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by Micropower Group

READY AT A GLANCE

How FireCAN Communication Turns the PowAirBox II into the Central Charging Status Interface

Whitepaper | August 2026

Intelligent Vehicle Charging for Emergency Response Vehicles

Product Management | August 2026

INTRODUCTION

A reliable power supply is a key prerequisite for the operational readiness of fire, emergency medical service, and special-purpose vehicles. During standby periods, vehicle batteries must be charged, electrical consumers supplied with power, and potential faults detected at an early stage.

Traditionally, these tasks have been handled by two separate systems: the PowAirBox II ensures the supply of electrical power and compressed air, while an onboard charger charges the vehicle batteries and maintains them in a charged state. Both systems operate reliably. However, until now, critical information about the actual charging status of the vehicle has not been visible directly at the vehicle.

With the new FireCAN functionality of the PowAirBox II, this changes fundamentally. The PowAirBox II can now process status information from a FireCAN-enabled battery charger and display it directly via its status indicator. This transforms the PowAirBox II from a simple shore power connection point into a visible interface between the charger, the vehicle, and the user. The focus is no longer on the mere presence of mains power, but on the actual operating status of the charging system.

MORE TRANSPARENCY FOR DAILY OPERATIONS

For many years, the presence of a mains power supply was considered sufficient proof that a vehicle was ready for charging. However, modern emergency response vehicles place higher demands on charging and readiness monitoring.

The presence of electrical power alone does not necessarily mean that the battery is being charged. A charger may have detected a fault, or the connection to the battery may be interrupted without this being immediately apparent. As a result, uncertainty can arise when assessing the actual operational readiness of a vehicle.

With the new FireCAN communication functionality, the PowAirBox II receives status information directly from a FireCAN-enabled charger and displays it via its integrated status indicator. This provides users with clear and reliable information about the current charging status of the vehicle.

Within our product portfolio, the RC Series chargers already offer a perfectly matched solution for this application. Together with the PowAirBox II, they form a fully integrated system that combines power supply, communication, and status indication in one seamless solution.

FROM TWO COMPONENTS TO A SYSTEM SOLUTION

The new functionality is based on the interaction of three components:

- PowAirBox II
- RC charger with FireCAN
- CAN connection via terminal line D

The RC charger acts as the data source. It continuously determines its current operating status and provides this information via FireCAN messages. The PowAirBox II receives this data and visualizes it through the status indicator integrated into the front panel.

- Creating a Continuous Information Chain
- The RC charger knows the battery status
- FireCAN transmits this information
- The PowAirBox II makes it visible exactly where it is needed: on the outside of the vehicle

The real added value is therefore not created by a single component, but by the interaction of all systems involved.

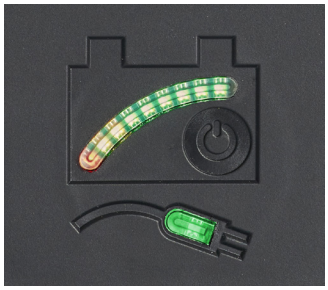
THE NEW FEATURE IN DETAIL

After power-up, the PowAirBox II initially operates in its standard mode. The status indication is based on the unit's own power supply measurements. As soon as the first valid FireCAN message is received from the RC charger, control of the status indicator is automatically transferred to the charger. This changeover takes place automatically and requires no configuration.

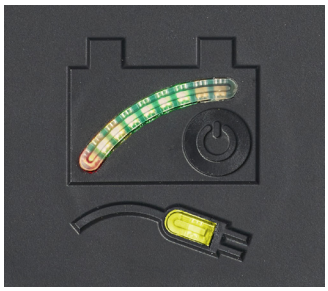
Once control has been transferred, it remains active until the PowAirBox II is fully restarted. A restart can only be performed by interrupting the DC supply voltage. Disconnecting the mains supply, ejecting the connector, or unplugging the CAN cable will not reset the status indication logic.

THE STATUS DISPLAY IN FIRECAN MODE

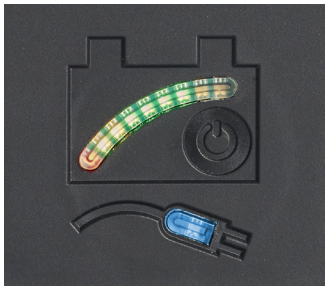
In FireCAN mode, the display follows the same color logic as the RC charger itself. This means users do not need to learn a new status indication system.



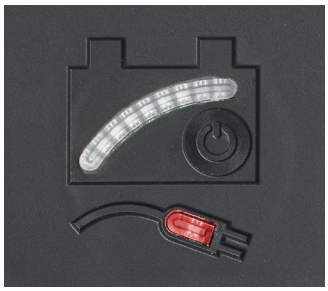
Green
The battery is fully charged. The vehicle is ready for operation.



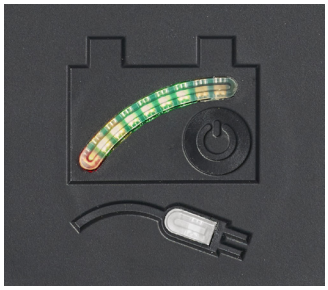
Yellow
The battery is currently being charged. The charging process is active.



Blue
The charger is operational but is currently not supplying charging current. There is no fault present. Possible causes may include an interrupted connection to the battery, for example due to a blown fuse.



Red
A fault has been detected. This may be a charger fault, an insufficient AC or DC power supply, or a failure of the data communication. If no valid CAN messages are received for more than five seconds, the display will also switch to red.



White
A device has been detected on the CAN bus whose status cannot be evaluated. This may indicate wiring, configuration, or compatibility issues.

Particularly important is the handling of communication failures. The PowAirBox II not only detects faults in the charger itself, but also failures of the data connection. As a result, a ”silent bus” does not go unnoticed.

BENEFITS FOR DIFFERENT USER GROUPS

For **fire departments**, the system provides an immediately visible indication of a vehicle's operational readiness. A quick walk through the vehicle bay is enough to assess the status of the charging infrastructure. Green means ready for deployment, yellow means charging, and red indicates that action is required.

Emergency medical services benefit particularly during frequent vehicle changes and shift handovers. Charging readiness becomes part of a transparent and traceable handover process.

Vehicle manufacturers and body builders can meet requirements for externally visible charging status monitoring without the need for additional remote displays, extra body openings, or additional wiring routes.

Procurement departments and purchasing authorities benefit from a standards-oriented complete solution comprising charger, communication, and status indication. This provides planning reliability and simplifies the development of future tender specifications.

Workshops and service technicians benefit from faster fault diagnosis. The display color alone provides an initial indication of potential causes of a malfunction.

CONCLUSION

With FireCAN communication, the PowAirBox II evolves from a conventional shore power connection point into a central status display and information interface for vehicle charging.

Instead of simply indicating the presence of a power supply, it now provides visibility into the actual status of the charger. Charging processes, float charging, fault conditions, and communication issues become visible exactly where they matter most to users: directly on the vehicle exterior.

This creates a seamless solution that combines charging technology, communication, and status indication. For fire departments, emergency medical services, vehicle manufacturers, and service organizations, this means greater transparency, faster response times in the event of faults, and a simpler assessment of vehicle readiness.

The PowAirBox II no longer just shows that power is available. It shows whether the vehicle is truly ready for action.

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