

PACMOBILE 25X

Operation manual



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1. Introduction

1.1 About this manual

This document contains the original instructions. The original language of the document is English.

It is not always possible to give a detailed illustration of all the parts of the product. Thus the illustrations in this document can show a typical configuration. They are for instructional use only.

1.2 Revision summary

Date	Version	Comments
November 2017	001	
September 2018	002	Layout charger updated
October 2018	003	Keywords corrected for translations
April 2019	004	Removal of CE logo
Oktober 2021	005	PACCAR branded

1.3 Copyright

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This manual could contain technical inaccuracies or typographical errors.

All specifications in this manual were up to date when the manual was published.

PACCAR strives to continuously improve the products and has the right to make changes in specifications and design without prior notification.

1.4 Liability

The product is delivered as a certified product.

- Do the installation and maintenance procedures of the machine only as given in this document.
- Obey all local safety regulations.
- Heliox is not liable if you do not obey the safety instructions in this chapter.

1.5 Guarantee

PACCAR guarantees a good working product. Refer to the signed offer for the guarantee period.

If unqualified and uncertified personnel perform any work, the guarantee may become void.

1.6 Symbols used in this manual

Symbol	Description
	Warning: If you do not obey these instructions, there is a risk that can cause personal injury or death.
	Caution: If you do not obey these instructions, there is a risk that can cause damage to the machine.
	Note: Gives information.

1.7 Abbreviations

Abbreviation	Description
3P	three-phase voltage
A/C	air conditioning
AC	alternating current
ACB	auxiliary circuit breaker
ACD	automatic coupler device
AGV	automated guided vehicle
BMS	battery management system
CAN	controller area network
CC	communication controller
CCS	combined charging system
CP	control pilot
CPO	charge point operator
DC	direct current
EMC	electromagnetic compatibility
EMI	electromagnetic interference
EV	electric vehicle
EVCC	electric vehicle communication controller
EVSE	electric vehicle supply equipment
GPRS	general packet radio service
HV	high-voltage
IMD	insulation monitoring device
IP	inverted pantograph
IR	infrared
LV	low-voltage
MCB	miniature circuit breaker

Abbreviation	Description
MCCB	molded case circuit breaker
N	neutral
OCPP	open charge point protocol
PE	protective earth (safety ground, gnd)
PLC	power line communication
PP	proximity pilot
PPE	personal protective equipment
RCD	residual current device
RESS	rechargeable electric storage system
SECC	supply equipment communication controller
SEPD	supply equipment power distributor

1.8 Contact information

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2. Safety

2.1 General safety warnings



Warning:

- Obey this manual.
- Make sure this manual is always available.
- Obey all relevant local laws and regulations.
- Only qualified personnel can do installation or maintenance.
- Do not include unauthorised personnel during installation or maintenance.
- Do not use the product if it is damaged.
- Do not use the product if the cable is damaged.
- Do not adjust the product.
- Only use the product as intended. Refer to Intended use on page 8.
- Only use the product within the specified technical data. Refer to Charger specifications on page 12.
- The load capacity of the grid must accord with this product.
- Ground the product correctly.
- Do not touch the inner parts of the product during or shortly after operation.
- Be safe and compliant. Wear personal protective equipment as required by the laws of your location.
- Wear electrically resistive shoes during maintenance.
- Wear insulating rubber gloves during maintenance.



Warning:

- Make sure that water cannot enter the product.
- Wear an ESD-grounded wrist strap during maintenance.

2.2 Safety warning for CCS chargers



Warning:

- Do not use a CCS extension cable with this charger.
- Do not operate the charger in direct sunlight. You may use the charger outdoors, however you must keep the environment and the temperature as stable as possible.

3. Description

3.1 Product

The depot charger (EVSE) is a power supply system for electric vehicles (EV). The depot charger charges the batteries of electric vehicles during a long-term stop or overnight stop.

The charging occurs via a combined charging system (CCS) plug. Refer to section System overview on page 7.

3.2 Intended use

The product is designed to charge an electric vehicle. The charging is achieved through a CCS plug mounted on the side of the cabinet. The properties of the rechargeable electric storage system (RESS) in the electric vehicle must comply with the technical data of the product.

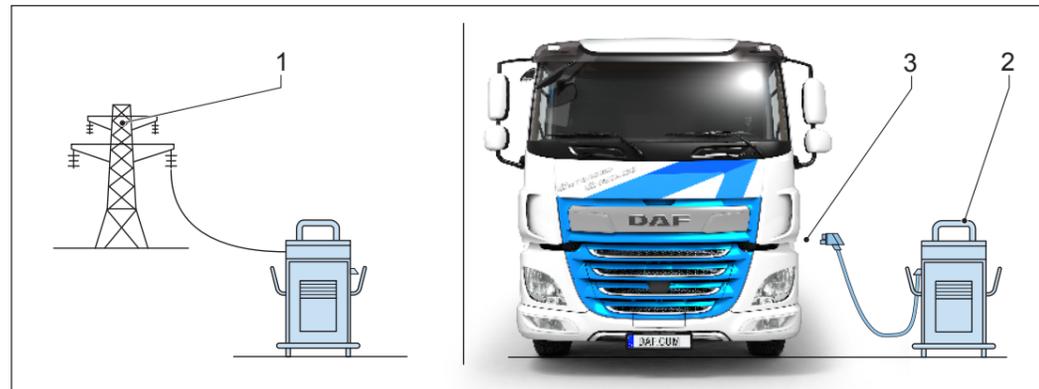


Warning:

- Other use than the intended use can cause loss of life, injury and damage to the product, the connected systems and the environment.
- Avoid death or serious injury. Never use extension CCS cables with this product.

3.3 Overview

3.3.1 System overview

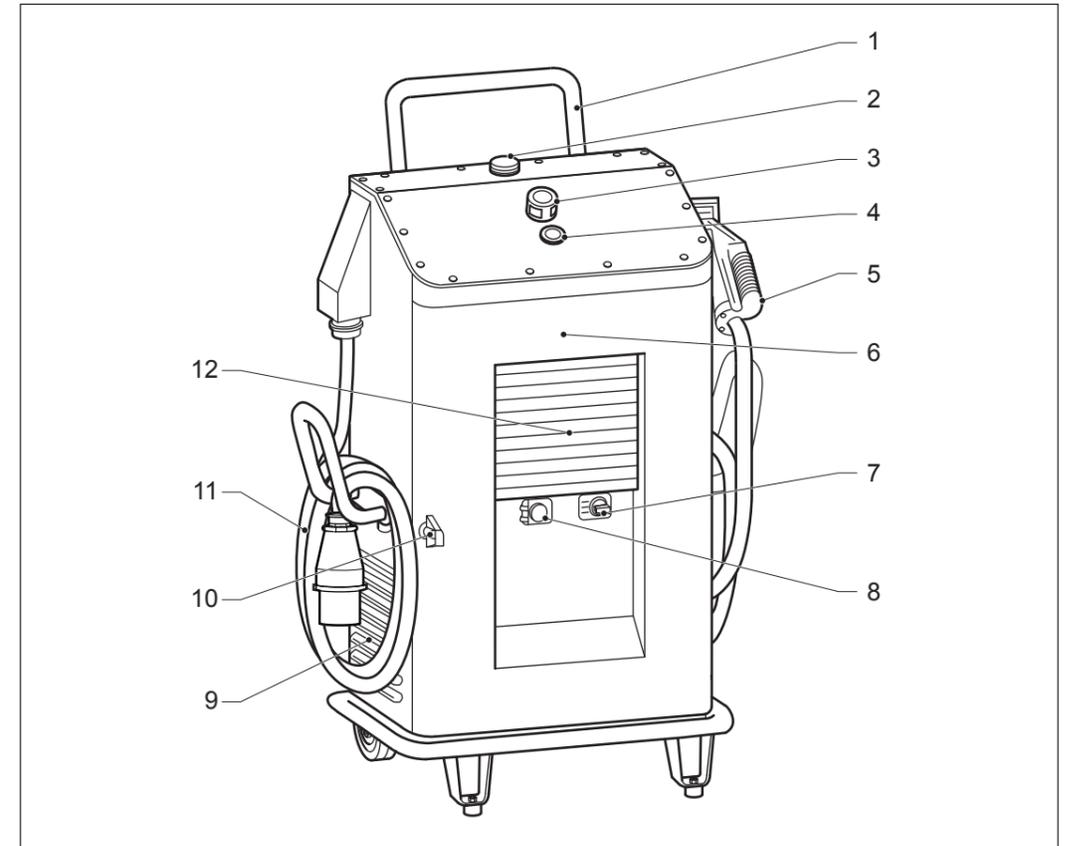


- 1. Grid
- 2. Charger

- 3. CCS COMBO 2 DC connector

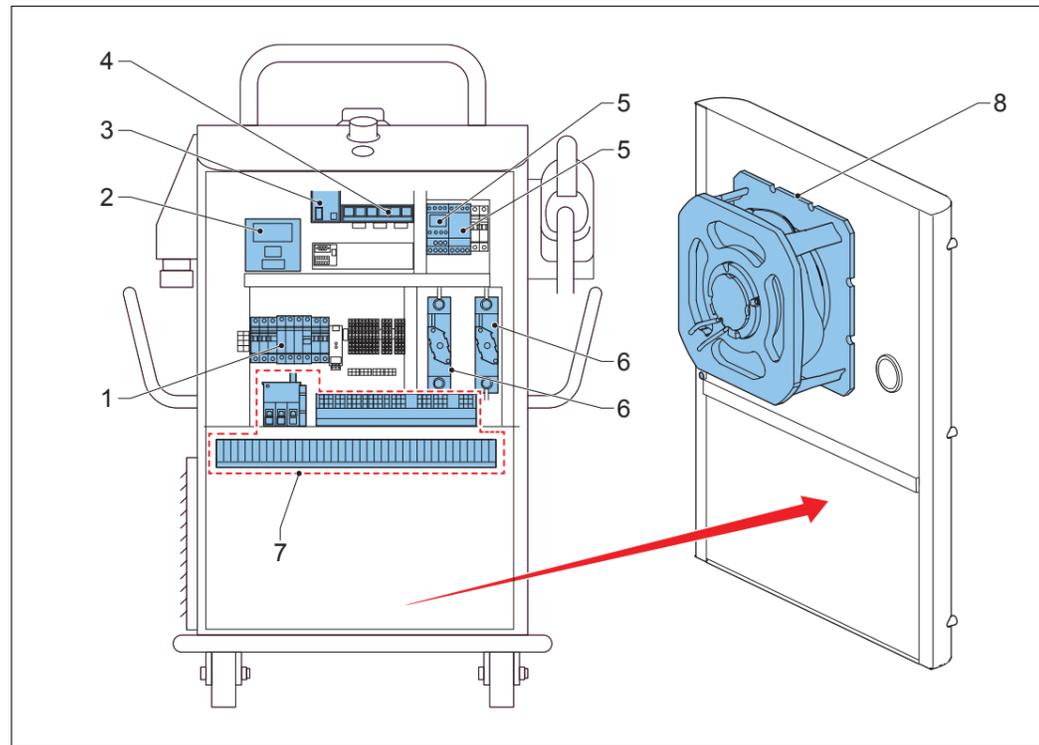
The charger is equipped with a CCS plug, which can be directly connected to an electric vehicle.

3.3.2 Charger



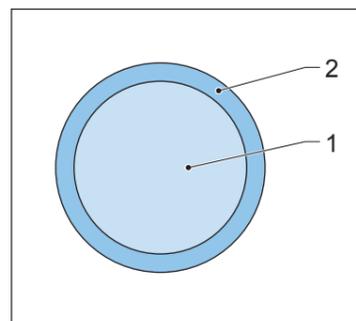
- 1. Handle
- 2. GSM antenna
- 3. E-stop
- 4. Charging indicators (LED)
- 5. CCS plug
- 6. Front panel
- 7. Power selector switch
- 8. Ethernet service socket
- 9. Ventilation grid
- 10. Key lock
- 11. AC input cable

3.3.3 Components and connections of the charger



- | | |
|-----------------------------|--------------------------------------|
| 1. AC main switch/RCD (1Q1) | 5. Isolation guard (6U3) |
| 2. CPU (10U2) | 6. Fuse DC |
| 3. Modem | 7. Distribution power terminal block |
| 4. SECC (I2SE) | 8. Fan |

3.3.4 Charging indicators (LED)



1. Stop button (functions only in chargers with CCS plugs)
2. LED ring

The stop button is equipped with an LED ring that indicates the status of the charging process.

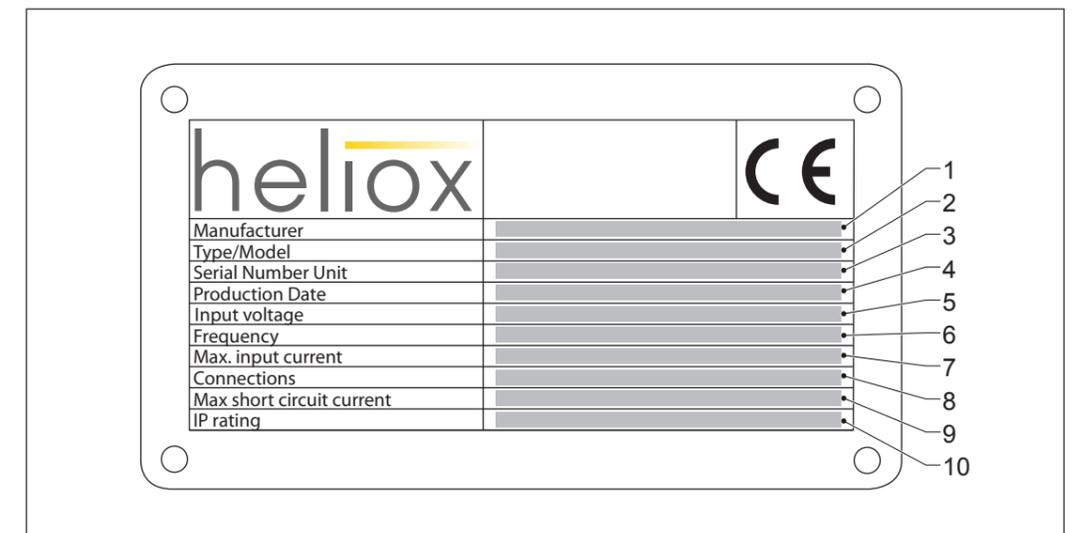
Status	Duration	Description
No LED	10 seconds	The charger is in an unavailable state.
Green LED flashes	60 seconds	The charger is in the startup phase.
Green LED constant		The charger is ready to charge and the EV can connect to the charger, e.g. by connecting the optional CCS plug.
Blue LED flashes	20 seconds	The charger is starting or stopping a charge process.
Blue LED constant		A charge is in process. Push the button to stop the process.
Red LED constant		The charger has a fault.

3.4 Product identification

The type number of the product is HE9816040-01. For other identification details of the product, refer to section *Identification plate* on page 10.

3.4.1 Identification plate

Check the actual identification plate or this manual for the specific data. Refer to *Technical data* on page 11.



- | | |
|--|---|
| 1. Manufacturer | 6. Frequency (if applicable) |
| 2. Product type/model | 7. Maximum input current |
| 3. Serial number of the unit (year, week, production number) | 8. Grid connection values (if applicable) |
| 4. Date of production | 9. Maximum short circuit current |
| 5. Input voltage | 10. IP rating |

3.5 Technical data

3.5.1 Charger specifications

Table 1: Identification

Type/Model	PacMobile 25X
Serial Number Unit	HE9816040-01-YYWWXX

The maximum power rating of the charger is 25 kW ($I_{max}= 41.7 \text{ A @ } 600 \text{ V}_{DC}$)

Input voltage: 3 x 400 V_{AC} + N + PE

Output voltage: 100–1000 V_{DC}

Table 2: General data

Dimensions	
Depth [mm]	330 mm
Width [mm]	500 mm
Height [mm]	900 mm
Case material	steel
Cabinet color	RAL 7022
Carriage color	RAL 1023
Operating temperature [°C]	-20 to +40
Storage temperature [°C]	> 5
Protection class	IP54 / IK10
Weight [kg]	50
Maximum floor loading [kg/m ²]	303
Environment	indoor and outdoor
Operational noise level at 2 m distance [dB(A)]	< 55

Table 3: Electrical data

Dimensions	
Maximum rated output power (PDC) [kW]	25
DC output voltage range (VDC) [V]	100-1000
DC output current range (IDC) [A]	41.7
Ripple current at full load [%]	< 2
Current and voltage precision at constant setpoint [%]	< +/- 1 (IEC 61851-23)
Power factor	> 0.94
Efficiency at full load [%]	> 94
Input connections	3P + PE (fixed installations) + N
AC input voltage range (VAC) main power [Hz]	3 x 400 VAC (50-60)
Maximum input current (A), main power [A]	39
Input current limit values [A] ¹	16 / 32 / unlim
Dielectric withstand (V RMS)	3000
Maximum short-circuit current [kA]	10

¹ A power selector switch can be used to set this limit.

3.5.2 Standards

The product was produced and tested according to:

- IEC61851-23: Electric vehicle conductive charging station
- IEC61851-24: Digital communication between EC charging station and an electric vehicle for control of DC charging
- EN55011-A1: Conducted/Radiated EMI
- EN61000-6-2-2006: Electromagnetic compatibility
- EN60204-1: Isolation check/high voltage test
- IEC60529-IP52: Degrees of Protection Provided by Enclosures

3.5.3 Communication protocols

The depot charger utilizes a DIN 70121 compliant communications protocol. The charger system can only be accessed for remote support by Heliox via internet / GPRS.

3.5.4 Cables for installation

This section gives the specifications for the cables for connection of the units of the system.

You can use an extension at AC input cable if these cable has equal or better characteristics.

Purpose	Type	Supplier	Core section
AC Main power, 400 V, 100 A, 3P and PE	Radox 125	Huber and Suhner	16 mm ²
	ÖLFLEX HEAT 125 SC	Lapp	16 mm ²

3.5.5 Cable identification



Note:

- The color of the heat shrink at the end of the cable identifies the cable. This rule applies even if the cable color does not agree with the color code in the table.
- It is mandatory that all PE cables are entirely yellow and green. To only have a yellow and green heat shrink is insufficient identification.

Identification (CCS)	Cable
Red	DC+
Black	DC-
Yellow and green cable	PE
Brown	CP
Blue and orange	NTC +
White and purple	NTC -
Grey	Not used

4. Operation

4.1 Connect the AC input

Procedure

1. Connect the plug of the AC input cable to the mains socket.
2. Select the input current (16 / 32 / unlim) with the power selector switch.
3. Wait until the LED ring turns green. The LED ring shows the status of the charger.
Refer to *Charging indicators (LED)* on page 9.

4.2 Start the charging process (see vehicle manual)

Procedure

1. Park the vehicle at the indicated location near the charger.
2. Activate the hand brake.
3. Dismount the CCS plug from the charger.
4. Connect the CCS plug to the electric vehicle.
5. For CF Electric, press the green button on the truck (near the plug).

4.3 Stop the charging process (electric vehicle)

Procedure

1. For CF electric, press the green button.
2. Disconnect the CCS plug from the electric vehicle.
3. Return the CCS plug to its original position on the charger. When all operations are completed, the green LED stays on.

4.4 Stop the charging process (overtemperature)

If the charger detects that the temperature is too high, it will trigger a stop of the charging process. The charger will disable until the temperature is at an acceptable level. The fan keeps spinning after the stop of the charging process. Refer to *Fan operation* on page 13.

4.5 Fan operation

The charger has a built-in fan at the front (refer to *Components and connections of the charger* on page 9) of the cabinet. After a stop of the charging process, the fan operates for an additional minute. This enables additional cooling of the charger.

When the emergency button is pressed, the fan stops spinning immediately to prevent any risks.

4.6 Use the emergency stop button

Procedure

1. Push the emergency stop button to shut down the charger in an emergency situation.
Pressing the emergency stop button trips the safety breakers and requires a reset of the button to continue use.

4.7 Reset the charger after an emergency stop

Procedure

1. Turn the emergency stop button clockwise to reset the emergency stop button.

4.8 How to Hard reset the charger

Procedure

1. If the CCS plug is connected to the vehicle, disconnect the CCS plug.
2. Disconnect the AC cable from the mains.
3. Wait until all the LED ring does not show any light. Refer to *Charging indicators (LED)* on page 9.
4. Connect the AC cable to the mains. The charger begins the start up phase.



Note:

The LED ring shows the status of the charger. Refer to *Charging indicators (LED)* on page 9.



Caution:

If the charger does not start up, there is a serious fault. Refer to *How to Soft reset the charger* on page 14.

4.9 How to Soft reset the charger

- Do this procedure if the LED ring of the charger shows that a fault has been present for more than 1 minute. Refer to *Charging indicators (LED)* on page 9.
- If the charger does not start up after a soft reset, refer to *How to Hard reset the charger* on page 14.

Procedure

1. Make sure that the AC input cable is connected to the mains power supply.
2. Use the emergency stop button. Refer to *Use the emergency stop button* on page 14.
3. Release the emergency stop button, by turning it clockwise. The charger should begin the start up phase.



Note:

The LED ring shows the status of the charger. Refer to *Charging indicators (LED)* on page 9.



Caution:

If the charger does not start up, there is a serious fault. The charger needs a service. Refer to *Service-line structure* on page 16.

5. Troubleshooting

5.1 Service-line structure

The service-line is structured in such a way that simple faults can be fixed with the help of the 1st line support. Depending on the complexity of the issue, you will be further directed to the specific service department.

Support line	Contact	Action
1st line support	Heliox call centre	Reset of the EVSE
2nd line support	Heliox service department	Physical check, measurements and a hard-reset
3rd line support	Heliox service department	Additional support



Note:

A report of every executed service action must be made and sent to the Heliox support e-mail address. Refer to section *Contact information* on page 5. It is important to mention the type number and serial number of the product in the report.

5.2 Troubleshooting table



Note:

Refer to section *Charging indicators (LED)* on page 9 for the normal functioning of the active LEDs.

Fault	Action
There is no LED active for more than 10 seconds.	Check the mains connection.
The red LED is active.	1. Use the troubleshooting section of the maintenance manual to identify the fault.
	2. Use the service-line structure to contact the correct service department. Refer to section <i>Service-line structure</i> on page 16.



Note:

If other problems occur during operation, use the service-line structure to contact the correct service department. Refer to section *Service-line structure* on page 16.

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