

BUS & COACH FIRE PROTECTION

FOR ZERO EMISSION AND COMBUSTION ENGINE VEHICLES

The Forman UNECE Regulation 107 Certified Fire Suppression System delivers reliable multi-zone protection across buses and coaches.

The system offers protection for ZEVs – including battery-powered, hybrid, and fuel cell vehicles - and ICE vehicles against the risk of fire in the engine compartment or around sensitive electrical components. The system uses our ABC dry chemical suppression agent. This means it can be safely used to protect any area of a vehicle.

Forman's **V-IS Information System** fully integrates with the Fire Suppression System to deliver status information and alert audio messages directly to the driver, including high temperature warnings, low pressure alerts, and system deployment notifications.



Reliable operation with no false discharges

The electronic linear heat detection cable detects fires within seconds with no risk of false discharges from loss of pressure.



Audible driver and passenger alerts

Integrates with the V-IS to keep drivers updated about the status of the vehicle and deliver journey information to passengers.



Engine bay temperature rise warning

The system delivers warning messages when it detects a dangerously high temperatures in protected areas of the vehicle.

How Does the Fire Suppression System Work?

Our fire detection and suppression system uses a Linear Heat Detection Cable (1). This is routed around the potential fire hazards identified in the vehicle, including the engine bay and any junction boxes.

When the cable is exposed to a fire, it sends a signal to the control module (2) which deploys the suppression agent.

The Dry Chemical ABC suppression agent is sent through the distribution network (4) and is discharged through critically-located nozzles (5) directly onto the fire.

This process is extremely quick, allowing the system to actuate immediately to put out the fire in a matter of seconds.

Forman UNECE Regulation 107 Certified Fire Suppression System

Layout Sample

- 1 Linear Heat Detection Cable
- 2 Control Module
- 3 Dry Chemical Agent Tank
- 4 Distribution Network
- 5 Discharge Nozzles
- 6 VMMS Vehicle Multi-Message System (optional)
- 7 Driver's Cab Speaker (optional)
- 8 Smoke Alarm (optional)
- 9 Temperature Rise Pre-Warn Cable and Detectors (optional)

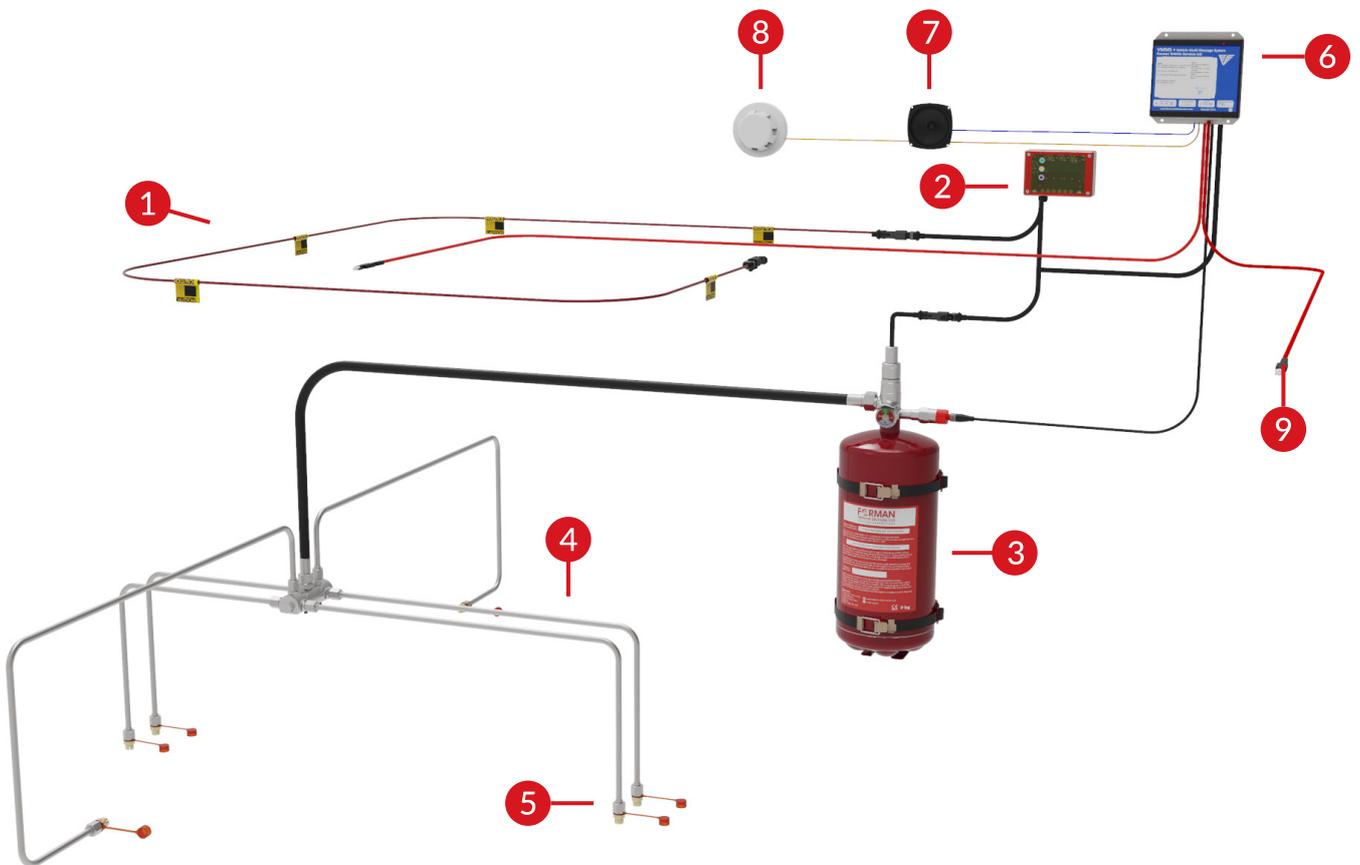


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Why Dry Chemical Suppression Agent?

Dry chemical, also known as dry powder, is the world's most widely used suppression agent in the vehicle fire suppression market.

In a study⁽¹⁾ commissioned by the Fire Protection Research Foundation analysing the impact various suppression agents on Class A materials, ABC Dry Chemical showed the fastest extinguishing time using the least amount of agent.

Compared to water mist, the Dry Chemical agent was able to extinguish the fire in half the time using half the quantity of agent.

The Forman ABC Dry Chemical is highly effective at tackling most types of fires – including Class A, Class B, Class C and electrical fires. This includes fires caused by a number of sources, such as combustible materials, flammable liquids, gases and electrical hazards.

Test Number	Suppression Agent	Extinguishing Time (sec)	Extinguisher Discharge Time (sec)	Agent Discharged (kg)
1B	ABC Dry Chemical	3	33	4.5
2B	Water Mist	6	88	9.0
3B	Halotron I	3	13	7.0
4B	FE-36	4	14	6.0

⁽¹⁾ Scheffey, J.L. and Forssell, E.W., "Measuring the Impact of Fire Extinguisher Agents on Cultural Resource Materials – Final Report," Fire Protection Research Foundation, Quincy, MA, February 2010.

Why Linear Heat Detection Cable?

✓ Rapid fire detection

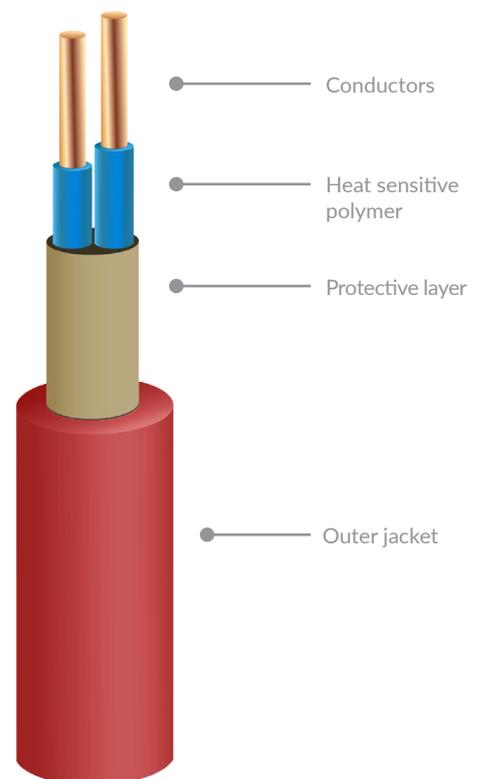
The detection cable is coated in a polymer, which melts when exposed to fire and causes a short circuit. This instantly signals the control module to deploy the suppression agent.

✓ Easy and safe to install

The cable can easily be routed around any fire hazard in the bus, making it essential for zero emission vehicles in particular.

✓ Reliable operation

Unlike a pressurised tube systems, the electronic detection cable can differentiate between a fire signal and other faults, such as a kinked or cut cable. The polymer will only melt when exposed to a fire, significantly reducing false discharges.



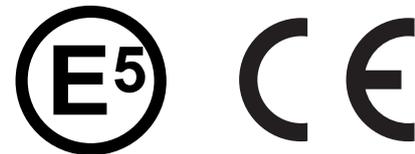
Linear Heat Detection Cable

Key Technical Specification

Forman Fire Suppression Systems - UNECE Regulation 107 Certified

Fire Detection Method	Linear Heat Detection Cable
Suppression Agent	Dry Chemical ABC Powder
Suppression Agent Quantity	9 kg (4m ³ engine compartment) 12 kg (6m ³ engine compartment)
Number of Discharge Nozzles	6 nozzles for 9 kg agent tank 8 nozzles for 12 kg agent tank
Agent Tank Construction	Stainless steel with red corrosion resistant paint
Nozzle Discharge Patterns	180° High-Dispersion nozzle
Operating Temperature Range	-30°C to +60°C
Bump Testing (EN 60068-2-27)	50 g
Shock Testing (EN 60068-2-27)	40 g
Vibration Testing (EN 60068-2-6)	5 – 200 Hz, 10g , amplitude ≤ ± 15 mm 200 – 500 Hz, 5g
Certifications and Approvals	E5 Approval - UNECE Regulation 107 compliant CE marked

For the complete technical specification and operating instructions, please contact Forman.



To find out how we can help you enhance the safety of your vehicles, call us on

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