



Vedlegg 1- Teknisk produkt beskrivelse

1. Produkt leveranse 450 kW Pantografer

Se og vedlagte produktblad

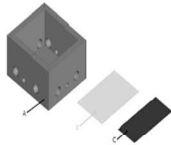
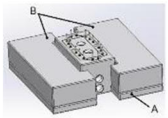
Quantity	Product code	Product	Description
7	6AGC069044	HVC 450PD CE 	Heavy Vehicle Charger 450kW for charging with ACS (Automated Connection System excluded) <ul style="list-style-type: none"> • Opportunity charger for frequent, short duration charge sessions for DC charging with 4-pole Automatic Connection System (ACS) of electric buses (vehicle components excluded). • DC output: 450kW; 150-850 VDC; max. 750A; • Galvanic Isolation. • AC input: 3P + PE; 400 VAC +/-10% (50 Hz); 3 x 750 A, 519 kVA. • CE certified; isolation resistance and DC output ripple current acc. to IEC 61851-23; EMC Class A acc. to IEC 61000-6-4 (emission) and IEC 61000-6-2 (immunity). • DIN 70121 and OppCharge compatible. • Controller, integrated 3G connection included. • Operating temperature: -10 to + 50 deg C (down to -35 deg C with the option HxC robustness package). • Dimensions: 770 (D) x 3510 (W) x 2030 (H) mm. • Weight: 4020 kg. • IP54, powder coated stainless steel housing for outdoor use. • Standard DC cable length for connection to ACS: max. 20m (cable not included). • Support of OCPP interface & ABB connected services. • Upgradeable to 600 kW. • Color: RAL 9002 <p>Robustness package is recommended.</p>
7	6AGC069038	HVC-PD standard pole with ACS 150-450kW CE 	<p>ABB standard pole with Automated Connection System (ACS) for charging 150-450kW. Includes:</p> <p>Standard pole:</p> <ul style="list-style-type: none"> • Dimensions (W,D,H): 1060 x 4850 x 5520 mm • Color: RAL 9003 • Weight: 1650 kg incl Pantograph and ACM <p>Automated Connection Device (ACD):</p> <ul style="list-style-type: none"> • Pantograph for automated charging of electric buses. • Voltage range: 900V DC • Max current: 600A • weight: 165kg • dimensions (W,D,H): 2010 mm x 900 mm x 490 mm • Maximum inclination in bus driving direction: 2,5 degrees. <p>Automated connection device Control Module (ACM):</p> <ul style="list-style-type: none"> • Controls safety, pantograph movement and communications with the vehicle. • Voltage range: 900V DC • Max current: 600A • Outdoor Wifi communication module • Standard distance between HVC and ACS is max. 20 meters. Cabling between HVC and ACS is excluded. <p>Upgradeability: Upgrade to 600kW with additional costs is possible. Additional costs to be determined.</p> <p>When 2 or more poles are positioned close to each other (<12m between center pantograph) the RFID antenna is required, see options below.</p>

Quantity	Product code	Product	Description
2	4EPY420127R1	HxC long distance support package (For Bodø Lufthavn)	To increase distance between HVC and ACS to max. 150 meters. <ul style="list-style-type: none"> • Data communication enhancer module; • Overvoltage protection system; • 1 package needed per system (ie HVC300P is one system) and not per cabinet. Cable between charger and ACS <u>not</u> included.
7	6AGC077530	HVC-PD RFID Antenna	RFID Antenna: this is required when 2 or more poles/ pantographs are positioned close to each other (<12m between center pantograph) 1x RFID antenne including cable and assembly parts 1 RFID antenna is required per pantograph Note: This RFID antenna can only be used in the regions Europe / Saudi Arabia / South Africa. When you have a project outside these regions, please contact the PG for advise.
21	4EPY420137R1	HxC robustness package Pantograph	Package to further increase robustness: <ul style="list-style-type: none"> • Redundant auxiliary power supply; • Low temperature option: integrated Heating system for extension of the operating temperature to -35 degC to +50 degC. • Active temperature measurement and control; • Intelligent air filter system; • Intelligent fuse control. 1 package required per HVC power cabinet. For example, HVC-300P requires 2x HxC robustness packages.
21	6AGC051920	HxC EMC Class B conducted package	Optional package to make HVC 150, HVC 300, HVC 450 and HVC 600 charger compatible with EMC class B conducted acc. to IEC 61000-6-3; Requires product to be mounted on the AC input line in the feeder pillar or substation, dimensions: 500 (h) x 350 (w) x 250 (d) mm. One package required per cabinet.

2. Igangkjøring og installasjon 450kW

Quantity	Product code	Product	Description
7	6AGC069031	HVC-PD commissioning 450-600KW cabinet and ACS	<p>Onsite Commissioning HVC 450/600 and ACS</p> <p>This system requires an onsite commissioning activity by an ABB trained and certified person. The following activities are executed:</p> <ul style="list-style-type: none"> • Commissioning of HVC charger and ACS system to be fully operational with the selected e-bus • Customer to make a compatible e-bus available during commissioning • Post-installation checking of operational correctness • Alignment and calibration of pantograph • Configuration of remote connectivity and remote management features • Safety tests • User/operator instruction • Travel & lodging in EU included (1 engineer with maximum of 1 working week in 1 trip)
7		Installation From 3.Party.	Se Bilag 2
7		Anti Grafitti Painting	Se Bilag 2

3. Fundamenter

Quantity	Product code	Product	Description
21	6AGC069029	HxC power cabinet foundation & front cover (one per cabinet) 	<p>Optional concrete foundation & front cover for a HXC power cabinet. The cover needs to be used to cover the service access area. In case the foundation is placed before the power cabinet it is advised to cover the area where later the power cabinet will be with the HXC Power cabinet foundation rear cover.</p>
7	4EPY420134R1	HVC-PD set concrete foundation charge pole 	<p>Concrete foundation standard pole ACS. This package includes the base plate, concrete foundation and 2 ballast plates.</p> <p>Total set:</p> <ul style="list-style-type: none"> • weight: 9150 kg • dimensions (W,D,H): 2400 mm x 2400 mm x 800 mm

4. Transport

Quantity	Product code	Product	Description
21		Transport	HxC 100-150kW cabinet transport from EU factory to customer
21		Transport	HxC cabinet foundation transport EU factory to customer
7		Transport	HVC-Pantograph Transport from EU factory to customer
7		Transport	HVC- Pantograph Foundation transport from EU factory to customer

5. Produkt Management, Opplæring og Dokumentasjon

Product code	Product	Description
	Project management	<ul style="list-style-type: none"> • Dedicated contact person during delivery and commissioning phase • Delivering input on site design • Coordinating on time delivery of ABB scope in line with overall project planning.
	Training	Training includes: <ul style="list-style-type: none"> • One day user training for bus drivers • One day training for maintenance personnel
	Documentation	User Manual (English) Maintenance manual (English)

6. Ansvarsforhold

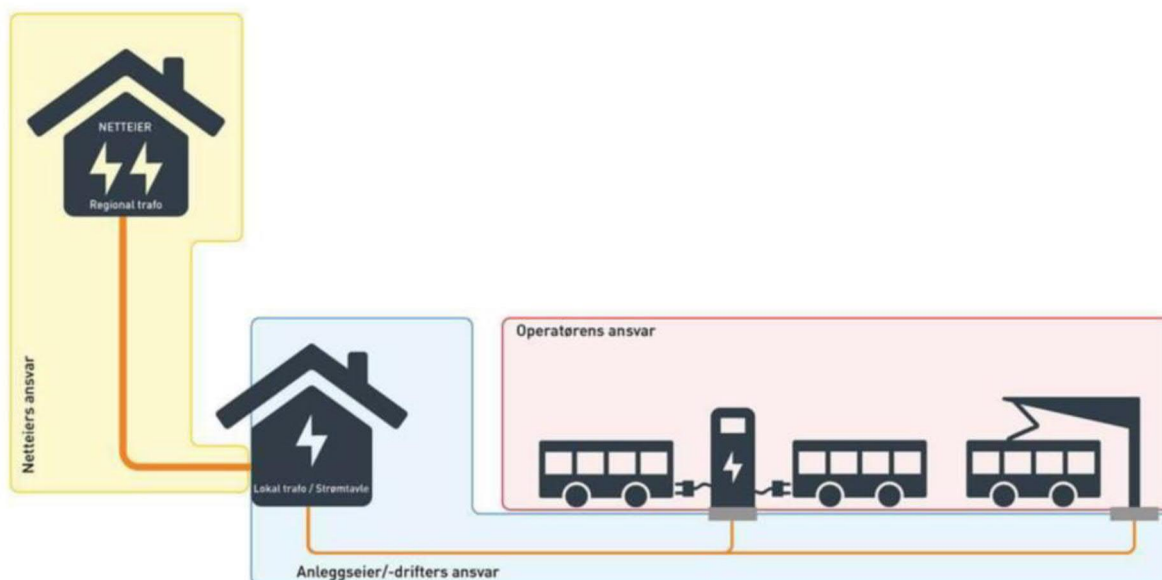


ABB leverer ferdig produkter og står for installasjon av disse. Alt under bakken og mellom trafo, likerettere og pantografer (inkludert kabler) er ikke ABB sitt ansvar. Se og Bilag 2

7. Tentativ leveringsplan

Week from order	1	2	3	4	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	
Delivery of products	█																												
Installation												█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Testing																													
Handover																													

Leveringsplan er foreløpig og avhengig av klargjøringer på siter, leveringstid av bussene samt interoperabilitet med bussleverandør. For Volvo busser er det meste av dette gjort fra fabrikk og/eller i tidligere installasjoner