

FRS-RACK® 2

Extinguishing Panel

FRS-RACK®2 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 agent.

APPLICATION

FRS-RACK®2 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 3m³ cubic capacity. The system's extinguishing agent FK-5-1-12 (chemical name for NOVEC™ 1230) effectively extinguishes group A, B and C fires, including fire of electrical equipment up to 1kV.

CONSTRUCTION AND OPERATION

FRS-RACK®2 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:

- a 2-litre container with a capacity of up to 3.2 kg fire extinguishing agent,
- extinguishing agent level indicator,
- a 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,
- a suction valve for removing vacuum from a tank in the course of pumping out extinguishing agent during fire fighting actions,
- a force pump to pump an extinguishing agent during fire fighting actions,
- a solenoid valve,
- a pressure switch to control pressure level at the pump output.

Fire detection unit:

- smoke detector,
- radial fan, sucking air with combustion products from the monitored space through an opening in the rear wall of the housing.

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®2 contains an external power supply and 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.



On the back of the panel, there are connectors for signals led from input sensors and for switching external devices.

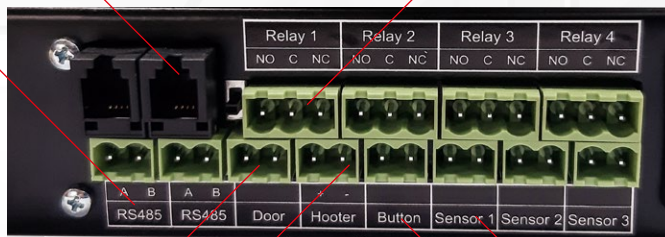


- 1. Extinguishing agent filling hole, closed with a 3/8" plug
- 2. Nozzle
- 3. AC inlet
- 4. Sensor air supply

2 temperature sensor inputs (RJ12)

4 outputs for potential-free relays

Input/output



A lock, when door is open

3 inputs for external sensors

External horn

A button to activate extinguishing actions from outside

Fill the container with an extinguishing agent or check the amount of it, if necessary, before starting the equipment. Upon filling the tank, mounting the equipment on a 19" rack, testing and connecting the battery, the extinguishing unit is ready to use - as a plug&play device, no additional configuration is required.

A smoke detector embedded in **FRS-RACK®2** will continuously analyse air limpidity. When smoke is detected, the sensor sends a signal to the control board; it starts extinguishing actions. Gas is released from the tank, which is pumped through a hermetically sealed pipe system, a solenoid valve and a nozzle, spraying it - under pressure - inside the protected rack. At the same time, an appropriate acoustic and visual system is activated by means of LEDs located on the front panel wall 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®2 is also possible. To do this, it is simply necessary to connect the device to the network and use its interface available from the browser. The unit can also be connected to external monitoring systems via TCP/IP or through an additional module, available separately.

TECHNICAL PARAMETERS OF THE SYSTEM

Tank emptying time	< 10 s
Mains power supply	100-240 V _{AC} , 50-60 Hz
IP range	20
Volume of tank for extinguishing agent	2 l (up to 3.2 kg of extinguishing agent)
Working temperature range	from +5 to +40°C
Range of storage temperatures (excluding extinguishing agent)	from -40 to + 80°C
Relative humidity (non-condensing)	20-90 %
Dimensions (W x H x D)	483 x 45 x 495 mm
Weight (excluding extinguishing agent)	12.2 kg

ENVIRONMENTAL WORKING CONDITIONS

FRS-RACK®2 extinguishing panel is designed for indoor use in an environment protected against weather conditions. This device ensures operation in temperatures from +5°C to +40°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®2 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®2 firefighting unit, as a non-pressurized unit, is subject to much more lenient transport regulations than similar units currently available on the market, especially with regard to approval for air transport.

EXTINGUISHING AGENT

FK-5-1-12 (a chemical name for NOVEC™ 1230) is a colourless, delicate-odour liquid agent. As an anhydrous solution, it does not conduct electricity and does not cause corrosion of equipment. Unlike carbon dioxide, it does not cause thermal shock to extinguished objects. 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 live electrical equipment.

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 1,1,1,2,2,4,5,5,5-nonafluoro-4-(trifluoromethyl)-3-pentanone
Chemical formula	CF ₃ CF ₂ C(=O)CF(CF ₃) ₂
Design concentration	4,5-5,9%

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

NOAEL	LOAEL	ODP	GWP
10%	>10%	0	1