FIREGUARD GLOBAL LTD

AQRS Clean Agent HFC-227ea

AUTOMATIC QUICK RESPONSE SUPPRESSION SYSTEM

DESCRIPTION

ELECTRICAL PANEL TUBE-BASED MICRO ENVIRONMENT SUPPRESSION SYSTEM (AQRS)

Electrical mains, server racks, MDB, wiring tray, automobile engine & industrial machinery have one thing in common. These spaces are high-risk spaces because they are most vulnerable to fire. What's more, these spaces hide fires until it becomes too large to handle.

The In-Panel Tube-Based System (AQRS) is an innovative fire fighting solution that is ideal for enclosed electrical cabinets that are highly vulnerable to fire.

FEATURES

- Classification: Works on class A, B, C fires and fires involving electrically charged devices and is effective on a wide range of flammable and combustible materials.
- Self-actuated: Does not require any power supply and will function normally in the event of a power outage. Electronics-Friendly: Shown to be electrically non-conductive and safe for use on electrically charged equipment.
- High-value Risk Protection: Suitable for protecting a range of high-value risks as it virtually eliminates damage to high-tech equipment, artwork and other delicate and sensitive objects.
- No Clean-up Required After Discharge: After a discharge, the extinguishing agent can be removed by simple ventilation.
- 24-hour Protection: Automatic detection and actuation controls ensure fire protection is always 'on'.
- Targeting the source of a fire rapidly and accurately,suppress the fire in seconds, preventing further damage and minimizing remedial work.
- Multiple Enclosures or compartment protection with the use of single cylinder of extinguishing agent by routing additional tubing to each enclosed space.
- No false activations.

OPERATION

The system uses unique heat-sensitive pneumatic polymer tubing for detection. This heat sensing tube spreads across the area that needs protection. On coming in contact with fire, the tube ruptures at a predetermined temperature of about 80°-90°C. This creates a pressure differential and activates the system.

The system then discharges the clean gas-based extinguishing agent onto the fire zone, extinguishing the fire at once.

APPLICATION AREA

- Electrical Panels
- Electrical Cabinets
- Switching Areas
- Printing Press
- Server Racks
- Mobile Tower
- Diagnostic Machines
- UPS Rooms

PRODUCT DATA

Cylinder Material	Mild Steel / Stainless steel
Cylinder pressure (20°C)	14 bar
Internal pressure of Sensor tube	14 bar
Working temperature range	-20°C up to +70°C
Superpressurization gas	Nitrogen (N_2)
Test Pressure	35 bar

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PRODUCT RANGE

MODEL		Agent Quantity(kg)	Max. Protected Volume (m^3)	System Configuration
Mild Steel Cylinder	Stainless Steel Cylinder			
FGQRH-01-M-D	FGQRH-01-S-D	1	1.8	Direct
FGQRH-02-M-D	FGQRH-02-S-D	2	3.6	
FGQRH-03-M-D	FGQRH-03-S-D	3	5.4	
FGQRH-04-M-D	FGQRH-04-S-D	4	7.2	
FGQRH-06-M-D	FGQRH-06-S-D	6	10.9	
FGQRH-O1-M-I	FGQRH-01-S-I	1	1.8	Indirect
FCQRH-02-M-I	FGQRH-02-S-I	2	3.6	
FGQRH-03-M-I	FGQRH-03-S-I	3	5.4	
FGQRH-04-M-I	FGQRH-04-S-I	4	7.2	
FCQRH-06-M-I	FGQRH-06-S-I	6	10.9	

GENERAL SYSTEM DATA

Extinguishing agent used (ISO name)	HFC - 227 ea
Nomenclature	1,1,1,2,3,3,3- Heptafluoropropane
Chemical formula	C_3HF_7
System pressure (at 20°C)	14 bar
Operating temperature range	-20°C to +70°C
Propelling gas	Nitrogen (N_2)
Approvals	UL Listed / FM Approved
EPA	Acceptable

SYSTEM CONFIGURATION

AQRS is available in two different configurations - the direct system and the indirect system. The key differentiator between the two configurations is the extinguishing agent dispersal mechanism.

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INDIRECT SYSTEM:

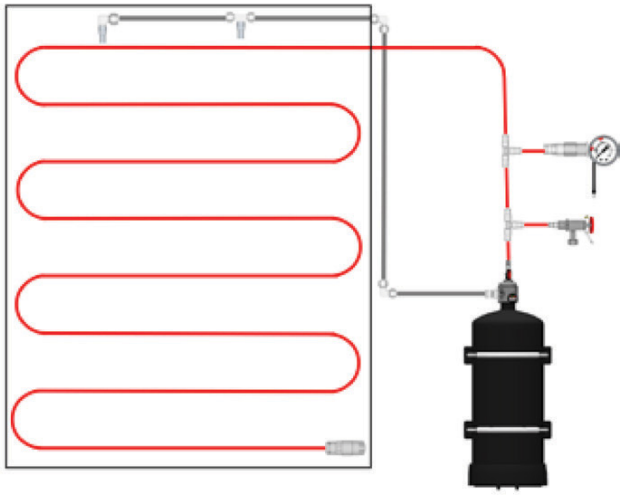
In the Indirect system, the pneumatic heat fire detecting tube acts as a detection device only. A separate line (a steel conduit) runs across the protected area which releases the extinguishing agent when required.
In case of a fire incident, the pneumatic tube detects fire and ruptures creating a pressure differential in the system. This activates the system and the extinguishing agent is released into the special steel conduit. The steel conduit has strategically placed nozzles that release the agent into the fire zone to achieve the extinguishing action.

Being a clean agent-based technology AQRS does not leave any residue and is electronics and environment friendly.

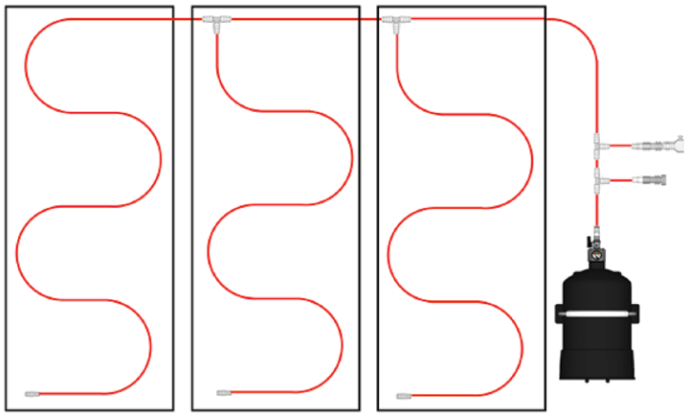
DIRECT SYSTEM:

In the direct system, the pneumatic heat fire detecting tube acts as both detection as well as delivery device. In case of a fire incident, the pneumatic tube ruptures at the point where the fire has occurred, creating a miniature hole.

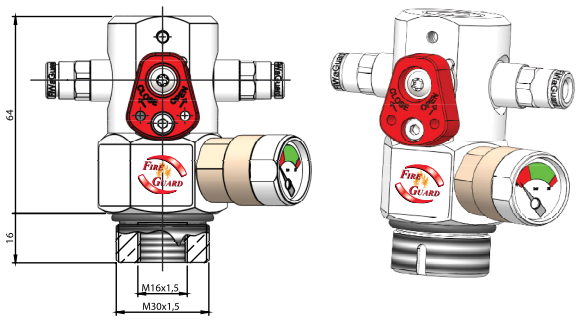
This creates a pressure differential in the system and the extinguishing agent is released through the ruptured hole directly onto the fire.

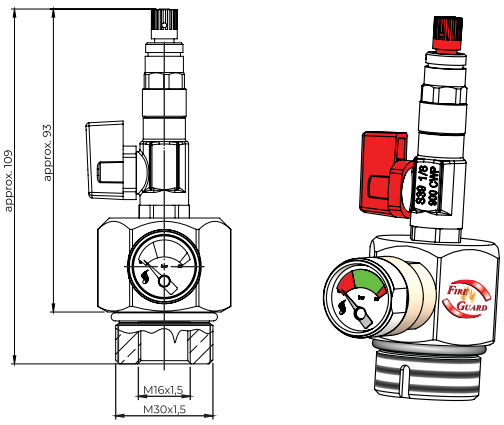


Indirect Low Pressure Valves



Direct Low Pressure Valves





FIRE DETECTING TUBE FITTINGS

To facilitate different system configurations and set ups, the following Fire detecting tube fittings are available:

Elbow plug in connector

Tee plug in connector

End of line plug

End of line adapter

End of line with pressure gauge

Grommet

Tube attachment

Straight plug in connector

PRESSURE GAUGE WITH ELECTRICAL SWITCH (TI-000002)

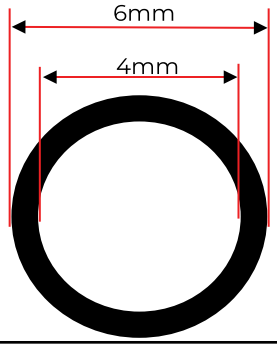
The Pressure Monitoring switch is installed at the end of line of the Sensing Tube to monitor drop in the pressure. Pressure gauge is used for indication and monitoring the cylinder pressure and for signaling leaks.

(Option)

FIRE DETECTING TUBES

UL-recognized

- Enables linear Monitoring and Detection.
- flexible Installation in the Hazard Area.
- Suitable for all AQRS - Plug-In
- Connectors → Quick and Easy Installation.
- Low Susceptibility / high Reliability



Color	Red (RAL3000)
Operating Temperature	Optimal temperature for long-term use is -40°C to +80°C (higher Temperatures can lead to a Reduction in Service Life) / Steady Load to max. +80°C has been tested. The lowest Operating Temperature is stipulated at minus 40°C.
Life Time	Best of our Knowledge and Experience we can contemplate that the Life Time of minimum 8 years can be expected considering Normal Environmental Conditions without any harsh Influences and without contact of aggressive Media
Dimensions	outer Ø6mm/Inner Ø4mm
Recommended Pending Raduis	150mm (min 100mm)
Material	modified Polyamide (PA)
Melting Point	approx. +220 degrees Celsius when heating up with 10 K/minute
Operating Pressure	recommended between 11bar and 23bar within the whole Temperature Range. optimal Filling Pressure: 18bar @ 180°C
Burst Pressure	approx. 120 bar @ 20°C (without Flame Impingement)
Product approval	UL-approved