

On-Board Charger

Efficient power electronics for AC and DC charging



On-Board Charger

Highly efficient one device solution



HIGHLIGHTS

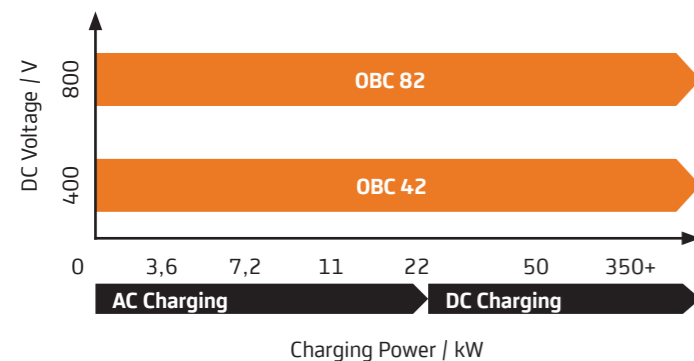
- AC charging up to 22 kW with 96 % efficiency
- DC charging functionality integrated
- Charging communication for AC and DC charging is fully integrated and supported without any additional devices
- Compatible with EU & US power grid topologies
- Full interoperability with all standard-compliant charging stations according to IEC 61851, DIN SPEC 70121 and ISO 15118

The innoelectric solution

Charging an electric vehicle requires numerous components. Both the transmission of the power and the communication between the components must work smoothly to charge the vehicle successfully. The innoelectric On-Board Charger (OBC) combines power electronics and communication and can be integrated in the vehicle as one component.

The innoelectric On-Board Charger is available in two versions with different voltage levels: OBC42 and OBC82. Both products are able to charge with a power up to 22 kW (AC charging) and also support high power charging (HPC, DC charging).

Flexible charging solution for different topologies



Fields of application



Passenger and commercial vehicles



Construction machinery

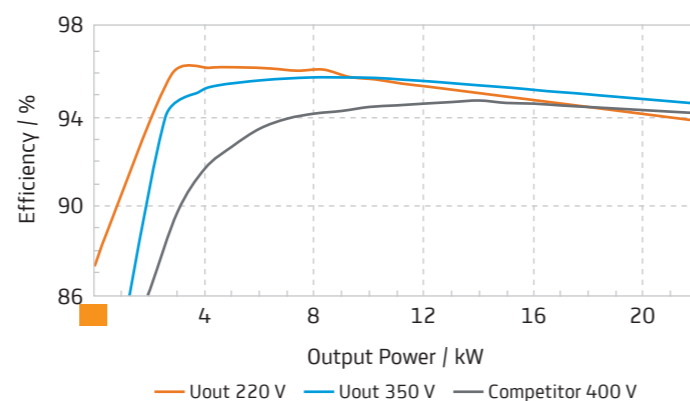


New mobility concepts

Efficient power electronics

The OBC is reaching a minimum efficiency of more than 94 % between 2 kW and 22 kW. The maximum efficiency is about more than 96 %.

Highest charging efficiency



The high efficient architecture of the innoelectric OBC results in a compact product size, reduced charging losses and a minimal load for the cooling system of the application.

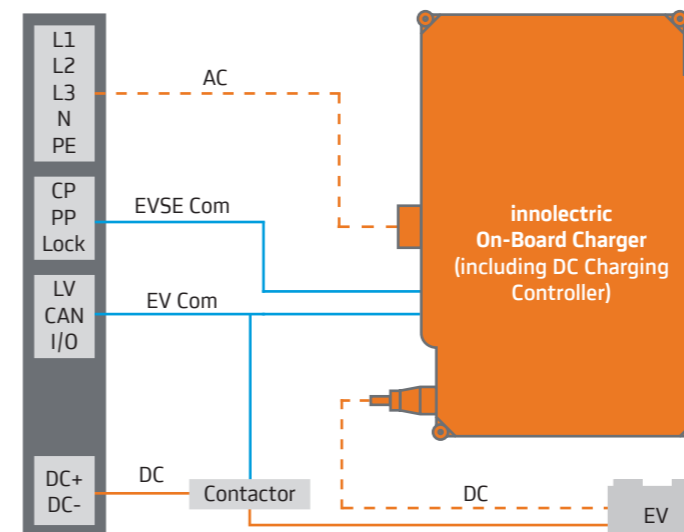
Especially end users in the field of commercial applications benefit from the high efficient results, which lead to a better TCO.

DC Charging Controller

The innoelectric On-Board Charger fully integrates power electronics and the communication module DC Charging Controller (D3C), enabling AC and DC charging without any additional devices in customer applications. This refers to the innoelectric concept with the necessity of only one single integration on the customer side.

In addition to the common AC charging function via PWM communication with up to 22 kW, the OBC is supporting the DC charging standard PLC (DIN SPEC 70121 and ISO 15118) with an output power regarding to the maximum charging capability of the EV.

DC fast charging topology



Customer benefits

Benefits regarding the DC charging process

- Higher energy quantity can be transferred in the same time
- Charging current is flowing directly to the battery of the EV, switched by a contactor
- PLC communication ensures a quick and safe charging process
- Maximum charging power will be defined automatically between the electric vehicle supply equipment (EVSE), OBC and EV

Further benefits

- Full control of locking actuator
- I/Os for LED (RGB) and DC contactors
- Galvanic isolation between AC and DC
- Upgradeable software architecture
- Intrinsic safety regarding voltage, current, temperature and discharge
- Wide range LV power supply (9 V and 32 V)
- Optional increase of the charging power by connecting multiple OBCs in parallel
- Tested under numerous different environmental conditions to ensure reliable long-term operations following LV123 / LV124, ECE R100 and ECE R10

Technical Data of the On-Board Charger

Product name	OBC42	OBC82
Component design	400 V	800 V
Input Power	22 kW	
Input Voltage (3~ AC)	380 - 480 V (+10 / -14 %)	
Input Voltage (1~ AC)	120 - 240 V (+10 / -14 %)	
Input Current (AC)	32 A (per phase)	
Frequency	50 - 60 Hz (+ / -1 %)	
Efficiency (2-22 kW)	> 94 %	
Efficiency (2-10 kW)	> 96 %	
Output Voltage (DC)	220 - 510 V	400 - 900 V
Output Current (DC)	up to 65 A	up to 45 A
AC charging communication	PWM (IEC 61851)	
DC charging communication	PLC (DIN SPEC 70121, ISO 15118)	
Interfaces	1 x CAN J1939 / 1 x Service CAN	
Degree of Protection	IP 6K6K / IP 6K9K / IP 67	
Dimensions (L x B x H)	570 x 370 x 115 mm	
Weight	< 30 kg	
Operating Temperature	-40 - +65 °C	

Minimal adjustments due to series production are possible.

Cutting-edge solutions

innoelectric is driving forward electromobility and develops component solutions for the electrified powertrain and the associated charging process as well as energy storages. We offer efficient charging technology for onboard and offboard applications. It can be used in cars, trucks and any other commercial or construction vehicles. Our customers benefit from turnkey solutions that can be easily integrated because power electronics and charging communication fit perfectly together.

Thanks to the innovative technology provided by STMicroelectronics innoelectric offers products with very high efficiency and top quality. The advantages for customers who purchase the innoelectric On-Board Charger, for example, are the above-average efficiency of the product with more than 96% efficiency and great availability.





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