



Solutions for E-Mobility

PHOENIX CONTACT –
in dialog with customers
and partners worldwide

Phoenix Contact is a global market leader in the field of electrical engineering, electronics, and automation. Founded in 1923, the family-owned company now employs around 14,000 people worldwide. A sales network with over 50 sales subsidiaries and more than 30 additional global sales partners guarantees customer proximity directly on site, anywhere in the world.

Our range of services consists of all kinds of products with a wide range of electrotechnical applications. This includes numerous connection technologies for device manufacturers and machine building, components for modern control cabinets and tailor-made solutions for many applications and industries such as the automotive industry, wind energy, solar energy, the process industry, or applications in the fields of water supply, power transmission/distribution and transportation infrastructure.



Global player with personal customer contact

Company independence is an integral part of our corporate policy. Phoenix Contact therefore relies on in-house competence and expertise in a range of contexts: the design and development departments constantly come up with innovative product ideas, developing special solutions to meet customer requirements. Numerous patents emphasize the fact that many of Phoenix Contact's products have been developed in-house.



PHOENIX CONTACT E-Mobility GmbH – your competent partner for E-Mobility

Within the Phoenix Contact Group, Phoenix Contact E-Mobility GmbH is the center of expertise for components and solutions in E-Mobility.

We develop charging systems and charging controllers for DC and AC charging. Our customers see us as a complete provider of components for devices within the charging infrastructure, for both static and mobile equipment.

As an innovator in this field, we set new standards with the further development and standardization of components and solutions for a worldwide and modern charging infrastructure.




Reliable connection technology for E-Mobility

Phoenix Contact offers a product and technology portfolio that enables you to implement various concepts for your charging infrastructure.

	Type 1/North America	Type 2/Europe	GB/T standard/China
Conventional charging (AC)	 SAE J1772/IEC 62196-2	 IEC 62196-2	 GB Part 2
Fast charging (DC)	 SAE J1772/IEC 62196-3	 IEC 62196-3	 GB/T Part 3/IEC 62196-3

Flexible, programmable charging controllers

The E-Mobility controllers from Phoenix Contact enable the setup of charging stations in accordance with current requirements and standards. Optimum controller solutions are available for private, commercial, and public applications.

	Private/AC	Commercial/AC	Public/AC and DC
EV Charge Control	 Basic	 Advanced	 Professional

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Charging systems – Type 1, Type 2 and GB/T standard from PHOENIX CONTACT

Phoenix Contact offers the complete range of charging connectors from a single source: Type 1, Type 2, and GB/T standard. Whether it's conventional charging on the AC power grid or fast DC charging, you'll find the perfect solutions in our product range.

We also offer individual combinations of cables and customer-specific housing colors and designs.

In addition to the comprehensive portfolio, Phoenix Contact also develops individual solutions for special customer requirements, even those not covered by standards.

Charging mode 2



Charging mode 3, case B



Charging mode 3, case C



Charging mode 4



1) The Type 1 standard does not call for a charging plug within the infrastructure. In Europe, an adapter charging cable is used here, which consists of a Type 1 charging connector in the vehicle and a Type 2 charging plug in the infrastructure.

Cable versions



A wide range of stranded cables:

- Various AC and DC cable cross sections depending on the current capacity
- Metric and AWG cables (VDE- and UL-certified)
- Spiraled and straight cables
- Various cable colors

Color versions

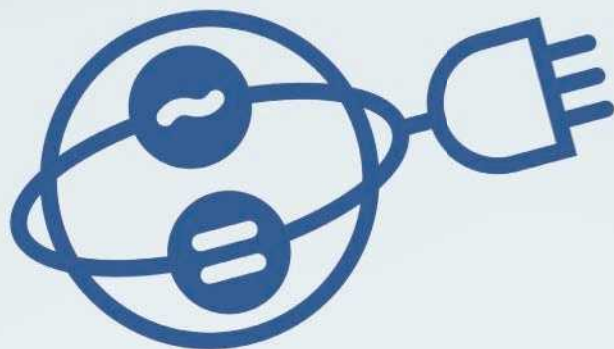


Modern charging stations increasingly feature special designs and colors. Choose charging plugs in custom matching colors.

Type 1/North America	Type 2/Europe	GB/T standard/China
<div>Type 2</div>		

CCS – Combined Charging System

The Combined Charging System (CCS) is a standard-compliant charging system for electric vehicles, which supports both conventional AC charging and fast DC charging. Both vehicle connectors fit into the CCS vehicle inlet. The CCS was developed in collaboration with leading automobile manufacturers.



Combined Charging System (CCS)

Advantages of the Combined Charging System (CCS)

Safe charging

An electromechanical actuator locking mechanism prevents the vehicle connector from being withdrawn during the charging process or prior to completion of all necessary transactions such as payment. This guarantees a high level of functional safety.

Fast charging

The DC contacts, which are larger than those used for AC charging, enable fast charging at up to 200 A. The ergonomic handle design and the low insertion and withdrawal forces of the vehicle connector guarantee fast, convenient, and easy handling.

Intelligent charging process

Predefined charging mechanisms and sequences are performed for both AC and DC charging. For both charging types, the signal and control contacts, CP and PP, are used for communication and control.





Type 1

The CCS Type 1, which complies with SAE J1772 and IEC 62196-3, is used for fast DC charging in the USA.



Type 2

In early 2013, the European Commission specified the use of the CCS Type 2 charging system according to IEC 62196 as a uniform standard throughout Europe.

Fast charging



Conventional charging



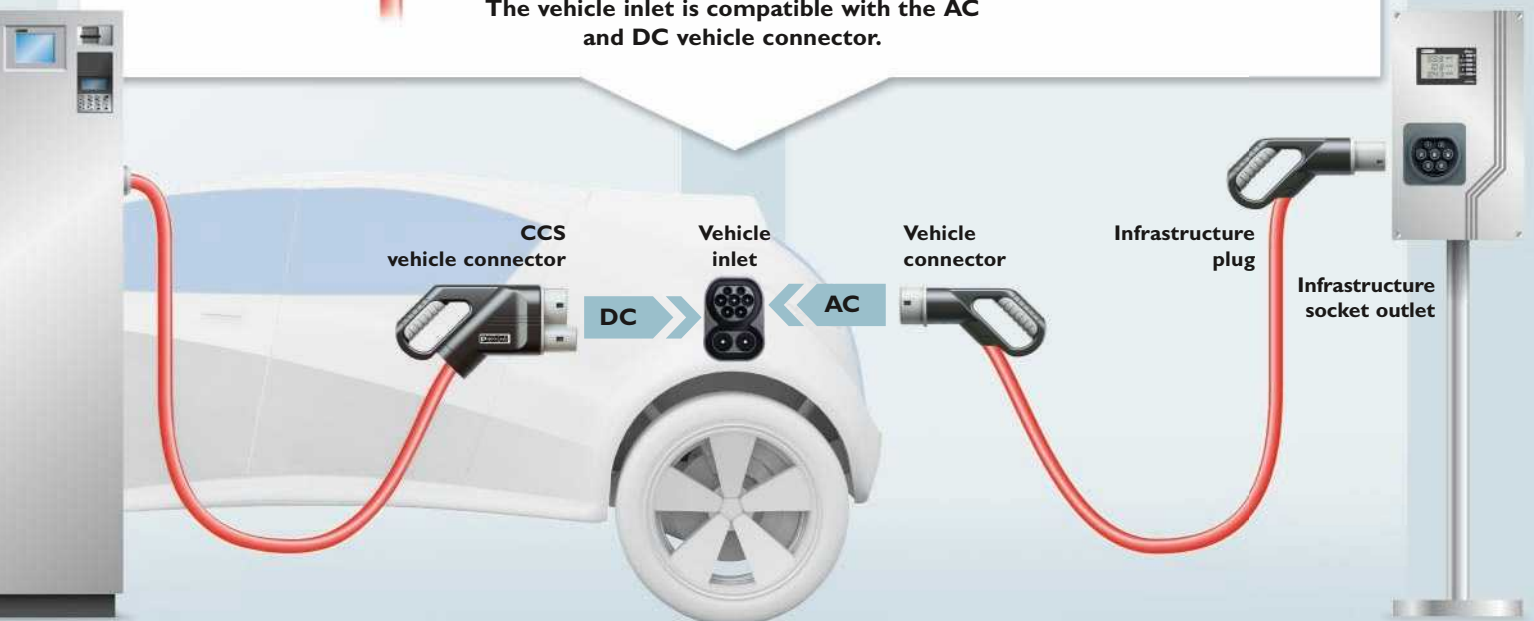
Type 1



Type 2



The vehicle inlet is compatible with the AC and DC vehicle connector.



CCS Type 1 – fast DC charging for North America



The CCS Type 1 was developed for the North American market on the basis of SAE J1772 and IEC 62196-3. The universal vehicle CCS inlet permits both single-phase AC and fast DC charging.

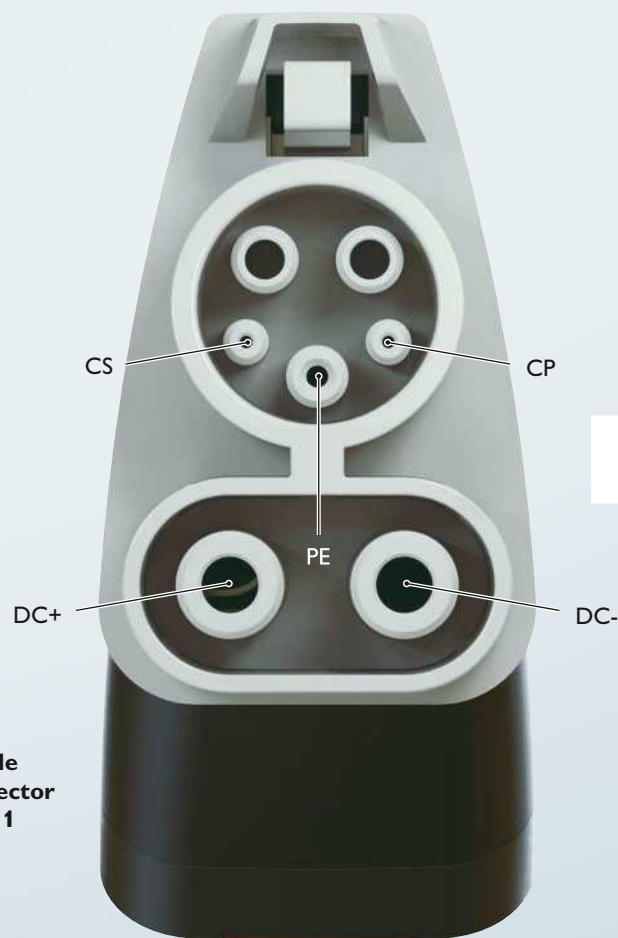
In contrast to the European Type 2, safety is guaranteed throughout the charging process by means of a lever locking mechanism. As soon as the lever is actuated, the charging process is immediately interrupted, which makes it impossible to withdraw the vehicle connector under load.



CCS vehicle connector
Type 1

Main features

- 3 + 2 positions for DC charging
- Robust, high-quality materials
- Convenient handling
- Low insertion and withdrawal forces
- Complies with SAE J1772/IEC 62196-3
- Locking and unlocking by means of a lever system with additional actuator locking mechanism at the inlet
- Frost-proof lever locking mechanism
- Temperature sensors for measuring the temperature of the power contacts



CCS
vehicle
connector
Type 1

Technical data – Combined Charging System – Type 1

Standards SAE J1772, IEC 62196-3

AC unit Type 1

Rated voltage	Up to 250 V AC
Rated current 1-phase	Up to 32 A

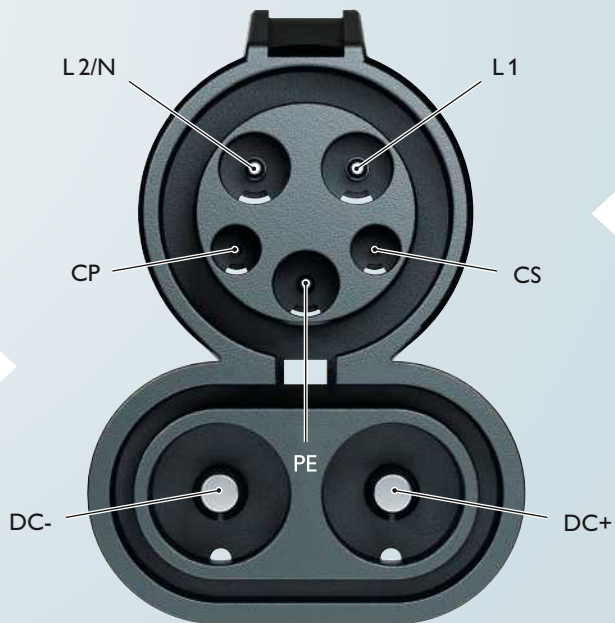
DC unit Type 1

Rated voltage	Up to 600 V DC
Rated current	Up to 200 A*

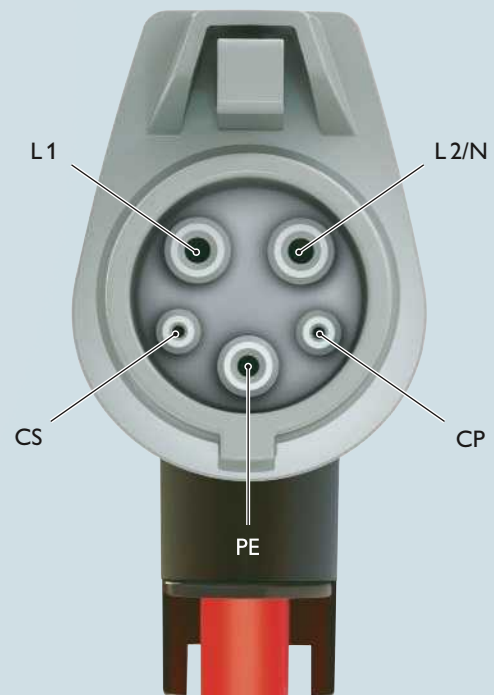
Degree of protection

IP degree of protection when plugged in/in road position	IP55
IP degree of protection when not plugged in	IP24
IP degree of protection with protective cap	IP54

* Higher currents available on request



**CCS vehicle inlet
Type 1**



**AC
vehicle connector
Type 1**

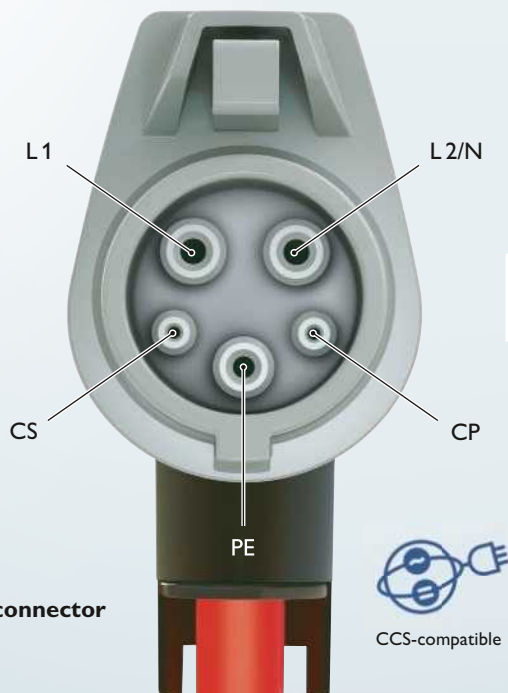
Type 1 – conventional AC charging for North America and Japan



The AC vehicle connector Type 1 carries out single-phase AC charging in charging modes 2 and 3. It has two signal contacts, which ensure that the charging process is controlled safely. The locking between the vehicle and the vehicle connector is closed by means of a lever system. The AC charging system Type 1 is based on the requirements of SAE J1772 and IEC 62196-2.



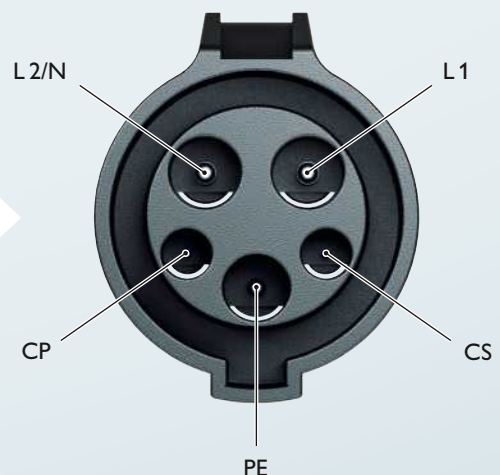
**AC vehicle connector
Type 1**



**AC vehicle connector
Type 1**



CCS-compatible



**AC vehicle inlet
Type 1**

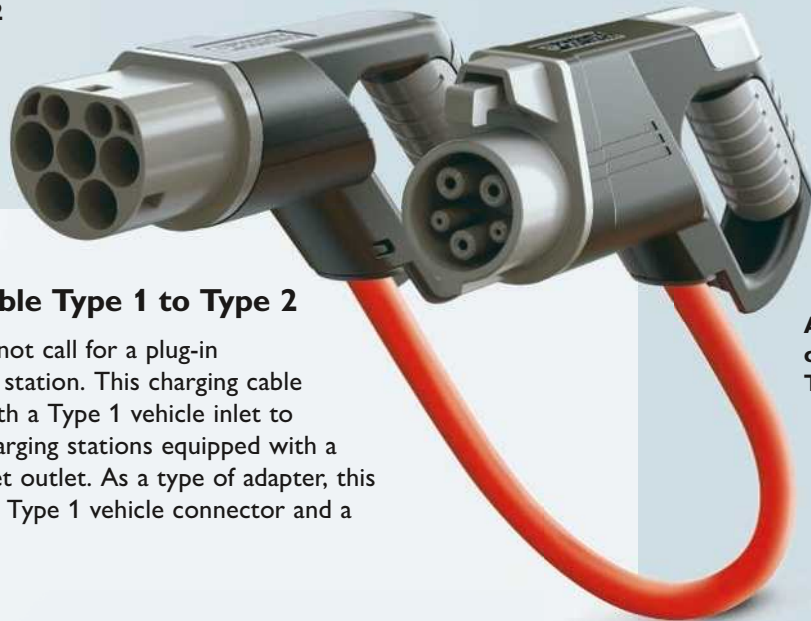
Main features

- 3 + 2 positions for 1-phase charging
- Complies with IEC 62196-2 and SAE J1772
- Convenient handling
- Locking and unlocking by means of a lever system
- Robust, high-quality materials
- Locking and unlocking by means of a lever system with additional actuator locking mechanism at the inlet
- Frost-proof lever locking mechanism

Technical data – AC vehicle connector Type 1

Standards		IEC 62196-2/SAE J1772
Rated voltage		Up to 250 V
Rated current 1-phase		Up to 70 A
Degree of protection		
IP degree of protection when plugged in		IP54
IP degree of protection with protective cap		IP44

**AC infrastructure
plug Type 2**



Adapter charging cable Type 1 to Type 2

The Type 1 standard does not call for a plug-in connection to the charging station. This charging cable enables electric vehicles with a Type 1 vehicle inlet to be charged at European charging stations equipped with a Type 2 infrastructure socket outlet. As a type of adapter, this charging cable consists of a Type 1 vehicle connector and a Type 2 infrastructure plug.

**AC vehicle
connector
Type 1**

CCS Type 2 – fast DC charging for Europe



The Combined Charging System (CCS) Type 2 is the ideal charging interface for everyday charging situations in Europe. This means that the electric vehicle is suitable for both conventional AC charging and for DC charging on the move. The CCS vehicle connector transmits DC current up to 200 A. It is inserted into the vehicle inlet with the greatest of ease and very little force.



CCS vehicle connector
Type 2

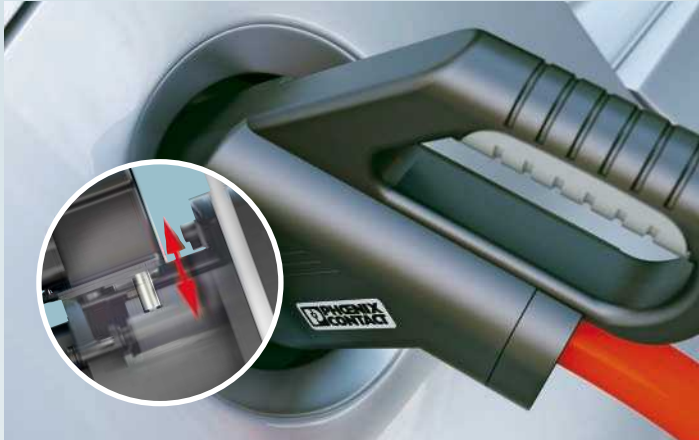
Main features

- 3 + 2 positions for DC charging
- Robust, high-quality materials
- Convenient handling
- Low insertion and withdrawal forces
- Complies with IEC 62196
- Temperature sensors for measuring the temperature of the power contacts



CCS
vehicle
connector
Type 2

Secure locking

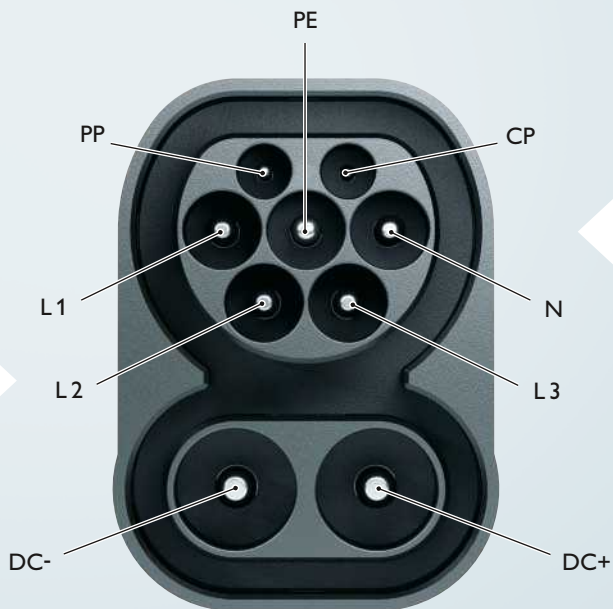


An electromechanical actuator locks the vehicle connector during the vehicle charging process. The actuator bolt is designed to withstand the highest pull-out forces. The integrated temperature monitoring prevents overheating.

Technical data – Combined Charging System – Type 2

Standard	IEC 62196-3
AC unit Type 2	
Rated voltage	Up to 480 V AC
Rated current 3-phase	Up to 32 A
DC unit Type 2	
Rated voltage	Up to 850 V DC
Rated current	Up to 200 A*
Degree of protection	
IP degree of protection when plugged in/in road position	IP54

* Higher currents available on request



CCS vehicle inlet
Type 2



AC vehicle connector
Type 2

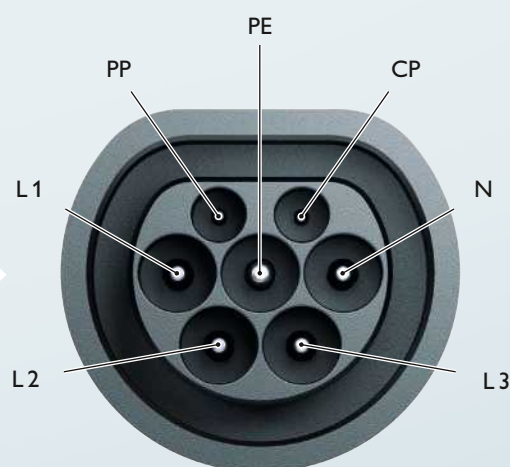
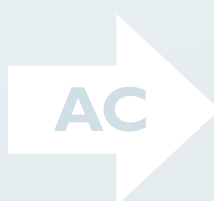
Type 2 – conventional AC charging for Europe



Single- or three-phase AC charging is carried out in charging modes 2 and 3 with the standardized Type 2 charging connectors from Phoenix Contact. As part of the safety concept, both PP and CP signal contacts assume control functions. These detect whether the vehicle connector is correctly inserted in the inlet and which level of power may be used for charging, for example.



AC vehicle connector Type 2



AC vehicle inlet Type 2

Main features

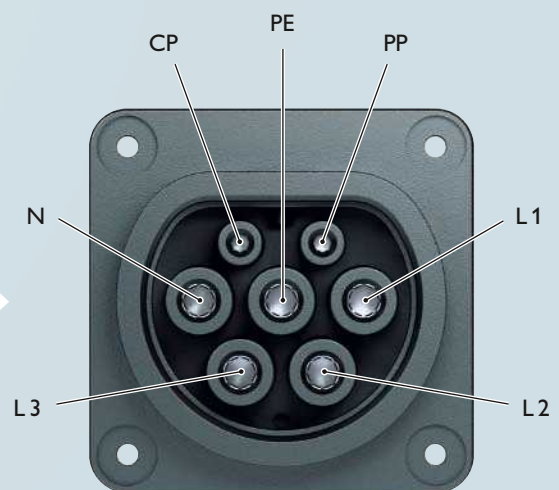
- 5 + 2 positions for 3-phase charging
- Mechanical locking
- Robust, high-quality materials
- Convenient handling
- Strong strain relief
- Low insertion and withdrawal forces
- Complies with IEC 62196
- Optional: temperature sensor outputs for measuring the temperature of the power contacts

Technical data – AC Type 2

Standard		IEC 62196-2
Rated voltage		Up to 480 V AC
Rated current 1-/3-phase		Up to 63 A
Degree of protection		
IP degree of protection when plugged in		IP44
IP degree of protection with protective cap		IP44



AC infrastructure
plug Type 2



AC infrastructure socket outlet
Type 2

Type 2 – conventional AC charging with a charging socket in the infrastructure



The standardized Type 2 infrastructure socket outlet from Phoenix Contact is designed for single- and three-phase AC charging. The space-saving design enables the infrastructure socket outlet to be installed in a compact wall charging station or standard charging station. A separate connection on the lock actuator is used to control the lock and query the lock state. The socket also enables a panel mounting frame or hinged cover to be mounted and a drainage tube to be connected.



Main features

- Modular design (front and rear mounting possible)
- Low installation height and depth
- Drainage system with discharge nozzle
- Lock recognition
- Theft/vandalism protection thanks to panel mounting frame or hinged cover



Panel mounting frame for the
infrastructure socket outlet



Hinged cover for the
infrastructure socket outlet

Technical data – AC infrastructure socket outlet Type 2

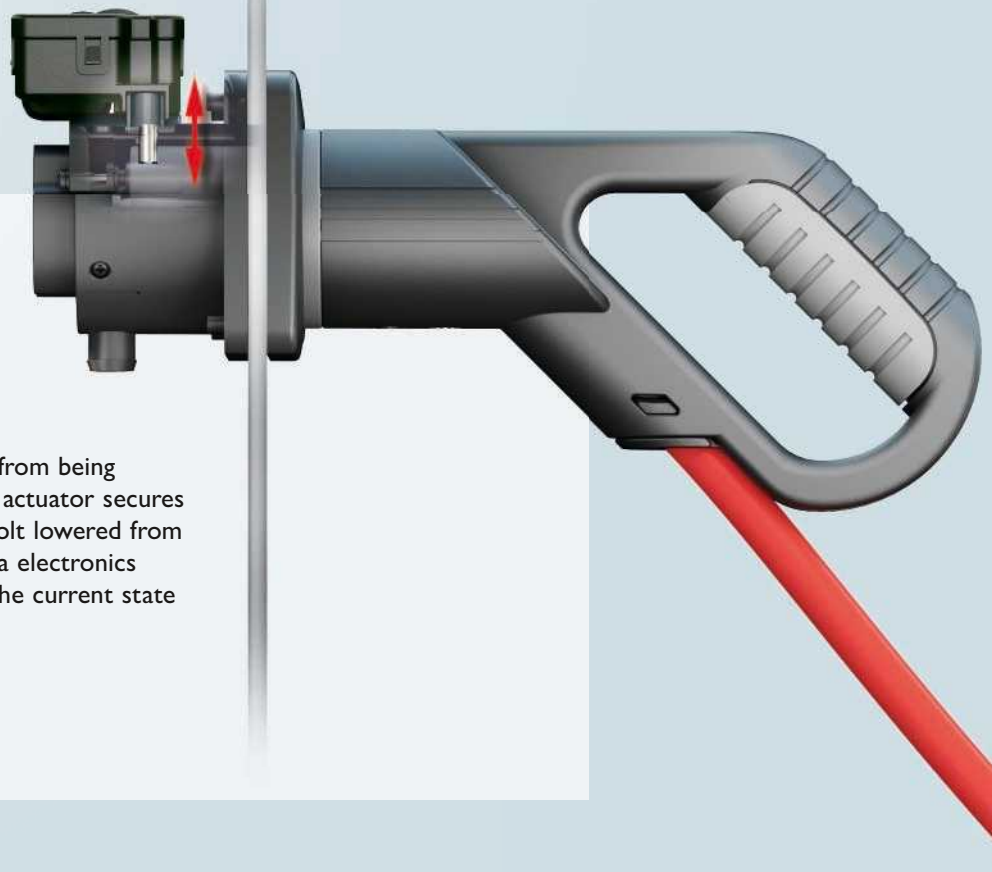
Standard	IEC 62196-2
Rated voltage	Up to 480 V
Rated current 1-/3-phase	Up to 32 A
Degree of protection	
IP degree of protection when plugged in	IP44
IP degree of protection with hinged cover	IP54

Rear and front mounting

The infrastructure socket outlet can be mounted on the housing panel from both the front and the rear.

Secure locking

A lock prevents the connector from being removed prematurely. The lock actuator secures the infrastructure plug with a bolt lowered from above. The lock is controlled via electronics integrated in the actuator and the current state can be queried.



Conventional AC charging with charging cable for charging mode 2

With the In-Cable Control and Protection Device (IC-CPD), electric vehicles can be charged easily and safely both on the go and at home. The vehicle is charged via a normal household socket with a power rating of up to 3 kW. The standardized communication with the vehicle as well as the safety equipment are integrated into the cable box and guarantee standard-compliant and safe vehicle charging according to IEC 61851 in charging mode 2.

IC-CPD

Charging cable with AC vehicle connector Type 2 and Schuko plug



Main features

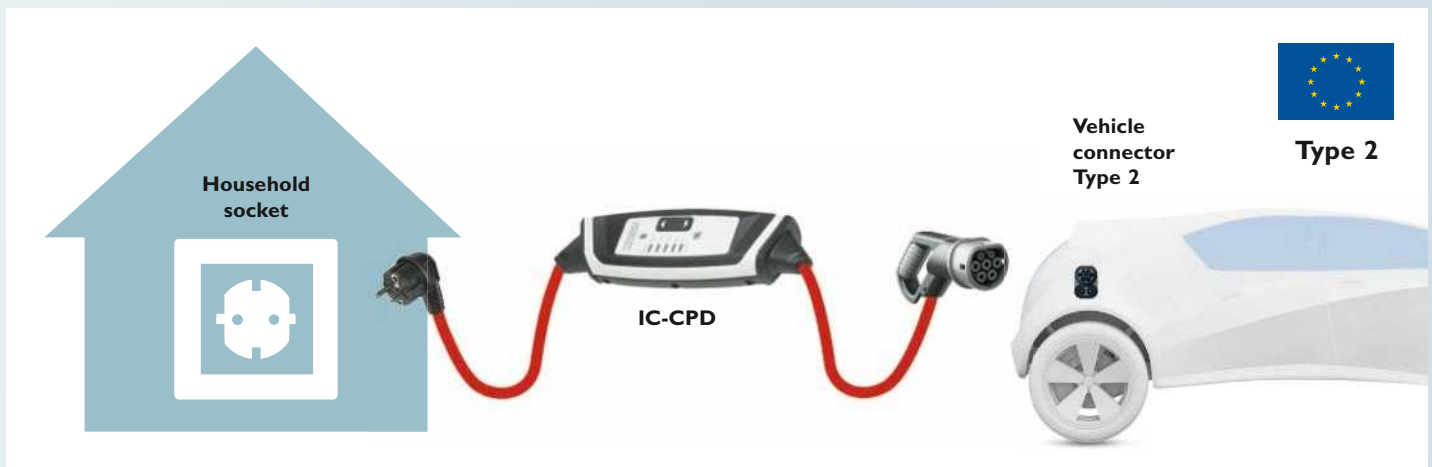
- Transportable charging system
- Easy operation
- Automatic charging process
- Integrated temperature and residual current monitoring
- Compatible with Type 1 and Type 2 charging systems
- Vehicle charging in charging mode 2 according to IEC 61851
- Vehicle charging with a household plug (Schuko CEE 7/7, type EF)
- Controllable charging current

Technical data – IC-CPD

Standard	EC 61851/Mode 2
Nominal voltage	200 ... 250 V AC
Charging current	6 ... 13 A
Rated frequency	50 Hz
Charging power*	1.4 ... 3 kW
Tripping characteristics	Type A/30 mA
Ambient temperature	-32 °C ... +40 °C
Degree of protection	
Electronics module	IP67

* Depending on charging current specification

Easy and safe charging via a household socket



* For vehicles on the European market with a Type 1 vehicle inlet.
Further product versions on request.

GB/T standard – fast DC charging for China



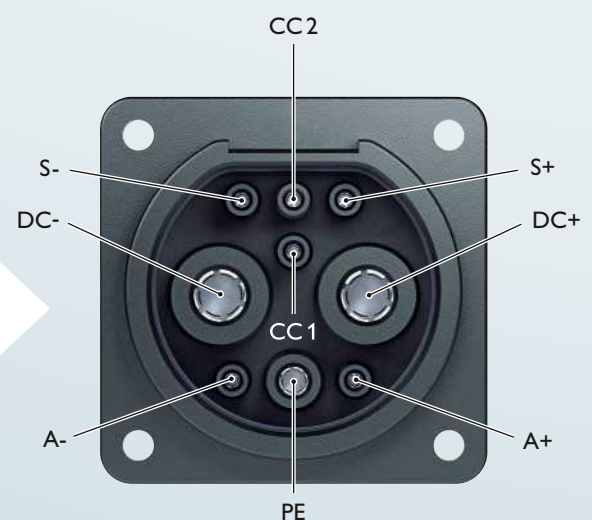
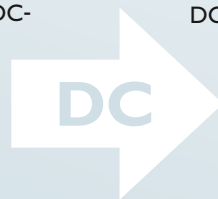
The DC charging system that complies with the GB/T standard provides fast DC charging for Chinese charging stations in charging mode 4. The unique locking mechanism is integrated in the vehicle connector and was developed by Phoenix Contact. The locking mechanism, which is controlled by the charging station, prevents the vehicle connector from being withdrawn during the charging process, thereby ensuring maximum safety.



**DC vehicle connector
GB/T standard**



**DC vehicle
connector
GB/T standard**



**DC vehicle inlet
GB/T standard**

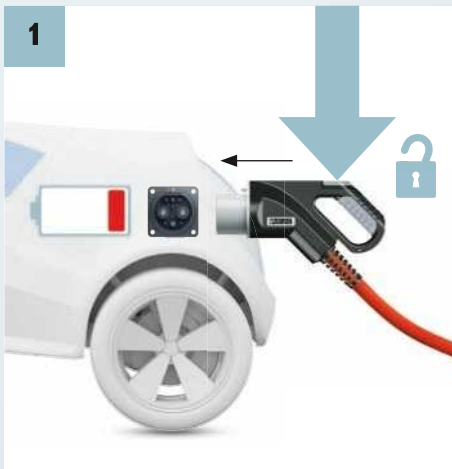
Main features

- 2 DC contacts, PE and communication contacts
- Locking and unlocking by means of a lever system with additional locking mechanism integrated in the vehicle connector
- Complies with GB/T Part 3
- Convenient handling
- Robust, high-quality materials
- Frost-proof lever locking mechanism
- Temperature sensors for monitoring inside the charging station

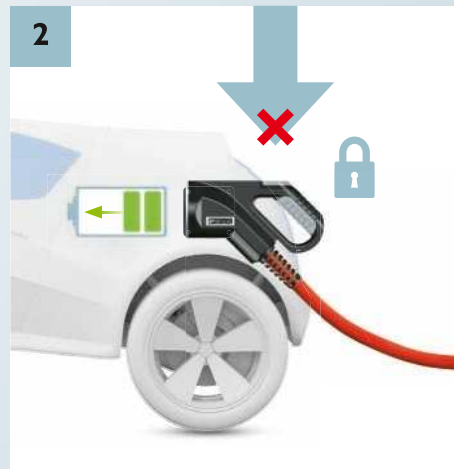
Technical data – DC charging system GB/T standard

Standard	GB/T Part 3
Rated voltage	Up to 750 V DC
Rated current	Up to 250 A
Degree of protection	
IP degree of protection when plugged in	IP55
IP degree of protection with protective cap	IP54

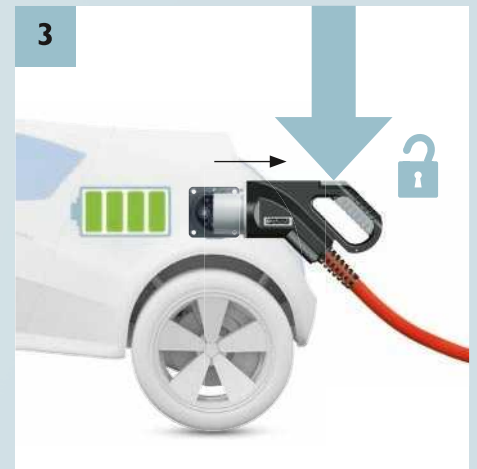
Innovative and unique: Integrated locking mechanism in the PHOENIX CONTACT vehicle connector



1 Actuate the lever and insert the connector into the vehicle inlet. The lever snaps into the vehicle inlet.



2 The locking mechanism integrated in the vehicle connector closes. The lever can no longer be actuated and the charging process starts. The vehicle connector cannot be removed during the charging process.



3 Once the charging process is complete, the locking mechanism integrated in the vehicle connector opens. The vehicle connector can be removed by pressing the lever.

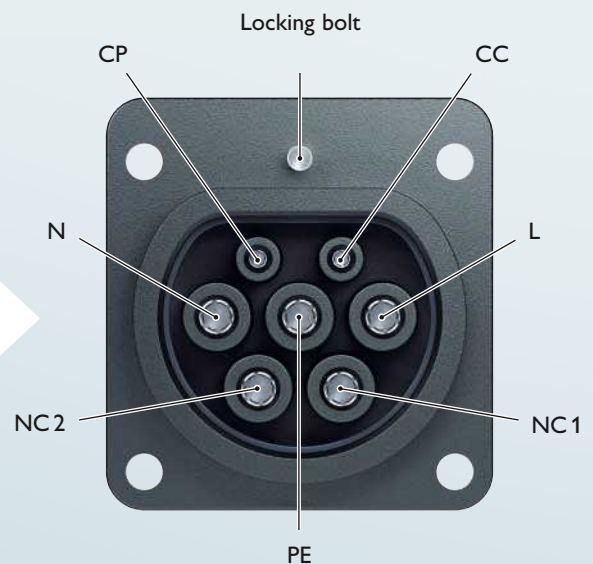
GB/T standard – conventional AC charging for China



The AC charging system standardized according to the Chinese GB/T standard enables both single- and three-phase charging in charging mode 3. A special lever locking mechanism guarantees safe charging. In the vehicle, an implemented, electric locking bolt also locks the vehicle connector. This prevents the connector from being removed during the charging process.



**AC vehicle connector
GB/T standard**



**AC vehicle inlet
GB/T standard**

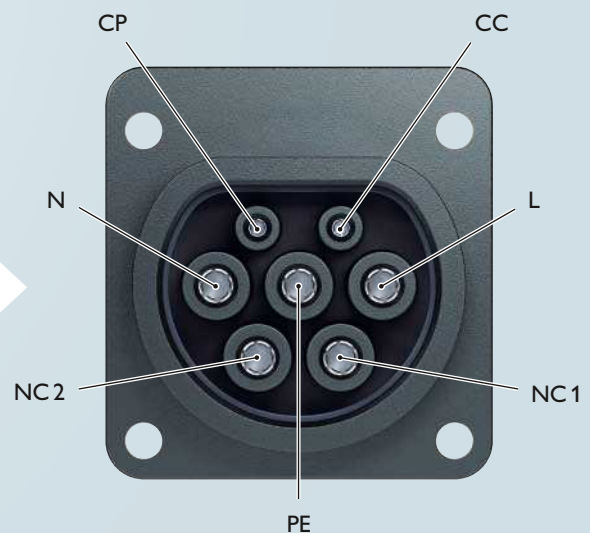
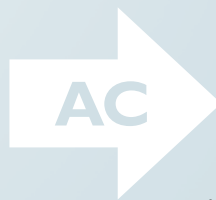
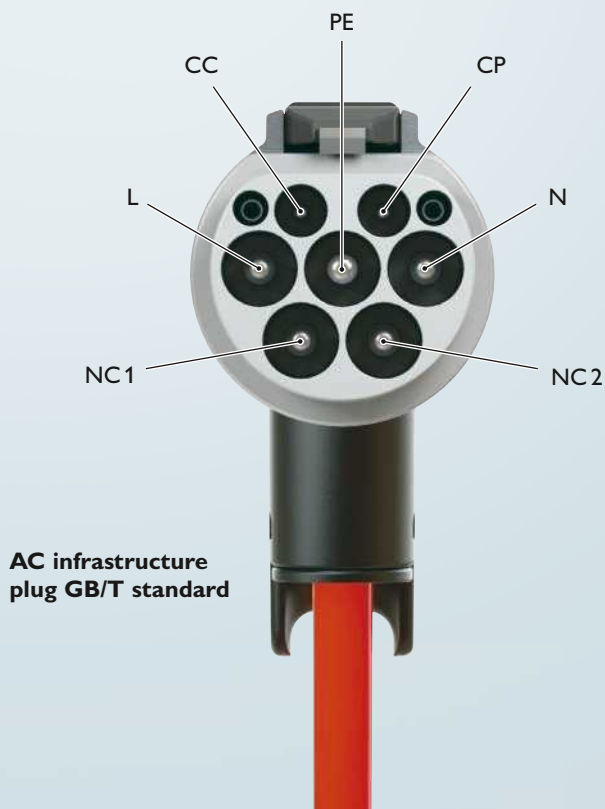
Main features

- 5 + 2 positions for 3-phase charging
- Mechanical locking
- Robust, high-quality materials
- Convenient handling
- Strong strain relief
- Low insertion and withdrawal forces
- Complies with IEC 62196

Technical data – AC charging system GB/T standard

Standard	GB/T Part2
Rated voltage	Up to 440 V AC
Rated current	Up to 32 A
Degree of protection	
IP degree of protection when plugged in	IP55
IP degree of protection with protective cap	IP54

AC infrastructure socket outlet
GB/T standard with actuator



AC infrastructure socket outlet
GB/T standard

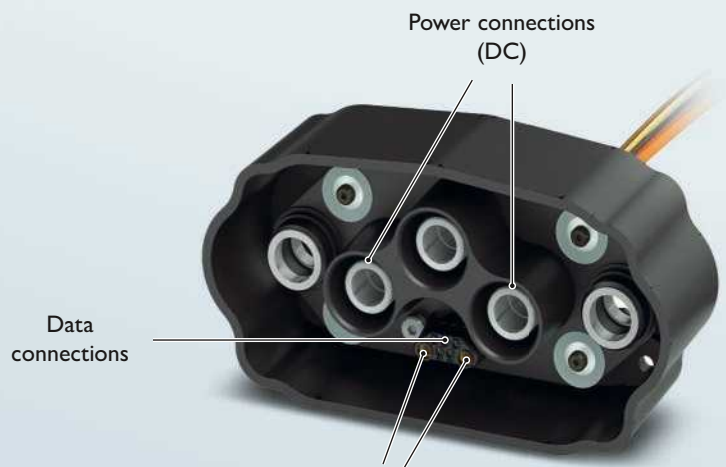
DC charging system for utility vehicles

In addition to the standardized connection systems for automobiles, Phoenix Contact also offers high-performance connectors for DC charging large battery units. The DC replacement battery concept is particularly suitable for utility vehicles used by local and municipal authorities as well as for forklift trucks, haulage vehicles, and passenger transport vehicles.



Main features

- Current: up to 400 A
- Voltage: up to 750 V DC
- Tolerance compensation for the plug-in process and vibration damping during the journey
- More than 10,000 insertion/withdrawal cycles
- Battery and thermal management as well as charging state monitoring via integrated data module



CCS Type 1 / CCS Type 2

Vehicle charging interface

PHOENIX CONTACT E-Mobility GmbH develops vehicle inlets especially for the automotive industry. The use of CCS vehicle inlets means that only a single one of these is required in an electric vehicle to encompass all charging situations. These CCS vehicle inlets can accommodate both AC and DC vehicle connectors, making them the optimal interface for charging all types of electric vehicles.

If you are interested in learning more about automotive products, please contact:

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phoenixcontact-emobility.com



Your advantages:

- CCS vehicle inlets for everyday charging situations thanks to AC and DC charging in one
- Application-specific development – a perfect fit for your electric vehicle
- Low installation heights and depths
- Easy to configure for commercial and special vehicles

Technical data

Parameters	CCS Type 1	CCS Type 2
Standard	IEC 62196-3, SAE J1772	IEC 62196-3
AC charging power	Up to 32 A / 250 V AC	Up to 32 A / 250 V AC
DC charging power	Up to 125 A / 600 V DC*	Up to 125 A / 850 V DC*
IP degree of protection (when plugged in)	IP54	IP54
IP degree of protection with protective caps	IP54	IP54

* Higher currents available on request

Charging controllers for every E-Mobility application

The E-Mobility controllers from Phoenix Contact enable the setup of charging stations in accordance with current requirements and standards, and ensure a high degree of security and interoperability with electric vehicles. Optimum controller solutions are available for the entire range of applications – private, commercial, or public as well as AC or DC charging technologies.

The charging controllers can be easily combined with the EV-RCM residual current modules.

EV Charge Control Basic



EV Charge Control Basic is a compact, cost-effective controller solution specifically for simple charging points:

- For setting up wall charging stations, for example
- For home garages, carports, and underground garages

AC charging points (IEC 61851-1)	1
AC charging points (DIN SPEC 70121/ISO 15118)	
Charging case	B, C
Vehicle connector release in the event of mains failure	•
Load and energy management	•
Programmable	
TCP/IP communication	
Mobile phone interface	
OCPP 1.2/1.5	
RS-485, Modbus RTU	Slave
RS-232	
CAN	
Available as a printed-circuit board	•

Integration into your charging infrastructure

In addition to its E-Mobility charging systems and controllers, Phoenix Contact also offers a wide range of electrical connection technology and electronics for use in charging stations.

These components function alongside the specific E-Mobility software modules to form the basis of intelligent charging infrastructures which can be used to promote cost-effective operation.

EV Charge Control Advanced



EV Charge Control Professional



EV Charge Control Advanced is the advanced controller solution for commercial applications:

- Suitable for connection to load and energy management systems
- Suitable for company premises and parking lots

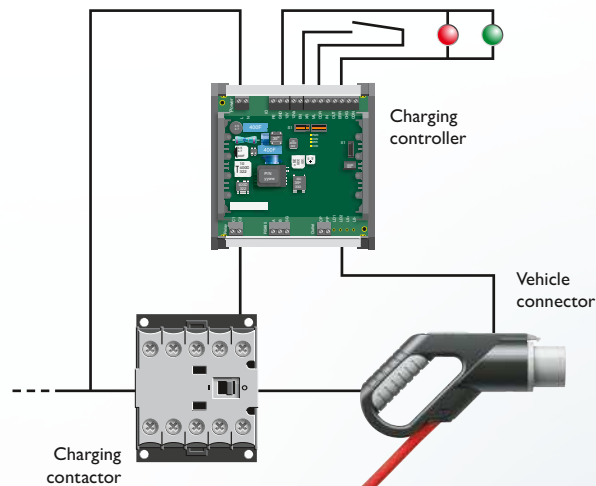
EV Charge Control Professional is the controller solution for charging stations with increased operating expenditure:

- For AC and DC charging
- For the public charging infrastructure

1	1
	1
B, C	B, C
With extra module EM-EV-CLR-12V	•
•	•
	•
•	•
	•
Master	Master
	•
	•

EV Charge Control Basic – AC charging controller for the simple charging station

The EV Charge Control Basic not only fulfills the key functions required for charging an electric vehicle in accordance with IEC 61851 (communication via CP and PP, charging connector lock and release), but also integrates the power supply for the charging connector lock and a mains failure unlocking module for charging scenario B (with infrastructure socket outlet).

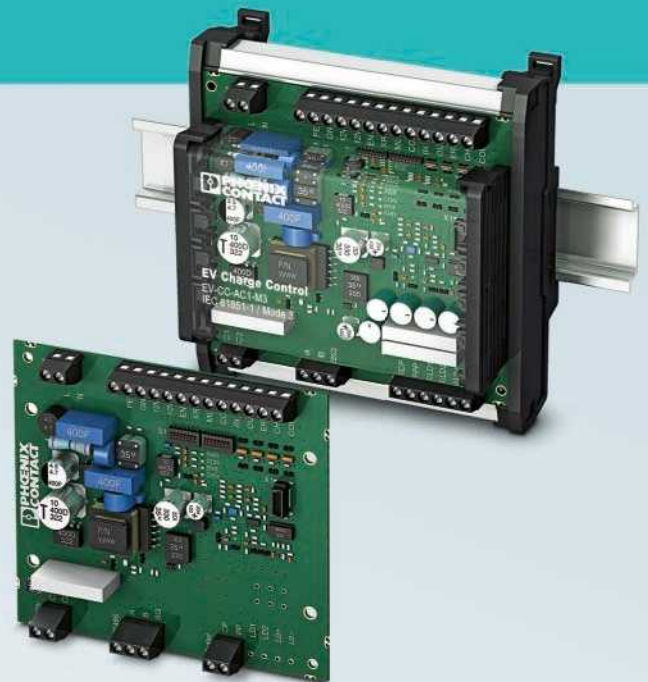


Simple

EVCC Basic lets you implement simple charging stations – called wall boxes – for home use, without a significant increase in time or expense. No additional activation is required for the contactor acting as the switching element

Your advantages:

- Integration of all required controller functions
- Release of the infrastructure plug in the event of main failure
- PCB or mounting rail device
- Configurable digital inputs and outputs
- Modbus RTU RS-485 interface (slave) for remote control and monitoring



Technical data

Parameters

Supply voltage range	110 V AC ... 240 V AC
Digital inputs	4
Digital outputs	4
Configurable charging current	16 A, 20 A, 32 A, 63 A
Ambient temperature range	-35 °C ... +70 °C

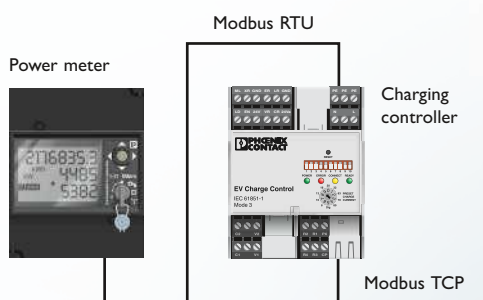
EV Charge Control Advanced – AC charging controller for commercial vehicle fleets and parking lots

The EV Charge Control Advanced integrates all the necessary controller functions for commercial charging points and offers extensive configuration possibilities. The charging controller has many applications, and even supports load and energy management systems on company premises and in parking lots.



Your advantages:

- All of the necessary charging point controller functions are integrated
- Ethernet interface for configuration and operation
- Set up any arrangement of scalable charging infrastructures
- Charging initiation, status monitoring, and energy monitoring via Modbus TCP



Communication

The EVCC Advanced charging controller can establish an intelligent connection to the control systems via Ethernet and Modbus TCP.

The relevant energy and performance data is recorded by the charging controller via a configurable RS-485 interface, Modbus RTU.

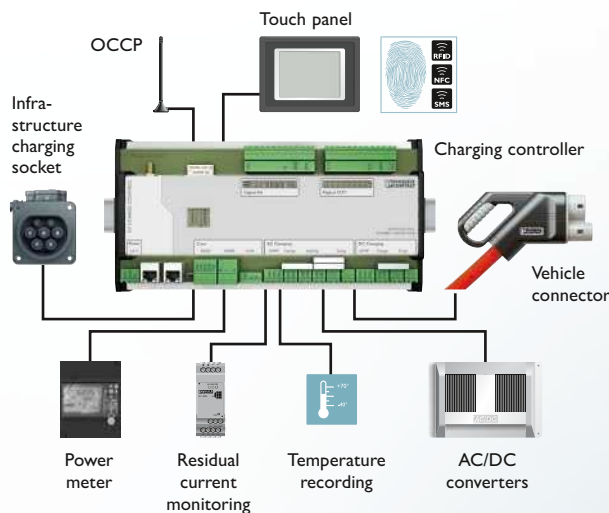
Technical data

Parameters

Supply voltage range	110 V AC ... 240 V AC
Digital inputs	4
Digital outputs	4
Configurable charging current	6 to 80 A
Ambient temperature range	-25 °C ... +60 °C

EV Charge Control Professional – AC and DC charging controller

The EV Charge Control Professional integrates all interfaces of a sophisticated charging station – TCP/IP communication, GSM/UMTS, serial communication, digital and analog I/Os, and vehicle interfaces – into a single device. Communication with the electric vehicle is facilitated during DC charging in accordance with ISO/IEC 15118 / DIN SPEC 70121 (Combined Charging System). The charging station can also be integrated into billing systems via the Open Charge Point Protocol (OCPP).

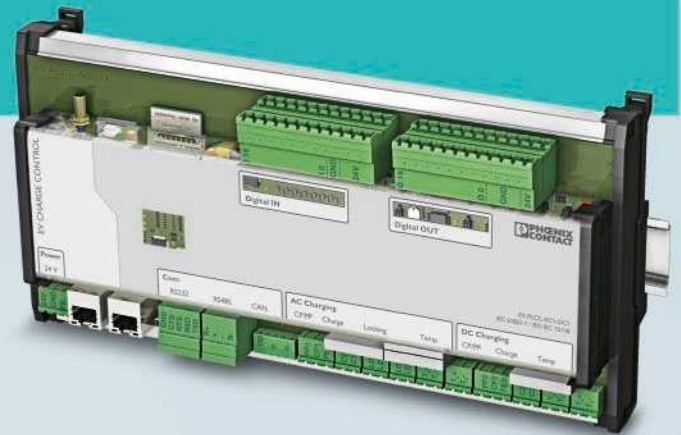


Programmable

The charging controller is freely programmable in line with IEC 61131 and optimized for the functional requirements of E-Mobility. It is also as robust and reliable as an industrial PLC.

Your advantages:

- High-level communication in accordance with ISO IEC 15118 and DIN SPEC 70121
- Controller solution for AC and DC charging in accordance with the Combined Charging System (CCS)
- Extensive I/Os and serial interfaces for system integration
- Communication with management systems (OCPP)



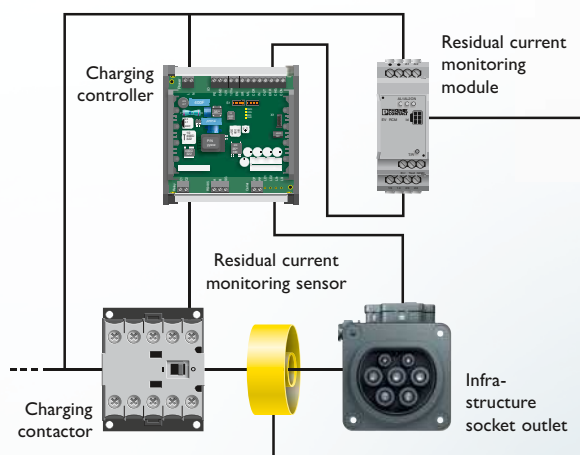
Technical data

Parameters

Charging methods	AC and DC
Standard	IEC 61851-1, ISO/IEC 15118, DIN SPEC 70121
Vehicle interfaces	2 (1 x AC, 1 x DC)
Interfaces	Digital I/Os
	Serial communication (RS-485, RS-232, CAN)
	Temperature monitoring
	Ethernet
	GSM
Protocols	OCPP

RCM – Residual current monitoring modules

The EV-RCM residual current monitoring modules detect AC and DC residual currents based on the requirements in IEC 62752. In combination with existing residual current devices, the modules increase the voltage protection level required by the standard when charging electric vehicles. An optional connection to charging controllers from Phoenix Contact enables convenient status monitoring as well.



Compatible

In conjunction with Phoenix Contact charging controllers, RCM modules increase the voltage protection level while charging electric vehicles according to IEC 60364-7-722 and DIN VDE 0100-722. This ensures long-term durability of a compact charging point such as, in this case, a wall box.

Your advantages:

- Universal residual current detection with a measuring transducer
- Use and continued operation of type A residual current circuit breaker possible
- Status monitoring in conjunction with Phoenix Contact charging controllers
- Optional feedback using Phoenix Contact charging controllers in the event of errors



Technical data

Parameters

Input voltage range	100 ... 240 V AC 50/60 Hz
AC residual current I _{dn1}	30 mA
DC residual current I _{dn2}	6 mA
Load current I _n	32 A
Operating temperature	-25 °C ... +80 °C

Smart Charging – Intelligent charging infrastructure

Charging infrastructure billing and management systems have a wide range of different requirements to live up to. In addition to communicating with the vehicle, they also have to offer functions for integrating the charging infrastructure into billing systems.

As charging controllers from Phoenix Contact come complete with standard interfaces, they can be used in conjunction with appropriate software modules for charging management purposes, intuitive user handling, or integration into billing systems with OCPP (Open Charge Point Protocol).

And this is exactly how we can offer our support no matter whether you're setting up an individual charging point or an entire system of charging stations.

Note

If you are interesting in learning more about how we can offer support with structuring and networking your charging infrastructure, please contact:

PHOENIX CONTACT E-Mobility GmbH
Hainbergstraße 2
32816 Schieder-Schwalenberg, Germany
Phone: +49 (0) 52 35 34 38 90
Fax: +49 (0) 52 35 34 38 91
E-mail: emobility@phoenixcontact.com
phoenixcontact-emobility.com



The charging station can be integrated into your management system using communication protocols such as OCPP or SQL.

Individual designs

Let us help you to design your personal charging infrastructure:

Software modules for...	Semi-public charging infrastructure	Public charging infrastructure
Key switch	•	
RFID card	•	•
Smartphone app	•	•
Billing systems		•
Management systems	•	•



We supply software modules in accordance with IEC 61815 and ISO 15118 to facilitate communication between vehicles, charging stations, and even back-end systems.

Our expertise

Let us help you with the different charging types and the communication methods that go with them:

Functions	
Charging methods	AC and DC
Protocols	OCPP, SQL, CAN, Modbus RTU
Interfaces	Ethernet
	Digital I/Os
	Serial communication (RS-485, RS-232)

Whatever the application, let us help you with this list of relevant libraries and function blocks:

Libraries		
EM-CP-PP	E-Mobility Lib	Communication with charging controllers
EVCC Basic	E-Mobility Lib	Communication with charging controller
OCPP	OCPP Lib	Communication with back-end systems
SQL	SQL Library	Connection to central databases
Modbus	Modbus Lib	Reading energy values from measuring devices
Serial communication	COM Serial	Integration of RFID readers

Additional components for the charging infrastructure

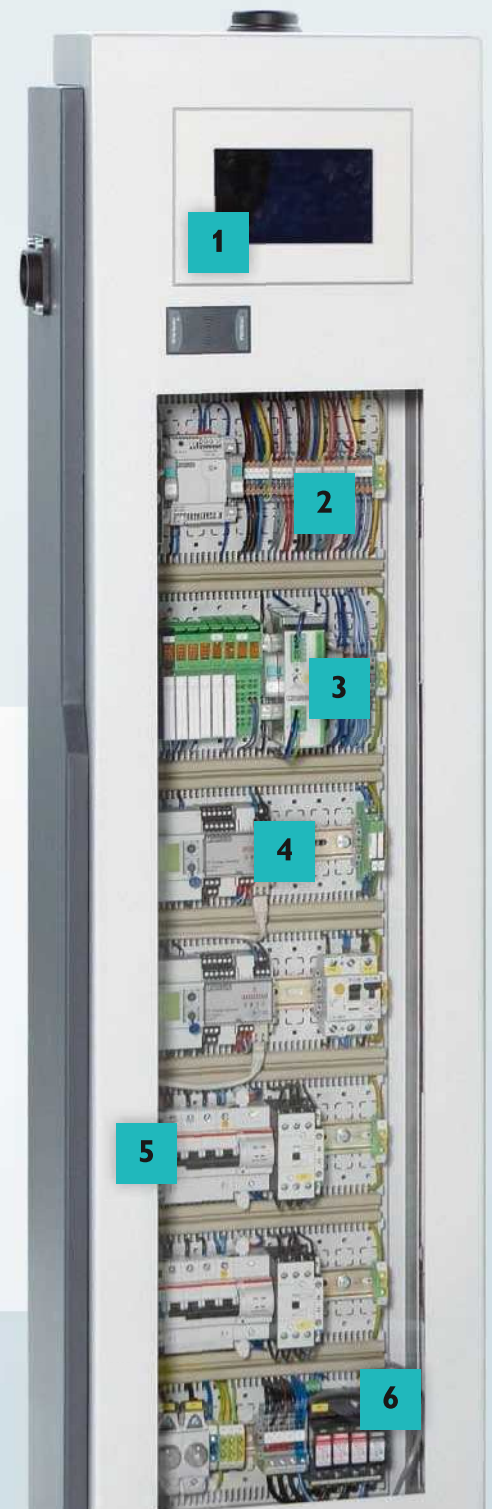
In addition to our charging systems, we also offer a complete product range for constructing a modern charging infrastructure – from the power supply to the vandalism-proof operator interface. Our solution expertise is rounded off by professional consultation and software services.

Solution for the charging infrastructure

Alternatively, a charging infrastructure can be designed in various ways, locally or in conjunction with a management system. Users are offered a vandalism-proof operator panel with extended temperature range.

Wired or wireless integration in management systems is supported. Secure data transmission is implemented via VPN tunnel.

Additional I/O devices can be connected thanks to the support of standard interfaces.





1. Operator interface

We offer a wide range of operator panels for operating and, to some extent, controlling charging stations – these also include outdoor and vandalism-proof versions. They are designed as touch and web panels or as operator terminals with function buttons. The devices can be integrated or connected to I/O devices via various interfaces such as USB or Ethernet. If required, they can also perform control tasks.



2. Terminal blocks

CLIPLINE complete features terminal blocks and function terminals for supply, potential distribution, and signal distribution. Thanks to the free choice of connection technology and the use of hybrid terminal blocks, the installation can be specifically tailored to the application.



3. Power supply

Stable operation is ensured through the use of power supplies. Various performance classes and compact designs enable use in a wide range of applications. Uninterruptible power supplies are available to increase availability.



4. Communication

Thanks to standard interfaces such as Ethernet, WLAN, GSM/GPRS, Trusted Wireless etc., open communication with management systems is possible. Component versions featuring various functions and designs enable custom integration according to customer-specific requirements.



5. Energy data acquisition

Various EMpro energy meters are available for obtaining data on energy consumption or power characteristics for billing purposes. Connection for data evaluation is supported via Ethernet or serial interfaces.



6. Surge protection

Surge voltages caused by switching operations and lightning strikes, especially outdoors, can be discharged effectively. TRABTECH protects the charging infrastructure against disturbances on the signal, data, and power cables and ensures the availability of electric vehicles.

AC charging cables Type 1



**AC vehicle connector
Type 1**

Mode 3, 1-phase, 250 V, 4 m cable, black:

Spiraled:

20 A, metric
Order No. 1621670

32 A, metric
Order No. 1621794

Straight:

16 A, AWG
Order No. 1621484

30 A, AWG
Order No. 1409949

70 A, AWG
On request

20 A, metric
Order No. 1621482

32 A, metric
Order No. 1409952



AC vehicle connector, infrastructure plug Type 1 and charging connector Type 2

Mode 3, 1-phase, 250 V, 4 m cable, black:

Spiraled:

20 A, metric
Order No. 1621669

Straight:

20 A, metric
Order No. 1621481

32 A, metric
Order No. 1410090

AC charging cables Type 2



**AC vehicle connector
Type 2**

Mode 3, 4 m cable:

Spiraled:

20 A, 1-phase, 250 V, red
Order No. 1405194

20 A, 1-phase, 250 V, black
Order No. 1405195

20 A, 3-phase, 480 V, black
Order No. 1405197

Straight:

32 A, 1-phase, 250 V, black
Order No. 1405198

32 A, 3-phase, 480 V, black
Order No. 1405199

63 A, 3-phase, 480 V, black
On request



AC vehicle connector, infrastructure plug and charging connector Type 2

Mode 3, 4 m cable:

Spiraled:

20 A, 1-phase, 250 V, red
Order No. 1405193

20 A, 1-phase, 250 V, black
Order No. 1405192

20 A, 3-phase, 480 V, black
Order No. 1404567

Straight:

20 A, 1-phase, 250 V, red
Order No. 1404876

20 A, 1-phase, 250 V, black
Order No. 1405193

32 A, 1-phase, 250 V, black
Order No. 1404568

32 A, 3-phase, 480 V, black
Order No. 1404569

Infrastructure socket outlets Type 2 and GB



**AC infrastructure socket
outlet Type 2 with actuator**

Mode 3, 0.7 m single wires:

20 A socket with 12 V actuator, 3-phase
Order No. 1405213

20 A socket with 24 V actuator, 3-phase
Order No. 1405215

32 A socket with 12 V actuator, 3-phase
Order No. 1405214

32 A socket with 24 V actuator, 3-phase
Order No. 1405216



**AC infrastructure socket
outlet Type 2 – accessories**

Hinged cover

Order No. 1405217

Panel mounting frame

Order No. 1405218

- As an option, the AC infrastructure socket outlet Type 2 can be secured with a hinged cover or a panel mounting frame



**AC infrastructure socket
outlet GB/T with actuator**

Mode 3, 0.7 m single wires:

32 A socket with 12 V actuator, 1-phase
Order No. 1408171

32 A socket with 12 V actuator, 3-phase
Order No. 1408172



**AC infrastructure socket
outlet GB/T without
actuator**

Mode 3, 0.7 m single wires:

32 A socket without actuator, single-phase
Order No. 1408169

32 A socket without actuator, 3-phase
Order No. 1408170

AC charging cables GB/T



AC vehicle connector GB/T

Mode 3, 5 m cable:

16 A, 1-phase, 220 V, orange, straight

Order No. 1408166

32 A, 1-phase, 220 V, orange, straight

Order No. 1408167

32 A, 3-phase, 440 V, orange, straight

Order No. 1408168

AC vehicle connector and infrastructure plug GB/T

Mode 3, 5 m cable:

16 A, 1-phase, 220 V, orange, straight

Order No. 1408161

32 A, 1-phase, 220 V, orange, straight

Order No. 1408163

32 A, 3-phase, 440 V, orange, straight

Order No. 1408165

AC charging cables for charging mode 2



In-Cable Control and Protection Device (IC-CPD)

Mode 2, 4 m cable, 230 V, 13 A, vehicle connector Type 1, household plug CEE 7/7 (type EF)

Order No. 1621797

Mode 2, 4 m cable, 230 V, 13 A, vehicle connector Type 2, household plug CEE 7/7 (type EF)

Order No. 1621516

IC-CPD wall bracket

Order No. 1622474

DC charging cables



DC vehicle connector CCS Type 1

Mode 4, cable: 5 m, black, straight, AWG:

60 A, 600 V DC

Order No. 1621488

125 A, 600 V DC

Order No. 1409950

200 A, 600 V DC

Order No. 1621489



DC vehicle connector CCS Type 2

Mode 4, cable: 5 m, black, straight, metric:

60 A, 850 V DC

Order No. 1618306

125 A, 850 V DC

Order No. 1409060

200 A, 850 V DC

Order No. 1621653



DC vehicle connector GB/T

Mode 4, cable: 5 m, black, straight, metric:

60 A, 750 V DC

Order No. 1621468

125 A, 750 V DC

On request

250 A, 750 V DC

On request

Vehicle charging interfaces



**CCS vehicle inlet
Type 1**

Mode 2, 3, 4, mountable lock actuator, 2.0 single wires:

- **DC charging**
200 A, 600 V DC
- **AC charging**
32 A, 250 V DC



**CCS vehicle inlet
Type 2**

Mode 2, 3, 4, mountable lock actuator, 2.0 single wires:

- **DC charging**
125 A, 850 V DC
- **AC charging**
32 A, 480 V AC



DC Battery Connector

- 400 A
- 750 V
- Tolerance compensation for the plug-in process
- Vibration damping

If you are interested in automotive products, please contact
PHOENIX CONTACT E-Mobility GmbH, Hainbergstraße 2, 32816 Schieder-Schwalenberg, Germany
Phone: + 49 5235 3-43890,
Fax: + 49 5235 3-43891, E-mail: emobility@phoenixcontact.com,
phoenixcontact-emobility.com

Components for charging stations



Displays

2.8" touch display
Order No. 2701257

Further touch panels are available from Sutron:

Outdoor Touch Panel 5.7"
Outdoor Touch Panel 7"
P Line Touch Panel 7"

- Mini touch and outdoor panels are also available as shock-proof versions



Power supply

1-phase DC voltage supply in a flat design

12 V: Order No. 2868570

24 V: Order No. 2868664

Uninterruptible power supply, 24 V, in a flat design
Order No. 2868703

Compact and efficient power supply

Order No. 2902993

Uninterruptible power supply, 24 V, in a compact design
Order No. 2905907



Measuring technology

Energy meter, DIN rail mounting

Order No. 2901363

Current transformer

Order No. 2277019

- Power and energy measurement



Surge protection

3-phase surge protection type 2
Order No. 2859521

1-phase surge protection type 3
Order No. 2858357

Surge protection for Ethernet
Order No. 2881007

- Device protection for ensuring availability

Components for charging stations



Charging controller

EV Charge Control Basic
Order No. 1622452

- For charging scenarios with an infrastructure socket outlet (case B) and charging connector (case C)
- With housing for DIN rail mounting



Charging controller

EV Charge Control Basic
Order No. 1622452

- For charging scenarios with an infrastructure socket outlet (case B) and charging connector (case C)
- As a PCB version



Charging controller

EV Charge Control Basic
Order No. 1622459

- For charging scenarios with an infrastructure plug (case C)
- With housing for DIN rail mounting



Charging controller

EV Charge Control Basic
Order No. 1622460

- For charging scenarios with an infrastructure plug (case C)
- As a PCB version



Charging controller

Charging controller according to IEC 61851
Order No. 2902802

- Charging controller according to IEC 61851-1
- Mode 3



Add-on module for plug release

EM-EV-CLR-12V
Order No. 2903246

- Power supply for releasing the charging connector following voltage failure



Residual current monitoring

Order No. 1622450

- 1-channel versions



Residual current monitoring

Order No. 1622451

- 2-channel versions



Always up to date, always available to you. Here you'll find everything on our products, solutions and service:

phoenixcontact.com

Product range

- Cables and wires
- Connectors
- Controllers
- Electronics housings
- Electronic switchgear and motor control
- Fieldbus components and systems
- Functional safety
- HMIs and industrial PCs
- I/O systems
- Industrial communication technology
- Industrial Ethernet
- Installation and mounting material
- Lighting and signaling
- Marking and labeling
- Measurement and control technology
- Modular terminal blocks
- Monitoring
- PCB terminal blocks and PCB connectors
- Power supply units and UPS
- Protective devices
- Relay modules
- Sensor/actuator cabling
- Software
- Surge protection and interference filters
- System cabling for controllers
- Tools
- Wireless data communication

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