EV Infrastructure
Product Brochure
ABB EV charging
Mission statement – EV Infrastructure team

We offer AC and DC charging solutions for Electric Vehicles...

...from 3-600kW...

...based on standards...

...in all countries...

..with cloud connectivity..

...using ABB technology...

Present in >80 countries

and ABB manufacturing.
ABB offers end-to-end solutions for the complete value chain
Your one-stop shop for e-mobility infrastructure

AC chargers
- Terra AC

DC fast chargers
- Terra systems

E-bus chargers
- HVC 150

Energy Management
- EV Site Solution

Integrated solutions
- Energy storage
- eHouse with chargers

Charging network software services
- ABB Ability

Building automation
- KNX, energy mngr.

Components
- DIN rail & LV and MV distribution boards

Renewable integration
- HVDC, solar, wind

Substations
- Transformers

Service
- Asset management
- Extensions, upgrades & retrofits
- Installation & commissioning

ABB’s solutions will work together seamlessly throughout the whole value chain
# Public and commercial car charging – Use cases

Charging service should match charging application and demand

<table>
<thead>
<tr>
<th>Public and commercial EV Charging</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AC destination</strong></td>
</tr>
<tr>
<td>3-22 kW</td>
</tr>
<tr>
<td>4-16 hours</td>
</tr>
</tbody>
</table>

- Office, workplace
- Home
- Multi family housing
- Hotel and hospitality
- Overnight fleet
- Supplement at DC charging sites for PHEVs

- Office, workplace
- Hotel and hospitality
- Parking structures
- Dealerships
- Urban fleets
- Public or private campus
- Sensitive grid applications

- Retail, grocery, mall, big box, restaurant
- High turnover parking
- Convenience fueling stations
- Highway truck stops and travel plazas
- OEM R&D

- Highway corridor travel
- Metro ‘charge and go’
- Highway rest stops
- Petrol station area’s
- City ring service stations
- OEM R&D
Public and commercial car charging – Use cases
Charging service should match charging application and demand

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</table>

- Terra AC
- DC Wallbox 24
- Terra 54, Terra 94, Terra 124, Terra 184
- Terra HP
The Terra AC wallbox provides tailored, intelligent and networked charging solutions for any business, home or location.

- **Ethernet, WiFi and Bluetooth** are in every charger. 4G with 3G fallback is available in some variants.
- **Authentication** can be done with a smartphone, via the BT connection, with an RFID card or tag.
- The charger will switch off when it detects that the car is taking more current than is allowed.
- Integrated protections, including DC ground fault and overvoltage, protects both user and car.
Terra AC Wallbox

Features

Built-in safety
- Overcurrent
- Overvoltage and undervoltage
- Ground fault
- Surge protection
- PE (protective earth) continuity monitoring

Connectivity
- Ethernet RJ45
- Bluetooth
- Wifi
- 4G variants
- RS485/P1 for connection to energy meter
- OCPP1.6
- Authentication via the App or RFID
- Configuration via the App or ABB web portal
ABB Terra DC Wallbox 24 – 920V capable

Versions & Timing

This 920 V DC wallbox is available in the following configurations:
– Single outlet CCS1
– Single outlet CCS2
– Dual outlet CCS1 + CHAdeMO
– Dual outlet CCS2 + CHAdeMO

All variants with 3.5m and 7m cable

Availability can differ per country:
– EU versions (Class B EMC): available
– US versions (FCC): available
## DC Fast Charging

New DC charging portfolio

### Cars Fast Charging Portfolio

<table>
<thead>
<tr>
<th>Destination</th>
<th>Fast Charging</th>
<th>Ultra Fast (High Power)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-25 kW</td>
<td>50-180 kW</td>
<td>350 kW</td>
</tr>
</tbody>
</table>

- **DC Wallbox**: 24 kWp
  - Terra 24 – Terra 54: 20 kW - 50 kW
    - Terra 94: 90 kW
    - Terra 124: 120 kW or 2 x 60 kW
    - Terra 184: 180 kW or 2 x 90 kW
- **Terra HP**: 175 kWp - 350 kWp

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Terra 54 DC Fast Charger
The pillar of growth for smart, sustainable mobility

- A decade of experience in EV charging and with more than > 8.000 units sold
- Installations in 77 countries
- A single solution serving all electric vehicles
  - CCS connectors for American and EU cars
  - CHAdeMO connector for Japanese cars
  - AC Plug for early EV and hybrid cars
- Ready for the next generation of electric vehicle power trains, including trucks and vans, with up to 920V higher voltage charging

Connectivity
- 24/7/365 network monitoring by ABB for 99%+ uptime
- Remotely updated with latest features for the latest electric vehicles
- More than 75% of service cases are resolved remotely
- Serves all payment collection schemes

Flexibility
- Time-tested
- Global
- Future-proof
- Easy-to-use
- Safety
- Reliability
- Automatic customer authorization upon plug-in with Autocharge feature
- Touch-screen display with user-friendly flow and simplified visual of charge process
- Independently certified and 3rd party tested according to relevant electrical safety standards
- Redundant power modules ensures continued operation in the event of single component failure

Source: ICG
Power modules and upgradability

- Terra 24
  - Based on 2 (Terra 24) and 5 (Terra 54) 10 kw power modules
  - Almost 10,000 chargers installed worldwide
  - Terra 24 is upgradable to Terra 54
  - Terra 54 is available also in High Voltage variant (150-920 Vdc)

- Terra 54

- Terra 94
  - Based on new 30 kw power modules
  - Terra 94 and 124 upgradable to higher power rating, up to 180 kW
  - Terra 54 cannot be upgraded to the new power modules due to different rating of the electrical components
  - Terra 94-124-184 provide High Voltage capability (150-920 Vdc)
Terra EV Fast Charger
Power modules layout Terra 94, Terra 124 and Terra 184

Mode 1 - Full power on outlet 1 OR outlet 2

Mode 1 - Full power on outlet 1 OR outlet 2

Mode 2 – Each outlet can deliver up to 50% of total power
### Highway and metropolitan segment

**Terra 184(HC); CE-approved 180 kW Multi-standard chargers – Input: 3x 400V, configurations**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>DC Charger</th>
<th>CCS-2 (A)</th>
<th>CHAdeMO (A)</th>
<th>AC (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terra 184 C</td>
<td>DC Charger</td>
<td>180kW DC CCS-2 (200A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terra 184 CJ</td>
<td>DC Charger</td>
<td>180kW DC CCS-2 (200A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terra 184 CC</td>
<td>DC Charger</td>
<td>180kW DC CCS-2 (200A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terra 184HC CJ</td>
<td>DC Charger</td>
<td>180kW DC CCS-2 (200A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terra 184HC CC</td>
<td>DC Charger</td>
<td>180kW DC CCS-2 (200A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terra 184 CJT</td>
<td>DC+AC Charger</td>
<td>180kW DC CCS-2 (200A)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Terra 184 CCT</td>
<td>DC+AC Charger</td>
<td>180kW DC CCS-2 (200A)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Available**
- **Expected:** Q3 2020
- **Expected:** Q4 2020
- **Expected:** Q4 2020

*Note: Picture is of Terra 184 CJT (T54 CJT)*

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Highway and metropolitan segment
Terra 124; CE-approved 120 kW Multi-standard chargers – Input: 3x 400V, configurations

<table>
<thead>
<tr>
<th>Terra 124 C DC Charger</th>
<th>Terra 124 CJ DC Charger</th>
<th>Terra 124 CC DC Charger</th>
<th>Terra 124HC CC DC Charger</th>
<th>Terra 124 CJT DC+AC Charger</th>
<th>Terra 124 CCT DC+AC Charger</th>
</tr>
</thead>
<tbody>
<tr>
<td>120kW DC CCS-2 (200 A)</td>
<td>120kW DC CCS-2 (200 A)</td>
<td>120kW DC CCS-2 (200 A)</td>
<td>120kW DC CCS-2 (300A) (picture is with 200A cables)</td>
<td>120kW DC CCS-2 (200A)</td>
<td>120kW DC CCS-2 (200A) (picture is with 200A cables)</td>
</tr>
</tbody>
</table>

Terra 124 CJT DC+AC Charger
Terra 124 CCT DC+AC Charger

Available
Available
Available
Expected: Q4 2020
Expected: Q4 2020
Expected: Q4 2020
Highway and metropolitan segment
Terra 94; CE-approved 90 kW Multi-standard chargers – Input: 3x 400V, configurations

<table>
<thead>
<tr>
<th>Model</th>
<th>DC Charger</th>
<th>DC+AC Charger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terra 94 C</td>
<td>90kW DC CCS-2 (200 A)</td>
<td>90kW DC CCS-2 (200 A)</td>
</tr>
<tr>
<td>Terra 94 CJ</td>
<td>90kW DC CCS-2 (200 A)</td>
<td>90kW DC CCS-2 (200 A)</td>
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<tr>
<td>Terra 94 CC</td>
<td>90kW DC CCS-2 (200A)</td>
<td>90kW DC CCS-2 (200 A)</td>
</tr>
<tr>
<td>Terra 94 CJT</td>
<td>90kW DC CCS-2 (200A)</td>
<td>90kW DC CCS-2 (200 A)</td>
</tr>
<tr>
<td>Terra 94 CCT</td>
<td>90kW DC CCS-2 (200A)</td>
<td>90kW DC CCS-2 (200 A)</td>
</tr>
</tbody>
</table>

Available Available Available Expected: Q4 2020 Expected: Q4 2020

22kW AC (picture is of T54 CJT)
## Highway and metropolitan segment

Terra 54(HV): CE-approved 50 kW Multi-standard chargers – Input: 3x 400V, some possible configurations:

<table>
<thead>
<tr>
<th>Model</th>
<th>Configuration</th>
<th>Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terra 54(HV) C DC Charger</td>
<td>50kW DC CCS-2</td>
<td>Available</td>
</tr>
<tr>
<td>Terra 54(HV) CJ DC Charger</td>
<td>50kW DC CCS-2 50kW DC CHAdeMO</td>
<td>Available</td>
</tr>
<tr>
<td>Terra 54(HV) CT DC+AC Charger</td>
<td>50kW DC CCS-2 22kW AC</td>
<td>Available</td>
</tr>
<tr>
<td>Terra 54(HV) CG DC+AC Charger</td>
<td>50kW DC CCS-2 50kW DC CHAdeMO 22kW AC (also in 43kW AC)</td>
<td>Available</td>
</tr>
<tr>
<td>Terra 54(HV) CJT DC+AC Charger</td>
<td>50kW DC CCS-2 50kW DC CHAdeMO 22kW AC</td>
<td>Available</td>
</tr>
<tr>
<td>Terra 54(HV) CJG DC+AC Charger</td>
<td>50kW DC CCS-2 50kW DC CHAdeMO 43kW AC</td>
<td>Available</td>
</tr>
<tr>
<td>Terra 54(HV) CTG DC+AC Charger</td>
<td>50kW DC CCS-2 50kW DC CHAdeMO 22kW AC</td>
<td>Available</td>
</tr>
</tbody>
</table>
ABB High Power Charging

Charge Post
- Single version
  - CCS: 500 A / 920 V capability, liquid cooled cable
- Multi standard version
  - CCS: 500 A / 920 V capability, liquid cooled cable
  - CHAdeMO: 200 A (optional 125 A) / 500 V capability
  - 7” (optional 15”) touch screen
- Programmable RGB LED strips + white LED top light
- Customer replaceable top insert
- Operating temperature: -35 °C … +55 °C
- IP 54 cabinet can be placed outdoors
- Vandalism proof, stainless steel, resistant against heavy snow & rain

Payment solutions
- Creditcard terminals for EU & USA & RoW
- RFID (Mifare, Calypso, etc.)
- PIN code access

Power Cabinet
- 160 kW nominal/ 175 kW peak power per cabinet
- 375 A max. output per single cabinet
- 150 – 920 V\textsubscript{DC} output voltage range
- Operating temperature: -35 °C … +55 °C
- IP 54 cabinet can be placed outdoors
- Vandalism proof, stainless steel, resistant against heavy snow & rain
- Galvanic isolation included in cabinet
- Power module redundancy & automatic failover mechanism

Remote management & diagnostics
- Works with all ABB cloud connected services
ABB High power charging 2018-2025
Towards 15 minute charging – 400 km/ 250 Mi driving

Terra 54

Terra HP – 1 cabinet

Terra HP – 2 cabinets

Dynamic DC: patented by ABB

Power expansion

1 cabinet expansion

2 cabinet expansion

50 kW → 175 kW_p
3½x more power

7x more power
350 kW_p

125 A → 375 A
3x higher current
4x higher current
500 A

**Charge post versions (CE)**

Standard charge post with 7” display and optional 15” display, standard cable length 3.2m (for CCS and CHAdeMO)

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**Standard versions with 7” touch screen display**

- 500 A CCS liquid cooled (also 3.8m)
- 500 A CCS liquid cooled (also 3.8m)
- 200 A CHAdeMO

**Versions with 15” touch screen display**

- 500 A CCS liquid cooled (also 3.8m)
- 500 A CCS liquid cooled (also 3.8m)
- 200 A CHAdeMO
eBus charging landscape

Overnight charging
(at the depot)

Opportunity charging
(on route or end stop)

Connector charging

Pantograph charging
Electric bus charging landscape
## HVC Product portfolio

<table>
<thead>
<tr>
<th>Power (kW)</th>
<th>24kW</th>
<th>50kW</th>
<th>100kW</th>
<th>150kW</th>
<th>300kW</th>
<th>450kW</th>
<th>600kW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connector</strong></td>
<td></td>
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</tr>
<tr>
<td>DC-Wallbox</td>
<td>Terra 54HV</td>
<td>HVC 100C 1-3 depot box</td>
<td>HVC 150C 1-3 depot box</td>
<td></td>
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<tr>
<td><strong>Pantograph Down</strong></td>
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<tr>
<td><strong>Pantograph Up</strong></td>
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<tr>
<td><strong>Pantograph</strong></td>
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Run a successful and profitable business with connected ABB chargers

Connectivity is needed to:

1. Monitor and operate a network of chargers
2. Get paid for charge sessions
3. Help EV-drivers in case of questions
4. Maintain and service chargers at the lowest cost

Reliable 24/7 connectivity is fundamental for the commercial operation of a network of chargers!
Connected Services are required to successfully run a commercial charger network

The ABB Ability platform: years of experience and thousands of connected EV chargers

Reliable 24/7 connectivity is fundamental for the commercial operation of a network of chargers!
Positioning connected services

<table>
<thead>
<tr>
<th>Electric cars</th>
<th>Charging infrastructure</th>
<th>Solutions to run a charger network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audi</td>
<td>MCCS</td>
<td>MasterCard</td>
</tr>
<tr>
<td>BMW</td>
<td>CHAdeMO</td>
<td>VISA</td>
</tr>
<tr>
<td>DAIMLER</td>
<td>GB</td>
<td>VIRTIA</td>
</tr>
<tr>
<td>Ford</td>
<td>AC</td>
<td>BOSCH</td>
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<tr>
<td>GM</td>
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<td>Fortum</td>
</tr>
<tr>
<td>Mitsubishi</td>
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<td>NTT DATA</td>
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<tr>
<td>NISSAN</td>
<td></td>
<td>GRIDPOINT</td>
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<td>PEUGEOT</td>
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<td>eMobility</td>
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<tr>
<td>Porsche</td>
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<td>Enercon</td>
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<tr>
<td>RENAULT</td>
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<td>chargecloud</td>
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<tr>
<td>TESLA</td>
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<td>CGI</td>
</tr>
<tr>
<td>VOLKSWAGEN</td>
<td></td>
<td>has-to-be</td>
</tr>
</tbody>
</table>

ABB does **not** have exclusive cooperation with any of the solutions.
It is all about making your business work
We are looking forward to empowering you!