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FRS Rack®3
Fire Extinguishing Device

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General Safety Information

FRS-RACK®3 is an autonomous, fully automatic detection and extinguishing system. It is purposefully designed for fire protection of control, telecommunication and server cabinets or any other enclosures equipped with 19” rack system.

The device consists of pressurized nitrogen cylinders, an extinguishing agent reservoir, two solenoid valves, a nozzle, two optical smoke and temperature sensors, a power supply unit, a control board and a connections board. All system elements are placed inside of a single 1U module and the device is ready to be used out of the box. The extinguishing agent used is FK 5-1-12 which fulfills EN 15004-2 requirements and does not affect protected technologies or data stored on protected media. The extinguishant is non-corrosive, non-conductive and allows extinguishing of electrical circuits with nominal voltage up to 1000V.

The lifespan of the device, excluding the back-up battery is 10 years from the year of manufacture. The life span of the back-up battery is 4 years. Product warranty is 2 years from the moment of purchase, considering the right operating conditions are ensured and regular maintenance is carried out.

Functional test of the entire system, including detection, pressure and drive parts of the equipment should be performed every 12 months. The quality of the extinguishant, battery capacity and the pressure inside the tanks and their integrity shall be inspected at least once every 24 months. Each inspection is performed by a person trained by the manufacturer or authorized distributor.

This equipment may only be used in accordance with the operating conditions specified in the technical documentation and operating instructions. If the device is used in a way that is outside of defined operating conditions, the manufacturer shall not be liable for any damages caused by such use. All risks imposed by incorrect use are strictly under the user’s responsibility. The user shall also carry out regular visual and functional inspections according to the operating conditions and maintenance schedule. These inspections shall be documented. The operator of the device must warn about any changes within the protected enclosure that could affect the functionality or effectiveness of FRS-RACK®3 system (e.g., blocking of the nozzle by newly installed devices, changes in ventilation etc.). Visual inspections are fully the user’s responsibility. Technical revisions shall be carried out strictly by a person trained by the manufacturer.

LN-FRS-RACK3-1U

Technical Parameters

AC supply input voltage range	100-240 VAC
Frequency	50-60 Hz
Current at 230V AC	0,5 A
Efficiency	88%
Current at 230V AC	<1mA
Output voltage	Un = 24 VDC
IP	20
Extinguishant container volume	1,64 l
Operating temperature	+5 to +45
Storage temperature without the extinguishant	-40 to +80oC
Relative humidity (non-condensing)	85%
Dimensions WxDxH mm	482 (19") x 603 x 44,45 (1U) mm
Weight without the extinguishant	12,50 kg

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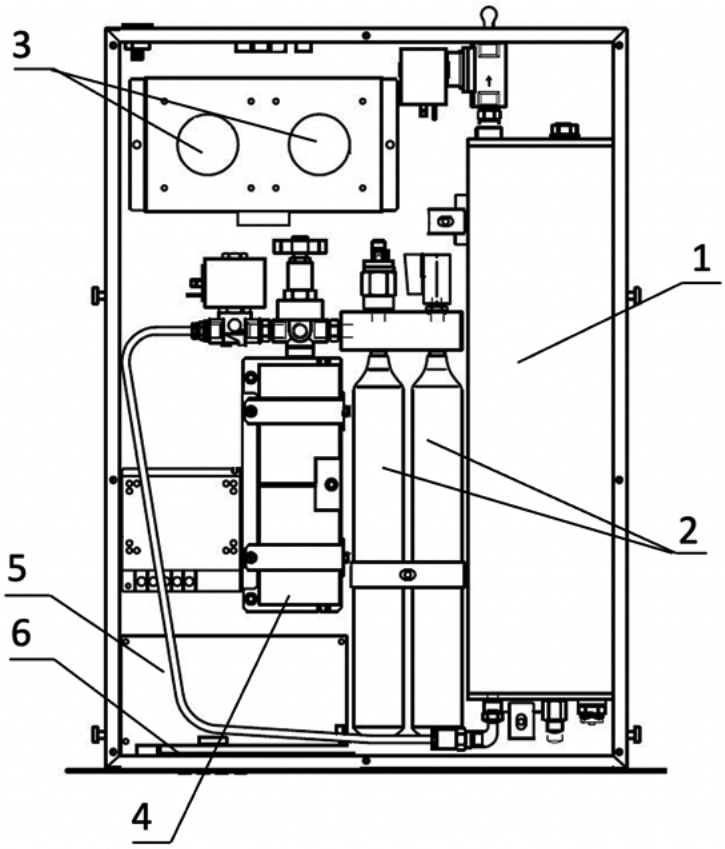
Design

The casing of the device is made of steel sheet metal. The extinguishant container and the piping are made of stainless steel and other non-corrosive materials. All materials have been tested and correspond with the described operating conditions and the extinguishant used and are to last throughout the lifespan of the device.

All metal components of the casing are finished with black polyester powder coating (RAL 9005). Minimal thickness of the coating is 60 µm. The resistance to separation corresponds to class 1 according to ISO 2409. The surface should not contain any defects, like scratches, excess paint, dirt etc.

The inside of the device, including the component placement is shown in the Picture 1.

Picture 1



The Device Consists of:

- **Extinguishant container (1)** a stainless steel reservoir filled with the agent FK-5-1-12.

- **Pressurized nitrogen in pressure tanks (2)**

- **Combined optical smoke and temperature sensors (3)**

- **Back-up Un battery (4)** is a supplementary energy source for the work of the device in case of the main energy source failure. The capacity of the back-up battery fully covers energy requirements of the system to complete the release of extinguishant.

- **Control board (5)** collects and evaluates the data from all inputs and sensors, receives external signals and send commands to peripheral devices.

- **Manual control and local alarm board (6)** allows the manual control of the device from the front panel, it notifies about the device's current condition with built-in LED diodes.

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Design

Manipulation - Initial Setup

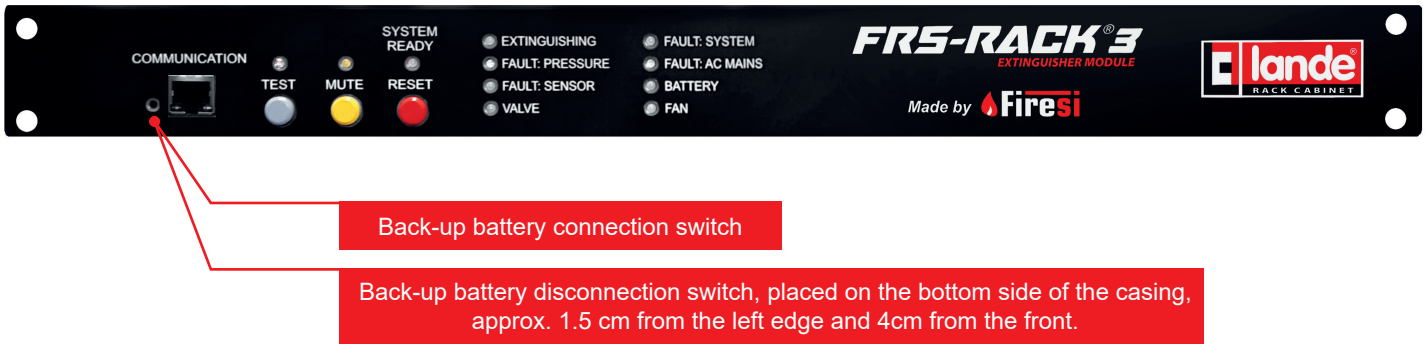
FRS-RACK®3 can be controlled manually using the front panel or externally, using the inputs on the back panel.

It can be controlled via SNMP and Ethernet protocols and settings of the device are accessible through the HTML interface. All system notifications can be viewed through web interface. LED indicators on the front panel of the device indicate failure or certain states of the device.

The placement of control interface elements is shown on Picture 2.

All buttons and indicators of the front panel are labelled according to their function or meaning.

Picture 2



Inputs and Outputs

The device is equipped with a relay board with 4 relays for external devices control. The connectors for the relays, external sensors and other external devices and their identifying labels are placed on the back plate of the extinguisher. Their placement is shown in the images 3 and 4.

Picture 3 - FRS RACK®3 Back Plate

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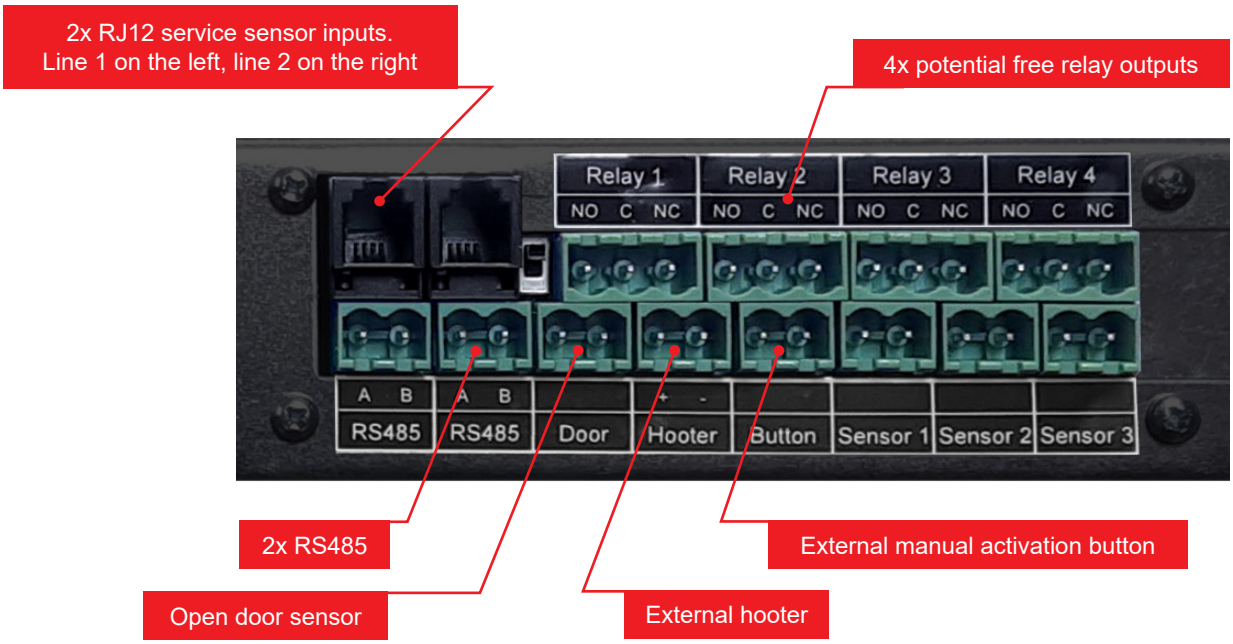
Design

Inputs and Outputs

Picture 4 - Back Plate Connections



Relay outputs: FRS-RACK®3 is equipped with 4 SPDT relay outputs. Separate relay activation can be set up by the user. It is also possible to make relays activate during testing.

Additional optional components
Door contact: prevents extinguishing from discharging when the door is open. The reason for it is that with the door open the extinguishant would not reach the required concentration inside of the cabinet.

When the extinguishing is blocked, the "EXTINGUISHING" indicator on the front panel of the device lights up yellow.

External hooter: the external hooter is activated as soon as extinguishing starts. The hooter can be deactivated by "MUTE" button on the front panel.

Manual activation button allows to initiate extinguishing remotely and manually. The integrity of the circuit is constantly monitored.

External dry contact sensors: the extinguishing process can be initiated by a signal from external detection or other extinguishing devices. Such devices must be connected to "Sensor 1" to "Sensor 3" inputs. These inputs allow remote control of the FRS-RACK®3 from other devices conncted to it (extinguishing start up/extinguishing block/ connection of fire alarm systems). If the connected equipment requires power supply, it should be supplied by an external source. These connectors are not designed for sensors that do not have a relay connector.

External monitoring temperature sensor: can be used to continuously monitor temperature changes in the protected area by connecting the sensor to the FRS-RACK®3 device which transmits the monitored data via the user interface. It also allows the user to preselect a temperature at which the sensor will trigger an alert through the user interface.

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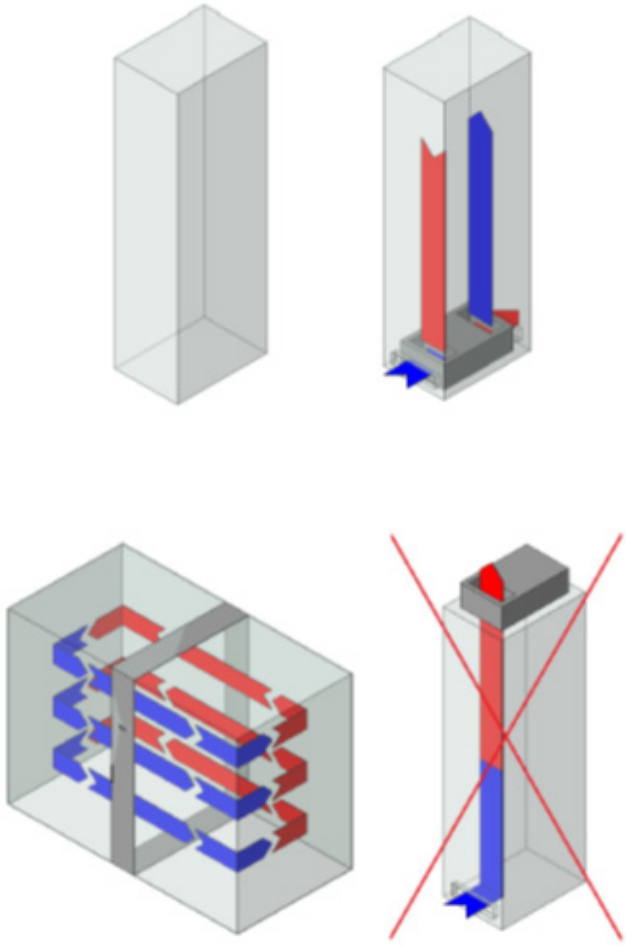
Installation

General

FRS-RACK®3 is designed closed space of volume not exceeding 2 m³. The device cannot be exposed to aggressive substances, direct sunlight, risk of mechanical damage and working conditions outside of described in this manual. Before installing the device please be sure to familiarise yourself with local fire protection and safety norms.

For correct functioning of the device the hazard zone can be equipped with a cooling solution that does not let air out of the enclosure. FRS-RACK®3 can be connected to such systems to switch off the ventilation during the extinguishing.



Safety

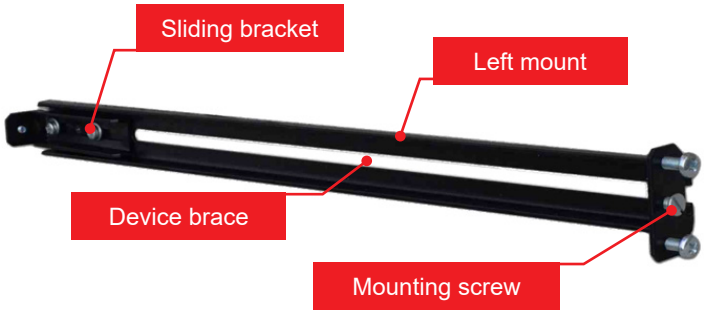
EN 50110-1 applies concerning protection from the electric current. The device can be installed only by a person certified according to EC 842/2006 and trained as stated by local legislation. This person shall not handle the internal elements of the device, interfere with electrical circuits due to the risk of shock.

It is prohibited to:

- Place the device close to heating elements (in the zones of heating over 50°C)
- Connecting the device to the power before installing it in place.
- Service or repair a device, connected to the electricity.
- Weld, smoke, and use open fire at distance lower than 25 meters from the device.

This device is compatible with 19" rack mountings. It is only to be placed with the front panel facing the door of the cabinet using included mounts. Place the mount between the mounting rails and screw the M5 flathead screws in.

To install FRS-RACK®3, attach the mount inside the cabinet to the highest available position. Slide the device in and screw it to the mount.



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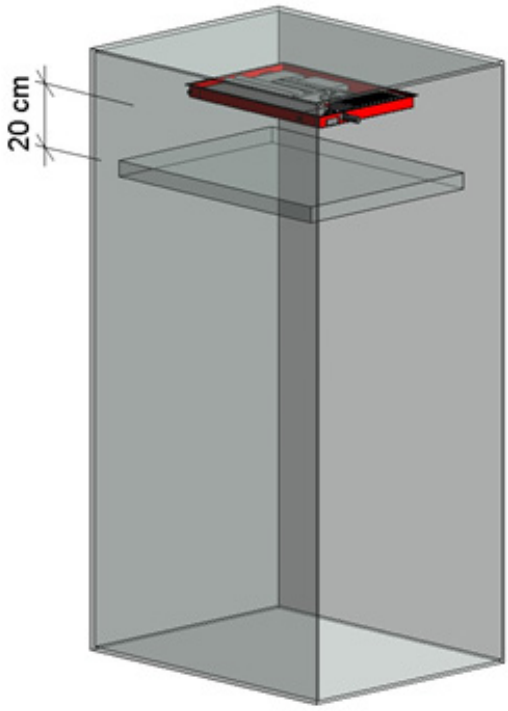
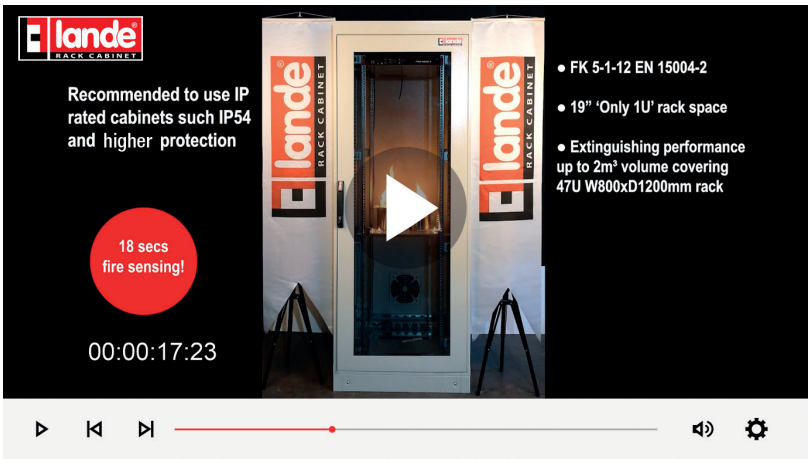
Installation

The horizontal orientation of the device must be maintained throughout the installation process and required space must be freed in advance.

The device is installed in the upper part of the cabinet with a minimum of 20 cm between the lower part of the FRS-RACK®3 device and the nearest device below.



Lande FRS-RACK®3 Fire Extinguishing Module Performance Video



https://youtu.be/pzlT2lssO3M

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