
ENERGYBUS CONNECTS...

COMPONENTS - SERVICES - VEHICLES - PEOPLE



WHAT IS ENERGYBUS?

THE OFFICIAL STANDARD FOR MICROMOBILITY

EnergyBus is an open standard and purpose-made bus system for the electrical components in Light Electric Vehicles (LEVs) such as pedelecs, e-bikes, e-scooters, and also for energy management systems. It is based on the automotive CAN standard. The EnergyBus protocol has been specifically designed to meet the requirements of light electric vehicles, and accordingly prioritises processing of system data, data packet transfer and on defining hardware such as connectors, cables etc. This means that manufacturers benefit from a standardised, closely defined developer toolkit.

In July 2019, the use of EnergyBus communications was adopted by the International Electrotechnical Commission (IEC), the sole publisher of international standards. The IEC 61851-3 standard defines general requirements for AC and DC conductive power supply systems for light electric vehicles.

THE ENERGYBUS STANDARD



HARDWARE

Connector and interfaces:
EnergyBus plug family



SOFTWARE

Technical
communications protocol:
EnergyBus protocol



SAFETY

Test procedures,
safety standards,
certification

WHY AN OPEN STANDARD?

Innovation needs open standards: easy-access, extendable and modular in application, so that all products in the system are compatible and interoperable. Safety is guaranteed through standardisation. It remains flexible and configurable for future developments, enabling long-term, sustainable investments.

CAN BUS

... revolutionised the
automotive sector.

USB & BLUETOOTH

... revolutionised the computer
industry and the plug & play
product ecosystem.

ENERGYBUS

... is the standard for light
electromobility and will
revolutionise flexible mobility.

HOW DOES THE ENERGYBUS STANDARD WORK ?

EFFICIENT

The EnergyBus network can distribute sensor measurements and data to multiple controllers wherever the information is needed within the system, so that each controller does not need its own sensors: it's multicasting-capable.

SAFE

The EnergyBus protocol and standardised hardware components all talk the same technical language. This delivers design freedom for smart networked products and systems. Data and status information can be requested via remote modes. These safety standards can be certified and thus made traceable for the end user.

SUSTAINABLE

Individual components, system parts or software applications can be easily exchanged or added. Such flexible and swappable product ranges and systems are not only more environmentally friendly, they also deliver long-term planning and investment security for decision-makers and manufacturers.



EXTERNAL COMPONENTS AND SERVICES

The ability to interconnect and integrate components underpins a multitude of new data-driven applications and business models.



DIAGNOSIS

All interconnected components can be optimised and monitored via both remote and self-operated diagnostics for maintenance and servicing.



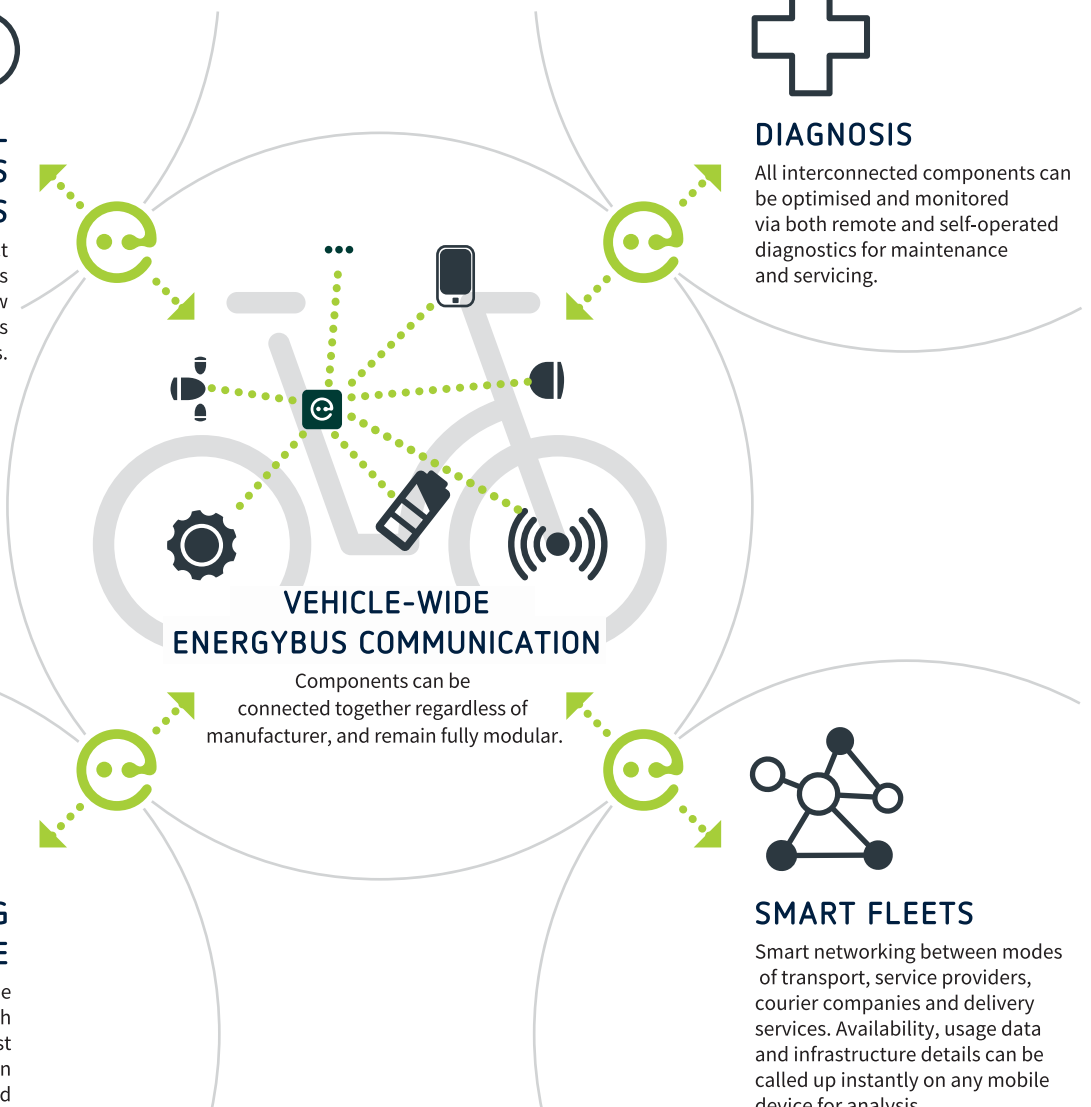
CHARGING INFRASTRUCTURE

A dense network of reliable charge points, compatible with every vehicle, will build trust and ready LEVs for mass adoption and everyday use. Charging should be available wherever they can park.



SMART FLEETS

Smart networking between modes of transport, service providers, courier companies and delivery services. Availability, usage data and infrastructure details can be called up instantly on any mobile device for analysis.



WHAT ARE THE ADVANTAGES OF ENERGYBUS ?

KEY FEATURES



Add-able modules



Expandable functionality



Configurable functions



Adaptable elements



Certifiable software and hardware-based safety



Software-based automation capability for service and repair

BENEFITS FOR:

MANUFACTURERS OF LEV SECTOR PRODUCTS

Developing products based on EnergyBus means fast updating or upgrading of existing products, simplification of system integration, affordable enhancement of product development, and the capability to network to other services (enabling new business models).

OPERATORS OF LEV FLEETS

Operators of company or factory fleets, public hire fleets, tourism services, delivery and courier services can profit from improved efficiency and profitability thanks to remotely accessible and potentially automated administration, management and maintenance of vehicles.

DECISION MAKERS FOR LEV INFRASTRUCTURE

For decision makers (municipalities, cities, town planners) the modularity and flexibility of systems, vehicles and components based on the EnergyBus Standard means deliverability and security for long-term planning and sustainable investment. Parking spaces can be effectively managed with EnergyBus.

HOW DOES ENERGYBUS MAKE MOBILITY SMART ?

- ✔ Plug & play: components are interchangeable. Services and a variety of products can be networked on a standard platform.
- ✔ Modular: makes updates and upgrades affordable and easy.
- ✔ Maximum safety: technical protocol standards ensure EnergyBus products remain undamaged even under improper use.
- ✔ Smart networking: automation-capable processes for fleet operation, framework for remote or self-diagnostic software for service and maintenance.
- ✔ Parking space management: the availability of micro-mobility and use of public space by vehicles (for charging and parking) can be monitored and controlled by cities and municipalities.



ENERGYBUS CHARGING INFRASTRUCTURE

“ (...) Furthermore, the Federal Government will work to ensure that these charging systems are standardised and hence made more user-friendly. This will also help towards the goal of providing a consistent charging infrastructure. Given the speed at which the market is developing, the groundwork for this must be completed swiftly. (...) ”

National Cycling Plan 2020,
German Federal Ministry of Transport and Digital Infrastructure



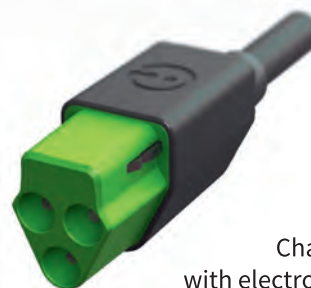
Lock plug: electronic theft protection with no charging function



Charge-lock plug: 60V with electronic theft protection



Charging socket for all plug types



Charge-lock plug: 120V with electronic theft protection



With a plug family, charge socket and a charging protocol based on CANopen, EnergyBus has condensed the wide variety of existing charging systems into one functional, safety-certifiable charging standard for the LEV sector. This offers manufacturers, developers and users a reliable, modular package for the development and use of sustainable products. The charging standard for LEVs is already defined in the EU standard EN 50604-1 and in the international standard IEC 61851-3. The charging interface is, rather like mains plugs and sockets, always identical.



Examples of applications

ENERGYBUS ORGANISATIONS

The EnergyBus organisation brings together three legal strands:

EnergyBus e.V.

EnergyBus e.V. is a registered membership association with the objective of promoting standardised charging infrastructure for e-bikes, pedelecs and other Light Electric Vehicles (LEVs). Its members are both individuals and manufacturers of electric vehicle components such as plugs, batteries, control systems and drive units. The Association has existed since 2007.

EnergyBus GmbH

EnergyBus GmbH is a fully-owned subsidiary of EnergyBus e.V. This company's responsibilities include regulations and processes for the certification of the EnergyBus standard, distribution of brand licenses and conformity testing.




EnergyBus Operations GmbH

EnergyBus Operations GmbH is a joint venture between EnergyBus GmbH and Mastermind Advisory Services. The task of this company is the global licensing of the patent rights of EnergyBus e.V.

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