



YG FIRE SECURITY
INDUSTRY AND
FOREIGN TRADE
LIMITED COMPANY

HAFEX[®]

HYBRID AEROSOL
FIRE EXTINGUISHING
SYSTEMS

"NEWEST AND THE CLEANEST
AEROSOL FIRE EXTINGUISHER"



HAFEX[®]

"NEWEST AND
THE CLEANEST
AEROSOL FIRE
EXTINGUISHER"



YG FIRE SECURITY INDUSTRY AND FOREIGN TRADE LIMITED COMPANY

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YG YANGIN GUVENLIGI LTD. was established in 2010, building on our extensive knowledge and experience in the fire and safety industry dating back to 2003. Our business operations primarily focus on public and private institution projects, rather than retail sales. This has led to the development of deep connections with the government of Turkey and its various departments for safety and security, including the army, secret services, and national projects. As a result of our proven track record of trustworthiness and quality, we have chosen to manufacture our own products instead of importing them.

company story

In addition to our traditional manufacturing operations, we have also begun to manufacture portable fire extinguishers that utilize aerosol as an extinguishing media, as well as the first and only Super Fire Ball that can be activated by a fire control system in addition to the traditional manual activation method since 2017.

Our technology has continued to evolve through our partnership with SGS (Siyah Guvenlik Sistemleri) in 2019, which has led to the creation of the cleanest and most advanced aerosol fire extinguishing system in the world under the brand name HAFEX® (HYBRID AEROSOL FIRE EXTINGUISHING SYSTEMS). This system utilizes two different aerosol compound formulas for different purposes.

company story

Now, YG YANGIN GUVENLIGI LTD. has grown to produce the largest Aerosol Fire Extinguishing Generators in the World in both K and S types of Aerosol.

We manufacture our own auxiliary parts, electronic equipment, and fire control panels. Furthermore, we are constantly expanding our scope of manufacturing and developing new products.

We are a member of SAHA ISTANBUL DEFENSE AVIATION AND SPACE CLUSTER, the largest defense industry association in Turkey. Our company is approved as a government and military supplier, and our products are included in the Government Material Office with many of them having NATO stock codes for land, air and sea use.

We also hold management position in one of the biggest fire and safety association in Turkey.

We have formed solution partnership with VODAFONE TR where we can provide S type of Aerosols for 4G&5G base stations, meanwhile we are working with many known private and government partnered institutions worldwide.

Our company holds a total of 28 trademark patents, including 10 product and technology patents /utility models.

YG YANGIN GUVENLIGI LTD is one of the leading manufacturers of fire suppression systems in Turkey. Our company has sales representatives in 18 different countries and in 6 provinces across Turkey. We provide marketing and installation services to all cities in Turkey. Our team is highly experienced in providing specialized service in the field of fire suppression systems and offers a high-tech customer support and installation services to many countries around the World.



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condensed aerosol technology

01



TS ISO 15779



TS EN 15276



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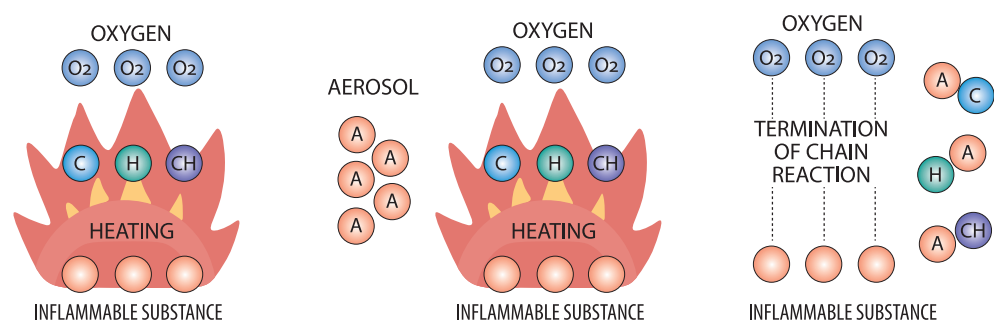
aerosol technology

In the 1990s, the use of aerosol fire extinguishers have started to spread due to the need for alternative fire extinguishing agents which could replace Halon gaseous fire extinguishers that are used in fire extinguishing systems. Main reason was the prohibition of the use of portable fire extinguishers and fixed fire extinguishing systems which are containing Halon gases after the Vienna Convention, Montreal and Kyoto Protocols, which were prepared and adopted in order to prevent climate changes around the world, also to impose restrictions on greenhouse gas emissions and to reduce the effects of global warming. The aerosol fire extinguishers belong to the class of hot aerosol extinguishers and they are one of the most preferred fire extinguishers, because they have high fire extinguishing efficiency, their structure is simple, convenient and modular, they do not need a pressurized and sealed container, they contain fire extinguisher chemicals in solid tablets with long service life, they are easy to install and maintain, aerosol fire extinguisher Ozone Hazard Potential (ODP) and Global Warming Potential (GWP) are zero, they are harmless to the environment and they have well price-performance ratio in comparison to other gaseous fire extinguishers.

How Do Condensed Aerosols Are Extinguishing Fire?

The aerosol fire extinguishers chemically and physically interrupt the fire by breaking the chemical reaction chain that sustains the fire and absorbing free radicals such as hydrogen and hydroxyl radicals which are important for the fire to sustain. This is done by attracting these radicals to the high surface area of the aerosol particles. The aerosol particles in the aerosol fire extinguisher don't significantly decrease the oxygen level in the environment, hence they can be safely used in areas where people or other living things are present without posing a risk to them. Additionally, these aerosol extinguishers are also non-toxic, which makes them suitable to be used in enclosed spaces where people may be present.

Figure- Aerosol Fire Extinguishing Mechanism



When an aerosol fire extinguisher is activated, the tablets inside the extinguisher generates a dense fog composed of particles as small as 2 microns by the result of redox (reductionoxidation) reaction.

This fog contains potassium carbonate, potassium bicarbonate, nitrogen, carbon dioxide, and some water vapor, that reacts with hydrogen and hydroxyl compounds, also known as free radicals, which are unstable products that are produced during combustion and act as a fuel for the fire. The fog absorbs these molecules and prevents them from reintegrating into the combustion reaction. This breaks the chain of the chemical combustion reaction and chemically extinguishes the fire.

In addition to this, HAFEX® aerosol fog also provides physical suppression by producing a large amount of nitrogen and cooling the environment.

The small size of the aerosol particles ensures that the fire extinguishing process is successful by completely filling the volume without requiring pipes or pressured nozzles unlike traditional extinguishers that are pressurized and sealed.

"HAFEX® aerosol fire extinguisher do not require sealings since they do not store pressurized liquid or gas extinguisher as an agent."

Advantages of Aerosol Fire Extinguishing Systems

- + No need to use pipe or nozzle. When the system is activated, the HAFEX aerosol will fill the entire closed volume and extinguish the fire.
- + Easy to install and mount.
- + Can be used without maintenance for 15 years.
- + Can be activated directly by an electrical signal or mechanically thermobulb activator.
- + Robust and compact body structure takes a small space.
- + No toxic or corrosive effect. It does not harm the environment and livings.
- + HAFEX® Aerosols Do not leave any residue or sediment after activation.
- + It can be easily integrated with the existing fire detection and control system.
- + It does not require filling, maintenance and calibration. Therefore, annual operating costs are zero.
- + Since suppression takes place within seconds, secondary damages remains minimal.
- + According to the EPA, it is one of the least extinguishing agents that can be officially used instead of Halon gases.
- + O.D.P. (Ozone depletion potential) = 0
- + G.W.P. (Global warming potential) = 0
- + G.H.E (Green house effect) = 0
- + The ratio of extinguisher weight to extinguishing capacity is very low in comparison to the other fire extinguishing agents.

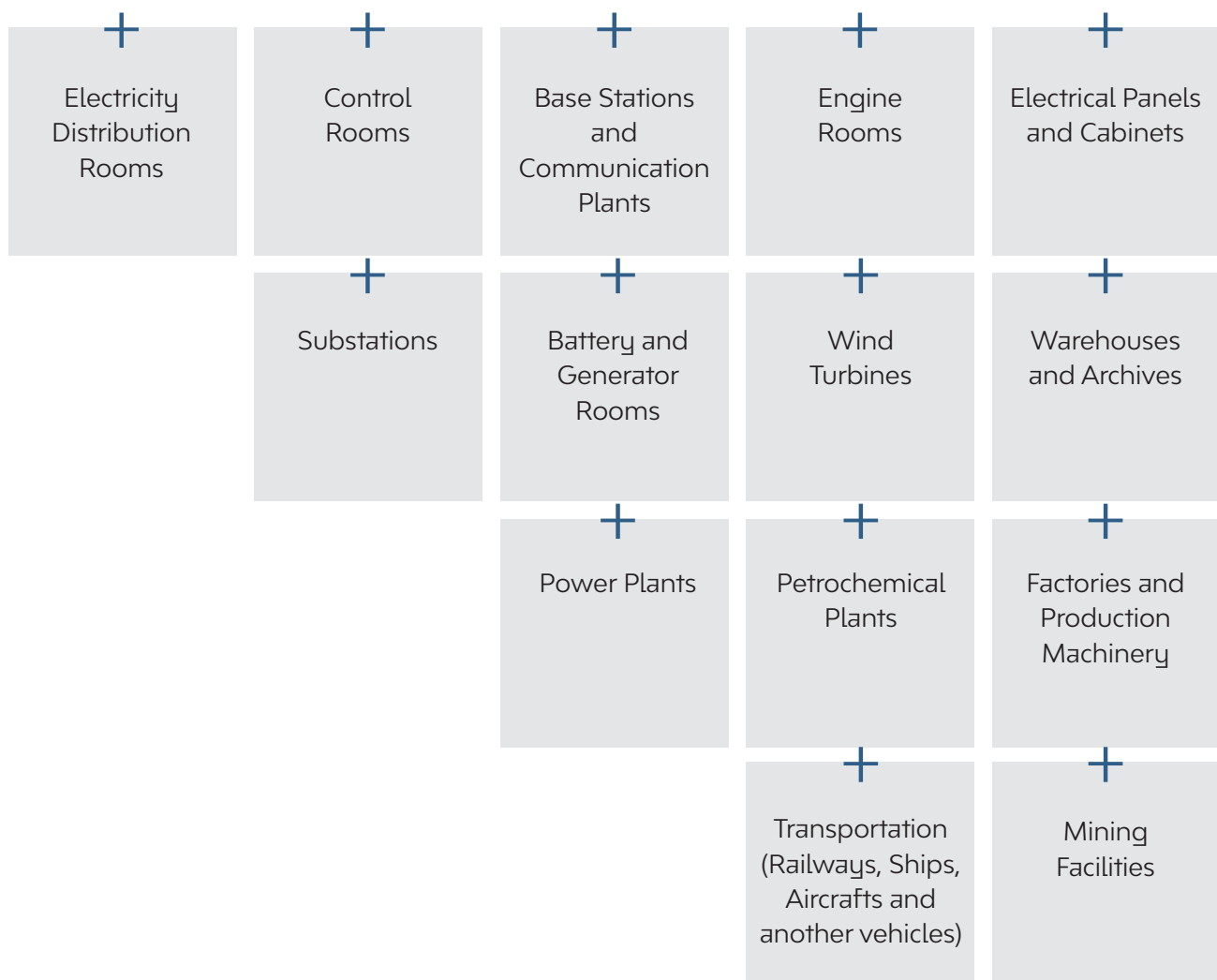
Places Where It Is Not Appropriate To Use Aerosol Fire Extinguishers

- + The aerosol fire extinguishers are not suitable for use in the following types of fires;
- + Chemical fires containing their own oxygen source such as cellulose nitrate
- + Reactive metal fires such as sodium, potassium, magnesium, titanium, zirconium
- + Fires of oxidizing agents such as sodium chlorate, sodium nitrate, nitric oxide, fluorine
- + Some organic peroxide fires with capability of autothermal degradability
- + Reactive hydride and metal amide fires that can react with the aerosol fire extinguishers
- + Pyrophobic material fires such as white phosphorus.

Types of Fires Which Aerosol Fire Extinguishers Are Effective

- + The aerosol fire extinguishers are used effectively in the following fire classes in a closed environment.
- + Class A Fires: Fires of solid organic materials such as wood, coal, paper, grass, textile products, plastics and similar products.
- + Class B Fires: Fires of liquid combustible materials such as gasoline, diesel oil, fuel oil, mineral oils, paint, varnish, thinner, alcohol, acetone, glue.
- + Class C Fires: Fires of combustible gases such as LPG (liquefied petroleum gas), propane, natural gas, methane, hydrogen, acetylene and fires of gaseous material liquefied under pressure.
- + Fires in electrical and electronic equipment, transformers, electrical distribution systems and panels, computer and data processing system cabinets, telecommunication devices.

Usage Areas of Aerosol Fire Extinguishing Systems



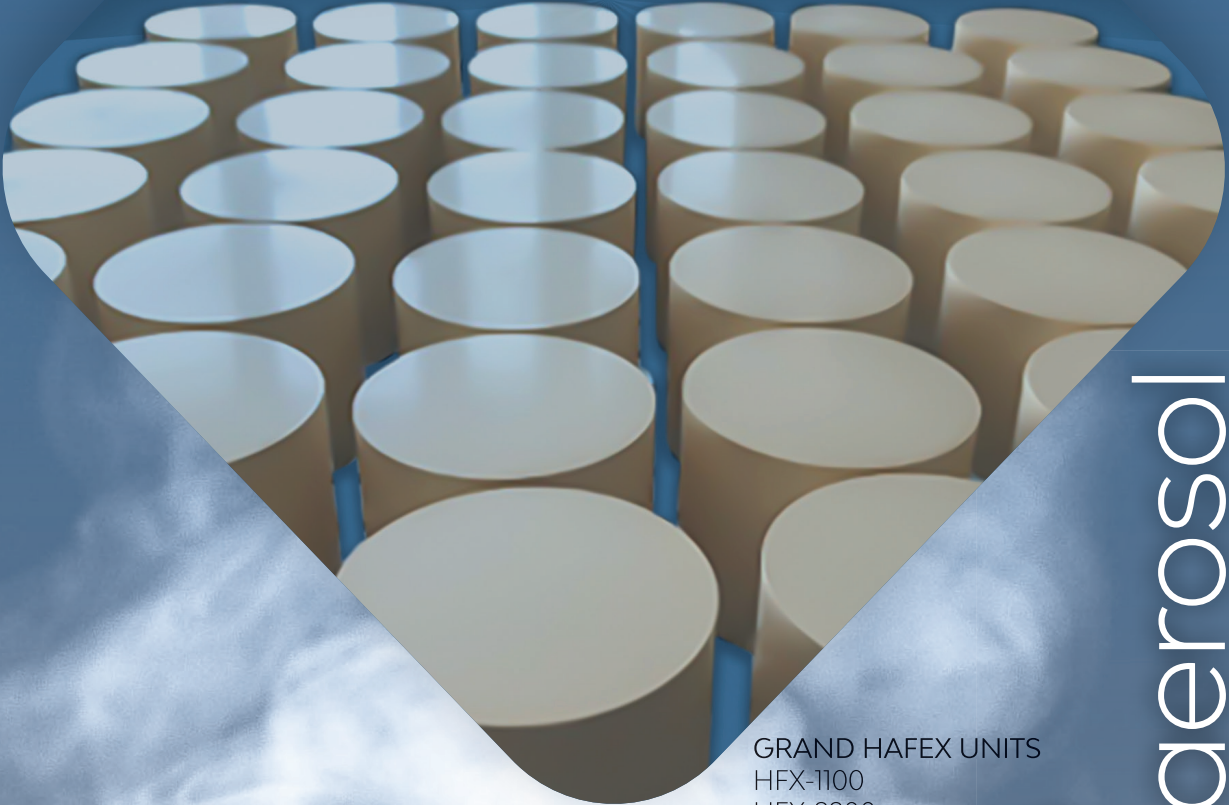


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02

K TYPE HAFEX AEROSOL



GRAND HAFEX UNITS

HFX-1100
HFX-2200
HFX-3400
HFX-4500
HFX-6000
HFX-7600

MINI HAFEX UNITS

HFX-20
HFX-50
HFX-100
HFX-200
HFX-500

k type
hafex aerosol

02



TS ISO 15779



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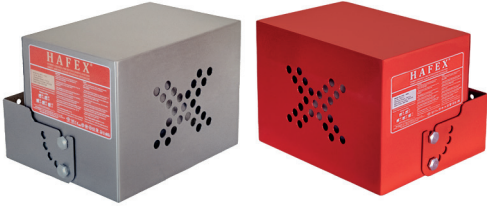


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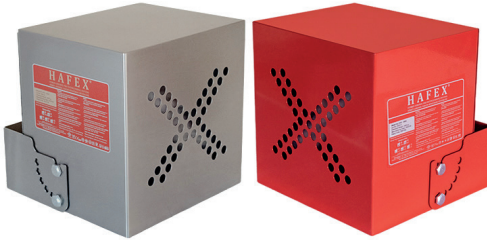
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GRAND HAFEX® UNITS



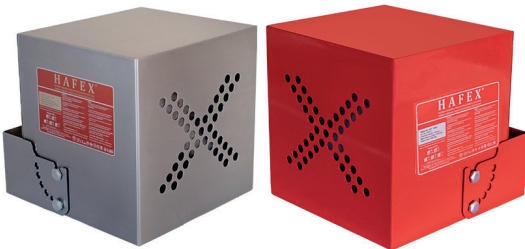
HFX1100

Model	HFX-1100
Compound	K (Potassium Nitrate Based)
Gross Weight	10300 gr. ±%3
Compound Weight	1100 gr.
Dimensions (mm)	210 (W) x 287 (L) x 200 (H)
Discharge Time	13-16 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



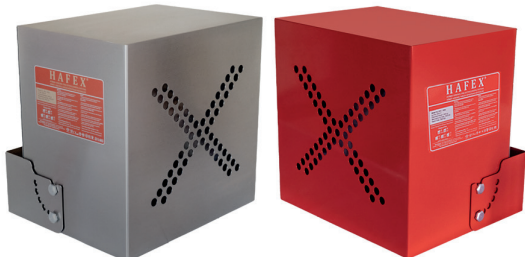
HFX2200

Model	HFX-2200
Compound	K (Potassium Nitrate Based)
Gross Weight	17600 gr. ±%3
Compound Weight	2200 gr.
Dimensions (mm)	287 (W) x 287 (L) x 240 (H)
Discharge Time	14-17 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



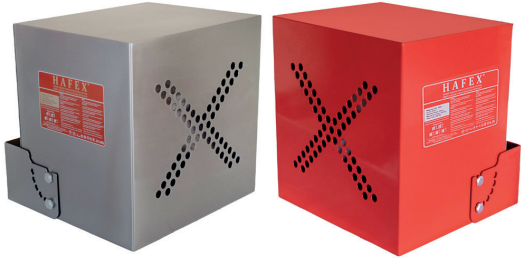
HFX3400

Model	HFX-3400
Compound	K (Potassium Nitrate Based)
Gross Weight	20400 gr. ±%3
Compound Weight	3400 gr.
Dimensions (mm)	287 (W) x 287 (L) x 264 (H)
Discharge Time	14-17 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



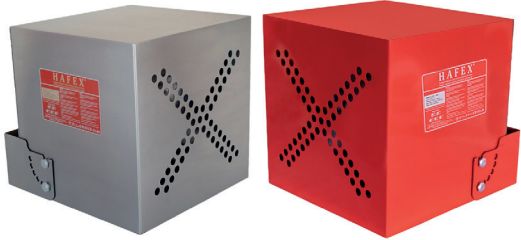
HFX4500

Model	HFX-4500
Compound	K (Potassium Nitrate Based)
Gross Weight	28600 gr. ±%3
Compound Weight	4500 gr.
Dimensions (mm)	361 (W) x 361 (L) x 268 (H)
Discharge Time	15-18 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX6000

Model	HFX-6000
Compound	K (Potassium Nitrate Based)
Gross Weight	33000 gr. ±%3
Compound Weight	6000 gr.
Dimensions (mm)	361 (W) x 361 (L) x 302 (H)
Discharge Time	16-19 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX7600

Model	HFX-7600
Compound	K (Potassium Nitrate Based)
Gross Weight	39800 gr. ±%3
Compound Weight	7600 gr.
Dimensions (mm)	361 (W) x 361 (L) x 268 (H)
Discharge Time	17-20 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX20

Model	HFX-20
Compound	K (Potassium Nitrate Based)
Gross Weight	500 gr. ±%2
Compound Weight	20 gr.
Dimensions (mm)	50 (W) x 50 (L) x 93 (H)
Discharge Time	3-5 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX50

Model	HFX-50
Compound	K (Potassium Nitrate Based)
Gross Weight	700 gr. ±%2
Compound Weight	50 gr.
Dimensions (mm)	50 (W) x 50 (L) x 130 (H)
Discharge Time	3-5 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F

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MINI HAFEX® UNITS

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HFX100

Model	HFX-100
Compound	K (Potassium Nitrate Based)
Gross Weight	1330 gr. ±%4
Compound Weight	100 gr.
Dimensions (mm)	80 (W) x 80 (L) x 113 (H)
Discharge Time	4-6 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX200

Model	HFX-200
Compound	K (Potassium Nitrate Based)
Gross Weight	1760 gr. ±%4
Compound Weight	200 gr.
Dimensions (mm)	80 (W) x 80 (L) x 147 (H)
Discharge Time	4-6 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX500

Model	HFX-500
Compound	K (Potassium Nitrate Based)
Gross Weight	3980 gr. ±%3
Compound Weight	500 gr.
Dimensions (mm)	100 (W) x 100 (L) x 243 (H)
Discharge Time	5-7 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



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03

S TYPE HAFEX AEROSOL

s type
hafex aerosol

GRAND HAFEX UNITS
HFX-1100S
HFX-2200S
HFX-3400S

MINI HAFEX UNITS
HFX-20S
HFX-50S
HFX-100S
HFX-200S
HFX-500 S

03



TS ISO 15779



TS EN 15276



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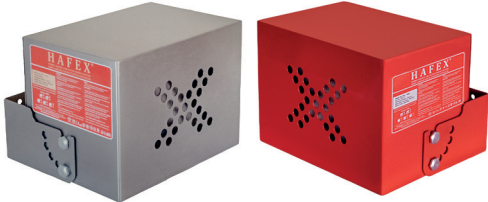


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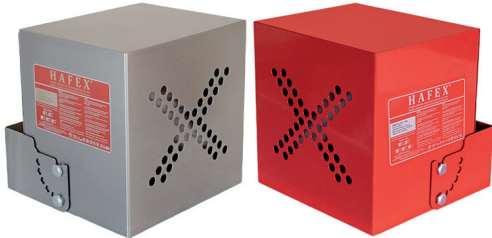
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GRAND HAFEX® UNITS



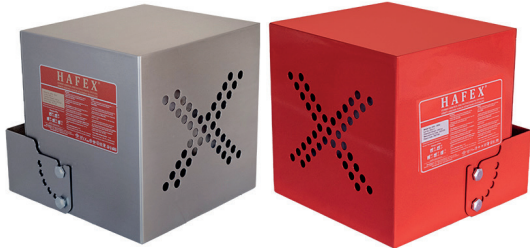
HFX1100S

Model	HFX-1100 S
Compound	S (Strontium Nitrate Based)
Gross Weight	10000 gr. ±%3
Compound Weight	1100 gr.
Dimensions (mm)	210 (W) x 287 (L) x 200 (H)
Discharge Time	16-19 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX2200S

Model	HFX-2200 S
Compound	S (Strontium Nitrate Based)
Gross Weight	16800 gr. ±%3
Compound Weight	2200 gr.
Dimensions (mm)	287 (W) x 287 (L) x 240 (H)
Discharge Time	20-23 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX3400S

Model	HFX-3400 S
Compound	S (Strontium Nitrate Based)
Gross Weight	19600 gr. ±%3
Compound Weight	3400 gr.
Dimensions (mm)	287 (W) x 287 (L) x 264 (H)
Discharge Time	25-28 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX20S

Model	HFX-20 S
Compound	S (Strontium Nitrate Based)
Gross Weight	495 gr. ±%2
Compound Weight	20 gr.
Dimensions (mm)	50 (W) x 50 (L) x 93 (H)
Discharge Time	4-6 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX50S

Model	HFX-50 S
Compound	S (Strontium Nitrate Based)
Gross Weight	695 gr. ±%2
Compound Weight	50 gr.
Dimensions (mm)	50 (W) x 50 (L) x 130 (H)
Discharge Time	4-6 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX100S

Model	HFX-100 S
Compound	S (Strontium Nitrate Based)
Gross Weight	1300 gr. ±%4
Compound Weight	100 gr.
Dimensions (mm)	80 (W) x 80 (L) x 113 (H)
Discharge Time	5-7 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F

MINI HAFEX® UNITS



HFX200S

Model	HFX-200 S
Compound	S (Strontium Nitrate Based)
Gross Weight	1730 gr. ±%4
Compound Weight	200 gr.
Dimensions (mm)	80 (W) x 80 (L) x 147 (H)
Discharge Time	5-7 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



HFX500S

Model	HFX-500 S
Compound	S (Strontium Nitrate Based)
Gross Weight	3930 gr. ±%3
Compound Weight	500 gr.
Dimensions (mm)	100 (W) x 100 (L) x 243 (H)
Discharge Time	6-8 Seconds
Activation Method	Electrical, Thermal (Optional)
Suitable Fire Classes	NFPA 10: A, B, C (Electrical Equipment) EN 2: A, B, C, F



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HAFEX ELECTRONICS

200A+
VEHICLE FIRE CONTROL PANEL

HFX-48GSM
COMPACT CONVENTIONAL FIRE CONTROL PANEL
DESIGNED FOR THE TELECOM INDUSTRY

200L
MINI FIRE CONTROL PANEL

BPA
BATTERY POWERED ACTIVATOR

HFX-SQR
SEQUENTIAL ACTIVATOR

HFX-TBA THERMOBULB ACTIVATOR
68°C 79°C 93°C 141°C

hafex electronics & auxiliary equipments

04

HAFEX ELECTRONICS &
AUXILIARY EQUIPMENTS



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HAFEX® ELECTRONICS

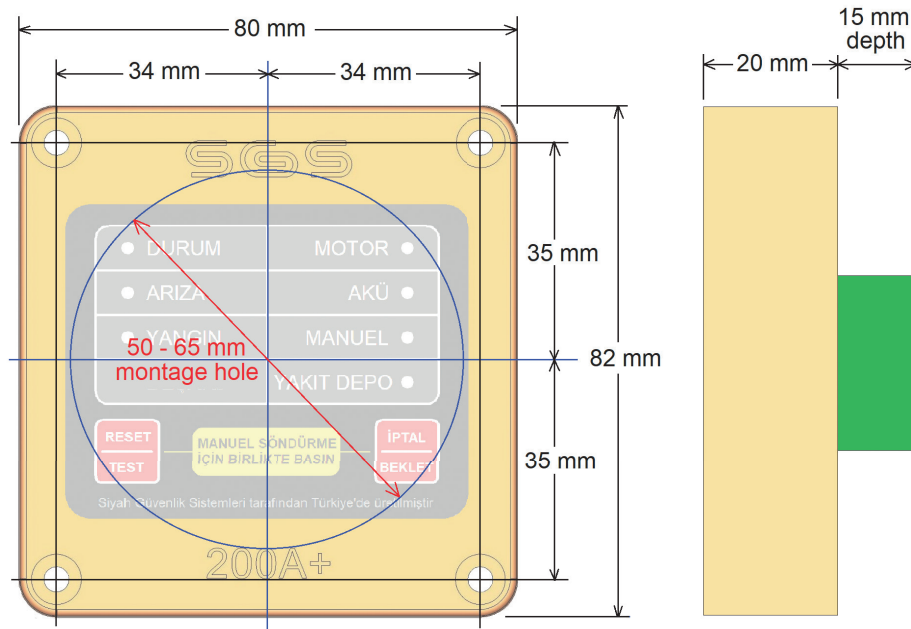
200A+

200A+ VEHICLE FIRE CONTROL PANEL

The 200A + fire control panel is a small size and useful fire detection and extinguishing panel designed to detect and extinguish possible fires in motor land vehicles and motor vessels.



Dimensions And Mounting



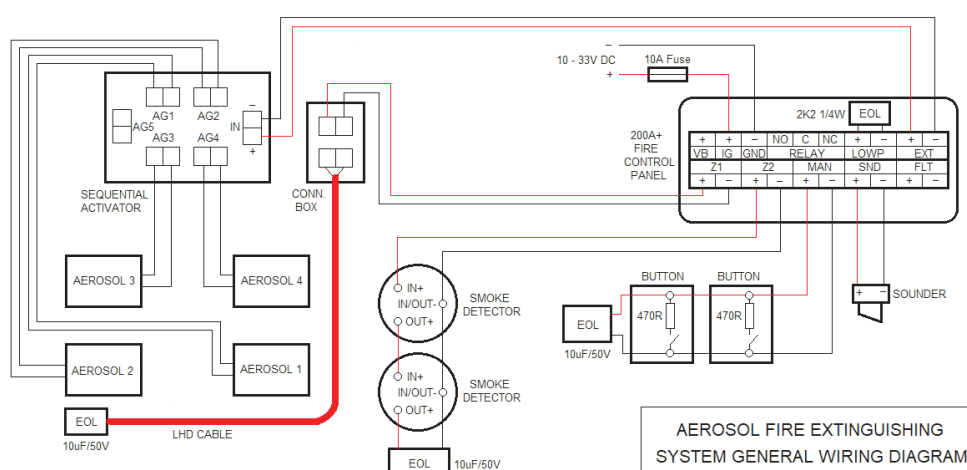
Key Features

- + It can work in all vehicles with 12V and 24V supply infrastructure.
- + 4 detection inputs (Engine, Battery, Manual and Fuel Tank) and 1 extinguishing output for the engine compartment.
- + Compatible with conventional 2-wire detectors, digital LHD (Linear Heat Detection) cables or miniature thermostats.
- + Engine compartment fire suppression system can operate in Automatic and Manual, Manual Only, Test and Change-over Mode.
- + It has the ability to automatically or manually activate the aerosol fire extinguishers or pressurized cylinders with solenoid valves in the engine compartment in case of fire.
- + Detection inputs and extinguishing output can be monitored against short circuit and open circuit failures that may occur.
- + Panel warns the user visually and audibly in case of fault or fire.
- + It has sounder output, auxiliary relay output and fault output.
- + Easy to use with two multi-functional buttons on the panel.
- + It can be used as surface or panel mounted with its small size and useful body structure.

Technical Specifications

Supply Voltage and Current Consumption	
Supply Voltage Range	10 – 33V DC
Quiescent Current	32 mA @ 12V DC
	20 mA @ 24V DC
Fire State Current (Manual)	85 mA @ 12V DC
	50 mA @ 24V DC
Engine and Battery Compartment Detection Inputs	
Supply Voltage	12V DC Nomimal
Alarm Condition	<700 Ohm
Short Circuit Condition	<50 Ohm
Current Capacity	25 mA Maximum
End Of Line Element (EOL) 1	10uf/50V %10 ceramic capacitor
Engine Compartment Fire Extinguishing Output	
Current Capacity	1 A continuous, 2A maximum @ 25°C
Monitoring Voltage	5V DC
Monitoring Current	2 mA Maximum
End Of Line Element (EOL)	1N4004 – 4007 general purpose diode
Short Circuit Condition	<170 Ohm
Open Circuit Condition	>1K Ohm
Fuel Tank Detection Input	
Alarm Condition	470 Ohm<R<2K2 Ohm
Open Circuit Condition	>4K7 Ohm
Short Circuit Condition	<220 Ohm
Monitoring Voltage	5V DC
Monitoring Current	2 mA Maximum
End Of Line Element (EOL)	2K2 1/4W %1 resistor
Auxiliary Relay Outputs	
Sounder Output Current Capacity	200 mA continuous, 400 mA maximum @ 25°C
Fault Output Current Capacity	200 mA continuous, 400 mA maximum @ 25°C
Relay Contact Current Capacity	2A maximum @ 24V DC
Dimensions	W: 80 mm, L: 82 mm, D: 20 mm (Top) W: 80 mm, L: 82 mm, D: 53 mm (Full)

+ “See the user manual for more information”



HAFEX® ELECTRONICS HFX48GSM

HFX48GSM

COMPACT CONVENTIONAL FIRE CONTROL PANEL
DESIGNED FOR THE TELECOM INDUSTRY PANEL



Key Features

- + It can operate with 48V DC supply voltage, which is standard for the telecom industry.
- + For this reason, it does not require an additional DC / DC or AC / DC SMPS.
- + It can operate with a maximum 60V DC supply voltage.
- + False alarm situations are minimized with the "cross-zone" operation of conventional smoke detector and LHD heat detection cable entries.
- + It can be integrated into the BSC / BTS remote monitoring infrastructure with its Alarm and Fault auxiliary relays.
- + It takes less space and is easy to install with its compact ABS body structure.

Technical Specifications

Rated operating voltage	48V DC
Operating voltage range	30 - 60V DC
Standby current	15mA@48V
Alarm condition current	45mA@48V
24V DC supply regulator current	3A (max.)
24V DC supply short circuit protection	Electronics
Number of detection inputs	3
Detection input supply voltage	24V DC
Detection input current capacity	25mA@24V
Line resistance for alarm condition	<700 Ohm
Line resistance for short circuit	<50 Ohm
Number of extinguisher outputs	4
Extinguisher output supply voltage	24V DC
Extinguisher output current capacity	2A@24V
Extinguishing output short circuit protection	PPTC polymer
Extinguish delay (countdown) time	30 sec
Aerosol extinguisher trigger time	1 sec
Voltage capacity of Alarm and Fault relay	250V (max.)
Current capacity of Alarm and Fault relays	2A (max.)
Dimensions (mm)	212x123x60

200L MINI FIRE CONTROL PANEL

The 200L micro fire control panel evaluates the information received from the linear heat detection cable (LHD) or thermostats connected to the fire detection line. And It is a rail mounted miniature fire control panel suitable for use in small areas, which can automatically activate the fire extinguisher units (aerosol gas extinguishers or pressurized tube extinguishers with the help of a special pyrotechnic valve) connected to the extinguishing line when a fire situation occurs. 200L operates by connecting to all mains networks in the 100 - 240V AC voltage range and has a built-in rechargeable lithium-ion battery that automatically switches on in case of a power failure. Thus, it works without the need of any external DC power supply or battery. The 200L fire control panel continuously checks the detection and extinguishing connection lines and can detect any connection problems that may occur in these lines. In case of alarm or malfunction, it warns the user visually and audibly. Thanks to the small and easy-to-install rail-mounted housing, it can be installed quickly to protect small areas against fire. With the multi-function button on the panel, all operations such as audible warning silence, extinguisher activation cancellation, resetting the panel after an alarm or switching the panel on and off can be performed by the user with a single button.

Key Features

- + Microcontroller based surface mount design.
- + Miniature body that can be easily mounted on the rail.
- + Ability to work with linear heat sensing cable (LHD) or thermostats.
- + Can be supplied from 100 - 240V AC city networks.
- + Built-in rechargeable lithium-ion battery that automatically switches on in case of power failure.
- + Visual and audible warning in case of alarm and malfunction
- + Automatic line fault monitoring.
- + Multi-function one-button operation.
- + Alarm relay output.
- + Extinguishing line short circuit protection.
- + Very low power consumption.

Usage Areas

- + Electrical Distribution and Control Panels
- + GSM Base Stations (radio station)
- + Bank ATM Devices
- + Industrial Kitchen Hoods
- + IT Server Cabinets
- + Industrial Machinery
- + Elevator Control Systems

200L
HAFEX[®] ELECTRONICS

04

HAFEX ELECTRONICS &
AUXILIARY EQUIPMENTS

HAFEX® ELECTRONICS

HFX200L

HFX200L MICRO FIRE CONTROL PANEL

Technical Specifications



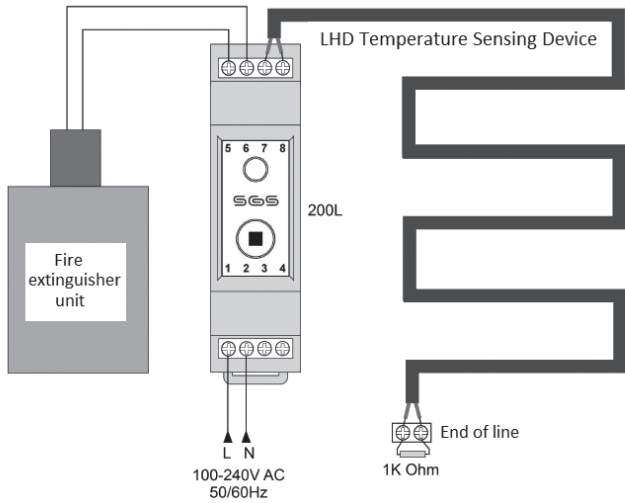
Maximum Operating Values

Supply Source Voltage	240V AC @ 50Hz Supply Source
Alarm Relay Output Voltage	250V
Alarm Relay Output Current	2A
Extinguishing Activation Current	2A
Operating Temperature Range	- 40 ° C to + 85 ° (All values are valid for + 25 ° C ambient temperature)

Normal Operating Values

Voltage	220V AC 50 Hz
Extinguishing Activation Voltage	4.2V DC
Built-in Lithium-ion Battery Capacity	4.2V (full charge)
Extinguishing Activation Current	900mAh
Standby Time	7 days

General Application Scheme



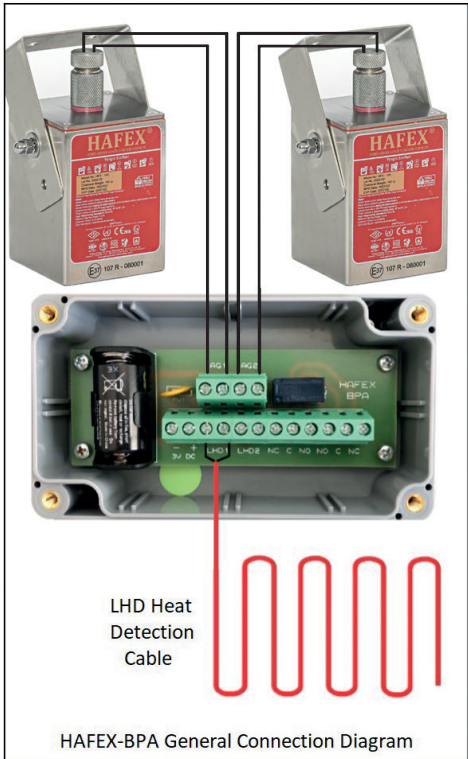
Panel Connections	Connection No	Connection title	Connection definition
	1	L	AC supply source input phase end. (Operating voltage range of the panel is 100 - 240V AC 50 / 60Hz)
	2	N	AC supply source input neutral end.
	3	RA	Alarm relay output normally open (NA) contact terminal. In the event of an alarm, the contact between the RA-RB closes.
	4	RB	Alarm relay output normally open (NA) contact terminal. In the event of an alarm, the contact between the RA-RB closes.
	5	EP	Extinguisher connection line + end.
	6	EN	Fire extinguisher connection line - end.
	7	ZN	Fire detection line - end. (LHD or thermostat connector)
	8	ZP	Fire detection line + end. (LHD or thermostat connector)

BPA BATTERY POWERED ACTIVATOR



HAFEX - BPA (Battery Powered Activator) has a built-in lithium CR2 battery with a capacity of 3V 800mAh, which can detect the ambient temperature with a Linear Heat Detection cable (LHD) in small volumes and activate up to 2 aerosol fire extinguishers when the ambient temperature exceeds the alarm threshold of the LHD cable. is a small size module. If desired, it can be used instead of internal battery by externally feeding it with a 3V DC 2A power supply. The general connection of the BPA module is shown below.

BPA
HAFEX® ELECTRONICS

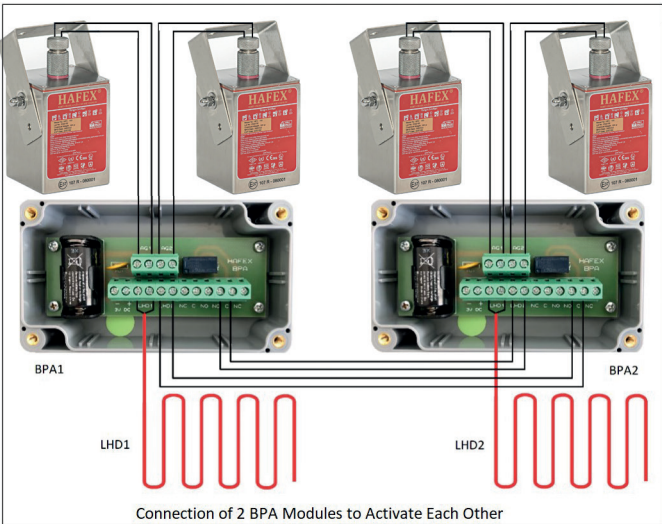


Inside the HAFEX - BPA module, there is a PTC type resettable polymer fuse with 2A cut-off current rating that protects the 3V lithium battery or external DC supply from excessive current during the activation of aerosol fire extinguishers.

WARNING! Only 3V CR2 type non-rechargeable batteries should be used in the module. In case of external supply, the battery should not be used During installation, attention should be paid to the polarity (connection direction) of the battery or supply source.

HAFEX - BPA module is designed to activate up to 2 aerosol fire extinguisher units. Aerosol extinguisher units are connected to AG1 and AG2 connection ports. If only one aerosol extinguishing unit is to be connected, only one of the AG1 or AG2 ports is used. In this case, the other connection port is left blank. Either of the LHD1 or LHD2 inputs of the BPA module can be used for the LHD heat sensing cable connection. It is recommended to check the LHD heat sensing cable for damage and short circuit before connecting to the BPA module.

WARNING! While connecting the aerosol extinguisher and LHD heat sensing cable to the BPA module, care should be taken to ensure that the battery of the module is removed or if an external supply is used, the supply voltage is cut off. After all connections are made, the battery of the module should be replaced or energized if external power is used.



HAFEX - BPA (Battery Powered Activator) has a built-in lithium CR2 battery with a capacity of 3V 800mAh, which can detect the ambient temperature with a Linear Heat Detection cable (LHD) in small volumes and activate up to 2 aerosol fire extinguishers when the ambient temperature exceeds the alarm threshold of the LHD cable. is a small size module. If desired, it can be used instead of internal battery by externally feeding it with a 3V DC 2A power supply. The general connection of the BPA module is shown below.

HAFEX[®] ELECTRONICS HFXSQR

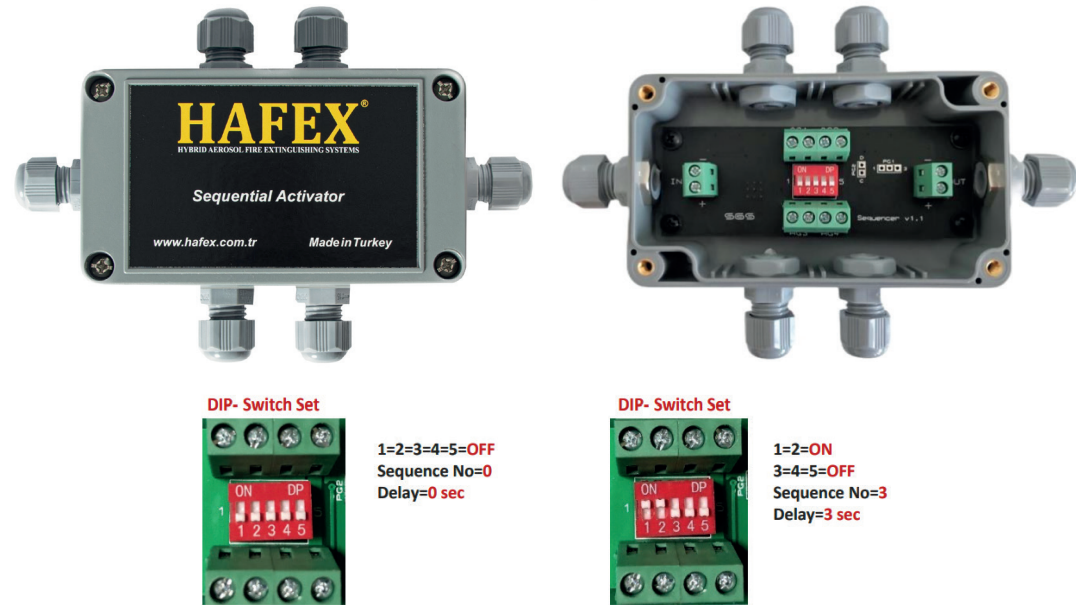
HFXSQR SEQUENTIAL ACTIVATOR

"Auxiliary equipment for connecting a large number of aerosol extinguishing units to the panel extinguishing output."

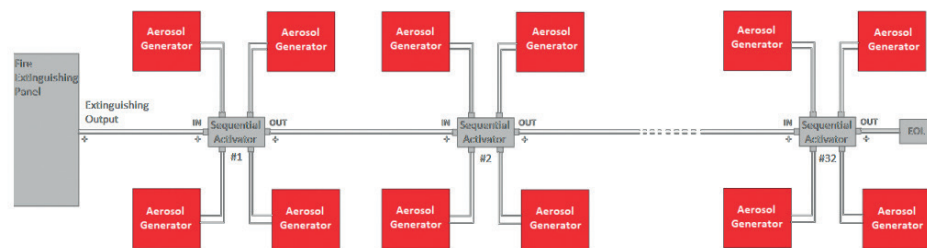
When more than 4-5 aerosol extinguisher units are connected to the extinguishing output of a panel with 24V DC supply voltage, in series with each other or more than 2-3 in parallel to each other, the extinguishing output of the panel is difficult to activate the aerosol extinguisher units electrically. When more than these numbers are connected to the panel extinguishing outlet, there is a possibility that some of the units will not be activated.

Key Features

- + However, it is necessary to activate a large number of aerosol extinguisher units through an extinguishing outlet, especially for the protection of large closed volumes. In order to overcome this problem, it is necessary to use the auxiliary equipment that we call Sequential Activator.
- + The sequencers are connected to the extinguishing out-put of the panel and each sequencer controls up to 4 aerosol suppression units. Using the sequencer, it is possible to connect a maximum of 256 aerosol extinguishers to the extinguishing outlet of a panel.
- + Sequencers produced by other companies are linked together like chain links. Each sequencer is activated by the previous sequencer. Therefore, if a previous sequencer fails, all subsequent sequencers are disabled. Unlike competitors' products, our production sorters work independently from each other. For this reason, a situation such as the collapse of the entire system after the defective sequencer due to a failure of any sequencer is prevented.



Connection Diagram For Using Hafex Sequential Activator Within The Fire Extinguishing System



HFXTBA THERMOBULB ACTIVATOR 68°C 79°C 93°C 141°C

Key Features

- + It does not require an energy source to activate the HAFEX® aerosol generator.
- + Suitable for mini and grand HAFEX® units.
- + Response Time Index (RTI) = 24√ms
- + Average Crash Load = 4.1 kN~ 418 kg
- + Thermo Bulb Certificates : UL and LPCB

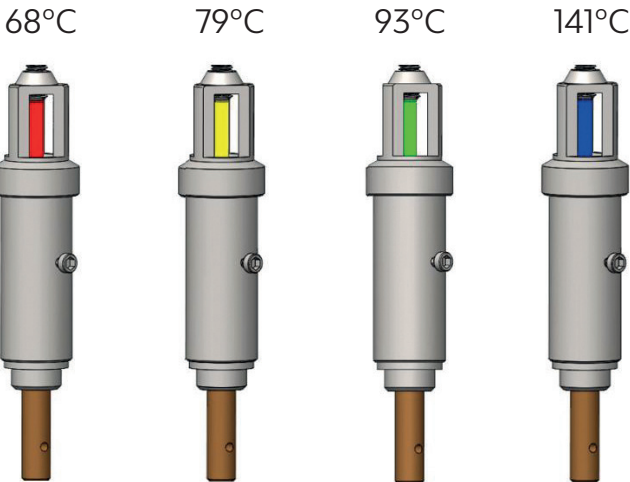
Product Survey

“It functions as a fire detector and automatic activator for the HAFEX® aerosol generators.”

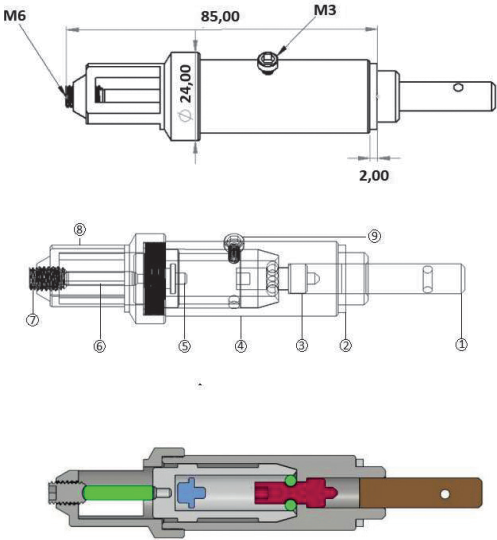
Product Codes

- + Accordingly, HFXTBA68 HFXTBA79 HFXTBA93 HFXTBA141

Temperature Options



Technical Drawing



Legends

Part No	Part Name / Material
1	Igniter / Brass
2	Washer / SS 304
3	Trigger Pin / SS 303
4	Activator Body / SS 303
5	Spring Cap / SS 304
6	Termo Bulp / Glass
7	Set Screw / SS 303
8	Bulp Cap / SS 303
9	Safty Screw / SS 304

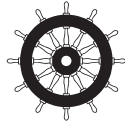
DIRECTIVES AND STANDARDS SURVEY



UNECE-R107

UN ECE R107

United Nations Economic Commission for Europe Regulation No.107. Automatic fire suppression system protecting engine compartment of busses and coaches.



0437/22

MED-IMO MSC.1/Circ.1270

International Maritime Organization (IMO)-Equivalent to Fixed Gas Fire-Extinguishing Systems, as Referred to in SOLAS 74, for Machinery Spaces.



BS EN 15276:2019

British Standards Institution. Fixed firefighting systems - Condensed aerosol extinguishing systems.



TS EN 15276

TS EN 15276:2019

Turkish Standards Institution. Fixed firefighting systems - Condensed aerosol extinguishing systems.



TS ISO 15779

ISO 15779:2011

Condensed aerosol fire extinguishing systems — Requirements and test methods for components and system design, installation and maintenance — General requirements.



ATEX

Directive 2014/34 EU

Equipment or protective system intended for use in potentially explosive atmospheres. II 3G Ex sc IIC T5...T1 Gc



Directive 2013/29/EU

EU declaration of conformity (DoC) is a mandatory document that you as a manufacturer or your authorised representative need to sign to declare that your products comply with the EU requirements.



ISO 14001:2015

It is the international standard that specifies requirements for an effective environmental management system (EMS).



ISO 9001:2015

It is defined as the international standard that specifies requirements for a quality management system (QMS).



ISO 45001:2018

It specifies requirements for an occupational health and safety (OH&S) management system, and gives guidance for its use, to enable organizations to provide safe and healthy workplaces by preventing work-related injury and ill health, as well as by proactively improving its OH&S performance.



HAFEX®

hafex.com.tr

HFX200R | HFX400R

rack
cabinet fire
extinguishing
system

05

05

RACK CABINET FIRE
EXTINGUISHING SYSTEM



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HFX200R | HFX400R

HFX200R | HFX400R

RACK CABINET FIRE DETECTION, EXTINGUISHING AND
CONTROL MODULE

The fire detection, control and aerosol fire extinguishing generator infrastructure is placed in a 2U module design especially for rack cabinets.

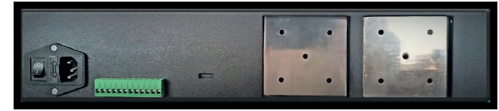
The laser-based air sampling infrastructure used in the extinguishing system is different from competing applications, which is more unique and smaller than other conventional solutions.

It is ensured that the extinguishing process that will not damage the electronic equipments within the cabinet by use of the S-type HAFEX aerosol extinguishers

Because of these reasons, HFX-200R&400R are the first and only kind in the industry.

Interior Features

- + Fire detection and warning system
- + Fire extinguishing system
- + Fire control module



Exterior Features

- + Compact plug & play system
- + Lightweight and easy assembly
- + Touch screen fire monitoring and control unit



NO FIRE FIRE IS DETECTED FIRE IS EXTINGUISHED



- + Innovative and sensitive smoke detection with a laser-based optical air sampling sensor with an optimum service life of 20,000 hours.
- + Monitoring and control with resistive touch 3.5" TFT color LCD screen. Audible and visual warning in case of malfunction and fire.
- + After extinguishing operation or in case of false alarm, the system can be restarted by pressing and holding the reset button for 5 seconds.
- + This process commands the detection system to clean its filters and the process takes about 30 minutes. After this period, the system is restarted and the fire detection & alarm system is reactivated without the need for any other action, only by means of two keys.



HAFEX®

hafex.com.tr



vehicle fire
extinguishing
system

06



UNECE - R107

(E37) 107 R - 080001



TÜRK STANDARDLARI ENSTİTÜSÜ



TS ISO 15779



TS EN 15276



ATEX



UNECE-R107



0437/22



bsi
Aerosol
Fire
Extinguishers
KITEMARK™

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29

06

VEHICLE FIRE
EXTINGUISHING SYSTEM

HAFEX VEHICLE FIRE EXTINGUISHING SYSTEM

YG FIRE SAFETY LTD. THE FIRST TURKISH DOMESTIC AEROSOL FIRE EXTINGUISHING SYSTEM MANUFACTURER WITH UN ECE R107 TYPE APPROVAL WHICH CAN BE APPLIED TO M2 AND M³ CATEGORY MOTOR VEHICLES AND RUMORCES

The type approval number 107R 08 0001 has been given to Domestic Turkish Production HAFEX® branded Clean Condensed Aerosol Fire Extinguishing Systems by Turkish Standards Institution (TSE) Transportation and Logistics Systems Center Presidency, with the report number of TSE.06.R-107.0015. Therefore, HAFEX® is exhibited to the international market with complete United Nations Regulation Type Approval.

Justification Of Why Hafex Should Be Used In Motor Vehicles

Aerosol fire extinguishing systems can be used effectively in; A, B, C, F class (according to EN2 standard) fires and electrically sourced fires. Defining the design and test conditions of aerosol suppression systems are available in the national standard "ISO 15779:2011 (TS ISO 15779:2016) : Condensed Aerosol Fire Extinguishing Systems - Rules and Test Methods for Components and System Design, Installation and Maintenance." Aerosol fire extinguishing systems are easy to apply and very effective in engine compartments of motor vehicles that the system can operate at various regions such as where fire risks can be seen at; battery and electrical equipment compartments, heater compartments and equipment areas with high heat generating features. Vehicle fire safety regulations have been reviewed in recent years and important decisions have been made by UNECE (United Nations Economic Commission for Europe) and decided to use fire detection systems within the engine compartment and in closed compartments of the bus (driver's sleeping compartment, toilet, luggage and other closed sections). UNECE Regulation No.107 ensures the heating of the bus located in the engine compartment is modified to use fire detection system and also newer requirements are made in 2016. However, there are four different fire tests in the scope of UN ECE-R107, which must be complied by the fire extinguishing systems to determine the performance reliability. "M² (Passenger with a Maximum Loaded Weight up to 5000 kg Carrying motor vehicles) and M³ (Motor vehicles carrying passengers with a Maximum Load Weight of more than 5000 kg) category, the UNECE-R107 regulation, which includes

technical regulations regarding the general structure of vehicles." After HAFEX® successfully passing the appropriate performance tests specified in the UNECE-R107 regulation, HAFEX® is certified to be used in all closed areas of motor vehicles that have a risk of fire, especially the engine compartment.



3 Different Application Method Of Hafex Fire Extinguishing Systems In Motor Vehicles

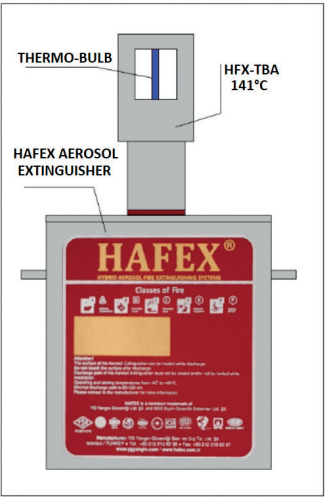
YG FIRE SAFETY LTD. THE FIRST TURKISH DOMESTIC AEROSOL FIRE EXTINGUISHING SYSTEM MANUFACTURER WITH UN ECE R107 TYPE APPROVAL WHICH CAN BE APPLIED TO M2 AND M3 CATEGORY MOTOR VEHICLES AND RUMORCES

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1. Point Temperature Sensing Mechanical Infrastructure

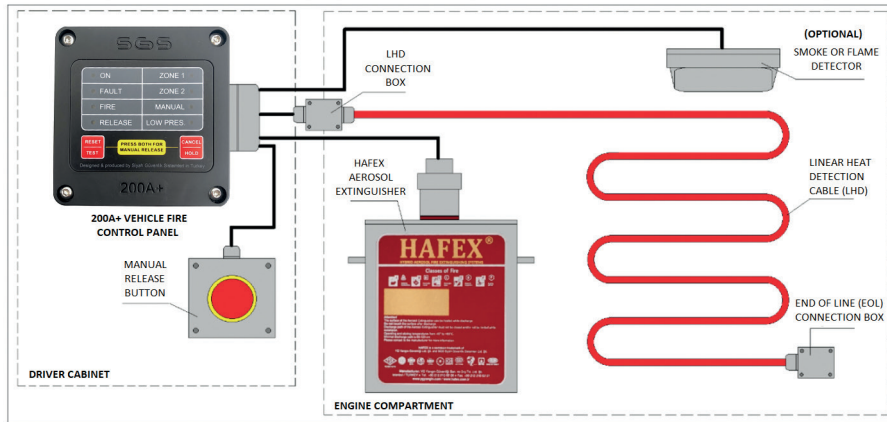
Mechanical activator connection with a thermo-tube sensor sensitive to ambient temperature, suitable to use in small volumes such as batteries, electronic equipment or fuse compartments of vehicles. It is a mechanical point temperature sensing infrastructure that does not require electrical energy or a fire control panel to operate aerosol fire extinguishing generators and it is designed to meet the most basic level of protection. Depending on the characteristics of the environment, the appropriate activation temperature threshold (57 °C, 68 °C, 79 °C, 93 °C, 141 °C or 182 °C) can be selected for the system.

By means of thermal switches that can optionally be mounted on the aerosol extinguisher units, the information on the activation of the aerosol extinguisher units can be electrically transmitted and the driver can be alerted audibly or visually. In addition, it is possible to activate the mechanical actuator with an electrical signal or manually.



2. Conventional Fire Control Panel Based Infrastructure

Suitable to use in both small volumes and large closed spaces such as the engine compartments of vehicles, Aerosol fire, which is managed by a microprocessor-based electronic fire control panel (200A +) designed to be used in vehicles with both 12V and 24V supply infrastructure, with an operating voltage range of 10 - 30V DC, small enough to be used in motor vehicles, and capable of meeting the need for advanced level protection. is the extinguishing system infrastructure. For fire detection, all conventional smoke, heat, flame, CO (carbon monoxide) detectors, miniature thermostats and linear heat detection (LHD) cables can be used in the system. The fire control panel has 3 detection inputs. Two of these inputs are designed to work independently or with a cross-zone logic when required. Thus, by using two different types of fire detection detectors in these detection inputs, the occurrence of false fire alarms can be effectively prevented. Third detection input is used for to activate extinguishing manually when it is required.

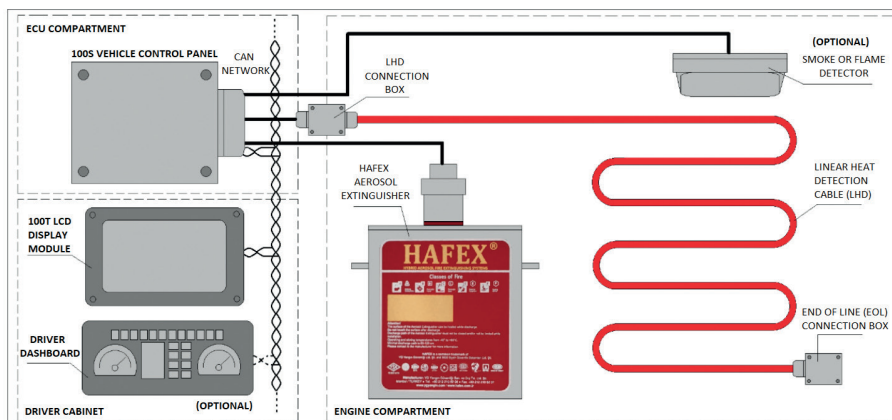


However, thermal switches that can optionally be mounted on the aerosol extinguisher units, the information on the activation of the aerosol extinguisher units can be electrically transmitted and the driver can be alerted audibly or visually. There is also a manual extinguishing start button that enables

the extinguishing system to be activated manually. There are also siren and auxiliary relay outputs. The extinguishing output of the fire control panel is designed so that it can directly activate a maximum of 5 aerosol extinguisher units in the case of 24V supply and a maximum of 3 aerosol extinguisher units in the case of 12V supply. The number of aerosol extinguisher units that can be connected to the panel can be increased by using auxiliary equipment called activation sequencers. In case of open circuit / short circuit faults that may occur in the detection inputs or extinguishing output and in case of fire alarm, the driver is warned audibly and visually by the fire control panel.

3. Fire Control Panel Based Infrastructure

That can be connected to CAN Network microprocessor-based electronic fire that can be integrated into the vehicle's existing CAN (Controller Area Network) communication network backbone, designed to be used in all volumes of motor vehicles with fire risk, with a 10 - 30V DC operating voltage range, also designed to be used in vehicles with both 12V and 24V supply infrastructure. Capable of meeting the need for advanced level protection managed by the control panel (100S) It is the aerosol fire extinguishing system infrastructure. For fire detection, all conventional smoke, heat, flame, CO (carbon monoxide) detectors, miniature thermostats and linear heat detection (LHD) cables can be used in the system. The fire control panel can be programmed completely over the CAN communication port with 3 detection inputs, 1 extinguishing output, 2 sirens and 1 auxiliary relay output. The CAN communication port of the panel supports the SAE J1939 communication protocol used in buses, business machines, trucks, trucks and military vehicles. The panel has a touch LCD screen mounted in the driver's cabin of the vehicle via CAN network. The monitoring module (100T) or, when the vehicle manufacturer has created the necessary infrastructure within the instrument panel in the driver's cabin. The 100S panel send all information with the status of the aerosol extinguishing system. Up to 8 fire control panels can be integrated into the CAN communication network and by creating a fire extinguishing subsystem, they can be monitored and sent commands to the panels through the 100T monitoring module (or dashboard).



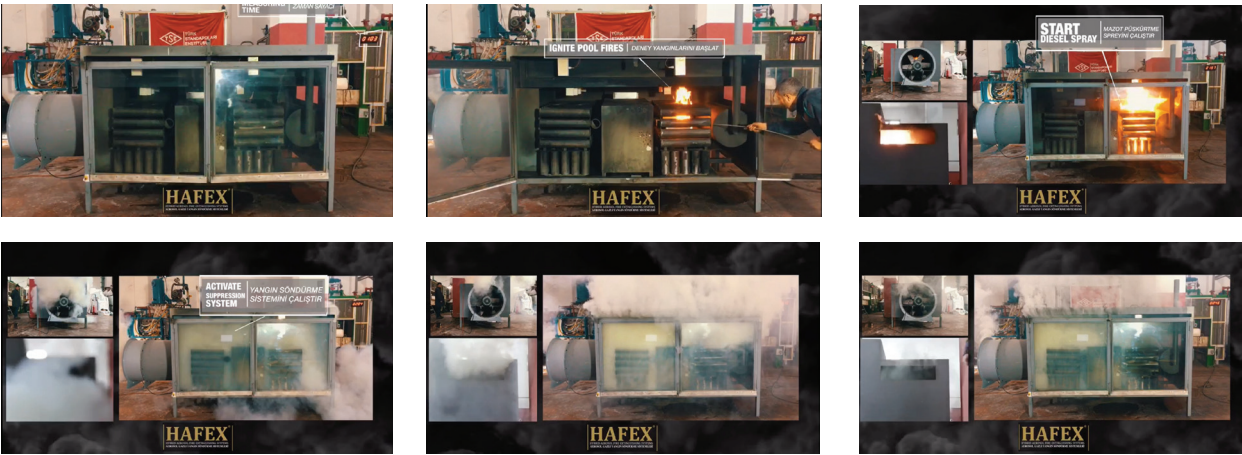
In addition, the panel has a real-time event log with a capacity of 1000 events that is not affected by power outages. All alarm and fault activities of the fire extinguishing system are recorded retrospectively in the panel.

Images From The Tests Performed By TSE In Accordance With UNECE R107 Regulation

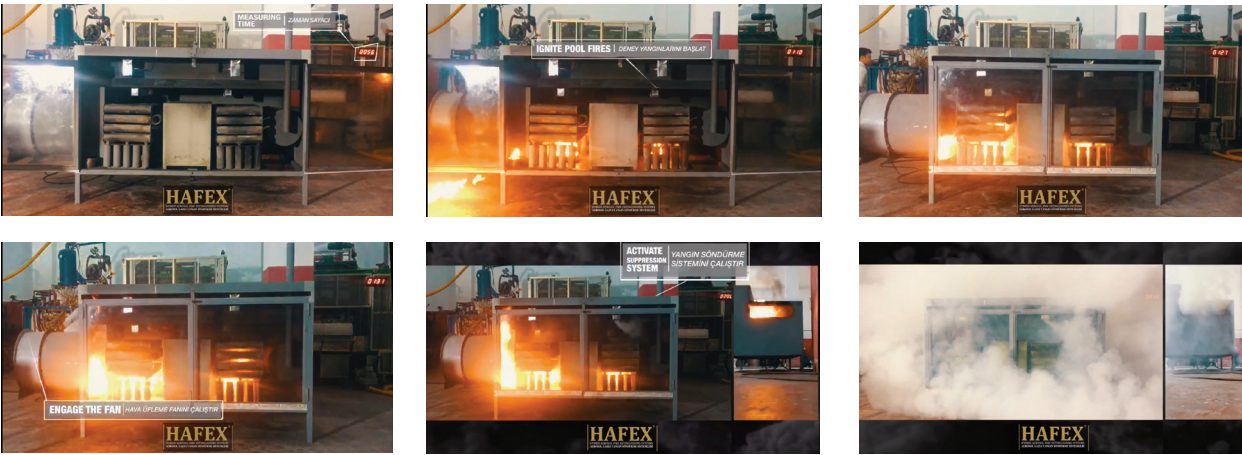
High-Load Fire With Fan Test



Low-Load Fire Test



Low-Load Fire Test



Re - Ignition Test



SOME OF OUR REFERENCES

E

GALL



X



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"NEWEST AND
THE CLEANEST
AEROSOL FIRE
EXTINGUISHER"



YG FIRE SECURITY INDUSTRY AND FOREIGN TRADE LIMITED COMPANY

HAFEX[®]



YG FIRE SECURITY
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