

FRS-RACK® 3

Extinguishing Panel

FRS-RACK®3 is a fully automatic and self-contained, exceptionally effective and quick-operated extinguishing device. It is designed to detect, extinguish, and control fire in 19" racks. The system provides comprehensive protection as it fills the entire protected space with extinguishing clean agent.

APPLICATION

FRS-RACK®3 is a 1U high single-zone automatic extinguishing device for **the protection of 19" wide racks**, specifically tele-communication, server and control racks up to 2m³ capacity. The system's extinguishing agent FK-5-1-12 effectively extinguishes group A, B and C fires, including extinguishing of electrical circuits with nominal voltage up to 1000V.

CONSTRUCTION AND OPERATION

FRS-RACK®3 consists of an extinguishing unit, a power supply unit, and a fully automatic fire detection system for fire control, ongoing analysis of the received signals, and their appropriate communication.

Extinguishing unit contains:

- 1.64 l container with a capacity of up to 2.5 kg fire extinguishing agent,
- extinguishing agent level indicator,
- pressure relief valve to protect the device in the event of tank failure or overheat above the permissible temperature limit at which an extinguishing agent can pass from liquid to gaseous form,
- pressure cartridges which create overpressure in the tank to expel the fire extinguisher,
- solenoid valve,
- pressure switch to control pressure level at the pump output.

Fire detection unit:

- optical smoke/temperature detector.

Unit for control of firefighting actions, signal analysis, and communications:

- a control board that collects and analyses data from all input sensors,
- a local signalling board for manual control, inspection and check of the system status,
- an input relay card, which collects external signals and controls the auxiliary equipment of the system via internal relays.

Power supply module:

- power supply,
- a 12V_{DC} battery, to ensure energy demand of the system during firefighting actions.

FRS-RACK®3 contains an ethernet cable to connect the device via html interface and guiding rails for mounting the unit to a rack frame.



On the front wall of the device there are control buttons and LEDs, which inform about operating states and current processes as part of the system.



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 device.

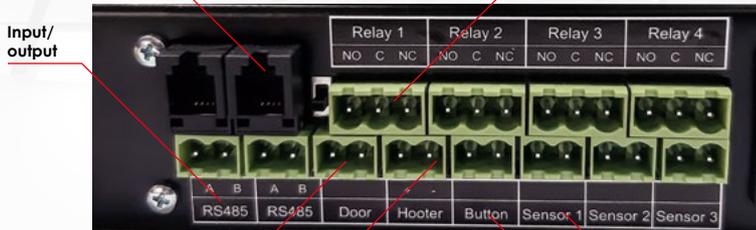


1. Nozzle
2. PE

3. Relay board
4. AC inlet

2 temperature sensor inputs (RJ45)

4 dry contact relay outputs



Open Door Sensor

3 inputs for external sensors

External horn

A button to activate extinguishing actions from outside

Mount the equipment on a 19" rack, connect it to the power supply to check the extinguishing unit is ready to use. It is an out of a box device so no additional configuration is required.

An optical smoke/temperature detector embedded in **FRS-RACK®3** will continuously analyse the protected area. When smoke or predefined risk temperature is detected, the sensor sends a signal to the control board; it starts extinguishing actions. The fire extinguishing agent is forced through the solenoid valve of the fire extinguisher tank and then released through the nozzle into the protected area of the rack cabinet. At the same time, the visual and acoustic system is activated by LEDs located on the front panel to inform about extinguishing actions that have been taken.

The control system monitors the system during both standby and extinguishing actions. The unique indication of the equipment status by means of LEDs on the front panel allows the user to fully control the device at all times.

Remote monitoring of **FRS-RACK®3** is also possible. To do this, it is simply necessary to connect the device to the network using the inputs on the back panel of the device. It can be controlled via the SNMP and Ethernet protocols and settings of the device are accessible through the HTML interface.

TECHNICAL PARAMETERS OF THE SYSTEM

| | |
|--|---|
| Tank emptying time | < 14 s |
| Mains power supply | 100-240 V _{AC} , 50-60 Hz |
| IP range | 20 |
| Volume of tank for extinguishing agent | 1.64 l (up to 2.5 kg of extinguishing agent) |
| Working temperature range | from +5 to +45°C |
| Range of storage temperatures (excluding extinguishing agent) | from -40 to + 80°C |
| Relative humidity (non-condensing) | 85% |
| Dimensions (W x D x H) | 482 (19") x 603 x 44,45 (1U) mm |
| Weight (excluding extinguishing agent) | 12,5 kg |

ENVIRONMENTAL WORKING CONDITIONS

FRS-RACK®3 extinguishing panel is designed for indoor use in an environment protected against weather conditions. This device ensures operation in temperatures from +5°C to +45°C at a maximum 85% humidity. However, due to life of the battery, it is recommended to maintain operating temperatures up to +25°C, as the higher temperature the shorter life of the battery is.

FRS-RACK®3 should be mounted at the highest possible location within the protected rack. Operational position of the device must always be horizontal and the control panel must be easily accessible.

FRS-RACK®3 firefighting unit containing the nitrogen pressurized tanks might be subject to a specific transport condition (refer to the device user manual).

EXTINGUISHING AGENT

FK-5-1-12 is a clean, colourless, delicate-odour liquid agent. The extinguishant is non-corrosive and non-conductive. Unlike carbon dioxide, it does not cause thermal shock to extinguished objects. It has a density corresponding to 11 times the density of air. Upon application, no traces of residue are left as it evaporates. It is totally safe for people and the environment. It is mainly designed for extinguishing A, B, and C group fires, as well as for extinguishing of electrical circuits with nominal voltage up to 1000V.

FK-5-1-12 is released as a gas in the course of extinguishing. Extinguishing with this agent is to remove heat energy from the flames; it entirely inhibits combustion reactions and prevents further potential ignition.

Technical specification of the extinguishing agent:

| | |
|----------------------|--|
| Chemical name | FK-5-1-12 Dodecafluoro-2-methylpentan-3-one, Perfluoro(2-Methyl-3-Pentanone) |
| Chemical formula | CF ₃ CF ₂ C(=O)CF(CF ₃) ₂ |
| Design concentration | 4,5-10% |

Ecological properties of FK-5-1-12 extinguishing agent:

| NOAEL | LOAEL | ODP | GWP | ALT |
|-------|-------|-----|-----|--------|
| 10% | >10% | 0 | 1 | 5 days |