

Rail Services International
Austria GmbH
Domaniggasse 2, A-1100 Wien

USER MANUAL

SFCP II-Rail - Smart Fire Control Panel

T: +43 (0)1 617 77 71
F: +43 (0)1 617 77 71-28
E: info@railsi.at
www.railsi.at



DOCUMENT REVISION DETAILS

Issue	Modification Detail	Author	Date
1.0	1st publishing document	PvT	23/12/2021
1.1	Various small corrections	PvT	16/01/2022
1.1.1	Adaptation layout and small adaptations	WB	01/02/2023
1.1.2	Adaptation important notes	WB	02/06/2023
1.1.3	Adaptation technical specifications and key features	WB	18/07/2023
1.1.4	Adaptation technical specifications	WB	06/05/2024

SOFTWARE VERSION DETAILS

Issue	Modification Detail	Author	Date
1.0	1st release Dare EMC tests	PvT	23/12/2021

IMPORTANT NOTES – PLEASE READ CAREFULLY

This manual should be thoroughly read and understood before installing and commissioning the system.

The SFCP II-Rail, with the associated connections, must be installed, commissioned, and maintained by skilled, knowledgeable and competent personnel that is trained to execute this work. The person commissioning the system is aware of the technical terminology and objective of the equipment.

Electrostatic Discharge (ESD) precautions must be taken when opening the SFCP II-Rail. Avoid direct contact with any of the components on the printed circuit board. Do not allow contact of the electronics to clothing in order to prevent electrostatic discharges. Failure to observe accepted ESD handling practices might cause damage to the SFCP II-Rail. The warranty will be void if the equipment is damaged by ESD.

The warranty is only valid if the system is installed, commissioned, operated and maintained in accordance with the valid national and international standards.

The SFCP II-Rail successfully passed full EMC compliance testing for CE and FCC in accordance with:

- EU-Directive 2014/30/EU
- FCC-Conformity according to EN 50130-4/2011
- FCC CFR 47, Part 15/2013
- EN 61000-4
- EN 50155:2022-06; EN 60068; EN 61373
EN 50121-3—2:2016/A1:2019



WARRANTY

RSI confirms that the SFCP II-Rail is free from defects in materials and workmanship. The warranty is void if the SFCP II-Rail control panel is damaged, misused, used contrary to the respective operation manuals, repaired or altered by a non-authorized third party.

The liability of RSI is always limited to repair or, at RSI's discretion, replacement of the SFCP II-Rail. RSI shall under no circumstances be liable for any direct, indirect and or consequential damages such as, but not limited to, damage of or loss of property and or equipment, costs of deinstallation, costs of reinstallation, costs of transport and or storage, loss of revenues and or profits, costs of capital, costs of purchased and or replacement goods, or any claims by direct or indirect customers or any other loss or damage. Any remedies set forth herein shall never exceed the price of the SFCP II-Rail supplied. This warranty is exclusive and expressly in lieu of all other warranties, whether expressed or implied, including, without limitation, any warranties of merchantability or fitness for a particular purpose.

RESERVATIONS

The diagrams of operating principles of the SFCP II-Rail fire detection and extinguishing system, included in this manual, are intended to support this manual and are therefore not intended and suitable for technical implementation or execution.

No part of this manual may be reproduced or made public electronically, mechanically nor by photocopying, nor by any other means, nor stored in an automated database without prior written permission from RSI.

RSI has a policy of continuous improvement and reserves the right to make changes to the product specifications at any time and without prior notice. Possible errors and omissions reserved.

TABLE OF CONTENTS

DOCUMENT REVISION DETAILS.....1

SOFTWARE VERSION DETAILS1

IMPORTANT NOTES – PLEASE READ CAREFULLY2

WARRANTY2

RESERVATIONS.....2

TABLE OF CONTENTS3

1 INTRODUCTION.....4

2 KEY FEATURES4

3 CHARACTERISTICS & OPTIONS5

4 ENCLOSURE & INSTALLATION7

5 IN- & OUTPUTS.....8

6 CONTROL BUTTONS 11

7 LED INDICATION 13

8 DIP SWITCHES 16

9 CONNECTION & CABLE AND WIRING SPECIFICATION..... 19

10 TECHNICAL SPECIFICATION..... 20

11 DEVICES SUPPORTED BY THE SFCP II-RAIL 21

12 ENCLOSURE SPECIFICATIONS 22

13 MAIN WIRING DIAGRAM 23

14 FIRE DETECTOR AND WIRING OPTIONS..... 24

15 EXTERNAL EXTINGUISHER RELEASE & HOLD WIRING OPTIONS 25

16 SFCP II-RAIL EXTERNAL SOUNDER & BEACON WIRING OPTIONS 25

17 SFCP II-RAIL – FIRE EXTINGUISHERS WIRING OPTIONS 26

18 SFCP II-Rail – ETB/DIN 27

1 INTRODUCTION

The SFCP II-Rail is a very compact and robust, stand-alone fire detection & extinguishing control panel designed to protect various applications in numerous areas of tunnelling & mining, marine & offshore, rolling stock & rail infrastructure, automotive & transport, power generation & distribution as well as process & manufacturing industry. Typical application areas are protection of electrical cabinets, CNC machines, engine rooms, and many more technical applications in which safety of personnel and equipment is of utmost importance. The SFCP II-Rail enables the user to detect and extinguish a fire rapidly and effectively.

The SFCP II-Rail fire detection & extinguishing control panel has been designed to be focussed on easy installation & commissioning “plug & play”, simple handling as well as operation under very harsh & heavy-duty environmental conditions.

The SFCP II-Rail is designed meeting the requirements of the European standard EN 54-2 “Fire Detection and Fire Alarm systems - Control and Indicating Equipment”, the EN 12094-1 for fixed firefighting systems Part 1: “Requirements and test methods for electrical automatic control” and the EN 15276-2 for aerosol fire extinguishing systems. The SFCP II-Rail is a versatile fire alarm & extinguishing control system with a high-performance level intended for small and medium size firefighting systems.

2 KEY FEATURES

- the SFCP II-Rail can be operated fully manual as well as in combination with a single- or double stage fire detection, alarm and extinguishing function
- two individually fully monitored fire alarm input zones for the connection of conventional smoke and heat sensors, linear heat cable as well as type E heat detectors
- two individually fully monitored input groups for the connection of external manual extinguishing release and hold buttons
- one fully monitored output for the connection of aerosol fire extinguishing generators
- one output for the connection of visual/acoustic alarm devices
- voltage-free contacts for “fire alarm”, “fault”, “extinguishing released” and “ventilation off”
- two integrated extinguishing release buttons to be pressed simultaneously to prevent unwanted releases
- an extinguishing hold button to postpone releases (puts delay timer back to the start)
- mode button to easily switch between manual only- and automatic & manual extinguishing mode
- settable extinguishing delay time (0 – 35 sec) to prevent unwanted releases including option to override the extinguishing delay time at manual release
- watchdog timer for additional safety
- historic event log memory readable from a mini-USB port
- the SFCP II-Rail works with input voltages from 8 to 32 Volt DC
- waterproof IP65 (EN 60529) ABS enclosure
- EN 45545 and UL certified cable glands

3 CHARACTERISTICS & OPTIONS

3.1 ACOUSTIC ALARM

The SFCP II-Rail has an internal sounder. Malfunctions are indicated by a continuous tone and alarms by a pulsing tone. Different tones will sound at extinguishing activation and actuation of the hold (extinguishing delay) function. An additional external sounder/beacon can be connected to the SFCP II-Rail. The voltage of the monitored output powering the additional sounder/beacon is controlled by the SFCP II-Rail and independent of the primary power supply.

3.2 HISTORIC EVENT LOG

The SFCP II-Rail has an internal historic event log memory with a capacity of 10.000 events. The event data can be read by connecting a laptop computer to the Mini USB-B port. The SFCP II-Rail will act like an USB stick containing text files with event data. Each time the SFCP II-Rail reboots, a new file will be created with a new batch number in the filename. Events like e.g., actuation of internal or external buttons, detailed fault indication, alarms and relay switching events are logged in the text files.



3.3 DIRECT RELEASE

If the SFCP II-Rail timer settings are programmed with the respective dip-switches (0 - 35 sec, see chapter 8.7), the direct fire dip-switch (dip switch 1) gives the choice to override the delay in case of a fire event. The delay timer is initiated in case the automatic detectors of the SFCP II-Rail detect a fire. This delay can be overridden. In direct release mode, the extinguishing release will take place immediately by pressing the dual extinguishing release buttons on the front of the panel or by pressing the external extinguishing release button(s).

3.4 VEHICLE MODE (PROTECTION OF VEHICLES ONLY)

If the fire detection & extinguishing system is used to protect the engine compartments of vehicles, the SFCP II-Rail can be set in vehicle mode (dip switch 2). In vehicle mode and if the ignition of the vehicle is switched off, a single or dual fire alarm (depending on the dip switch settings, see chapter 8.3), will immediately trigger the extinguishing release.

In vehicle mode the primary power supply of the SFCP II-Rail will connect terminals 15 (+) and 14 (-). The back-up power from the vehicle batteries will directly be connected to the terminals 17 (-) and 18 (+). Additionally, the ignition line (directly from the ignition lock) must be connected to terminal 13 (+). Terminal 13 is monitored. If the vehicle ignition is switched off and the key is removed, the vehicle is considered unmanned and the SFCP II-Rail is switched to vehicle mode. This will be indicated by the "heartbeat" flashing of the "power" LED.

As soon as the ignition is switched on again, the SFCP II-Rail switches back to “normal” operation mode and the control panel returns to the programmed state. The power LED will light continuously.

If the battery voltage falls below 7,5 Volt, it will generate a fault which will be indicated by the respective fault LEDs and the fault relay will switch.

Please note: the vehicle mode does not work in the manual only mode (see chapter 8.3)

3.5 SINGLE OR DUAL RELEASE MODE

The SFCP II-Rail can be programmed to single or dual release mode using dip switch 5 (see chapter 8.5). Usually, in order to avoid unwanted or false releases, the extinguishing system will be activated in the so-called two zone dependency mode. This means, that sensors in both fire zones have to detect a fire alarm state in order to initiate the release of the extinguishing system.

Depending on the application, sometimes the single extinguishing release mode is more suitable.

In case of a first fire alarm condition, the SFCP II-Rail will, independent of single- or dual release mode, indicate this by means of the common fire LED lighting, the respective zone fire LED lighting, the internal buzzer generating a pulsing sound and the common fire relay switching.

The extinguishing system as well as the VFC fire relay will be activated respectively, according to the dip switch settings. (Dip-switch 4 and 5, see chapter 8.5 and 8.6)

As an option, a connection module specially developed for aerosol extinguishers can be used to connect, control and supervise the extinguishing units to the extinguish line of the SFCP II-Rail → See chapter 18 for more details.

3.6 GENERAL FAULT RELAY

The SFCP II-Rail contains a general fault relay. This relay will be energized in case of a fault in the fire detection & extinguishing system or its power supply. This implies that in the event of complete power interruption, the fault relay will not be able to switch. If a complete fail-safe operation is desired or required, the SFCP II-Rail can be programmed to “fault relay energized” mode using dip switch 3 (see chapter 8.4). This means that the fault relay will be energized in normal condition and falls-off in the event of a fault.

Attention: in "Fault relay energised" mode, the NO output is activated, and the NC output is open.

3.7 1ST OR 2ND STAGE VFC

The 1st or 2nd stage VFC of the SFCP II-Rail can be programmed to single or dual triggering mode using dip switch 5 (see chapter 8.6). In single triggering mode, the VFC will be activated when one of the fire detection zones have sensed a fire alarm condition. In dual triggering mode the VFC will be triggered after both fire detection zone 1 and fire detection zone 2 have detected a fire condition. This VFC can be used to switch off for example a ventilation system or an engine.

3.8 EXTINGUISHING DELAY TIMER

A countdown timer is used to wait a certain amount of time (delay) until the moment of releasing the extinguishing system in case of a fire alarm. This delay time can be programmed using the time setting dip switches (dip switch 6 – 8, see chapter 8.7). The delay time can be set between 0 and 35 seconds in steps of 5 seconds.

Caution: if the direct release mode is chosen, the delay time will be zero seconds in case of manual release

3.9 STATIONARY MODE

If the fire detection & extinguishing system is used in a stationary environment (no vehicle mode, see chapter 3.4) to protect e.g., electrical cabinets, CNC machines, etc., the SFCP II-Rail is automatically in stationary mode. In this mode there are two ways to secure the power supply to the SFCP II-Rail control panel:

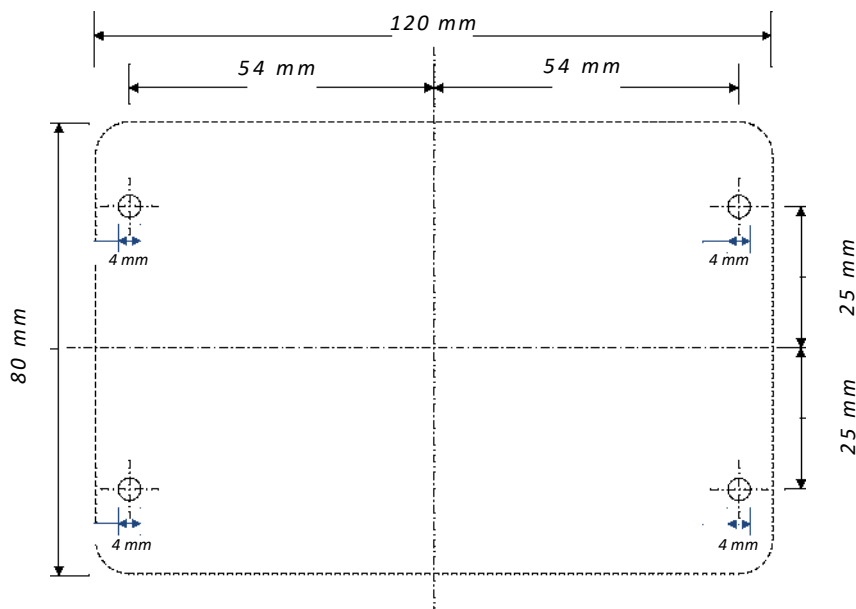
- A** using a power supply with integrated UPS function; in this case the terminals for back-up power 17 (-) and 18 (+) must be connected to the terminals of the primary power supply 15 (+) and 14 (-)
- B** using independent back-up batteries; the back-up batteries must directly be connected to the terminals 17 (-) and 18 (+). The terminals 15 (+) and 14 (-) must be connected to the primary power source.

If the power provided to the panel (primary, back-up or both) is lower than 7,5 Volt, this will generate a fault situation and be indicated by the respective fault LEDs and the fault relay. Additionally, the internal buzzer will indicate the fault by a pulsing sound.

4 ENCLOSURE & INSTALLATION

The control panel should be mounted horizontally at an easily accessible location. A dry, flat surface suits best. It should be considered that the SFCP II-Rail can easily be opened and the internal connections can easily be accessed for wiring purposes.

A suitable mounting method should be chosen and used at all four (4) fixing points (see drill template hereunder) to install the SFCP II-Rail at the respective location.



Mounting the SFCP II-Rail: drill template

The SFCP II-Rail must be mounted in such way that it is capable to withstand shocks and vibrations. The control panel should not be mounted near sources of excessive heat.

The enclosure is provided with 3 predrilled holes (2 times M16x1.5, 1 times M20x1.5) intended to use for cable glands. To ensure the IP rating of the enclosure as well as to fulfil certain market specific standards, the cables must be fixed using the provided cable glands. If not all the cable glands are used, the holes must be closed using the provided plugs.

The SFCP II-Rail housing consists of two parts. The rear part is mounted to the fixing surface and contains the holes for the certified cable glands. The front part incorporates the panel electronics, the connectors to connect the wiring and the operational surface. The front part is secured to the rear part by four bolts. To open the enclosure these bolts must be loosened. The panel electronics are protected against dust and moisture. For this reason, the PCB of the electronics is potted.

Install the required cables with sufficient length and connect the wires to the respective terminals according to the wiring diagram and connection requirements.

After all wires are correctly connected and the cable glands have been tightened, the front part with the electronics must be closed and tightly secured with the four (4) bolts.

Caution: make sure the wires are not pinched between the two enclosure parts.

5 IN- & OUTPUTS

5.1 MONITORED INPUTS

The SFCP II-Rail is equipped with two individuals, fully monitored fire alarm detection zones for the connection of conventional smoke and heat sensors, linear heat cable as well as type E heat detectors. Additionally, two individuals, fully monitored input groups for the connection of external manual extinguishing release and hold function are present at the connection block of the SFCP II-Rail.

All inputs are continuously scanned for alarm or fault conditions and require a 10 kOhm end of line resistor, also if the input is not used. The external buttons as well as the linear heat detection cable and the type E heat detectors might need an additional alarm resistor of between 470 and 1000 Ohm. The 10 kOhm resistors are supplied with the SFCP II-Rail.

5.2 DETECTION ZONES

The SFCP II-Rail is equipped with two detection zones. The two detection loops are continuously scanned for fire alarms and faults. The monitoring is set to the following values:

- loop resistance of less than 100 Ohm: FAULT
- loop resistance of more than 100 Ohm and less than 1,5 kOhm: FIRE
- loop resistance of more than 1,5 kOhm and less than 8 kOhm: FAULT
- loop resistance of more than 8 kOhm and less than 12 kOhm: NORMAL
< 8k Ω or > 12k Ω - for 1 fire switch connected on one zone
< 8k Ω or > 27k Ω - for 2 fire switches connected in parallel on one zone
- loop resistance of more than 12 kOhm: FAULT

Note:

If linear heat detection cable is used, an additional alarm resistance with a value of between 470 and 1000 Ohm must be installed in series with one of the wires of the linear heat detection cable. Otherwise SFCP II-Rail will see an actual fire alarm as a fault. If a type E heat detector is used, an alarm resistor with resistance between 470 and 1000 Ohm must be placed in series with the alarm-contact and the end of line resistor with a value of 10K Ohm in parallel with the alarm contact and 470 - 1000 Ohm resistor. The Heat Detector with automatic Reset HDL-3 already have the alarm resistors in the scope of supply.

The commissioning engineer should ensure, that the conventional smoke and heat detectors used, have corresponding internal resistance specifications and the correct input voltage. The maximum number of detectors in one zone is dependent on the characteristics of the cable used and the length of the cable. Devices advised for the SFCP II-Rail are described in this manual (see chapter 11).

All monitored inputs are monitored for line interruption and are protected against short circuit. The power supply of all monitored detection inputs is controlled by the SFCP II-Rail and is independent of the main power supply voltage. The conventional fire detectors must have a working voltage of at least 9 to 20VDC.

5.3 EXTERNAL MANUAL RELEASE INPUT

The SFCP II-Rail has a separate group for external extinguishing release button(s). The external extinguishing release button has the same function as the two extinguishing release buttons (fire buttons) at the front of the panel. By pressing the external extinguishing release button, the fire extinguisher(s) will be released. Depending on the dipswitch (time) settings (see chapter 8) it is possible to delay the release of the extinguishing system. The delay can be set between 0 and 35 seconds in steps of 5 seconds. This input loop is continuously scanned for alarm or fault conditions.

5.4 EXTERNAL HOLD INPUT

The SFCP II-Rail has a separate input group for external extinguishing hold button(s). The external hold button has the same function as the internal hold button. When an alarm is active and the delay timer is still counting down, this button can be pressed to stop the delay timer and delay the extinguishing release process. As soon as the hold button is released the extinguishing release countdown timer will start from the set maximum time again (see dip switch settings, chapter 8).

5.5 MONITORED OUTPUTS

The SFCP II-Rail is equipped with five output groups, two monitored outputs and three (3) voltage-free contacts. The monitored output groups are continuously scanned for line interruption and short circuit fault conditions. The voltage-free outputs can withstand a maximum contact load of 30 VDC /1A. The voltage-free contacts are not monitored.

The monitored outputs are the extinguishing loop for a maximum of 6 extinguishing units and an output for a two-tone alarm sounder/beacon.

5.5.1 Monitored extinguishing output

The extinguishing units can either be connected directly in series using an EOL Diode (1N5400, 1N4007, RL201, SF21, see also chapter 10) or by using the SFCP II-Rail ETB/DIN connection modules with integrated EOL capability. If connected directly, the main connection of the wires at the panel is polarity (+/-) sensitive. If the SFCP II-Rail ETB/DIN connection modules are used to connect the extinguishing units, the main connection at the panel is not sensitive for polarity. The maximum number of aerosol generators depends on the loop-/cable length between the panel and the aerosol generator.

Maximum number of extinguishing units to be connected to the SFCP II-Rail:

	Loop Length [m]	50	100	150	200	250	300	350
Connection	Cable Length [m]	25	50	75	100	125	150	175
Without SFCP II-Rail ETB		8*	7*	6*	6*	5*	5*	4*
With SFCP II-Rail ETB		10*	10*	9*	9*	8*	7*	7*

*The numbers mentioned in the table above are **only** valid under the following conditions:

- Specific resistance of connection cable: max. 30 Ohm/km
Recommendation: at least 2x0,75mm² stranded with braided shield and functional integrity
- The maximum number of extinguishing units does not depend on the supply power
- A diode with the type-specification 1N4007 is applied in the loop in case of connection without SFCP II-Rail ETB/DIN (see wiring diagram – chapter 9.1)

5.5.2 Monitored sounder/beacon output

- Sounder/beacon loop is monitored for open and short circuit faults by placing a 10 kOhm EOL monitoring resistor between the + and – connection of the one or two-tone alarm sounder/beacon. The EOL resistor must always be connected to the general + connector or the + of the first stage alarm as well as to the general – connector or to the - of the first stage alarm of the sounder/beacon.

5.6 VOLTAGE-FREE CONTACT RELAY OUTPUT

Contact load relay 30 VDC/1A.

- one general fire alarm relay output (NO/NC); the general fire relay will energize upon activation of a fire condition of any of the fire zones or by pushing the internal or external extinguishing release button(s)
- one general fault relay output (NO/NC); the general fault relay indicates the presence of a faulty situation in the SFCP II-Rail fire detection & extinguishing system
- one 1st or 2nd stage fire alarm relay output (NO/NC): the relay output is programmable to switch at 1st stage or 2nd stage fire alarm. The output relay is intended to be used, among other things, to switch off the ventilation, air conditioner or other critical equipment in the protected area

6 CONTROL BUTTONS

The SFCP II-Rail has a simple and clear control and information display. The display has integrated push buttons as well as information LEDs to determine the current state of the SFCP II-Rail rapidly. The picture on the right side highlights the control buttons. The function of the various buttons is described hereunder.

6.1 MUTE

The internal buzzer can be silenced at any time by pressing the “MUTE” button once. To silence the external sounder, press the “MUTE” button twice. In case of a renewed or secondary alarm the internal buzzer as well as the external sounder/beacon will be activated again.

6.2 RESET

To reset the panel, press the “RESET” button. This will reset all detection loops and alarm indications. Beware that certain detection equipment (e.g., linear heat detection cable, external manual release button) first needs to be reset before resetting the panel.

6.3 LAMP TEST

All LED indicators and the buzzer can be tested at any time by pressing the “MUTE” and “RESET” buttons simultaneously. All LEDs must light up when pressing this function.

Caution: three additional LEDs (battery fault, hold button fold, extinguishing release button fault) are placed at the back side of the panel front (at the inside of the enclosure, see chapter 7.13)

6.4 HOLD

If the extinguishing function is imminent, the extinguishing release sequence can be halted by pressing the “HOLD” button at the panel or an external hold button, the extinguishing release sequence will be halted as long as this button stays pressed. The corresponding yellow “exting hold” LED will start flashing, and the internal buzzer gives a different pulsing tone. In case the control panel is already in the 2nd stage alarm condition (both detection loops have indicated a fire alarm) and the extinguishing delay timer is still counting down, the countdown process will be stopped, and the delay timer set back to starting position. In that case the buzzer will also sound differently. Releasing of the internal or external hold button will re-start the countdown timer.



6.5 MODE

The SFCP II-Rail can be either operated in automatic & manual mode or in manual only mode.

- **automatic & manual mode:** in automatic & manual mode the extinguishing system will be activated by either triggering the automatic fire detectors and/or by pushing the manual release button(s) either on the panel front or external extinguishing release button(s). The fire extinguishers will be released either immediately or delayed, depending on the dipswitch settings (time and/or direct release).
- **manual only mode:** in manual only mode the extinguishing system can only be activated by pushing either the manual extinguishing release buttons on front of the panel or by pushing the external extinguishing release button(s). The fire extinguishers will be released either immediately or delayed, depending on the dipswitch settings (time and/or direct release). In this mode the automatic fire detectors will only trigger a fire alarm, but not initiate the extinguishing process.

To change the operational mode of the panel from automatic & manual to manual only and vice versa, the “MODE” button has to be pushed for 3 seconds. The actual active operation mode of the panel is indicated by the respective LEDs at the front of the panel.

6.6 EXTINGUISHING RELEASE

When a fire emerges, press both extinguishing release buttons. These buttons are found in the big yellow area, marked with the text “PRESS BOTH TO EXTINGUISH”, at the front of the panel. This will trigger an alarm and start the extinguishing process. The fire extinguishers will be released either immediately or delayed, depending on the dipswitch settings (time and/or direct release).

7 LED INDICATION

The front of the SFCP II-Rail has 1 common fire (red) and 13 individual LEDs which are divided in three sections to indicate general functions, fire detection and the extinguishing status, with separate LED indicators. At the inside of the enclosure, positioned at the circuit board, 3 additional LEDs can be found. These LEDs indicate possible faults of the battery power supply, the external hold button, and the sounder/beacon.



7.1 MANUAL MODE ONLY LED

The “manual mode only” LED is lit continuously if the panel is set to manual only mode (see chapter 6.5) In this case the extinguishing system can only be activated by either pushing the two manual release buttons on front of the panel or by pushing the external manual release button(s).

7.2 AUTOMATIC & MANUAL MODE LED

If the panel is set to automatic & manual mode (see chapter 6.5), the “automatic & manual mode” LED will be lit continuously. The extinguishing system will be activated by either triggering the automatic fire detectors and/or by pushing the manual release button(s) either on the panel front or external extinguishing release button(s). The fire extinguishers will be released either immediately or delayed, depending on the dipswitch settings (time and/or direct release).

7.3 POWER LED

The green “power” LED indicates the power status of the SFCP II-Rail , which can have different states:

- **start-up of the panel:** when the SFCP II-Rail is started-up this LED will flash for a maximum time of 1 minute. Under normal operation conditions this LED will be lit continuously, the system is ready when the green power led is lit continuously.
- **stationary mode:** (see also chapter 3.9) Under normal operation conditions the “power” LED will be lit continuously. If the main power supply is interrupted, the panel will switch to battery mode. This is indicated by the “power” LED flashing with a frequency of 1 flash per second. In addition, the “general fault” LED will light up and the general fault relay will be switched. Besides that, the internal buzzer will sound continuously. If the primary power is in normal operation but the battery power is either interrupted or has a power of less than 7.5 VDC, the “power” LED will continue to be illuminated continuously, but the “general fault” LED, as well as the “batt” LED inside the panel will light up. In this case also the internal buzzer will sound continuously.

- **vehicle mode:** (see also chapter 3.4) If the ignition line is activated by switching on the ignition lock, the “power” LED will be lit continuously. If the ignition lock is switched off, the panel will switch to battery mode. This will be indicated by a heartbeat flashing of the “power” LED. The “general fault” LED will not light up and the buzzer will not sound. If the ignition is switched on but the battery power is either interrupted or has a power of less than 7.5 VDC, the “power” LED will remain lit continuously, but the “general fault” LED, as well as the “batt” LED inside the panel will light up. In this case also the internal buzzer will sound continuously.

7.4 COMMON FIRE LED

A fire alarm event is triggered by the activation of a fire detector, by pushing the two manual release buttons at the panel or by actuation of the external manual release button. In these cases, the red “common fire” LED, positioned under the “power” LED, will light up continuously. In case of a fire alarm triggered by an automatic fire detector in zone 1 or zone 2, indication will be by illumination of the respective zone alarm LED.

7.5 ZONE 1 OR ZONE 2 ALARM LED

The red “zone 1 alarm” respectively “zone 2 alarm” LED will flash in case one or more fire sensors in the respective zone detect a fire condition. This will always be accompanied by the continuous illumination of the “common fire” LED (see also chapter 7.4).

7.6 EXTINGUISHING RELEASED

The red “exting released” LED will be illuminated (continuously) when the extinguishers are activated. The “exting released” LED (red) will, depending on the dipswitch settings, light up after the configured extinguishing delay time has passed (can also be immediately), or by either actuation of the two fire extinguishing buttons on the front or the external release button (both with extinguishing delay time or directly). An internal LED signals a fault in the external extinguishing release line (see chapter 7.12).

7.7 EXTINGUISHING DELAYED

The red “exting delay” LED indicates that the extinguishing release delay is active. This LED flashes when the delay time is counting down and the release is imminent. The LED lights up continuously if the “HOLD” button is pressed (internal or external). The LED flashes again when the “HOLD” button is released. As soon as the delay time counter expires, the “extinguishing delay” LED vanishes, and the extinguishing release is activated. An internal LED signals a fault in the external hold line (see chapter 7.12).

7.8 GENERAL FAULT

The yellow “general fault” LED will illuminate continuously at any fault condition. Additionally, the internal buzzer will sound continuously.

7.9 RELEASE BUTTON FAULT

The yellow “release button fault” LED indicates a fault in the external release button line. In case of a fault, the LED will flash. Additionally, the “general fault” LED will light up constantly and the internal buzzer will sound continuously.

7.10 ZONE 1 OR ZONE 2 FAULT

When the SFCP II-Rail has detected a fault in one of the fire detection loops of the system, the respective yellow fire zone fault LED (“zone 1 fault” or “zone 2 fault”) will flash and the general fault LED will light up constantly. The internal buzzer will sound continuously.

7.11 EXTING HOLD

The yellow “exting hold” LED flashes as long the “HOLD” button at the front of the control panel or the external hold button is pressed. Simultaneously the internal sounder will generate a pulsing sound. This yellow LED and the pulsing sound will fade when the hold button is released again.

7.12 EXTING FAULT

The yellow “exting fault” LED lights up continuously when a critical fault is detected in the extinguishing output line (e.g., open or short circuit). Simultaneously the general fault LED lights up constantly and the internal buzzer will sound continuously. The “exting fault” LED vanishes automatically as soon as the cause of the fault has been resolved.

7.13 INTERNAL FAULT LEDS

Three extra yellow fault LED indicators can be found at the internal electronic PCB by opening the cover of the control panel. These LEDs flash in case of faults in:

- “batt” LED signals a fault in the battery power line. A fault is registered in case of low power (<7.5 VDC) or if the battery power line is not connected. Simultaneously the general fault LED at the front lights up constantly and the internal buzzer will sound continuously.
- “hold” LED signals a fault in the external extinguishing hold line. Simultaneously the general fault LED at the front lights up constantly and the internal buzzer will sound continuously.
- “s/b” LED signals a fault in the monitored sounder/beacon line. Simultaneously the general fault LED at the front lights up constantly and the internal buzzer will sound continuously.



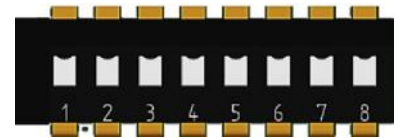
8 DIP SWITCHES

8.1 STANDARD SETTING

The standard setting of the SFCP II-Rail is based on user experience. In this standard setting all switches are in off position. (White square represents the position of the DIP switch)

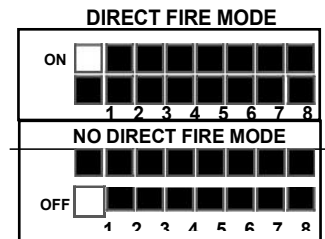
Standard setup is:

- automatic & manual mode (see also chapter 6.5, 7.1 and 7.2)
- the vehicle mode is disabled (see also chapter 3.4 and 7.3)
- extinguishing delay time is 0 seconds
- the internal buzzer is not muted
- dual release mode for automatic extinguishing release. (co-occurrence) (see also chapter 3.5)
- fire alarm relay switches at 2nd stage (see chapter 5.6)



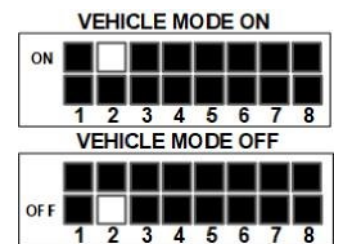
8.2 DIRECT RELEASE

- In case a delay time has been set (between 0 and 35 seconds), the direct release mode (dipswitch 1) enables to override the delay timer in case of a fire event. If a fire alarm is detected, by only one or both automatic fire detection zones of the SFCP II-Rail, the delay timer can be overridden by pressing both extinguishing release buttons on the front of the panel or by pushing the external extinguishing release button. In direct release mode the extinguishing units will be released immediately after doing so. By pushing the two extinguishing release buttons at the front of the panel or by pushing the external extinguishing release button, the “1st or 2nd stage fire alarm relay” will be switched immediately.



8.3 VEHICLE MODE

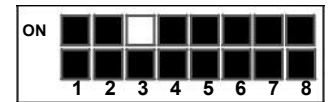
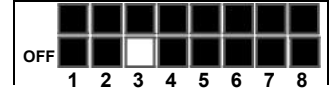
- If the SFCP II-Rail is intended to protect the engine compartment of a vehicle, the programmed extinguishing delay time must be disabled when the vehicle is parked, and the driver leaves the vehicle. (see also chapter 3.4 and 7.3)
- If DIP switch 2 is switched **off** (standard), the system always behaves as programmed with the defined extinguishing delay time.
- If DIP switch 2 is switched **on**, the extinguishing delay time is disabled as soon as the ignition lock of the vehicle is switched off.



8.4 FAULT RELAY ENERGIZED

- In the standard configuration the general fault relay (NO/NC) will be energized in the event of a fault. However, in the event of a complete power failure, the general fault relay will not operate. If a complete “fail safe” condition is required use DIP switch 3.
- **Caution: in energized state the NO output is a NC output and vice versa**
- If DIP switch 3 is switched off (standard), the general fault relay is energized in the event of a fault.
- If DIP switch 3 is switched on, the general fault relay is energized in the quiescent state.

FAULT RELAY NOT ENERGIZED



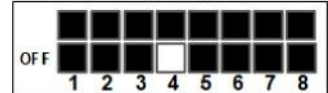
8.5 SINGLE OR DUAL FIRE ALARM

- The extinguishing can either be released after one detection zone has an alarm condition (single alarm mode) or after two fire detection zones both have an alarm condition (dual alarm mode). The SFCP II-Rail can be put in either single- or dual alarm mode using dipswitch 4 inside the panel.
- If DIP switch 4 is switched **off** (standard), the extinguishing system will be automatically activated if both fire detection zones have detected a fire and the programmed delay time has passed.
- If DIP switch 4 is switched on, the extinguishing system will be automatically activated if only one fire detection zone has detected a fire and the programmed delay time has passed.

FIRE ZONE SINGLE MODE



FIRE ZONE DUAL MODE



8.6 1ST OR 2ND STAGE FIRE ALARM RELAY

- With DIP switch 5 the characteristic of the “1st or 2nd fire alarm relay” can be programmed. The relay can switch when only one detection zone has sensed a fire alarm state or when both, zone 1 and zone 2 have detected a fire alarm situation.
- If DIP switch 5 is off (standard), the “1st or 2nd stage fire alarm relay will switch when both zone 1 and zone 2 have detected a fire alarm situation.
- If DIP switch 5 is on, the “1st or 2nd stage fire alarm relay will switch when only one detector of zone 1 or zone 2 has sensed a fire alarm situation.

VFC RELAY on 1st STAGE FIRE



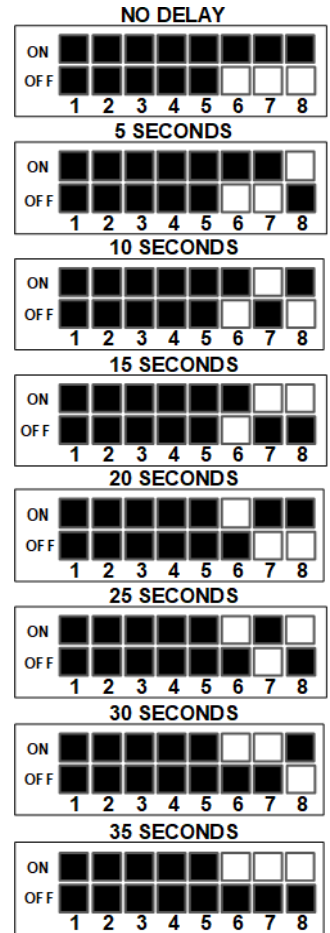
VFC RELAY off 2nd STAGE FIRE



8.7 EXTINGUISHING DELAY TIMER

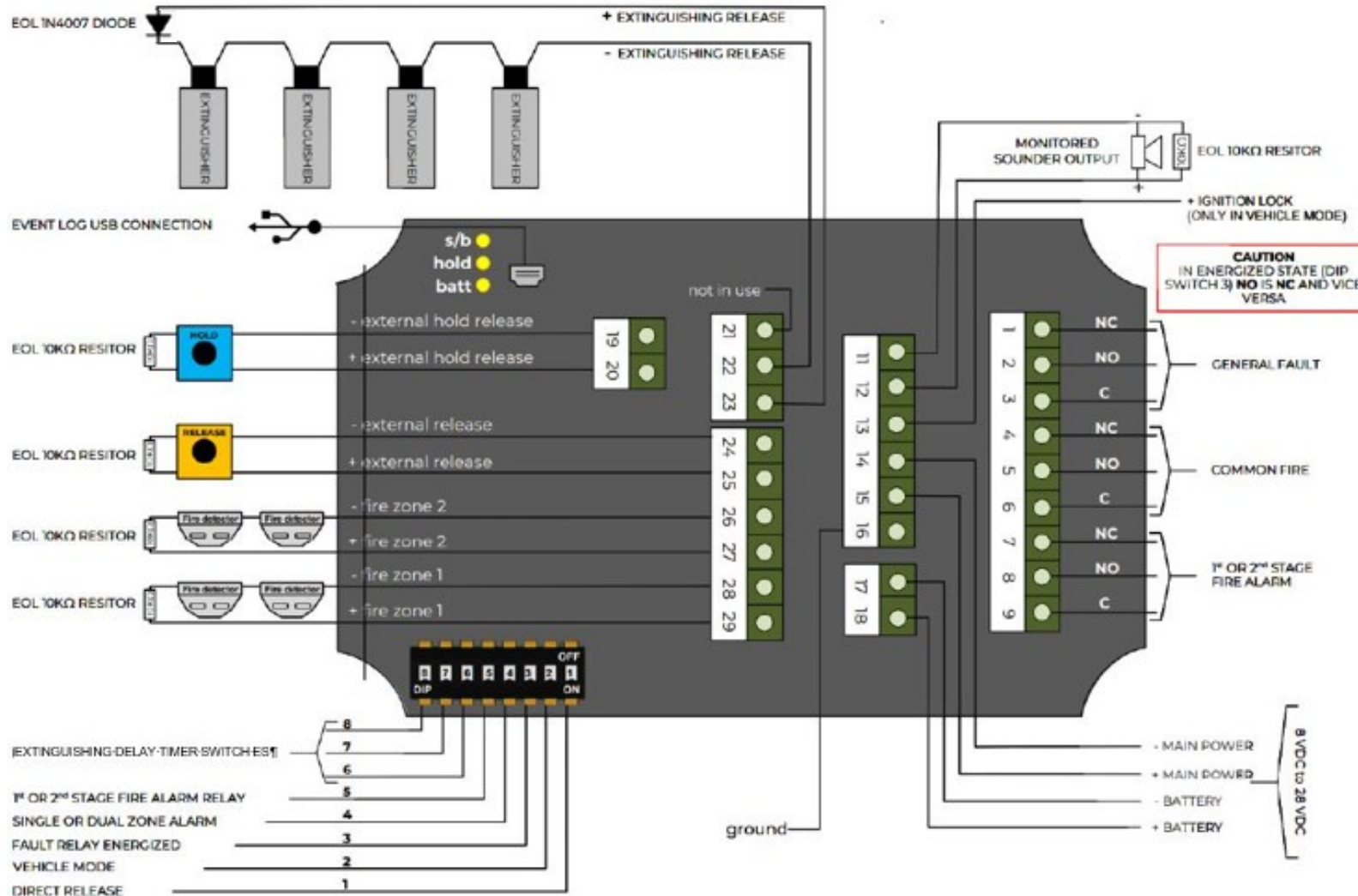
Extinguishing delay can in various cases be very useful (e.g., in normally occupied spaces). The delay time is used to wait a certain amount of time before the extinguishing is activated. To set the delay time, there are 3 dipswitches at the inside of the control panel. The delay time can be set between 0 and 35 seconds, in steps of 5 seconds, depending on the individual position of the TIME-dipswitches 6, 7 and 8. (see picture on the right side; black square is dipswitch position)

Extinguishing delay time	DIP 6	DIP 7	DIP 8
No time delay: the extinguishing system will immediately after fulfilling the programmed requirement (1 st or 2 nd stage fire alarm) be activated	off	off	off
Time delay is 5 seconds	off	off	on
Time delay is 10 seconds	off	on	off
Time delay is 15 seconds	off	on	on
Time delay is 20 seconds	on	off	off
Time delay is 25 seconds	on	off	on
Time delay is 30 seconds	on	on	off
Time delay is 35 seconds	on	on	on



9 CONNECTION & CABLE AND WIRING SPECIFICATION

9.1 WIRING DIAGRAM



9.2 WIRING & CABLE SPECIFICATION

- Recommendation: at least 2x0,75mm² stranded with braided shield and functional integrity (or equivalent)
- Minimum solid copper core diameter of the extinguishing line: 0.75mm²
- Minimum solid copper core diameter of the other cables 0,5mm²
- Maximum solid copper core diameter other cables 1,5mm²
- Maximum wire resistance: 30 Ω / km
- Maximum cable length of extinguishing line is 175 meters (see chapter 5.5.1)

10 TECHNICAL SPECIFICATION

Enclosure

Dimension (l x w x h)	120 x 80 x 57mm
Material	ABS
Colour	Black
Rating	IP65
Ambient Temperature Range	-25 to 65 °C
Cable gland holes	2xM16x1,5; 1xM20x1,5

Power related specification

Main power supply	8 to 32 VDC
Maximum power usage	5 Watt
Maximum voltage VFC	30 VDC
Maximum current VFC	1 A
Voltage extinguishing line	15 VDC
Limited alarm current fire detectors	60 mA
Sounder / beacon alarm maximum current	100 mA (@ 24 VDC)
Sounder / beacon voltage main powered mode	8 to 32 VDC

Connector and cable specification

Conductor cross section	>0.5 mm ² & <1.5 mm ²
Conductor cross section AWG / kcmil	20 ... 16
Stripping length	8 mm, advisable to use cable end
Maximum cable length (see also chapter 5.5.1)	175 m

Extinguisher output specification

End of line component	Diode with anode connected to + connection
Recommended diode	1N5400, 1N4007, RL201, SF21
Maximum extinguisher count	See chapter 5.5.1
Extinguisher release current	< 1,3 A
Extinguisher release pulse length	> 50 and < 55 ms

Detection zone inputs (see chapter 5.2)

Normal operation	> 8 k Ω and <12 k Ω
Alarm mode	> 100 Ω and <1200 Ω
Operational voltage range requirement	9 – 20 VDC

Remote button inputs (hold & extinguishing release)

Normal operation	> 8 k Ω and <12 k Ω
Button pressed mode / Alarm mode	> 100 Ω and <1200 Ω
Operational voltage range requirement	9 – 20 VDC

11 DEVICES SUPPORTED BY THE SFCP II-RAIL

11.1 DETECTION DEVICE SUPPORT (NOT LIMITED TO THE FOLLOWING EXAMPLES)

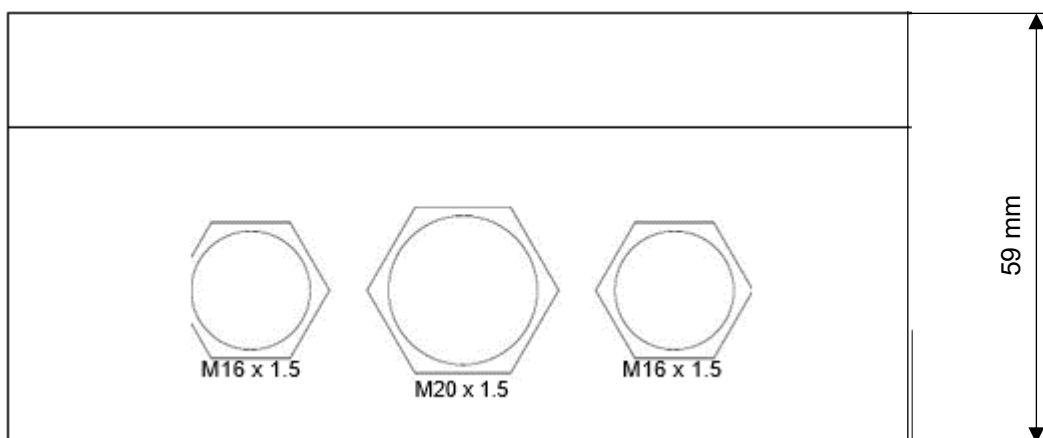
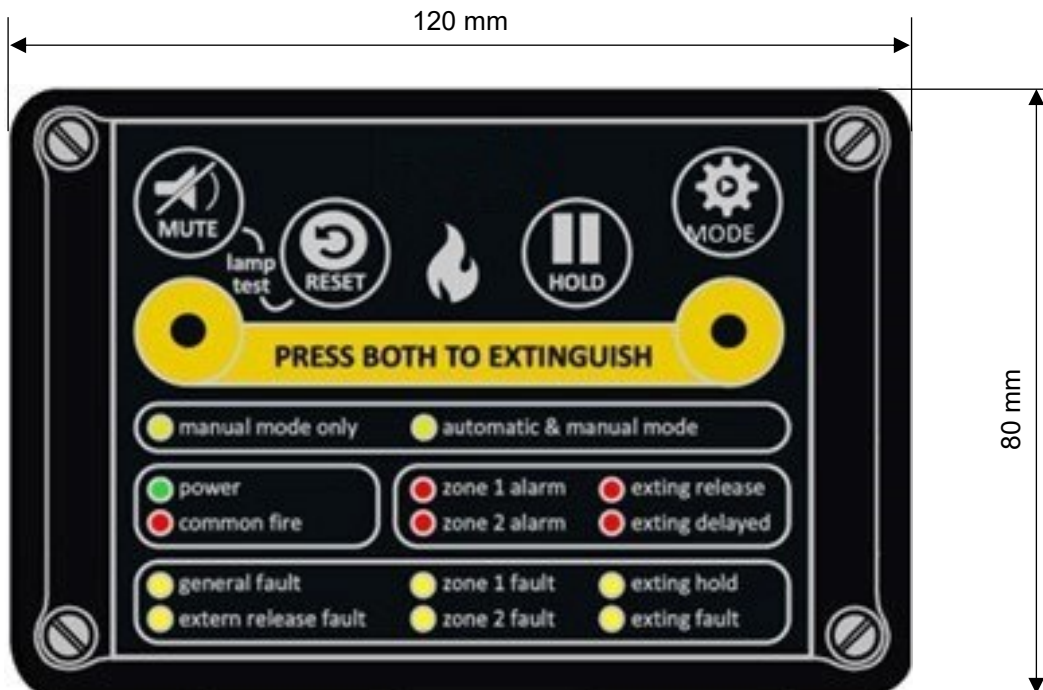
Type	Brand
Orbis Optical Detector	Apollo
Orbis Multisensor Detector (optical / thermo)	Apollo
Orbis Heat Detector A1R	Apollo
Orbis Heat Detector CR	Apollo
Orbis Heat Detector BR	Apollo
Orbis Standard Base	Apollo
Manual Call Point / Extinguishing Release Button yellow	NSC
Line Heat Detector Cable – different temperatures	Protectowire
Heat Detector with automatic Reset HDL-3	Lico

11.2 SOUNDER / BEACON DEVICE SUPPORT (NOT LIMITED TO THE FOLLOWING EXAMPLES)

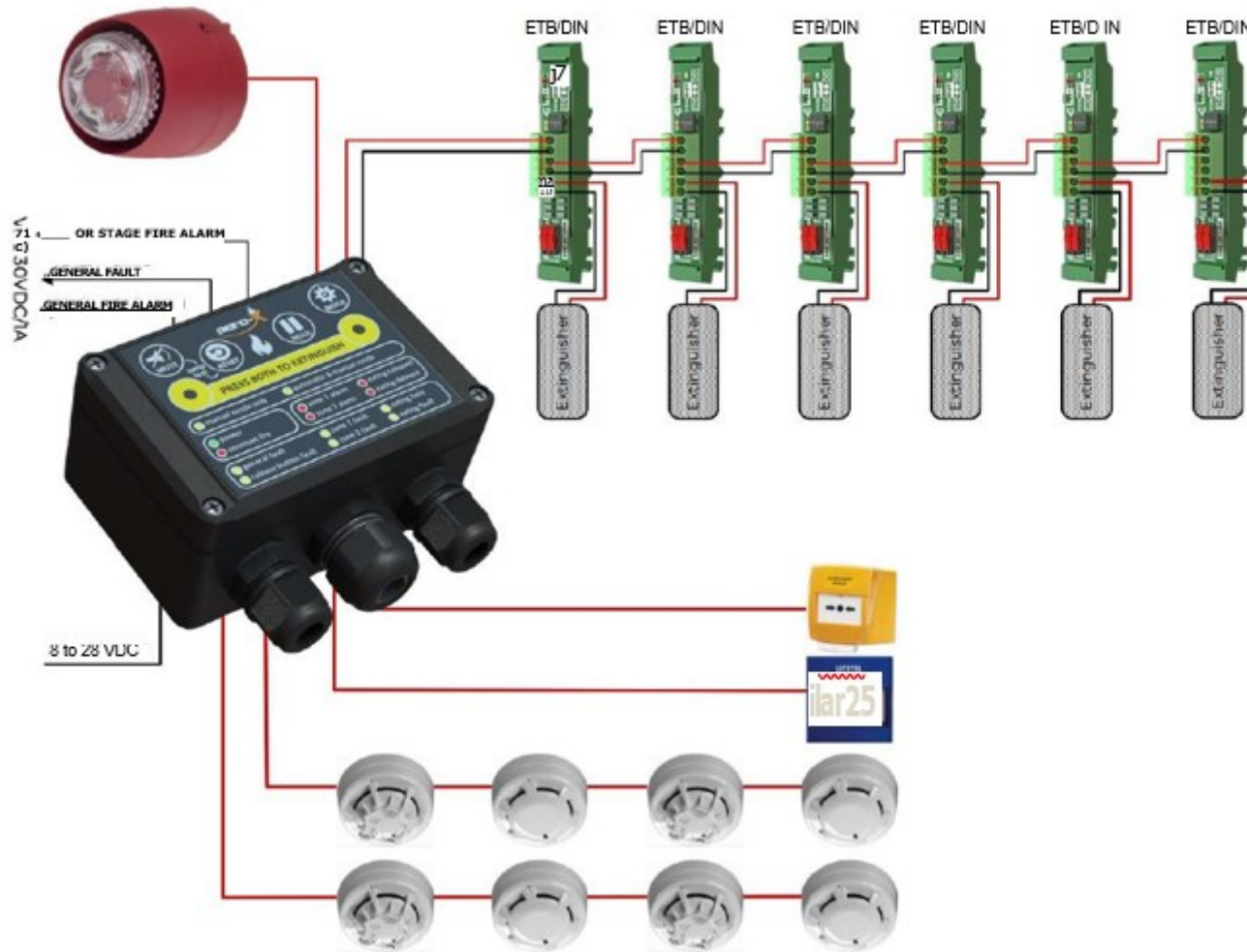
Type	Brand
Fire Alarm Sounder RoLP 32 red	Cooperfulleon
Fire Alarm Sounder Beacon combined - RoLP LX Wall	Cooperfulleon

12 ENCLOSURE SPECIFICATIONS

- dimensions enclosure : 120 x 80 x 57 mm (w x h x d)
- protection class: IP 65
- colour of enclosure : black RAL 9005
- enclosure material: ABS
- cable gland holes: 3 predrilled holes, 1 x M16x1.5, 1 x M20x1.5



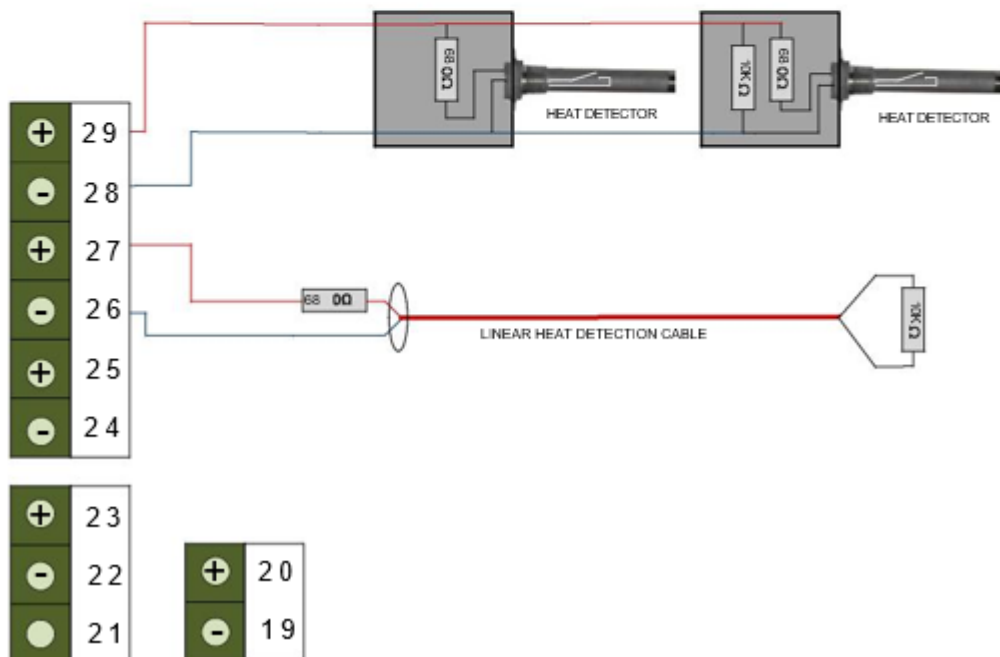
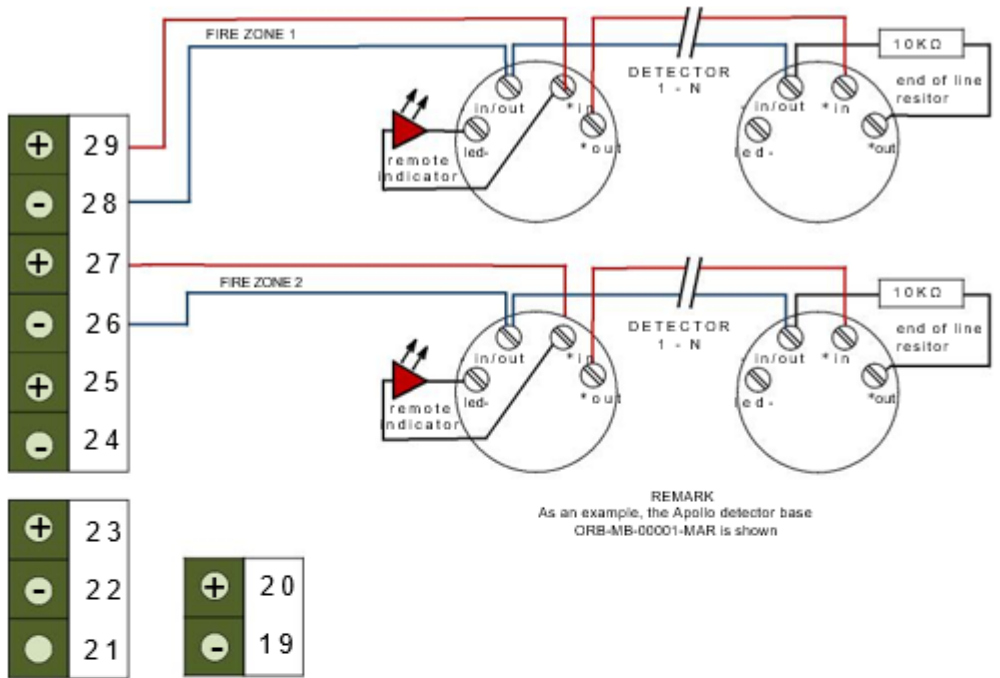
The diagram below shows the general SFCP II-Rail connection options



14 FIRE DETECTOR AND WIRING OPTIONS

Three different types of detectors can be connected to the SFCP II-Rail.

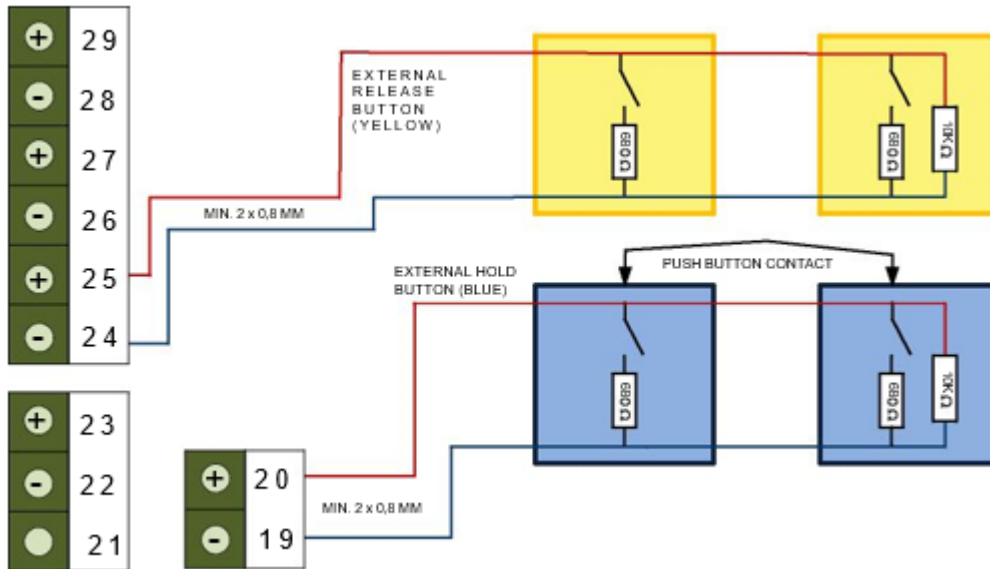
- Conventional fire detectors (smoke / heat / multi criteria)
- Heat Detector with automatic Reset HDL-3
- Linear heat detection cable



15 EXTERNAL EXTINGUISHER RELEASE & HOLD WIRING OPTIONS

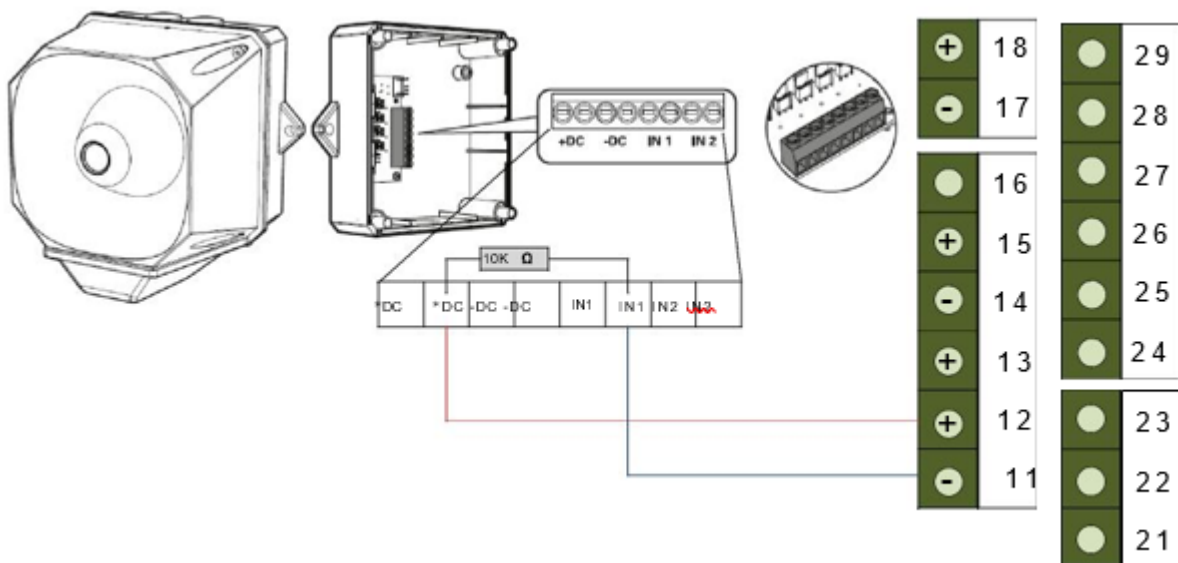
The SFCP II-Rail has a separate input for external extinguishing release and external hold-off button.

- Conventional manual release button
- Conventional manual hold button



16 SFCP II-RAIL EXTERNAL SOUNDER & BEACON WIRING OPTIONS

The SFCP II-Rail can handle numerous of sounder beacons. (Make sure the electrical consumption in terms of mA is not too high, because of operation in battery mode, the voltage rate should be checked as well). An example of how to connect the e.g., the Fire Alarm Sounder Beacon combined - RoLP LX Wall can be found below.

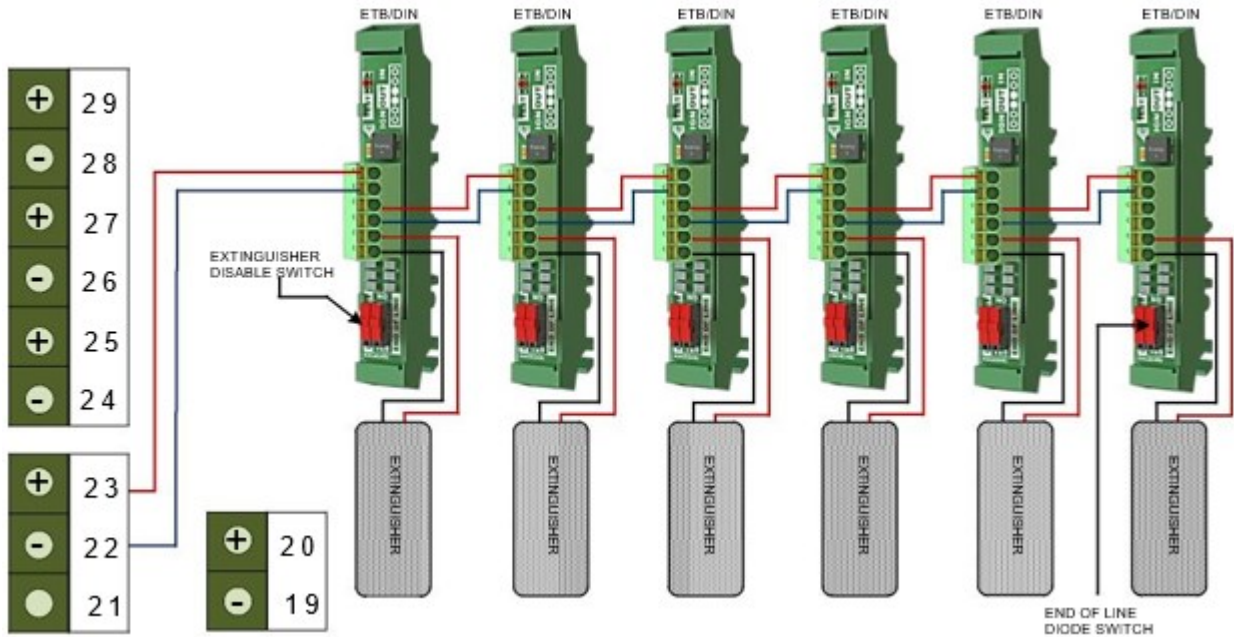


17 SFCP II-RAIL – FIRE EXTINGUISHERS WIRING OPTIONS

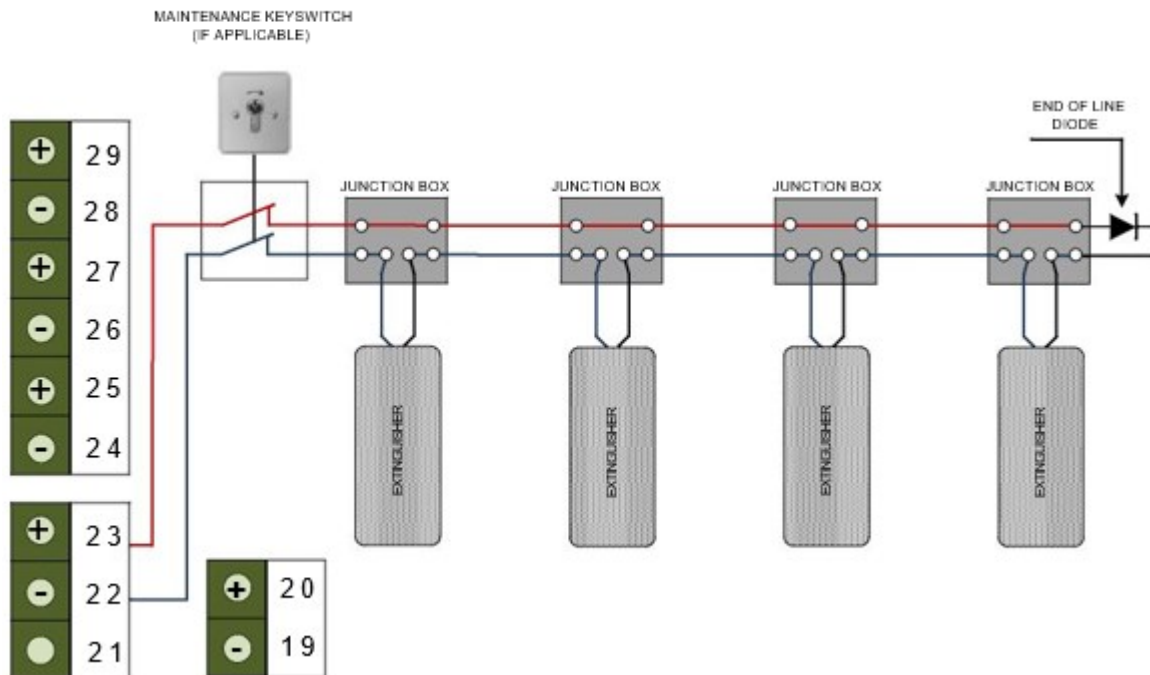
There are various ways to connect the aerosol generator(s) to the SFCP II-Rail.

- By using SFCP II-Rail ETB/DIN terminal board(s) (max. 10, see chapter 5.5.1):

Connecting the extinguishing units using the SFCP II-Rail ETB/DIN terminal board(s) is the preferred method. This way to connect makes sure that the extinguishing line is properly monitored and that in case of extinguishing activation all extinguishing units will for sure be released.

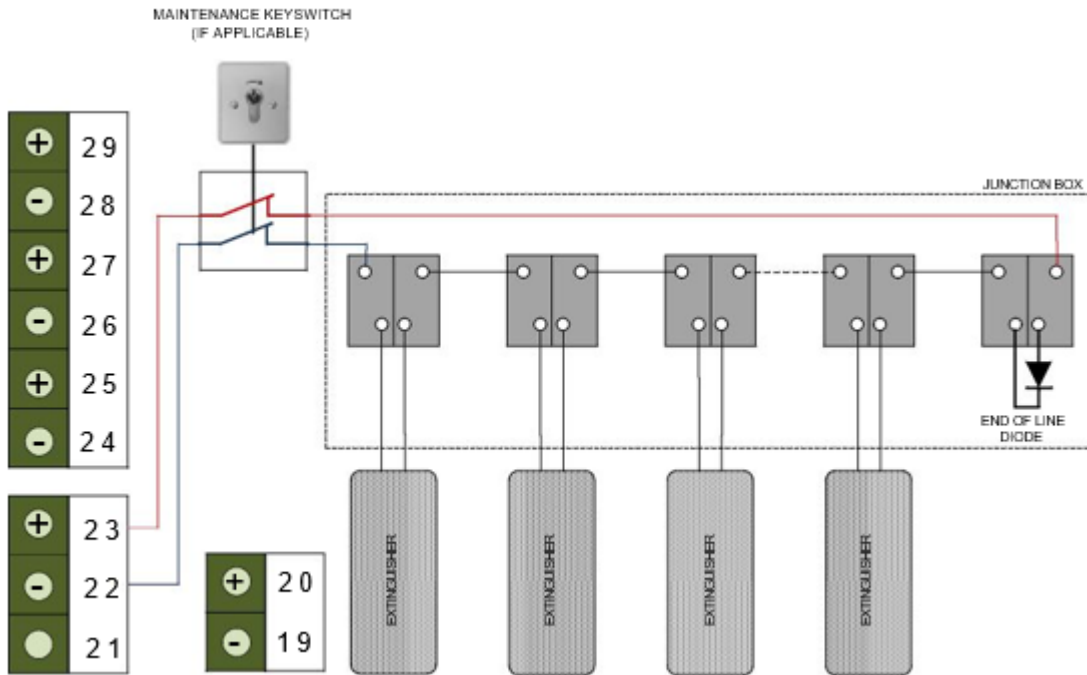


- By connecting the extinguishing units in series. This can e.g., be done by applying an IP-protected junction box mounted directly on each extinguishing unit



- Alternatively, one or both connection options can also be combined in one central junction box e.g., SFCP II-Rail junction box. The centralized junction box makes installation, commissioning as well as maintenance a lot easier because all necessary wiring and measurements can be carried out at one location.

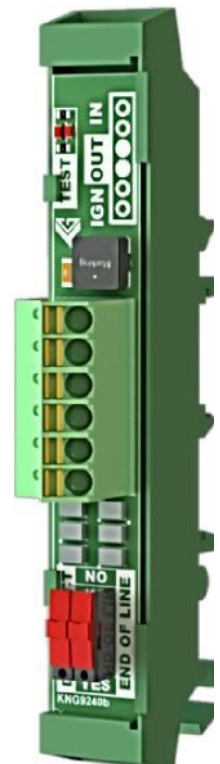
18 SFCP II-RAIL – ETB/DIN



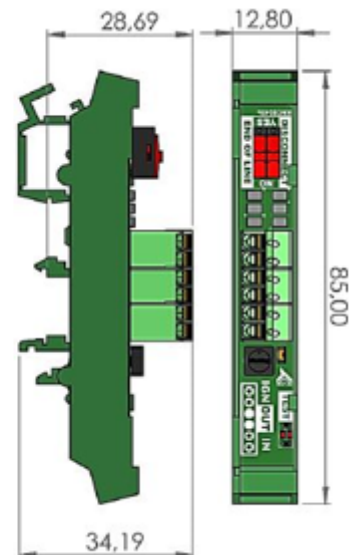
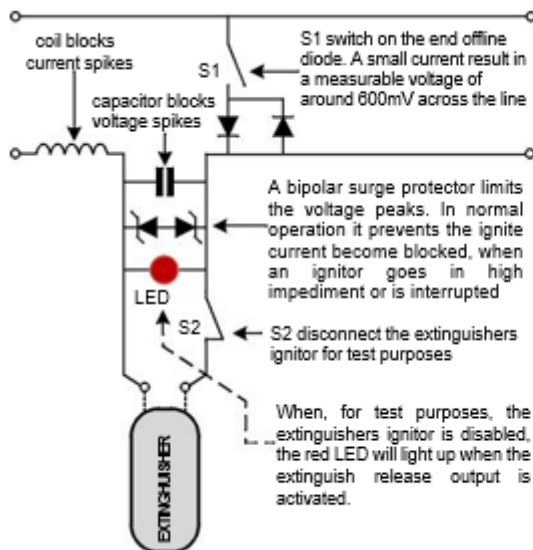
The SFCP II-Rail ETB/DIN is specially developed for the SFCP II-Rail controlling aerosol extinguishers. This terminal connection board is equipped with built-in security electronics, which ensures that all activators of the extinguishing units will be activated. Together with an end line switch, this option turns the SFCP II-Rail system into a complete and reliable fire detection and extinguishing control system. The SFCP II-Rail ETB/DIN terminal board unit is 35 mm DIN rail compatible.

The most important characteristics of the SFCP II-Rail -ETB/DIN are:

- easy connection through push connection
- minimum core diameter 0.5 mm²
- maximum core diameter 1.5 mm²
- a bridging protection ensures that the ignition current flows through all electrical activators for at least 50 ms, also when one of the ignitors is malfunctioning or behaving differently than others (e.g., igniting sooner and having a high impedance before other ignitors are ignited)
- the SFCP II-Rail ETB/DIN is equipped with a switch that activates the end-line monitoring diode on the last extinguishing generator
- a second switch is intended to disconnect the electrical activator from the extinguishing line for the purpose of testing the extinguishing line without activating the extinguishing generators there is a red test LED that shows that an activation current is actually being initiated during the commissioning test



- the SFCP II-Rail ETB/DIN is equipped with reverse polarity protection, thereby avoiding connection errors
- the SFCP II-Rail ETB/DIN is equipped with surge protection, which reduces the risk of activation of an aerosol extinguishing generator in case of e.g., a lightning strike or other unwanted voltage peaks.
- mounting method: DIN rail 35 mm



In case of questions, please contact:

RSI Austria GmbH
 Domaniggasse 2
 A-1100 Vienna
 Austria

Tel. +43 1 617 77 71-0
 Fax. +43 1 617 77 71-28
 Email info@railsi.at
 Web www.railsi.at

Outdated or replaced computers and electronics are valuable sources for secondary raw materials, if recycled. Dealers of the SFCP II-Rail system must comply with local regulations for waste separation applicable in the country where the supplier is located.

Questions concerning the information presented in this manual may be addressed to your dealer. For technical questions or support contact your dealer or further assistance.

