





ARESFSS BUS FIRE EXTINGUISHING SYSTEM

Bus fire extinguishing systems which ARESFSS Industry designed and certificated with the substructure it has gained in Defence Industry, in accordance with UNECE R107 regulation requirements, enable to respond fires that can burst out at engine section manually or automatically. Thanks to ARESFSS Industry's vast product range, it can provide flexible solutions to customer needs with different agent alternatives such as FM200, Aerosol type extinguishing solution or liquid solution.

It is very important to have automatic fire detection and extinguishing systems on all light or heavy, private or commercial vehicles used for business or personal purposes, especially so as to provide life safety. Great financial losses and casualties can be prevented with an instant response.

ARESFSS Fire Extinguishing System equipment; consist of a control unit which controls the system, detector, extinguisher tube and solution discharge nozzles that enables the response. ECE R107 certified, ARESFSS Bus Fire Extinguishing Systems do not harm main equipment of the vehicle, are harmless to environment and human health and makes a difference compared to its equivalents by being easily cleaned after system activation.

System General Specifications

» Conformity to AS 5062, UNECE R107, R10 and STANAG-4317 standards

» Capability to record last 500 alarms and errors
» Led lighting indicators

» Automatic and manual activation system

» Sound warning system
» Activation-suspense

» It conforms to IP 67 standards. It has water and dust ingress protection.

» Ability to extinguish fire within 3 secs from breaking out time



» Optional control unit options

» Extinguisher and sensor error debugging
» Capability to make detection with optical detector sensors

» Built-in test feature (BIT)
» Design suitable for harsh environmental conditions

» Opportunity to programme computer on mini-USB port

» Easy installation, connection and adjustable assembly

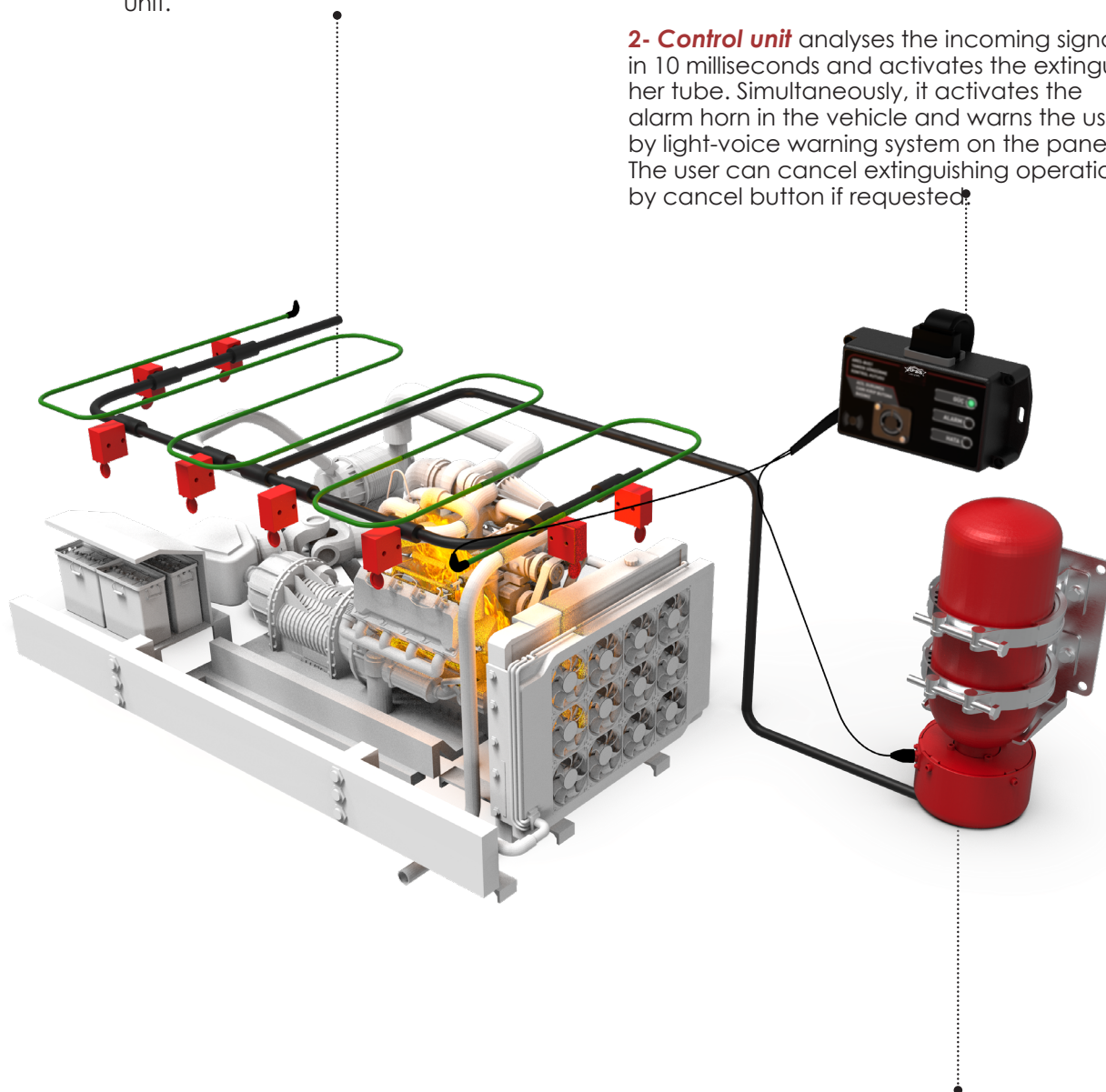
» Conformant to MIL STD-461, MIL-STD-810, MIL-STD-1275 military standards

BUS PYREX- THERMAL WIRE AUTOMATIC FIRE EXTINGUISHING SYSTEM OPERATION SCHEMATIC



1- The fire is detected by **Linear sensor wire** and the signal is sent to control unit.

2- **Control unit** analyses the incoming signal in 10 milliseconds and activates the extinguisher tube. Simultaneously, it activates the alarm horn in the vehicle and warns the user by light-voice warning system on the panel. The user can cancel extinguishing operation by cancel button if requested.



3- **The extinguisher tube** is activated with the help of the pyrotechnic trigger it has and extinguishing agents are released. Fire extinguisher tube delivers 2X FSS liquid extinguishing agent to nozzles within 2 seconds by the help of hydraulic lines.

BUS PYREX UV-IR DETECTOR WIRE AUTOMATIC FIRE EXTINGUISHING SYSTEM OPERATION SCHEMATIC



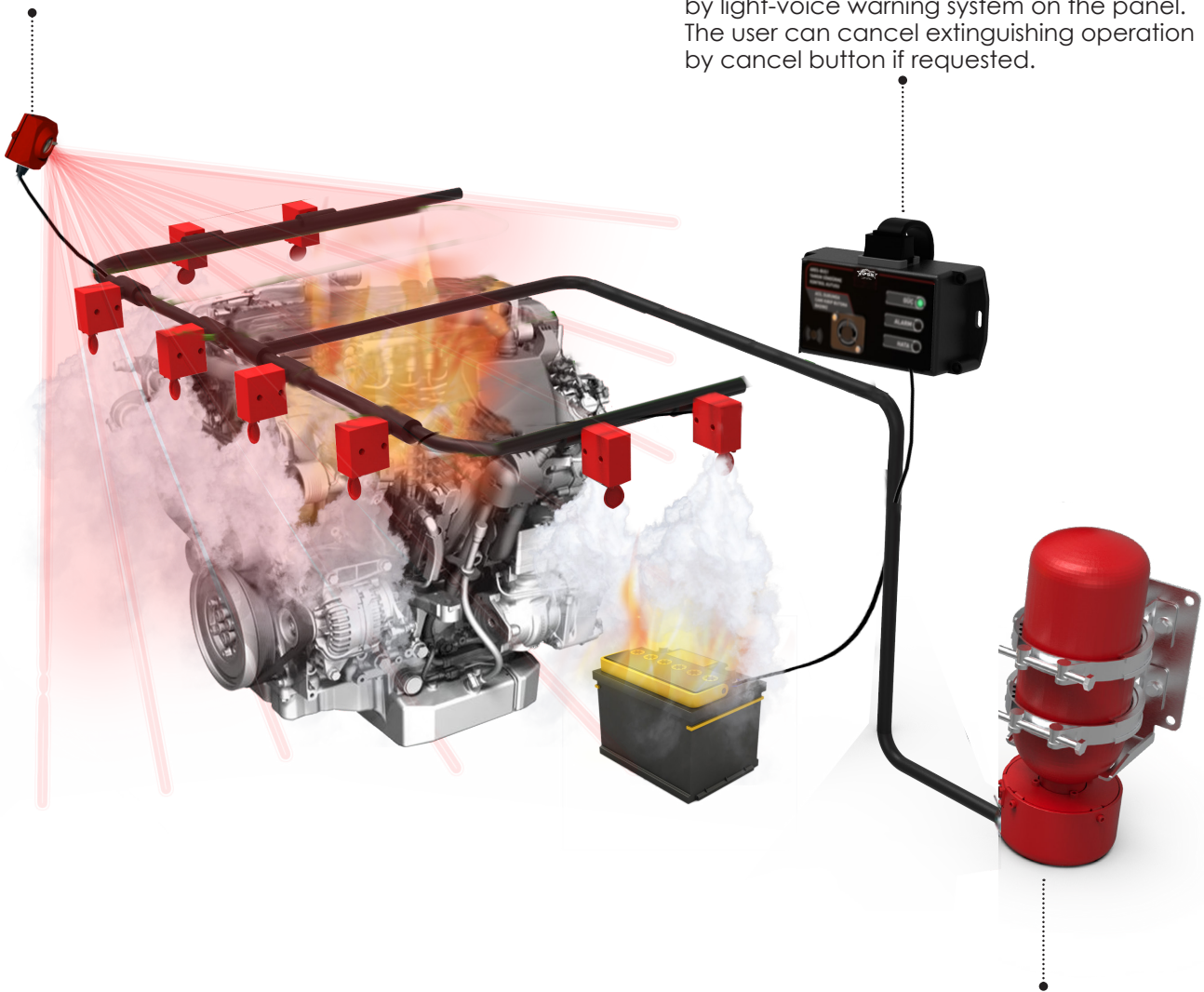
**DETECTION IN
3 MILLISECONDS**

1- The fire is detected within 3 milliseconds by **UV-IR Detectors** produced by ARES-FSS Industry and the signal is sent to control unit.



**EXTINGUISHING
IN 2 SECONDS**

2- **Control unit** analyses the incoming signal in 10 milliseconds and activates the extinguisher tube. Simultaneously, it activates the alarm horn in the vehicle and warns the user by light-voice warning system on the panel. The user can cancel extinguishing operation by cancel button if requested.



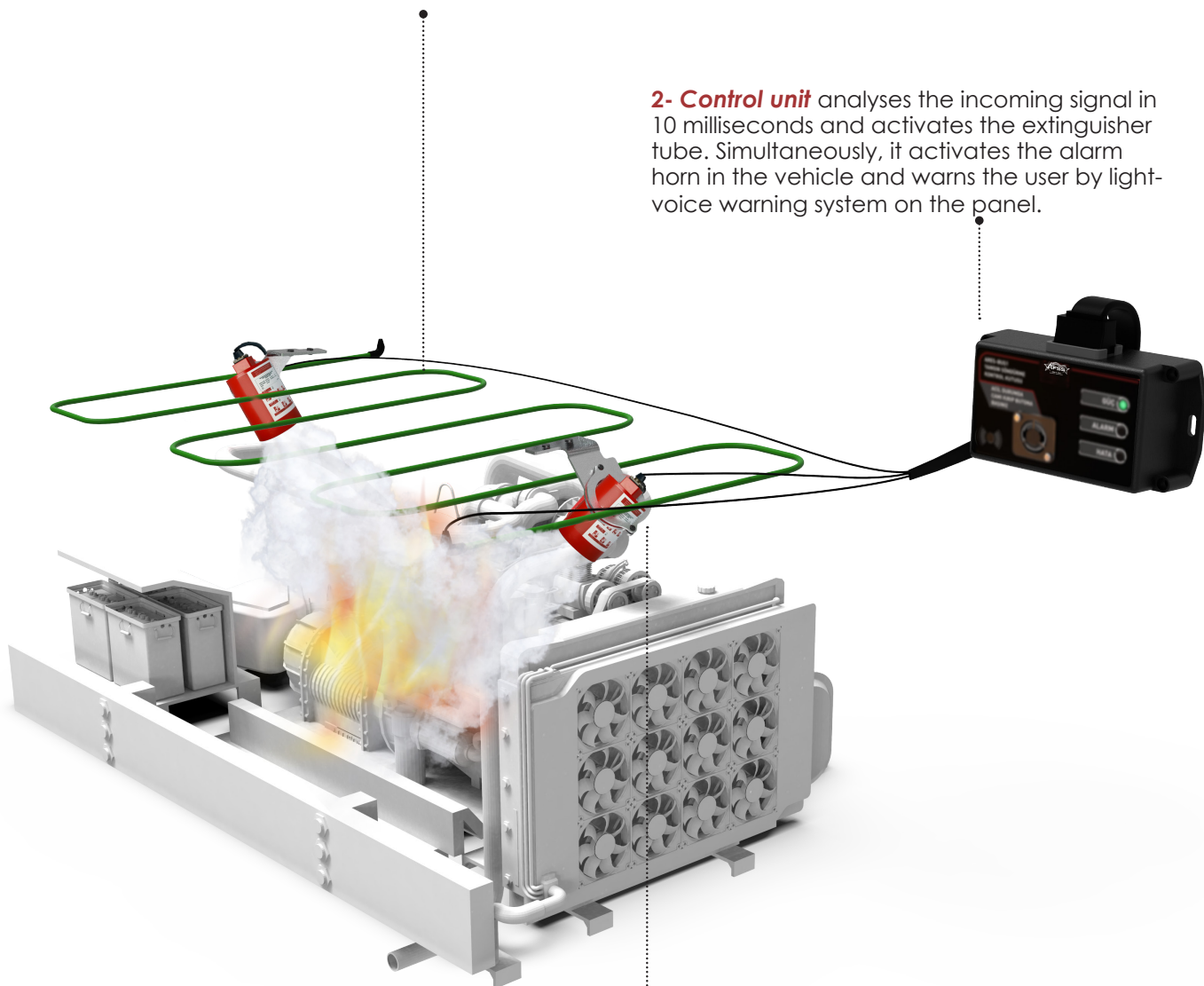
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BUS AEROSOL- THERMAL WIRE AUTOMATIC FIRE EXTINGUISHING SYSTEM OPERATION SCHEMATIC



1- The fire is detected by **Linear sensor** wire and the signal is sent to control unit.

2- **Control unit** analyses the incoming signal in 10 milliseconds and activates the extinguisher tube. Simultaneously, it activates the alarm horn in the vehicle and warns the user by light-voice warning system on the panel.



3- **The extinguisher tube** is activated with the help of the pyrotechnic trigger it has and extinguishing agents are released. The solid NRE-CM agent within the cylinder spreads homogenously and extinguishes in 5 seconds.

BUS AEROSOL-UV-IR DETECTOR AUTOMATIC FIRE EXTINGUISHING SYSTEM OPERATION SCHEMATIC



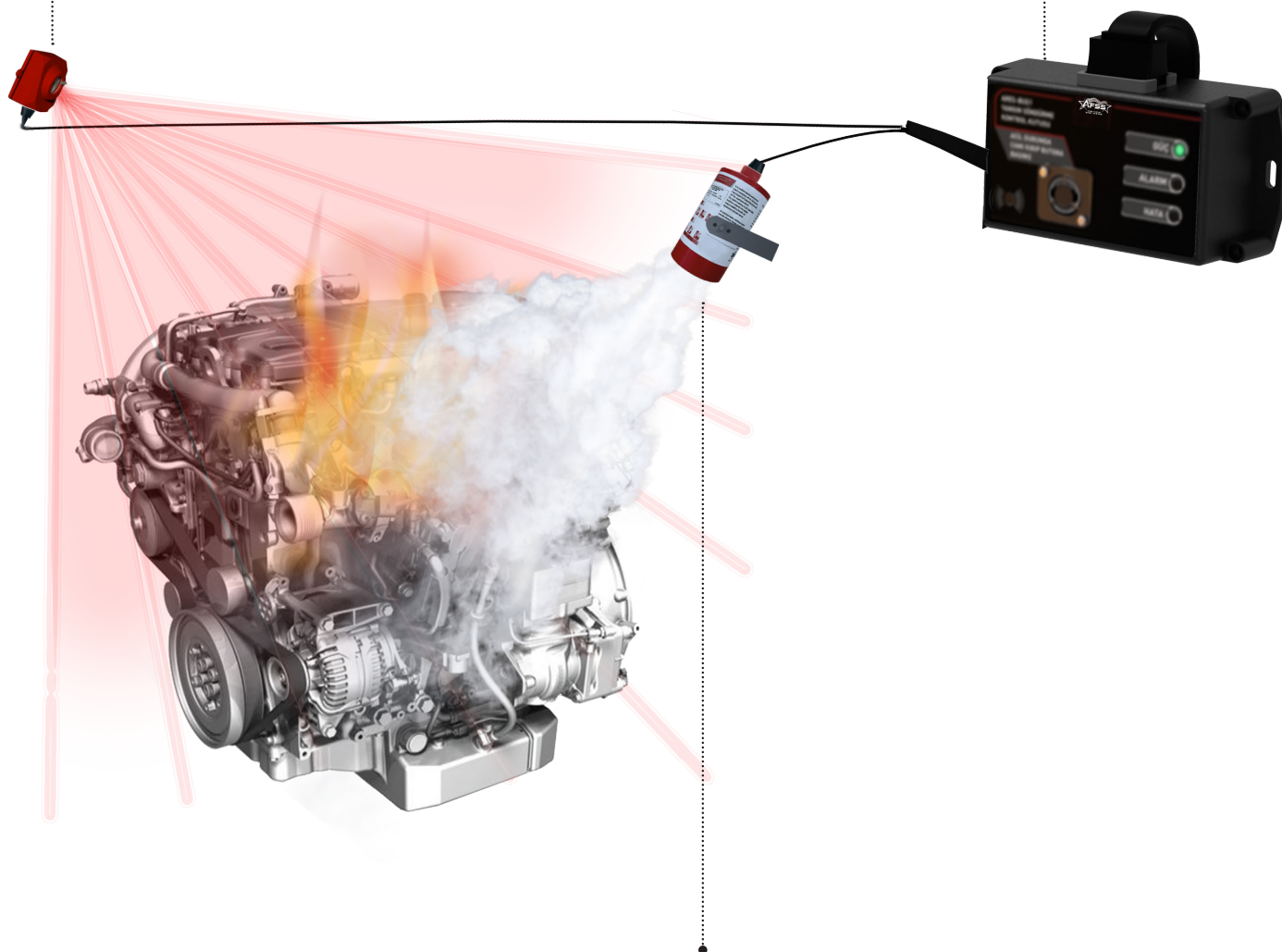
DETECTION IN 3 MILLISECONDS

1- The fire is detected within 3 milliseconds by **UV-IR Detectors** produced by ARES-FSS Industry and the signal is sent to control unit.



EXTINGUISHING IN 5 SECONDS

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ARESFSS BUS AEROSOL AUTOMATIC FIRE EXTINGUISHING SYSTEM WITH MECHANICAL ACTIVATION OPERATION SCHEMATIC



**DETECTION
AT OPTIONAL
TEMPERATURES**
(57°, 68°, 79°, 93°C,
141°C, 180°C)



**EXTINGUISHING
IN 5 SECONDS**

- FAERO-TD, provides independent system-solution in which fire detection and extinguishing are mechanically united without any need of electricity.
- It can be activated mechanically, not being controlled by control unit and without being connected to any electrical powersupply.



ARESFSS III+ Control



- ARESFSS control unit is the unit section where warning, detection and fault status of the system which is designed and developed by ARESFSS Industry completely as a completely domestic product, by power leds belonging to each cylinder and detector.
- ARESFSS Control unit which operates flexibly, complying with system configurations and operating logic, controls fire extinguishing and fire suppression system. This smart control unit which has a many-chambered compact structure, receives the detection signals for power group, body, tire, engine, crew and other compartments to be protected and activates the system.
- By means of smart control unit, system verifications and logical operations could be performed. It has features of built-in-test, manual activation and automatic activation. It has water and dust protection at IP 67 level. Error, alarm and other data regarding fire suppression and fire extinguishing system are transmitted to vehicle main computer by CANBUS communication infrastructure.

SPECIFICATIONS	EXPLANATION
CAN Bus	Available (J-1939 Protocol) Conformity
Supply Voltage	24 Vdc nominal (16-32 Vdc)
Power Consumption	450 mA @ 24 Vdc (In number of components used in the system it differs ± 100 mA.)
Operating Temperature	-32°C +71°C
Storage Temperature	-50°C +71°C
Weight	2200 \pm 50 gr
Dimensions (Width X Height X Width)	180 x 86 x 149 mm (± 5 mm)
Impermeability	IP-67
Detector Reading Number	1 linear thermal detector or thermal wire
Extinguisher Reading Number	1 tube pyrotechnic
Military Test Standards It Conforms	AS 5062, UNECE R107, R10, MIL-STD-461, MIL-STD-810, MIL-STD-1275
Detector and tube error indicator	Available

BUTTON SPECIFICATIONS



Manual Body Activation
Manual Tires Activation
Manual Engine Activation
Manual Crew Activation
Blackout Mode
Built In Test Equipment(BIT)
Combat / Peace Mode Selection

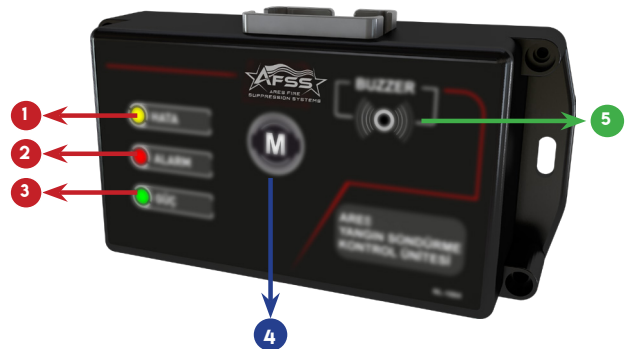
AREFSS Bus Control Box



- AREFSS Bus control unit which is designed and developed by AREFSS Industry as a completely domestic product, is the unit section where warning, detection and fault status of the system are monitored by power LEDs belonging to each tube and detector. AREFSS Bus Control unit which operates flexibly, complying with system configurations and operating logic, controls fire extinguishing and fire suppression system.
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Supply Voltage	24 Vdc nominal (16-32 Vdc)
Power Consumption	450 mA @ 24 Vdc (In number of components used in the system it differs \pm 100 mA.)
Operating Temperature	-32°C +71°C
Storage Temperature	-50°C +71°C
Weight	480 \pm 50 gr
Dimensions (Width X Height X Width)	85x49x100 \pm 5 mm
Impermeability	IP-65
Detector Reading Number	1 linear thermal detector or thermal wire
Extinguisher Reading Number	1 tube pyrotechnic
Military Test Standards It Conforms	AS 5062, UNECE R107, R10, MIL-STD-461, MIL-STD-810, MIL-STD-1275
Detector and tube error indicator	Available

BUTTON SPECIFICATIONS



1	ERROR STATUS LED
2	ALARM STATUS LED
3	POWER ACTIVE LED
4	MANUAL ACTIVATION
5	ALARM STATUS INDICATOR

Pyrex Fire Extinguisher Tube

- The fire suppression cylinders eliminate the high temperature up to 2000 degrees generated within the vehicle by RPG and ATGM attacks striking the armoured vehicle and the pressure created by the explosion with the cooling agent HFC 227EA (FM-200) gas inside them. These extinguisher cylinders zero out loss of both lives and property when they are active by eliminating the high temperature generated by the rocket attack thanks to the cooling gas specification and also eliminating the high pressure with the 42 BAR pressurised operating pressure.
- Extinguisher cylinders have successfully passed high temperature, low temperature, humidity, environmental tests as per MIL-STD-810H military standards. Compared to the other extinguishers in its own segment, having an aluminium body makes it lighter and more practical. These extinguishers optionally having an operating range between -32 and +120 degrees, have completely environment friendly HFC 227EA gas. The fact that they do not leave any dust or dirt when they are active, eliminates the necessity of cleaning. The extinguishers being activated within 3 milliseconds by pyrotechnic triggers, guarantee to get activated absolutely in all kinds of environmental conditions and establishes superiority to equivalent electronic valved structures.



SPECIFICATIONS	EXPLANATION
Reaction Time	≤ 10 milliseconds
Pressure Indicator Resistant to Vibration	Available
Triggering	Pyrotechnic Activation
MTBF	250.000 hours
Extinguisher Agent	HFC 227EA (FM-200)
Capacity	3,4-4,5 lt Gaz Extinguisher
Triggering Voltage	24 Vdc (10-32 Vdc). It can also be triggered at lower voltages but performance may decrease.
Water and Dust Protection	IP67
Operating temperature	-32°C +71°C
Storage temperature	-32°C +71°C
Weight	5-18 kg
Vertical and Horizontal Positioning	Available
Tube Nominal Pressure	42 Bar
Test Standards It Conforms	AS 5062, UNECE R107, R10, MIL-STD-461, MIL-STD-810, MIL-STD-1275

FAERO Aerosol Fire Extinguisher Tube

- FAERO Aerosol Extinguisher is designed to extinguish and defuse type A (solid fuel), B (liquid fuel), C (gas fuel) fires and type E (electrical) fires in enclosed volumes.
- After the extinguishing agent concentration required for each type of fire and volume to be protected is calculated, the solid NRE- CM agent content in the FAERO cylinder and total number of FAERO cylinders at the area to be protected are determined. FAERO-125, is designed to produce powdered aerosol to extinguish a fire in a 1,25 m³ enclosed volume.



SPECIFICATIONS	EXPLANATION
Extinguishing Volume	1,25 m ³ - 2,5 m ³ - 5 m ³
Activation Mode	Electrical
Discharge Time	4-6 seconds
Discharge Length	2 m
Optional Manual Triggering	Available
Nozzle and Hydraulic	Not used
Toxicity	None
Triggering voltage	24 Vdc (10-32 Vdc). It can also be triggered at lower voltages but performance may decrease.
Content	Potassium based dry chemical mixture
Operating temperature	-40°C +120°C
Storage temperature	-32°C +71°C
Weight	1,8 kg
Test Standards It Conforms	AS 5062, UNECE R107, R10, MIL-STD-461, MIL-STD-810, MIL-STD-1275

SPECIFICATIONS

- No Need Electricity
- Include Detection Feature
- No Ozone Depletion
- No Global Warming
- Low Toxicity
- Highly Efficient - 100 gr/m³
- Approved By EPA for SNAP Listing
- Small-Safe-Simple
- For A-B-C-E Class Total Flooding Applications
- Cost Effective
- Cool and dry; Max. 10 Years Storage/Shelf Life

APPLICATIONS

- CNC-Machines
- Control Rooms (sub Floor; Above Ceiling)
- Electrical Cabinets
- Engine & Compressors Rooms
- Flammable and Combustible Liquids and Gases Storage
- Paint Lockers
- Marine Applications
- Server Rooms
- Telecommunications Facilities

Aerosol Fire Extinguisher Tube with Mechanical Activation

- FAERO-TD, provides independent system solution in which fire detection and extinguishing are mechanically united. It can be activated mechanically, not being controlled by control unit and without being connected to any electrical power supply. Thanks to the thermal sensor/activator on it, it can detect fire and get activated automatically, at various temperatures (e.g. 57°, 68°,79°, 93°C, 141°C, 180°C) according to different requirements.



SPECIFICATIONS	EXPLANATION
Extinguishing Volume	1,25 m ³ - 2,5 m ³ - 5 m ³
Activation Mode	Mechanical
Discharge Time	4-6 seconds
Discharge Length	2 m
Nozzle and Hydraulic Line	Not used
Toxicity	None
Triggering voltage	24 Vdc (10-32 Vdc). It can also be triggered at lower voltages but performance may decrease.
Content	Potassium based dry chemical mixture
Operating temperature	Detection at different optional temperatures (57°, 68°,79°, 93°C, 141°C, 180°C)
Weight	1,8 kg
Test Standards It Conforms	AS 5062, UNECE R107, R10, MIL-STD-461, MIL-STD-810, MIL-STD-1275

SPECIFICATIONS

- No Need Electricity
- Include Detection Feature
- No Ozone Depletion
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- Low Toxicity
- Highly Efficient - 100 gr/m³
- Approved By EPA for SNAP Listing
- Small-Safe-Simple
- For A-B-C-E Class Total Flooding Applications
- Cost Effective
- Cool and dry; Max. 10 Years Storage/Shelf Life

APPLICATIONS

- CNC-Machines
- Control Rooms (sub Floor; Above Ceiling)
- Electrical Cabinets
- Engine & Compressors Rooms
- Flammable and Combustible Liquids and Gases Storage
- Paint Lockers
- Marine Applications
- Server Rooms
- Telecommunications Facilities

Fire Detection System Components

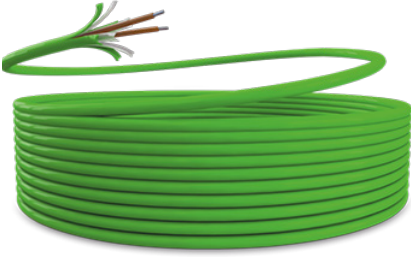
UV-IR OPTICAL DETECTOR











- Optical detectors detect heat and light waves at different frequencies by UV and IR sensors within it, makes required matches and send flame signal to control box. Detectors are genuinely designed by ARESFSS Industry engineers applying to NATO Stanag 4317 and American MIL PRF 62546C standards. UV-IR flame detectors have also successfully passed high temperature, low temperature, humidity, shock-vibration, corrosion and EMI/EMC tests as per MIL-STD-810H and MIL-STD-461F standards.
- Detectors have been specially designed as IP67 and can stay under 1 meters of water for half an hour. The detectors also having protection for false alarms, do not react against false alarms such as sunlight, vehicle headlights, welding beam, infrared heater, cigarette ash.

TECHNICAL SPECIFICATIONS	
Detection in a time period less than 3 ms	Ultraviolet (UV) and Infrared (IR) Sensor
Power supply: 24 VDC nominal	Operating temperature: -51°C / +120°C
Storage temperature: -55°C / +150°C	Power consumption: 70 mA @ 24VDC
Weight: 480g ±50g	Dimensions: 85x49x100 mm (±5mm)
140° Blind Detection	Compatible to CAN-BUS J-1939
IP 67 Water and Dust Protection	Advanced Software Algorithm

LINEAR SENSOR WIRE













- Linear sensor thermal wires are used for detecting the fire in the areas they are located in cases of fire. In this system, it is aimed to detect fire by fastening the thermal wire on surfaces in the area desired to be protected from fire. As for detection period, detection can be performed within 10 up to 40 seconds depending on magnitude, class of fire and the area it bursts out. When the ambient temperature reaches to 180 °C, the structure of the wire starts to get damaged and the outer layer melts and the wires inside touch each other and conduct fire alarm to control box.

TECHNICAL SPECIFICATIONS	
 Wide detection area	 Operating temperature: -32°C / +121°C
 High reliability	 Storage temperature: -55°C / +71°C
 Operating temperature: -55°C / +150°C	 MTBF Period: 200.000 hours
 Cable diameter : 6 mm	 Maximum Length: 15m

EMERGENCY SWITCH








- Emergency switch, provides manual remote access to fire extinguishers in the system. It enables to activate the fire extinguishers located at crew, tire, body, engine and other compartments protected by the system.
- Manual activation switch operates independent from main controller.

TECHNICAL SPECIFICATIONS	
 Indicating warning signal	 Dimensions WxDxL: 77,8 x 77,8 x 75 mm (±5 mm)
 Activation up to three tubes	 IP67 water and dust ingress protection
 MTBF duration of 150,000 hours	 Salt fog test resistance of 800 hours
 Operating voltage : 16-32 VDC	 It has MIL-STD-810G ,MIL-STD-461G, MIL-STD-1275E certifications.
 Operating temperature: -40°C +71 °C	 Conforming to UL, CE GOST-R standards.

MOTOR NOZZLE



GENERAL SPECIFICATIONS	
 The engine nozzle is designed as a conical structure in order to provide effective dispersion to the engine compartment.	
 It is insulated against dust, rain, mud and grease.	
 Nozzles can be placed to engine compartment with the well designed brackets.	
 It is produced from aluminium and resistant against corrosion.	
 Weight : 160g ± 20g	