



# Smarter Mobility

Heavy Commercial Vehicle Charging



# ABB Heavy Commercial Vehicle charging

ABB offers a complete portfolio for charging electric Heavy Commercial Vehicles such as buses and trucks.

With increasing air pollution levels in cities and a stronger public commitment to cleaner transportation, electric city buses and trucks offer a great opportunity to reduce emissions in cities, while also reducing operational costs.

ABB offers a complete portfolio for charging electric Heavy Commercial Vehicles such as buses and trucks. Charging can be done during daily operation at any given stop or rest opportunity, charge time typically is between 3 and 6 minutes and requires an automated connection device and high power charging. This so called Opportunity Charging provides an ideal solution to ensure zero-emission public transport during the day without impacting the normal operation on the route.

Since most vehicles will return to a depot for overnight parking, this also provides an ideal moment to charge the vehicles up to 100% and to precondition the vehicle before it goes back into operation. Normally this requires lower charging powers and can be done by a connector or by automated connection devices and is called Overnight Charging. Different power levels and interfaces are available to either charge 1 vehicle per charger or to have sequential charging, which offers an efficient solution to charge up to 3 vehicles with 1 charger.

Charging powers start at 24 kW and can be extended up to 150 kW for overnight charging and up to 600 kW for opportunity charging. The following 3 interfaces are supported:

1. Connector – CCS1 or CCS2;
2. Pantograph Up - roof mounted pantograph;
3. Pantograph Down - pantograph mounted on the infrastructure.

# Heavy Commercial Vehicle charging product portfolio

	Connector	Pantograph Down	Pantograph Up
24 kW	 <p>— DC wallbox</p>		
50 kW	 <p>— Terra 54HV</p>		 <p>— Terra 54HV PU</p>
100 kW	 <p>— HVC 100C 1-3 depot box</p>		 <p>— HVC 100PU-S</p>
150 kW	 <p>— HVC 150C 1-3 depot box</p>	 <p>— HVC 150PD kit / HVC 150PD</p>	 <p>— HVC 150PU-S / HVC 150PU</p>
300 kW		 <p>— HVC 300PD</p>	 <p>— HVC 300PU</p>
450 kW		 <p>— HVC 450PD</p>	 <p>— HVC 450PU</p>
600 kW		 <p>— HVC 600PD</p>	 <p>— HVC 600PU</p>



### Flexibility

The Heavy Commercial Vehicle charging product line offers a wide range of chargers, providing maximum flexibility to the operator or fleet owner to electrify a single bus line up to a complete fleet of electric buses or trucks with the required power level.



### Future proof

ABB products support a wide output voltage range of 150 – 850 V DC and some products even up to 920 V DC, supporting today's and next generation of cars, buses and trucks.



### Interoperability

Use the same charging infrastructure for different vehicle configurations and different vehicle makes.



### Modular design

The modular power cabinets can be expanded at any time, allowing customers to invest in increasing charging power in line with the emergence of higher-capacity in the (near) future.



### Complies with international standards

ABB's high power chargers are designed to the highest international electrical, quality and safety standards, including IEC 61851-23, guaranteeing safe and reliable operation in public areas.



### Always connected – remote service & data management

ABB chargers come with an extensive suite of connectivity features including remote monitoring, remote management and smart software upgradeability. These advanced services enable high uptime of the equipment, a fast response to problems and provide owners of chargers with powerful insight into statistics of their charging operation.



### ABB is your experienced partner

The new fast charging solution for Heavy Commercial Vehicles is based on ABB's solid experience in charging solutions for electric vehicles. Since early 2010, ABB has sold more than 10,500 fast charging systems for electric vehicles around the world and is a global leader in this market.

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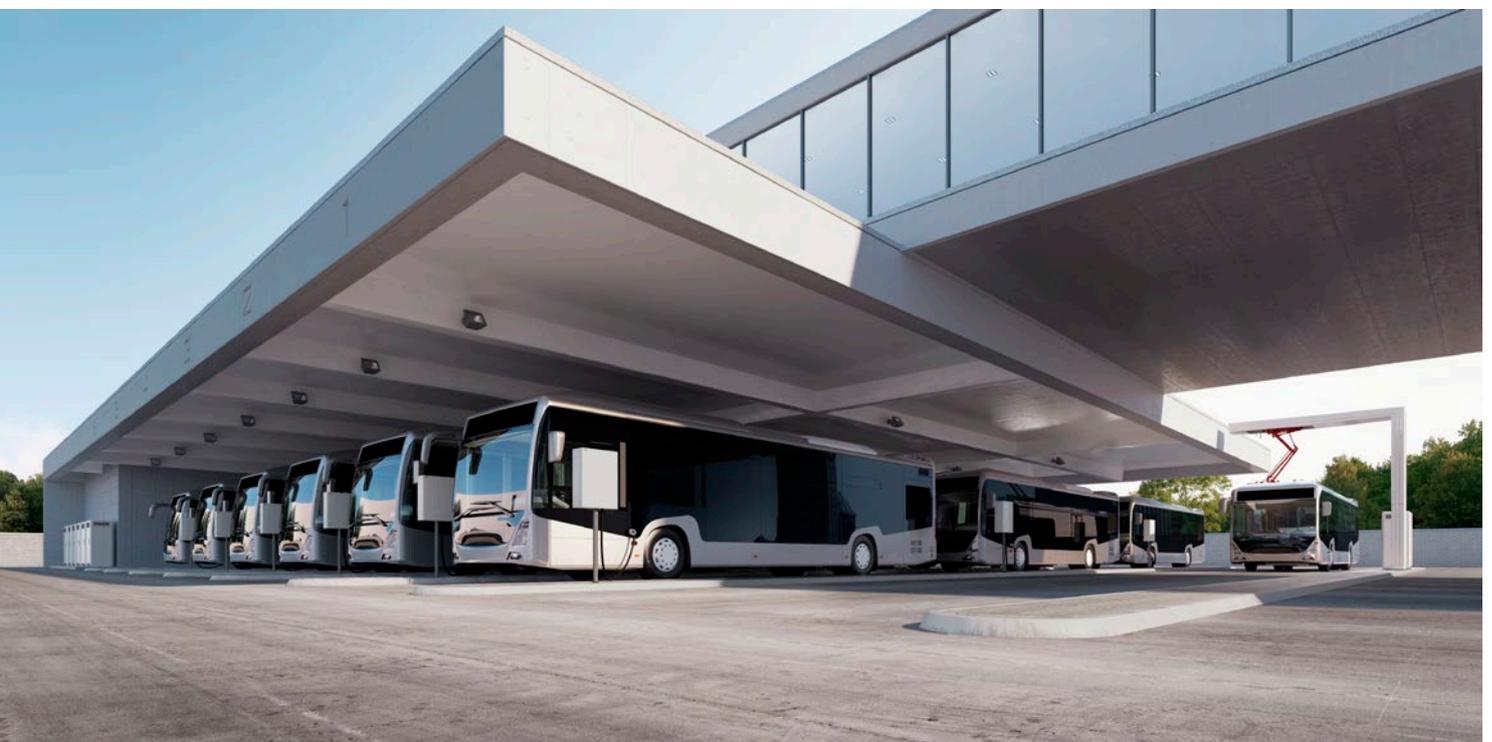
## Connector

Charge electric buses and trucks with a connector

ABB offers a complete portfolio for charging heavy electric vehicles such as buses and trucks with a CCS connector. Due their large Voltage range the DC wall box (24 kW) and Terra 54HV (50 kW) are perfectly suited to charge electric buses and trucks. For higher power the products with 100 kW and 150 kW including sequential charging, are specially designed to charge larger fleets of electric vehicles in it its most optimized way.

Main features and key benefits:

- Power range of 24 kW, 50 kW with Voltage range from 150-920 V DC
- Power range of 100 kW, 150 kW with Voltage range from 150-850 V DC
- Sequential charging with up to 3 outlets with 100 and 150 kW
- Small footprint with remote depot control box
- Compliant with ISO 15118 / DIN 70121 / IEC 61851-23 & -24
- OCPP compliant
- Remote diagnostics and management tools



### Sequential charging

Instead of having one charger per vehicle, ABB offers sequential charging for the 100kW and 150kW chargers. A single power cabinet is paired with up to three depot charge boxes. After the first vehicle has finished charging, the next vehicle will start charging automatically. The advantages are:

- Vehicles are charged with high power, maximizing vehicle availability
- The required grid connection is smaller, reducing initial investments and operational costs
- Optimal utilization of installed infrastructure, meaning lower investments in charging equipment

### Connector specification

#### Technical specifications

Power	100 kW, 150 kW
Input AC connection	3P + PE
Rated input current & power (per 150 kW module)	100 kW: 3 x 170 A, 117 kVA 150 kW: 3 x 250 A, 173 kVA
Input voltage range	400 V AC +/-10% (50 Hz or 60 Hz)
Maximum output current (per 150 kW power cabinet)	100 kW: 166 A 150 kW: 200 A (limited by CCS cable)
Output voltage range	150- 850 V DC
DC connection standard	IEC 61851-23 / DIN 70121/ ISO 15118
Connection method between charger and bus	CCS 1 or CCS 2
Environment	Indoor / Outdoor
Operating temperature	Standard: -10 °C to +50 °C Optional: -35 °C to + 50 °C
Dimensions (W,D,H)	Power cabinet: 1170 x 770 x 2030 mm Depot charge box: 600 x 220 x 800 mm
Network connection	GSM / 3G modern 10/100 base-T Ethernet
Protection	Charge cabinet: IP54- IK10 Depot charge box: IP65- IK10
Sequential charging	Yes, up to 3 outlets per charger
Cable length between depot charge box and cabinet	Up to 150 m
Cable length between 2 depot charge boxes	Up to 30 m
Cable length connector	Standard: 3.5 m Optional: 7 m

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01 HVC-150C with  
150 kW power cabinet  
and three depot  
charge boxes with  
sequential charging



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## Pantograph Up

Charge electric buses with a roof mounted pantograph

ABB offers an ideal solution to charge electric buses that are equipped with a roof mounted pantograph. This allows to charge larger fleets of electric buses overnight in a range of 50-150 kW per vehicle and during the day with 150 kW up to 600 kW for opportunity charging.

Main features and key benefits:

- Voltage range from 150-850 V
- Power range of 50-100-150 kW for overnight charging
- Sequential charging with up to 3 outlets for overnight charging
- Power range of 150-300-450-600 kW for opportunity charging
- Safe and reliable fully automated connection
- Compliant with ISO 15118 / DIN 70121 / IEC 61851-23 & -24
- OCPP compliant
- Remote diagnostics and management tools



## Pantograph Up specification – Opportunity charging

### Technical specifications

Power	150 kW, 300 kW, 450 kW, 600 kW
Input AC connection	3P + PE
Rated input current & power (per 150 kW power cabinet)	3x 250 A, 173 kVA
Input voltage range	400 V AC +/- 10 % (50 Hz or 60 Hz)
Maximum output current (per 150 kW power cabinet)	250 A Max is 600 A (limited by contact hood)
Output voltage range	150-850 V DC
DC connection standard	IEC 61851-23 / DIN 70121/ ISO 15118
Connection method between charger and bus	4-pole contact dome
Environment	Indoor / Outdoor
Operating temperature	Standard:-10 °C to +50 °C Optional: -35 °C to + 50 °C
Dimensions (W,D,H)	Power cabinet: 1170 x 770 x 2030 mm Pole: 3250 x 406 x 5007 mm
Network connection	GSM / 3G modern 10/100 base-T Ethernet
Protection	IP54- IK10
Cable length between power cabinet and pole	Up to 100 m

## Pantograph Up specification – Overnight charging

### Technical specifications

Power	50 kW, 100 kW, 150 kW
Input AC connection	3P + PE
Rated input current & power	50 kW: 3x 80 A, 55 kVA 100 kW: 3x 170 A, 117 kVA 150 kW: 3x 250 A, 173 kVA
Input voltage range	400 V AC +/-10 % (50 Hz or 60 Hz)
Maximum output current	50 kW: 125 A 100 kW: 166 A 150 kW: 250 A
Output voltage range	150- 850 V DC
DC connection standard	IEC 61851-23 / DIN 70121/ ISO 15118
Connection method between charger and bus	4-pole contact dome
Environment	Indoor / Outdoor
Operating temperature	Standard:-10 °C to +50 °C Optional: -35 °C to + 50 °C
Dimensions (W,D,H)	50 kW power cabinet: 325 mm x 770 mm x 1300 mm 100-150 kW power cabinet: 1170 x 770 x 2030 mm Control box: 600 x 600 x 250 mm
Network connection	GSM / 3G modern 10/100 base-T Ethernet
Protection	Charge cabinet: IP54-IK10 Control box: IP65-IK10
Sequential charging	Yes, up to 3 outlets per charger
Cable length between power cabinet and contact dome	Up to 150 m
Cable length between 2 contact domes	Up to 30 m

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01 HVC-300PU  
with 300 kW power  
cabinet and slim  
design charge pole



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## Pantograph Down

Charge electric buses following the OppCharge protocol

ABB offers an ideal solution to charge electric buses fully automated following the OppCharge protocol. With typical charge times of 3 to 6 minutes the system can easily be integrated in existing operations, ensuring zero-emission public transit during the day without impacting on the normal operation of the route.

Main features and key benefits:

- Voltage range from 150-850 V
- Power range of 150-300-450-600 kW
- Charge in 3 to 6 minutes
- One charger can serve multiple vehicle types and brands
- Safe and reliable fully automated connection
- Compliant with OppCharge / IEC 61851-23
- OCPP compliant
- Remote diagnostics and management tools



## Pantograph Down specification – Overnight & Opportunity charging

### Technical specifications

Power	150 kW, 300 kW, 450 kW, 600 kW
Input AC connection	3P + PE
Rated input current & power (per 150 kW power cabinet)	3x 250 A, 173 kVA
Input voltage range	400 V AC +/- 10% (50 Hz or 60 Hz)
Maximum output current (per 150 kW power cabinet)	250 A Max is 600 A (limited by pantograph)
Output voltage range	150-850 V DC
DC connection standard	IEC 61851-23 / OppCharge
Connection method between charger and bus	4-pole automatic connection system
Environment	Indoor / Outdoor
Operating temperature	Standard: -10 °C to +50 °C Optional: -35 °C to + 50 °C
Dimensions (W,D,H)	Power cabinet : 1170 x 770 x 2030 mm Pole: 4850 x 1060 x 5820 mm
Network connection	GSM / 3G modern 10/100 base-T Ethernet
Protection	IP54- IK10

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01 HVC-450PD  
with 450 kW power  
cabinet and standard  
charge pole



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**For more information please contact:**

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