

Modern communication platform for bus and lightrail

IDR-f3 on-board computer

In the vehicle, the IDR-f3 on-board computer by ebblo is the central unit for information and voice transmission between driver, passengers and control centre. As a combination of on-board computer and router, it integrates many different components – such as radio devices or multimedia systems. In the DACH region, more than 10,000 ebblo on-board computers are in use every day.



The IDR-f3 generation of on-board computers combines proven components from the IDR-f2 generation with modern interfaces and transmission technologies. The closest possible technical correlation of the two models offers important advantages for ebblo customers: both generations are one hundred percent compatible in terms of pins and plugs, allowing for mixed operation with f2 and f3 units within vehicle fleets. Thanks to the new communication technologies, IDR-f3 only needs one new antenna.

Current technology

On the inside, the IDR-f3 conceals a number of upgraded components that result in clear improvements: The general performance of the IDR-f3 is enhanced with the latest CPU generation as well as a larger RAM. Further-

more, the IDR-f3 supports the latest mobile radio standards and the Wi-Fi security standard WPA3. Advanced GNSS modules also improve location accuracy.

Driver terminal

The driver operates the on-board computer using the IP Terminal IPT with intuitive user interface. Besides the familiar on-board computer functions, the IDR software also has the option of supporting integrated driver navigation. As an alternative to IPT, other user terminals such as ticket vending machines can also be connected to the existing interfaces.



Voice and data

The IDR simultaneously supports several radio devices with voice and data functions via analogue radio, digital radio (TETRA) and mobile radio. An internal fallback controller checks the functions of the IDR (watchdog). Even if the on-board computer fails, this safeguards the availability of voice communication between the driver and control centre and between the driver and passengers.

In addition to the named radio devices, the integrated acoustic functionality supports altogether 3 microphones, 4 amplifiers for loudspeakers and the connection of an audio source (MP3 player).

Interfaces

There are four serial interfaces for connecting other units, together with a CAN bus interface, network connections, configurable digital inputs and outputs as well as the VDV vehicle bus. The IDR acts as router for units connected via Ethernet or provides them with memory capacity. It supports OpenVPN and certificates for protected data transfer via mobile radio and Wi-Fi.

Thanks to integrated Bluetooth technology, ebblo's ebblo Assist Mobility Assistance System runs on IDR-f3 without needing any additional hardware in the vehicle. Mixed operation with f2 and f3 units is also possible with ebblo Assist.

The IDR permits dual head and traction operation in trams. In addition to the train bus, the system also supports IP communication via the coupling. Powerline modules can be connected directly to the IDR-f3 for a two-wire connection to communicate via the coupling. Electro acoustic equipment (ELA) already present in the trams can also be integrated.

Integrated control

IDR's power management comes into play when integrating additional components. It switches two external load circuits on or off automatically. The IDR goes automatically to a power-saving sleep mode to protect the vehicle batteries. It switches itself on again for data exchange or when the ignition is activated.

Use in bus and light rail

The IDR has been specially conceived for use in vehicles. It is based on an efficient processor core with low power consumption. The unit generates little heat, which implies a long service life. Its compact design is ideal in view of the usually very restricted space in the vehicle.



Technical data

Core system

- Intel® Atom™ quad core processor Elkhart Lake
- 8 GB RAM, 480 GB SSD memory (with optional upgrade)
- Operating system: Windows 10 IoT (2021 LTSC)
- GNSS with dead reckoning
- Internal acoustics

Interfaces

- Network (layer 2 switch/router)
- Serial interface (RS 232/422/485)
- USB 3.0
- VDV300 vehicle bus
- CAN bus interface
- Discrete inputs and outputs
- Bluetooth

Communication

- Mobile radio with voice support as per 3GPP rel. 16 (up to 5G)
- Wi-Fi 802.11 b/g/n/ac/ax
- Private analogue radio and digital radio (TETRA)
- External analogue transmitter for TLP
- VPN Client

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