

FIRE PROTECTION SYSTEMS FOR BUSES AND COACHES



DAFO
Vehicle
BY UNITED SAFETY



Dafo has been in business for over 100 years and has always been in the front line of technology engineering and part of regulatory development on a worldwide basis. Dafo was one of the first companies in the world which started to develop integrated firefighting solutions for vehicles.

Most bus fires start in the engine compartment and surrounding areas. A tested and certified vehicle fire suppression system in combination with a reliable fire detection system is the best first line of response in case of an emergency such as at a thermal incident.



Over the years Dafo has obtained vast experience and knowledge from our end user installations which have been used as a basis for eliminating false alarms and false releases. As a result of the development Dafo can today proudly present three different state of the art reliable solutions for buses and coaches both without vulnerable and pressurized agent containers.

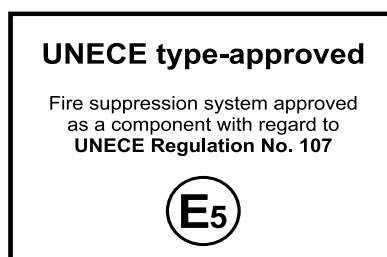
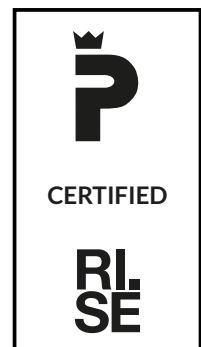


With more than 300,000 vehicle systems sold worldwide, our know-how and experience ensure our customers have the latest technology combined with proven reliability. Our systems are used worldwide as integrated solutions on OEM production lines as well as retrofitted installations for the end user.

Buses operate in various surroundings and climate types such as desert, tropic, arctic, on highways and in mountain terrain. These environments are very challenging also for fire suppression systems. Dafo Vehicle's fire suppression systems are thoroughly tested for fire performance ability and environmental durability such as Electromagnetic Compatibility (EMC), vibration, corrosion and temperature extremes according to international vehicle standards to ensure the highest performance.

Dafo Vehicle's fire suppression systems are approved as a component in accordance with UNECE Regulation No. 107 and are P-marked according to SPCR 183. The systems have also fulfilled the requirements of the Australian Standard AS 5062:2016, which is equivalent to the Zambia Bureau of Standards ZS1209:2019.

In addition, Dafo Vehicle systems are certified in compliance with the regulations UAE.S 5041:2021 and SASO 2946:2020, ensuring that our solutions meet internationally recognized safety standards across multiple markets.



Child Check-Mate System

Helping ensure no passenger is left behind

Ensuring that every passenger has safely left the vehicle at the end of a route is a critical responsibility for drivers and operators. Child Check-Mate is an electronic safety system designed to support this process by prompting drivers to physically check the entire vehicle before leaving it unattended.

By integrating a simple verification routine into the driver's end-of-route procedure, the system helps reduce the risk of passengers remaining on board and supports safer transport operations.

How it works

When the vehicle is switched off at the end of a route, the Child Check-Mate system activates an audible reminder. To deactivate the alert, the driver must walk to the rear of the vehicle and press a reset button located at the back. This ensures the driver performs a full walk-through of the vehicle, confirming that all passengers have safely disembarked.

The process is simple, effective, and designed to fit naturally into daily driver routines.

Key benefits

Improved passenger safety – Helps ensure no passenger remains on board at the end of a trip

Driver support – Reinforces standard safety procedures through a clear and consistent reminder

Operational reliability – A straightforward system designed for everyday use

Flexible integration – Compatible with a wide range of vehicle types and transport applications



Versatile solution for passenger transport

Child Check-Mate systems can be installed in various vehicle types, including buses, minibuses, vans, and other passenger transport vehicles. The system can also be integrated with additional vehicle technologies such as GPS or camera systems, depending on operational requirements.



Supporting safer transport operations

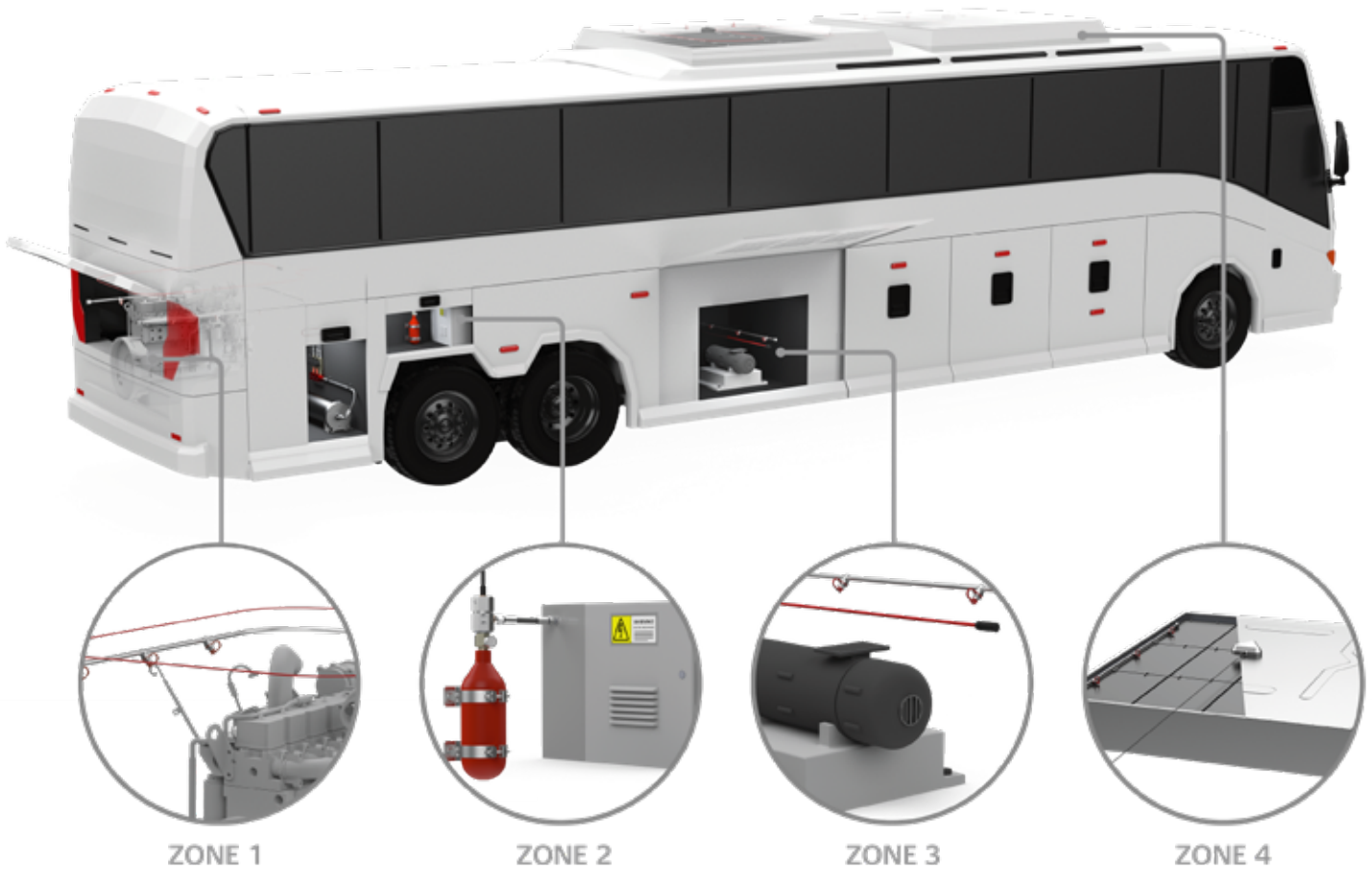
A consistent safety process helps operators maintain high standards in passenger transport. By combining driver awareness with a simple electronic reminder system, Child Check-Mate adds an extra layer of protection for passengers, operators, and transport providers.

Electric & Hybrid vehicles

Dafo Vehicle has developed a full coverage multi-zone fire protection solution in response to the urgent need for risk mitigation in EV and HEV vehicles. The suppression agent Forrex EV™ is used as one part of the complex system solution and it provides effective cooling capacity to slow the fire development for allowing safe evacuation of passengers. In order to cover all risk areas in the EV

or HEV vehicle, the main risk scenarios are typically divided into four protection zones.

The different protection zones are then protected in various ways by robust detection and suppression systems – both liquid based and gas-based solutions.



Zone 1 Engine compartment

Protection applied for combustion engine (HEVs) and compartment with electrical components (EVs) based on Dafo Vehicle's well proven liquid based fire suppression system.

- Liquid based FORREX agent.
- Robust detection/suppression technology.
- Prevents re-ignition.

Zone 2 Electrical hazards

Electric systems are a common failure source on conventional vehicles that now increases in risk with the addition of high voltage, high power traction systems.

- Detection using heat or smoke detection or combination of both.
- Clean extinguishment without any residuals through our PFK system with agent gas FK-51-2-12.

Zone 3 Traditional hazards

Many of the traditional hazards still exists and has to be taken into account. Heaters, AC units and hydraulic systems all present a potential fire hazard.

- General system feature.
- Liquid based FORREX agent.
- Robust detection suppression.

Zone 4 Batteries

Dafo Vehicle's liquid based fire suppression system is used to protect battery pack from external fires as well as to provide maximum cooling in case of a thermal runaway battery fire in order to create sufficient time for evacuation of passengers.

- High sensitive gas detection for early warning.
- Robust Dafo Vehicle linear detection.
- Double amount of liquid compared to normal combustion engine application is used.

Dafo^{CLOUD}

The Dafo^{CLOUD} is a cloud-based risk management system to provide full overview of lifecycle of Fire Detection and Suppression System (FDSS).

The Dafo^{CLOUD} provides access to the full history and genealogy of sub-systems of the FDSS and the complete information is seamlessly accessible and updatable by relevant stakeholders.

The restricted access database contains information about the whole life cycle of each FDSS:

Manufacturing

- The electrical sub-systems of FDSS are always individually tested, programmed and configured by using equipment connected to Dafo^{CLOUD} which enables full control and visibility about detailed test reports but also firmware files, settings and configurations used over the time.

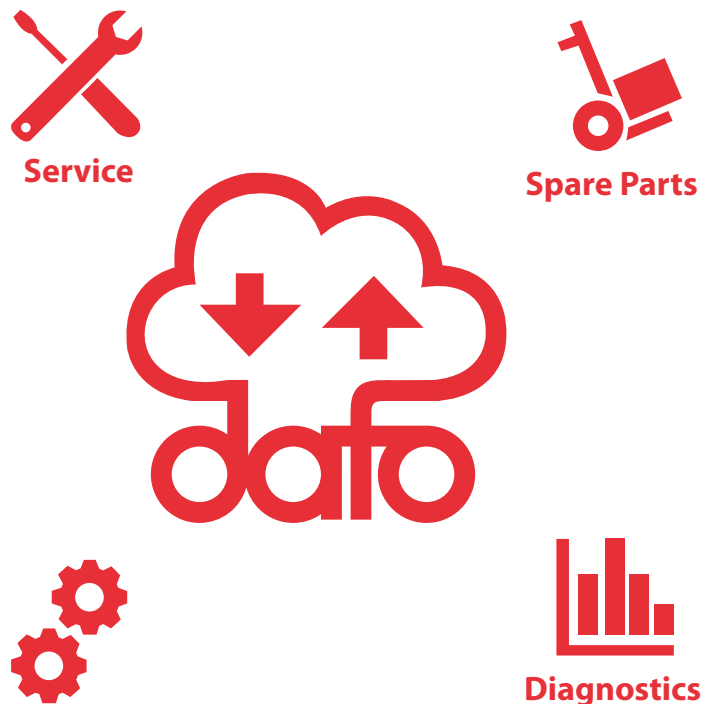
Installation

- The FDSS-specific installation documentation is accessible for technicians via Dafo^{CLOUD}.

Maintenance

- Both planned and unplanned maintenance activities, including associated time-stamped reports, photos/videos and reminders for next actions will be stored and handled by Dafo^{CLOUD}.
- Historical event logs of Control Units can be accessed from Dafo^{CLOUD} for in-depth analysis

The Dafo^{CLOUD} is the basis for reducing and controlling the total cost of ownership with keeping maximized safety in focus.



Safe with Dafo Vehicle



Active fire protection is an integral part of systematic and effective fire prevention. Together with Dafo Vehicle, you will always get the most effective solution so that you can limit fire damage, reduce downtime and increase productivity.

Since the start back in 1919, Dafo has developed into a modern, high-tech company committed to offer the very best solutions to our customers.

Dafo Vehicle has three main business areas: **Integration** (Fire suppression systems integration into OEM production line, **Retrofit** (Fire suppression systems installed at final customer) as well as **Service & Maintenance**.

Dafo Vehicle has an extensive network of distributors and service providers worldwide, ensuring reliable support for customers across multiple markets. The company is part of United Safety & Survivability Corporation, a global provider of innovative safety technologies designed to help protect both life and property.

United Safety serves commercial businesses, private operators, and public sector organizations with solutions tailored to the specific safety challenges of each industry.

Do not compromise safety – contact Dafo Vehicle today!

