HARDY BARTH emobility

Charging Station

cPµ1

Instruction Manual

English

Contact Details

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Contents

Important Information

Safety notices in this manual

This instruction manual contains important information for installation and putting into operation of all charging stations of type **cPµ1**. Please make sure to read and follow the provided safety notices in any circumstances.

In particular, the warnings and safety measures clearly marked in this manual must be followed. The associated symbols carry the following meanings:

Danger!

Sections marked with this symbol indicate electrical voltages that represent danger to life and limb. Actions marked with this symbol must not be carried out **under any circumstances.**

Caution!

Sections marked with this symbol indicated further hazards that may lead to damage of users or the Wallbox itself. Actions marked with this symbol should be carried out with special care and by professional staff.

Please note!

Sections marked with this symbol indicate further important information and particularities that are necessary for a proper functioning device.

Safety notices on this device

Further safety notices and operating instructions can be found on and also inside the device. These symbols carry the following meanings:

Attention!

Only qualified staff which are familiar with this manual (this document) are allowed to open the **cpµ1**.

Attention!

Dangerous electrical voltages occur inside the housing

General safety notices

Before you start operating your cPµ1 charging station, please make sure you have carefully read the manual, heeded and followed all instructions and warnings.

The installation, repair and maintenance of the cPµ1 as well as taking into operation must be carried out by qualified staff.

eCHARGE Hardy Barth GmbH does not assume liability for any damage of property or physical injuries caused by non compliance of the assembly and manual instructions, by usage of non-authorized replacement parts or accessories, or by deploying non-qualified professional staff.

This device represents the current state of technology and fullfills all current technical safety requirements, directives and norms. The provided safety information serve to ensure a safe installation at the desired installation place as well as the proper operation of the device. Disregard of or actions contrary to the safety information and instructions contained in this manual, may lead to electric shock, fire and/or severe injuries.

Usage of the charging station is only allowed if the installation has been carried out flawlessly and professional staff has taken it into operation. Malfunctions which threaten the safety of persons, connected users or the device itself must be removed by qualified or authorized staff only.

In case of a substandard installation or a malfunction caused by substandard installation, please contact first the company that has carried out the installation. If the errors still cannot be removed, please contact the technical support of **eCHARGE Hardy Barth GmbH**.

Via email support@echarge.de
Via telephone +49 (0) 9666 – 188 00 0

Please make sure to store this manual in a safe and always accessible place.

A service case occurs, when...

- …the housing has been damaged mechanically,
- …the housing cover has been removed or cannot be closed or locked anymore
- …the necessary protection against water and/or foreign objects seems not to be provided anymore
- …the charging sockets and/or the external charging cable are visibly damaged or damaged in functional regards
- …the charging station does not work properly or is damaged otherwise

Please also note the following:

- Do not install the charging station in close vicinity of running water or jetting water: The cPµ1 is sufficiently protected against spray and splash according to IP44.
- The cPµ1 must not be installed in an environment prone to or with danger of explosion (EX area).
- Do not install the charging station in any environment prone to or with danger of flooding.
- Please note that an additional fuse could be required due to a connected vehicle and/or due to national regulations.
- Please note that in some countries (other than Germany) and/or due to various vehicle manufacturers, tripping characteristics of the fault-current circuit breaker (type B) can be required. Please contact your distributor to learn about the requirements.

Operating instructions/Maintenance

Please note the following instructions regarding usage and maintenance of your device:

- This device **MUST ALWAYS** be connected to the protective conductor of the power supply.
- Please ensure that the rated nominal voltage and rated nominal current of the device correspond with the requirements of your local power supply system and that the nominal capacity is not exceeded during charging.
- Always follow the local safety regulations of the country you are installing or using the device .
- In order to fully disconnect the charging station from the power supply always disconnect the lead through one or more automatic cut-outs.
- Never install or operate the charging station in constricted rooms. In particular please ensure that vehicles can be parked within instructed distance to the charging station. The charging cable must never be strained with tensile strength when it is connected.
- Make sure that the front side of the housing cover is always closed to prevent unauthorized opening.
- **DO NOT** modify the housing or the wiring inside the Wallbox **in any case**. Violation contravenes the guarantee specifications and annul the warranty immediately.
- There are no components inside the product that will need to be maintained by the user.
- Only deploy qualified staff to install and/or repair your device.

ATTENTION!

The cPµ1 charging station is designed for installation and operation at 230 /400V 50 Hz. The lead has to be inserted through a suitable cable channel or a tube on the bottom side of the housing.

- For cleaning use a dry or a slightly damp piece of fabric. DO NOT use any aggressive cleaners, wax or solvents (such as cleaning petrol or paint thinners for example). These can tarnish the display or damage the varnish.
- The cpµ1 charging station MUST NOT be cleaned with a pressure washer or similar devices which apply high pressure on the housing when cleaning.

- Regularly examine the charging cable and/or charging sockets of your Wallbox as well as additional accessories to find possible damage spots and/or damages in general. If damages are found on the additional charging cable, please replace them immediately. No further charging is allowed in this case.

DANGER!
If you find damage on the housing, charging sockets or corresponding charging cables after installation, take the Wallbox out of order immediately and contact the service department of eCHARGE!

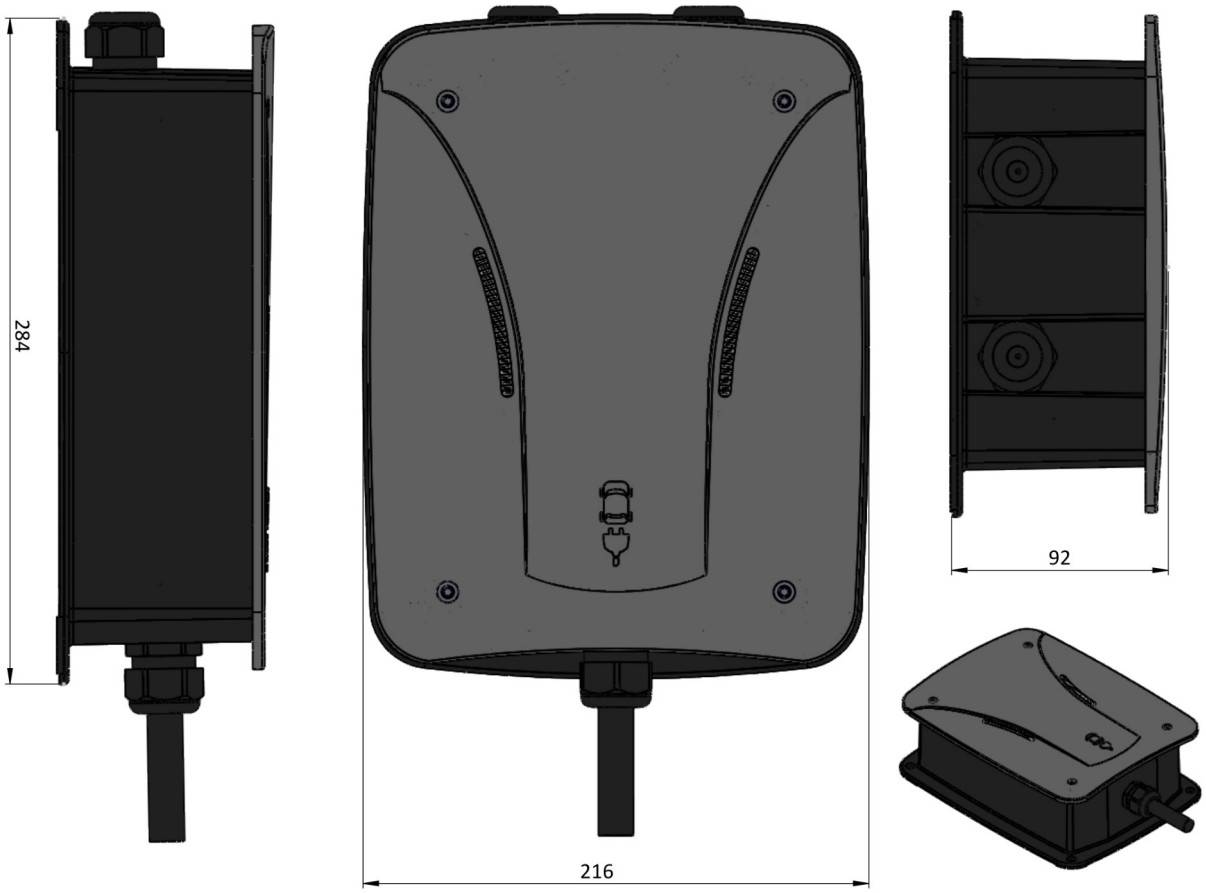
- The local regulations of operating electrical devices apply at any time.

Dimensional drawings and measurements

The cPµ1 charging station is delivered after being completely assembled and tested. Below, all measurements and assembly points are detailed in the dimensional drawings.

Charging station

Front view and side view of the cPµ1-series
(all specifications are in mm)



Introduction

Thank you for choosing the cPµ1 charging station by e C H A R G E !
By choosing this product, you are investing in an innovative and sustainable solution for the public and industrial section.

The charging stations of the cPµ-series are delivered pre-configured and can be installed at a prepared mounting site with minimal technical and minimal time effort.

Via the optional available eCB1 module, the cPµ1 can be embedded into an already existing
photovoltaic system. When operating in an integrated network the charging station will allow nearly 100 % power usage consisting solely of solar electricity.

The charging stations of the cPµ-series are constantly developed further and at all times comply with regulations and norms for charging of electric vehicles applicable through-out Europe according to IEC 61851-1, Mode 3. Please read on page 24 at paragraph “Standards and guidelines” for more details.

If you require more information to your charging station or want to inform yourself about additional equipment or want to know about further delivery programs of eCHARGE, please visit our website: www.echarge.de

Product description

Your cPµ1 charging station permits safe and comfortable charging of electric vehicles according to Norm IEC 61851-1, Mode 3.

Depending on the respective variant your cPµ1 is laid out for charging as fast as possible due to its circuit design and its diameter of cables and pins.

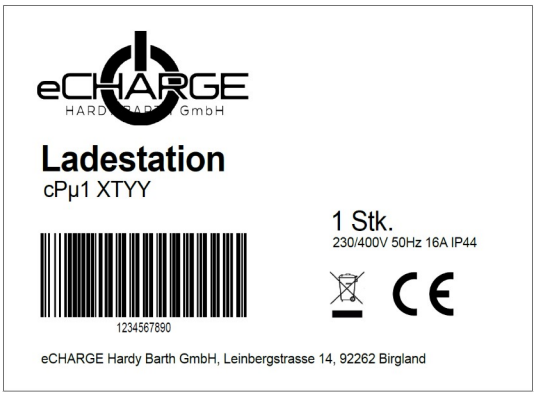
The cPµ1 also offers a fixed charging cable according to IEC 62196-2 of either Type 1 or Type 2, depending on your variant.

We set maximum value on the user‘s safety on all of our products. Therefore, the cPµ1 Wallboxes offer effective protection against short circuit, electric shock and other threats because of its protection equipment.

Via two LED lights on the housing, the user is always informed about the current state of the charging station.

Identifying your product variant

The cPµ-series consists of multiple variants which differ in charging cable and charging capacity. Therefore they serve different implementation profiles. Inside the housing of the Wallbox you will find an identification plate. Open the housing cover before installation and operation in order to verify the type of variant with help of the identification plate:



In particular the model description (cPµ1 XTYY) and data of the power supply (voltage, power frequency, current) are relevant for identification.

Detailed information to cPµ1 charging stations can be found in section ”Technical specifications” on page 23.

Scope of delivery

Your cPµ1 Wallbox is delivered with various components which are essential for the installation and proper operation. Please check immediately whether your package contains the following basic components:

Components	Quantity	Description
cPµ1 charging station	1	Charging station consisting of plastic housing with a lockable cover
Instruction for assembly and operation	1	Contains instructions for mechanical and electrical installation as well as taking into operation (this document)

Available accessories

eCHARGE offers the following additional accessories for your cPµ1 charging station:

Illustration	Description	Item number
	**eCB1-Module** external load management module for charging control with solar energy 3-phase active power-energy meter up to 63 A with LAN-interphase, RS-485 Bus system	3M40403

Preparing the installation

Several requirements regarding the mounting site and connection technology must be met for the installation in order to guarantee a safe operation.

Requirements for mounting site

The cPµ1 charging station was developed for indoor as well as outdoor areas. As user, please note the following requirements for the mounting site and installation to ensure safe charging later on.

- Follow all local regulations concerning electrical installation, fire prevention and accident prevention
- All regulations to installation a low voltage system according to IEC 60364-1- and IEC 60364-5-52 apply to any times.
- The mounting surface has to be steady and solid enough to withstand mechanical pressure.
- The installation position has to provide a lead big enough for the power supply
- Do not install the Wallbox at crowded areas or passage ways. Please make sure to lay all charging cables in sight and pedestrians or routes are NOT obstructed in any way.
- Even though basically the cPµ1 is constructed to operate in an environment with high temperatures, it is highly recommended to install the charging station at a place, where it is protected of direct sun irradiation. This way, overheat of the housing can be prevented. You can find more information to environmental conditions in section “Technical specifications” on page 23.
- The socket and storage devices for the connector should be between 0. 4 m and 1. 5 m above the ground.

Installation and taking into operation

The installation has to be carried out principally by professional staff. **Approval has to be given by a qualified electric company before the charging station can be taken into operation for the first time.**

The cPµ1 charging station is an electrotechnical device and therefore has to follow certain demands concerning the installation indoors and outdoors: Even though the housing of the cPµ1 fullfills the standards given by IP44, please note, especially for outdoors, various environmental conditions:

- To ensure safe operation, comply with minimum distances to other technical constructions. Further information can be obtained upon asking your distributor or deployed qualified staff of the electrical installing company.
- The charging station has to be installed in places easily accessible to persons authorized for usage.
- Choose the place of installation accordingly so the charging cable of the cPµ1 can reach the charging socket of your Electric Vehicle without any further problems. UNDER NO CIRCUMSTANCES should the cable be strained with tensile strength while it is connected with your EV.

Mechanical installation on wall

At least two persons are required to perform the following instructions. Additionally these components will be required:

- An electric drilling machine or a cordless screwdriver (not included in scope of delivery)
- A twist drill Ø 6 mm for the respective mounting surface (not included in scope of delivery)
- A Torx-screwdriver or Torx-Bit TX20 (not included in scope of delivery)
- 4 fastening screws of size 4,0×45/40,5 with matching plastic screw anchors of size 6×35 mm (included in scope of delivery)
- if necessary: a level (not included in scope of delivery)

Please proceed as follows:

1. Take off the front cover of the housing by unscrewing the 4 screws in the corners. Then carefully unplug the LED Display.
2. Mark the four drill holes on the wall by using the charging station as template.
3. Drill the previously marked spots (Ø 6 mm).
4. Insert the included screw anchors for the fastening screws.
5. Position the charging station so the drilled holes of the wall tally with the ones of the cPµ1.
6. Now insert the fastening screws and tighten them.
7. Skip to step 3 of the electrical installation or follow step 8 to complete the mechanical installation by closing the housing.
8. Before putting the cover back on, plug the LED-Display back in and then close the lid over the housing. Use the screws to fasten it back to its place.

The mechanical installation is now complete.

PLEASE NOTE!

ATTENTION! Please check the measurements on the drilling template over with a calibrated metering rule BEFORE drilling and marking the spots for the drilling holes with help of the template.

Electrical installation of charging station

DANGER!
Danger to life due to electric shock!
Before working with the cPµ1 charging station:
Disconnect the electrical power supply and make sure that it stays disconnected non-stop through the whole installing process.

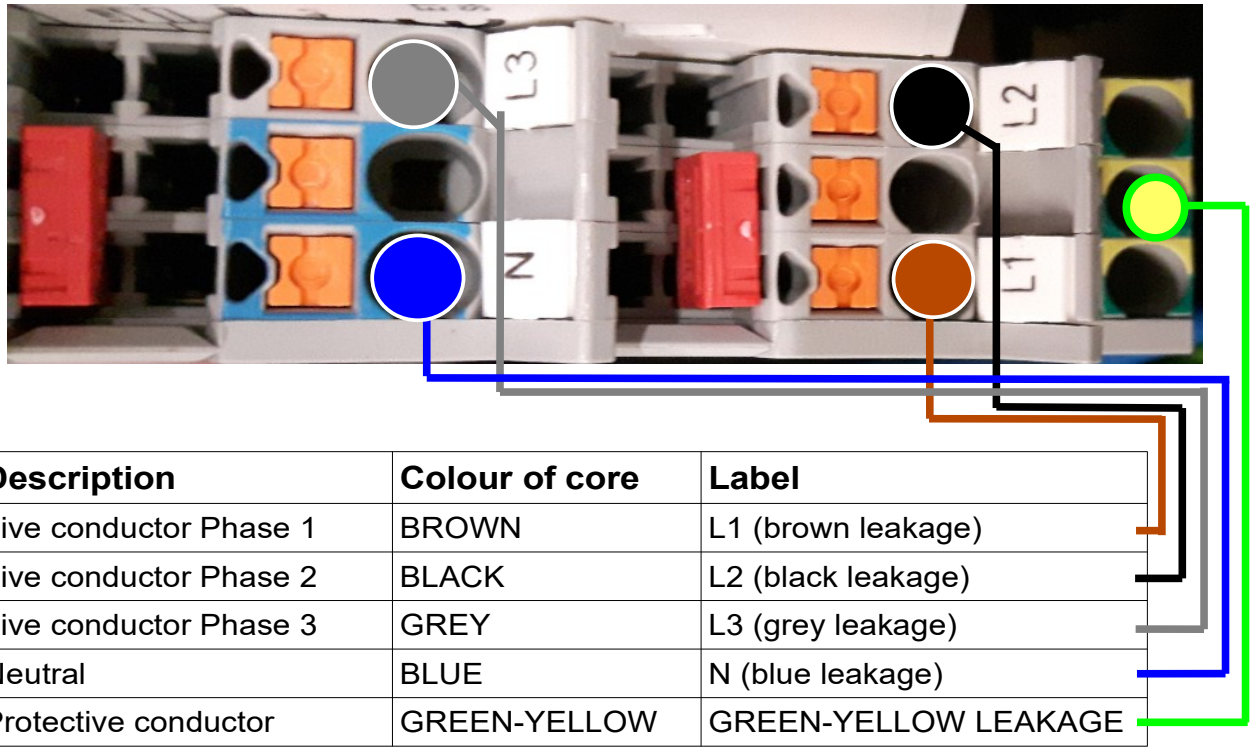
After completion of the mechanical installation the charging station will be connected to the power line. In the following, instructions on how to connect additional accessories are now shown in this manual as it focuses on the basic installation process. You can find instructions for the accessories in separate manuals of the respective component.

For the electrical installation, the following tools will be needed:

- A slotted screwdriver with maximum width of 4 mm (not included in scope of delivery)
- A Torx screwdriver or Torx-Bit TX20 (not included in scope of delivery)
- Stripping tongs

In order to connect your charging station to the power line, please proceed as follows:

1. Once again make sure that all circuit breakers and all fault-current-circuit breakers in the lead are **deactivated**.
2. Take off the cover of the housing by unscrewing the four screws in the corners. Then unplug of the LED-Display.
3. Insert the lead from above into the respective cable glands. Clamp the stripped cores of the lead into the lead terminal blocks according to the labels (see photo on page 17).



Description	Colour of core	Label
Live conductor Phase 1	BROWN	L1 (brown leakage)
Live conductor Phase 2	BLACK	L2 (black leakage)
Live conductor Phase 3	GREY	L3 (grey leakage)
Neutral	BLUE	N (blue leakage)
Protective conductor	GREEN-YELLOW	GREEN-YELLOW LEAKAGE

DANGER!
The previously named colour codes are NOT obligatory on an international level: If the cores are colour-coded differently please contact a qualified electrical company and have them examine the lead and if required, replace it.

1. Plug the LED-Display back in and re-attach the cover of the charging station before securing it with its screws.
2. Reactivate the circuit breakers and all fault-current-circuit-breakers.

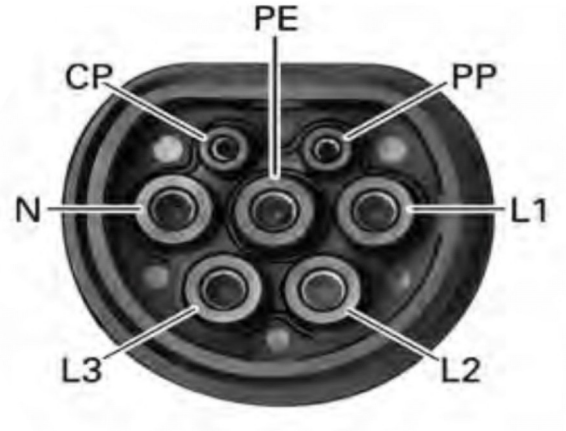
The electrical installation is now complete.

PLEASE NOTE!
The first time operating the charging station should be executed by a qualified electrician in any case. They can determine correct operation as well as repair malfunctions or mistakes that had been made during the installation.

Taking into operation and charging process

After the mechanical and the electrical installation, your charging station is immediately ready. The cPµ1 possesses a Type 1 or Type 2 charging cable complying with IEC 62196-2 for charging (depends on variant).

The Type-2 charging cable of the cPµ1 has three live conducting pins, a neutral conductor, a PE conductor and two signalling contacts (**C**ontrol **P**ilot and **P**roximity **P**ilot), which provide a safe connection without danger.



Only when the plug of the charging cable is interlocked with the charging socket, voltage will be output through the conducting pins and the charging process will start.

The cPµ1 is equipped with a DC fault-current-circuit breaker which automatically interrupts in case of leakage current. Thereby it is not necessary to install a Type B fault-current-circuit-breaker in the pre-distributor. A Type A fault current circuit breaker suffices.

Safety notices for operation

Please note the following safety notices before you charge with your cPµ1:

- Make sure that the cPµ1 has been installed according to the requirements of this document. Mind especially that the charging device is freely accessible and is not exposed to rain or direct solar radiation. You should also be able to connect the external charging cable to your electric vehicle without putting it under tension or straining it otherwise.
- Make sure that your cPµ1 is properly connected to the lead.
- Make sure that the lead is protected by appropriate automatic cut outs.
- Make sure the cover of the cPµ1 is always securely closed during normal operation
- Make sure that the external charging cable is not twisted and assure yourself that the cable and cover do not have any visible damages.

Charging process

The cPµ1 is designed to charge your vehicles as fast as possible according to IEC 61851-1 Mode 3. The effective charging time depends on the battery of your vehicle as well as on the current residual energy. Therefore, it is not possible to give a binding statement regarding the charging time.

In fact, you will determine the data upon practice and thus, develop your own personal schedule for charging.

In order to charge your vehicle, please proceed as follows:

1. Check the LED-display on the front side of your cPµ1. If the charging station is ready, the LEDs are glowing in green.
2. Plug the charging cable of the cPµ1 into the socket of your vehicle. The vehicle must be parked accordingly so you can reach it comfortably. The cable **must not** be strained during the charging process.
3. Charging will start as soon as the cable connects with the socket of your vehicle. Upon starting the LEDs colour will change to blue.

Completion of charging process

4. The charging process will not be terminated by the charging station but only by the vehicle itself. Based on communication between the cPµ1 and your vehicle, the charging station will give notification by switching the LED colour from blue back to green. This is to signify that you can remove the charging cable.
5. Upon ending the charging process pull the cable out of the charging socket.

PLEASE NOTE!

Should any errors or malfunction occur during or after the charging process, it will be indicated on the LED-Display of the charging station. The following chapter describes how to recognize the operation status and/or error status and which actions are necessary to be taken.

Troubleshooting

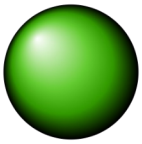
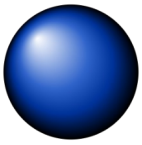
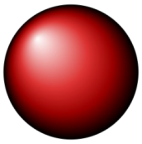
The cPµ1 is also designed for maximum security and reliable charging. Through internal testing routines, malfunctions are identified and immediate switch off is issued. Should there be any malfunctions during the charging process, the LED-Display will immediately indicate them. This chapter describes how to recognize the error states and operating states and which measurements are to take in order to repair the glitch.

Portrayal of operating conditions

The LED-Display on the front cover shows the current operating condition. For visualization the LEDs can...

- ...glow (they are permanently turned on)
- ...not glow (they are permanently turned off)

When in normal mode, colours and states are displayed as follows:

 GREEN	 BLUE	 RED	**Description**
on	off	off	The charging socket is ready. You can connect the vehicle to charge at any time.
off	on	off	The electric vehicle is currently charging.
off	off	on	An error occurred while charging. (Please contact a technician)
off	off	off	There is an error at the charging point. (Please contact a technician) OR The LEDs of the display are damaged.

Interruptions of operation and solutions

The cPµ1 executes internal testing routines to guarantee proper and safe operation. In order to restore the previous operation state, first, it is essential that you determine the type of malfunction undoubtedly.

DANGER!
Inside the charging station life threatening voltages occur!
Opening the charging station and following works on the charging station must be carried out solely by qualified staff.

The following malfunctions can occur:

Malfunction	Possible cause	Proposal for solution
The LEDs are not working	The cPµ1 is not provided with any voltage	The external power supply of the cPµ1 is interrupted: Please check the fuses and protective switch of the pre-installation, located in the lead. If that doesn't remove the error please contact your local distributor.
	The LEDs of the display are damaged.	If the LEDs are defect please contact your local distributor or the previously deployed electrician so they can be exchanged.
The electric vehicle is not recognized.	The charging cable is not plugged in correctly.	Remove the charging plug from the vehicle and plug it in once again. Make sure that the cable is set correctly in the socket of the vehicle. If that doesn't remove the malfunction please contact your local distributor or the previously deployed electrician.
	The vehicle is configured faultily.	Check the settings of your vehicle and restore them to pre-setting if needed. If that doesn't remove the error please contact your local distributor and/or the previously deployed electricians.
The LEDs display an error sequence.	The cPµ1 recognizes a malfunction (See page 21)	Please contact your local distributor and/or the previously deployed electricians.

Appendix

Technical specifications

Variant	cPµ1
Power line	For lead up to. 5×4 mm² at maximum
Rated nominal voltage	230 / 400 V
Rated nominal current	16 A / 20 A, 3-phase / 1-phase
Nominal frequency	50 Hz
Maximum charging capacity	11 kW
Protective switches	DC fault current detection 6 mA (built in); additionally required: fault-current circuit breaker Type A, 40 A, 0,03 A and an automatic cut-out C16 A/ C20 A
Charging cable	1 x Type-2, 20 A/16 A; 1 x Type-1, 16 A
Charging controller	EVCC (charge controller phoenix)
Load management	Dynamic with external eCB1 module
Environmental temperature	-30 to 50° C
Storage temperature	-30 to 85° C
Relative humidity	5 to 95% (not condensing)
Class of protection	I
Over-voltage category	III
Degree of contamination	3
Type of protection for cover	IP44
Dimensions	283 mm x 196 mm x 88 mm (HxWxD)
Weight per unit	Approx. 5.5 kg
Product number	3M3XXXX

Standards and guidelines

The cPµ1 fullfills the following standards and protection classes:

General standards

Norm	Explanation
2014/30/EU	EMV-guideline
2011/65/EU	RoHS-guideline
2012/19/EU	WEEE-guideline
ElektroG	Electrical and electronical laws

Equipment safety standards

Norm	Explanation
IEC 61851-1 Ed 2.0:2010	Conductive charging systems for electric vehicles part 1: general requirements
IEC 61851-22 (69/201/CD)	Conductive charging systems for electric vehicles part 22: alternating current charging station for electric vehicles
DIN EN 61851-1:2012-01	Conductive charging systems for electric vehicles part 1: general requirements
E DIN EN 61851-22:2011-04	Conductive charging systems for electric vehicles part 22: alternating current charging station for electric vehicles
HD 60364-7-722:2012	Installation of low voltage systems part 7-22 power: power supply of electric vehicles

For Germany

Norm	Explanation
DIN VDE 0100-722:2012-10	Installation of low voltage systems - requirements for establishments, rooms and grounds of special kind - power supply for electric vehicles

Protection class and protection types

Protection class/protection type	Explanation
	Protection class I: all electrically conductive components of the operating device are connected low impedance with the protective conductor system of the fixed installation
IP 44	Protection type of housing: Protection against foreign objects < 1 mm and protection against splashing from every direction

Warranty / Guarantee

Guarantee specifications and warranty

eCHARGE Hardy Barth GmbH guarantees the legally prescribed warranty period of 24 month for the present product as well as a warranty of the same duration for the country in which the product was purchsaed.

If the product is operated in another country, the legal provisions for the country in which the product was purchased applys. The warranty, like the guarantee, is not transferable under any circumstances.

Should modifications of any kind have been made to the product that have not been explicitly authorized by eCHARGE Hardy Barth GmbH or have been described in the guidelines of authorized service partners, the manufacturer's warranty obligations become void with immediate effect.

Exclusion of claims for damages and liability

This includes claims which are attributable to the following causes:

1. Deterioration due to normal wear and tear, corrision, damage, accident, incorrect storage or operation, lack of reasonable and necessary maintance.

2. Wallbox installation services carried out by unauthorised persons (by an unauthorised electrician), installers not auhorised by eCHARGE Hardy Barth GmbH or the customer himself.

3. Repairs or interventions carried out by unauthorised persons, companies or by the customer himself to remedy defects in the wallbox.

4. Use of spare parts that are not original spare parts from eCHARGE Hardy Barth GmbH.

5. Incorrect maintenance and/or use due to non-observance or non-compliance of the operting instructions.

6. Acceptance of further damage to the device and its surroundings, e.g. by continued use of the device after the defect/disturbance has been detected.

7. Damage due to mechanical overload.

The manufacturer further rejects any claims for damages due to improper use, negligence, modifications, repair attempts by unauthorized persons or force majeure .

The repair and/or the replacement of defective parts does not lead to an extension or a new start of the warranty period according to the guarantee conditions.

ATTENTION!
Should problems occur when operating your product please immediately contact your local distributor or an authorized representative to clarify wether the malfunction is covered by guarantee and/or warranty provisions.
Do not, **under any circumstances**, make alterations or repairs to your product on your own!

The company eCHARGE Hardy Barth GmbH guarantees the proper operation of the present product after delivery within the scope of the lawfully valid warranty.

The warranty is limited to such damage that is attributable to normal use and to obvious material or manufacturing defects.
In these cases, the manufacturer will attempt to restore the proper functioning of the product in cooperation with the local distributor.
Any costs incurred for the transport of the product shall be borne by the customer.

If the serial number has been removed from the wallbox through the fault of the customer, or if it has been altered or is illegible, all rights granted under the warranty conditions shall lapse and only the warranty period prescribed by law shall apply.

If the customer orders repair or replacement work to be carried out outside the business hours of eCHARGE Hardy Barth GmbH, the hourly wage and travel costs outside normal business hours (Monday – Friday, 9:00 am – 16:00 pm) will be charged to the customer according to the current price list.

Customers service for questions, complaints and objections:
on weekdays from 9 am – 12 pm / 2 pm – 4 pm
telephone: +49 9666 / 188 00 0
e-mail at support@echarge.de

Please have the serial number, the product name of the wallbox and your customer number ready!