Released	7	–	–
Accidental no-pulse release (no discharge signal was initiated, but extinguishant release was detected)	No-Pulse Release	7	–	–
Extinguishant release has failed. The S2000-ASPT issued the Discharge Signal, but no extinguishant release was detected	Release Failed	7	–	–
Failed activation of fire protection equipment controlled by the S2000M and output control units	Failure	3	–	–
The Discharge Signal was inhibited (e.g. the door of protected premises is in an open status during pre-discharge countdown)	Inhibited	7	–	–
Extinguishant release has been aborted / stopped	Abort (Stop)	7	–	–
Fire protection equipment has been aborted /stopped (output control units controlled by the S2000M panel)	Abort (Stop)	7	–	–
The activation/operation of voice alarm system (Rupor) has been aborted	VA Abort	7	–	–
An actuator has gone to the operating position	Operating Pos	7	Rxxx ²⁾	normal
An actuator has gone to the initial position	Initial Pos	7	Rxxx ²⁾	normal
An actuator failed to go to Operating or Initial position	Actuator Failed	3	E320	fault
Actuator supervision circuits are in the wrong status	Actuator Error	3	E320	fault
Potok-3N Pump is turned on	Pump ON	7	E205	–
Potok-3N pump is turned off	Pump OFF	7	R205	–
Fire Alarm 2	Fire Alarm 2	1	E110	alarm
Fire Alarm 1	Fire Alarm	1	E110	alarm
Fire Pre-Alarm	Fire Pre-Alarm	1	E118	alert
Intrusion Alarm	Intrusion Alarm	2	E130	alarm
A panic input has initiated the panic alarm	Panic Alarm	2	E122	alarm
A lobby input has activated an alarm	Lobby Alarm	2	E134	alert
A flood detector has detected flooding and activated an alarm	Flood Detected	2	E154	alarm
A flood detector has restored its normal status	Flood Reset	5	R154	normal

Description	Events as displayed on LCD	Category ¹⁾	Code CID ²⁾	Event LARS ³⁾
An open-circuit fault has occurred on an input circuit	Input Open	3	E371	fault
A short-circuit fault has occurred on an input circuit	Input Short	3	E372	fault
An open-circuit fault has occurred on a relay output circuit	Output Open	3	E320	fault
A short-circuit fault has occurred on the relay output circuit	Output Short	3	E320	fault
The relay output has been restored (recovery after output circuit failure)	Output Restored	3	R320	normal
A system component has been failed	Fault	3	E380	fault
A failed component has been recovered	Restored	3	R380	normal
Noise level in a detector has exceeded the limit	Noise	3	–	–
Noise level in a detector fell down till the acceptable level	Noise Removed	3	–	–
Input (loop, detector) or output is out of service due to a configuration error	Config Error	3	E380	fault
A communication lost occurred between the S2000-KDL and addressable detector or addressable expansion input/output device; or communication lost between the S2000-ASPT and the connected S2000-KPB	Com Lost	3	E382	fault
A communication recovery between S2000-KDL and an addressable detector or expansion unit; or between the S2000-ASPT unit and the connected S2000-KPB	Com Restored	3	R382	normal
A detector requires maintenance service (too dusty condition in the smoke chamber of DIP-34A)	Service Required	3	E393	fault
The recovery of a failed input	Restored	3	Rxxx ²⁾	normal
An input was not in a normal status (activated or faulty) when attempted to be armed	Arming Failed	4	E374	fault
A fire or alarm Reset	Alarm Reset	4	–	–
The Automatic Extinguishing Mode has been turned off	Auto Mode OFF	4	–	–
The Automatic Extinguishing Mode has been turned on	Auto Mode ON	4	–	–
An input has been disabled (input monitoring is disabled)	Disabled	4	E570	–
An input has been enabled (input monitoring is enabled)	Enabled	4	R570	–
An output has been disabled (output monitoring and control is disabled)	Disabled	4	E520	–
An output has been enabled (output monitoring and control is enabled)	Enabled	4	R520	–
The monitoring of auxiliary input has been restored (turned on)	Aux Enabled	4	R570	–
An input has been armed	Armed	5	Rxxx ²⁾	normal
An input has been disarmed	Disarmed	5	Rxxx ²⁾	normal
An exit delay has been activated (delayed arming)	Arming Delay	5	–	–
The Test has been started	Test ON	4	E607	–
The Test has come to an end	Test OFF	4	R607	–
The detector responds to specific test procedure applied when detector is in the normal operating mode	Alarm Test	8	E611	–
Unverified detector signal	Detector Signal	8	–	–
An auxiliary input Activation (Auxiliary Input Activated)	Aux Activated	9	E150	alarm
An auxiliary input has returned to the Normal status (Auxiliary Input Restored)	Aux Restored	9	R150	normal
An alternative activation of programmable auxiliary input	Aux Activated 2	9	–	–

Description	Events as displayed on LCD	Category ¹⁾	Code CID ²⁾	Event LARS ³⁾
A remoted control unit has been operated to start a relevant system/device	RCU Activation	9	E150	alarm
A remote control unit has been reset to the initial position	RCU Reset	9	R150	normal
A disarmed input has been activated	Input Activated	9	–	–
A disarmed input has been restored	Input Restored	9	–	–
A device or detector enclosure is open	Tamper Alarm	3	E383	alarm
A device or detector enclosure is closed	Tamper Restored	3	R383	normal
Temperature is above the high limit	t^hHigh	8	E158	–
Temperature is below the low limit	t^lLow	8	E159	–
Temperature is within normal range	tⁿNormal	8	R xxx ²⁾	–
A failure of the temperature sensor	t^sSensor Fault	3	E380	fault
The recovery of a failed temperature sensor	t^sSensor Restored	3	R380	normal
A pressure switch detected the extinguishant release	Pressure Signal	8	–	–
The pressure switch did not detect the extinguishant release	Pressure Failed	8	–	–
Local manual activation of actuator (appliances)	Manual Start	4	–	–
Local manual abortion of actuator (appliances)	Manual Stop	4	–	–
The increase of water, pressure (Potok-3N) or humidity (S2000-VT) level	Level Increased	8	E166	–
The decrease of water, pressure (Potok-3N) or humidity (S2000-VT) level	Level Decreased	8	E167	–
The water or pressure level is restored (Potok-3N)	Level Normal	8	R166 - R169 ²⁾	–
The water or pressure level is above the critical limit (Potok-3N)	Level AboveLimit	3	E168	–
The water or pressure level is below the critical limit (Potok-3N)	Level BelowLimit	3	E169	–
The power supply of a unit (device) is beyond the acceptable range	Power Failed	3	E337	fault
Voltage of the first power input of the unit or detector (input point) is out of acceptable rates	Power Failed 1	3	–	–
Voltage of the second power input of a unit or detector (input point) is out of acceptable rates	Power Failed 2	3	–	–
Power of unit or detector has recovered after failure	Power Restored	3	R337	normal
Voltage of the first power input of the unit or detector (input point) has recovered	Power Restored 1	3	–	–
Voltage of the second power input of the unit or detector (input point) has recovered	Power Restored 2	3	–	–
Battery is missing or must be replaced. In some cases it means low battery	Battery Fault	3	E311	fault
Backup battery charge is low	Battery Low	3	E302	fault
A backup battery has failed test and may not be used further	Bat Test Error	3	E309	fault
A failed backup battery has been recovered	Battery Restored	3	R311	normal
The charge of Battery 2 is low	Battery 2 Low	3	E384	fault
Battery 2 has been repaired	Battery 2 Normal	3	R384	normal
Failure of 220V commercial power supply	Mains Failed	3	E301	fault
Recovery of 220V commercial power supply	Mains Restored	3	R301	normal

Description	Events as displayed on LCD	Category ¹⁾	Code CID ²⁾	Event LARS ³⁾
Overload of battery backup power supply (RIP)	Overload	3	E312	fault
RIP overload is repaired	Load Restored	3	R312	normal
The charger of a backup battery power supply is failed	Charger Failed	3	E312	fault
The charger of a backup battery power supply is repaired	Charger Restored	3	R312	normal
RIP power output is OFF (the DC OFF command has been executed)	DC OFF	4	–	–
The RIP power output is ON (the DC ON command has been executed)	DC ON	4	–	–
A unit has been rebooted	Device Reboot	3	R339	–
Unauthorized substitution of a system unit (Error Authenticating Device)	Err Auth Device	3	E333	fault
The communication between S2000M and RS485-connected unit has been lost	Disconnected	3	E333	fault
The communication between S2000M and RS485-connected unit has been recovered	Connected	3	R333	normal
A device has been disconnected from the RS-485 line	RS Line Fault	3	E331	–
The RS485 line has been restored	RS Line Restored	3	R331	–
Polling Loop short-circuit has failed	PL Short-Circuit	3	E332	fault
Overvoltage fault on the Polling Loop circuit	PL Overvoltage	3	E332	fault
Recovery of the Polling Loop circuit	PL Restored	3	R332	normal
Lost communication with an addressable detector of Polling Loop 1	PL1 Com Lost	3	–	–
Lost communication with an addressable detector of Polling Loop 2	PL2 Com Lost	3	–	–
Recovered communication with one or more addressable detectors of Polling Loop 1	PL1 Com Restored	3	–	–
Recovered communication with one or more addressable detectors of Polling Loop 2	PL2 Com Restored	3	–	–
Commination error from a PL-connected addressable device	PL Com Error	3	E382	fault
Unstable communication with PL-connected addressable devices	PL Com Unstable	3	E382	fault
Failed communication with a subscriber or failure of notification routing link (UO-4S and S2000-PGE)	Link Failed	3	E351	fault
Recovery of communication with a subscriber or notification routing link (UO-4S and S2000-PGE)	Link Restored	3	R351	normal
Unknown device	Unknown Device	3	–	–
Hardware error or unit failure: <i>n</i> = 1 – Firmware corruption (firmware checksum error); <i>n</i> = 4 – Hardware failure; <i>n</i> = 5 – Error indexing codes in S2000-2 and S2000-4	Test Error <i>n</i>	3	E343	fault
Partition (zone) armed	Zone Armed	4	R402	arm
Partition (zone) disarmed	Zone Disarmed	4	E402	disarm
Partition arming command was initiated (arming requested)	Arming	4	R462	–
Partition disarming command was initiated (disarming requested)	Disarming	4	E462	–
A user presented or entered credentials with control permission (e.g. token to arm or disarm a zone)	Authentication	4	–	–

Description	Events as displayed on LCD	Category ¹⁾	Code CID ²⁾	Event LARS ³⁾
Change of output status: On, Pulsing, Off	Relay On Relay Pulsing Relay Off	7	–	–
Event on a user transaction (passage) to an access controlled area (access zone)	Transaction	6	–	–
Wrong code (credential) is presented	Wrong Code	6	E461	–
Requested access has been granted	Access Granted	6	E422	–
A presented credential is correct but does not provide access due to insufficient privileges	Access Denied	6	E421	–
Access is locked down	Access Locked	6	–	–
Free access mode is enabled	Free Access	6	–	–
Normal Access Mode is restored	Access Restored	6	–	–
Door is open	Door Open	6	–	–
Door is closed	Door Closed	6	Rxxx ²⁾	normal
The door is left open too long	Door Held Alarm	6	E426	alarm
The door is open without granted access	Door Forced Open	6	E426	alarm
Attempt to guess a code	Guessing	6	–	–
Entering the Programming Mode	Programming	8	R627	–
The events have not been transmitted due to the full buffer (S2000-IT)	Buffer Full	8	E623	–
The event log is overflowed resulting in loss of some events	Buffer Overflow	8	E624	–
A device self-test has been initiated manually	Manual Test	8	E601	–
A user response to an alarm event message (a user pressed the Silence button on the Signal-20M, S2000-BI, or S2000M)	Silencing	8	–	–
The S2000M panel has been powered on	S2000M Power ON	8	R305	–
The Printer is turned on	Printer ON	8	R336	normal
The printer is off, or not ready (e.g. no paper)	Printer OFF	8	E336	fault
The event message to inform that system data has been changed by a user	Date Changed	8	E625	–
The event message to inform that system time has been changed by a user	Time Changed	8	E625	–
Generated by the panel every midnight and when data is changed	Date:	8	–	–
The panel generates the System Time event when the system time is changed	System Time	8	–	–
Guard report at a checkpoint	Guard Checkpoint	8	E999	–

Notes to Table E.1:

¹⁾ Event Categories:

1 – Fires

2 – Alarms;

3 – Faults

4 – Arm/Disarm;

5 – Input Arm/Disarm;

6 – Access;

7 – Relay (activation and reset of outputs, start/release and stop/abort of fire protection equipment;

8 – Service;

9 – Auxiliary.

²⁾ A CID Code is an event code in the Contact ID protocol when transmitting messages over the radio link of Rif String RS-202:

E150: event code 150; **R150:** restoration code 150;

Rxxx: restoring from activated or fault status with the same restoration code:

«-»: such event is not transmitted to the Rif String RS-202 system.

³⁾ Events defining the range of LARS codes:

alarm – activated detector signals, alarms, fires;

prealarm – alerts such as lobby alarms and pre-alarms

fault – faults;

normal – restoring normal status from activated or fault status;

armed – a partition (zone) is armed by a user;

disarmed – a partition (zone) is disarmed by a user;

«-» – events are not transmitted to LARS.

16 Acceptance and Packing Certificate

S2000M Monitoring and Control Panel

Product Name

ACDR.426469.027

manufacture number

serial number

Produced and accepted in according to the mandatory requirements of Russian standards and engineering documentation. Approved to be used as designed and packed at BOLID company.

QCD

Name

yyyy, mm, dd