

# Battery Electric Vehicle Solutions

'Power electronics product development since 10 years'

*Let's make together clean source for mobility...*  
*Cost Quality Class Customer (Q3C)*

■ DC-DC ■ Charger ■ Inverter ■ EVSE



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# DC-DC Converter

The DC-DC converter is a product offering within the Power Electronics category APECEV. The Low Voltage (LV) battery is no longer charged by the alternator; instead, it is charged from the high-voltage (HV) battery pack. To facilitate this, a standard DC-DC converter is employed to provide power to various electrical loads in vehicles, including infotainment systems, instrument clusters, headlights, and safety systems, while also recharging the LV battery.

APECEV is widely recognized for its established reputation and extensive experience in manufacturing highly reliable, cost-effective indigenous converters. Our expertise allows us to design custom solutions by leveraging cutting-edge technology and adhering to standardized production processes.

## Key Features:

- Input voltage range: 30Vdc-85Vdc
- Output voltage range: 14Vdc, 28Vdc
- Power output range: 120W-360W
- CC-CV mode for clean power and protection for abruptly cut-off.
- Protection: OVP, UVP, SCP, and reverse polarity protection
- Efficiency >95%
- Comply with ISO7637, AIS004, and CISPR25
- Protection level: IP67
- Operating Temp: -20 ~ 60deg C
- Localized in India and aligned with the PLI scheme for fame subsidy



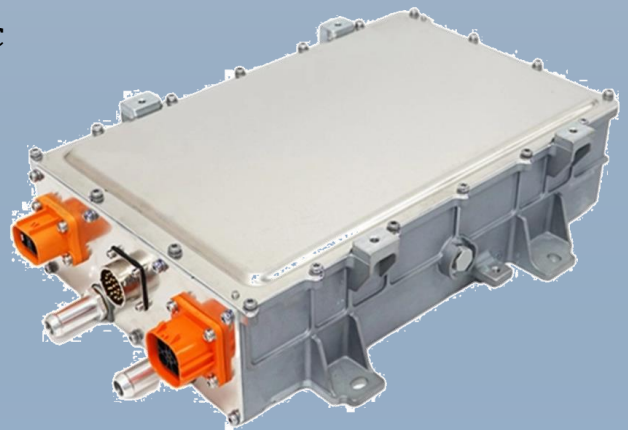
# Charger

The charger serves as the crucial link between the vehicle and the public grid, responsible for converting AC grid energy into the DC voltage required for the vehicle's battery. Our charger is equipped with the capability to manage and regulate both the current and voltage during the charging process, operating in a Constant Voltage and Current Control Mode. This precise control not only ensures efficient charging but also extends the lifespan of the high-voltage (HV) battery.

At APECEV, we are committed to a continuous cycle of innovation aimed at producing chargers that are not only highly efficient and reliable but also compact and cost-effective. These chargers are designed to accommodate various power levels, making them well-suited for the diverse grid conditions found in India.

## Key Features:

- Input voltage range: 85Vac-265Vac
- Output voltage range: 42Vdc-60Vdc
- Power factor:  $\geq 0.99$
- Max. output current: 50A
- Frequency: 47Hz-60Hz
- Output power: 3kW
- Efficiency  $>92\%$
- CC-CV mode
- Protection level: IP67
- Operating Temp:  $-20 \sim 60\text{deg C}$
- Comply with ISO7637 and AIS004
- Localized in India and aligned with the PLI scheme for fame subsidy



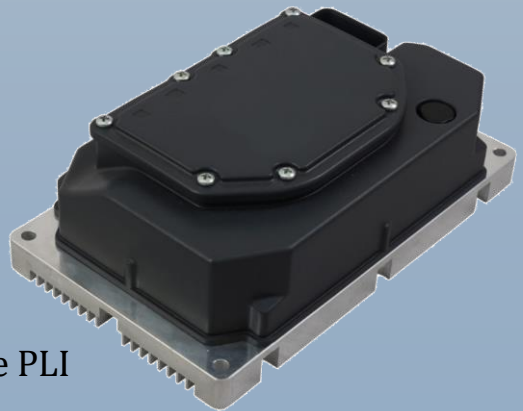
# Inverter

The high-voltage inverter plays a pivotal role in the electric vehicle's operation. It functions by converting direct current (DC) received from the high-voltage (HV) battery into alternating current (AC) to power the traction drive motors, propelling the vehicle. Additionally, during regenerative braking, it offers a reverse mode capability where it can extract kinetic energy from the vehicle and transform it into electrical energy for storage in the battery.

APECEV is actively engaged in the development of advanced inverters to support automotive plug-in hybrid (PHEV) and battery electric (BEV) applications. These advanced inverters are engineered to meet the specific requirements and demands of modern electric vehicles, further enhancing their performance and efficiency.

## Key Features:

- Input voltage range: 40Vdc-60Vdc
- Output power: 5kW-12kW
- Output voltage: 24Vac, 3 phase
- Operating Temp: -20 ~ 60deg C
- Comply with ISO7637 and AIS004
- Localized in India and aligned with the PLI scheme for fame subsidy



# Electric Vehicle Supply Equipment (EVSE)

EVSE comprises the essential hardware and software elements required to establish a connection between an electric vehicle (EV) and an electricity source which control the charging procedure. When an electric vehicle is connected to an EVSE, it initiates the transfer of electrical power from the grid, which is subsequently converted and directed toward the vehicle's battery. This process facilitates swift and regulated charging, guaranteeing the efficient and secure recharging of the EV's battery."

## Key Features:

- Input voltage range: 70Vac-265Vac
- Output power: 3.3kW
- Charging standard: IEC-61851
- Charging protocol: CCS, Type 2 plug
- Connection point: IEC 62196-2, Type 2
- AC input plug: Type M, 15A(Indian) and 16A(IEC60309)
- Charging mode: Mode 2
- Operating Temp: -20-55 Deg C
- RCD: AC (30mA) and DC(6mA)
- Protection level: IP67
- Comm. Interface: IEC62752, IEC61851
- Localized in India and aligned with the PLI scheme for Fame subsidy.

