



S2000-ASPT

Fire Alarm and Extinguishing Control Panel



Engineer's and User's Manual

ATTENTION!

To modify the panel configuration parameters use the program

UProg.exe of version **4.0.0.905** or higher.

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This Engineer's and User's Manual is intended to help for studying operability principles and maintenance of the S2000-ASPT Fire Alarm and Extinguishing Control Panel version **3.05**.

Please read these instructions completely before connecting, operating or adjusting this product.

1 GENERAL

The S2000-ASPT Fire Alarm and Extinguishing Control Panel (hereinafter referred to as the panel) is designed to be used in standalone or centralized fire alarm and protection systems.

The panel provides monitoring fire conditions, controlling audible and visual alarms, and operating a fire suppression system both releasing extinguishing agent and monitoring faults of the fire protection equipment.

The main S2000-ASPT functions are:

- Protecting a single hazard area
- Releasing extinguishing agent in gaseous, dry chemical, or aerosol fire suppression system both automatically and remotely
- Receiving and processing signals from both manual call points and automatic fire detectors (passive, active, two-wire, four-wire, normally open, and normally closed)
- Controlling one sound and three visual alarms
- Controlling technological equipment such as ventilation systems and so on
- Receiving commands from and transmitting alarm and fault messages over the RS-485 interface line to the network controller (either a S2000M fire and alarm control console or a PC with the ARM Orion software package installed)
- Monitoring for faults of fire protection equipment and audible and visual alarms
- Monitoring for faults of fire suppression installation
- Receiving signals from:
 - Door open sensors
 - Pressure detectors
 - Mass of Pressure outputs of the fire protection equipment
 - Connected S2000-KPB release modules
 - Manual call points
 - IButton reader
- Transmitting the "Fire Alarm" and "Fault" messages to a fire department or central monitoring station.

The panel can operate both stand-alone and as an addressable part of an Orion security installation controlled by its network controller.

Also the panel can be co-operated with S2000-KPB relay modules allowing increasing the number of release circuits.

The panel can be powered by:

- mains power supply 220 V ac/ 50 Hz, or
- backup power supply: two connected in series batteries 12 V d.c.



DO NOT operate the panel without connecting batteries to it

The panel provides round-the-clock operation.

The panel must not be used under aggressive or dust ambient conditions or in explosion-hazardous premises.

The panel construction design provides the ingress protection rating in accordance with IP30 (IEC 529-89).

The panel has been ready to operate after no more than 30 s since powering on.

The average operating life is 10 years, panel's both backup batteries needing to be replaced once every 5 years. Do not replace only one battery but rather both batteries must be replaced.

The panel weight is no more than 6 kg without backup batteries.

Overall dimensions are equal to 305x255x95 mm.

The panel is intended to be used under the following ambient conditions:

- operating temperatures:
 - from 0°C to 50°C provided that backup batteries are housed within the panel, and
 - from -30°C to 50°C provided that backup batteries are stored separately;
- relative humidity up to 98% (for 25°C) non-condensing;
- vibration load from 1 to 35 Hz, with maximum acceleration 0.5 g.

Following are the schemes that show some ways to use the panel within a fire alarm and extinguishing system (see Figure 1-1 to Figure 1-4).

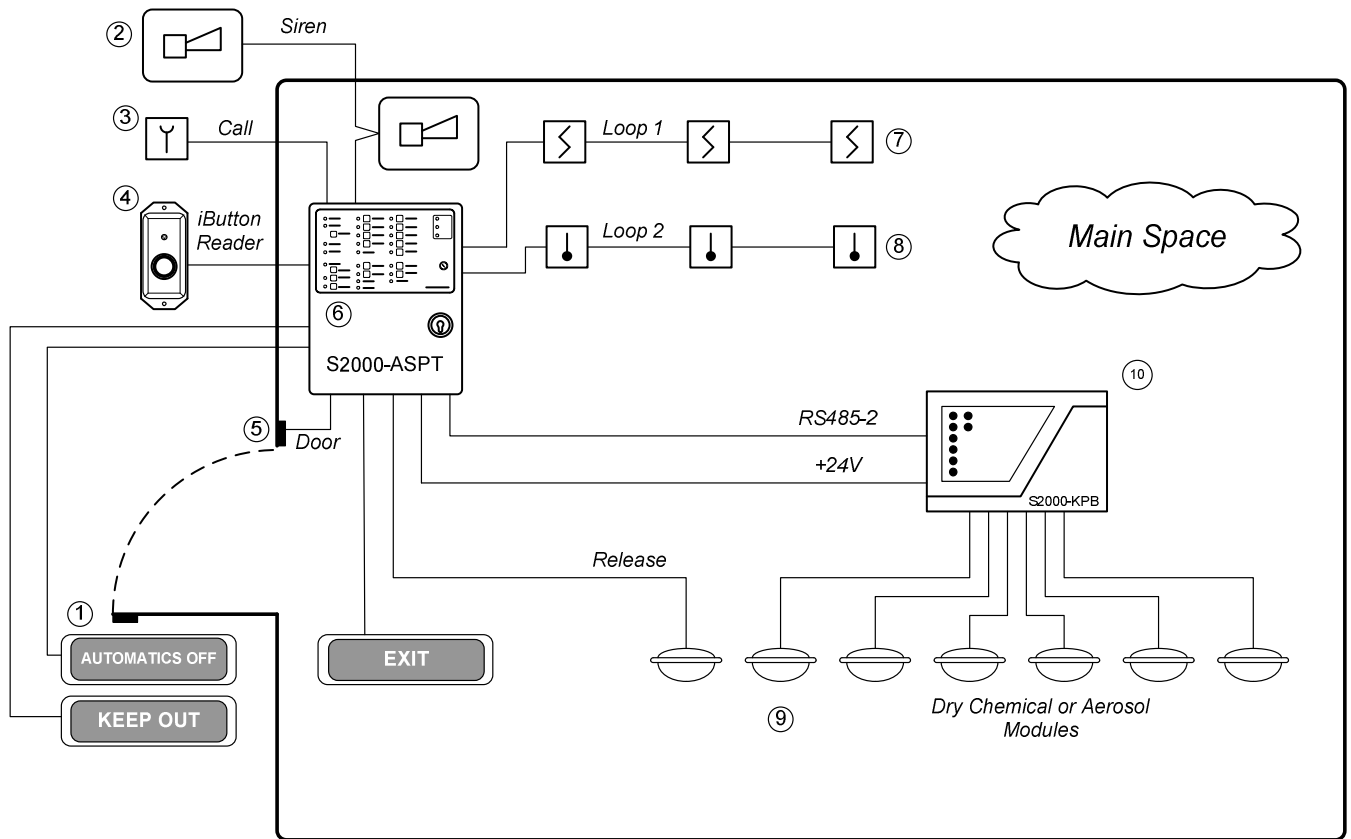


Figure 1-1. A Standalone Dry Chemical Fire Extinguishing System

1 : Light Alarms (Caution Signs)

2 : Audible Alarm

3 : Manual Call Point

4 : iButton Reader

5 : Door Contact

6 : S2000-ASPT Panel

7 : Smoke Detectors

8 : Heat Detectors

9 : Fire Protection Modules

10 : S2000-KPB module

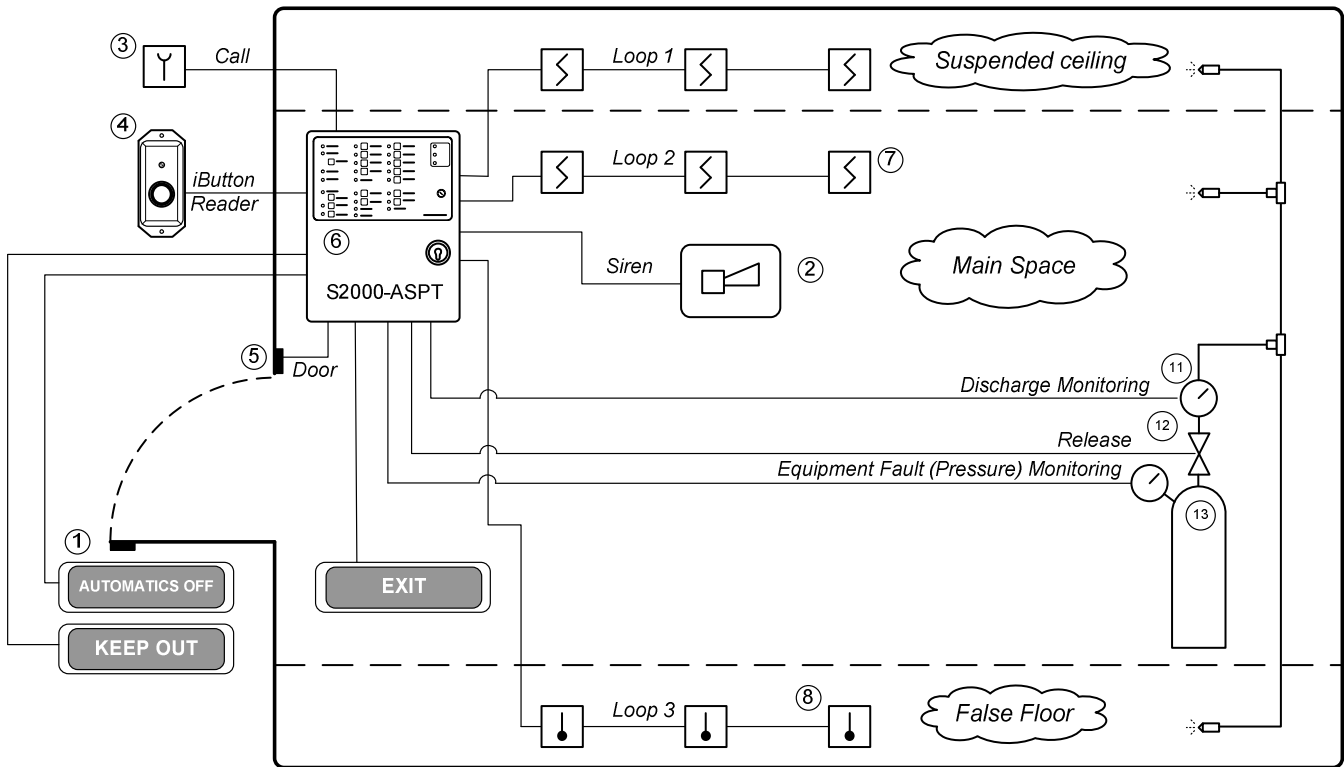


Figure 1-2. A Standalone Gaseous Fire Extinguishing System

- 1 : Light Alarms (Caution Signs)
- 2 : Audible Alarm
- 3 : Manual Call Point
- 4 : iButton Reader
- 5 : Door Contact
- 6 : S2000-ASPT Panel

- 7 : Smoke Detectors
- 8 : Heat Detectors
- 11 : Output Pressure Detector
- 12 : Release Activator
- 13 : Internal Pressure Detector

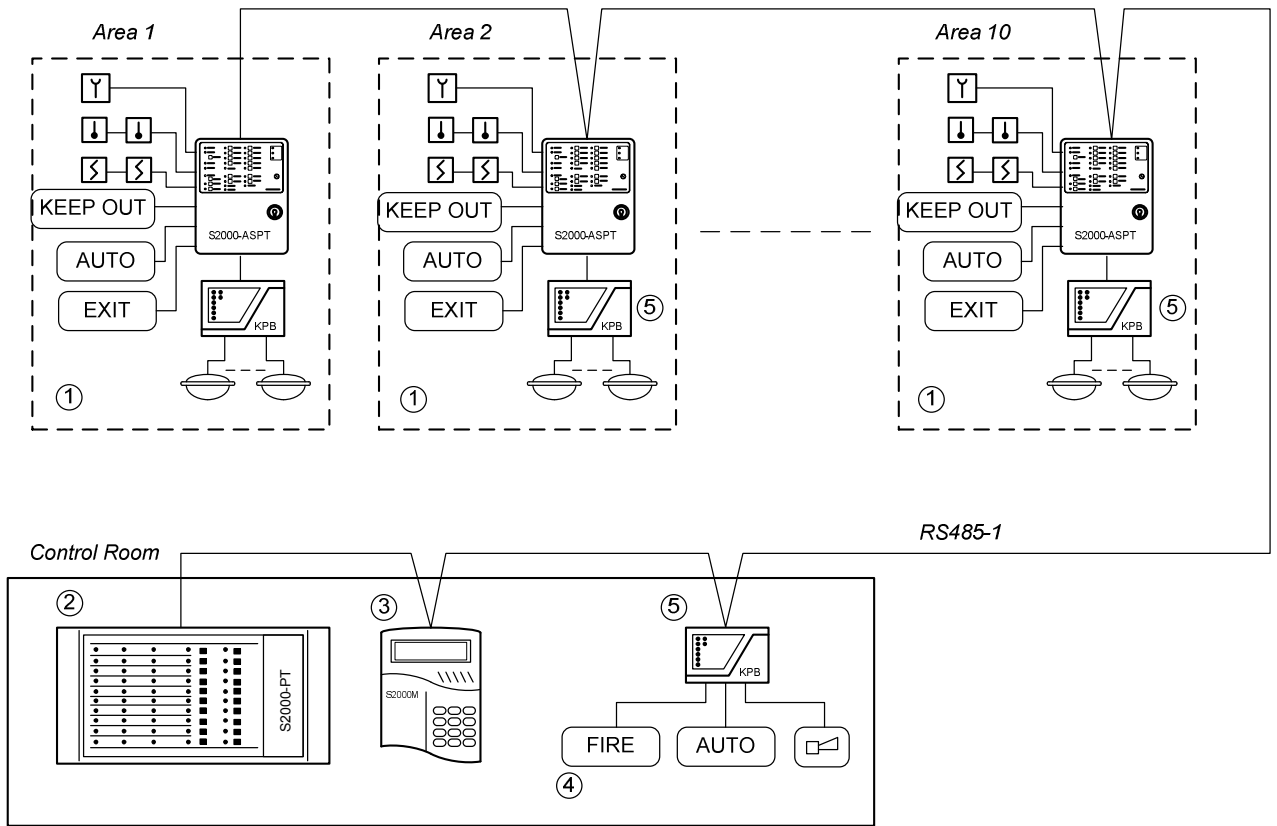


Figure 1-3. A Centralized Dry Chemical Fire Extinguishing System

1 : Hazardous Area

2 : S2000-PT CIE

3 : S2000M Control Console

4 : Light and Sound Alarms

5 : S2000-KPB Module

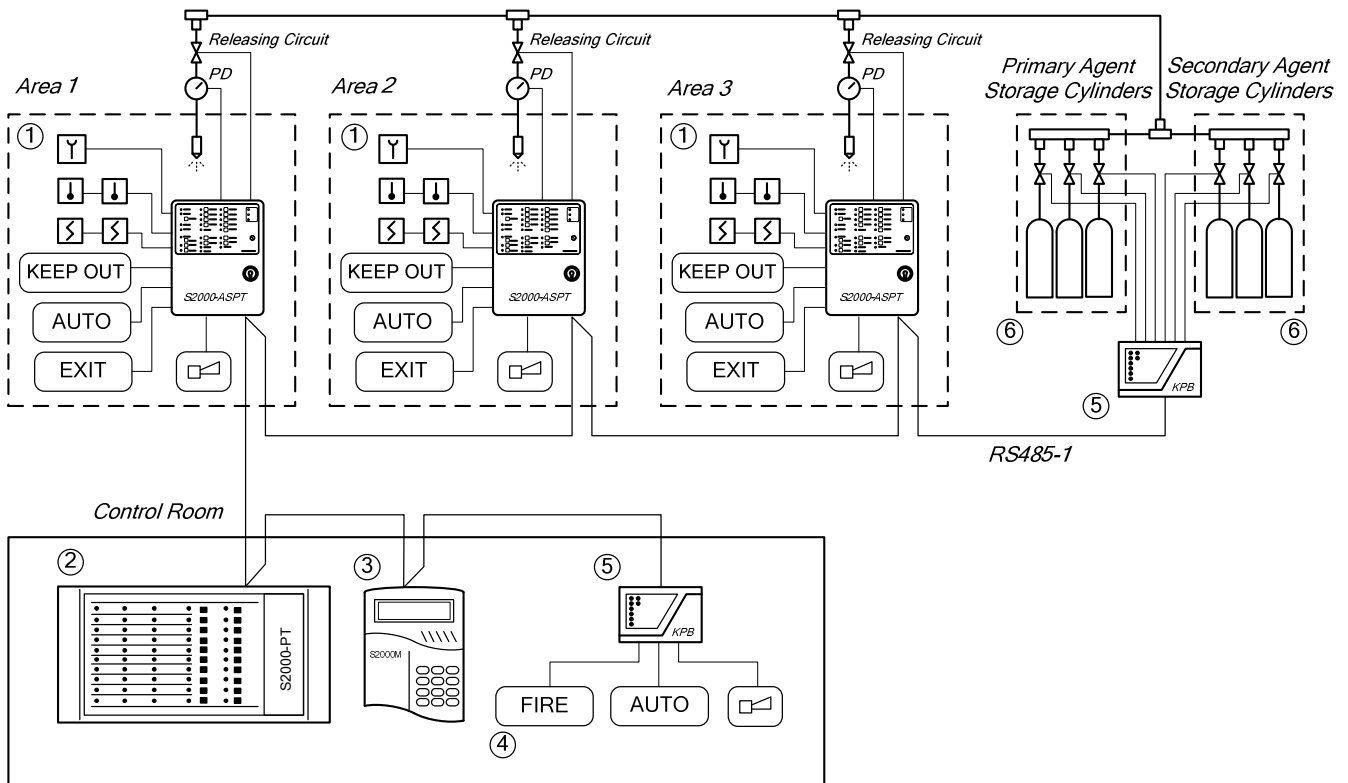


Figure 1-4. A Centralized Gaseous Fire Extinguishing System

- | | |
|----------------------------|----------------------------|
| 1 : Hazardous Area | 4 : Light and Sound Alarms |
| 2 : S2000-PT CIE | 5 : S2000-KPB Module |
| 3 : S2000M Control Console | 6 : Gas Installation |

2 PANEL DESIGN

2.1 Panel View and Basic Elements

The basic panel elements are shown in Figure 2-1.

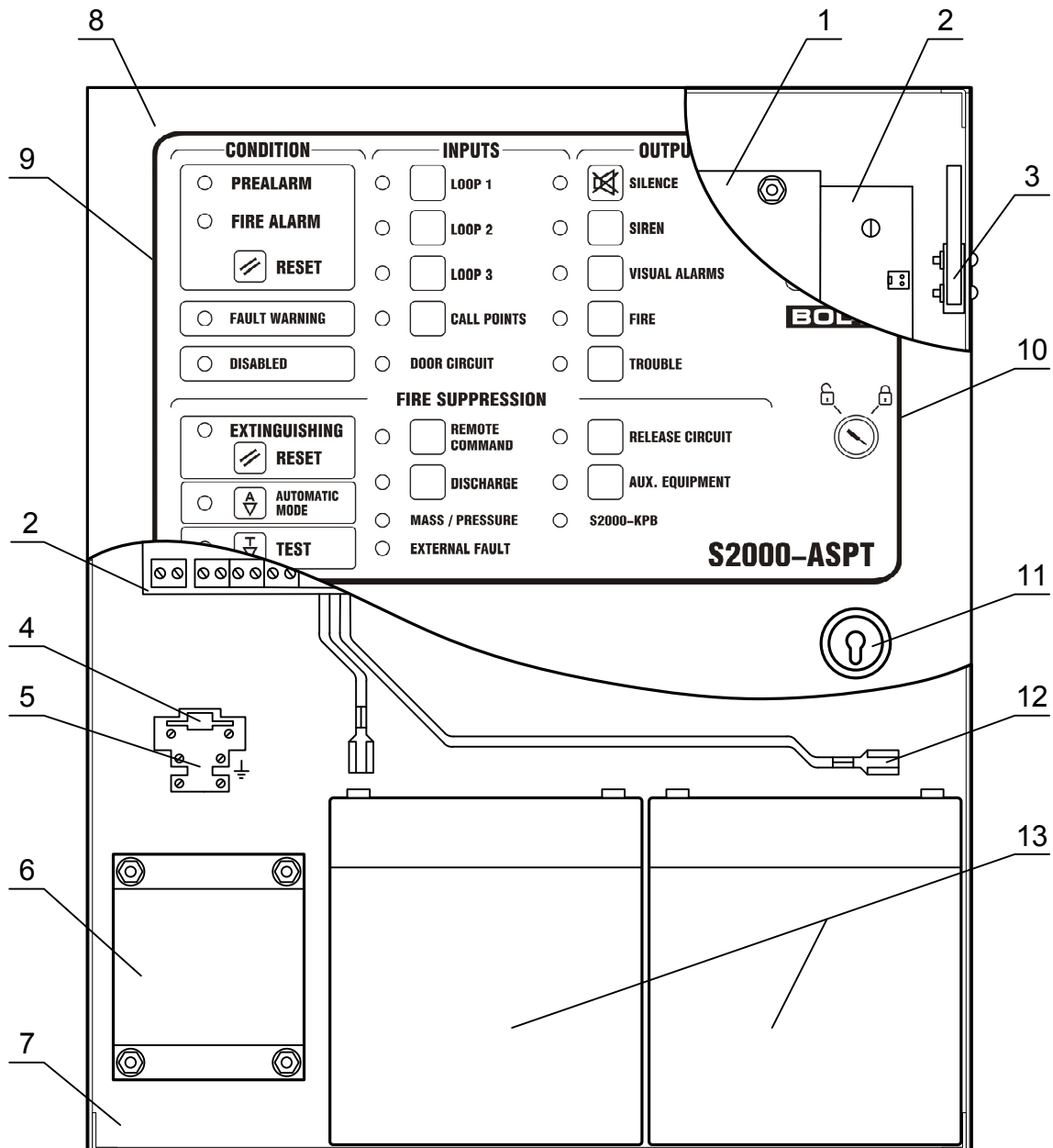


Figure 2-1. Basic Panel Elements

- | | | |
|--------------------|----------------------------------|-----------------------|
| 1 – Control Board | 5 – Power and Earth
Terminals | 9 – Front Plate |
| 2 – Main PCB | 6 – Transformer | 10 – Key Switch |
| 3 – Tamper Switch | 7 – Panel Base | 11 – Mechanical Lock |
| 4 – F1 Fuse Holder | 8 – Panel Top Cover | 12 – Battery Leads |
| | | 13 – Backup Batteries |

2.2 Panel Front Plate

A number of light indicators and push buttons as well as a key switch are located on the panel front plate as follows.

2.2.1 Front Plate Indicators

There are 27 light indicators (LEDs) on the panel front plate as shown in Figure 2-2. Its destination and light modes are represented by Table 2-1.

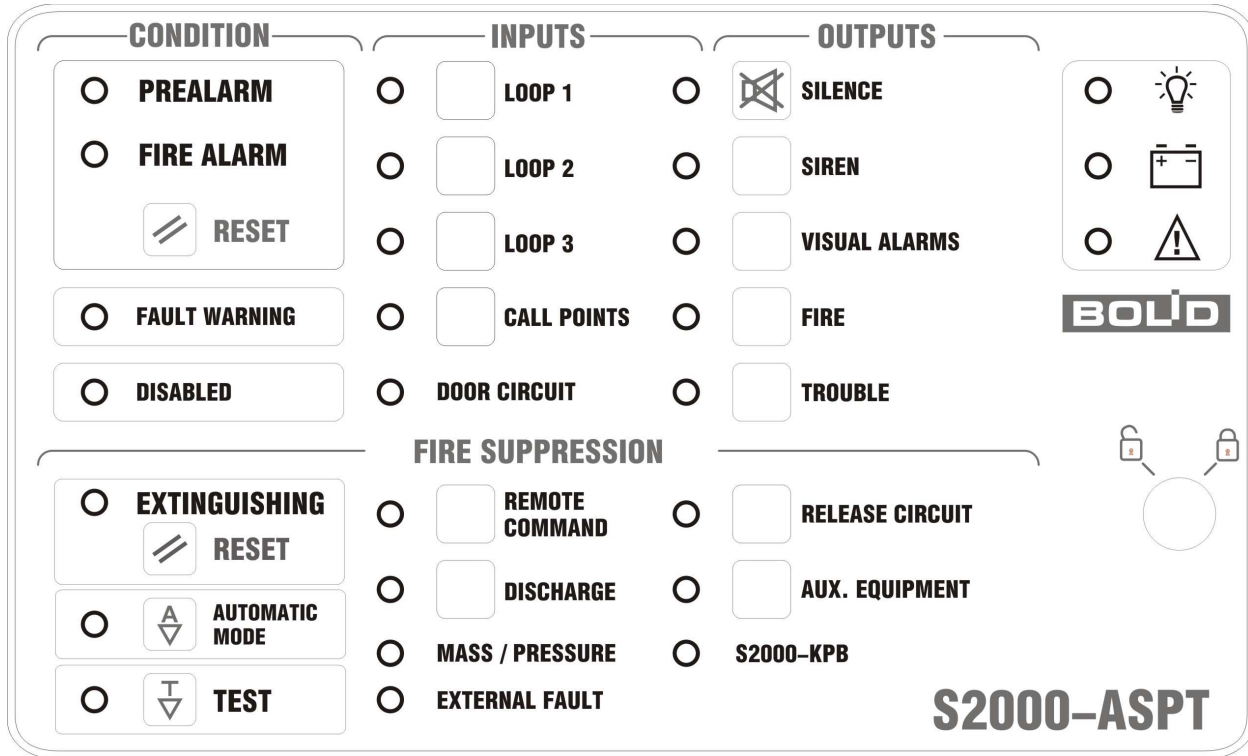





Figure 2-2. The Panel LEDs

Table 2-1: Panel Faceplate Indicators

Indicator	Color	Destination
PREALARM	Red	The generalized indicator for prealarm fire conditions
FIRE ALARM	Red	The generalized indicator for fire conditions
FAULT WARNING	Yellow	The generalized indicator for fault conditions
DISABLED	Yellow	The generalized indicator for disabled conditions

Indicator	Color	Destination
EXTINGUISHING	Red	The generalized indicator for the Extinguishing operating mode of the panel
AUTOMATIC MODE	Red	Indicates whether the automatic mode to release extinguishing agent is set on or off; also indicates the current status of the VA3 output
TEST	Yellow	Indicates the panel Test mode
LOOP 1 LOOP 2 LOOP 3	Red	Indicates prealarm, fire alarm and fire response loop conditions
	Yellow	Indicates fault and disabled loop conditions
CALL POINTS	Red	Indicates one or more manual call points wired to the MCP panel terminals being activated
	Yellow	Indicates the MCP circuit failure or disablement (as a result of pressing the same-name button)
DOOR CIRCUIT	Yellow	Indicates the circuit with door open detector included being broken or failed
REMOTE COMMAND	Red	Indicates remote release command having been received over the RS-485-1 interface line
	Yellow	Indicates remote release commands being disabled
DISCHARGE	Red	Indicates the Extinguishing and Unexpected Release panel modes
		Indicates this circuit fault or being disabled
MASS/PRESSURE	Yellow	Indicates that one or more Mass or Pressure inputs of S2000-KPB have failed
EXTERNAL FAULT	Yellow	Indicates this circuit fault or being broken
SILENCE	Yellow	Indicates internal panel sounder being disabled

Indicator	Color	Destination
SIREN	Red	Indicates this output is activated causing the connected sound alarms to sound
	Yellow	Indicates that the output is disabled or the connected circuit failed
VISUAL ALARMS	Red	Indicates the VA1 and VA2 outputs are activated and so are the connected caution signs (the pre-discharge and discharge alarms)
	Yellow	Indicates that the VA1 and VA2 outputs are disabled or the connected circuits failed (see the note below the table)
FIRE	Red	Indicates that fire condition is being transmitted to a fire monitoring station
	Yellow	Indicates the VA1 and VA2 outputs being disabled
FAULT	Yellow	Indicates that either a fault signal is being sent on the fire monitoring station or the output is disabled by pressing the same-name button
RELEASE CIRCUIT	Red	Indicates that the panel releasing circuit is active (under current)
	Yellow	Indicates fault or disabled condition of the releasing circuit
AUX.EQUIPMENT	Red	Indicates that the relay is activated
	Yellow	Indicates that the output is disabled
S2000-KPB	Yellow	Indicates that one or more of the S2000-KPB modules connected to the panel failed or are isolated
 Power	Green	Indicates that the panel power is turned on
 On Batteries	Yellow	Indicates faults of mains power, backup batteries, and the battery charger
 Device Failure	Yellow	Indicates the Device Failure panel mode

Note: For the VISUAL ALARM indicator, activating one of the VA outputs by the panel is more priority condition to display than circuit failure condition of the other VA output

The behavior of all the indicators in particular conditions while panel operating is described below in the Section 3.10.

2.2.2 Push Buttons

There are 17 operating push buttons and a key switch on the panel front plate.

Locating the push buttons on the panel front plate is shown in Figure 2-3. The push button and key switch functions are demonstrated by Table 2-2.

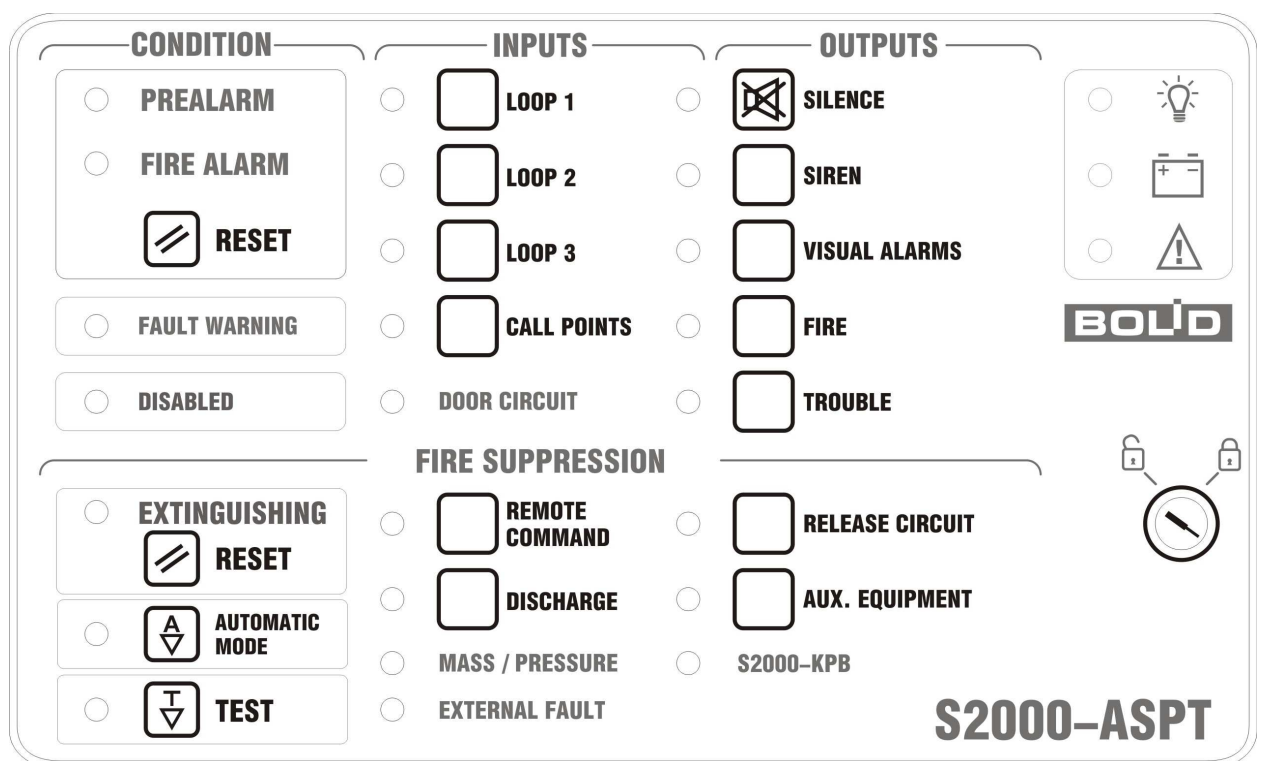



Figure 2-3. Panel Push Buttons and Key Switch


Table 2-2: Push Button Functions


Button	Function
Fire RESET	Cancels the Fire mode of the panel ²⁾
Extinguishing RESET	Aborts extinguishing ²⁾
AUTOMATIC MODE	Disables/Enables automatic discharge of extinguishing equipment ²⁾

Button	Function
TEST	Switches the panel to the Test mode ^{2),3)}
LOOP 1	Disables/Enables the input zones of automatic detection ^{2),3)}
LOOP 2	
LOOP 3	
CALL POINTS	Disables/Enables the Manual Call Point circuit ^{2),3)}
REMOTE COMMAND	Disables/Enables the remote release commands received via the RS-485-1 interface ^{2),3)}
DISCHARGE	Disables/Enables the Pressure Detector circuit ^{2),3)}
SILENCE	Silences the internal sounder ¹⁾
SIREN	Disables/Enables the circuits controlled by the outputs VA1 and VA2 ^{2),3)}
VISUAL ALARMS	Disables/Enables the circuits controlled by the outputs VA1 and VA2 (pre-discharge and discharge alarms) ^{2),3)}
FIRE	Disables/Enables the FIRE output ^{2),3)}
FAULT	Disables/Enables the FAULT output ^{2),3)}
RELEASE CIRCUIT	Disables/Enables the releasing circuit ^{2),3)}
AUX.EQUIPMENT	Disables/Enables the NO-NC-C output ^{2),3)}
Key Switch	Locks/Unlocks pressing the panel buttons by means of the key provided ^{2),3)}


Note: The digits 1), 2), and 3) denote the access levels for which the specified operations are enabled (see Section 3.1 of this Manual)

Once the Fire RESET button  has been pressed (available for the access level 2), the panel resets all fire alarms and automatically arms all responded alarm loops.

Once the Extinguishing RESET button  has been pressed (available for the access level 2) the panel aborts the Extinguishing mode, de-energizes the releasing circuit R, and switches the releasing outputs of the S2000-KPB modules (if present) to initial conditions.


Pressing the AUTOMATIC MODE button  (available for the access level 2) causes the panel to switch the mode of automatic release on and off. If the automatic mode is enabled, pressing the button will disable this one, and, otherwise, if the automatic mode is disabled, pressing the button will enable it. If automatic mode is blocked (for

example, the door sensor detector circuit is broken), pressing the button causes the internal sounder to make a long sound.


If the Test button  is pressed (available for the access levels 2 and 3), the panel enters the TEST mode (see the Section 3.8.6).


The LOOP1 – LOOP3 and CALL POINTS buttons having been pressed, the input zones of automatic detection and manual call points are armed / disarmed.

The REMOTE COMMAND and the DISCHARGE buttons having been pressed, the input of remote releasing commands and pressure detector monitoring are disabled / enabled respectively.

Pressing the SILENCE button  (available for all the access levels) silences the internal panel sounder when it is activated. The internal sounder is unblocked manually by repeated pressing the button or automatically after any event causing sounding having occurred. The internal sounder CANNOT be silenced when the panel is in the Pre-discharge Delay mode.

Pressing the buttons SIREN, VISUAL ALARMS, FIRE, FAULT, RELEASE CIRCUIT, and AUX.EQUIPMENT disables / enables the output circuits SA, VA1 and VA2, Fire, Fault, R, and NO-NC-C respectively.

When the key switch is positioned to the  (locked position), the manual panel control by means of its push buttons is disabled. This is available for the access level 1. Pressing any button causes the internal sounder to make a long sound indicating blocking the buttons.

When the key switch is positioned to the  (unlocked position), the manual panel control by means of its push buttons is enabled. This is available for the access level 2 and above. In such a mode if you press any faceplate button the internal sounder makes short sound acknowledging the pressing.

2.3 Panel Internal PC Board

The panel PCB layout can be shown in Figure 2-4.

The main internal panel components are:

- Terminal Blocks
- XP1 and XP2 jumpers
- HL1 internal light emitting indicator
- Voltage test points

2.3.1 PCB Terminal Blocks

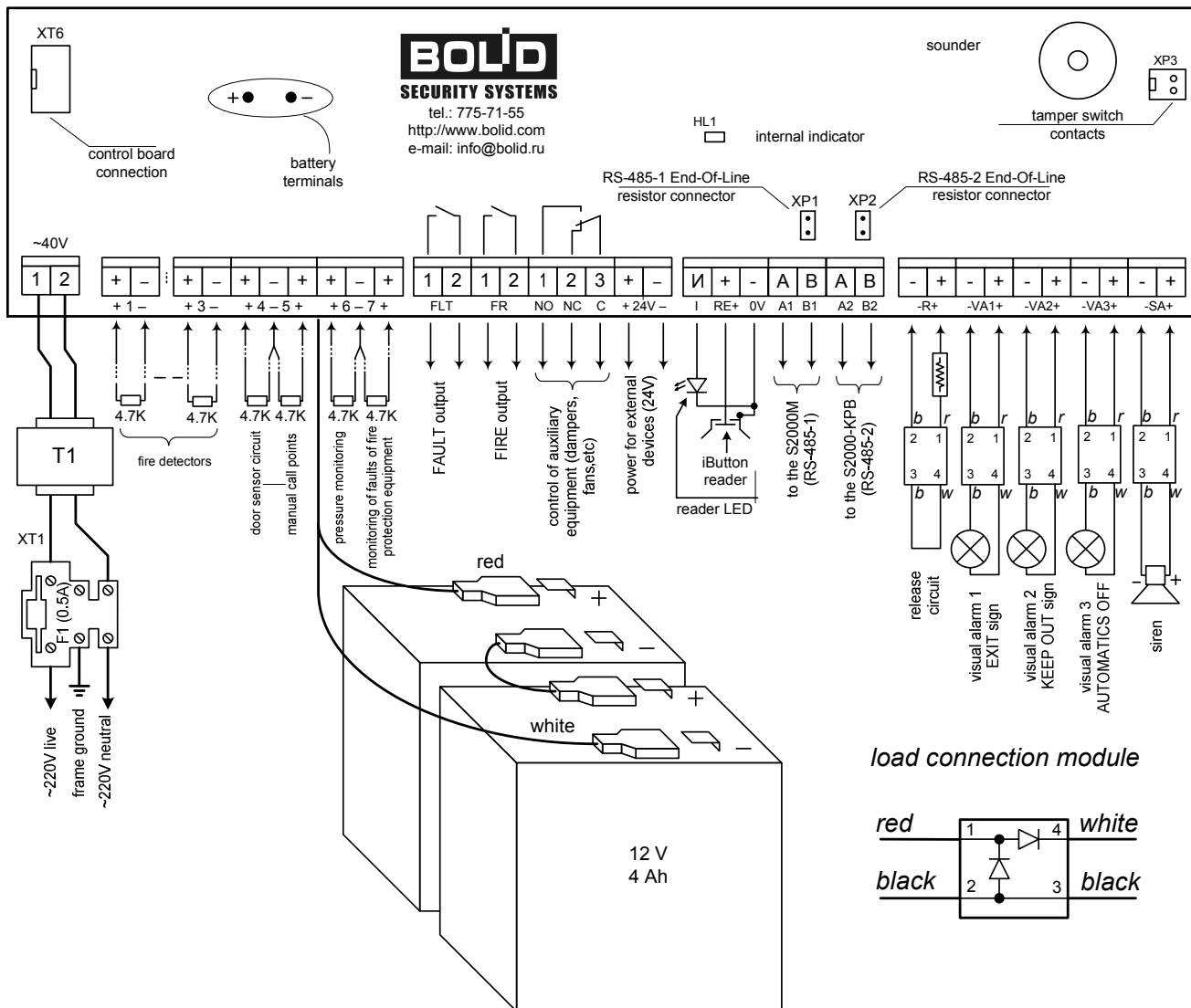


Figure 2-4: Panel Printed Circuit Board Layout

The panel PCB terminal blocks (see Figure 2-4) are designed to:

- +1-, +2-, +3-** : connect alarm loops 1, 2, 3 with fire detectors included
- +4-** : connect door open sensors
- +5-** : connect manual call points
- +6-** : connect pressure detector contacts
- +7-** : connect a fault circuit of fire protection equipment
- FLT** : transmit fault condition to a fire department
- FR** : transmit fire conditions to a fire department
- NO-NC-C** : connect auxiliary equipment to be controlled (such as fans, dampers, and so on)

+24V-	: supply 24 V d.c. to external devices
I	: connect the LED of the iButton reader
RE+	: connect the iButton reader
0V	: (this is the panel 0V circuit output)
A1, B1	: link the panel with the network controller (RS-485-1)
A2, B2	: connect S2000-KPB modules to the panel (RS-485-2)
+R-	: connect the exploder (releasing circuit)
VA1	: connect a visual alarm 1 (EXIT sign)
VA2	: connect a visual alarm 2 (KEEP OUT sign)
VA3	: connect a visual alarm 3 (AUTOMATION OFF table)
SA	: connect an audible alarm (siren)

2.3.2 PCB XP1 and XP2 Jumpers

In order to help keep the network line at optimum level for communication, the End-of-Line (EOL) terminators or resistors have to be connected to each end of the RS-485-1 and RS-485-2 interface lines.

For this purpose two jumpers, marked as XP1 and XP2 on the panel PCB, are destined. If the S2000-ASPT panel is the first or the last device in the RS-485-1 and/or RS-485-2 lines, then the relative jumper(s) must be connected across the corresponding A and B lines. Otherwise the jumpers must be removed.

2.3.3 Voltage Test Points

Following are the panel PCB voltage test points:

0	- the panel 0V circuit
5	- the regulated $5\pm 0,5$ V voltage supply output
27	- the regulated 27 ± 1 V voltage supply output
40	- mains rectifier output voltage

2.4 Panel Tamper Switch

There is a tamper switch under the panel top cover (see Figure 2-1). The tamper switch is connected to the XP3 terminal block of the panel main PCB by a double-core cable. When the panel top cover is closed, the tamper switch contacts are closed too.

You must open the panel cover to switch the panel to the Master Key Programming mode.

2.5 External Reader

The panel provides connecting the reader of Dallas Touch Memory electronic devices (or iButtons). The user authentication is performed by key code reading.

The reading and writing iButton codes are implemented when an iButton is touched to the reader.

The panel is supplied by a single input to connect a reader.

The distance between the panel and the reader cannot exceed 100 m provided the wire cross-section area is not less than 0.1 square mm.

The panel provides storing up to eight iButton codes (including the code of the Master Key) in its non-volatile memory.

3 TECHNICAL DESCRIPTION

3.1 Access Levels for the Indications and Controls


The panel provides five different access levels for the indications and controls which are used to have user access to panel operations.

Access Level 1:

The access level 1 is expected to be used by operating personnel and safety officers responsible for safety supervision who might be expected to investigate and respond to a fire alarm or a fault warning.

The following operations are available for these users:

- Monitoring indication of light emitting indicators of the panel front plate, and
- Silencing the panel sounder, if activated

No special procedures for entry to access level 1 is needed; this level is associated with the  position of the Key Switch on the panel front plate (see Figure 2-3).


Access Level 2:

The access level 2 is expected to be used by persons having a specific responsibility for operating fire protection equipment, and who are trained and authorized to operate the panel in the following conditions.

- Quiescent mode
- Fault mode
- Prealarm mode
- Fire Alarm mode
- Pre-discharge Delay mode
- Release mode
- Extinguishing mode

The access level 2 enables users to implement all the operations available for the access level 1 and additionally the following operations:

- Resetting the Prealarm and Fire Alarm panel operating modes
- Resetting the Extinguishing, Pre-discharge Delay, and Release panel operating modes
- Switching on/off the mode of automatic release

To entry for access level 2 switch the Key Switch on the panel front plate (see Figure 2-3) to the  position by means of the key provided.

Access Level 3:

The access level 3 is expected to be used by persons who are trained and authorized to operate fire protection equipment and all panel functions including disabling panel input/output circuits and switching the panel to the Test mode.

To entry for access level 3 touch the iButton reader connected to the panel with the Master Key.

If the *Master Key Provided Access* panel configuration parameter (see Section 3.7.3) is set off (off by default) all operations said above are available for the access level 2 too.

Access Level 4:

The access level 4 is expected to be used by persons who are trained and authorized to configure and re-configure the panel as well as to maintain the panel, to repair the panel, or to alter its firmware.

A mechanical lock on the top panel cover and its key provided are used for entry to access level 4.

Access Level 5:

When the panel operates under controlling of an Orion network controller, an additional access level 5 can be provided for a system operator (operator of the S2000/S2000M console or ARM Orion) which is enabled to control the panel remotely.

For entry to access level 5, the proper password enrolled in the Orion system database must be typed on the console keypad or PC keyboard.

3.2 External Circuit Control Outputs

The panel provides some outputs to connect and operate the external devices as shown in Table 3-1.

Table 3-1: Panel Control Outputs

Output	Output type	Parameters	Purpose
VA1	Normally opened contacts monitored for short/open failures	<i>Provided that the backup batteries are connected:</i> (24±2) V, 1 amp, up to 2 amp for 2 seconds (See App.A) control circuit current 0.0015 amp	To connect a pre-discharge alarm (EXIT light sign)
VA2			To connect a discharge alarm (KEEP OUT sign)
VA3			To connect the AUTOMATICS OFF sign
SA			To connect an external sound alarm (siren)
R			The release circuit to connect exploders, valves and so on

Output	Output type	Parameters	Purpose
I	Voltage of (5±0,5) V	0.015 amp maximum current	Connects the LED of the iButton reader
RE+		700 micro amp maximum current	Connects the iButton reader
FR	Normally opened solid state relay contacts	Maximum commuting voltage is 100V/0.1amp d.c.	Transmits the FIRE message to the fire department
FLT			Transmits the TROUBLE message to the fire department
NO-NC-C	Change-over relay contacts	Maximum commuting voltage is 28V/2amp d.c. or 128V/0.5amp a.c.	Controls auxiliary equipment such as ventilation, air conditioning and air heating installations as well as air damper controls and so on
24V	d.c. power supply	(24 ± 2) V (See page 82)	Supplies 24 V power to external devices consumed no more than 0.2 amp

3.3 Transmitting Fault Conditions to a Central Monitoring Station

Transmitting fault conditions to a Central Monitoring Station (CMS) is performed by opening the contacts of the FAULT panel output. The fault conditions include:

- Short/open failure of an alarm loop, door sensor circuit, audible or visual alarm circuit, manual call points' circuit, pressure detector or fire protection equipment fault circuit
 - Audible or visual alarm circuit overcurrent
 - Mains or backup power supply failure
 - Panel tampering
 - Disablement of a zone, circuit, or output
 - Receiving fault conditions from a connected S2000-KPB module
 - Loss of communication with any S2000-KPB module

3.4 Transmitting Fire Conditions to a Central Monitoring Station

Transmitting fire conditions to a CMS is performed by closing of the contacts of the panel FIRE output in cases of as follows:

- Panel entering the Fire Alarm mode
- Remote releasing the extinguishing system
- Emergency release when an extinguishing agent is being discharged without having received a release pulse

3.5 Zone Monitoring

The panel provides monitoring for such physical and logic zones as:

- zone #1: panel alarm loop #1
- zone #2: panel alarm loop #2
- zone #3: panel alarm loop #3
- zone #4: panel door sensor circuit
- zone #5: panel manual call points' circuit
- zone #6: pressure detector circuit
- zone #7: panel mains power control
- zone #8: panel battery power control
- zone #9: panel automatic release mode control
- zone #10: panel operating mode control
- zone #11: panel remote release mode control
- zone #12: fire protection equipment fault monitoring
- zones #20, #21, #22: controlling the tamper switch and two zones of the first S2000-KPB
- zones #30, #31, #32: controlling the tamper switch and two zones of the second S2000-KPB
- ...
- zones #170, #171, #172: controlling the tamper switch and two zones of the 16th S2000-KPB

3.5.1 Monitoring Alarm Loops

The panel provides connecting and monitoring for statuses of three alarm loops having the characteristics as follows:

- alarm loop resistance (without regard to termination resistor) no more than 100 Ω
- leakage impedance between the loop wires or between any wire and earth at least 50 k Ω

The termination 0.5 W, 4.7 k Ω ±5% resistors provided have to be included into each alarm loop.

In the quiescent mode the panel provides alarm loop inputs with power voltage ranging from 24 V down to 19 V depending on rated current from 0 to 3 milliamps correspondently.

In case of a short failure in any loop the panel supplies other loops with the same input voltage as mentioned above.

The panel provides limiting the loop current in case of a short circuit failure by the value of 27 milliamps.

The effective voltage ripples are not to exceed 20 mV.

The panel recognizes the following **alarm loop statuses** as follows:

- Normal (Operating) status
- Responded (Broken) status
- Open Failure status
- Short Failure status

The statuses of alarm loops are defined depending on their parameters accordingly with Table 3-2.

Table 3-2: Alarm Loop Parameters in Various Statuses

Alarm Loop Type	Alarm Loop Parameters			
	Operating	Responded	Open Failure	Short Failure
1 Smoke, double response recognizable	resistance 2.2 to 5.4 kΩ Smoke detectors consume current from 0 to 3 milliamp	resistance 0.1 to 1.8 kΩ	resistance > 6.6 kΩ	resistance < 100 Ω
2 Combined (smoke and heat)	resistance 2.2 to 5.4 kΩ Smoke detectors consume current from 0 to 1.2 milliamp	resistance 0.1 to 1.8 kΩ or 6.6 to 14.4 kΩ	resistance > 16 kΩ	resistance < 100 Ω
3 Heat, double response recognizable	resistance 2.2 to 5.4 kΩ	resistance 6.6 to 25 kΩ	resistance > 30 kΩ	resistance < 1.8 kΩ

Alarm loop resistance can be estimated based on its measured ADC value by using the formula as follows:

$$R_{\text{loop}} = \frac{280.8}{\text{ADC}} - 1, [\text{K}\Omega],$$

Where R_{loop} is the actual resistance value of an alarm loop, and

ADC is the measured ADC-value of the resistance.

Reading the ADC values can be requested by means of the network controller tools using the loop control menu.

The panel provides powering active two-wire detectors through alarm loops. The maximum number of detectors to be wired into any alarm loop can be estimated by formula:

N = I_{max} / i, where:

N is the number of detectors

I_{max} is maximum load current (I_{max} = 3 milliamp for a loop type 1
I_{max} = 1.2 milliamp for a loop type 2)

i is the current in milliamps consumed by each detector in the quiescent mode

If an alarm loop of type 1 (smoke, double response recognizable) is in use then the wired detectors have to retain their operability in case of loop voltage having fallen down to 12 V.

The **integration time**, the time the panel needs to detect loop breaking, is 300 milliseconds for all loop types.

3.5.2 Monitoring Input Circuits 4 to 7

The panel provides monitoring for conditions of such input circuits as the door sensor circuit, the manual call point circuit, the pressure detector circuit, and the fault circuit of fire protection equipment which have the characteristics as follows:

- wire resistance (without regard to termination resistors) no more than 100 Ω
- leakage impedance between two wires or between any wire and earth at least 50 kΩ

The termination resistor 0.5 W, 4,7 kΩ±5% has to be included into each monitored circuit said above.

The panel recognizes the following **statuses** of the door sensor and manual call point circuits:

- Normal (Operating) status
- Activated (Broken) status
- Open Failure status
- Short Failure status

Table 3-3 gives the couples between the circuit parameter values and the relevant statuses.

Table 3-3: Monitored Circuits 4 and 5 in Various States

Operating	Broken	Open Failure	Short Failure
From 2.2 kΩ to 5.4 kΩ	From 200 Ω to 1.8 kΩ, or from 6.6 kΩ to 25 kΩ	More than 30 kΩ	Less than 100 Ω

The resistance of a monitored circuit can be estimated based on its measured ADC value by using the formula as follows:

$$R_{mc} = \frac{ADC}{126.4 - 0.53 \cdot ADC}, [K\Omega],$$

where R_{mc} is the actual resistance of the monitored circuit, and

ADC is the measured ADC-value of the resistance.

Reading the ADC values can be requested by means of the network controller tools using the loop control menu.

The **integration time** that is needed the panel to detect circuit breaking is 1 s for manual call points circuit and 300 milliseconds for other monitored circuits.

3.6 Monitoring Panel Outputs

The panel provides monitoring for conditions of the following panel outputs:

- output #1: visual alarm #1 (EXIT light sign)
- output #2: visual alarm #2 (KEEP OUT light sign)
- output #3: visual alarm #3 (AUTIMATICS OFF light sign)
- output #4: audible alarm (fire siren)
- output #5: releasing circuit
- outputs #21 to #26: executive outputs of the first S2000-KPB
- outputs #31 to #36: executive outputs of the second S2000-KPB
- ...
- outputs #171 to #176: executive outputs of the 16th S2000-KPB

3.6.1 Monitoring Annunciator Appliance Circuits

The panel monitors the VA1, VA2, VA#, and SA circuits for open and short failures both in activated and deactivated conditions.

The maximum commuting current for each output is:

- 1 amp in permanent mode
- Up to 2 amp for 2 s in pulse mode

The maximum circuit controlling current is 1.5 milliamps.

The panel recognizes the following **statuses** of the annunciator appliances as:

- Normal (Operating) status
- Open Failure status
- Short Failure status

These statuses are defined depending on a voltage of alarm output negative terminal relative to 12 V output one in agreement with Table 3-4.

Table 3-4: Alarm Circuit States

Operating	Open failure		Short failure	
	ON	OFF	ON	OFF
Voltage ranged from 0.35 V to 4.0 V	Less than 0.05 V	More than 4.1 V	More than 4.5 V	Less than 0.3 V

3.6.2 Monitoring Releasing Circuit

The panel monitors the releasing circuit for open and short failures both for quiescent condition and while agent releasing.

If the panel is used in a gaseous extinguishing system, the release is considered to be successive after pressure detector having actuated. If the release pulse has completed but the pressure detector doesn't respond or its circuit is in fault, the release is considered to be failed. In such a case duration of the release pulse must comply with the maximum time of the extinguishing agent releasing.

The release circuit parameters met the requirements listed in the Section 3.6.1.

3.7 Panel Configuration Parameters

To adjust the panel for particular application it can be necessary to change some configuration parameters stored in the panel non-volatile memory. The panel configuration parameters can be sorted into the following four groups:

- Parameters of alarm loops and monitored circuits
- Parameters to control the NC-NO-C relay output
- Parameters of the panel
- System parameters

3.7.1 Parameters of Alarm Loops and Monitored Circuits

Table 3-5: Loop and Circuit Parameters

Parameter	Description	Range
Loop Type	Determines the control algorithm and available types of detectors to be connected (normally opened or closed detectors; recognition of two or more detectors actuating in one loop)	1 – smoke with double actuating recognition 2 – combined (smoke and heat) without double actuating recognition 3 – heat with double actuating recognition
Loop Analysis Delay	The pause before alarm loop status analysis having begun since power reset. It is defined by the time period necessary for two-wire detectors operating mode recovery	3 to 255 s
Loop Requery Prohibition	Blocks the repeated status request of the actuated detector	On/Off
Recovery Time	Gives the time from the moment of restoring a monitored circuit until the moment of considering the circuit as being in norm	0 to 255 s

Loop Type parameter defines the panel a way to control the alarm loop and detectors included. The Alarm Integration Time value for all loop types is 1 s. The panel provides recognizing of such loop statuses as Breaking, Open Failure, and Short Failure.

Having received a single response from a smoke (normally opened) detector the panel transmits the “Fire Signal” message to the network controller and **requests the detector status again** by shutting the loop power down and waiting the repeated actuation during one minute. Unless after power reset the detector has returned to the initial status, or the detector has actuated again within one minute the panel enters the Prealarm status. Otherwise the panel retains the Quiescent mode.

Single heat (normally closed) detector response immediately causes the panel to enter the Prealarm mode.

Alarm loops of types **1** and **3** are capable of recognizing dual actuating, that is, the panel perceives each of two or more actuated detectors. In such a case the loop switches from the Armed or Fire

Prealarm statuses to the Fire status only after another detector having actuated at the same loop.

For an alarm loop of type **2** only single detector actuating is recognized. If so, the panel switches to the Prealarm status. The transition to the Fire Alarm status becomes possible if another loop has transitioned to the Fire Prealarm status.

Entering the Fire Alarm mode causes the panel to release extinguishing agent. So, for loops of types **1** and **3** the extinguishing system can be discharged in case of double detector response in a single loop while for loops of the type **2** this one can be discharge when two detector responses in two different alarm loops.

The loop of type **1** is intended to wire fire detectors with normally opened contacts, powered by loop, with actuated detector voltage rest of 4.5 to 8 V and minimum operating voltage no more than 12 V. An additional resistor has to be brought in a loop in series with fire detectors. The values of the additional resistors are represented in clause 6.2.1.

The loop of type **2** is intended to wire both smoke (normally opened) detectors without any series resistors and heat (normally closed) detectors with shunt resistors connected across its contacts as shown in Figure 6-4.

The loop of type **3** is intended to wire fire contact detectors with normally closed contacts. A shunt resistor needs to be brought in parallel across the detector contacts. See clause 6.2.1 for more information.

Loop Analysis Delay parameter defines the time period during which the panel doesn't consider loop resistance changes after power reset. The value of this delay is defined by detector pre-operating time, its minimum value being equal to 3 s.

If necessary, the function of repeated request of actuated detector can be disabled by setting the **Loop Requery Prohibition** parameter on. This feature is suitable if, for example, normally opened four-wire detectors with separate power supplying are in use.

The **Recovery Time** parameter is related to such circuits as the door sensor circuit, discharge monitoring circuit, and fire protection equipment trouble circuit. Varying the value of this parameter for the particular device or equipment provides increasing or decreasing the time the device or equipment needs to restore the circuit after breaking. This provides avoiding unnecessary messages due to transient processes as well as people passing through the door.

3.7.2 Parameters of the NO-NC-C Relay Control

Table 3-6: NO-NC-C Parameters

Parameter	Description	Range
Executive Program	The number of the executive program (see Table 3-7) which defines both the way the relay is controlled depending on the condition of the related inputs/outputs (see below) and the initial condition of the relay	0 to 8, 13 to 15, 19 to 24, and 27 to 30
Activation Time	The time the relay will be activated for (only for those programs which suppose activation the relay for a time)	From 0 to 8192 s (2 h 16 min 32 s) with increments of 0.125 s
Link the Relay With	Links the relay with the panel inputs and/or outputs which statuses can impact on the activating the relay	-

The **Executive Program** parameter defines the tactic of relay control depending on the condition of the panel input/output circuits (so called *local control*) or the initial relay condition just after panel power turning on until receiving the first command from the network controller (so called *centralized control*). All available programs are described in Table 3-7).

Table 3-7. Relay Executive Programs

№	Program	Description	Initial Condition
0	Remote Control	The relay is controlled only remotely	Off
1	Switch On	The relay is switched on if there is an Intrusion Alarm or Fire Alarm	Off
2	Switch Off	The relay is switched off if there is an Intrusion Alarm or Fire Alarm	On
3	Switch On for a Time	The relay is switched on for a specified time if there is an Intrusion Alarm or Fire Alarm	Off
4	Switch Off for a Time	The relay is switched off for a specified time if there is an Intrusion Alarm or Fire Alarm	On
5	Blink From Off Condition	The relay is switched on/off once per second if there is an Intrusion Alarm or Fire Alarm	Off
6	Blink From On Condition	The relay is switched on/off once per second if there is an Intrusion Alarm or Fire Alarm	On
7	Blink for a Time From Off Condition	The relay is switched on/off once per second for a specified time if there is an Intrusion Alarm or Fire Alarm	Off

№	Program	Description	Initial Condition
8	Blink for a Time From On Condition	The relay is switched on/off once per second for a specified time if there is an Intrusion Alarm or Fire Alarm	On
13	Fire Output	If the related loop has Fire Alarm or Fire Prealarm status then the relay is switched on, else the relay is switched off (open)	*
14	Trouble Output	If there are related alarm loops having Trouble, Arming Failed, or Disarmed status, the relay is switched off. Otherwise the relay is switched on	*
15	Fire Lamp	<p>In case of a Fire Alarm the relay is switched on/off twice per second in mode 'On for .25s and Off for .25s'</p> <p>In case of a Fire Prealarm the relay is switched on/off once per second in mode 'On for .25s and Off for .75s'</p> <p>In case of a Trouble the relay is switched on/off once per 2 seconds in mode 'On for .25s and Off for 1.75s'</p> <p>If all the alarm loops related with the relay are armed the relay is switched on</p> <p>Otherwise, the relay is switched off</p>	*
19	Switch On For a Time Upon Arming	If any related alarm loop has just been armed the relay is switched on for a given time	Off
20	Switch Off For a Time Upon Arming	If any related alarm loop has just been armed the relay is switched off for a given time	On
21	Switch On For a Time Upon Disarming	If any related alarm loop has just been disarmed the relay is switched on for a given time	Off
22	Switch Off For a Time Upon Disarming	If any related alarm loop has just been disarmed the relay is switched off for a given time	On
23	Switch On For a Time When Arming Failed	If arming of any related alarm loop has just failed the relay is switched on for a given time	Off
24	Switch Off For a Time When Arming Failed	If arming of any related alarm loop has just failed the relay is switched off for a given time	On
27	Switch On Upon Disarming	If at least one related loop is disarmed the relay is switched on	Off
28	Switch Off Upon Disarming	If at least one related loop is disarmed the relay is switched off	On
29	Switch On Upon Arming	If at least one related loop is armed the relay is switched on	Off
30	Switch Off Upon Arming	If at least one related loop is armed the relay is switched off	On

NOTES:

- 1) * means that the relay condition is defined by the conditions of input/outputs related with the relay

2) “Off” relay conditions means the following conditions of the contacts:

NO-C: opened

NC-C: closed

3) “On” relay conditions means the following conditions of the contacts:

NO-C: closed

NC-C: opened

The **Activation Time** parameter defines the time the relay is activated for if the program is supposed to be time limited. The maximum time the relay can be activated for is 65,535 periods of 0.125 s (8192 s total).

The relay can **be linked with** the following panel **input zones**:

- Zone 1: Detection Loop 1
- Zone 2: Detection Loop 2
- Zone 3: Detection Loop 3
- Zone 4: Door Sensor Circuit
- Zone 5: Manual Call Points
- Zone 6: Pressure Detector
- Zone 11: Remote Release
- Zone 12: Fire Protection Equipment Fault

The relay can **be linked with** the following panel **outputs**:

- Output 1: Visual Alarm 1 (EXIT caution sign)
- Output 2: Visual Alarm 2 (KEEP OUT caution sign)
- Output 3: Visual Alarm 3 (AUTOMATICS OFF sign)
- Output 4: Siren
- Output 5: Releasing Circuit

The relay should be linked to one or more outputs only for the executive program No 14 (“Trouble output”).

If the relay is linked with a zone/output, the control commands from the network controller are ignored. *Local relay control is in priority to centralized relay control.*

The relay to be able to be controlled remotely by network controller commands, do the following:

- Remove all links between the relay and panel inputs/outputs in the panel configuration (by UProg tools)
- Select any executive program with the proper relay initial conditions (“On” or “Off”) in the panel configuration (by UProg tools)

- In the configuration of the network controller link the relay with the proper partitions, assign the relay to proper executive program, and define the required delay and activation time.

If the relay is not linked to the panel inputs/outputs in the panel configuration, the Executive Program defines only the initial condition of the relay, that is, the condition of the relay just after powering on the panel. If the relay is to be controlled centrally, in most cases the program is given which supposes the “Off” initial condition (for example, the program No 1, “Switch On”). After turning panel power on and till receiving the centralized command which is to switch the relay to the required condition some time can be needed. So, if the centralized program supposes the “On” initial condition, it is advisable to switch the relay to “On” condition just after power turning on. To do this, assign the relay to any executive program with “On” initial condition, for example, the program No 2, “Switch Off”.

3.7.3 Panel Configuration Parameters

The panel configuration parameters define the panel operating tactics and the parameters of releasing the fire suppression system. These are shown in Table 3-8.

Table 3-8: Panel Parameters

Parameter	Description	Range
Automatic Pre-discharge Delay	Defines the pre-discharge time interval between fire conditions occurring as a result of fire detector responses and generating release pulse	0 to 255 s
Remote Pre-discharge Delay	Defines the pre-discharge time interval between fire conditions occurring as a result of manual call point activation or receiving remote release command via the RS-485 interface and generating release pulse	0 to 255 s
Release Pulse	Defines the duration of release pulse	0 to 255 s
Siren Sounding Time	Defines the time to activate the sound alarm, connected to the SA panel output	0 to 255 s
Automatic Mode Recovery	Allows auto restoring of automatic discharge mode just after panel having entered the Quiescent mode after door closing or door circuit fault repairing	On/Off

Parameter	Description	Range
Automatic Release Recovery	Enables returning the Pre-discharge Delay mode in case of automatic release after door circuit having been repaired	On/Off
Remote Release Priority	Enables remote releasing even in case of door being open or a door circuit fault	On/Off
Pressure Detector Disabled	Blocks up the pressure detector circuit input	On/Off
Blocking Two Prealarm Release	Disables automatic release which is the result of two alarm loops being in the Fire Prealarm statuses	On/Off
Master Key Provided Access	Restricts access to disabling/enabling the panel inputs/outputs (see the Section 3.1)	On/Off
S2000-KPB Addresses	Defines the addresses of the connected S2000-KPB modules controlled by the panel	Up to 16 addresses ranged from 1 to 127

The **Automatic (Remote) Pre-discharge Delay** parameters defines the duration of delay (in seconds) between release conditions having occurred and generating a pulse to release the fire extinguishing system. The panel provides individual delays for automatic release and remote release (both by remote release command received via RS-485 interface and by activating a manual call point).

The **Siren Sounding Time** defines the time to activate an external audible alarm connected to the panel when the panel has entered the Fire Alarm or Pre-discharge Delay mode.

If the **Automatic Mode Recovery** parameter is set on then the panel automatically restores the automatic release mode after a door having closed or any door circuit trouble having repaired. If the parameter in question is set off then breaking the door sensor circuit leads to disabling automatic release, this mode being kept even after trouble having restored.

If the **Automatic Release Recovery** parameter is set on then the panel automatically restores the Pre-discharge Delay release mode if upon an automatic release the door sensor circuit has been broken and repaired again (or the door has been open and then closed again). If this parameter is set off, in case of automatic release breaking the door sensor circuit

aborts releasing, and the extinguishing system will not be discharged even after the door circuit is restored.

It is sensible to set this parameter if the Automatic Mode Recovering has been set on.

The **Remote Release Priority** parameter prioritizes the remote release mode above blocking release upon any fault or opening the door sensor circuit. This parameter being set on, the remote release can not be blocked up by door opening, but only by reset.

The **Pressure Detector Disabled** parameter allows canceling monitoring the pressure detector circuit of the panel if there is no need for this, for example, if dry chemical or aerosol extinguishing equipment is in use.

The **Blocking Two Prealarm Release** parameter blocks panel entering the Fire Alarm mode in case of two different alarm loops entering the Fire Prealarm status. This parameters provide implementing the tactics of automatic releasing upon two detector responses in a single alarm loop.

The **Master Key Provided Access** parameter additionally restricts the user rights to disable/enable (including arm/disarm) panel inputs/outputs. If this parameter is set on, a user authorized for the second access level can disable a zone or an output if only he or she has a Master key. If the parameter is set off, users authorized for the second access level are automatically enabled to make actions authorized for the third access level.

The **S2000-KPB Addresses** define the S2000-KPB modules which relate to this hazard extinguishing area and expand release output of the panel. The S2000-KPB modules are connected to the S2000-ASPT panel through its RS-485-2 interface line. Each module has to be assigned with unique network number ranged from 1 to 127. The maximum number of S2000-KPB modules to be connected to a single S2000-ASPT panel is 16. After release conditions having occurred (see clause 3.8.13) and Pre-discharge Delay period having been expired the panel gives the discharge command to each of the connected S2000-KPB modules. The discharge pulse durations as well as pauses between S2000-KPB output activation are given by S2000-KPB module configurations.

3.7.4 System Configuration Parameters

The system configuration parameters define the panel operating in network mode as a part of Orion security system under S2000/S2000M or ARM Orion PC controlling.

Table 3-9: System Parameters

Parameter	Description	Range
Network Address	Defines the panel address within the RS-485 interface line connected to the network controller (RS-485-1)	1 to 127
Response Pause	Defines the time required the panel to respond on the requests of the network controller	1.5 ms to 500 ms with increments of 0.125 ms

The **Network Address** is designed for unique identifying the S2000-ASPT panel by the network controller. The panel transmits events to and receives commands from the network controller using this address. This address must be unique for each the device.

Setting the **Response Pause** parameter provides using the panel within a system with a sophisticated network topology where long layover can exist, for example, while converting RS-485 data into other interfaces intended for transmission over local area networks, fiber optic channels, or radio channels.

The current values of the Network Address and Response Pause can be reset to factory (default) values by pressing the panel tamper switch with special way: long-long-long-short. “Long pressing” means pressing and holding the tamper switch pressed for more than 1.5 s, while “short” one means pressing and holding the tamper switch pressed for a time between 0.1 s and 0.5 s. A pause between pressings must last from 0.1 s and 0.5 s.

3.7.5 The Factory Default Settings

The factory default values of parameters are represented by Table 3-10, Table 3-11, Table 3-11, and Table 3-12.

Table 3-10: The Factory Loop and Panel Configuration

Parameter	Value
Loop Type for the loop #1	2
Loop Type for the loop #2	2
Loop Type for the loop #3	2
Loop Requery Prohibition for the loop #1	Off
Loop Requery Prohibition for the loop #2	Off
Loop Requery Prohibition for the loop #3	Off

Loop Analysis Delay, s for the loop #1	3
Loop Analysis Delay, s for the loop #2	3
Loop Analysis Delay, s for the loop #3	3
Recovery Time, s for the door sensor circuit	15
Recovery Time, s for the pressure detector circuit	15
Recovery Time, s for the external fault circuit	15
Automatic Pre-discharge Delay, s	30
Remote Pre-discharge Delay, s	15
Release Pulse, s	15
Siren Sounding Time, s	120
Automatic Mode Recovery	Off
Automatic Release Recovery	Off
Remote Release Priority	Off
Pressure Detector Disabled	Off
Blocking Two Prealarm Release	Off
Master Key Provided Access	Off

Table 3-11: Default Addresses of the Controlled S2000-KPB

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Addr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3-12: The Factory System Parameters

Parameter	Value
Network Address	127
Response Pause	1.5 ms

Table 3-13: Default NO-NC-C Relay Parameters

Zone Number	1	2	3	4	5	6	7	8	9	10	11	12	13
Link the Relay With	+	+	+	+	+	+	+	+	+	+	+	+	+
Executive Program	13: Fire Output												
Activation Time	Unlimited												

The zone numbers means as follows:

1 : Detection Loop 1

2 : Detection Loop 2


- 3 : Detection Loop 3
- 4 : Door Sensor Circuit
- 5 : Manual Call Points
- 6 : Pressure Detector Circuit
- 7 : Fire Protection Equipment Fault
- 8 : Releasing Circuit
- 9 : Visual Alarm 1 Circuit
- 10 : Visual Alarm 1 Circuit
- 11 : Visual Alarm 1 Circuit
- 12 : Sound Alarm Circuit
- 13 : Remote Release Commands

3.8 Panel Operating Modes

The panel supports the following operating modes:

- Pre-operation
- Device Failure
- Quiescent
- Fault
- On Batteries
- Battery Fault
- Disabled
- Test
- User Key Programming
- Master Key Programming
- Prealarm
- Fire Alarm
- Pre-discharge Delay
- Release
- Extinguishing
- Release Fault
- Emergency Release
- Blocked Release

3.8.1 Pre-operation

The panel switches from the power off condition to the Pre-operation mode after mains power having been turned on. In this mode the panel has analyzed the voltage at the AC/DC converter output for 3 s and then reads zone conditions, the automatic release mode, and the panel mode from the panel non-volatile memory. The only indicator on the panel faceplate which is lit is the Power indicator .

If the voltage at the AC/DC converter output (the control point “40” on the panel PCB) is below than 30 V or unstable, the panel keeps being in the Pre-Operation mode infinitely. The panel leaves the Pre-operation mode when the converter output voltage has a stable value higher than 30 V.


Having left the Pre-operation mode, the panel makes a sound and returns to a mode in which it was before turning the power off.

If before turning the power off the panel was in the Release mode (see below), extinguishing will be aborted automatically while turning the panel on to avoid second releasing of the fire protection system.

If the panel keeps the Pre-operation mode and the TEST indicator flashes, it means that the panel has not been completely tested upon manufacturing. To switch the panel to the Quiescent mode (see below) press and hold the tamper plunger for a long time or return the panel back to the manufacturer.

3.8.2 Device Failure

The panel enters the Device Failure mode if a checksum error has been detected during a microcontroller memory test or battery charger has failed.

In case of a **checksum error**, both the Device Failure indicator  and the FAULT WARNING indicator on the panel front plate flash, and the internal panel sounder beeps.



If after restarting the panel the checksum error is detected once more, then update the microcontroller firmware by doing the following:

1. Connect the panel to a PC via one of the interface connectors such as an S2000M in the programming mode, PI-GR, S2000-USB, or USB-RS485. Use the A1 and B1 panel terminals.
2. Turn the panel power on.
3. With the help of the program "ORION_PROG.EXE" update the firmware.

While the firmware is written to the panel, the panel sounder keeps silent, the HL1 indicator on the panel PCB being lit with short breakings.

When writing has been completed the panel enters the Pre-operating mode.

NOTE: The program "ORION_PROG.EXE" and the firmware file can be downloaded from the site of the Bolid Company, <http://bolid.ru>.

If a **charger failure** has been detected during the relevant self-test procedure, the indicators FAULT WARNING, , and  flash, the panel sounder sounds interruptedly. In such case the panel should be sent to the manufacturer for repair with the relevant notification.

3.8.3 Quiescent Mode

The panel is considered to be in the Quiescent mode if all its monitored input and output circuits are in Norm conditions.

3.8.4 Fault

The panel enters the Fault mode, when generating any message described in the section 3.3. After repairing all the faults the panel automatically leaves the Fault mode.


3.8.5 Disabled

The panel enters the Disabled mode if a zone is disabled (disarmed), or an output is disabled, or the panel sounder is disabled. Turning the automatic release mode off doesn't lead to the panel entering the Disabled mode.

3.8.6 Test

The Test mode provides inspecting operating of the:



- Outputs controlling the visual and sound alarms (VA1, VA2, VA3, SA)
- Fire and Fault outputs
- NC-NO-C relay ("Aux.Equipment")
- Electronic key to shut the power of the alarm loops off

To switch the panel to the Test mode you must be authorized to use the access level #3. If so, use the Test push-button  to start the Test mode.

To test a panel output, press the relevant output's push-button. The device condition will be displayed by the associated indicator: if the output is active (closed) the indicator is turned on while, otherwise, if the output is not active (open) the indicator is turned off. Switching over conditions of the outputs VA1, VA2, VA3, Fire, Fault, and Aux.Equipment is implemented by repeated pressings on the output push-button. The Siren

output can be activated for no more than 3 s. The outputs VA1 and VA2 (“Visual Alarms”) are activated in interrupted mode.

To inspect operating of the electronic key for shutting down the alarm loop power, press any button of the Device Loop 1, Device Loop 2, and Device Loop 3. In such case the power on the terminals “+1-”, “+2-”, and “+3-” has turned on for 3 seconds.

To leave the Test mode press the Test button  repeatedly or press the Reset button . The panel has automatically left the Test mode since 30 seconds after last pressing a button.

3.8.7 On Batteries

The panel enters the On Batteries mode when the mains power has been off. The panel enters the On Batteries mode within no more than 60 s since the mains power has failed. The panel leaves the On Batteries mode within no more than 300 ms since the mains power has been restored.

3.8.8 Battery Fault

The panel enters the Battery Fault mode in the two following cases:


- One or two of the batteries has/have failed
- The battery charger has failed

The panel enters the Battery Failed mode within no more than:

- 15 minutes since the backup power has failed
- 300 ms since the battery charger has failed

The panel leaves the Battery Failed mode within no more than:

- 15 minutes since the backup power has been restored
- 300 ms since the battery charger has been restored

The time to exit the Battery Fault mode when the backup power has been restored can be decreased down to 300 ms by pressing the Fire Reset button .

3.8.9 Master Key Programming

The panel can be switched to the Master Key Programming mode only from the Quiescent mode by opening the panel top cover and pressing the tamper switch with one long – one short – one long pressing. Long pressing means keeping for at least 1.5 s, while short pressing means keeping for 0.1 to 0.5 s. The pauses between pressings last 0.1 to 0.5 s.

This mode is designed for writing the code of a special Master Key electronic device to the panel memory.

The panel exits the Master Key Programming mode after repeated touching the reader with the Master Key device or automatically after 30 s timeout since last button pressing having expired.

The new Master Key being enrolled into the panel memory, all already existed electronic identifiers are deleted.

3.8.10 User Key Programming


The panel enters the User Key Programming mode from the Quiescent mode if the iButton reader connected to the panel is touched with the Master Key. This mode is designed to enroll to the panel memory the codes of User Keys (up to 7) which are supposed to be used to switch the automatic release mode on and off.

Exit the User Key Programming mode is implemented:

- Automatically after the last, eighth User Key has been enrolled, or
- By second touching the iButton reader with the master Key, or
- Automatically after 30 s having been expired since the reading of a User Key touched to the reader.

3.8.11 Prealarm

The panel switches from the Quiescent mode to the Prealarm mode after response of a single fire detector wired to any alarm loop, the duration of the response lasting at least 1 s. If active smoke detectors are wired into the alarm loop, this transition is implemented with the repeated query of the actuated detector status (see the Section 3.7.1).

To cancel the Prealarm mode, press the Fire Reset button  or give the relevant command by means of the network controller.


3.8.12 Fire Alarm

The panel switches from the Prealarm mode to the Fire Alarm mode after response of a second fire detector in the same or any other alarm loop depending on the configuration settings (see the Section 3.7.1).

The panel enters the Fire Alarm mode from the Quiescent mode in case of:

- Response of two or more detectors in the same alarm loop or different alarm loops depending on the current loop settings (see the Section 3.7.1), or
- Response of a manual call point connected to the Manual Call Points input of the panel, or
- Receiving a release command from the network controller

The panel having entered the Fire Alarm mode, its internal sounder is activated, the SA output is activated, and the contacts of the Fire output are closed.

To cancel the Fire Alarm mode, press the Fire Reset button  or give the relevant command by means of the network controller.

3.8.13 Pre-discharge Delay


The panel enters the Pre-discharge Delay mode in cases of:

- Manual call point circuit breaking (a remote release), or
- Receiving a release extinguishing agent command from a network controller (a remote release), or
- Actuating of two or more fire detectors connected to the panel (an automatic release)

If the panel has entered the Pre-discharge Delay mode then:

- The SA (sound alarm) and the VA1 (visual alarm 1) outputs are switching on, and
- The FR output contacts are closed

In this mode the Pre-discharge Delay begins to be counted if programmed. The value of the Pre-discharge Delay is programmed individually for automatic and remote release. While the Pre-discharge Delay is being counted, the panel internal sounder beeps. Before 15 s remaining until the Pre-discharge Delay has been expired the sounding frequency is duplicated, and before 5 s sounding frequency is quadrupled. The Pre-discharge Delay having expired, the panel transits into the Release mode.

To cancel the Pre-discharge Delay mode, press the Extinguishing Reset button  or give the relevant command by means of the network controller.

3.8.14 Blocked Release

In automatic and remote launch modes counting of a launch Delay can be terminated if one of the conditions described in Sections 3.9.1 and 3.9.2 has occurred. In such cases the panel enters the Blocked Release mode.

For a remote release, the panel restores the Pre-discharge Delay mode when the door sensor circuit has been restored.


For an automatic release, the panel restores the Pre-discharge Delay mode when:

- The manual call points circuit has been broken, or a Release Extinguishing Agent command has been received from the network controller, or

- The automatic release mode is repeatedly turned on if the *Automatic Release Recovery* configuration parameter is set on

3.8.15 Release


Having entered the Release mode, the panel generates the release pulse of given duration at the output of the releasing circuit R and gives release commands to the connected S2000-KPB modules. The VA1 output (usually assigned with an EXIT light sign) is turned off while the VA2 output 2 (usually assigned with a KEEP OUT light sign) flashes.

To cancel the Release mode, press the Extinguishing Reset button  or give the relevant command by means of the network controller.

3.8.16 Extinguishing


If response of the pressure detector has been detected during the release pulse, then the panel switches from the Release to the Extinguishing mode.

If the *Pressure Detector Disabled* parameter is set on, then the panel transits to the Extinguishing mode just after the Release mode finishing.

To cancel the Extinguishing mode, press the Extinguishing Reset button  or give the relevant command by means of the network controller.

3.8.17 Release Fault

If no response of the pressure detector has been detected during the release pulse then the panel transits from the Release mode to the Release Fault mode. The panel in this mode can enter the Extinguishing mode after pressure detector having actuated.

To cancel the Release Fault mode, press the Extinguishing Reset button  or give the relevant command by means of the network controller.


3.8.18 Emergency Release

The panel switches from the Quiescent mode to the Emergency Release mode in case of a response of the Pressure Detector having occurred.

In the Emergency Release mode:

- The outputs VA1, VA2, and SA are turned on, and
- The contacts of the FR output is closed

In the Emergency Release mode the release pulse doesn't generate and doesn't give a command to launch the connected S2000-KPB modules.

To cancel the Emergency Release mode, press the Extinguishing Reset button  or give the relevant command by means of the network controller.

3.9 The Modes to Release the Fire Suppression System

The panel provides the following modes to release a fire extinguishing agent:

- Remote mode, and
- Automatic mode

3.9.1 Remote Release

The remote releasing the extinguishing system is implemented in case of either activation manual call points or receiving the relevant command from the network controller. When one of the conditions said above is met, the panel immediately enters the Fire Alarm and Pre-discharge Delay modes.


If the *Remote Release Priority* parameter is set off, then in the remote release mode the pre-discharge delay is stopped when the door sensor circuit has been broken or failed. As soon as the door sensor circuit has restored the pre-discharge delay continues to be counted. If the Remote Launch Priority parameter is set, the pre-discharge delay is counted without regard to opening or fault the door sensor circuit.

3.9.2 Automatic Release

In case of automatic releasing the panel enters the Pre-discharge Delay mode just after having entered the Fire Alarm mode (after having received two responses from automatic fire detectors). If the automatic mode is disabled while the pre-discharge delay is being counted, the pre-discharge delay is stopped. In such case the panel can enter the Pre-discharge Delay mode again only by:

- Automatic release mode having restored (having repeatedly activated), or
- Remote releasing the extinguishing system resulting from manual call point activation or receiving the remote release command from the network controller.

To *switch the automatic release mode on/off*:

- Press the AUTOMATIC MODE button  on the panel front plate, or
- Touch the reader connected to the panel with an authorized User Key enrolled in the panel memory, or
- Send the relevant command from the network controller.

Automatic release is cancelled by the door sensor circuit being broken or failed. If the *Automatic Mode Recovery* parameter is set on, the automatic release mode recovers when the door sensor circuit has been restored.

If the automatic release mode is disabled, the panel turns on the visual alarm connected to the VA3 output (usually, the AUTOMATICS OFF light sign).

3.10 Panel Indication

All panel indication is described by the Tables following.

Table 3-14: PREALARM Indicator

Panel Mode	Indicator Behavior
Prealarm	Turned on for 0.5 s once per second
Other modes	Off

Table 3-15: FIRE Indicator

Panel Mode	Indicator Behavior
Fire Alarm	Turned on for 0.25 s twice per second
Other modes	Off

Table 3-16: FAULT WARNING Indicator

Panel Mode	Indicator Behavior
Fault	Turned on for 1 s once per two seconds
Disabled (excluding silencing the internal sounder)	
Device Failure	
The panel enclosure is open	
Other modes	Off

Table 3-17: DISABLED and SILENCE Indicators

Panel Mode	Indicator Behavior
Disabled (including silencing the internal sounder)	Lit steady
Other modes	Off

Table 3-18: EXTINGUISHING Indicator

Condition	Indicator Behavior
Launch Delay	Turned on for 0.5 s once per second
Launch	Turned on for 0.25 s twice per second
Emergency Launch	
Launch Fault	
Extinguishing	
Other Modes	Off

Table 3-19: AUTOMATICS ON/OFF Indicator

Panel Mode	Indicator Behavior
Automatic launch is enabled	Off
Automatic launch is disabled	Lit steady

Table 3-20: TEST Indicator

Panel Mode	Indicator Behavior
Test	Turned on for 0.25 s twice per second
Other modes	Off

Table 3-21: DETECTOR LOOP 1...3 Indicators

Zone Condition	Indicator Behavior	Color
Norm	Off	-
Detector response	Double flashes once per two seconds	Red
Prealarm	Turned on for 0.5 s once per second	Red
Fire Alarm	Turned on for 0.25 s twice per second	Red
Short/Open failure	Turned on for 1 s once per two seconds	Yellow
Disabled	Lit steady	Yellow

Table 3-22: MANUAL CALL POINTS Indicator**REMOTE COMMAND Indicator**

Zone Mode	Indicator Behavior	Color
Norm	Off	-
Fire Alarm	Turned on for 0.25 s twice per second	Red
Short/Open failure	Turned on for 1 s once per two seconds	Yellow
Disabled	Lit steady	Yellow

Table 3-23: DOOR CIRCUIT Indicator**EXTERNAL FAULT Indicator**

Zone Mode	Indicator Behavior
Norm	Off
Broken	Turned on for 0.5 s once per second
Short/Open failure	Turned on for 1 s once per two seconds

Table 3-24: DISCHARGE Indicator

Zone Mode	Indicator Behavior	Color
Norm	Off	-
Broken	Turned on for 0.5 s once per second	Red
Short/Open failure	Turned on for 1 s once per two seconds	Yellow
Disabled	Lit steady	Yellow

Table 3-25: MASS/PRESSURE Indicator

Zone Mode	Indicator Behavior
Norm	Off
Breaking of the Mass or Pressure input circuit of an S2000-KPB	Turned on for 1 s once per two seconds

Table 3-26: SIREN Indicator**VISUAL ALARMS Indicator****FIRE Output Indicator****RELEASE CIRCUIT Indicator****AUX.EQUIPMENT Indicator**

Output Condition	Indicator Behavior	Color
Deactivated	Off	-
Activated	Lit steady	Red
Short/Open failure	Turned on for 1 s once per two seconds	Yellow
Disabled	Lit steady	Yellow



Table 3-27: FAULT Output Indicator

Output Condition	Indicator Behavior
Activated	Off
Deactivated	
Disabled	Lit steady

Table 3-28: S2000-KPB Indicator

Condition	Indicator Behavior
Loss of communications with any connected S2000-KPB module	Turned on for 1 s once per two seconds
Other	Off

**Table 3-29: Power Indicator
On Batteries Indicator**

Panel Condition	Indicator Behavior	
		
Quiescent	Lit steady	Off
On Batteries (mains power failed, batteries in norm)	Turned on for 1 s once per two seconds	Lit steady




Panel Condition	Indicator Behavior	
		
Battery fault (Mains power in norm, the batteries failed)	Lit steady	Turned on for 1 s once per two seconds
Full power fault (both mains and backup power failed)	Turned on for 1 s once per two seconds	Turned on for 1 s once per two seconds
Power shutdown	Off	Off

Table 3-30: Device Failure Indicator

Condition	 Indicator Behavior
Device Failure Mode	Turned on for 1 s once per two seconds
Other	Off

3.11 External Indication

The tables below describe the behavior of external indicators connected to the panel.

Table 3-31: SIREN (SA Output)

Panel Condition	Output Behavior
Fire Alarm, Pre-discharge Delay	Turned on for 1.5 s once per every 2 seconds
Release, Extinguishing	
Emergency Release	
Other	Off

Table 3-32: EXIT Sign (VA1 Output)

Panel Condition	Output Behavior
Pre-discharge Delay	Turned on for 0.5 s once per second
Emergency Release	
Release, Extinguishing	Off
Other	Off

Table 3-33: KEEP OUT Sign (VA2 Output)

Panel Condition	Output Behavior
Pre-discharge Delay	Off
Emergency Release	Turned on for 0.5 s once per second
Release, Extinguishing	
Other	Off

Table 3-34: AUTO OFF Sign (VA3 Output)

Panel Condition	Output Behavior
Automatic release enabled	Off
Automatic release disabled	On

Table 3-35:**Reader LED**

Panel Condition	LED Behavior
Automatic release enabled	Lit steady
Automatic release disabled	Off
Programming User Keys	Flashes

Table 3-36:**FAULT Relay**

Panel Condition	Relay Contacts
Power shutoff	Opened
Fault mode	
Disabled mode	
Enclosure tampering	
Other	Closed

Table 3-37:

FIRE Relay

Panel Condition	Relay Contacts
Fire Alarm mode	Closed
Pre-discharge Delay	
Release, Emergency Release	
Extinguishing	
Other	Opened

3.12 Panel Co-operation

The panel can be connected to the network controller via RS-485-1 interface terminals and to the controlled S2000-KPB modules via RS-485-2 terminals.

3.12.1 Zones Monitored by the Network Controller

Following are the zones that can be monitored by the network controller through the S2000-ASPT panel:

- zone #1: panel alarm loop #1 control
- zone #2: panel alarm loop #2 control
- zone #3: panel alarm loop #3 control
- zone #4: panel door sensor control
- zone #5: panel manual call point control
- zone #6: panel pressure detector control
- zone #7: panel mains power control
- zone #8: panel battery power control
- zone #9: panel automatic release mode control
- zone #10: panel operating mode control
- zone #11: panel remote release mode control
- zone #12: fire protection equipment fault monitoring
- zones #20, #21, #22: controlling the tamper switch and loops of the first S2000-KPB
- zones #30, #31, #32: controlling the tamper switch and loops of second S2000-KPB
- ...
- zones #170, #171, #172: controlling the tamper switch and loops of the 6th S2000-KPB

3.12.2 Outputs Monitored by the Network Controller

The network controller is capable of monitoring the panel and S2000-KPB outputs as follows:

- output #1: panel VA1 (EXIT)
- output #2: panel VA2 (KEEP OUT)
- output #3: panel VA3 (AUTOMATICS OFF)
- output #4: panel SA (SIREN)
- output #5: panel releasing circuit R
- outputs #21...#26: first S2000-KPB's outputs
- outputs #31...#36: second S2000-KPB's outputs
- outputs #41...#46: third S2000-KPB's outputs
- ...
- outputs #171...#176: 16th S2000-KPB's outputs

3.12.3 Implemented Network Controller Commands

The panel is intended to receive through the RS-485-1 interface line and to implement the network controller commands such as:

- Reading Configuration
- Writing Configuration
- Assigning the Network Address
- Resetting alarms
- Abort releasing
- Release extinguishing system
- Switch the release mode to automatic or remote
- Time synchronization
- Loop parameter request

The panel provides transmitting of launching/launch canceling commands through the RS-485-2 interface to any S2000-KPB module registered in the panel configuration.

3.12.4 Panel Messages Being Transmitted to the Network Controller

The panel can transmit to the network controller some event messages as follows:

- “EMERGENCY LAUNCH” - Fire extinguishing equipment has been launched (that is the outflow of extinguishing agent has been detected) without having received the launching pulse
- “ARMED” - Detector status monitoring has been turned on

“FIRE TRBL RST”	- Extinguishing equipment operates normally
“ARM FAILED”	- Arming has failed due to the actuated status of detector
“FIRE SIGNAL”	- Fire conditions have been detected
“FIRE PREALARM”	- Fire signal has been received and fire is probable
“FIRE ALARM”	- Fire alarm
“LAUNCHING”	- The pulse for the fire extinguishing equipment launching has just been given out
“LAUNCHING DELAY”	- The condition for fire extinguishing equipment launching has been met and the launching delay is being counted
“LAUNCH BLOCKED”	- Launching of the fire extinguishing equipment was blocked up (e.g. due to the door opening to the protected area)
“ILLEGAL CODE”	- Access has denied due to the illegal entered code
“LOOP TRBL OPEN”	- Open-circuit failure in the alarm loop
“LOOP TRBL SHORT”	- Short circuit failure in the alarm loop
“RELAY TRBL OPEN”	- Open-circuit failure of relay output load circuit
“RELAY TRBL SHORT”	- Short-circuit failure of relay output load circuit
“RELAY RESTORE”	- Relay output load circuit has been restored
“AC POWER FAILED”	- AC power has been lost
“AC POWER RESTORE”	- AC power has been restored
“BATTERY FAILED”	- Battery supply has been out of range
“BATTERY RESTORED”	- Battery supply has been restored
“TAMPER ALARM”	- Panel case is opened
“TAMPER RESTORE”	- Panel case is closed
“MANUAL TESTING”	- Panel diagnostic mode has been started
“ALARM RESET”	- Fire alarm has been cancelled. The detectors have been monitored again.
“GAS PRESS SIGNAL”	- The pressure detector fixed pressure rising
“EXTINGUISHING”	- Fire extinguishing is in process (the launching pulse was given out and outflow of fire extinguishing agent has been detected)

“LAUNCH FAULT”	- Fire extinguishing equipment was not successfully launched (the launching pulse was given out but outflow of fire extinguishing agent has not been detected)
“EX MODE AUTO”	- The auto launching mode of fire extinguishing is in effect
“EX MODE MANUAL”	- The auto discharge mode is OFF
“PROGRAMMING”	- Programming mode having been entered
“ALARM CANCEL”	- The user has silenced the inner alert fire or trouble signal
“SELF-TEST ERROR”	- A trouble has been detected in the process of a panel self-testing procedure

3.12.5 S2000-KPB Messages

The panel receives events from the S2000-KPB modules connected via RS-485-2 interface line:

“FIRE TROUBLE”	- Extinguishing equipment fault
“FIRE TRBL RST”	- Extinguishing equipment operates normally
“RELAY TRBL OPEN”	- Open-circuit failure of relay output load circuit
“RELAY TRBL SHORT”	- Short-circuit failure of relay output load circuit
“RELAY RESTORE”	- Relay output load circuit has been restored
“POWER FAILED”	- S2000-KPB power has been lost
“POWER RESTORE”	- S2000-KPB power has been restored
“TAMPER ALARM”	- S2000-KPB module case is opened
“TAMPER RESTORE”	- S2000-KPB module case is closed

While configuring S2000-KPB modules which are to operate under the S2000-ASPT panel of versions 2.01+, set the Condition parameters of programmable alarm loops only to Fire Equipment Fault or Fire Equipment Restored values

3.12.6 Control Commands Transmitted to S2000-KPB

The panel provides transmitting release/abort commands over the RS-485-2 interface line to each of the S2000-KPB modules programmed in the configuration.

3.13 Panel Powering

The panel keeps its operability upon mains power supply from 130 V to 250 V a.c./ (50 ± 1) Hz or upon backup battery supplying from 22 V to

28 V d.c. Two backup batteries in series of 12 V and 4 to 4.5 Ah capacities each are to be used as a backup power supply.



DO NOT operate the panel without connecting batteries to it

The panel generates an AC POWER FAILED message within 60 s since:

- mains power has dropped below 130 ± 10 V, or
- mains rectifier output voltage (test point “40” on the main panel PCB) has been below 30 ± 0.5 V

The panel generates an AC POWER RESTORED message when:

- mains power has exceeded 180 ± 10 V, or
- mains rectifier output voltage (test point “40” on the main panel PCB) has exceeded 40 ± 0.5 V

If the mains power failed, the panel automatically begins to consume power from backup batteries. When mains power has been restored, the panel returns to consume power from mains.

The panel generates a BATTERY FAILED message within 15 minutes since the battery voltage has dropped below 22 ± 0.5 V under load current consumption 0.5 amp in the Quiescent mode. When the battery voltage has exceeded 25 ± 0.5 V the panel, the panel generates a BATTERY RESTORED message.

If mains power failed and the backup battery voltage has dropped below 20.5 ± 0.5 V, the device power is shut down (full discharge).

The wattage consumed from mains power doesn't exceed 30 W.

The method of calculating the value of current consumed in the quiescent mode from backup batteries is represented in Appendix A.

4 STANDARD DELIVERY, MARKING, AND PACKING

4.1 Standard Delivery

Following is the list of the S2000-ASPT components provided:

- ✓ The S2000-ASPT Fire Alarm and Extinguishing Control Panel itself
- ✓ This Engineer's and User's Manual
- ✓ The component parts including:
 - 7 termination resistors MF 1/2W-4K7-5%
 - 5 load connection modules
 - 1 AC fuse 0.5 amp
 - 2 mechanical lock keys
 - 2 electric-contact lock keys
 - 1 battery connector
 - 3 woodscrews
 - 3 wall plugs 8x35
 - 2 plastic bushings

Notes:

The S2000-ASPT panel is delivered by manufacturer WITHOUT backup batteries, iButton readers and iButtons which are to be purchased separately.

The panel is delivered with XP1 and XP2 jumpers being put on, the fuse being not housed.

4.2 Marking

Each panel is supplied with marking as follows:

- ✓ Manufacturer logotype
- ✓ Symbolic notation
- ✓ The two last digits of the year and the quarter of the manufacturing
- ✓ Accordance mark
- ✓ Factory number

The external panel terminal marking corresponds to the wiring diagram.

Near the mains-operating socket there is the lettering denoting the supply mains rated voltage.

The panel enclosure is supplied with the ground terminal designed to connect the protective earth.

4.3 Packing

The panel along with component parts and maintenance documentation is packed into the carton box. It is assumed to pack the panel into the proper container.

The boxes or containers are placed along with accompanying documents into the transportation pickings.

Each transportation packing should be furnished by packing list contained information as follows:

- 1) Manufacturer logotype;
- 2) The identification, the designation and the number of products inside;
- 3) The designation and the number of replacement components;
- 4) Packager sign or stamp;
- 5) The date of packaging.

5 GENERAL INSTRUCTIONS

Install, test and maintain the S2000-ASPT panel according to instructions as follows. Failure to follow these instructions may result in failure to the device to operate properly or personal injury.

5.1 Safety Precautions

Do FOLLOW the electrical installation operational and electrical safety code rules during the installation, operation, or maintenance of S2000-ASPT panel and communication lines and associated equipment.

Only certificated personnel trained in the requirements of safety codes have to be allowed to deal with this activity.

MAKE SURE that the protective ground is properly wired before operating the panel. NEVER use the panel without system earth or in case of fuse mismatching with the rating requirements.

Do SHUT OFF mains and backup power before installing the panel or repairing any failure.

BEWARE of touching the "~220 B" terminals that can be alive and dangerous.

5.2 Storage

There must not be any acids or alkalis vapor, aggressive gas or other noxious agent with corrosive effect on premises where the device is storied.

6 GETTING STARTED

To provide the claimed features and functions, the panel must be operated with connected and charged batteries.

After unpacking make visual inspection of the panel and ensure the panel is free from mechanical damages. Check the panel completeness.

After transportation the panel shall be cured without packing under normal condition for at least 24 hours.

Master this manual for technical features, display and control elements of S2000-ASPT before you put the panel into service. If S2000-ASPT is co-operated with other parts of fixed extinguishing or safety system, namely S2000/S2000M and S2000-KPB, study these devices' manuals closely.

6.1 Mounting the Panel

Overall and mounting dimensions of the S2000-ASPT panel given in millimeters are shown in Figure 6-1 and Figure 6-2.

The S2000-ASPT panel is wall mountable. There are three holes on the panel base to mount it on the wall at any required place and one hole for fixing the panel with the screw.

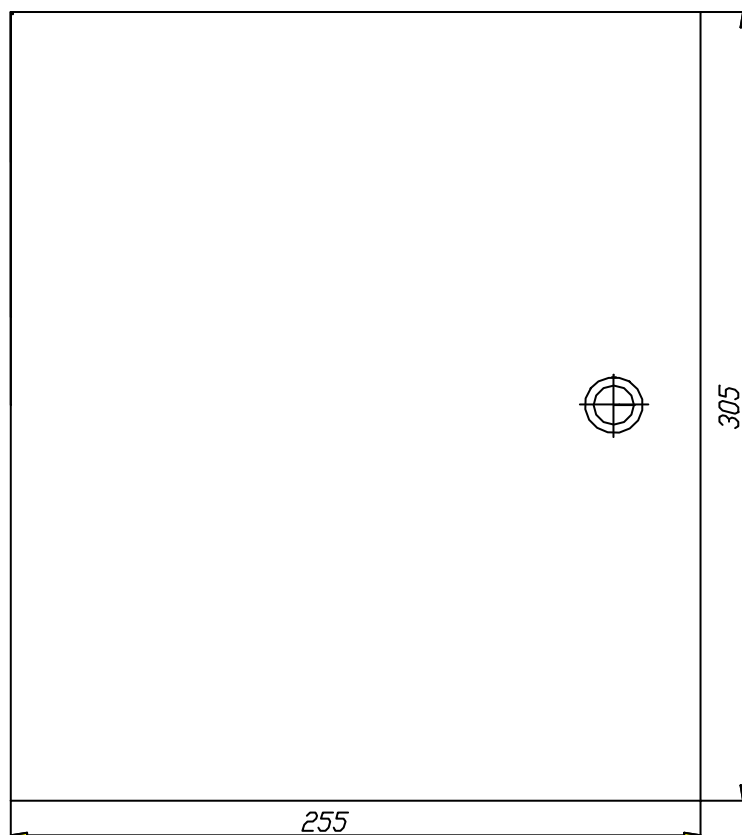


Figure 6-1: S2000-ASPT Overall Dimensions

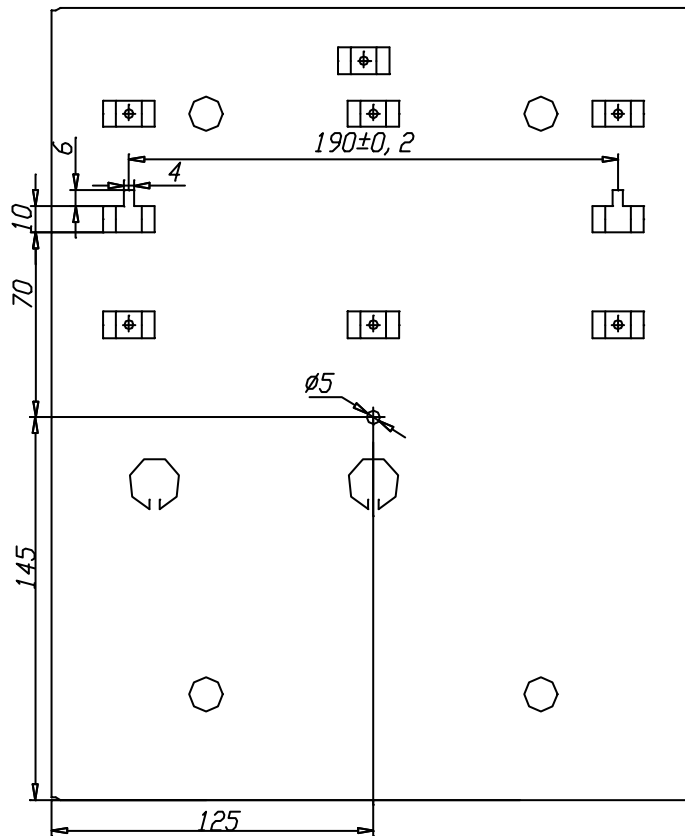



Figure 6-2: S2000-ASPT Mounting Dimensions

6.2 Connecting the External Circuits

The wiring of the external circuits to the panel is carried out in accordance with the connecting diagram shown in Figure 2-4.

After all connection having been completed cover the panel top cover. Then turn the key switch on the panel front plate to the Locked position .

6.2.1 Connecting the Alarm Loops

Connect alarm loops with automatic detection included to the PCB terminal blocks marked as "+1-", "+2-" and "+3-".

The detector wiring diagrams for specific loop types are demonstrated in Figure 6-3, Figure 6-4, and Figure 6-5. If any alarm loop is not in use, connect the supplied termination resistor of 4.7 kΩ across the relative terminal blocks.

The number of detectors included into a single loop can be calculated by formula being referred to in clause 3.5.1.

The values of additional series and shunt resistors are selected in such a way so that a confirmed response of a single smoke detector or a response of a heat detector causes the loop to get the Fire Prealarm status while two detector responses causes the loop to get the Fire Alarm status.

6.2.1.1 Smoke, Double Response Recognizable Alarm Loop

Bring the provided termination resistor 4.7 k Ω into the alarm loop as shown in Figure 6-3.

Here R_{term} is for the termination resistor mentioned above

SD is for a smoke detector

R_s is for a resistor brought in series with any smoke detector. Its value varies from 1.5 k Ω up to 3 k Ω depending on specific smoke detector type and can be corrected during testing operability of the panel with specific detectors

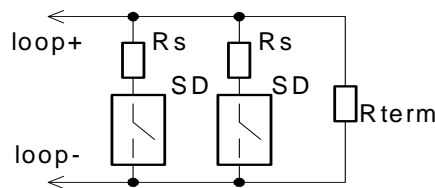


Figure 6-3: Smoke Detectors Wiring into Loop of Type 1

6.2.1.2 Combined Smoke and Heat Alarm Loop

Bring the provided termination resistor 4.7 k Ω into the alarm loop as shown in Figure 6-4.

Here R_{term} is for the termination resistor mentioned above

SD is for a smoke detector

HD is for a heat detector

$R_s = 0 \div 510 \Omega$ is a resistor brought in series with smoke detectors (depends on the type of the detector)

$R_{sh} = 8.2 \text{ k}\Omega$ is a resistor brought in parallel across a heat detector

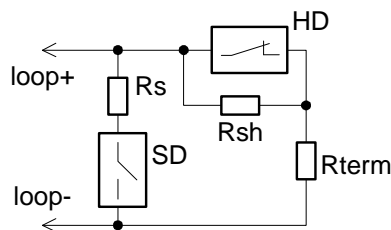


Figure 6-4: Smoke and Heat Detectors Wiring into Loop of Type 2

6.2.1.3 Heat, Double Response Recognizable Alarm Loop

Bring the provided termination resistor 4.7 k Ω into the alarm loop as shown in Figure 6-5.

Here R_{term} is for the termination resistor mentioned above

HD is for a heat detector

$R_{sh} = 4.7\text{ k}\Omega$ is for a resistor brought in parallel across a heat detector

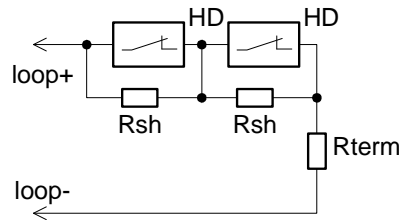


Figure 6-5: Heat Detectors Wiring into Loop of Type 3

6.2.2 Connecting Circuits to the Contacts +4-, +6, +7-

Connect, if necessary, the door open sensor (door contact or another detector), the discharge monitoring circuit, and the extinguishing equipment fault circuit to the panel PCB terminal blocks marked as “+4-”, “+6”, and “+7” respectively.

Any contact detectors or relay outputs of other devices can be used as status detectors or signal devices brought into the circuits connected to the “+6” and “+7” terminals.

Standard wiring of detectors along with termination, series and shunt resistors is shown in Figure 6-6. Instead of door detectors or along with them other burglary alarm device output circuits can be wired into this circuit. The number of door detectors not powered by circuit in question is unlimited.

If this circuit is not in use, connect the supplied termination resistor of 4.7 k Ω across the relevant terminals.

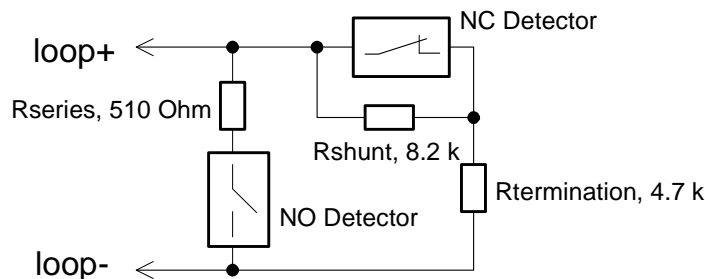


Figure 6-6. Wiring Door Sensors or Pressure Annunciators

6.2.3 Connecting Manual Call Points

The circuit with manual call points included is connected to the "+5-" PCB terminals as shown in Figure 6-7.

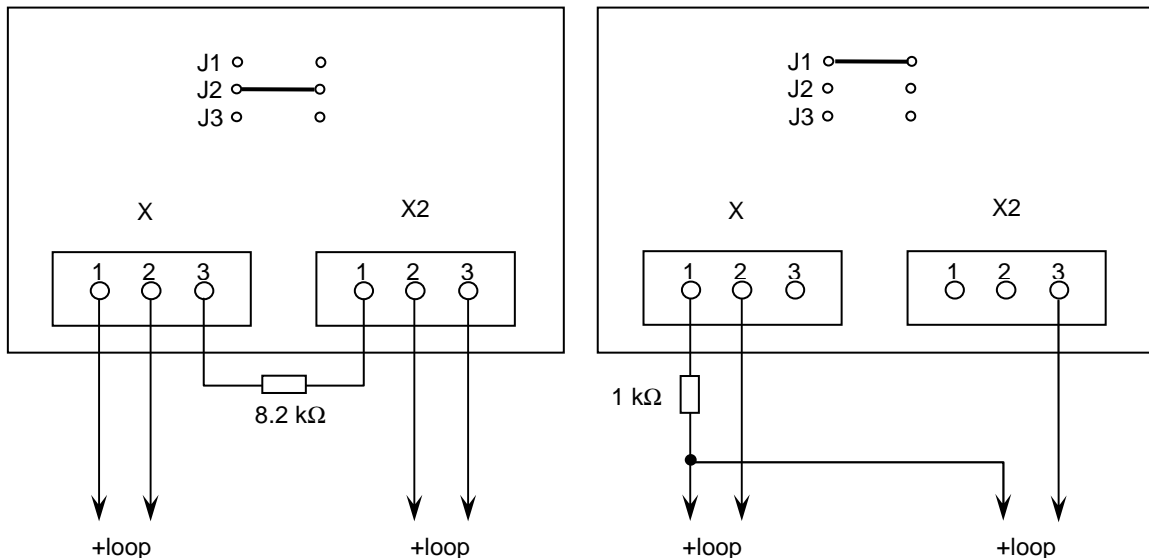


Figure 6-7: Wiring Manual Call Points

You can include into circuit in question suitable manual devices designed for d.c. voltage.

If this circuit is not in use, connect the termination resistor 4.7 kΩ across the "+5-" terminals.

6.2.4 Connecting Light and Sound Alarms

Connect the light and sound alarms if used to the "VA1", "VA2", "VA3" and "SA" terminals according to the Figure 2-4 and Table 3-1.

DON'T CONNECT ANY RATED LOAD TO OUTPUTS WHEN BACKUP BATTERIES ARE NOT CONNECTED.

THE LOAD CONNECTION MODULES ALLOWING THE PANEL TO CONTROL THE CIRCUIT CONDITIONS SHALL BE INSTALLED CLOSELY TO A LIGHT OR SOUND ALARM.

WHILE COMMISSIONING AS WELL AS WHEN ANY OUTPUT IS NOT IN USE CONNECT A 1 KΩ, 1 W RESISTOR ACROSS THE RELEVANT TERMINALS.

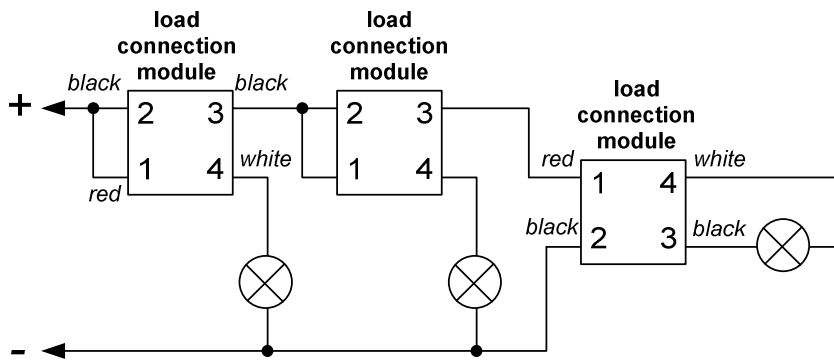


Figure 6-8: How to Connect Several Alarms to the Same Output

The schematic can require some additional resistors in case if the total current exceeds the normal value.

6.2.5 Connecting Releasing Circuit

The releasing circuit is connected to the “R” panel terminals. All required parameters are described in Table 3-1. If a releasing device imposes any additional limitation on the value of current, then DO BRING a suitable resistor in series with the releasing device.

6.2.6 Connecting Message Transmission Circuit

If the S2000-ASPT is intended to transmit FIRE and FAULT messages to a fire department or a central monitoring station, connect the appropriate circuits to the terminals marked as FR and FLT on the panel PCB correspondently.

A FIRE message is generated as a result of closing the FR output relay contacts, while a FAULT message is formed as a result of opening the FLT relay contact.

6.2.7 Connecting Auxiliary Equipment

The engineering and technical equipment which are to be controlled by the panel (ventilation controls, smoke management controls, hot-air heating and conditioning system controls, fire control dampers, air closers, door closers, and so on) are connected to the NO-NC-C panel terminals. The NO - C terminals are normally opened, the NC - C terminals being normally closed. The output parameters are shown in Table 3-1.

6.2.8 Connecting RS-485 Interface Lines

If S2000-ASPT is to co-operate with an S2000M console or S2000-KPB modules, it needs to be connected to these devices via the RS-485-1 interface port and the RS-485-2 interface port respectively. The typical wiring diagrams are shown in Figure 1-1, Figure 1-2, Figure 1-3, and Figure 1-4.

Connect A and B lines of the network controller RS-485 bus to the "A1" and "B1" terminals of RS-485-1 panel port respectively. If the S2000-ASPT panel is not the first or the last device in the RS-485 bus then remove the XP1 jumper (that is RS-485 EOL terminator) from the panel PC board, otherwise let it put on.

Connect A and B lines of the S2000-KPB modules' RS-485 bus to the "A2" and "B2" terminals of the panel RS-485-2 port correspondently. If the S2000-ASPT panel is not the first or the last device in the RS-485 bus then remove the XP2 jumper (that is RS-485 EOL terminator) from the panel PC board, otherwise let it put on.

Separating the panel from RS-485-1 or RS-485-2 lines **ALWAYS TAKE AWAY BOTH WIRES!**

6.3 Connecting Power Supply

Before connecting the panel to the mains power, insert the supplied plastic bushing into the hole made in panel enclosure. This bushing is used to isolate the power cable from panel metallic case.

The panel fuse, being housed into a special voltage insulating holder, is used as mains power on-off switch.

ATTENTION! IT IS FORBIDDEN TO EXPLOIT THE S2000-ASPT PANEL IN CASE OF DISCONNECTED BATTERY.

SWITCH THE MAINS POWER OFF AND PULL THE FUSE F1 OUT BEFORE YOU INSTALL OR REPLACE THE BATTERY.

How to start the panel:

Connect the ground wire to the ground terminal.

Then connect the backup batteries interconnected with the connector provided by coupling red panel wire to the "+" terminal and the white one to the "-" terminal.

Finally put the fuse F1 into the holder.

How to shut the panel down:

Remove the fuse F1 from the holder on the panel PCB.

Then disconnect the batteries.

Finally cut the mains power out de-energizing the panel.

6.4 Setting the Panel Configuration Parameters

S2000-ASPT panel is delivered by manufacturer with configuration parameters being set in accordance with the Table 3-10, Table 3-11, Table 3-12, and Table 3-13. In order to change default configuration, the panel needs to be connected to the network controller via RS-485-1 line and to the both power suppliers.

6.4.1 Changing Configuration Parameters by Means of UProg

To change the configuration by means of a computer, follow these steps:

1. Connect the RS-485-1 port of the panel to the COM port of the PC which the UProg Configuration Tool is installed on through one of the Bolid manufactured interface converters PI-GR, S2000-PI, S2000-USB, USB-RS485, or S2000M in programming mode.
2. Ensure the backup battery is connected to the panel. Turn up mains power. Wait until Pre-operation mode is finished.
3. Run the UProg program of version no less than 4.0.0.905. Select the proper COM port and start the device finding procedure.









NOTE: The program "ORION_PROG.EXE" can be downloaded from the sites of the Bolid Company, <http://bolid.ru> and www.bolid.com.

4. The program having found the connected devices, select the panel by scrolling the device list.
5. Set the proper configuration parameters and save changes by activating *Write Configuration* command.
6. If necessary, change the panel network address by using the *Network Address* command.

6.4.2 Changing the Panel Network Address by Means of the S2000M

To change the panel network address by means of the S2000/S2000M console, follow these steps:

1. Connect the panel to the S2000/S2000M console via RS-485-1 interface line.
2. Wait until S2000/S2000M console has detected the S2000-ASPT panel.
2. Press the **PRG** console key.
3. Enter the password.
4. Select the ADDRESSES command from the console menu by **▶** / **◀** and **ENT** keys, or press hot key **3**.


5. Select RS485 DEVICES menu command by  /  and  keys, or press hot key .
6. Enter the current panel address or select its value by  /  keys and press .
7. Enter the new panel address and press . Short double console sound acknowledges successfully performed assigning.
8. For the new address to come into effect, reset the panel power suppliers. The outage duration has to take at least 3 seconds.

ATTENTION! Connecting the panel into the Orion system (or connecting S2000-KPB modules to the panel RS-485-2 terminals) **NEVER ASSIGN THE SAME ADDRESS TO DIFFERENT DEVICES!** Include the devices into given interface line one at a time, assigning each of them the new unique address. Although the addresses of devices brought to the RS-485-1 line can coincide with those of devices brought to the RS-485-2 line, that is, address spaces of different interface line are unrelated.

DISCONNECTING THE PANEL FROM THE RS-485 INTERFACE
NEVER DETACH ONLY A SINGLE WIRE BUT BOTH WIRES AT ONCE

6.5 Testing the Panel

Before operating the panel it is advisable to test panel operability by doing the following:

- 1) Establish the test set-up shown in Figure 6-9.
- 2) Connect the panel A1 and B1 terminals with the S2000M operating as a network controller through the RS-485 interface line.
- 3) Insert the backup batteries and connect the panel to the mains power.
- 4) After expiring the Pre-operation mode the panel shall enter the Quiescent mode, the S2000M displaying the "CONNECTED D127" message followed by the "DEVICE RESTART D127" message.
- 5) Turn the key switch on the panel front plate to the Unlocked position .

If the panel has entered any alarm mode, press the Fire RESET button or Extinguishing RESET button to switch the panel to the Quiescent mode.

If the AUTOMATIC MODE indicator is turned on, reset it by pressing the relevant button. The H8 indicator (see Figure 6-9) shall start lighting.

- Close the S1 contact (see Figure 6-9). H1 indicator shall have being off for 3 s, the LOOP 2 indicator on the panel front plate shall flash with red color, and the S2000M console shall display “FIRE SIGNAL 127/002”.

When the H1 indicator has turned on again, the panel shall enter the Prealarm mode, the S2000M console displaying “FIRE PREALARM 127/002”. Then the H4 indicator shall start lighting.

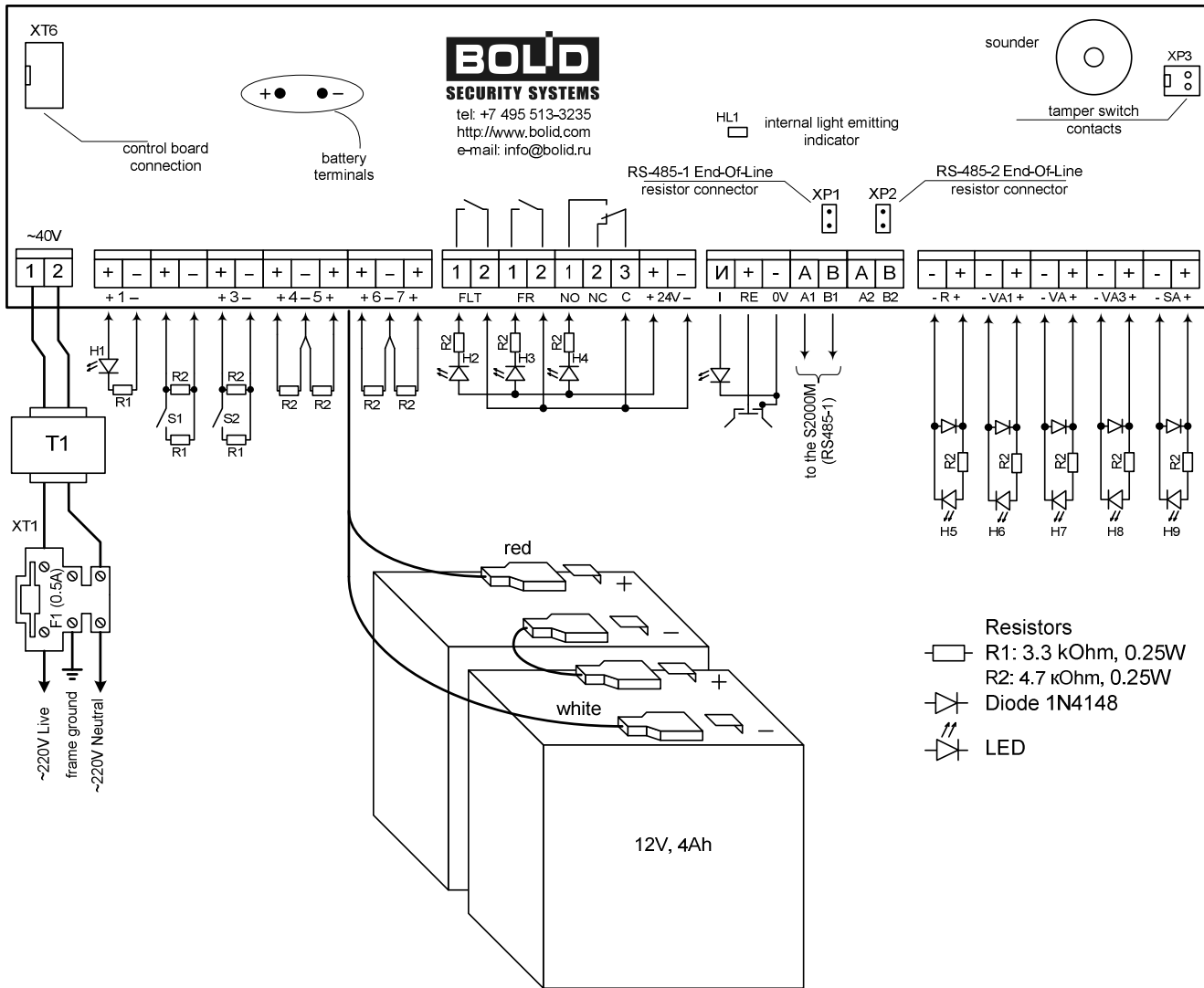


Figure 6-9. Wiring the Panel for Testing

- Open the S1 contact and close the S2 contact. The H2 indicator shall flash with red, the S2000M console displaying the “FIRE SIGNAL 127/003” followed by the “FIRE PREALARM 127/003”. Open the S2 contact.

- 8) After 2 s since opening the S2 the panel shall enter the Fire Alarm mode, the S2000M console displaying the "FIRE ALARM 127/010". The H3 shall light steady, and the H9 shall flash.
- 9) Press the AUTOMATIC MODE button on the panel front plate. The automatic release mode shall be turned on and the panel shall enter the Pre-discharge Delay mode. The S2000-M console shall display the message "AUTOMATICS ON 127/009" followed by the message "LAUNCH DELAY 127/010".

The H8 indicator shall turn off while the H6 indicator shall flash.


- 10) Close shortly the door sensor terminals "+4-". The panel shall enter the Blocked Release mode. The S2000M console shall display the messages "LOOP TRBL SHORT 127/004", "LAUNCH BLOCKED 127/010", and "EX MODE MANUAL 127/009" sequentially. Both the H2 and H8 indicators shall be off.
- 11) Open the door sensor terminals "+4-". The S2000M shall display "AUX ZONE RESTORE 127/004", the H2 indicator starting light in 2 s.
- 12) Switch on the automatic mode again and repeat all the actions described in the item 9). The panel shall enter the Pre-discharge Delay mode again. The S2000M shall display the "EX MODE AUTO 127/009" followed by "LAUNCH DELAY 127/010". In 30 s the panel shall enter the Release mode, the H5 indicator turning on. Then the automatic release mode shall be turned off, the S2000M shall displaying "LAUNCH 127/010" followed by "EX MODE MANUAL 127/009".

The H6 indicator shall turn off, while the H7 indicator shall start flashing.

- 13) In 15 s the H5 indicator shall turn off, the S2000M displaying the "LAUNCH FAULT 127/010".

NOTE: *The release fault message was generated because no response of the pressure detector has been detected during the release pulse.*

- 14) Press the Extinguishing RESET button followed by pressing the Fire RESET button. The panel shall enter the Quiescent mode. The S2000M console will sequentially display the messages "LAUNCH CANCEL 127/010", "ALARM RESET LP 127/002", "ALARM RESET LP 127/003", "ARMED LP 127/010", "ARMED LP 127/002", and "ARMED LP 127/003".
- 15) Shut the panel power off by removing the F1 fuse from the fuse holder on the panel main PCB. Within a minute the panel shall enter the On Batteries mode. The H2 indicator shall turn off, the S2000M console displaying "AC POWER FAILED 127/007".

- 16) Restore the panel power again. The panel shall enter the Quiescent mode, the S2000M displaying the “AC POWER RESTORED 127/007”.
- 17) Detach the red wire from the relevant backup battery. In 15 minutes the panel shall enter the Battery Failed mode, the H2 indicator turning off. The S2000M shall display “BATTERY FAILED 127/008”.
- 18) Connect the red wire to the battery again. Wait for 15 minutes and press the Fire RESET button. The panel shall enter the Quiescent mode, the S2000M displaying the “BATTERY RESTORED 127/008” message.
- 19) Detach the backup batteries. Detach the panel mains power connection. Close the panel top cover and turn the key switch to the Locked position .

6.6 Performance

The basic panel performance and operations are described by Sections 3.8 and 3.9 of this Manual.

The number of release outputs can be expanded up to 97 ones in case of using S2000-KPB (up to 16 modules per a single panel). The addresses of the S2000-KPB modules connected to the panel via the panel RS-485-2 port can coincide with the addresses of the devices connected to the panel RS-485-1 port. The addresses of the S2000-KPB modules which are used to expand the number or releasing outputs MUST be enrolled in the panel configuration.

Not only an S2000M console but also a PC with ARM Orion installed can co-operate with the panel as a network controller.


Some typical ways to use the S2000-ASPT panel are shown in Section 1 of this Manual.




Remote monitoring and controlling the panel can be implemented with the help of an S2000-PT control and indicating equipment. To do this, the network controller MUST be programmed properly by means of the PProg programming tool.

7 TROUBLESHOOTING

Use the Table 7-1 to resolve minor S2000-ASPT installation and operating problems.

Table 7-1: Problem Resolving

Problem	Possible Cause	Solution
If connected to the mains power, the panel is not turned on. The panel indicators are not lit	No utility voltage or F1 fuse is out of service	Check the S2000-ASPT power supply connection. Replace the fuse
When mains power has been shut down the panel shuts down too, but in case of the mains power supplying the panel indicates the battery fault	Contact impairment between battery leads and terminals. The battery is inoperable or discharged	Check the contacts between the panel and the battery and repair if necessary. Measure the battery voltage; if its value has fallen below 12 V then replace or charge the battery
The panel LEDs are not lit while the internal indicator HL1 on the main PCB flashes rapidly	The cord to couple the main PCB and the indication PCB is disconnected or defective	Connect the cable or check the proper connecting
FAULT WARNING indicator flashes, the panel making no sounds	The tamper switch has been released or out of service	Remove the panel cover and check the tamper switch. When the panel cover is closed the plunger must be pushed within 15 s
After panel having been turned on for more than 10 s the FAULT WARNING and the  indicators flash, the panel sounder being silent	Device is being in the Powering On mode. Mains power voltage is below the normal range	Check the value of the mains voltage at the panel power input and the same value at the control point "40"

<p>After powering up the panel the FAULT WARNING and the  indicators flash, the panel sounder sounds interruptedly, and the HL1 internal indicator on the main PCB flashes rapidly</p>	<p>A firmware error has been detected; the panel is being in the Device Failed mode</p>	<p>Update the microcontroller firmware (see Section <i>Device Failure</i>)</p>
<p>After powering up the panel the indicators FAULT WARNING, , and  flash, the panel sounder sounds interruptedly</p>	<p>A charger failure has been detected; the panel is being in the Device Failed mode</p>	<p>Send the panel to the manufacturer</p>
<p>After powering up the panel the TEST indicator flashes, the panel making no sounds</p>	<p>The panel is not completely factory-tested</p>	<p>1. Press and hold the tamper plunger until the panel enters the Operating mode, or 2. Send the panel to the manufacturer</p>
<p>The panel doesn't display S2000-KPB faults. A S2000-KPB module is not started along with starting the fire protection equipment</p>	<p>The S2000-KPB address is not enrolled in the panel configuration</p>	<p>Change the panel configuration having specified the addresses of the connected S2000-KPB modules. Turn the panel power on and then off again</p>
<p>The panel is not detected by the network controller</p>	<p>The interface line RS-485-1 is inoperable</p>	<p>Find out and repair the failure</p>
	<p>Interface lines A1 and B1 are interchanged</p>	<p>Supervise and correct if necessary</p>
	<p>The jumper XP1 connecting the EOL Terminator to the RS-485-1 line is set improperly</p>	<p>Ensure the EOL resistor (jumper) is put on if the panel is the first or the last device in the RS-485-1 interface line or removed otherwise</p>

	Some devices in the interface line RS-485-1 have the same network address	Check and change if necessary network addresses being in use so that they have been unique
The panel doesn't detect connected S2000-KPB modules. The S2000-KPB indicator flashes, the panel sounder beeping	The interface line RS-485-2 is inoperable	Find out and repair the failure
	Interface lines A2 and B2 are interchanged	Check and correct if necessary
	The jumper XP2 connecting the EOL Terminator to the RS-485-2 line is set improperly	Ensure the EOL resistor (jumper) is put on if the panel is the first or the last device in the RS-485-2 interface line or removed otherwise
	Some S2000-KPB modules have the same addresses	Check and change if necessary S2000-KPB addresses being in use so that they have been unique

8 MAINTENANCE

The S2000-ASPT maintenance needs to be performed by trained personnel having learned closely this Manual and been aware of the panel design along with the operating rules.

All maintenance operations have to be carried out by a person knowledgeable in the electrical installation work codes.

It is necessary to comply with safety precautions exposed in clause 5.1 of this manual.

It is obligatory to keep up the periodicity and technological order and technique of accomplishment of maintenance routines.

Disconnect the panel from the mains and backup power before you begin the working.

To ensure that your system is fully operational perform the maintenance according with dispatch lists as follows:

- According to the dispatch list#1 monthly, and
- According to the dispatch list#2 in case of receiving at least two nuisance alarms within a month.

Try out all the control and measuring equipment.

Check the panel isolation resistance annually in accordance with the step 4 of the dispatch list #2.

Register all the maintenance operations in a special log.

DISPATCH LIST #1. Visual Checking and Cleaning the Panel

- 1.1 Disconnect the panel from the mains power supply and remove dust, dirt and other contaminations from the panel surface with the help of waste, grainer brush
- 1.2 Visually check the panel and remove of signs of corrosion, if present, using a waste, grainer brush, and an oil-based solvent
- 1.3 Remove the panel top cover and clean all the terminals from dirt, dust, and corrosion using a waste, grainer brush, and an oil-based solvent
- 1.4 Remove the dust, dirt or humidity from the battery surface using waste and grainer brush. Measure the voltage at each battery output. If the voltage value has dropped below 12 V replace both backup batteries
- 1.5 Check the fuse F1 rating (0.5 A) and usability
- 1.6 Check if the panel is grounded properly and the earth wire is operable
- 1.7 Ensure connecting the external circuits matches with panel output terminals using the panel connecting diagram (see Figure 2-4)
- 1.8 Using a screwdriver tighten terminal screws if necessary. Repair the connection if there is any wire broken. Replace wires with broken covering
- 1.9 Inspect operating the panel indicators, push buttons, internal and external audible alarms, and visual alarms by switching the panel to the Test mode (see clause 3.8.5)

DISPATCH LIST #2

1. Inspect and clean the panel in accordance with the 1.1-1.8 steps of the Dispatch List #1.
2. Check the panel operability.
Simulate detector actuating and ensure the indication, messages and control commands are in agreement with the mode programmed
3. Disconnect the mains power and check the panel operability similarly to the procedure mentioned above
4. Measure the isolation resistance as follows:
 - Disconnect the mains and backup powers
 - Couple the 220 V block terminals
 - Using megaohm meter measure the isolation resistance between the Earth and the Live terminals

The isolation resistance value should be no less than 20 MΩ.

9 BOLID CONTACT INFORMATION

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Appendix A. Calculating the Battery Operating Time and Average Consumed Current

The capacity of a backup battery must provide powering the panel for 24 hours in the Quiescent mode and 3 hours in the Fire mode.

The panel is intended to be supplied by a battery with voltage rating of 24 V.

The **backup battery operating time** is defined by its capacity and by total load current consumed by the outputs VA1, VA2, VA3, SA and 24V. This dependence is expressed by the formula:

$$T_{op} = \frac{W}{I_l^\Sigma}, [\text{Hr}], \quad \text{where:}$$

T_{op} : the battery operating time in hours

W : the battery capacity in Ah

I_l^Σ : the total load current in Amp

$$I_l^\Sigma = I_l^{VA1} + I_l^{VA2} + I_l^{VA3} + I_l^{SA} + I_l^{24V}, [\text{Amp}]$$

The relationship between the I_l^Σ current and the battery supplying current I_{bat} in the 0...0.5 A range can be considered as linear:

$$I_{bat} = I_l^\Sigma + 0.06, [\text{Amp}]$$

The panel provides housing two assembled batteries 12 V, 4.5 Ah each within the panel enclosure.

1) *Evaluating maximum I_l^Σ for 24 hours of quiescent operating*

Taking into account 25% reserved battery capacity, the average current delivered by a battery during backup supplying can be evaluated as

$$I_{backup} = 0.75 \times \frac{W}{24} \text{ Amp};$$

Because the current consumed from the battery, I_{bat} , must not exceed the average current I_{backup} , so

$$I_l^\Sigma < 0.75 \times \frac{W}{24} - 0.06, [\text{Amp}]$$

Since all visual and sound alarms, except the VA3, are disabled in the Quiescent mode and don't consume current, therefore:

$$I_l^\Sigma = I_l^{VA3} + I_l^{24V}, [\text{A}] \quad (1)$$

For a 4.5 Ah battery:

$$I_{backup} = 0.14 [\text{Amp}], \quad I_l^\Sigma < 0.08 [\text{Amp}]. \quad (2)$$

Thus, if there are no external devices connected to the 24V panel output, then **backup battery of the capacity of 4.5 Ah supplies power to the panel for 24 hours provided that a visual alarm connected to the VA3 panel output consumes no more than 80 mA.**

2) *Evaluating maximum I_l^Σ for 3 hours of operating in the Fire mode*

Taking into account 25% reserved battery capacity, the average current delivered by a battery during backup supplying can be evaluated as:

$$I_{backup} = W/3, [A]; \quad I_l^\Sigma < 0.75 \times W / 3 - 0.06, [Amp]$$

Since visual alarms VA1 and VA2 are turned on in a flashing mode and can be turned on simultaneously only in the Emergency Launch mode, so the maximum value can be evaluated as:

$$I_l^\Sigma = 0.5 \cdot I_l^{VA1} + 0.5 \cdot I_l^{VA2} + I_l^{VA3} + 0.75 \cdot I_l^{SA} + I_l^{24V}, [Amp] \quad (3)$$

For a 4.5 Ah battery we obtain that:

$$I_{backup} = 1.125 [Amp], \quad I_l^\Sigma < 1.065 [Amp] \quad (4)$$

The values I_l^{VA1} , I_l^{VA2} , I_l^{VA3} , I_l^{SA} , I_l^{24V} must comply with I_l^Σ conditions and are defined depending on specific alarms.

The procedure of calculation is as follows:

1. Based on the technical specifications for visual and sound alarms being in use, find the values of current I_l^{VA1} , I_l^{VA2} , I_l^{VA3} , I_l^{SA} .
2. Based on the panel wiring diagram for operating, calculate the I_l^{24V} .
3. Calculate the I_l^Σ value based on the formula (1) and the conditions (2) for the quiescent mode.
4. Calculate the I_l^Σ value based on the formula (3) and the conditions (4) for the Fire mode.

Appendix B. Personnel Action Plan in Case of Fixed Extinguishing System Discharge

In order to prevent secondary actuating fire extinguishing installation in the event of its launch it is advisable to follow this sequence of operations:

1) Visually inspect the protected zones to discover the reason the extinguishing system has actuated: if it is the presence of combustion products, or smoke-filling, or manual call point activation. Take the necessary measures to protect occupants and premises against fire and extinguishing agent releasing.

2) In cases of fire having been already suppressed or nuisance alarm, suppress the audible alarm by means of SILENCE push-button pressing.

3) Check the conditions of panel faceplate indicators PREALARM, FIRE ALARM, AUTOMATICS ON/OFF, and EXTINGUISHING. Define which zones are in fire conditions.

4) Check the conditions of the indicators on responded fire detectors (if applicable). Inspect the conditions of manual call points.

5) Abort the Extinguishing mode by pressing the **RESET** button at the left lower corner of the panel faceplate. Abort the Fire mode by pressing the **RESET** button at the left upper corner of the panel faceplate.

6) Cutoff both mains and backup power from the panel and the S2000-KPB modules (if applicable).

7) Register your activity and observations into the user log.

8) After incident investigation having completed and before power returning, separate automatic fire-extinguishing modules from panel starting circuits and the S2000-KPB devices (if applicable), and replace them by simulators. You can use a fuse with actuating current being equal to automatic module's one as a simulator.

9) Carry out the pre-commissioning routines to check the panel operability.

10) Make sure the panel is not in an alarm mode and disable the mains and backup power supplies. Replace the simulators by the effective fire-extinguishing modules and restore the powering.

BOLID ONE YEAR LIMITED WARRANTY

Bolid Company and its divisions and subsidiaries («Seller»), 4 Pionerskaya Str., Korolev 141070, Moscow Region, Russia warrants its security equipment (the «product») to be free from defects in materials and workmanship for one year from date of original purchase, under normal use and service. Seller's obligation is limited to repairing or replacing, at its option, free of charge for parts or labor, any product proven to be defective in materials or workmanship under normal use and service. Seller is not responsible for results where the product is used improperly, where it is used for any application it is not intended for, used under unacceptable environmental conditions and mishandled or stored under improperly. Seller shall have no obligation under this warranty or otherwise if the product is altered or improperly repaired or serviced by anyone other than the Seller. In case of defect, contact the security professional who installed and maintains your security equipment or the Seller for product repair.

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Seller does not represent that the product may not be compromised or circumvented; that the product will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; or that the product will in all cases provide adequate warning or protection. Buyer understands that a properly installed and maintained alarm may only reduce the risk of a burglary, robbery, fire or other events occurring without providing an alarm, but it is not insurance or guarantee that such will not occur or that there will be no personal injury or property loss as a result. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE OR OTHER LOSS BASED ON A CLAIM THE PRODUCT FAILED TO GIVE WARNING. HOWEVER, IF SELLER IS HELD LIABLE, WHETHER DIRECTLY OR INDIRECTLY, FOR ANY LOSS OR DAMAGE ARISING UNDER THIS LIMITED WARRANTY OR OTHERWISE, REGARDLESS OF CAUSE OR ORIGIN, SELLER'S MAXIMUM LIABILITY SHALL NOT IN ANY CASE EXCEED THE PURCHASE PRICE OF THE PRODUCT, WHICH SHALL BE THE COMPLETE AND EXCLUSIVE REMEDY AGAINST SELLER. This warranty gives you specific legal rights, and you may also have other rights which vary from country to country. No increase or alteration, written or verbal, to this warranty is authorized.

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