

TECHNICAL DATA

Assembly instructions

CHARGING STATION

for electric vehicles

ecotech power charger

Model: PC 400- PC 600



PC 400-600	ecotech power charger (PC) specification	
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Document History

Version	Modification	Date	Author
0.1	First Edition	26.03.2010	VK
1.0	Revision 1	30.06.2011	VK
1.1	Revision 2	17.08.2011	AK

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2 Overview

ECOTECH POWER CHARGER PC 400/600 are an intelligent, network-and customer-friendly charging stations for public and semi-public areas.

PC 400/600 has been developed according to the standard IEC 61851-1 2010, 2nd edition with Mode 2 and Mode 3-charge options, with pilot contact, load control via PWM, and communication between customers and operators via GPRS or LAN, web and SMS. Access to the power charge station through mobile phone is possible via Windows and Apple apps.

PC 400/600 are also a **fast AC-Chargeres** with the charging output of 22kW (400V AC, 32A). PC 400, PC 600 are able to charge the e-cars (eg. Renault ZOE) **within only one hour**.

Customer authorization can be done via SMS or RFID, and / or by ATM or credit card. It is possible to connect up to 8 additional charging spots (PC 300) to PC 400/600 in order to achieve the most cost-effective solutions for garages or other parking lots.

Customer's friendly system: the system allows the first charging without contract or prepayment. The customer just shall to send a SMS with charge point number to provider and the charging starts. The provider can set up a credit for a first charge (5 or 10 kWh) in order to make the fist charging also for new customers possible. More details at www.enio.at. www.ecotech.eu.com

The PC 400 is offered in three versions:

PC 400- Solo - for wall or pole mounting

PC 400- Street charger - Stand-alone solution with LED RGB signals

PC 500 - Ingeteam - Ingeteam housing with ecotech PC charging control unit

PC 600- light & charge - Model with LED street lighting

The following modifications of PC 400 can be ordered.

1. **PC 400/600:** (standard version): Charging Station with different housing, **simultaneous charging from both connectors:** 1 * Type 2 for mode 3-charge, load management via PWM, and Schuko socket CEE7 for mode1and Mode 2-charging of light vehicles (e.g. Twizy, scooters etc.) LAN communication and RGB LED signal lighting on the top.
2. **PC 400/600-K:** Differs from the PC 400 through additional authorization/payment possibilities via debit and/or credit cards. The option to bill on site makes the use of the power charging station possible for non-registered customers as well.

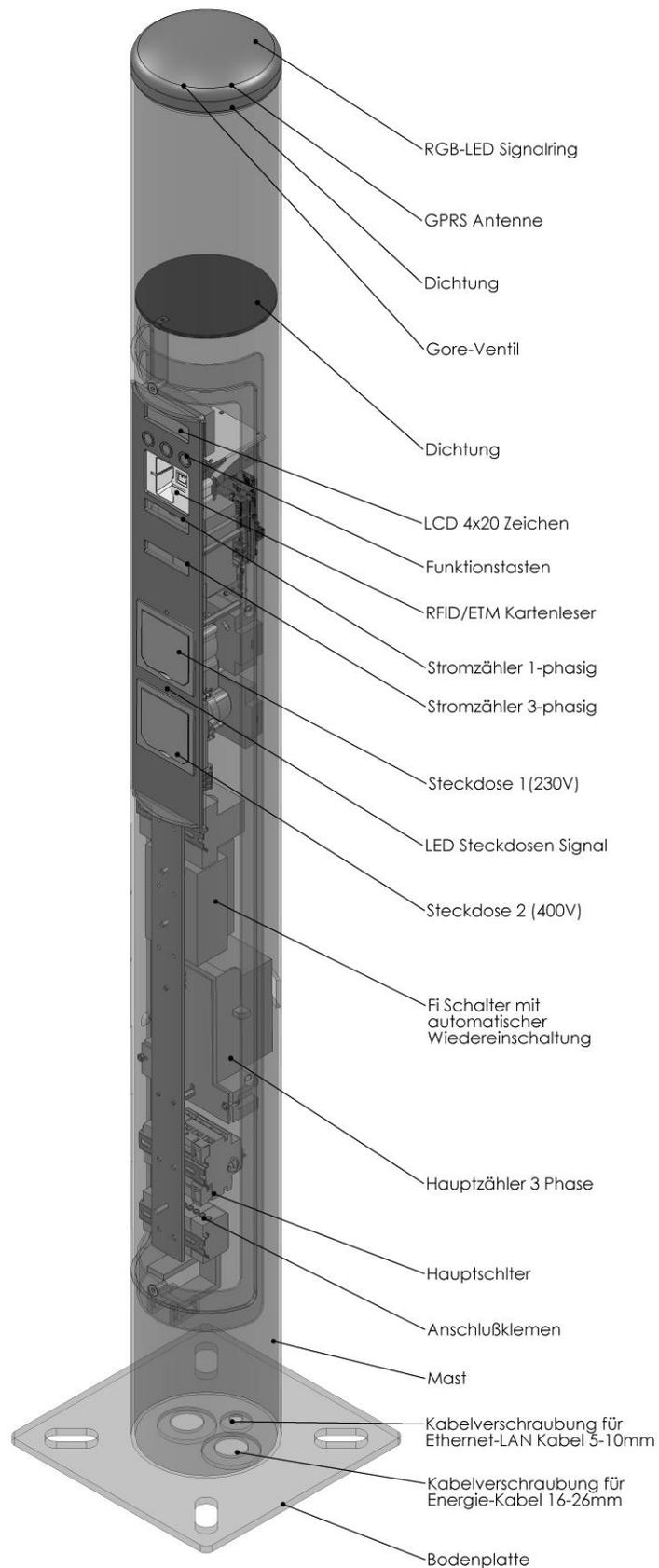
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3. The extending of PC 400/600 with the Wall box, PC 300, represents the most cost effective solution for garages and parking lots.

Depending on your requirements we use galvanized steel, stainless steel, or aluminum as the housing material.

**PC
400-600**

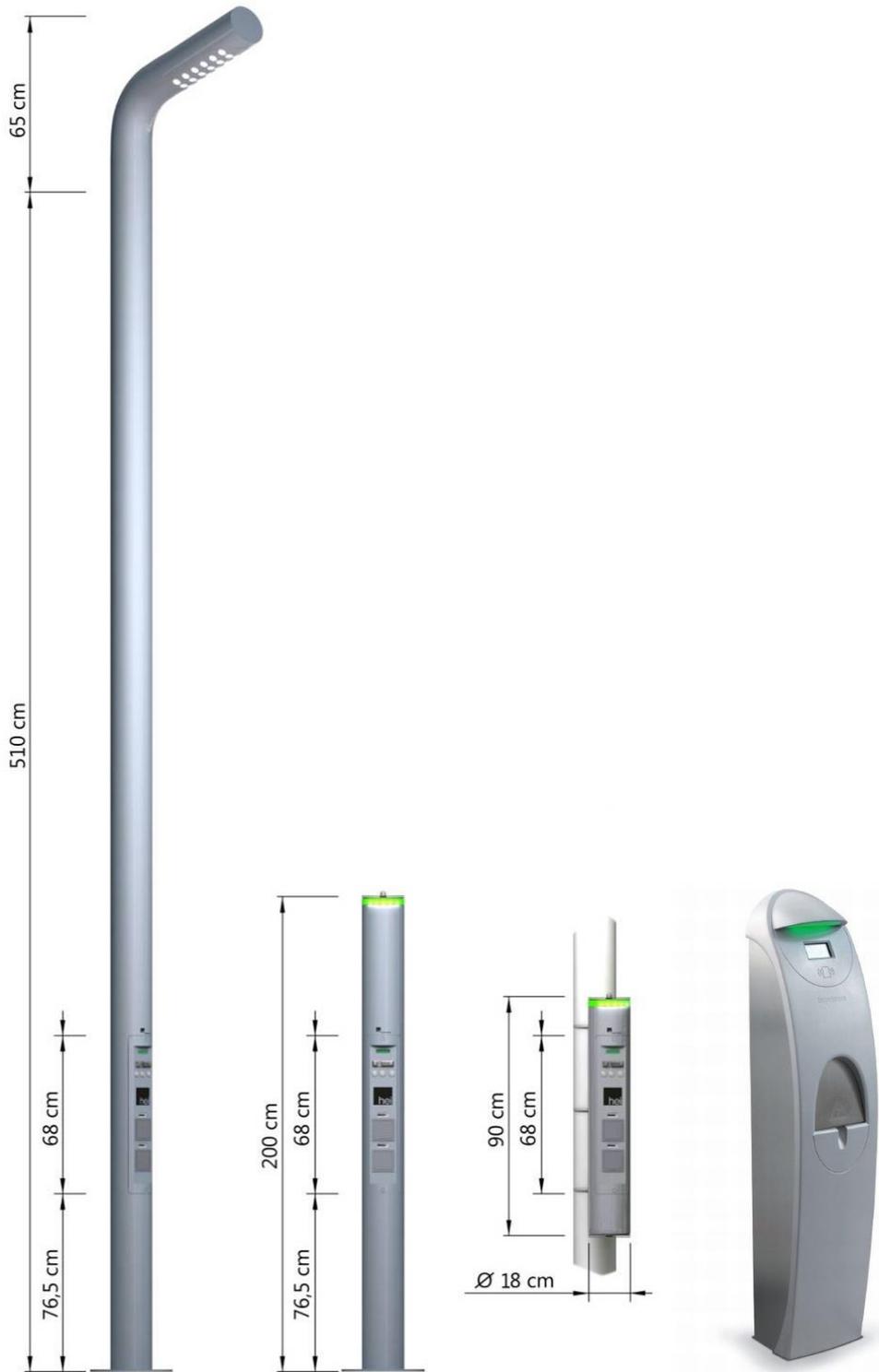
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3 Types and dimensions



**PC 600
light & charge**

**PC 400
street charger**

**PC 400
solo**

**PC 500
Inqetam**

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4 Technical data and options: Model PC 400; PC 600

<i>Ecotech power charger (PC)</i>	<i>Standard PC 400</i>	<i>Nr</i>	<i>Options (for System PC 400; PC 600)</i>	<i>choose option</i>
Power source	3-phase, 400 V / 32A	1	3-phase, 400 V / 63 A	
Connectors for power supply	> 5*10 mm ² Recommended 5*6 mm ²	2	5*25 to 5*150mm ² in underground junction box IP68	
		3	terminal block to loop through the supply line	
Installation protection main switch	separately for each outlet 1* 16A, 1* 32A	4	separately for each outlet 2*32A	
Electricity meter	without electricity meter	5	MID approval meters for each socket, 1-phase and 3-phase,	
		6	3-phase, A-Class main smart meter with optical (IR) and LAN interface, EHZ361WA	
Charging sockets	1 x Schuko socket / 230V, 16A / IP44 / IEC60309-1	7	Type 2, IEC 62196-2/ / 400V AC, 32A / IP44/ with lock (instead of Schuko)	
	1 x Type 2, IEC 62196-2/ / 400V AC, 32A / IP44/ with lock	8	2 x Schuko sockets / 230V, 16A / IP44/ IEC60309-1	
Authorization and payment	Without Authorization	9	Authorization via RFID (Mifare)	
		10	Authorization via SMS	
		11	debit and credit card	
		12	parking ticket (eg. Ski Data)	
Charging control	Mode 3 according to IEC 61851-1, 2010	13	without charging control - PC 230	
RGB signal ring	display the status of the charging spot (G-free, B-1 free, R- occupied)	14	No RGB ring, but with cover on top	
Socket status signal	Green – charging in process			
LED- street lighting	only light & charger	15	Light & charge PC 600: 36W, 3600 Lumen, equivalent street light „mira-190-3600“	
Display	LCD with backlight 4 x 20 characters EN/DE	16	Touch screen for wall mounting or PC connection. Languages: Fr, It, et.	
Communication	LAN (RJ45 socket)	17	GPRS Modem, PLC Modem (for garage)	
Expansion of charging spots	Up to 16 spots (8 Wall box PC 300 with charging cable and Type 1 or Type 2 plug +Schuko communication between master-slave unit via RS485)			
Safety	RCD is not included, EN61815-1:2010, 21, 22,	18	RCD Type AC, 30 mA, IEC 60364	
		19	RCD Type AC with automatic reclosing	
EMC	EN 61000-3-2:2006, EN 60950-1			

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External protection	IP44, IEC 60529		
Operating conditions	-30°C to +60°C, moisture up to 95%		
Storage Conditions	-40°C to +70°C, moisture up to 95%		
Certification	CE, EN 61851-1, 2010	20	UL 2251, UL 62
Type Dimensions, Weight	<i>PC400 Street charger</i> stand alone (h,d) 2.000 mm, 180 mm, 65 kg	21	<i>Light & charge</i> - integrated in street light (h,d) 5800 mm, 180 mm, 170 kg
	PC 500 Ingeteam 1,250 x 255 x 250 mm 30 kg	22	<i>solo</i> – for pole or wall installation (h, d) 900 mm, 180 mm, 25 kg
Housing material	Galvanized steel, painted	23	Stainless steel, brushed
Color pole	RAL 9006, white aluminum	24	RAL colors according to customer need
Installation	ground plate	25	pipe foundation

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5 Functions

1. Charging equipment with MODE 1 and MODE 3-charge charging mode for electric vehicles in accordance with the IEC 61851-1 2nd edition 2010 for installation in unprotected areas.
2. Customer authorization or payment via RFID (standard), debit or credit card or/and park ticket is possible. Authorization via RFID or SMS.
3. User-friendly automatic detection for the presence of the plug in the socket eliminates the need to select the socket by keys or touch screen.
4. Automatic locking mechanism to prevent unauthorized removal of the plug.
5. Viewing of charging status, usage time, costs, etc. on the LCD display.
6. RGB-LED Ring at the top of the charging station shows the status of charging spot and allows the user to locate it from a distance, in a garage, or at the street. The signal works as follows:
 - a. LED ring lights blue or green - at least one socket is free.
 - b. LED ring lights red - all sockets are in use or are out of order.
 Other colors are possible
7. Signaling of the sockets status:
 - a. Not connected - LED does not illuminate.
 - b. Plug is connected and charging started - LED lights up green.
8. Reservation of a charging spot is possible via WEB or SMS.
9. Data transmission via GPRS or LAN.
10. Offline function via white / black list in case of missing GPRS connection.
11. External ventilation and interlock (only by Type 2 EFSV coupling).
12. RS485 interface for communication with satellite charging stations (e.g. with PC 300).
13. Communication of counter reading by the smart meter via LAN or optical interface.
14. Central customer management.
15. Load control of concentrated charging systems (e.g. in parking garages).
16. Choice of charging initiation time by customers (preset load profile).
17. Ready for installation in existing installations up to 32A.
18. Main switch for safe installation and service.
19. Optional: surveillance camera, FI / LS with automatic reclosing

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6 Standards

6.1 General

2006/95/EG	EC-regulation for low voltage appliances
2004/108/EG	EC-regulation for EMC
2002/95/EG	EC-regulation for reduction of hazardous substances
2002/96/EG	EC-regulation regarding waste electrical and electronic equipment

6.2 Safety

EN 60950-1:2006	Safety of information technology equipment including electrical business equipment
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6.3 EMC

EN 61000-6-2	Immunity for industrial environments (EMC)
EN 61000-6-3	Emission standard for residential, commercial and light-industrial environments (EMC)
EN 61000-3-2:2006	Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
EN 61000-3-3:2008	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems

6.4 Function

IEC 61851-1 Ed 2.0	Electric vehicle conductive charging system Part 1: General requirements (69/173/FDIS)
IEC 61851-22 Ed 2.0	Electric vehicle conductive charging system Part 22: AC electric vehicle charging station (69/184/CD)
IEC 62196-1	Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles Part 1: General requirements (23H/248/CDV)

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7 Intended uses

The ecotech power charger is a charging station for electrically-powered vehicles, such as electric bicycles, electric scooters, electric motorcycles, electric cars, and electric wheelchairs.

This device has been developed and tested in compliance with standard policies, safety procedures, and environmental conditions, and must be used with strict adherence to the regulations under which it has been developed.

The information contained in this manual must be followed exactly in every case. Otherwise, a source of risk would be created.

In addition to the safety instructions given in this manual, adherence to the appropriate standard safety and accident prevention regulations is vital. HEI Eco Technology GmbH assumes no responsibility for any resulting damages, if the safety instructions for proper use are not observed.

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8 Choice of location for installation

The device is designed for outdoor installation. It is therefore necessary to ensure the appropriate application requirements and the protection of the equipment.

The installer is responsible for any damage to persons or property, if this is caused by non-compliant installation.

- The device should not be installed in potentially explosive zones.
- The device should not be installed in flood-prone areas.
- The device must be positioned so that water drainage can continue unimpeded by the installation.
- Protection from direct invasion of water (e.g. rain gutter, manual car wash facilities etc).
- Avoid the weather side: Devices with ATM card readers should be positioned so that the customer interface of the charging station does not face the main weather side.
- Make sure that the customer has enough space to use the device without any obstruction or danger.
- For installation, a horizontal, flat surface is necessary.
- In order to ensure a secure and lasting anchoring, we recommend designing the concrete foundation as follows: 50 cm x 50 cm, depth at least 40 cm founded, frost-proof. Concrete: C30/37 LP for XC4, XD1, and C25/30 XF4 LP for XC4, XD1, XF2, reinforcing steel: BST 500 S, BST 500 M.
- The surface must allow for the drainage of water.
- All wiring must be done in the middle of the device from the ground and have a length of at least 1 m available for further assembly.
- The operator must ensure that the access and customer area is always safe and usable for customers.
- The Ecotech e.U. is not liable for the security of the entire environment surrounding the device.

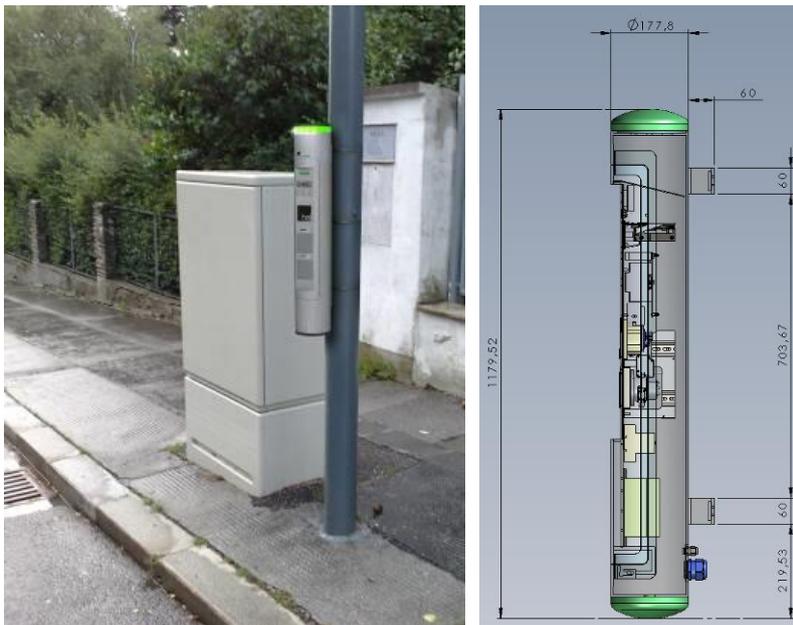
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8.1 Restricted installation areas

Take measures to ensure that the local fire prevention and accident prevention laws, as well as escape routes taken on location, are not disabled.

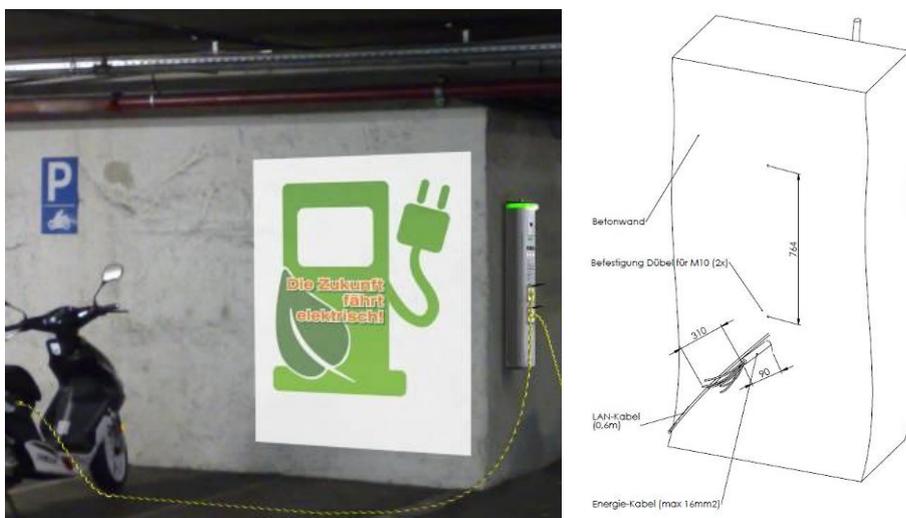
8.2 Pole mount (Solo)

Model Solo can be mounted to a pole with ring terminals.



8.3 Wall mount (Solo)

A mounting on the wall can also result in significant economic savings.



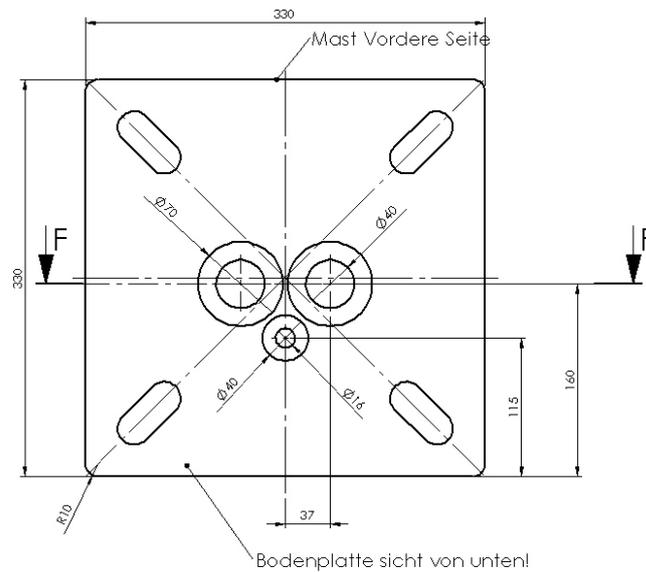
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8.4 Floor plate (street charger, light & charge)

In the standard version, the PC 400 street charger has a square base plate with dimensions of 320 x 320 x 25 mm and holes spaced 200-250 mm apart.

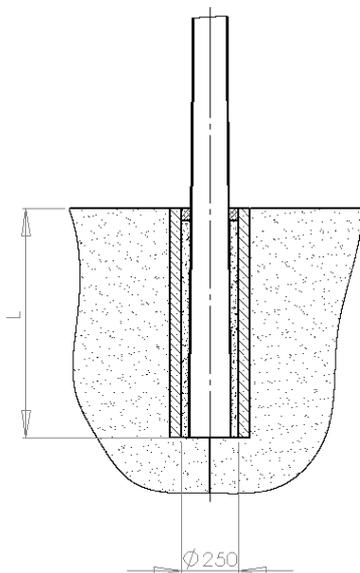


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8.5 Mount with pipe foundation (street charger, light&charge)

If the power station is to be mounted on a pipe foundation, the following points must be considered:

- 1) Excavation of the foundation and excavation depth, depending on the frost-free limit, but at least $L = 40\text{cm}$ for model PC/pole and $L = 100\text{ cm}$ for PC/light&charge
- 2) Insertion of a concrete pipe with diameter of about 25 cm. Pay attention to vertical installation.
- 3) Bind the concrete pipe with concrete. The curing of the concrete depends on the weather. We recommend waiting for about 3-5 days.
- 4) After the concrete hardens, the pole will be inserted and aligned vertically.
- 5) After the alignment of the pole, the existing gap between the pole and concrete pipe should be filled up with sand up to 10 cm below the top of concrete tube and compacted.
- 6) To prevent the intrusion of moisture into the concrete pipe, the pipe should be filled up to top with frost-stable concrete.



Note:

The manufacturer assumes no liability for improper installation. The observance of static compliance requirements, as well as statutory provisions, belong to the respective user or installer.

For the requirements for power supply, grounding, and inlet from excess cable connection see "Electrical connection".

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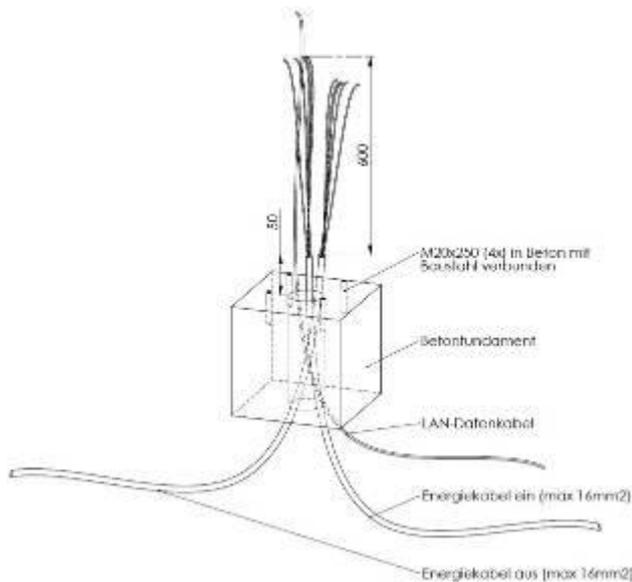
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9 Electrical installation

All work on the 230-400V AC power supply must be carried out exclusively by relevantly trained personnel (e.g. electrician).

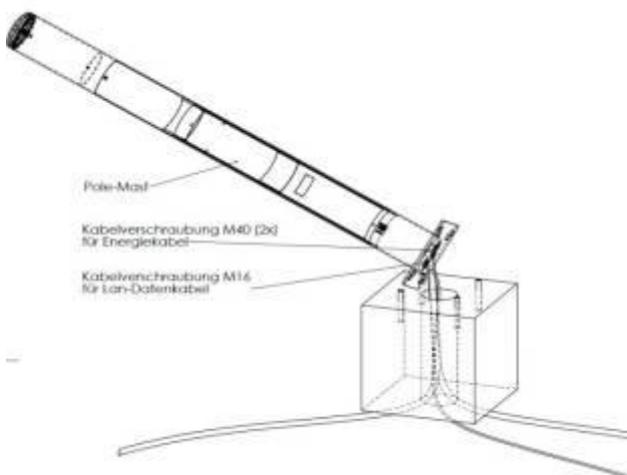
To connect the station to the power grid, as shown in the technical data sheet for PC-400, a 3-phase, 32A, 400V AC connection is required.



Step 1.

All cables must be routed in the middle of the device from the foundation. For mounting, cable length (over foundation) should be at least:

0.6 m - Power Cable PC 400 YMM - 5 x 6 mm² and 1.5 m - Ethernet LAN data cables with RJ45 connectors are required.



Step 2.

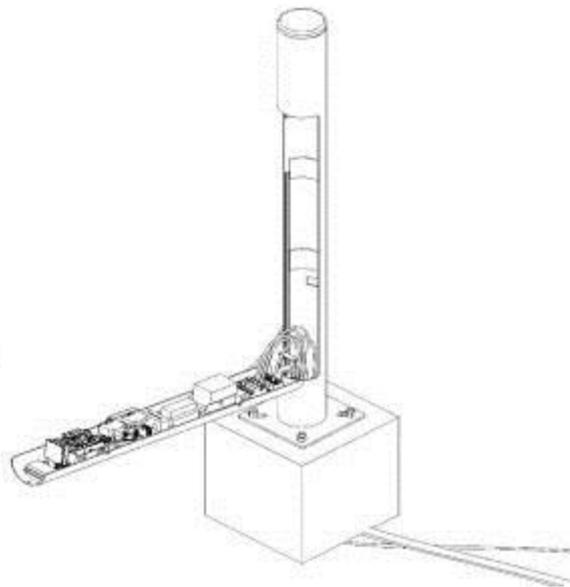
Unpack the pole and put the power and data cables into the glands in the pole.

Power and Ethernet cables lead through the appropriate cable gland M40 or M16 and tighten against the nut.

Raise the pole, align it vertically with a water level, and screw the pole to the mounting with an M20 nut on the anchor bolt.

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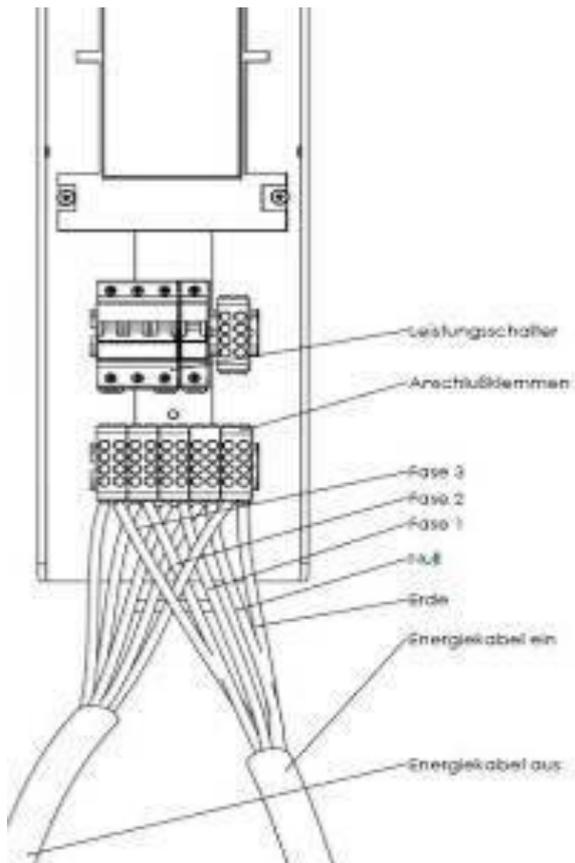
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Step 3.

Screw down two M8 screws on the front panel.

NOTE: First pull the front panel forward and then subsequently unfold it. This will prevent damage to the paintwork.



Step 4.

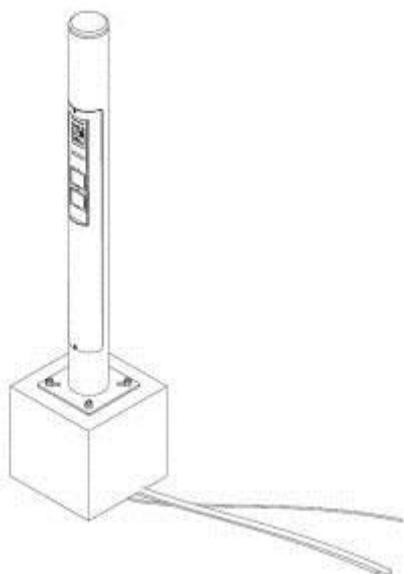
Insulate the last 15 mm of the power cable and connect them to the distribution terminal as shown.

If the power cable ends, leave the appropriate connectors free.

Assemble the Ethernet LAN cable with an RJ45 connector and connect it to the provided plug (in the electronic box).

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5.

Turn on the circuit breaker.

Close the front panel and fix it with two screws M8.

Ensure that the power supply to the cable is on. Display lights and shows loading. After about one minute, the light on top should be on.

Test the function, as described in the manual.

Lightning Protection:

The operator must ensure that by connecting the charging station to the supply system of a building, he does not disrupt the lightning protection concept of the building.

For a mira charger, all cables leading to the device should be protected by lightning arresters. These lightning arresters must be installed directly at the transition point between lightning protection zones.

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10 Operation (Plug & Charge)

Plug & Charge is the automatic detection of vehicle presence by the sensor in the socket. It makes the charging process especially user friendly.

To start the charging process:

- Step 1. Connect the vehicle plug to the electrical outlet.
- Step 2. Touch your RFID-Card/Chip to the RFID sensor.

The plug will be locked and the vehicle will start the charging process. The light on top will change color. During the charging process, unauthorized disconnection of the plug is not possible.

To stop the charging process:

- Step 1. Touch your RFID-Card/Chip to the RFID sensor.
- Step 2. Press “-“ to stop the charging process or “+“ to charge another vehicle.
- Step 3. The charging process will cease and the plug will be released. Disconnect the charging cable from the charging station.

11 Contact

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