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Fire curtain El60 | El120 Connection manual for control panel SCP-03

Connection manual for control panel SCP-03



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1. INTRODUCTION

This manual describes the operation of the conventional SCP-03 fire alarm control panel. The manual also covers remote control of the control panel by means of a repeater panel.

NOTE: Please read this manual before starting the installation, in order to avoid errors that may result in malfunction or even damage to the equipment, any connections may only be made by a person with appropriate authorization.

2. CONNECTING THE CONTROL PANEL AND ITS POSSIBLE USE

The variant configuration presented in Fig. 1 shows the possibilities of using SCP-03 control units. Fig. 2 shows the mainboard of the control unit, and Fig. 3 shows the wiring diagram as recommended by the manufacturer, enabling the use of the SCP-03 fire alarm control panel to control passive fire devices such as fire gates and smoke curtains. This solution uses both detection lines with connections to local detectors and FAS buttons, as well as facility fire alarm systems (FAS) also known as fire signal systems (FSS).

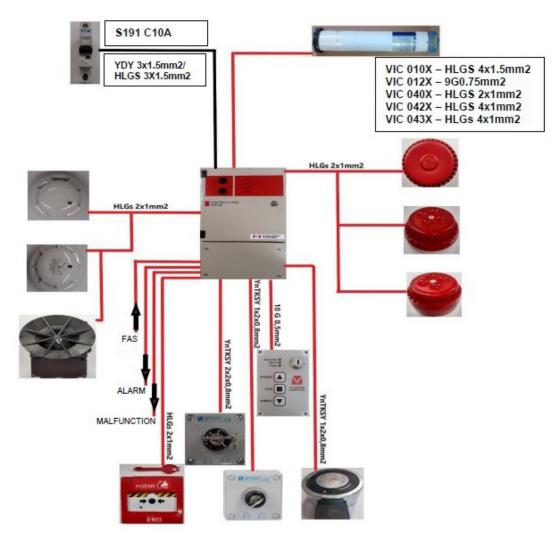


Fig. 1 Manufacturer's recommended configuration



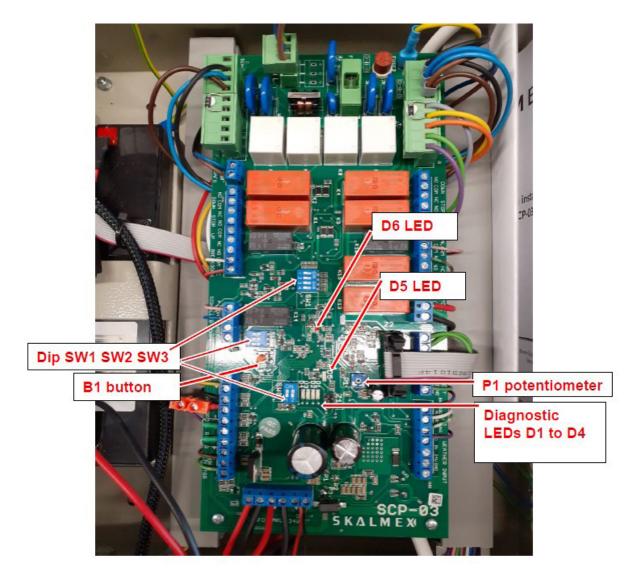


Fig. 2 SCP-03 panel's main board

2.1 Electrical diagram of the recommended configuration

When laying the cables, remember to keep the appropriate distance between the low voltage cables and the 230 VAC power cables. Avoid placing the signal cables in parallel to the 230 VAC power cables in their immediate vicinity.

The measuring circuits should be terminated with a 4.7 k Ω resistor (the resistor should be screwed to the terminals of the last device in the circuit). If a zone is not used, the resistor should be screwed directly to its terminals.



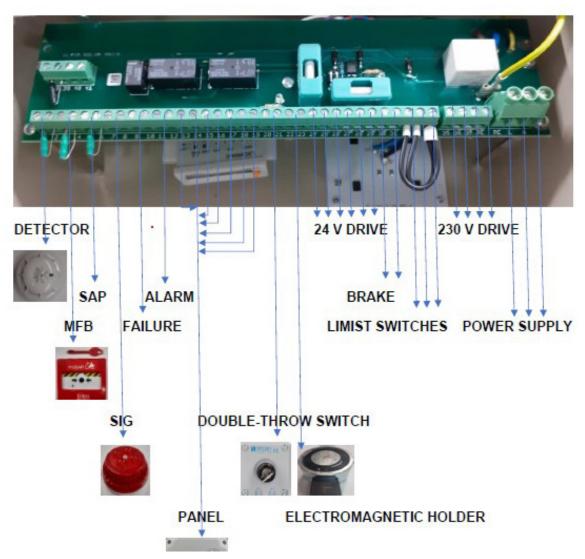


Fig. 3 Schematic diagram of connecting the SCP-03 system – recommended configuration.

All connections are described on pages from 7 to 15



2.2 Connection: Remote panel, 3-position switch

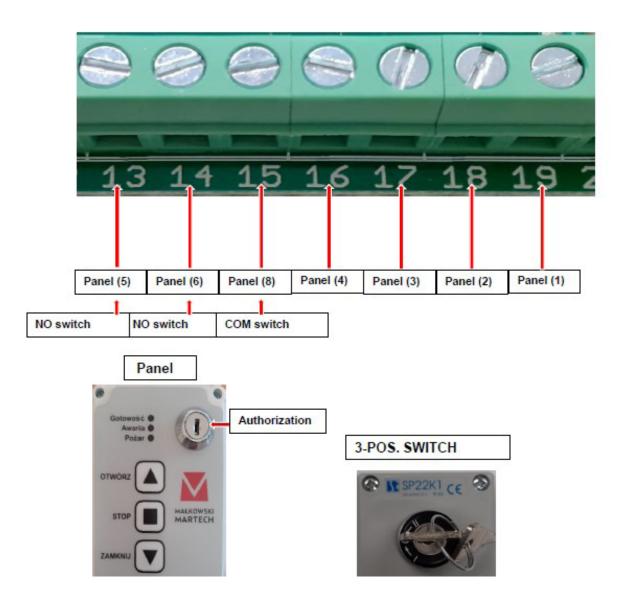
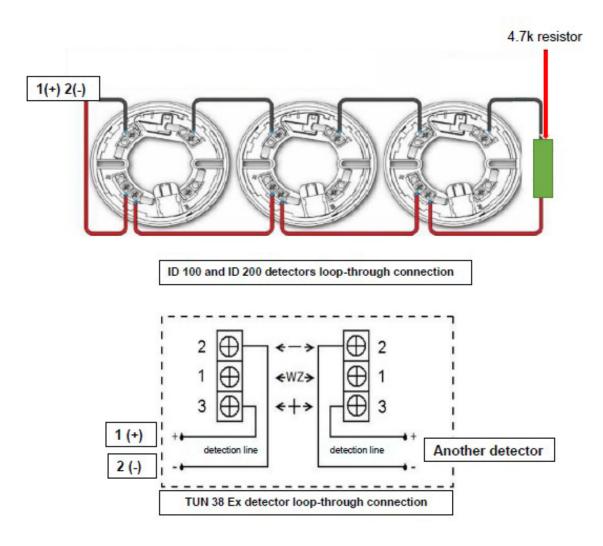


Fig. 4 Connection remote panel

Note: The buttons on the panel only work when the authorization key is turned



2.3 Connection of detectors





Note: The total number of detectors connected to the input must not exceed 6.



2.4 Connection of manual fire buttons (MFB)

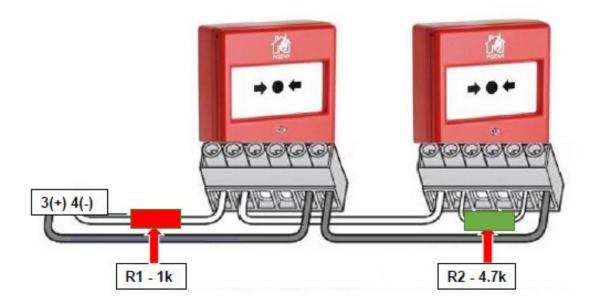




Fig. 6 Connection of MSBs to the control panel

Note: The total number of MSBs connected to the input cannot exceed 4.

MSB – input of the manual signal button input, i.e. the alarm button. You can connect several such buttons by connecting them in parallel to each other. At the beginning of the first MSB, a 1k resistor (R1) should be connected in series to the fire alarm control panel. At the end of the line, always connect a 4.7 k Ω resistor (R2) in parallel to the button.



2.5 Connecting fire alarm signal FAS (FSS) and connecting Outputs

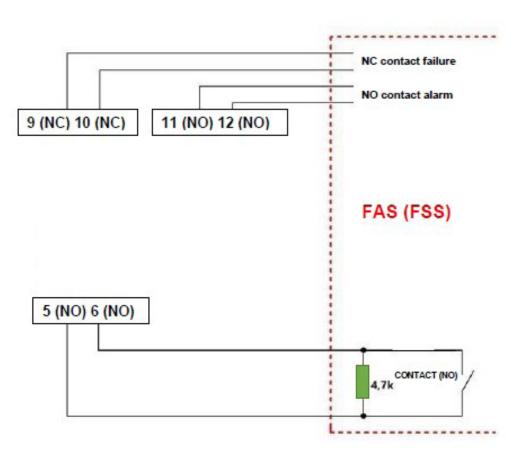


Fig. 7 Activation diagram for FSS/FAS and/or BMS control systems

Placing resistors at the end of the line connecting the SCP-03 control panel to the site fire alarm system ensures both correct operation of the devices and monitoring of the continuity of the connecting line.



2.6 Connection of signalling devices

The SCP-03 control panel is equipped with an output for connecting signalling devices. As standard, we use 3 types of signalling devices: acoustic (A), acoustic-optical (B) and optical (C).

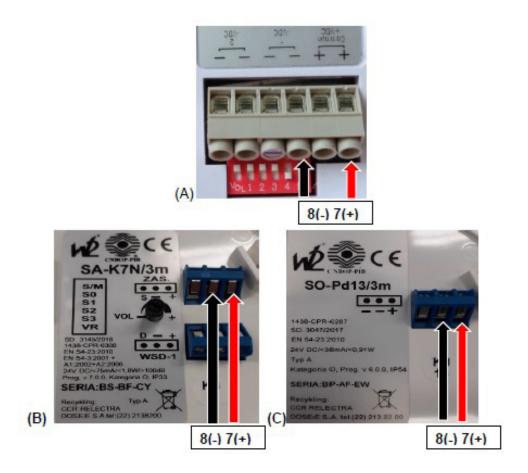


Fig. 8 Connecting the signalling devices to the control panel

The DIP-switches in the acoustic signal, marked with numbers from 1 to 5, are used to set the type of signalling (1 means that the switch is in the ON position). The acoustic-optical signal has a VOL potentiometer to set the sound volume, the optical signal has no additional settings.



Fig. 9 Description of the acoustic signalling device configuration

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2.7 Connecting an electric holder, key switch, motors powered by 24 VDC and 230 VAC

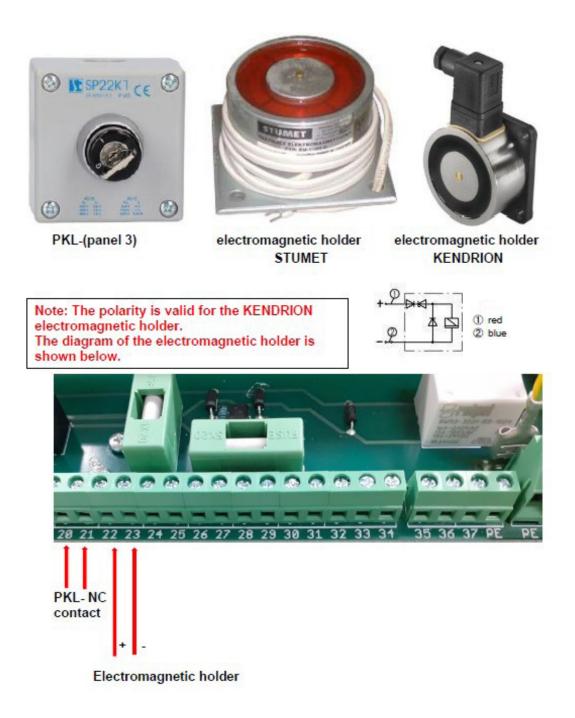


Fig. 10 A combination of an electromagnetic holder and a key switch used for tests and process locks.



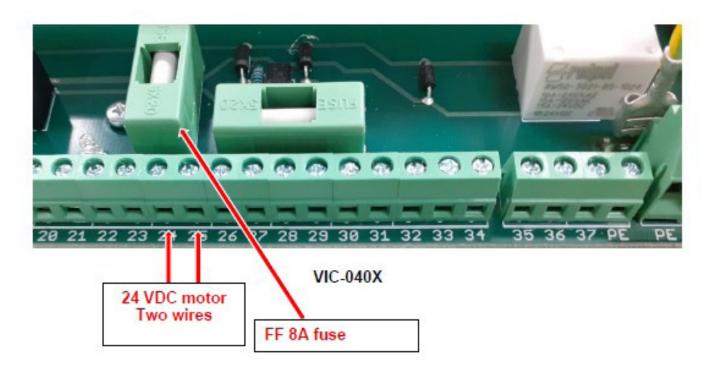
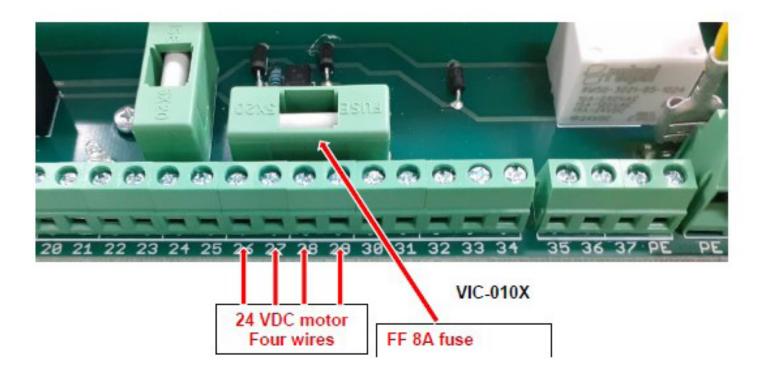
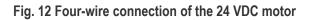


Fig. 11 Two-wire connection of the 24 VDC motor

In order to change the direction of rotation of the motor, swap the wires at the terminals 24/25





Terminal: 26- (grey), 27- (black), 28- (brown/yellow-green), 29- (yellow-green/brown) To change the direction of motor rotation, change the wires on terminals 28/29.



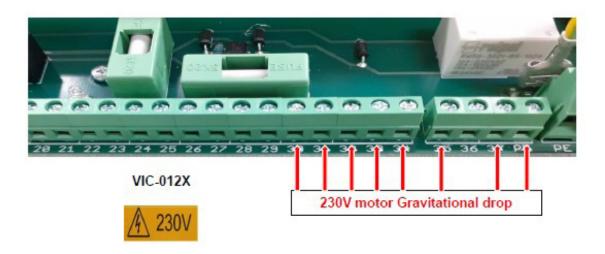


Fig. 13 230 VAC motor connection (gravitational drop)

Terminal: 30-(4), 31-(5), 32-(8/7), 33-(7/8), 34-(6), 35-(1), 36, 37-(3/2), PE-PE

NOTE: with drives with gravitational drop, do not connect the wire to terminal 36 (insulate it and leave the terminal free) Changing of the motor rotation direction takes place on terminal 37, wire no. 2 or 3 and on terminals 32, 33 - wires no. 7 and 8.

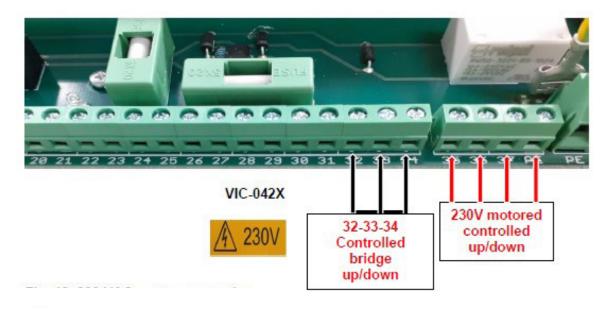


Fig. 14 230 VAC motor connection

Terminal: 35-(blue) 36-(black-br) 37-(br-bl) PE-PE. The direction of motor rotation is changed by changing the wire connections on terminals 36/37.



3. CONNECTING THE SUPPLY VOLTAGE

3.1 Main power supply

The main source of power supply for the control panel is the AC power network with a voltage of 230 V and a frequency of 50 Hz. The power supply should be connected to a 230 VAC circuit which is always energized (Fig. 1).

Note: Before connecting the power supply to the 230 VAC circuit, that circuit must be de-energized.

In order to connect the device to the power supply, perform the following steps in sequence:

- 1. Pass the cable through the cable gland.
- 2. Screw the 230 VAC power supply wires to the appropriate terminals (the phase wire to the L terminal, the neutral wire to the N terminal, and the protective wire to the PE terminal).

3.2 Emergency power supply

As a backup power supply, 12 V sealed lead-acid batteries should be used. As standard, batteries with a capacity of 2 x 2.3 Ah are installed in the control panel housing. The control panel can also work with a battery with a maximum capacity of 34 Ah (in an external battery container).

The battery should be connected to the appropriate leads (battery "positive" terminal to the red, "negative" terminal to the black lead).



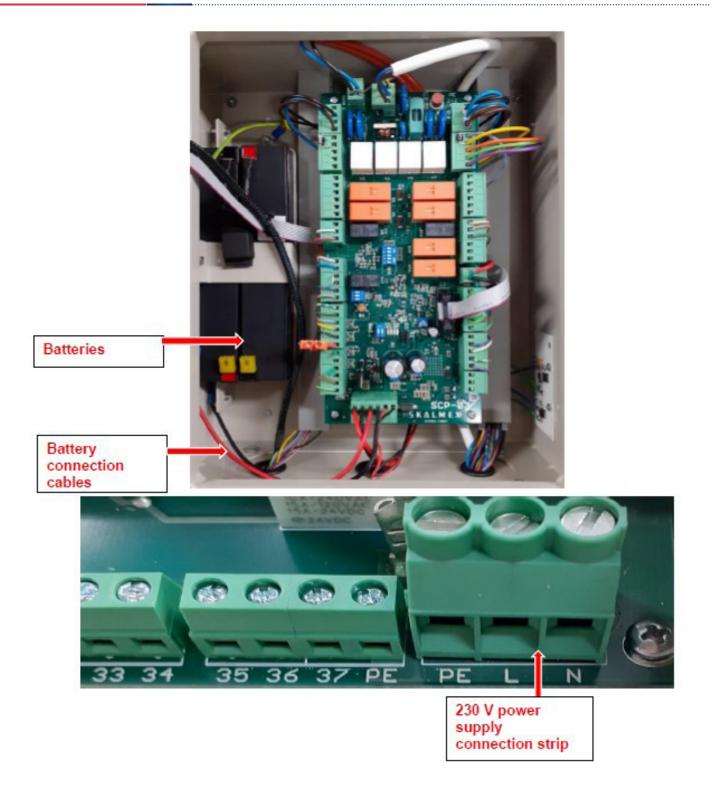


Fig. 15 Marking of 230 VAC supply voltage connection points

Depending on the used drive, it may be necessary to connect the 230 VAC power supply in front of the main switch.



4. DESCRIPTION OF THE FRONT PANEL

The following items are located on the front panel of the control panel or the repeater panel

- signalling LEDs (SIEĆ/AKUMULATOR/ALARM/AWARIA [mains/battery/alarm/failure])
- buttons for operating the drive (closing/opening)
- remote LED panel (Gotowość/Awaria/Pożar [ready/failure/fire])
- buttons for operating the drive (OTWÓRZ/STOP/ZAMKNIJ [open/stop/close])
- Key switch for locking the button functions



Fig. 16 Front panel of the SCP-03 control panel

During normal operation, the green LED described as SIEĆ (MAINS POWER) is lit on the front panel. The control panel can signal the states described below, which are the result of actions and events occurring during the operation of the fire protection system.

Basic signals

- Sieć (Network) (mains supply operation)
- Akumulator (Battery) (battery operation if lit, battery damage if flashing)
- Alarm (control panel alarming state)
- Awaria (Failure) (failure status if lit, testing status if flashing)



4.1 LED diodes

Additional signals

The LEDs on the control unit board (page 4) indicate the type of error that occurred. If more than one error occurs at the same time, the LEDs change their state at intervals of about 4 seconds, displaying the next error (1-means the LED is on).

If only the fault LED on the housing is lit and no LED indicating the type of error is on, then there is a failure of the main power supply.

Error c	ode			Error type
D1 D2 D3 D4				
0	0	0	0	No errors
1	0	0	0	Motor brake line or fuse damaged
0	1	0	0	Motor brake line or fuse damaged 2
1	1	0	0	Short circuit in the input line of the SAP signal
0	0	1	0	Break in the input line of the SAP signal

1	0	1	0	A short circuit in the fire detector line	
0	1	1	0	Break in the fire detector line	
1	1	1	0	Short circuit in the RESET line of the manual smoke exhaust switch	
0	0	0	1	Break in the RESET line of the manual	
				smoke exhaust button	
1	0	0	1	Short circuit in the SET line of the manual smoke exhaust switch	
0	1	0	1	Break in the SET line of the manual smoke exhaust switch	
1	1	0	1	Short circuit in the line of manual fire signal button	
0	0	1	1	Break in the line of manual fire signal button	
1	0	1	1	Blown fuse or a damaged mosfet in the line of the smoke exhaust flap motor	
0	1	1	1	Break in the line of the smoke exhaust flap motor	
1	1	1	1	Battery error, voltage too low or too high. In conjunction with the blinking blue LED on the front panel, indicates that the battery is damaged or disconnected.	



5. OPERATION

Brief description of the main functions of the control panel:

- · Disabling the electromagnetic brakes of the fire gate motors during an alarm
- Manual drive control of the gate (up/down) Input for speed control of the fire gate motors disconnecting the 230 VAC power supply
- · Opening the smoke exhaust flap when the control panel alarms
- Re-trying to open the damper during an alarm (Option)
- Locking the possibility of remotely resetting the alarm in the manual smoke exhaust button (option)
- Manual control of the smoke exhaust damper (ventilation)
- Maintaining the state of ventilation buttons (option)
- Automatic closing of the damper after a set time (ventilation option)
- Automatic damper closing after power failure (option)
- Limitation of the damper extension (time adjustable with a potentiometer, optional)
- Automatically closing the flap caused by the signal from the wind and rain sensor
- Triggering an alarm by damaging the sensor line or buttons (option)
- Transmission of alarm and fault signals to external systems via relay contacts
- Activation of a relay for the external optical or acoustic signalling during an alarm
- Activation of the relay of the electromagnetic door lock during an alarm
- Manual switching to the testing mode by long pressing (10-12s) the button on the control panel board.
- Deleting the alarm state by short
- pressing the button on the control panel board (<3s)

NOTE-All functions related to the alarm state have a higher priority than other functions of the control unit.

In SCP-03 control panel, access to the configuration and readout elements of the control panel's status has been divided into 2 levels.

Access level 1 - includes signalling and buttons on the main cover of the control panel, access is not restricted.

Access level 2 – includes all configuration switches, error reading LEDs and all control panel I/O terminals, access is limited by a key lock. Only authorized persons and persons especially responsible for security have access to this level.

5.1 LEVEL 1

At this level, 4 LEDs are available to signal the status of the control panel:

- SIEĆ (NETWORK) (green) if it is on, the control panel is powered from 230 VAC
- AKUMULATOR (BATTERY) (blue) if it is on, the control panel is powered from the battery, if it is flashing, the battery is damaged or worn out.
- ALARM (red) if it is on, the control panel is in alarm state
- AWARIA (FAULT) (yellow) if it is on, the control panel has detected a fault. If it is flashing, the control panel is in the test state.

There are also gate control buttons (up/down).



5.2 LEVEL 2

At this level, the following are available: (Technical Support)

- a) Configuration switches SW1, SW2, SW3 (page 4, fig. 2)
- b) P1 control potentiometers (page 4, fig. 2)
- c) Diodes for reading errors D1, D2, D3, D4 (page 4, fig. 2)
- d) Button B1 (page 4, fig. 2)
- e) Test LED D5 (page 4, fig. 2)
- f) Hardware watchdog LED D6 (page 4, fig. 2)

RE A

SW1.1	SW1.2	SW1.3	Time value minutes
0	0	0	0
1	0	0	6
0	1	0	15
1	1	0	60
0	0	1	90
1	0	1	180
0	1	1	240
1	1	1	360

The first 3 switches are used to set the ventilation time

The time may be shortened by 2 minutes if the SW2.1 dip switch is turned off

Dip switch SW3.2

a) setting the DIP switch SW3.2 to ON applies to SAP signal with NC output. The connection drawing is given on page 21.

b) setting the DIP switch SW3.2 to OFF applies to SAP signal with NO output.

RE B

P1 – Potentiometer to adjust the time of incomplete opening of the smoke exhaust damper.

(For the correct recalculation of the smoke damper opening time, a minimum gap should be kept between successive incomplete openings, min. 8 minutes).



RE C

LEDs for signalling emergency states.

RE D

Button B1 is used to:

- Resetting the alarm state by a short press (<3s)

- Entering the control panel's test mode by long pressing the button (10-12s).

- If pressed for 5 seconds when the control unit is connected to the power supply, it turns off or on the brake fault signalling. Turning off will be signalled by blinking all four error LEDs (D1-D4), and turning it on by blinking one LED (D1).

This option is useful when the motors to be connected have no brakes or only the smoke exhaust flap is connected.

RE E

During normal operation of the control panel, the D5 diode is pulsating every second.

RE F

D6 LED signals the processor reset with the hardware supervisor.

6. INSTALLING THE CABLING

Detection lines should be routed in accordance with the applicable rules for cable routing.

The lines should not be installed along high-power cables, they must be continuous, and terminated with line terminating resistors (4k7).

All detection lines, with the exception of the smoke detector, require, in addition to the end of line resistor, connection in series with the contact switching the resistor (1k).

In most MSBs, RPO buttons, the above resistor is already installed, if it is not installed, after pressing the manual signalling device's button, you will receive a failure signal instead of an alarm. In such a case, the above mentioned resistor, which is delivered with the control panel, should be added in series with the contact.

Before connecting the cables to the control panel, make sure that the polarity of the cables has not been reversed.

For the execution of detection lines, it is recommended to use certified cables with a minimum diameter of 0.8 mm.

Pay attention to the continuity of the shielding cable in order to eliminate the influence of interference.

The cables are led into the switchboard from below through the cable entries.

It is recommended that the detection line wires are placed as far apart as possible from the 230 VAC cable supplying the control unit and the door motor cables and the fire damper.

Directly on the electromagnetic brake terminals of the gate, a diode attached to the control panel should be installed, which additionally protects the control panels against overvoltage if the connector is accidentally pulled out during the control panel operation.



The LED diode should be installed as follows:

Terminal # 4 - Cathode

Terminal # 5 – Anode

Particular attention should be paid to connecting the smoke exhaust damper, the terminals do not have a specific polarity because it changes depending on the direction of travel of the damper. After connecting the smoke exhaust damper wires, trigger the alarm and check whether the damper starts to open.

If not, change the positions of the wires by reversing them.

The last step is to install the end of line resistor (4k7) in parallel with the flap wires, as close as possible to the smoke damper.

The method of connecting the ventilation buttons and manual control of the fire gate is the same, the active state of the input is during a short-circuit to GND, do not connect these inputs to any other voltages.

To the output of the information LEDs, connect the LEDs with the anode (+) to the appropriate output (mains, alarm or failure), connect the cathodes (-) of all LEDs together and connect to the GND terminal.

The supply voltage of the additional LEDs is 24 VD

7. CONFIGURATION AND COMMISSIONING

Recommended activities before turning on the control panel:

- · Check the wire installation for short circuits or interruptions;
- Check compliance of polarity (+, -) of wires with markings in the control panel;

Check the presence of termination resistors (4k7) at the ends of the line and on unused control panel inputs; Check the presence of a protective diode on the electromagnetic brake terminals (terminals 4,5); Configuration of the functionalities settings using switches on the control panel board -If necessary, remove the tin jumper located behind the connector "MOTOR CONT-ROL", and connect

 A device for controlling the speed of the fire gate opening, which can break the power supply circuit of the relays controlling the gate up/down travel.

Recommended actions after switching on the control panel:

In the event of a fault state signalling, read the error codes.

Remove any faults so that the control panel signals the quiescent mode and no faults. Test the control panels by turning on the test mode. Check if the control panel behaves correctly in the alarm mode.

Check the operation of other external devices connected to the control panel (weather detector, acoustic and/or sound signalling device)

After turning on the control panel, you should not:

Change settings with configuration switches

Tighten and unscrew the wires, remove and insert the plugs with the wires connected to the control panel.



8. PROCEDURE IN CASE OF FAILURE

- 1. Read information from LEDs 1 to 4 on the motherboard.
- 2. Record the information about the fault.
- 3. Remove the damage.
- 4. If the damage is restored without D1 to D4 signalling, call the service.

Note: Do not call the service in the event of signalling a 230 VAC supply failure, and if the service personnel finds that there is no voltage in the power network.

8.2 Setting the time relay (option - delayed SAP)

- Press the K2 button until the selected digit starts flashing
- ▶ Use the K3 button to set the correct figure. Switching to the next digit takes place after pressing the K2 button again
- A blinking dot means the selection of time units 000 time counted in full seconds 00.0 time counted in seconds with an accuracy to tenths of it e.g. 0.4seconds 0.00 time counted in seconds with accuracy to hundredths, e.g. 4.23 seconds 000. time counted in minutes to enter the settings menu, press and hold the K1 button (buttons description is visible after opening the housing) Settings:
- program P-1 After triggering, the relay will switch on for the set time. Channel C turns on the relay and resets the counter during the countdown. Channel E turns on the relay and stops the counter during the countdown during the countdown. Channel A turns on the relay. Re-establishing the signal during the countdown does nothing
- Program P-2 After triggering, the module will start counting the set time and then activate the relay for the set time channel E The program works once after power-up (starts immediately), to restart the timer, power the module again channel A The program works after feeding a signal to it, after the countdown is over, giving the signal again starts the measurement again channel C The program works after supplying signal, re-supplying the signal restarts the program (even during the countdown)
- Program P-3 The relay will operate in a loop, the time of switching on and pause can be set freely. The program starts immediately after supplying the power, supplying the signal changes the relay's operating mode and resets the counter.
- Program P-4 After triggering, the relay will turn on for the set time, during the countdown, another signal will restart the counter

Note: The P1 program is assigned to the time trial by the manufacturer and should not be changed,

The time is set to 0s, use only the K2 and K3 buttons to change the time setting.

K1 – left

K2 – middle

K3 – right



9. TECHNICAL DATA

Basic mains power supply with a voltage of	230 VAC + 10%, -15% 50 Hz
Overall dimensions	260x312x125 mm
Total weight	<7 kg
The tightness of the housing	IP 42
Operational reliability	Re 1000
Environmental class	2
Working temperature range	from –5°C to +50°C
Permissible operating relative humidity	95% at 40°C
Transport temperature range	–20°C to +50°C
Backup battery in the control panel housing	2x 13.8V 2x 2.3Ah
Supply voltage of external devices, non-stabilized	24V +70% -10%
Supply voltage of external devices stabilized	24V +5% -12%
Permissible current consumption from the external devices power supply ou	
Power output stabilized current max	<500mA
Non-stabilized power supply output (signalling) max current	<400 mA
Maximum current of the smoke exhaust flap motor - continuous 4A impulse	<2s 8A
Maximum fire gate motor current	6A at 230V
The maximum current of the electromagnetic brake of the fire gate	600mA
The maximum resistance of the bat	1.2Ω
Detection lines	4
Conventional sensor (max)	6
MSB and/or ROP input	10
Terminal resistor in the detection line	0.25 - 0.6 W 4.7k Ω
Terminal resistor in the smoke damper actuator line	0.25 - 0.6 W 4.7k Ω
Optional series resistor of detection lines	1 k Ω ±5%
Working voltage of the signalling devices	24V
The permissible current of signalling devices	max <400mA
Alarm relay output (switchable)	2A/30V
Relay output Failure (switchable)	2A/30V
Multiple signals of the gate motors' limit switches, switching contact	8A/230V x 4
Electromagnetic door lock, changeover contact	8A/230V
PC communication output (service)	RJ11/serial



10. FREQUENTLY ASKED QUESTIONS

NO.	QUESTION	ANSWER	
1	What supply voltage does the control panel require and does it have to be a guaranteed voltage?	The 230 VAC power supply for the VIC 042X and 043X drives must be guaranteed, and not for the others, because with the gravity drive, even in the event of a complete power failure (230 VAC power failure and 24 VDC battery failure), the partition will be closed.	Standard
2	What protection is needed to protect the control panel circuit?	The control panel circuit is protected by an over-current switch (sing- le-pole) with the value and characteristic C 10A.	Standard
3	How many and what batteries does the control panel have?	The control panel is equipped with two 12 V, 2.3 Ah batteries.	Standard
4	What signal must be fed to the control panel to trigger an alarm from the SAP system (FSS)?	The FAS signal (FSS) must be potential-free. With the normally open (NO) contacts, the control panel remains in the standby mode, and the contact closure causes an alarm.	Standard
5	What feedback signals can be downloa- ded from the control panel	 The control panel sends two information/potential-free signals: FAILURE signal, informing about the control panel damage, e.g. lack of 230 V power supply, worn out battery or missing EOL resistor. These are NC contacts when the control panel is operating correctly, and they go to NO condition when a fault occurs in the control panel or on the system circuits; ALARM OUT signal, which informs that the control panel has been put into the fire alarm state globally by FAS or locally from detectors or MSB. The contacts remain in the NO state when the control panel is in the ready state, and when the alarm is started, they go into the NC state. 	Standard



11. TERMINAL STRIP SCP-03 VER. MAX

1+	Smoke/Temp detector		
2-	Smoke/Temp detector		
3	MSB		
4	MSB		
5	FAS		
6	FAS		
7+	Beacon		
8-	Beacon		
9	Failure (NC)		
10	Failure (NC)		
11	Alarm (NO)		
12	Alarm (NO)		
13	Close Button		5
14	Open Button		6
15	COM button		8
16	LED-Green button		4
17	LED Yellow Button		3
18	LED-Red button		2
19	LED-GND button		1
20	Unstable switch (NC)		· ·
20	Unstable switch (NC)		
22+	Electromagnetic holder		
23-	Electromagnetic holder		
23-	24 VDC/2-wire driv		
24	24 VDC/2-wire driv		
26+	24 VDC/2-wire drive	Grey	
20+	24 VDC/4-wire drive	Black	
28+	24 VDC/4-wire drive	Br/ Yellow-Gr	
20+	24 VDC/4-wire drive	Yel-Gr-Br	
30+	Brake 230V drive		4
			5
31-	Brake 230V drive Top limit switch 230V drive		
32	Bottom limit switch 230V drive		7/8
33	Limit switch COM 230V drive		8/9
34			6
35	(N) 230V drive	Grey	1
36	(L) Bottom 230V drive	BI / Br	0.10
37	(L) Top 230V drive	Br / Bl	2/3
PE	(PE) 230V drive	Yellow-Green	
PE	(PE) Power		
L	(L) Power		
N	(N) Power		
38	Out Control		
39	Out Control		
40	Reset button		
41	Reset button		



12. ALARM RESET PROCEDURE

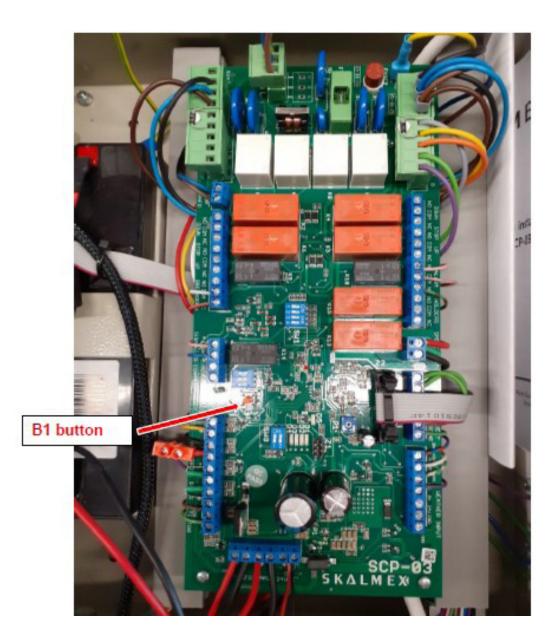


Fig. 17 Location of the B1 button for resetting the control unit

Instructions for resetting the fire alarm

- 1. Open the front panel with a key
- 2. Press B1 for no longer than 3 seconds.
- 3. Check the control panel's operation status when correct, only the Sieć (Mains power) lamp should be on.