



Fire alarm control panel

ACSP-402

Firmware version 1.00

EN



INSTALLER MANUAL

acsp-402_i_en 05/23

Satel®

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IMPORTANT

The device should be installed by qualified personnel.

Prior to installation, please read carefully this manual in order to avoid mistakes that can lead to malfunction or even damage to the equipment.

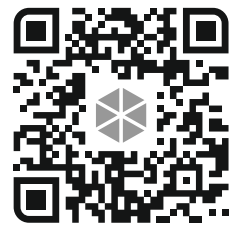
Disconnect power before making any electrical connections.

Changes, modifications or repairs not authorized by the manufacturer shall void your rights under the warranty.

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The programming and user manuals are available at www.satel.pl.
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The following symbols may be used in this manual:



- note,



- caution.

The ACSP-402 fire alarm control panel conforms to the essential requirements of the EU Regulations and Directives:

CPR 305/2011 Regulation of the European Parliament and of the Council of 9 March 2011 laying down harmonized conditions for the marketing of construction products and repealing the Council Directive 89/106/EEC on construction products;

EMC 2014/30/UE Electromagnetic Compatibility Directive;

LVD 2014/35/EU Low Voltage Directive.

The CNBOP-PIB Certification Body in Józefów issued the Certificate of Constancy of Performance **1438-CPR-0863** for the construction product ACSP-402 fire alarm control panel, confirming its compliance with the requirements of EN 54-2:1997+AC:1999+A1:2006 and EN 54-4:1997+AC:1999+A1:2002+A2:2006.

The Certificate and the Declaration of Performance can be downloaded from the **www.satel.pl** website.

The ACSP-402 fire alarm control panel has been granted the Certificate of Admittance **No 4772/2022** by the CNBOP-PIB in Józefów.

The Certificate of Admittance can be downloaded from the **www.satel.pl** website.



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1438

1438-CPD-0863

Declaration of Performance DOP/CPR/0863

EN 54 2:1997+AC:1999+A1:2006

EN 54-4:1997+AC:1999+A1:2002+A2:2006

Fire safety. Alarm signaling of fire reported by manual call points or detectors.

Use – see the Declaration of Performance DOP/CPR/0863.

Technical specifications – see this manual.

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1. Introduction

This manual describes the ACSP-402 addressable fire alarm control panel and its installation. Also described in this manual is the APSP-402 repeater panel, which is an optional element of the fire alarm system.

2. Purpose of the control panel

The ACSP-402 fire alarm control panel is used to:

- signal a fire reported by manual call points or detectors,
- indicate where a fire was detected,
- activate audible signaling (sounders) to warn people in the protected premises of a fire,
- report a fire to proper services (e.g. fire service),
- control devices that prevent the spread of fire,
- activate automatic fire extinguishing devices.

3. Features

Zones

- Grouping of manual call points and detectors in order to divide the protected premises into smaller areas.
- Up to 256 zones.
- Grouping of detectors into subzones for the purpose of alarm variants within a zone.

Groups

- Grouping of sounders.
- Linking with groups of remote indicators, inputs and outputs.
- Up to 32 groups.

Addressable detection lines

- Support of the following detection lines:
 - loop,
 - radial circuit,
 - loop with a branch (with a radial circuit).

Inputs

- 4 programmable inputs on the control panel mainboard (NO, NC).
- Supervision of external devices status, e.g. to notify of fire alarms and faults.

Outputs

- 2 outputs to control conventional sounders.
- Output to control the fire alarm routing equipment.
- Output to control the fault warning routing equipment.
- 8 programmable relay outputs:
 - control of external devices.
 - output to control the automatic fire protection equipment.

- 24 VDC power output 24 VDC.
- Output dedicated to powering the ACSP-ETH and ACSP-RSI modules.
- Signal delay at the outputs.

RS-485 communication bus

- Capability to connect:
 - APSP-402 repeater panel,
 - ACSP-ETH module (to expand the control panel with Ethernet link),
 - ACSP-RSI module (to opto-isolate the bus and connect the printer).

Programming

- Programming using the buttons of the control panel.
- Free ACSP Soft program for control panel programming (via USB port).

Event log

- Non-volatile memory of up to 9999 fire alarms.
- Non-volatile memory of 8999 events (including fire alarms).

E-mail notifications (ACSP-ETH module connection required)

- 4 addresses for notifications.
- Selection of event types for notifications.
- Periodic diagnostic reports.

Control panel mainboard module

- LEDs to indicate the status of the control panel and external devices.
- LCD display to:
 - configure the control panel,
 - display information about the fire alarm
 - display messages about disablements, tests and faults,
 - view the list of current disablements, tests and faults,
 - view the alarm and event log.
- USB port to connect the computer.
- Power supply connector.
- Battery connector.
- Built-in sounder.
- Real-time clock with a battery backup.

Power source

- Integrated APS-318 switching-mode power supply (main power source).
- 12 V / 17 Ah battery slot (backup power source).
- Automatic switchover to backup power source (battery) in the event of main power source failure.
- Battery charging system with temperature-compensated charging voltage.
- Battery status control (no battery, low battery or too high internal resistance).
- Low battery disconnect system.

4. Description of the system

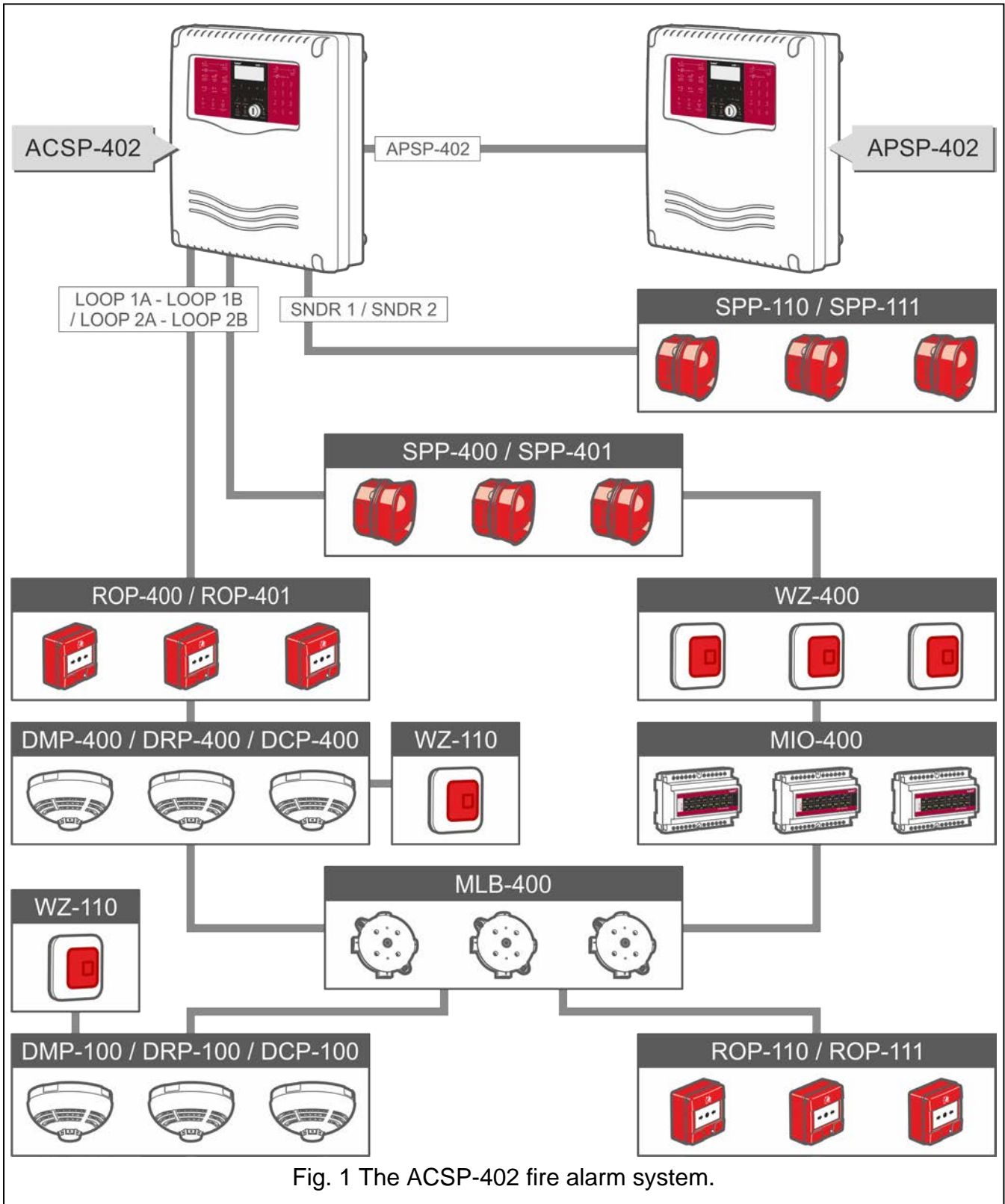
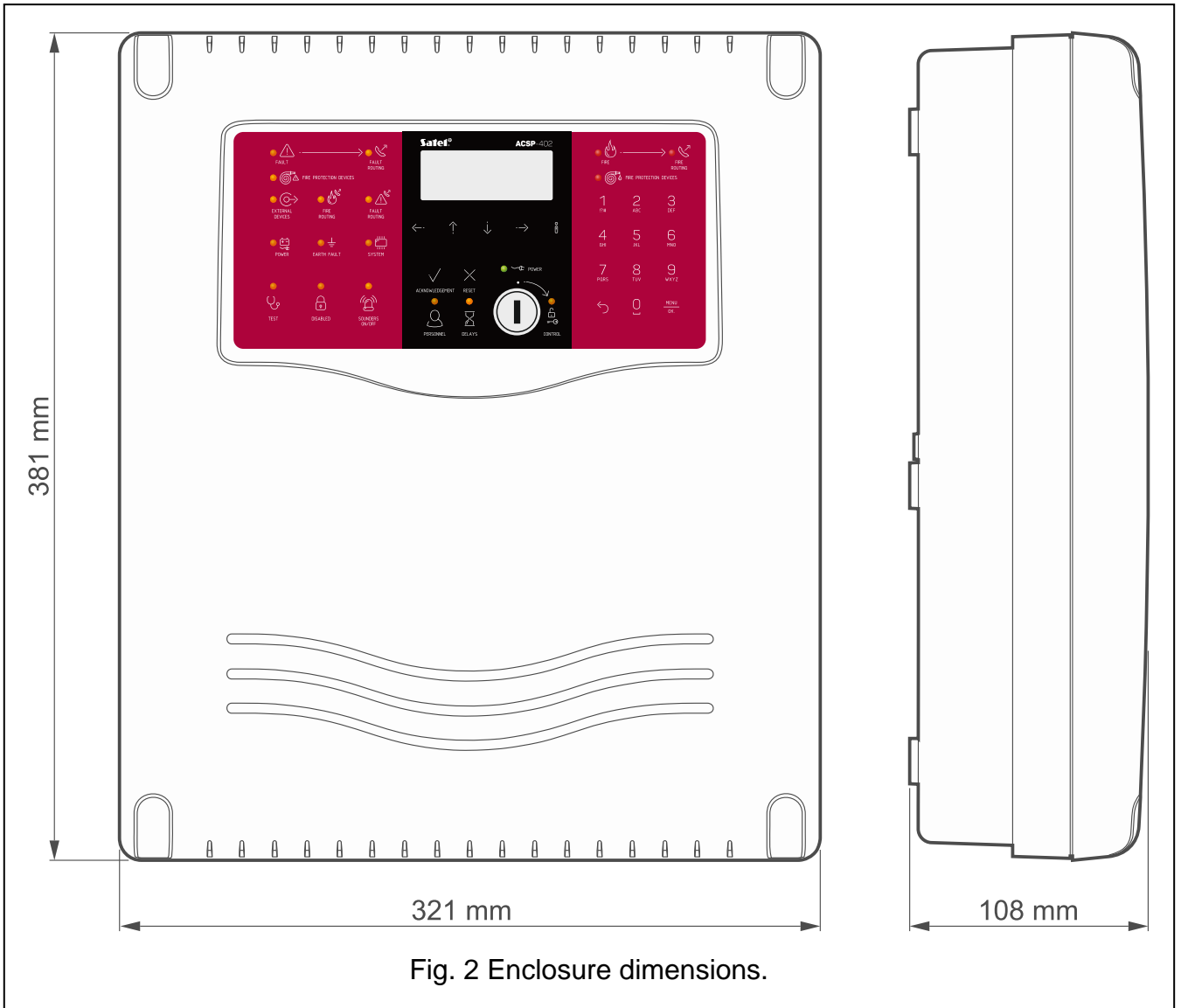


Fig. 1 The ACSP-402 fire alarm system.

4.1 Control panel

4.1.1 Enclosure



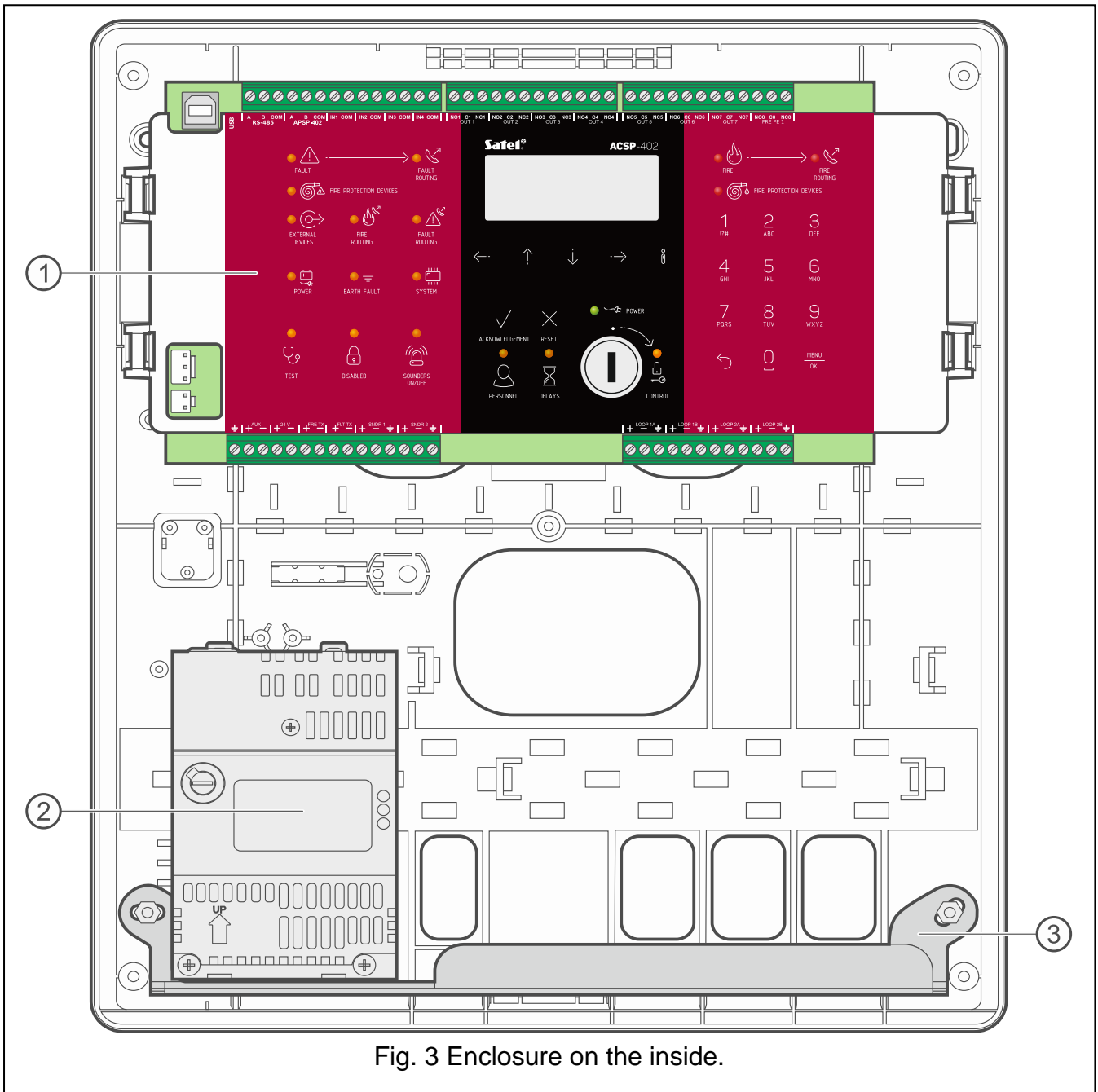


Fig. 3 Enclosure on the inside.

- ① control panel mainboard module.
- ② power supply.
- ③ metal insert for battery.

4.1.2 Mainboard module

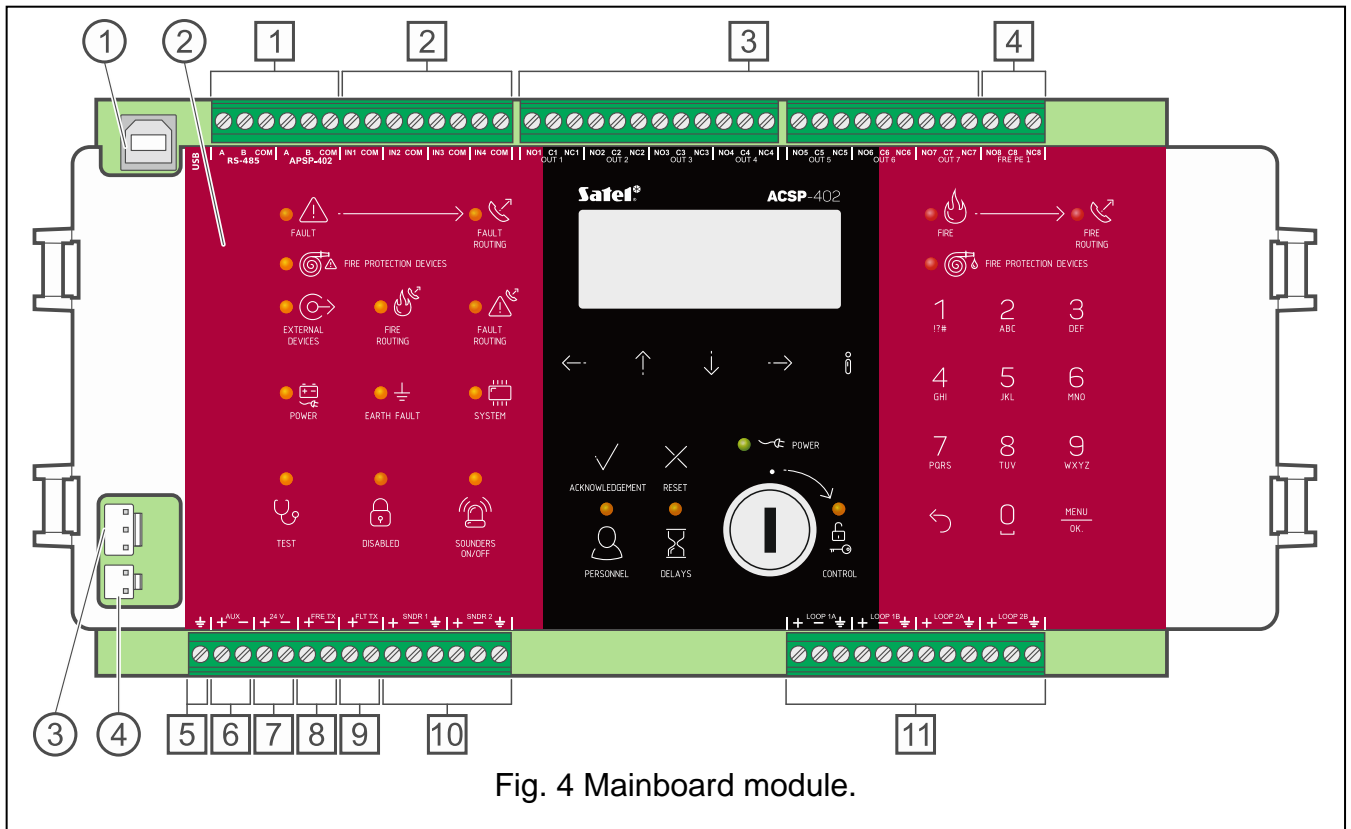


Fig. 4 Mainboard module.

- ① USB port (type B).
- ② front panel.
- ③ power supply connector.
- ④ battery connector.

Terminals

- ① RS-485 communication bus terminals:
 - RS-485 - terminals for connecting the ACSP-ETH or ACSP-RSI module,
 - APSP-402 - terminals for connecting the repeater panel.
- ② inputs:
 - IN1...4 - input (NO / NC),
 - COM - common ground.
- ③ relay outputs (potential-free):
 - NO1...7 - relay output normally open contact,
 - C1...7 - relay output common contact,
 - NC1...7 - relay output normally closed contact.
- ④ relay output to control the automatic fire protection equipment (potential-free with control of line continuity):
 - NO8 - relay output normally open contact,
 - C8 - relay output common contact,
 - NC8 - relay output normally closed contact.
- ⑤ protective earth terminal (only connect to 230 VAC mains PE protective circuit).
- ⑥ power output dedicated to the ACSP-ETH or ACSP-RSI module.

- 7 +24 VDC power output.
- 8 output for fire alarm routing.
- 9 output for fault warning routing.
- 10 outputs to control conventional sounders.
- 11 terminals for connecting the detection lines. See: "Types of detection lines" p. 14.

4.1.3 Front panel

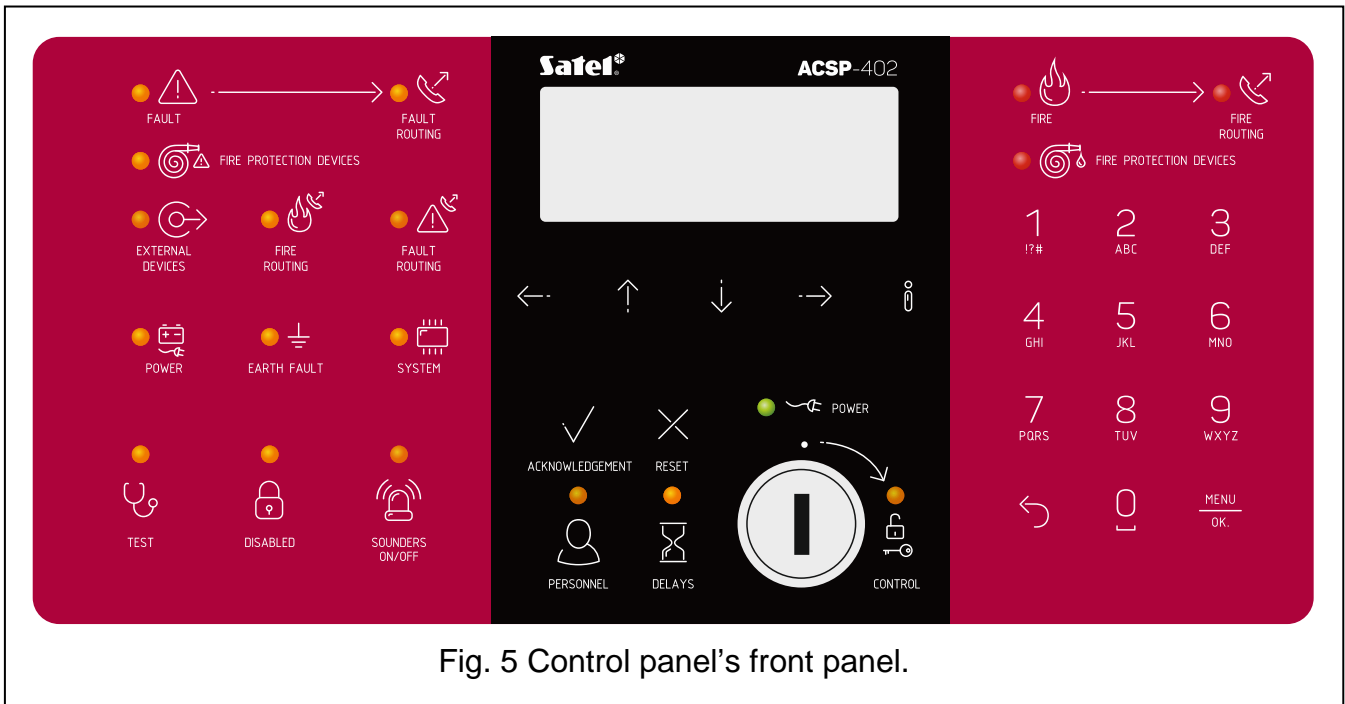



Fig. 5 Control panel's front panel.









LED indicators







LED	Label [color]	Indications
	FAULT [yellow]	ON - fault. flashing - fault memory.
	FAULT ROUTING [yellow]	ON - fault warning routing is acknowledged / test of the output for fault warning routing is started. flashing - output for fault warning routing is active.
	FIRE PROTECTION DEVICES [yellow]	ON - output to control the fire protection devices is disabled or is being tested. flashing - output to control the fire protection devices is faulty (short circuit or break).
	AUXILIARY DEVICES [yellow]	flashing - programmable input is faulty (short-circuit or break), device connected to programmable input reported fault, power output is faulty (overload), repeater panel / ACSP-ETH module / ACSP-RSI is not present, power source of the repeater panel is faulty.
	FIRE ROUTING [yellow]	ON - output for fire alarm routing is disabled or is being tested. flashing - output for fire alarm routing is faulty (short circuit or break).

LED	Label [color]	Indications
	FAULT ROUTING	ON - output for fault warning routing is disabled or is being tested. flashing - output for fault warning routing is faulty (short circuit or break).
	POWER [yellow]	flashing - power failure (loss of 230 VAC mains, no battery, low battery, high battery resistance).
	EARTH FAULT [yellow]	flashing - earth fault in one of the circuits of the fire alarm system.
	SYSTEM [yellow]	flashing - control panel hardware fault, microprocessor-based system fault, corrupted data in control panel memory, or alarm log overflow.
	TEST [yellow]	ON - function to test system elements is started (zones, lines, groups, sounders, inputs, outputs, etc. are being tested).
	DISABLED [yellow]	ON - system elements are disabled (zones, lines, groups, sounders, inputs, outputs, etc. are disabled).
	SOUNDERS ON/OFF [yellow]	ON - output to control sounders or sounder(s) connected to detection line are disabled or are being tested. flashing - output to control sounders is faulty (short circuit or break) or sounder(s) connected to detection line are faulty.
	PERSONNEL [yellow]	ON - control panel operates in the "Personnel present" mode.
	DELAYS [yellow]	ON - two-stage alarm mode is enabled (second stage alarm signaling is delayed).
	CONTROL [yellow]	ON - access level 2 (control from the control panel's front panel). flashing - access level 2 (control from the ACSP-402 repeater panel), access level 3 (service mode – control panel programming).
	POWER [green]	ON - 230 VAC mains power is present. flashing - no 230 VAC mains power, control panel is powered from a battery.
	FIRE [red]	ON – fire alarm acknowledged by the personnel. flashing - fire alarm.
	FIRE ROUTING [red]	ON - fire alarm routing is acknowledged / test of the output for fire alarm routing is started. flashing - output for fire alarm routing is active.

LED	Label [color]	Indications
	FIRE PROTECTION DEVICES [red]	ON - activation of fire protection equipment is acknowledged / test of the output to control the fire protection equipment is started. flashing - output to control the fire protection equipment is active.

Buttons

Button	Access level	Function
	1	Start the preview of tested system elements (e.g. zones, lines, groups, sounders, inputs, outputs, etc.). Start the function of testing the control panel LEDs and acoustic signaling. Press and hold for 3 seconds to start the function.
	2	Start the function of testing the system elements.
	1	Start the preview of disabled system elements (e.g. zones, lines, groups, sounders, inputs, outputs, etc.).
	2	Start the function of disabling the system elements.
	2	Deactivate / activate sounders during a fire alarm.
	1	Exit the user menu or submenu.
	2	Exit the menu, submenu or function in the user menu.
	3	Exit the submenu or function in the service menu.
	1 / 2 / 3	Scroll up and perform other operations in the user / service menu.
	1 / 2 / 3	Scroll down and perform other operations in the user / service menu.
	1	Open the user menu, enter the submenu. In the alarm mode, change how the information is presented about the alarming zone(s) (zone name / zone number and information about the alarm stage).
	2	Open the user menu / enter the submenu / start the function / select the option. In the alarm mode, change how the information is presented about the alarming zone(s) (zone name / zone number and information about the alarm stage).
	3	Enter the submenu / start the function / select the option in the service menu.
	1 / 2 / 3	Change how the information is presented (short / extended) about a selected system element (e.g. zone) or an event registered by the control panel (e.g. alarm / fault). In the case of the two-stage alarm mode, information is displayed about the time remaining until the second stage alarm is generated. Change how the information is presented about system elements

Button	Access level	Function
		(names / addresses). Press and hold for 3 seconds to change how the information is presented.
	1 / 2	Acknowledge the fire alarm / fault warning and silence the acoustic signaling in control panel and repeater panel. Reset the fault memory.
	2	Reset the fire alarm.
	2	Change the “Personnel present” / “Personnel absent” control panel operating mode (changing the operating mode may result in activating / deactivating the two-stage alarm mode (second stage alarm delay)).
	2	Activate / deactivate the two-stage alarm mode (second stage alarm signaling delay).
	1	Exit the user menu or submenu.
	2	Exit the menu, submenu or function in the user menu.
	3	Exit the submenu or function in the service menu.
	1	Open the user menu and enter the submenu.
	2	Open the user menu, enter the submenu, start the function and confirm the selected options.
	3	Confirm the service mode access code, enter the submenu, start the function and confirm the selected options.

Alphanumeric keys

The keys labelled with digits and letters are used to enter the access code to the control panel at level 3 (see: “Access levels” p. 32). They are also used to enter data during the programming of the control panel in the service mode.

Key switch

The key switch is used to gain access at levels 2 and 3 (see: “Access levels” p. 32).

Display

The display is used to operate and program the control panel. The access to each function depends on the access level gained by the user (see: “Access levels” p. 32).

Quiescent condition

If the control panel is in the quiescent condition, the display shows date and time as well as messages programmed in the control panel (e.g. information about the system).

Disabled condition

If the control panel is in the disabled condition, the display shows the same information as in the quiescent condition plus the number of disablements activated in the control panel.

Test condition

If the control panel is in the test condition, the display shows the same information as in the quiescent condition plus the number of started tests.

Fault warning condition

If the control panel is in the fault warning condition, the display shows the same information as in the quiescent condition plus the number of detected faults.

Fire alarm condition

If the control panel is in the fire alarm condition, the display shows information about the alarm(s). Depending on the access level, after you enter the user menu, you can view information about the currently tested and disabled system elements (access level 1 and 2) as well as block the system elements (access level 2).

Service mode

After starting the service mode (see: “Starting the service mode”), the display shows the service menu which enables programming of the control panel (access level 3).

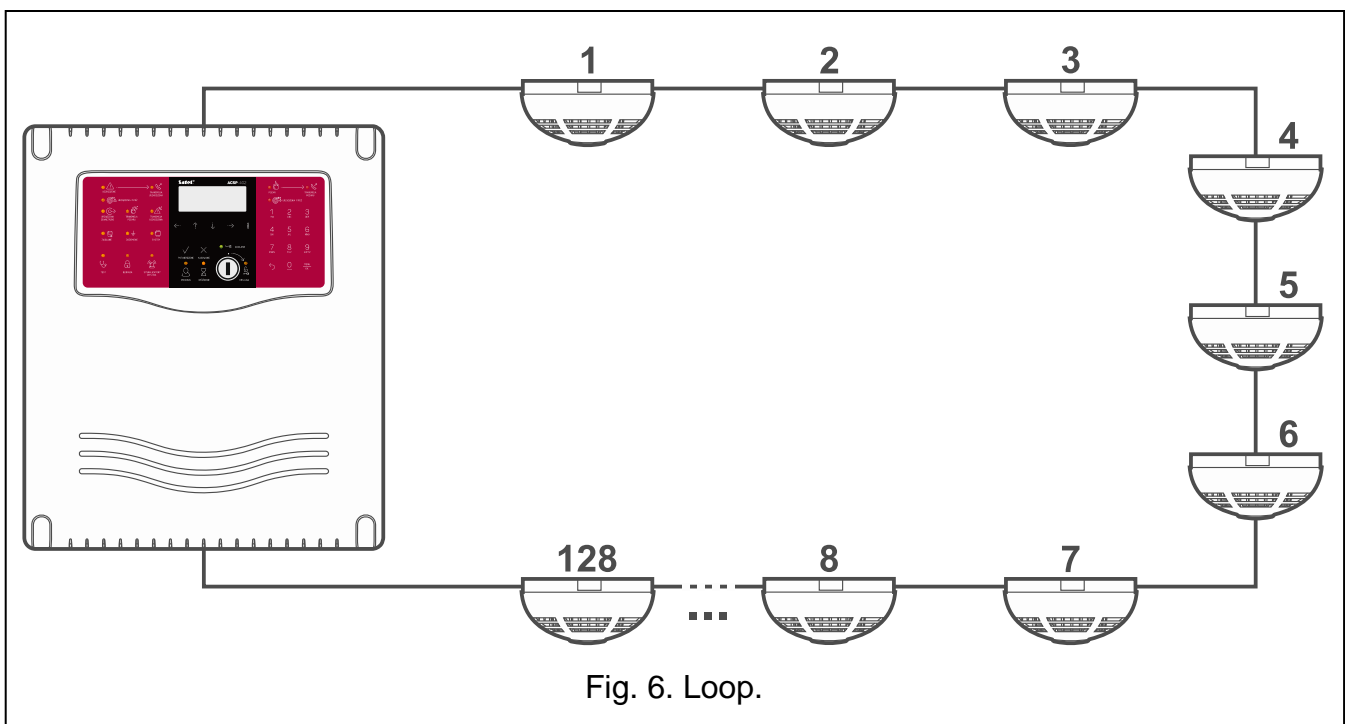
4.2 Addressable detection lines

The addressable detection line is used to connect to the control panel the following elements: detectors, manual call points, sounders, remote indicators and other addressable devices. The devices have unique addresses that enable the control panel to identify them (see: “Addressing elements on detection lines” p. 16).

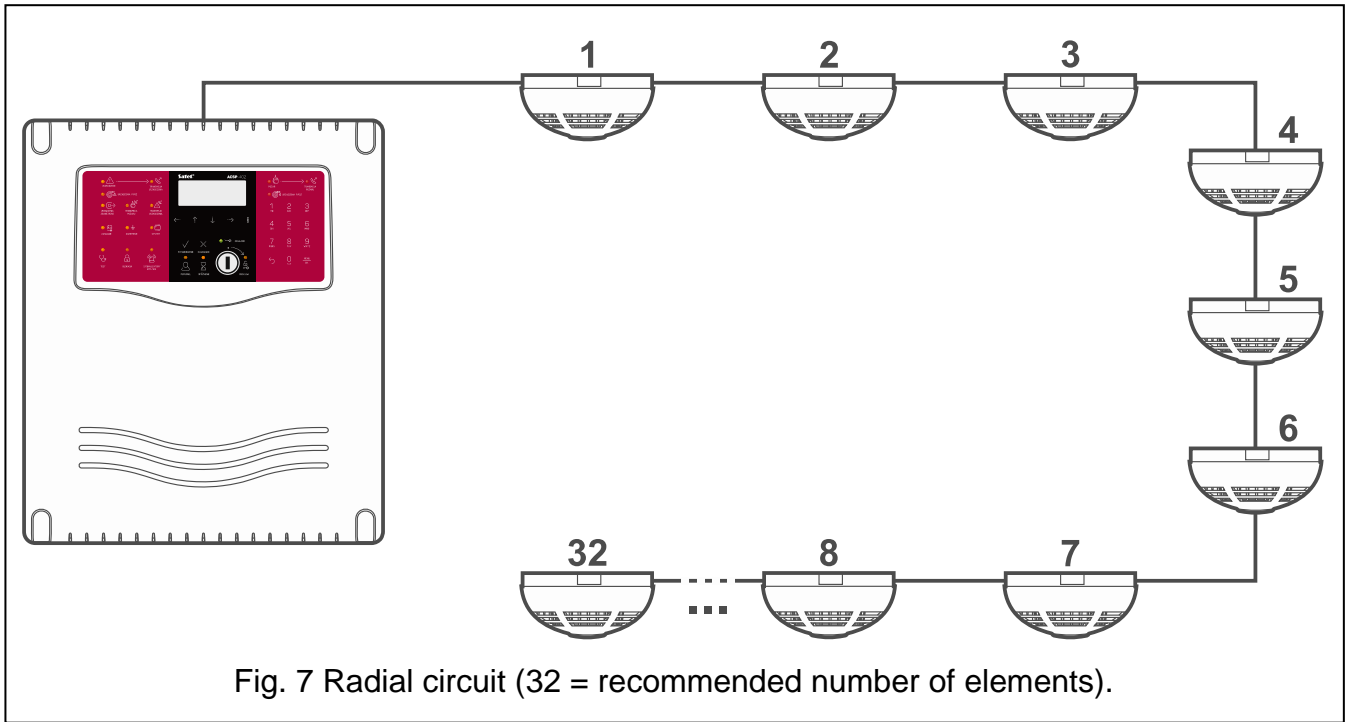
4.2.1 Types of detection lines

The ACSP-402 control panel supports detection lines of the following type:

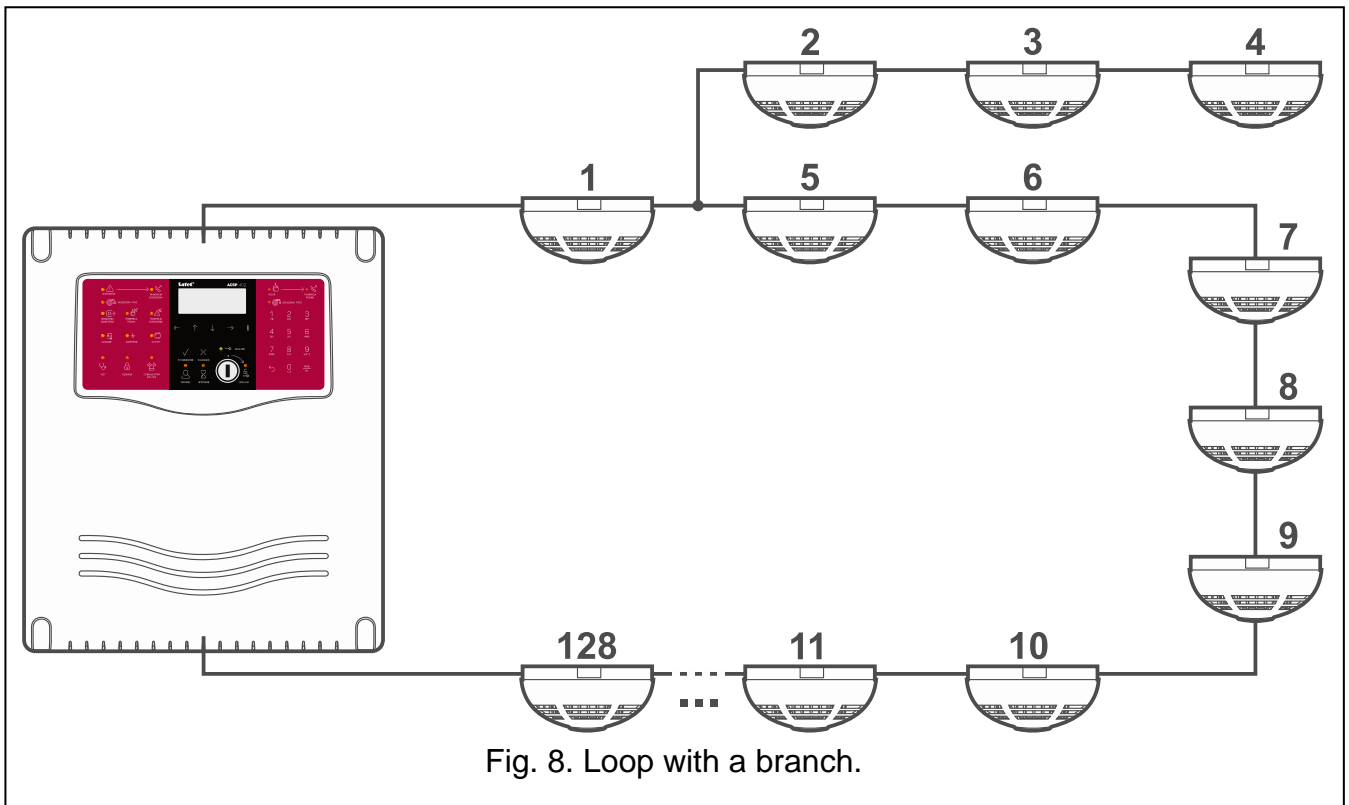
- **loop (closed line)** – both beginning and end of the detection line are connected to the control panel (see: Fig. 6). The circuit is resistant to single faults thanks to its loop shape and short-circuit isolators that are built in the line elements. When a line short-circuit occurs, the short-circuit isolators in the line elements that are closest to the location of the fault are activated. The loop can contain up to 128 addressable devices.



- **radial circuit (open line)** – only the beginning of the detection line is connected to the control panel (see: Fig. 7). The radial circuit is not fault-resistant. When a line short-circuit or break occurs, all line elements from the location of the fault occurrence until the end of the radial circuit are disconnected. It is recommended that the radial circuit contain up to 32 addressable devices.



- loop with a branch (with a radial circuit)** – a radial circuit can form a branch leading out of the loop (see: Fig. 8). The branch (radial circuit) is not fault-resistant. When a branch short-circuit or break occurs, all elements from the location of the fault until the end of the radial circuit are disconnected. Several radial circuits can branch out of the loop. Each radial circuit can contain up to 32 line elements. The whole detection line of this type (loop plus radial circuits) can contain up to 128 addressable devices.



i You can connect the MLB-400 module to the control panel’s detection line. The module is used to connect a side line of conventional detectors and call points (see: “Connecting the side line modules” p. 25).

The actual number of line elements that can be connected to the detection line has to be determined at the detection line planning stage (see: “Planning the detection line” p. 18).

Due to their reliability, the loops are a preferred type of detection lines. The radial circuits are to be used only in special cases.

4.2.2 Addressing elements on detection lines

The line elements (addressable devices) are given addresses after the function of element identification is run in the control panel (see: p. 30). Run this function when the system is first started. The address consists of the detection line symbol (**L1 / L2** – loop or **A1 / A2 / B1 / B2** – radial circuit) and the element’s reference number. The reference numbers are assigned in sequence, starting from the element connected closest to the terminals. For the loop, these are the **LOOP 1A / LOOP 2A** terminals. Figure 8 shows how the line elements are addressed if the loop has a branch.

If changes are made in the detection line(s), you must run the verification function (see the control panel’s programming manual). When it is completed, the new elements are given addresses and some of the previously identified elements may be given different addresses.

4.3 Detection zones



The detection zone is a separate area in the premises supervised by the fire alarm system. When the supervised area is divided into detection zones, it is possible to group the addressable line elements. This allows you to locate where the line elements are installed and to program a different alarm variant for each zone. The alarm variants can be specifically selected to match the conditions of each detection zone (see: “Alarm variants in the detection zone”). The detection zone can be divided into two subzones (A and B) for the purpose of grouping the line elements that belong to that zone. This division is useful in the case of the alarm variants with a group coincidence. These variants are dedicated to zones where adverse conditions increase the risk of false alarms.

The ACSP-402 control panel can support up to 256 detection zones. According to EN 54-2, each zone can be assigned up to 32 detectors and call points.


4.4 Fire alarm condition



If the signals received by the control panel are interpreted as fire alarm, the control panel goes into the fire alarm condition.


4.4.1 Pre-alarm

It is a preliminary danger alert based on the information from a detector. It is indicated by a message presented on the display (the  FIRE LED is OFF, the sounders and the fire alarm routing output are not activated). If the personnel press  RESET, the pre-alarm will be reset. If the pre-alarm is not reset, the first or second stage alarm will be generated (the type of alarm depends on whether the two-stage alarm is enabled in the control panel or not – see: p. 17).




4.4.2 First stage alarm

It is an internal alarm of the control panel generated based on the information from a detector or after an input is activated. The first stage alarm can be generated if the two-stage alarm is enabled in the control panel (see: p. 17). It is indicated by flashing of the red  FIRE LED and by a sound emitted by the control panel / repeater panel (the sounders and the fire alarm routing output are not activated). The message on the display includes information about the zone in which fire has been reported or the supervising input that has been activated. Press

 to change how the information is presented. If you press , information will be displayed about the time remaining until the second stage alarm is generated.



 *If the two-stage alarm is enabled in the zone for the manual call point (see the control panel programming manual), activating the manual call point will also generate the first stage alarm. The two-stage alarm function is not EN 54-2-compliant for the manual call points.*

In response to the first-stage alarm, the personnel can:




- press  ACKNOWLEDGEMENT – this delays the second stage alarm by the time needed to verify the danger (see: “Two-stage alarm” p. 17). The  FIRE LED stops flashing and turns ON. The acoustic signaling is turned OFF.
- press  RESET – the alarm is reset.

If the first stage alarm has not been reset, the second stage alarm will be generated.

4.4.3 Second stage alarm


The main alarm (external alarm). In the case of the one-stage alarm, it is generated right away based on the information from a detector or a manual call point or after an input is activated. It may be preceded by the first stage alarm if the two-stage alarm is enabled in the control panel (see: p. 17). It is indicated by flashing of the red  FIRE LED and by a sound emitted by the control panel / repeater panel. The following are also activated: the sounders, the output for fire alarm routing and other outputs (with delay time of 0 seconds) whose reaction type is related to the occurrence of second stage alarm (e.g. output to control the fire protection equipment). The message on the display includes information about the zone in which fire has been reported or the supervising input that has been activated. Press  to change how the information is presented.



In response to the second-stage alarm, the personnel can:

- press  ACKNOWLEDGEMENT – the  FIRE LED stops flashing and turns ON. The acoustic signaling in the control panel / repeater panel is turned OFF.
- press  RESET – the alarm is reset.

4.4.4 Two-stage alarm – second stage alarm delay

The following alarm variants are available:

- **one-stage** – if the signals received by the control panel are interpreted as fire alarm, the **second stage alarm** is generated.
- **two-stage** – if the signals received by the control panel are interpreted as fire alarm, the **first stage alarm** is generated. If the personnel do not respond before the “Time to acknowledge the alarm” has passed, the second stage alarm is generated. If the personnel press  ACKNOWLEDGEMENT, the second stage alarm will be additionally delayed by the preset time (see: “Time for alarm recognition”). This gives the personnel the time to verify if the fire alarm is justified.

If the two-stage alarm variant is to be used, the second stage alarm delay must be enabled in the control panel ( DELAYS button). The second stage alarm delay can also be enabled after the control panel is set in the “Personnel present” mode, and disabled after the control panel is set in the “Personnel absent” mode. The mode can be changed after the personnel press  PERSONNEL, automatically according to the attendance plan programmed in the

control panel, or after the supervising input operating in the “Personnel presence” mode is activated.

4.4.5 Alarm variants in the detection zone

There are 19 alarm variants available in the control panel, making it possible to select a variant that best suits the conditions in the zone. When a proper alarm variant is programmed in the zone, the fire can be detected at the earliest stage of its development, while at the same time the risk of false alarms can be reduced.

For detailed information on the alarm variants, please refer to the control panel programming manual.

5. System installation



Disconnect power before making any electrical connections.

For installation, you will need the following tools:

- 2.5 mm flathead screwdriver,
- Philips screwdriver,
- precision pliers,
- flat-nose pliers,
- drill with a set of drill bits.

5.1 Estimation of the system current consumption

In order to estimate the current consumption in the fire alarm system, sum up the currents consumed by all devices included in the system (control panel, repeater panel, detectors, sounders, expansion modules, etc.). The calculation should take into account the battery charging current.

If you plan to connect devices to the control panel power outputs, remember that the sum of the currents consumed by the devices must not exceed the maximum load capacity of those outputs.

5.1.1 Planning the detection line

While drawing up a plan of the addressable detection line, take into account:

- the maximum number of line elements that can be connected to each detection line type:
 - loop (with branches) – 128 elements,
 - radial circuit – 32 elements (recommended number – the control panel can support up to 128 elements, installed jointly in 2 radial circuits connected to the detection line terminals, e.g. LOOP 1A and LOOP 1B),
- maximum current consumed by all elements connected to the detection line,
- maximum resistance and capacitance of the detection line.

Table 1 will help you determine how many elements can be connected to the detection line.

Maximum load capacity of the line [LC] = 640			
Type of line element	Weight of element [W]	Maximum number of elements in line [L] = [LC] / [W]	
		Loop [L]	Radial circuit [L*]
Detector (DCP-400 / DMP-400 / DRP-400)	5	128	32
Manual call point (ROP-400 / ROP-401)	5	128	32
Sounder (SPP-400)	16	40	32
Input / output module (MIO-400)	20	32	32
Side line module (MLB-400)	128	5	5
Remote indicator (WZ-400)	5	128	32

* recommended maximum number of elements that can be connected to the radial circuit. If there are more elements, we advise using the loop layout.

Table 1.

If you plan to connect elements of different types to the detection line, use the following equation to determine the maximum number of elements in the line:

$$W_1 \times L_1 + W_2 \times L_2 + \dots + W_7 \times L_7 \leq 640$$

where:

W – weight of the line element of a given type,

L – number of line elements of a given type.

5.2 Cabling

To make electric connections between devices included in the system, use a shielded cable (to connect the shield, use the $\overline{\text{E}}$ or E terminals). In order to guarantee correct functioning of the system components, it is important that resistance and capacitance of the signal wires be as low as possible. To find the limit values for the detection lines and other connections, go to the “Specifications” section (p. 39).

Avoid running the cables in parallel to or in close vicinity of the 230 VAC wires, as this may result in malfunctioning of the system.

5.3 Mounting the control panel



The control panel mainboard contains components sensitive to electrostatic discharges.

Before connecting the mainboard to power source (battery and VDC from power supply), you must first complete all the installation work with hardwired devices (connection of repeater panels, detection line devices, sounders, etc.).

The control panel should be installed indoors, in spaces with normal air humidity, where temperature does not drop below -5°C and does not exceed 40°C. The mounting location should be readily accessible for the personnel and should provide good visibility of the LED indicators and legibility of the labels on the front panel. In spaces where there is a lot of

noise, we advise using external acoustic sounders. A manual call point should be installed close to the control panel (within sight of the personnel operating the control panel).

We recommend installing the control panel in a location supervised by the personnel 24 hours a day. If this is impossible, it must be ensured that the information about events registered by the control panel are transmitted to another location where the personnel is onsite 24 hours a day. The remote control devices and/or APSP-402 repeater panel can be used for this purpose.

A 230 VAC power circuit with protective grounding must be available at the control panel installation place.

1. Remove the cover (Fig. 9-I).
2. Remove the control panel mainboard module from catches in the enclosure base (Fig. 9-II).
3. Remove 2 bolts locking the insert for battery during transport (Fig. 9-III and 9-IV).
4. Place the enclosure base on the wall and mark the location of mounting holes (see: Fig. 10).
5. Drill the holes for wall plugs (anchors).
6. Run wires through the opening(s) in the enclosure base (see: Fig. 10).

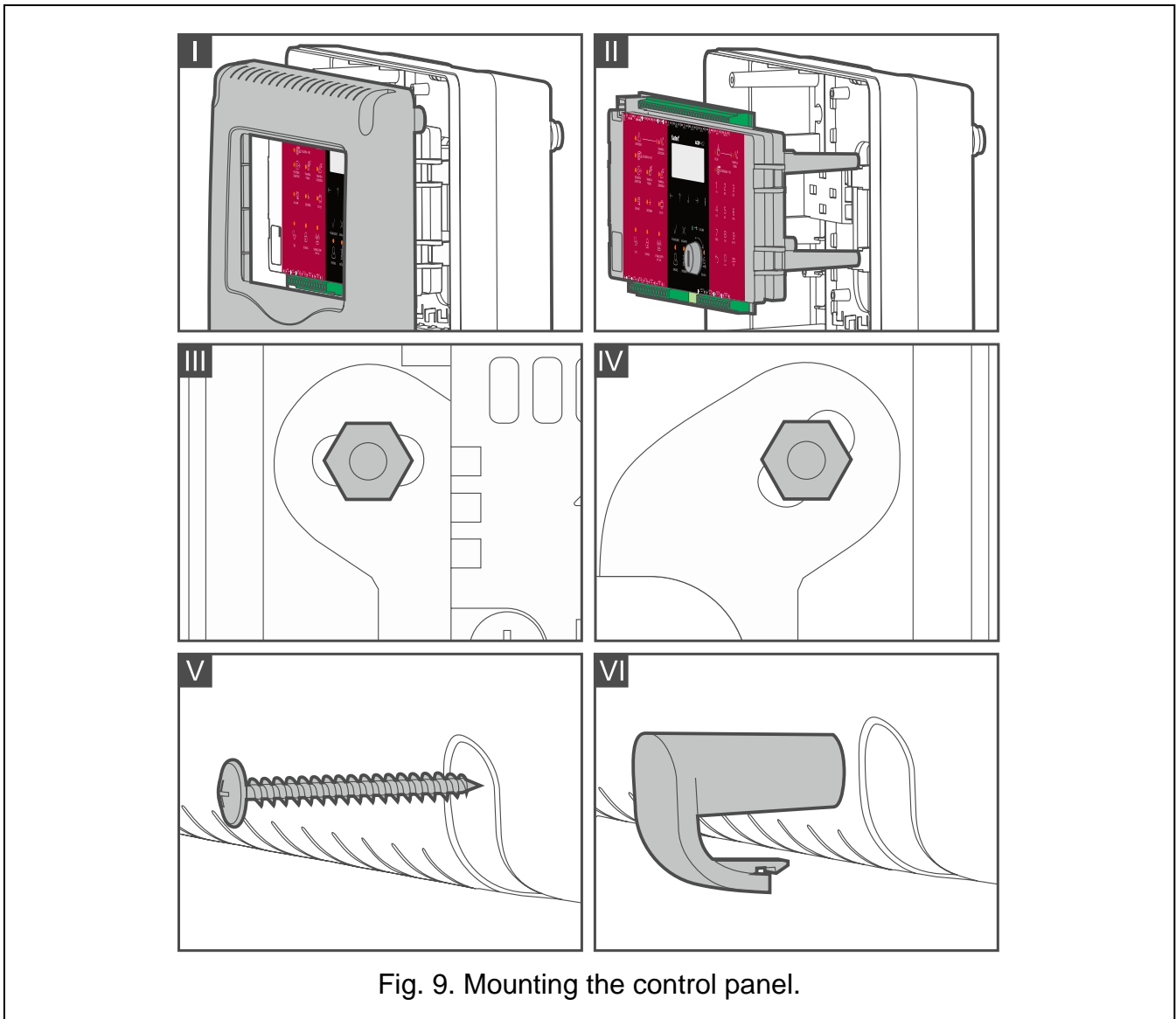


Fig. 9. Mounting the control panel.

7. Use wall plugs and screws to secure the enclosure base to the wall. Select wall plugs intended for the mounting surface (different for concrete or brick wall, different for drywall,

etc.). If you have trouble laying the cables, use the spacers included with the enclosure to shift the enclosure away from the wall.

8. Mount the control panel mainboard module on catches in the enclosure base.
9. Connect the wires to the corresponding terminals of the control panel (see sections from 5.4 to 5.9).
10. Connect the main 230 VAC power wires to the corresponding terminals of the power supply (see: "Main power source" p. 28).



Before connecting the power supply to a circuit from which it will be powered, make sure the circuit is de-energized.

11. Install and connect the battery (see: "Backup power source" p. 29).
12. Replace the cover and fasten it to the enclosure base with 4 screws (Fig. 9-V).
13. Cap the screw holes (Fig. 9-VI).
14. If the control panel is mounted in the premises where any installation or construction work is being carried out, protect the control panel from dust until the work is finished.

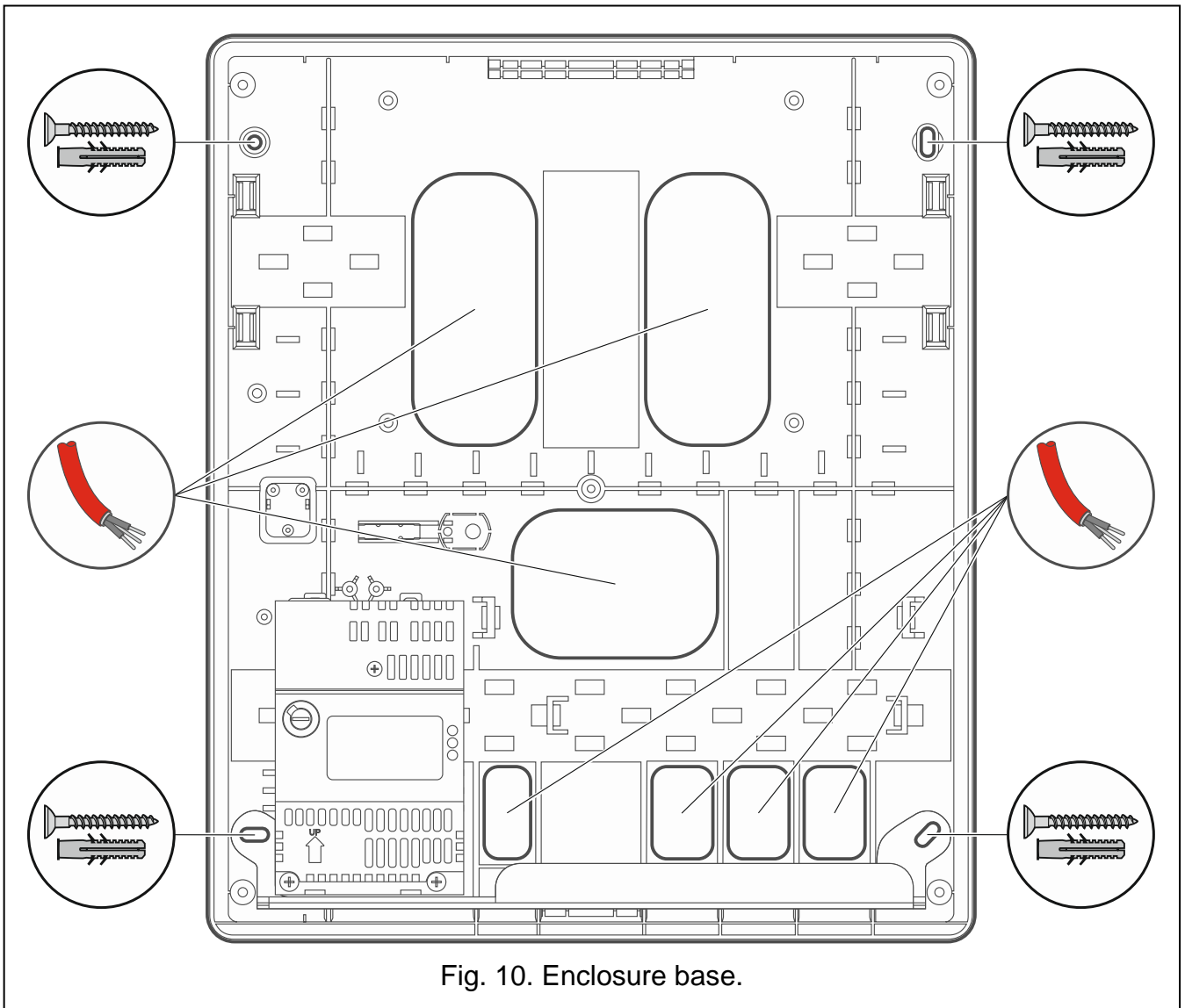


Fig. 10. Enclosure base.

5.4 Connecting the elements to the addressable detection line

You can connect loops (Fig. 11) and/or radial circuits (Fig. 12) to the control panel terminals. A loop can be connected to the **LOOP 1A** and **LOOP 1B** terminals (loop 1) as well as the

LOOP 2A and **LOOP 2B** terminals (loop 2). A radial circuit can be connected to any of the control panel's detection lines' terminals (e.g. **LOOP 1A**). As a result, two loops or four radial circuits can be connected to the control panel, or one loop and two radial circuits (Fig. 13). To make the connections, use a shielded cable that complies with the national fire protection requirements. To connect the shield, use the \perp terminal of the control panel detection line.

You can connect the following devices to the detection line (Fig. 14):

- detectors: DMP-400, DRP-400 and DCP-400,
- manual call points: ROP-400 and ROP-401,
- sounders: SPP-400 and SPP-401,
- remote indicators: WZ-400,
- side line modules: MLB-400,
- input / output modules: MIO-400.

For detailed information on how to connect a device to the detection line, refer to the installer manual of that device. During installation, bear in mind the instructions described in section "Planning the detection line" p. 18.

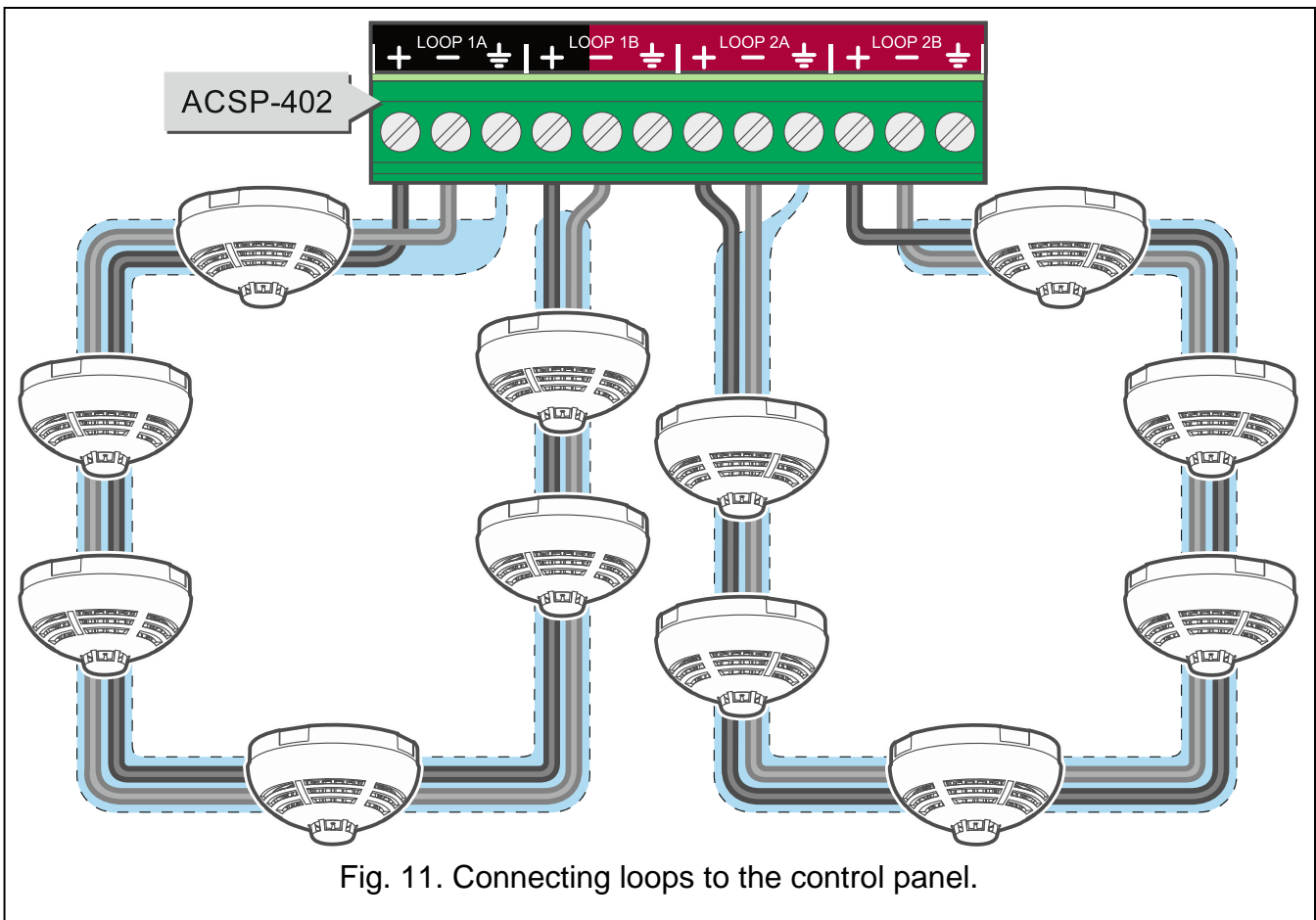


Fig. 11. Connecting loops to the control panel.

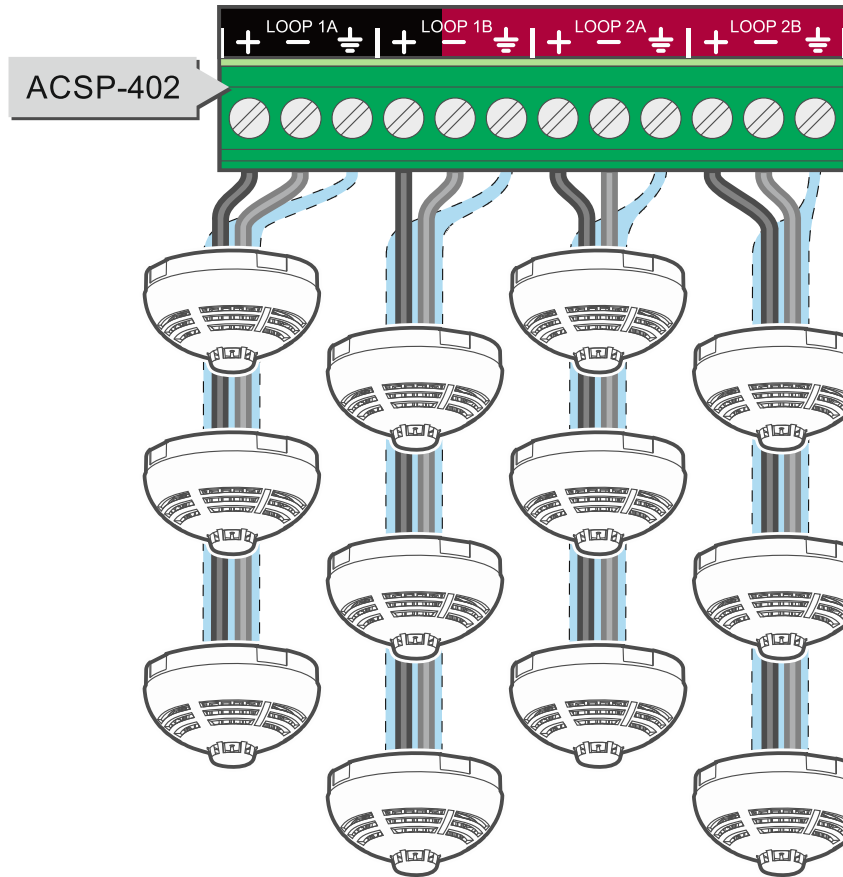


Fig. 12. Connecting radial circuits to the control panel.

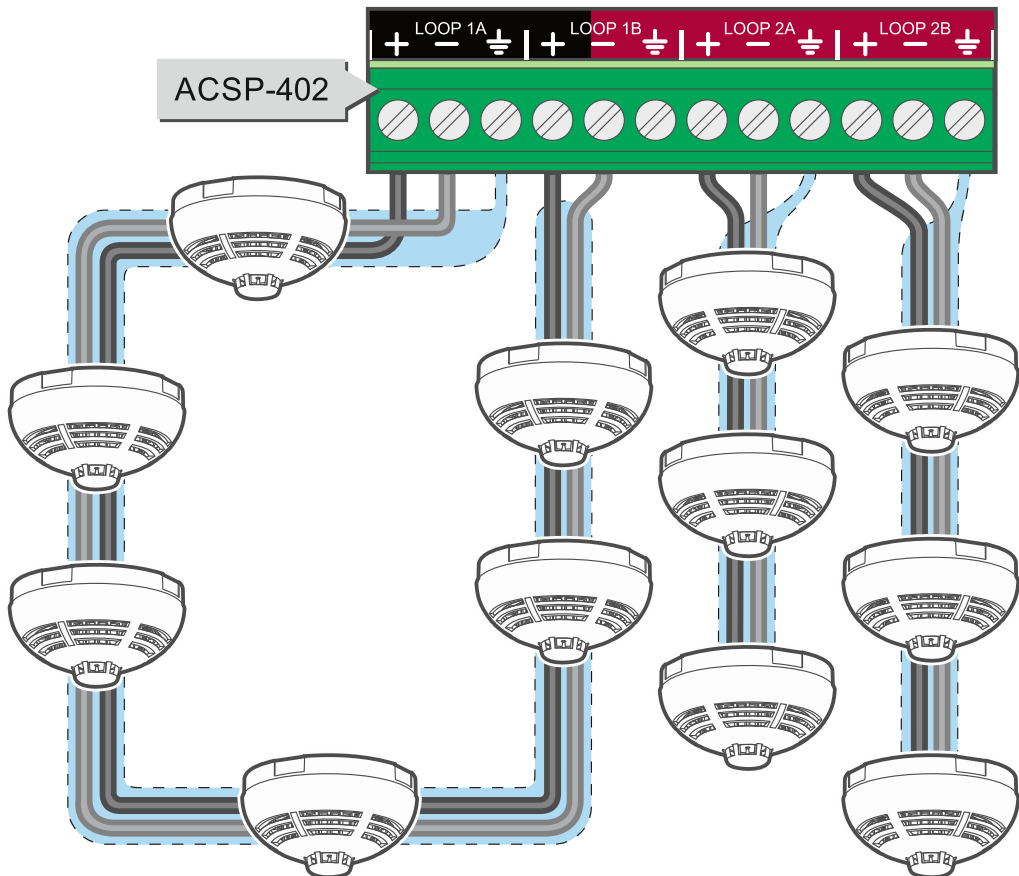


Fig. 13. Example of connecting 1 loop and 2 radial circuits to the control panel.

5.4.1 Connecting the detectors

You can connect the addressable DCP-400, DMP-400 and DRP-400 detectors to the control panel detection line. The detectors detect fire at early stages of development when there is some visible smoke (DMP-400, DRP-400) and/or temperature rise (DMP-400, DCP-400). You can connect up to 128 detectors to the loop and 32 detectors to the radial circuit (see: "Planning the detection line" p. 18).

To connect a detector to the detection line, use the DB-400 detector base.

i You can connect the conventional WZ-110 remote indicator to an addressable detector. The remote indicator LEDs indicate that the detector has reported alarm. For detailed information on how to connect the remote indicator to the detector, refer to the DB-400 detector base manual.

5.4.2 Connecting the manual call points

You can connect the addressable ROP-400 / ROP-401 manual call points to the control panel detection line. The call point is used to manually generate an alarm when a fire is discovered. You can connect up to 128 manual call points to the loop and 32 call points to the radial circuit (see: "Planning the detection line" p. 18).

For detailed information on how to connect the ROP-400 / ROP-401 call point to the detection line, refer to the installer manual of that device.

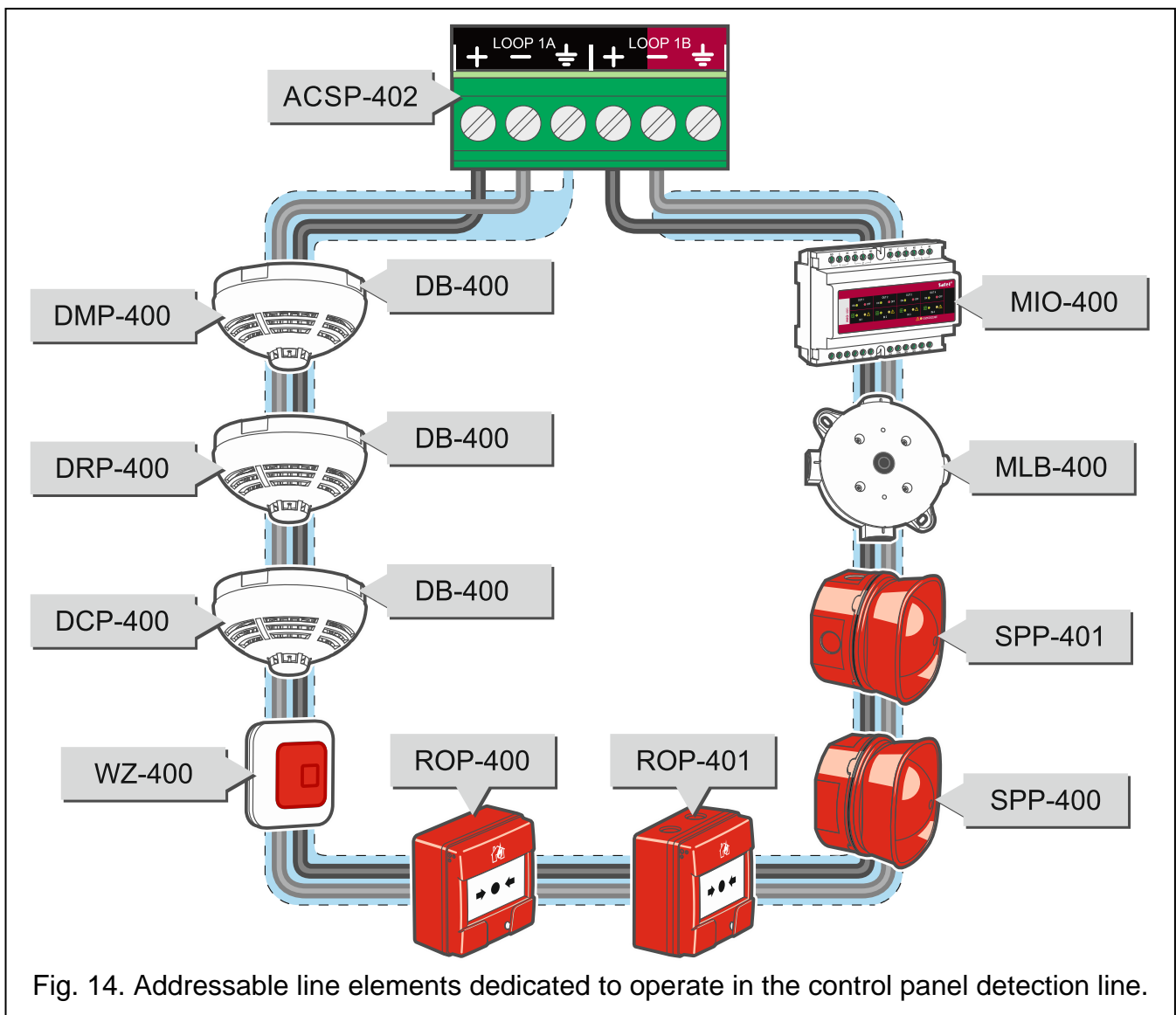


Fig. 14. Addressable line elements dedicated to operate in the control panel detection line.

5.4.3 Connecting the sounders

You can connect the addressable SPP-400 / SPP-401 acoustic sounders to the control panel detection line. The sounder is used for acoustic alarm signaling. You can connect up to 40 sounders to the loop and 32 sounders to the radial circuit (see: "Planning the detection line" p. 18).

For detailed information on how to connect the SPP-400 / SPP-401 sounder to the detection line, refer to the installer manual of that device.

5.4.4 Connecting the input / output modules

You can connect the MIO-400 modules to the control panel detection line. With each module, you can add 4 programmable inputs and 4 programmable relay outputs to the fire alarm system. You can connect up to 32 modules to the detection line of any type (see: "Planning the detection line" p. 18).

For detailed information on how to connect the MIO-400 module to the detection line and how to connect devices to the inputs and outputs of the module, refer to the module installer manual.

5.4.5 Connecting the side line modules

You can connect the MLB-400 modules to the control panel detection line. They allow you to add side lines with conventional detectors and call points to the addressable detection line. You can connect up to 5 modules to the detection line of any type (see: "Planning the detection line" p. 18). You can connect up to 32 detectors or 10 manual call points to the conventional side line.



Do not connect detectors and manual call points simultaneously to the side line.

For detailed information on how to connect the MLB-400 module to the detection line and how to connect conventional detector and call points to the side line, refer to the module installer manual.

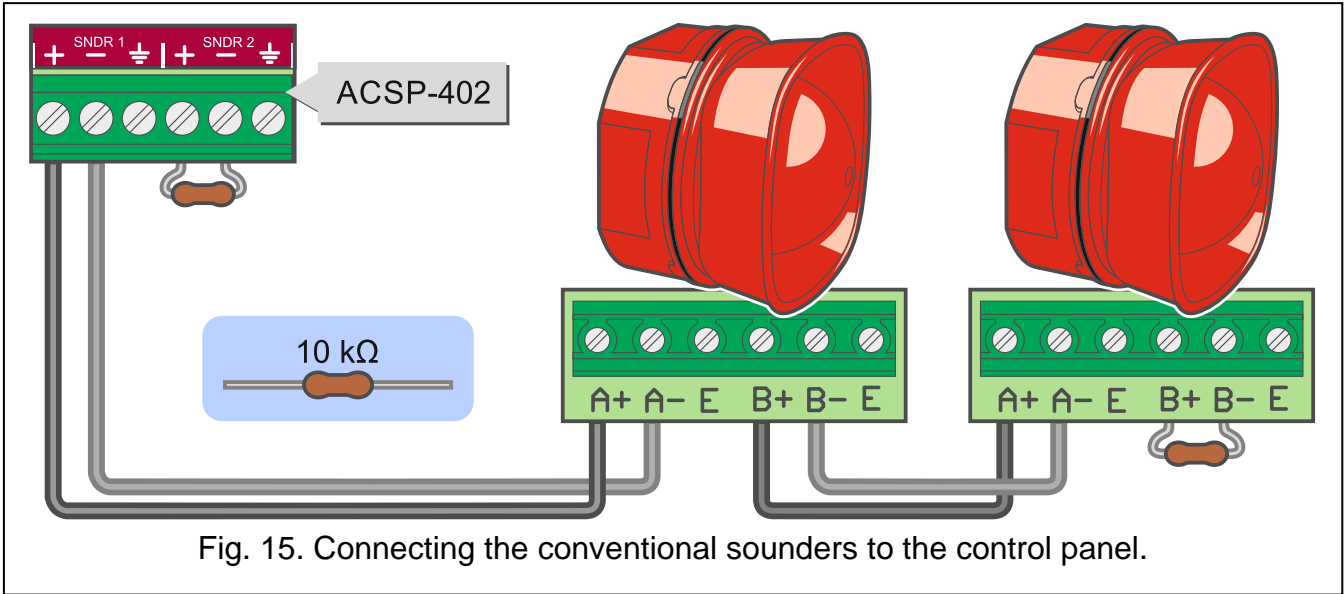
5.4.6 Connecting the remote indicators

You can connect the addressable WZ-400 remote indicators to the control panel detection line. The remote indicator is used to indicate the selected events in the system (e.g. alarm or faulty device) by means of LEDs. You can connect up to 128 indicators to the loop and 32 indicators to the radial circuit (see: "Planning the detection line" p. 18).

For detailed information on how to connect the WZ-400 remote indicator to the detection line, refer to the installer manual of that device.

5.5 Connecting the conventional sounders

You can connect conventional acoustic sounders powered by 24 VDC (e.g. SPP-110 or SPP-111 by SATEL). Fig. 15 shows the example of connecting the sounders to the **SNDR 1** input. To close the circuit, use the **10 kΩ** resistor. If the output for connecting the sounders is not used, the resistor should be screwed directly to the output terminals (Fig. 15). Using the shielded cable is not required for connecting the sounders.

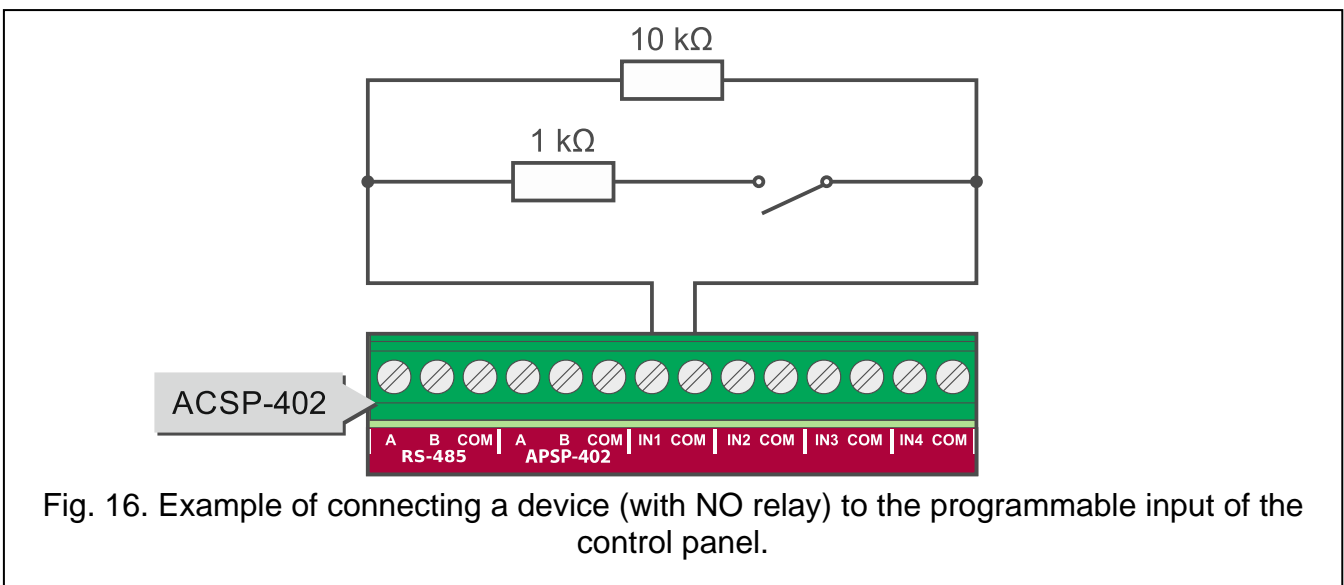


5.6 Connecting the fire alarm and fault warning routing equipment

You can connect the fire alarm routing equipment and fault warning routing equipment to the control panel. To close the circuit, use the **10 kΩ** resistor. If the output controlling the routing equipment is not used, the resistor should be screwed directly to the output terminals. Using the shielded cable for making the connections is not required.

5.7 Connecting devices to the programmable inputs

Connect the external devices that are to be supervised by the control panel to the programmable inputs of the control panel. You can connect devices with the NO or NC type relay. Fig. 16 shows the example of connecting the devices to the **IN1** input. The circuit should be terminated with the **10 kΩ** resistor. Connect the **1 kΩ** resistor in series with the device relay. Each of the inputs can be disabled in the control panel program if they are unused (there is no need to screw the resistor then). Using the shielded cable for making the connections is not required.



5.8 Connecting devices to the relay outputs

Connect the external devices that are to be controlled by the control panel to the relay outputs. The output 8 of the control panel (labelled FRE PE 1 on the mainboard) is dedicated to control the automatic fire protection equipment.

5.9 Connecting devices to the RS-485 communication bus

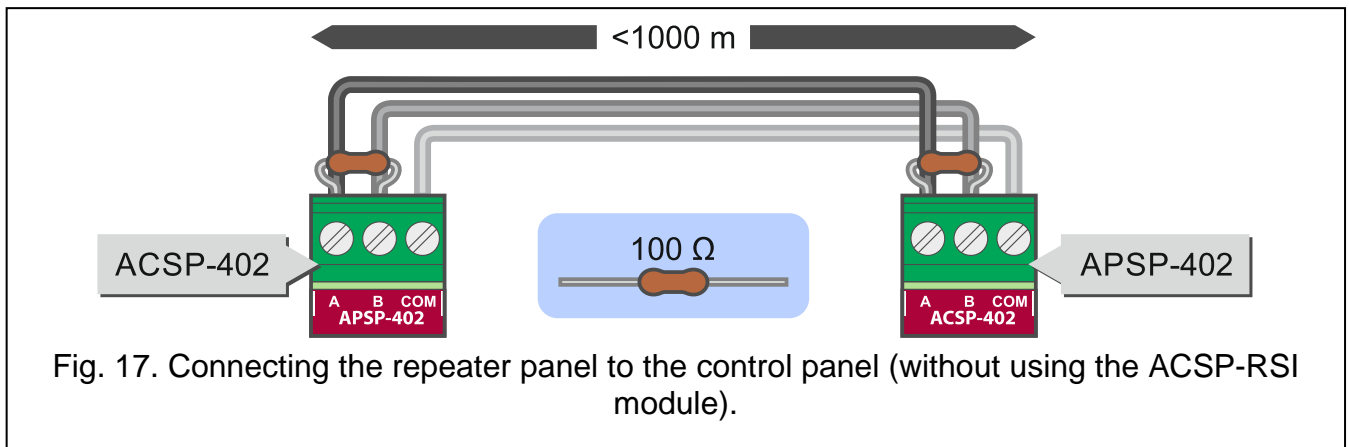
You can connect the APSP-402 repeater panel to the control panel using the RS-485 bus. You can also connect the optional ACSP-RSI and ACSP-ETH modules to the bus. To make the bus, use a twisted-pair cable that complies with the national fire protection requirements. The bus length can be up to 1000 meters.

5.9.1 Connecting the APSP-402 repeater panel

You can connect one repeater panel to the control panel. The panel is used for remote operation of the control panel at access level 1 and 2. Fig. 17 shows the example of connecting the APSP-402 repeater panel to the control panel. Use one pair of cables to connect the **A** and **B** terminals of the control panel to the **A** and **B** terminals of the repeater panel. Use an additional wire to connect the **COM** terminals of both devices. Screw **100 Ω** ($\pm 10\%$) resistors to the **A** and **B** terminals of the control panel and the repeater panel.



The control panel and the repeater panel must be connected to the same protective earth circuit (PE). If it is impossible, use the ACSP-RSI module to galvanically isolate the control panel and the repeater panel. For detailed information on how to install the module, refer to its manual.



5.9.2 Connecting the printer

You can connect the thermal printer if the ACSP-RSI module is installed in the system. The printer is used to print out events registered by the control panel.

For detailed information on how to connect the printer, refer to the ACSP-RSI module manual.

5.9.3 Connecting the ACSP-ETH Ethernet module

You can connect the ACSP-ETH Ethernet communication module to the control panel. The module is used for:

- remote preview of the system status in the VIRTUAL APSP mobile app,
- system events and status notifications via e-mail messages,
- presentation of the system status in the INTEGRUM app,
- time synchronization with the NTP time server.

The VIRTUAL APSP app is available for mobile devices and computers (Android, iOS, Linux and Windows systems).

For detailed information on how to connect the ACSP-ETH module, refer to its manual.

5.10 Connecting the power and starting the control panel



Do not connect power until all installation operations are completed.

5.10.1 Main power source

The control panel is powered by 18 VDC ($\pm 10\%$) from the SATEL APS-318 power supply. The power supply should be permanently connected to the 230 VAC mains. Before you make the cabling, familiarize yourself with the electrical installation of the facility. Make sure that the circuit you choose for powering will be always alive, in accordance with the applicable national regulations. The circuit must be provided with a 2-pole switch disconnecter with at least 3 mm contact separation and/or short-circuit protection with a 16 A time-delay fuse. The owner or user of the system should be instructed on how to disconnect the power supply from the mains (e.g. show them which circuit breaker protects the power circuit).



Before connecting the power supply to a circuit from which it will be powered, make sure the circuit is de-energized.

1. Remove the screw fixing the cover of power supply terminals (Fig. 18-I).
2. Remove the cover of power supply terminals (Fig. 18-II).
3. Run the cable through the cable entry (Fig. 18-III).
4. Screw the 230 VAC power wires to the corresponding terminals (phase conductor to L terminal, neutral conductor to N terminal, and protective conductor to PE terminal).
5. Screw the wire fastening element (Fig. 18-V).
6. Replace the cover of power supply terminals (Fig. 18-VI).
7. Fix the cover of power supply terminals with a screw (Fig. 18-VII).

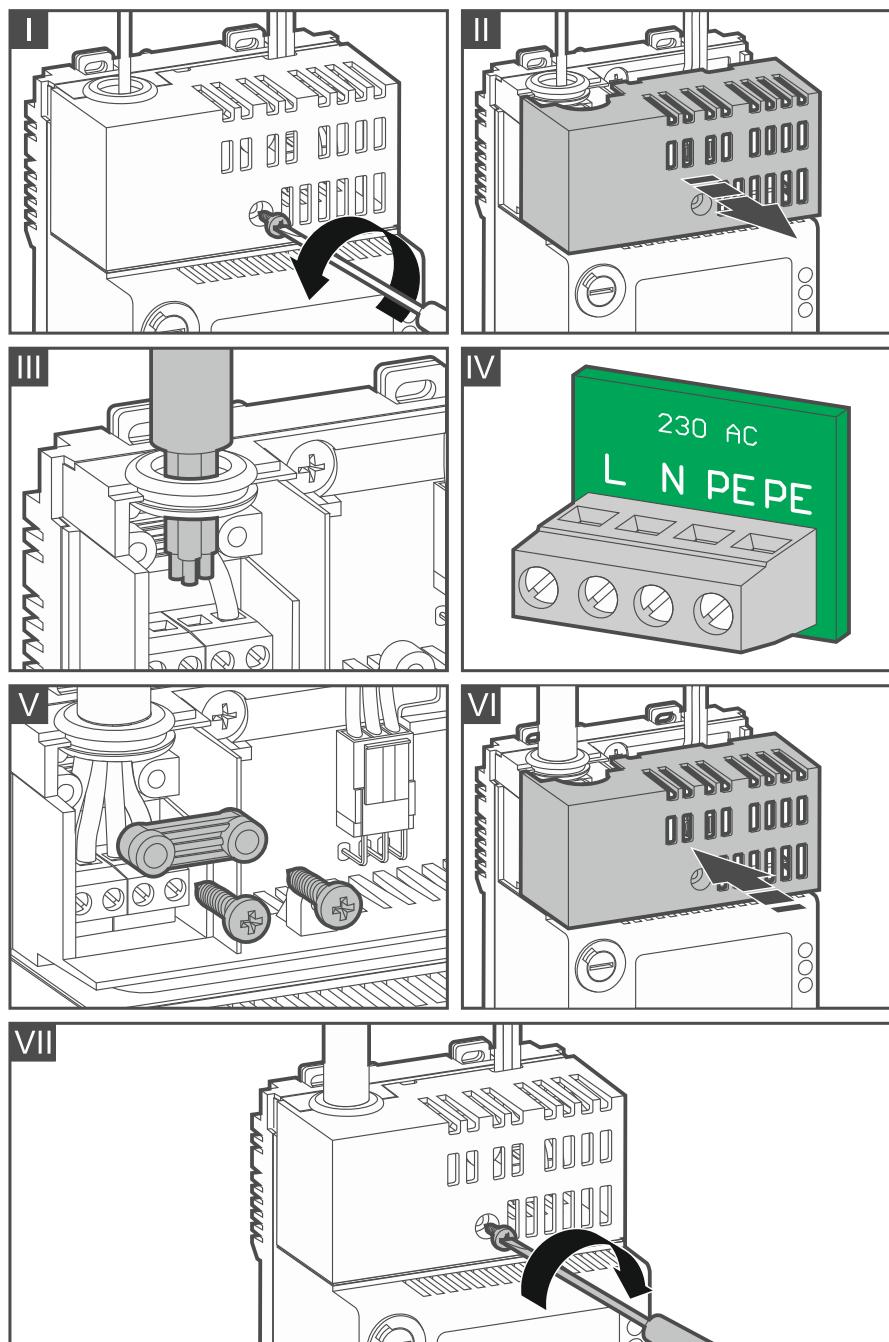


Fig. 18. Mounting the power supply.

5.10.2 Backup power source

A 12 V lead-acid sealed battery should be connected to the control panel as a backup power source. The battery capacity must be selected to match the current consumption in the system. The battery must ensure operation of the system without mains for 72 hours in the quiescent condition and for 30 minutes in the fire alarm condition.

The control panel can be used with up to **33 Ah** capacity battery. A battery with capacity up to **17 Ah** can be installed in the control panel enclosure. If the control panel is to operate with a higher-capacity battery, it must be installed in an external box. The SATEL CSP-AKU box enables battery installation outside the control panel enclosure.

If the battery voltage drops under load below 11.5 V for longer than 12 minutes (3 battery tests), the control panel will indicate battery failure. When the voltage goes down to

approximately 10.5 V, the battery will be disconnected. The control panel also indicates other battery failures, e.g. too high internal resistance of the battery.

Connect the battery to the control panel using the dedicated wires (positive terminal to red wire, negative terminal to black wire).



Do not connect deeply discharged battery to the control panel (with voltage across unloaded terminals below 11 V). The battery should be precharged with a proper charger.

The used batteries must not be discarded, but should be disposed of in accordance with the existing rules for environment protection.

5.10.3 Starting the control panel

Turn on the 230 VAC power in the circuit to which the power supply is connected. The control panel will be started.

5.11 Connecting the computer to the control panel











You can connect the control panel USB port (type B) with the computer USB port. When the computer is connected, you can configure the fire alarm system in the ACSP Soft program (communication is encrypted).

5.12 Starting the service mode

In the service mode, you can start the identification function in order to identify the elements connected to the detection line, and configure the fire alarm system.



When the service mode is started, the supervisory functions of the control panel are not performed (the repeater panel is not supported, alarms and faults are not signaled, etc.).

1. Turn the key switch to the CONTROL position. The yellow  LED will turn ON.
2. Press  or .
3. The “Level 2” menu will be displayed on the control panel display (the  cursor will show the “Alarms” submenu).
4. Press .
5. When the  cursor shows the “Service mode” function, press  or .
6. Enter the access code using the alphanumeric keys (default code: **1234**).
7. Press  to confirm the code.
8. The service menu will be displayed (the  cursor will show the “Zones” submenu).



If the control panel is connected with the ACSP Soft program, the “Service mode: ACSP Soft” message will be displayed. This means that the system can only be configured in the ACSP Soft program.

5.13 Identification of devices connected to the detection lines

Addressable elements of the fire alarm system connected to the detection line will not be properly supported, unless they have been identified by the control panel. During installation, each element is given its unique address. The identification of line elements is required after the control panel is first started.



The identification function resets the settings of all line elements and zones supported by the control panel.

When a new element is connected to the line, an identified element is disconnected from the line or one element is being replaced with another, the control panel reports a fault.

If you made any changes in the detection line(s), you must start the verification function (see the control panel programming manual).

5.13.1 Starting the identification function from the control panel

1. Start the service mode in the control panel (see: p. 30). The service menu will be displayed.
2. Keep pressing until the cursor shows the “Elements” submenu, then press or . The cursor will show the “All” submenu.
3. Keep pressing until the cursor shows the “Identify elements” function, then press or .
4. Press to confirm that you want to start the identification function (press or to quit).
5. When the message about a detected topology of detection lines is displayed, press to continue the execution of the function. If detection lines of a different topology than the connected ones have been detected, press or . Check the connections and restart the identification function.
6. When the elements connected to the detection line are identified, a message will be displayed on the number of elements connected to each line (L1/2=000 – number of elements connected to the loop type line, A1/2=000 and B1/2=000 – number of elements connected to the radial circuit type line).
7. Press to end the function.

5.13.2 Starting the identification function from the ACSP Soft program

The service mode must be started in the control panel (see: p. 30).

1. Click “Addressable elements” → “Structure and identification” → “Identification” → “Identification start”. The “IDENTIFICATION START” window will be displayed.
2. Select the “IDENTIFICATION” option and click “Run”.
3. When the message: “This identification mode will delete the settings of all addressable elements and zones” will be displayed, click “Run”.
4. The message about a detected topology of detection lines will be displayed. If it is correct, click “CONTINUE”. If detection lines of a different topology than the ones connected to the control panel have been detected, press “ABORT”, check the connections and restart the identification function.
5. The message that the identification is completed will be displayed. The configuration of the detection line will be presented in the “Structure and identification” tab.

6. Access levels

6.1 Level 1 – all users


When there is no key in the key switch or the key is in the neutral position, the user has access at level 1. Available functions:

- acknowledge fire alarms and faults,
- view:
 - fire alarm / fault / event log,
 - tested / disabled system elements (detection lines, zones, groups, addresses [line elements], routing outputs, sounders, inputs, outputs, detectors, manual call points, remote indicators).
 - information on the control panel program.

At level 1, it is possible to operate the system from the control panel and the repeater panel simultaneously.

6.2 Level 2 – authorized users


When the key switch is in the  CONTROL position, the user has access at level 2.

i *At level 2, it is possible to operate the system either from the control panel, or from the repeater panel. If the key switch is in the  CONTROL position both in the control panel and the repeater panel, only the control panel user has access at level 2 (control from the control panel has the priority).*

In addition to the level 1 functions, the following functions are available:

- reset the fire alarm,
- turn the sounders on / off,
- switch the “Personnel present” / “Personnel absent” control panel operating mode,
- enable / disable the alarm signaling delay function,
- enable / disable: detection lines, zones, groups, addresses (line elements), routing outputs, sounders, inputs, outputs, detectors, manual call points, remote indicators,
- test: zones, groups, routing outputs, sounders, inputs, outputs, detectors, manual call points, remote indicators,
- start the diagnostic functions,
- set the control panel clock and the display contrast.

6.3 Level 3 – service mode (control panel programming)

When the key switch is in the  CONTROL position, the user can gain access at level 3 (start the service mode – see: “Starting the service mode” p. 30). After the service mode is started, the functions used to configure the fire alarm system are available. For more information, refer to the control panel programming manual.

i *Getting access to the control panel at level 3 is only possible from the control panel. If the control panel is in the fire alarm condition, getting access at level 3 is impossible.*

When the service mode is started, the supervisory functions of the control panel are not performed (the repeater panel is not supported, alarms and faults are not signaled, etc.).

6.3.1 Access code

Use the code to get access to the control panel at level 3. By default, the **1234** code is programmed in the control panel. Change it as soon as possible. Program any 4 digits in the range from 0 to 9. You can program a new code when you have access at level 3.

7. Repeater panel

You can connect one APSP-402 repeater panel to the control panel. The panel can be mounted on the protected premises within 1000 m from the control panel.

7.1 Features

- Remote control at levels 1 and 2 same as from the control panel.
- Connection to the control panel via the RS-485 communication bus.
- LEDs to indicate the system status.
- LCD display to:
 - display information about the alarm,
 - display messages,
 - view the list of current disablements, tests and faults,
 - view the alarm and event log
- Built-in sounder.
- Integrated APS-318 switching-mode power supply (main power source).
- 12 V / 17 Ah battery slot (backup power source).
- Automatic switchover to backup power source (battery) in the event of main power source failure.

7.2 Description of the repeater panel

The repeater panel is offered in the same enclosure as the control panel (see: "Enclosure" p. 7).

7.2.1 Mainboard module

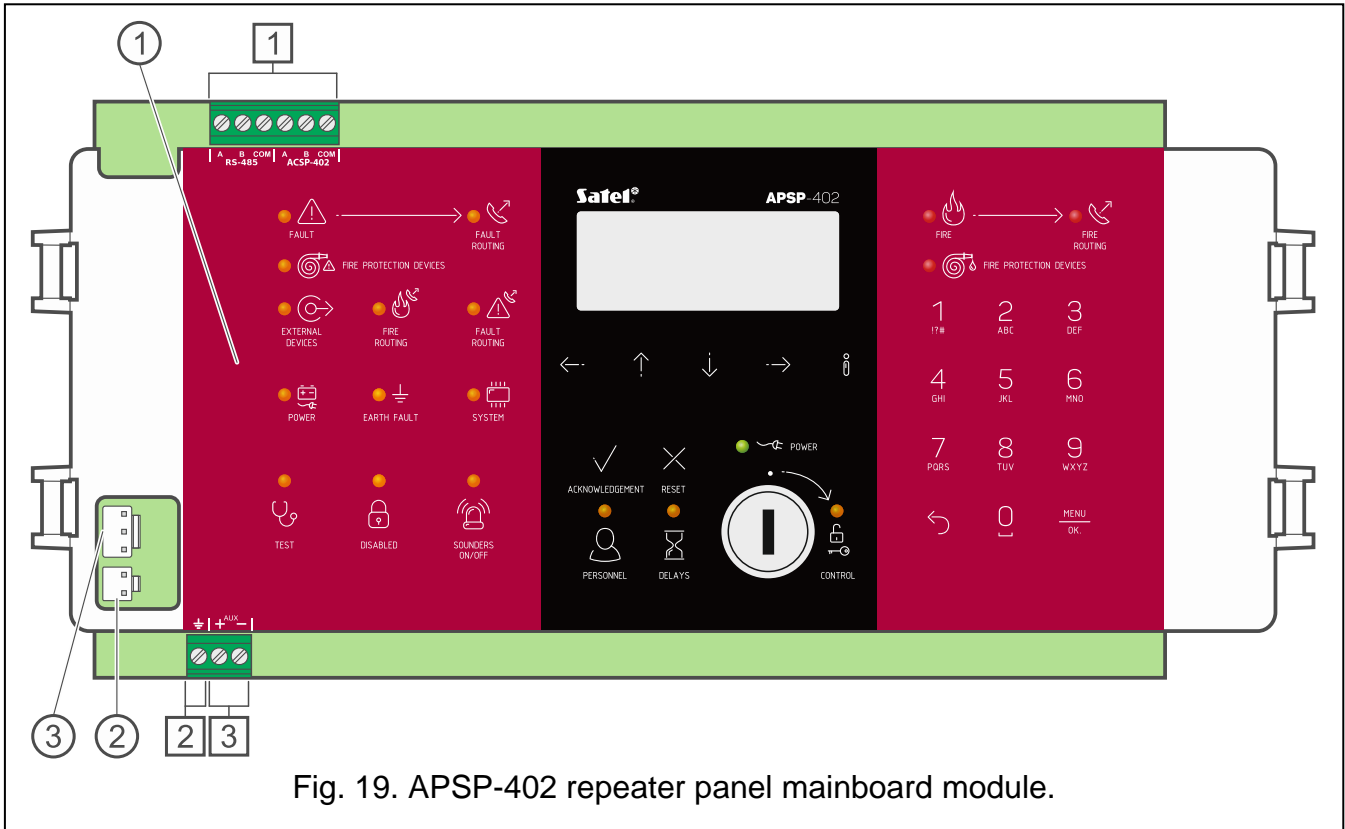


Fig. 19. APSP-402 repeater panel mainboard module.

- ① front panel.
- ② power supply connector.
- ③ battery connector.

Terminals

- ① RS-485 communication bus terminals (A and B – bus lines, COM – common ground):
 RS-485 - terminals for connecting the ACSP-ETH or ACSP-RSI module,
 ACSP-402 - terminals for connecting the control panel.
- ② power output dedicated to the ACSP-ETH or ACSP-RSI module.

7.2.2 Front panel

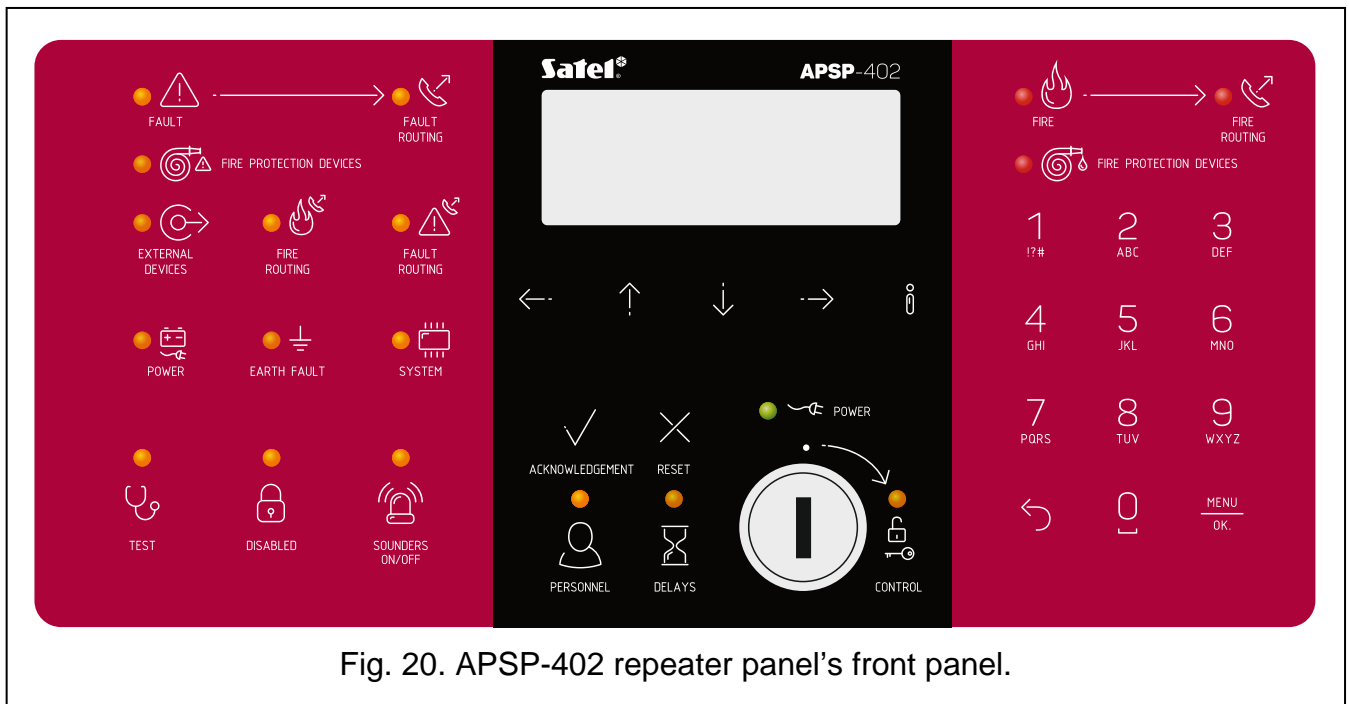



Fig. 20. APSP-402 repeater panel's front panel.

LED indicators

The LED indicators operate in the same way as in the control panel (see: “LED indicators” p. 10). The only difference is the yellow  CONTROL LED which operates as follows:
ON – access level 2 (control from the repeater panel).
flashing – access level 2 (control from the control panel).

Buttons

The buttons are used to operate the system in the same way as in the control panel after the personnel have gained access at level 1 or 2 (see: “Buttons” p. 12).

Key switch

The key switch is used to gain access at level 2 (see: “Access levels” p. 32).

Display

The display is used to operate the system in the same way as in the control panel after gaining access at level 1 or 2 (see: “Display” p. 13). If the control panel is in the quiescent condition or the fire alarm condition, the same information is presented on both displays, and the same functions are available in the user menu (level access 1 and 2).

7.3 Installation of the repeater panel



Disconnect power before making any electrical connections.

7.3.1 Mounting and connecting

1. Mount the repeater panel in the same way as the control panel (see: p. 19).
2. Connect the repeater panel to the RS-485 bus (see: p. 27).
3. Connect the main power source of the panel (see: p. 28).
4. Connect the backup power source of the panel (see: p. 29).

8. Checking the control panel and the repeater panel



In order to check the APSP-402 repeater panel for proper functioning, run all the tests described below and monitor the signaling. In order to check if the loss of main and backup power source is properly detected, disconnect the 230 VAC power and the battery from the panel.

8.1 Checking the system status

The control panel should be in the quiescent condition after it is started. At access level 1, only the green POWER LED should be ON in the control panel.

1. Check if the control panel is properly powered (the green POWER LED should be ON).
2. Make sure that the control panel is signaling no faults, disablements or alarms (no LED should be ON or flashing, except for the green POWER LED).
3. Press and hold for 3 seconds to test the LED indicators and acoustic signaling of the control panel. All LEDs should start flashing and the acoustic signaling should be heard.
4. Check if the current date and time is shown on the control panel display.


8.2 Checking the fault detection

8.2.1 No main 230 VAC power

1. Disconnect the 230 VAC mains supply.
2. After about 25 minutes the control panel should switch to the fault warning condition:
 - green POWER LED is flashing,
 - yellow POWER LED is flashing,
 - yellow FAULT LED is ON,
 - yellow FAULT ROUTING LED is flashing / ON (if the output for fault warning routing is enabled),
 - information about the number of detected faults is shown on the LCD display (details of the fault are available when the “Faults” function is started in the user menu),
 - acoustic signal is generated by the control panel.
3. Press ACKNOWLEDGEMENT to silence the control panel acoustic signaling.
4. Connect the 230 VAC mains supply.




8.2.2 No backup power (battery)

1. Disconnect the battery.
2. After about 15 minutes the control panel should switch to the fault warning condition:
 - yellow POWER LED is flashing,
 - yellow FAULT LED is ON,
 - yellow FAULT ROUTING LED is flashing / ON (if the output for fault warning routing is enabled),
 - information about the number of detected faults is shown on the LCD display (details of the fault are available when the “Faults” function is started in the user menu),

- acoustic signal is generated by the control panel.
3. Press  ACKNOWLEDGEMENT to silence the control panel acoustic signaling.
 4. Connect the battery.




8.2.3 Detection line break

Perform the following steps for at least one detection line.

1. Break the circuit.
2. The control panel should switch to the fault warning condition:
 - yellow  FAULT LED is ON,
 - yellow  FAULT ROUTING LED is flashing / ON (if the output for fault warning routing is enabled),
 - information about the number of detected faults is shown on the LCD display (details of the fault are available when the “Faults” function is started in the user menu),
 - acoustic signal is generated by the control panel.
3. Press  ACKNOWLEDGEMENT to silence the control panel acoustic signaling.
4. Bring the circuit back to its normal state.




8.2.4 Detection line short-circuit





Perform the following steps for at least one detection line.

1. Short the circuit.
2. The control panel should switch to the fault warning condition:
 - yellow  FAULT LED is ON,
 - yellow  FAULT ROUTING LED is flashing / ON (if the output for fault warning routing is enabled),
 - information about the number of detected faults is shown on the LCD display (details of the fault are available when the “Faults” function is started in the user menu),
 - acoustic signal is generated by the control panel.
5. Press  ACKNOWLEDGEMENT to silence the control panel acoustic signaling.
6. Bring the circuit back to its normal state.

8.2.5 Breaking / shorting other circuit









Run the same test for breaking and shorting the circuits connected to the outputs controlling the conventional sounders, routing outputs and inputs. The control panel should switch to the fault warning condition:

- yellow  FAULT LED is ON,
- yellow  FAULT ROUTING LED is flashing / ON (if the output for fault warning routing is enabled),
- information about the number of detected faults is shown on the LCD display (details of the fault(s) are available when the “Faults” function is started in the user menu),
- acoustic signal is generated,
- yellow  SOUNDERS LED is flashing (fault of the output controlling the conventional sounders),

- yellow  FIRE ROUTING LED is flashing (fault of the fire alarm routing output),
- yellow  FAULT ROUTING LED is flashing (fault of the fault warning routing output),
- yellow  FIRE PROTECTION DEVICES LED is flashing (fault of the output controlling the fire protection devices),
- yellow  EXTERNAL DEVICES LED is flashing (fault of the input supervising the operation of external devices).

8.3 Checking the alarm detection

Perform the following steps for at least one detection zone.

1. Trigger an alarm in the zone according to the requirements of the alarm variant (description of the alarm variants can be found in the control panel programming manual).
2. The control panel should switch to the fire alarm condition:
 - red  FIRE LED is flashing,
 - red  FIRE ROUTING LED is flashing / ON if the second stage alarm is generated (if the output for fire routing is enabled),
 - red  FIRE PROTECTION DEVICES LED is flashing / ON if the second stage alarm is generated (if the output controlling the fire protection devices is enabled),
 - information about the alarm is shown on the LCD display (details are available after pressing ),
 - acoustic signal is generated by the control panel,
 - sounders are activated (signaling settings are configurable).
3. Press  ACKNOWLEDGEMENT to silence the control panel signaling (red  FIRE LED will turn ON).
4. Turn the key switch to the  CONTROL position to get access to the control panel at level 2.
5. Press  RESET to reset the alarm.

9. Maintenance

The fire alarm system requires a regular maintenance. The periodic checks of the system should be carried out at least every 6 months. For spaces with harsh environment (e.g. due to dustiness, aggressive conditions which may cause corrosion, etc.), the frequency of periodical checks should be increased.

As part of maintenance:

1. Run a test of the control panel LEDs and acoustic signaling.
2. Read the event log.
3. Check the control panel battery as recommended by the manufacturer.
4. Turn off the 230 VAC power to check if the control panel automatically switches to the backup power source.
5. Repeat the steps 1, 3 and 4 for the repeater panel if it is connected to the control panel.
6. Perform a visual control of all detectors and manual call points.

7. Run a test of detectors and manual call points.
8. Run a test of inputs and outputs on the control panel mainboard and in the MIO-400 module(s).
9. Run a test of addressable and conventional sounders.
10. Run a test of routing outputs.

9.1 Fuse replacement in the battery charging system

The battery charging system in the ACSP-402 control panel and the APSP-402 repeater panel is protected by a SSTC 3.5 slow-blow fuse, manufactured by Bel Fuse, rated at 3.5 A. Location of the fuse is shown in Fig. 21. If the fuse blows, replace it with a new one. The fuses are available in product portfolio offered by SATEL.

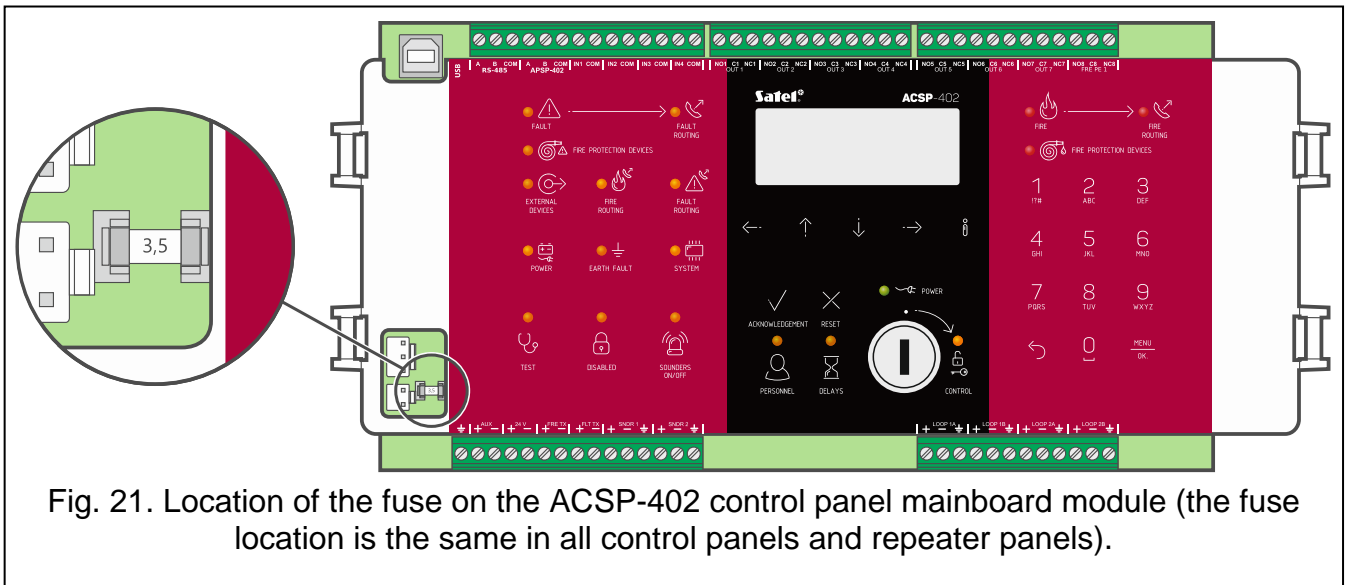


Fig. 21. Location of the fuse on the ACSP-402 control panel mainboard module (the fuse location is the same in all control panels and repeater panels).

10. Specifications

10.1 Control panel

Supply voltage	230 VAC±15% 50-60 Hz
Maximum current consumption from 230 V mains	300 mA
Power supply overcurrent protection:	
slow-blow fuse.....	3.15 A
Current parameters of integrated power supply (acc. to EN54-4):	
I _{max a}	1.6 A
I _{max b}	1.6 A
Backup power source:	
internal lead-acid battery	12 V / 17 Ah
external lead-acid battery	12 V / ≤33 Ah
Backup battery life	72 h
Maximum battery charging current	1.4 A
Battery charging system overcurrent protection:	
slow-blow fuse.....	3.5 A
Maximum battery internal resistance (with wires and terminals in circuit).....	1.1±10% Ω

Current consumption from battery – quiescent condition	220 mA
Current consumption from battery – fire alarm condition.....	320 mA
Current consumption from integrated AC power supply – quiescent condition	200 mA
Current consumption from integrated AC power supply – fire alarm condition.....	300 mA
Maximum number of addressable detection lines:	
loop	2
radial circuit	4
Maximum addressable detection line resistance.....	100 Ω (2 x 50 Ω)
Maximum number of line elements in addressable detection line	128
Recommended number of line elements in addressable detection line – radial circuit	32
Maximum number of detectors in conventional detection line.....	32
Maximum number of manual call points in conventional detection line.....	10
Maximum current in detection line	200 mA
Maximum resistance of sounder, alarm and fault circuits.....	75 Ω (2 x 37.5 Ω)
Number of conventional sounder circuits	2
Working voltage in conventional sounder circuit	24 VDC \pm 15%
Permissible current in conventional sounder circuit	180 mA
End-of-line resistor in conventional sounder circuit.....	10 k Ω \pm 5%
Number of fire alarm routing circuits	1
Working voltage in fire alarm routing circuit	24 VDC \pm 15%
Permissible current in fire alarm routing circuit	180 mA
End-of-line resistor in fire alarm routing circuit.....	10 k Ω \pm 5%
Number of fault warning routing circuits	1
Working voltage in fault warning routing circuit.....	24 VDC \pm 15%
Permissible current in fault warning routing circuit	180 mA
End-of-line resistor in fault warning routing circuit.....	10 k Ω \pm 5%
Number of programmable relay outputs.....	8
Electrical parameters of relay outputs.....	1A / 30 VDC (NO or NC)
Number of programmable supervising inputs.....	4
End-of-line resistor in supervising input circuit.....	10 k Ω \pm 5%
Alarm resistor in supervising input circuit.....	1 k Ω \pm 5%
AUX power output (for powering the ACSP-ETH and ACSP-RSI modules):	
normal condition	18 VDC +5%, -15%
AC mains failure.....	12 VDC +15%, -20%
+24 V power output.....	24 VDC \pm 15%
+24 V power output load capacity.....	200 mA
Output for communication with repeater panel and CSP-ETH module	serial transmission
End-of-line resistor on terminals for communication with repeater panel.....	100 Ω
Output for communication with PC computer (service)	USB type B
Clock battery	3 V (CR2032)
External alarm routing delay	0...10 min
Alarm counter capacity.....	9999
Event log capacity.....	8999
Enclosure protection rating	IP30

Maximum humidity	93±3%
Operating temperature range.....	-5...+40 °C
Transportation temperature range	-25...+55 °C
Dimensions	324 x 382 x 108 mm
Weight without battery	2721 g

10.2 APSP-402 repeater panel

Supply voltage	230 VAC±15% 50-60 Hz
Maximum current consumption from 230 V mains.....	250 mA
Power supply overcurrent protection:	
slow-blow fuse.....	3.15 A
Current parameters of integrated power supply (acc. to EN54-4):	
I _{max a}	1.6 A
I _{max b}	1.6 A
Backup power source:	
internal lead-acid battery	12 V / 17 Ah
Backup battery life	72 h
Maximum battery charging current	1.4 A
Maximum battery internal resistance (with wires and terminals in circuit).....	1.1±10% Ω
Current consumption from battery – quiescent condition	65 mA
Current consumption from battery – fire alarm condition	75 mA
Current consumption from integrated AC power supply – quiescent condition	60 mA
Current consumption from integrated AC power supply – fire alarm condition	70 mA
Enclosure protection rating	IP30
Maximum humidity	93±3%
Operating temperature range.....	-5...+40 °C
Transportation temperature range	-25...+55 °C
Dimensions	324 x 382 x 108 mm
Weight without battery	2625 g