Pantograph Up

Reliable, automatic charging for electric buses at the depot and en route

Pioneering the future of e-mobility

Delivering end-to-end electrification solutions for the transport of tomorrow, today.

Long standing experience

More than a decade in launching innovative EV charging technology, complimented by a century of experience in power distribution and energy management.

Trusted problem solver

From highway to home, from EV Fleets to retail, we are the partner of choice for the world's biggest brands of electric vehicle OEMs to nation-wide EV network operators.

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 100-150 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 100-150 kW for overnight charging
- Sequential charging with up to 3 outlets with 100 and 150 kW
- Power range of 150-600 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

Key values

High reliability
Proven design based on Panto Down & Terra HP control platform (>3.000 units in operation)

Flexibility
Full range of products available with a power rating of 100-600 kW including sequential charging and parallel charging.

Interoperability
Fully compliant with the international standards & validated with a large number of bus OEMs

Sequential charging

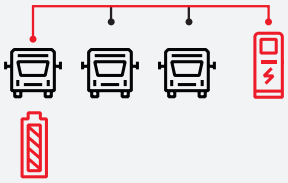
Instead of having one charger per vehicle, ABB offers sequential charging for the 100 kW and 150 kW Panto Up chargers. A single power cabinet is paired with up to three Contact Domes. After the first vehicle has finished charging, the next vehicle will start charging automatically.

The advantages are:

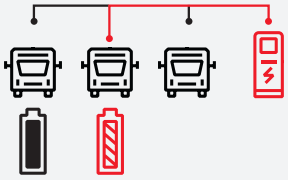
- Vehicles are charged with high power, maximizing vehicle availability
- The required grid connection is smaller, reducing initial investments and operational costs
- Optimal utilization of installed infrastructure, meaning lower investments in charging equipment

Charging schedule

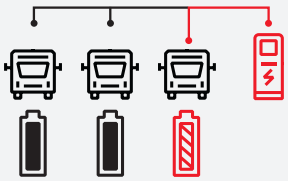
Bus 1
11:00 pm – 01:20 am



Bus 2
01:21 am – 03:40 am



Bus 3
03:41 am – 06:00 am



- At 6 am, the entire bus fleet will be ready

Delivering more value with end-to-end solutions

ABB Service Level Agreement (SLA)
ABB offers a modular service solution that can be tailored to your specific needs, from remote proactive monitoring to training programs and tools to support your own service teams. Allow ABB to create a service program that ensures the highest uptime and reliability for your critical EV charging operation.

- Preventative maintenance
- Remote monitoring and diagnostics
- Spare parts programs
- On-site repairs
- Training and certification for 3rd-party service providers
- Online collaborative service tools through ABB Ability Connected Services
- Over-the-air upgrades and services

EV Site Solution (EVSS)
Charging sites with multiple DC chargers will benefit from smart optimization of EV charging performance with ABB's EV Site Solution (EVSS) controllers.

- Reduce CAPEX costs for grid upgrades by efficiently managing energy use according to existing site capacity.
- Reduce OPEX by avoiding penalty costs for high energy demand peaks.
- Prevent power outages as a result of exceeding site's grid connection limit

Over-the-air software updates enable new optimization features and services as they are developed, such as energy forecasting

To learn more about ABB's EV Site Solution click and open the dedicated brochure EVSS Control 100

Charger

Technical specifications					
	100 kW	**150 kW**	**300 kW**	**450 kW**	**600 kW**
					
Charging interface					
HVC-PU set depot 100-150 kW	Yes	Yes	-	-	-
HVC-PU set charge pole 150-450 KW	-	Yes	Yes	Yes	-**
Sequential charging	Yes*	Yes*	-	-	-
Product information					
DC output power rating	100 kW	150 kW	300 kW	450 kW	600 kW
DC output voltage	150-850 V				
Input AC power rat 400 V AC	117 kVA	174 kVA	348 kVA	520 kVA	690 kVA
Input current (nominal) 400 V AC	159 A	238 A	476 A	713 A	950 A
Input AC power rat 480 V AC	117 kVA	174 kVA	348 kVA	520 kVA	690 kVA
Input current (nominal) 480 V AC	132 A	198 A	396 A	594 A	792 A
Input voltage range	CE: 400 V AC +/- 10% (50 Hz or 60 Hz***) UL: 480 V AC +/- 10% (50 Hz*** or 60 Hz)				
Input AC connection	3P + PE				
Protection	Overcurrent, overvoltage, undervoltage, ground fault including DC leakage protection, integrated surge protection				
Overvoltage category	Type II				
Power factor	≥ 0.95 (> 0.97 at full load)				
THDi	< 5%				
Standby Power	60 W	60 W	120 W	180 W	240 W
Short circuit current	CE: 25 kA UL: 65 kA				
Distance between charger & charging interface	100 m standard and longer distances optional				
PU pantograph types	4-pole contact dome (DC+, DC-, CP, PE)				
Efficiency	94-96%				
Cellular communication	GSM / 4G / LTE				
General characteristics					
IP and IK rating	IP-54 and IK-10 (cabinet)				
Enclosure type	Stainless steel				
Operational attitude	Up to 2000m				
Operation temperature range	-35°C to +50°C				
Dimensions (H x W x D)	2030 x 1170 x 770 mm	2030 x 1170 x 770 mm	2030 x 1170 x 770 mm (x 2)	2030 x 1170 x 770 mm (x 3)	2030 x 1170 x 770 mm (x 4)
Mass	1290 kg	1340 kg	1340 kg (x 2)	1340 kg (x 3)	1340 kg (x 4)
Color	RAL 9002				
User interface					
Connectivity	Internet access via 4G / 3G / Ethernet (RJ45)				
Communication protocols	OCPP 1.5 / 1.6 and OPC-UA				
HMI	7" inch touchscreen inside the cabinet for service purposes				
Configuration					
Software update	Over-the-air updates via ABB web portal, OCPP 1.6				
Control and configuration	ABB web portal, on-board service portal, OCPP 1.6, OPC-UA				
Certification and standards					
Charging system	IEC 61851-1 ed 3, IEC 61851-21-2 ed 1, IEC 61851-23 ed 1, IEC 61851-24 ed 1, IEC 62196-2, IEC 62196-3, IEC 61000				
Communication to the EV	DIN 70121, ISO/IEC 15118 series ed 1				
Communication to the backend	OCPP 1.6 JSON				
Electro-Magnetic Compatibility	Radiated Emissions Class A and Class B. Conducted Emissions Class A and Class B optional with external filter				
Compliance	CE and UL certification				
Warranty	Base warranty 24 months after Site Acceptance Test or 30 months after factory delivery. Warranty extensions available				

* Sequential charging only possible with HVC-PU set depot 100-150 kW CE, maximum 3 Contact Domes
** Upgrade of the HVC-PU set charge pole 150-450 kW required
*** Only for version without trap filter (THD<8%) for versions with trap filter (THD<5% is not allowed)

Charging interface

Technical specifications			
	HVC-PU set depot 100-150 kW CE	**HVC-PU kit 150-450 kW CE**	**HVC-PU set charge pole 150-450 KW CE**
			
Charging applications			
Overnight charging	Yes	-	-
Opportunity charging	-	Yes	Yes
Sequential charging	Optional	-	-
Product information			
DC output current rating	350 A	1000 A	1000 A
Distance between control box & contact dome	10m according to standards	-	-
Connector Types	Contact dome (Schunk 10.01.5003.05)		
General characteristics contact dome			
Material	Glass fiber, DC contact rails copper and CP, PE rails Aluminum		
Dimensions control box (H x W x D)	325 x 1300 x 770 mm		
Mass	45 kg		
Color	RAL 7035		
General characteristics control box / pole			
IP and IK rating	IP-65 and IK-10		
Enclosure type	Steel		
Dimensions control box (H x W x D)	450 x 600 x 250 mm	500 x 250 x 250 mm (CPI box)	5300 x 1300 x 4600 mm
Mass	30 kg	12 kg	500 kg
Color	RAL 9002	Steel	RAL 9003
User interface			
Emergency button	Option for external emergency button	Yes	Yes
Stop button	Option for external stop button	-	-
LED indicator	Yes 3 color LED, Red/ Green/ Blue & external option	External option for 3 color LED, Red/ Green/ Blue	Yes 3 color LED, Red/Green/Blue

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

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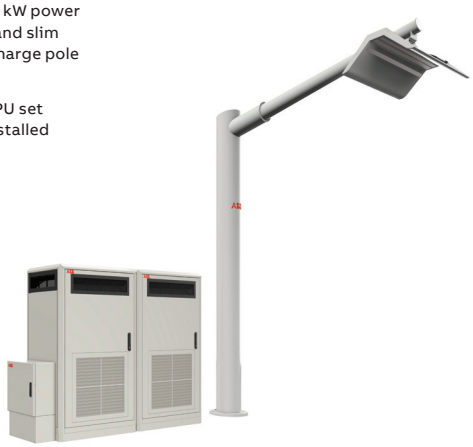
02 HVC-PU set depot installed



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01

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02

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