150 kW Ultra-Fast Charger

Future-ready infrastructure for fast charging of electric cars.

emobility.delta-emea.com
Get ready for future challenges.

E-Mobility is a central part of a smart, decarbonized, environmental friendly urban lifestyle.

CO₂ is one of the greenhouse gases that contributes most to climate change. Cars and light commercial vehicles with combustion engines account for approximately 22% of total carbon dioxide emissions in the EU. In response to this challenge, Europe is promoting forms of mobility that help reduce CO₂ emissions and release fewer air pollutants.

In order for battery-powered electric vehicles to be accepted by as many people as possible, a high-performance charging infrastructure must be created in Europe. The medium-term goal is the overland journey, in which charging the electric car is just as quick and easy as refueling vehicles with combustion engines today.

Users expect a dense network of public or semi-public charging stations, easy operation and secure payment. Needless to mention, the charging capacity of the electric vehicle should be optimally used and the appropriate charging connector should be available at every charging station.

From the point of view of charging infrastructure operators, who also want to offer their customers fast-charging solutions and additional services related to electro-mobility, the efficiency and reliability of the technology used play a key role. Various successful business models exist to optimize total operating costs over the entire life cycle of the charging infrastructure.

A present-day charging infrastructure is ideally already prepared for future technologies such as electric cars with charging capacities of well over 100 kW or higher battery capacities. 1000 Volt technology is just as important as the use of high-performance CCS cable/plug systems to accelerate charging processes.
Ultra-Fast Chargers from Delta.

The perfect long-term and economical fast charging solution for operators of charging infrastructure solutions

The Ultra-Fast Charger offers maximum flexibility in terms of installed AC and DC charging capacity, location and type of charging points.

Start with less DC charging power and expand as needed up to a maximum of 150 kW. Arrange the charging points on one side or implement familiar "fuel pump" architecture with charging points on two opposite sides. Choose from a wide range of arrangement options for all-important types of charging connectors.
The reliable and powerful basis for setting up large, distributed charging infrastructures.

Up to four electric vehicles can be charged simultaneously on one Ultra-Fast Charger. Non-discriminatory of course - all important connection types can be equipped: CCS, CHAdeMO, AC plug, AC socket.

With 150 kW DC charging power and the option of upgrading to 1000 V charging technology and temperature-controlled high-performance CCS cable/plug, the system is equipped for the fast charging of future electric cars.

Scalable DC charging power keeps investment costs under control. With reduced initial costs, you minimise the risk of bad investments, but at the same time keep the option open to react quickly to increasing demand.
Invest now!

The modular and upgradable system design enables strategic use of the charging infrastructure depending on the development of the market ... And your investment is protected for the future.

Plannable investments.

Save on initial investments and get smart into the charging business - with a fast charging station that offers AC charging as well as scalable DC charging power, which can be expanded in 50 kW increments up to 150 kW.

With just one Ultra-Fast Charger, a non-discriminatory fast charging solution can be implemented for up to four electric vehicles. This enables you to offer charging services at locations whose business potential cannot really be estimated today. The limitation to a single fast charging station also reduces installation costs, such as the connection to the transformers, cabling, building materials and labour costs.

You cannot or do not want to reserve too much space for the charging solution at the beginning? You don’t want to invest in expensive building measures to set up a charging station? Neither is a problem with the Ultra-Fast Charger. Less than 1m x 1m floor space and a maximum weight of 450 kg with full equipment make the decision to enter the business with charging solutions easier. Installation, electrical installation, commissioning and subsequent extensions - everything is quick and uncomplicated.

You might argue that your current grid connection (transformer and wiring) cannot yet provide the full power for simultaneous charging of four vehicles? In this case, the intelligent grid management of the Ultra-Fast Charger intervenes to dynamically regulate the charging power and thus avoid overloading the transformer. The transformer can be retrofitted later to meet increased demand for charging stations.

Limited total cost of ownership.

The Ultra-Fast Charger is low-maintenance. It is accessed from all sides for maintenance; making all internal components easily accessible.

The Ultra-Fast Charger is equipped with state-of-the-art electrical and electronic components and therefore works very reliably. The modular system design also contributes to high availability. Even if one of the power modules fails, charging is still possible with reduced charging power.

Due to their low weight, a single technician can easily move the power modules. There is no need for expensive special equipment or multiple technicians.

The convenient accessibility of important components and the low weight reduce costs for maintenance, repair and minimize downtimes and costs.

Want even more reliability and availability? Then have your Ultra-Fast Charger equipped with an AC socket and your users can charge their electric vehicle even if a DC plug is damaged.
Stay flexible.


Delta closely follows the latest technological and legal developments in the field of battery-powered electric vehicles and continuously equips the Ultra-Fast Charger with new, innovative functions and improvements.

Connectors, cables and power modules can be retrofitted directly at the charger’s location. This makes it easier to implement future technologies.

With remotely installable firmware updates, the Ultra-Fast Charger is quickly updated to the latest software version.

More power with 1000 V DC.

With the 1000 V charging option, vehicles with a battery voltage of up to 1000 V can be charged. The connected battery system is automatically detected and the power modules controlled accordingly.

This option is recommended for operators of charging stations who wish to offer a premium charging service or set up a charging infrastructure for trucks, electric buses and special vehicles such as municipal vehicles. The charging station can extend the range of a Porsche Mission-E by 100 km in just ten minutes.

Individually configurable.

The Ultra-Fast Charger is available in different configurations and adapts to the requirements of your site. The standard system is equipped with a CCS plug for up to 150 kW, a CHAdeMO plug for up to 63 kW, a type 2 AC plug for up to 43 kW and a type 2 AC socket for up to 22 kW on the front.

The type and arrangement of the Ultra-Fast Charger charging connections are configured according to your requirements. These can be arranged on one or two sides.

This flexibility allows different concepts to be implemented when designing the station, such as drive-through islands or star-shaped charging stations and many other parking scenarios.

Charge - automatically and dynamically.

The dynamic power distribution of the Ultra-Fast Charger supplies the first charging vehicle with the entire available DC power (up to 150 kW). As soon as several vehicles are connected, the power is automatically and dynamically distributed between all vehicles. All Ultra-Fast Charger models can charge up to four electric cars in parallel and offer up to six charging points.

German calibration law.

At present, work is still in progress on the development of measuring instruments for AC and DC charging processes conforming to calibration law. Until approved measuring instruments are ready for the market, a transitional solution from the Federal Government applies which grants an operating permit for registered, non-compliant charging stations. You can already use the Ultra-Fast Charger today without hesitation and retrofit it later according to the then valid legal regulations.

Compatible with E-Mobility standards.

The Ultra-Fast Charger offers interfaces according to open standards. Therefore, the charger is compatible with common platforms for operators of charging stations, the electro-mobility service provider and roaming platforms. Integration into existing backends is possible using the Open Charge Point Protocol (OCPP). The connection is made via Ethernet, GPRS, 3G or 4G.
Drivers of electric cars love it.

Throughout Europe, the Ultra-Fast Charger platform is considered to be very user-friendly. The charging station in Rättvik, Sweden, received the „Swedish Charging Station of the Year 2016“ award.

The Ultra-Fast Charger is already successfully operated at many locations in Europe under a wide variety of climatic conditions, e.g. in Germany, UK, Switzerland, Scandinavia or Spain.

Fast charging instead of long waiting.

Through dynamic and efficient management of charging processes, up to four vehicles can be loaded simultaneously, eliminating queues and waiting times. With a DC output of 150 kW, next-generation SUVs can charge power for an additional 100 km range in less than 10 minutes.

Easy to use.

The charging process is simple and takes place in just two steps. The charging plug is connected to the vehicle and authentication is done via RFID or CPO + eMSP back office. Charging starts automatically.

Low noise level when charging.

Thanks to its high-frequency power converter, the Ultra-Fast Charger not only offers high efficiency in all load and charge conditions, but also requires less cooling and can therefore be operated much quieter under all power conditions. Some other fast chargers available on the market, which operate at full power in warm weather, make a lot of noise and therefore cannot be installed near a hotel or restaurant.

Buttons and display for any weather.

The Ultra-Fast Charger comes with high-resolution color display and rugged mechanical buttons. The anti-reflective display is easy to read even in direct sunlight and, unlike touch displays, mechanical keys can also be easily operated with gloves.
Connector types and charging cables

AC connectors

- AC plug Type 2, 32 A
- AC socket Type 2, 16 A

DC connectors

- CHAdeMO plug, 125 A
- CCS plug, 200 A or 400 A

Length of charging cables

- Standard length: 3.5 m = 2.5 m operating radius
- Special length: 5 m = 4 m operating radius
**Configuration options**

**Charging points on 1 side with 2 DC connectors**

All charging points are on the front. Depending on the configuration, a maximum of 2, 3 or 4 vehicles can be charged simultaneously. All DC configurations can be combined with all AC configurations.

### DC connectors

- **DC1: CCS; DC2: CCS**
- **DC1: CHAdeMO; DC2: CHAdeMO**
- **DC1: CHAdeMO; DC2: CCS**
- **DC1: CCS; DC2: CHAdeMO**

### AC connectors

- **1x AC plug Type 2; 1x AC socket Type 2**
- **1x AC plug Type 2**
- **1x AC socket Type 2**
- **no AC charging point**
Configuration options

Charging points on 1 side with 3 DC connectors

All charging points are on the front. Depending on the configuration, two or three vehicles can be charged simultaneously. To DC2, two DC plugs (CCS + CHAdeMO) are connected, which cannot be used at the same time.

Only the configurations shown are possible. Charging point configurations with AC plug are not possible.

Since it is expected that in the future the majority of vehicles on the road in Europe will have a CCS connector, it makes sense to consider increased flexibility in the usage scenarios with a view to the future.

With this version, it is possible to load either 2x CCS vehicles simultaneously or 1x CCS and 1x CHAdeMO. This increased flexibility in selecting the DC connectors improves the throughput of charging processes during peak times and waiting times can be reduced before further expansion at the station becomes necessary.
# Configuration options

## Charging points on 2 sides with 4 DC connectors

The charging points are located on the front and rear sides. Depending on the configuration, a maximum of 2, 3 or 4 vehicles can be charged simultaneously.

In principle, one DC charging point is available on each side, with a choice between CHAdeMO and CCS, as well as one AC charging point.

With the recommended standard configuration, all charging plug types are available on both sides. In this case, it does not matter from which side the charging station is approached (identical principle as for filling station). In this configuration, two cars can be charged simultaneously on each side via a DC and AC connection.

## Front panel connectors

<table>
<thead>
<tr>
<th>DC</th>
<th>CHAdeMO</th>
<th>CCS</th>
<th>AC</th>
<th>Stecker</th>
<th>AC</th>
<th>Steckdose</th>
</tr>
</thead>
</table>

## Rear panel connectors

<table>
<thead>
<tr>
<th>DC</th>
<th>CHAdeMO</th>
<th>CCS</th>
<th>AC</th>
<th>Stecker</th>
<th>AC</th>
<th>Steckdose</th>
</tr>
</thead>
</table>

[Diagram of charging points]
Access concepts

Due to the many possible combinations of charging connections, a wide variety of access concepts can be implemented for the vehicles.

The four pictures on the left show common arrangements of vehicle parking spaces for a single Ultra-Fast Charger.

This example with two Ultra-Fast Chargers shows how flexibly you can plan the arrangement of the parking spaces. It is a combination of parking and drive-through solution. Actually, only your imagination sets limits.
## Technical data

### Input

<table>
<thead>
<tr>
<th>AC connection</th>
<th>3 phases + N + PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC voltage</td>
<td>400 V_{\text{rms}} (L-L) ± 10%</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Nominal current</td>
<td>336 A_{\text{rms}} at maximum power (150 kW DC + 65 kW AC)</td>
</tr>
<tr>
<td>Power factor</td>
<td>0.99</td>
</tr>
<tr>
<td>Mains terminal</td>
<td>Terminal blocks</td>
</tr>
<tr>
<td>Transient OVP</td>
<td>Class II/C protection</td>
</tr>
</tbody>
</table>

### AC charging points

<table>
<thead>
<tr>
<th>Compliance</th>
<th>IEC61851-22</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC plug at 43 kW charging point</td>
<td>IEC62196-2 Mode 3, Type 2</td>
</tr>
<tr>
<td>AC socket at 22 kW charging point</td>
<td>IEC62196-2 Mode 3, Type 2</td>
</tr>
<tr>
<td>Nominal AC voltage</td>
<td>400 V_{\text{rms}}</td>
</tr>
<tr>
<td>Maximum charging current</td>
<td>at 43 kW charging point 3 x 63 A_{\text{rms}} at 43 kW</td>
</tr>
<tr>
<td></td>
<td>at 22 kW charging point 3 x 32 A_{\text{rms}} at 22 kW</td>
</tr>
<tr>
<td>Cable / access length</td>
<td>3.5 m / 2.5 m, 5 m / 4 m</td>
</tr>
<tr>
<td>Protections</td>
<td>RCD Type B, Overcurrent circuit breaker, Ground monitoring</td>
</tr>
</tbody>
</table>

### DC charger - general

| DC output voltage range         | 200 to 500 V_{dc}, optional |
| Maximum current of power unit   | 500 A_{dc} at 300 V_{dc}, 375 A_{dc} at 400 V_{dc} |
| Maximum power of power unit     | 150 kW_{dc}                 |
| Cable / access length, Options  | 3.5 m / 2.5 m, 5 m / 4 m   |
| Protections                     | Overcurrent circuit breaker, Short circuit protection, Overvoltage protection, Undervoltage protection, Isolation monitoring, Ground monitoring |

### DC charging points: CCS

| Rating cable and connector 1), Options | 200 A_{dc} / 1000 V_{dc}, 400 A_{dc} / 1000 V_{dc} |
| Compliance                     | IEC61851-23/-24, IEC62196-3, DIN70121 |

### DC charging points: CHAdeMO

| Rating cable and connector      | 125 A_{dc} / 500 V_{dc} |
| Compliance                     | IEC61851-23/-24, JEVS G 105 Rev. 1.2 compatible |

1) The charger is upgradable with a temperature-controlled 400 A rated high power CCS cable/connector system to support 150 kW at 375 V

### Options

<table>
<thead>
<tr>
<th>Number of charging connections</th>
<th>Configuration of DC Charging points</th>
<th>Configuration of AC Charging points</th>
<th>Charging power</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 to 6 in different configurations from AC and DC connections</td>
<td>CCS and CHAdeMO in different numbers and combinations</td>
<td>Type 2 plug and Type 2 socket in various combinations</td>
<td>50 kW</td>
<td>Wired: Ethernet</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100 kW</td>
<td>Wireless: GPRS / 3G / 4G</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>150 kW</td>
<td></td>
</tr>
</tbody>
</table>