

BE-D Series

User manual



SCAME

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PRODUCT DESCRIPTION

Wall Box Scaem BE-D is a station for charging battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV). It is compatible with the type-2 CCS charging method, CHAdeMO charging method or both, depending on the configuration of choice.

The Wall Box comes with a HMI interface consisting of a 7-inch TFT touch display, a motion and ambient light sensor and an RFD card reader. These characteristics allow an intuitive and ceaseless charging experience.

The unit meets the IP54 and IK10 protection requirements and it is therefore suitable to be installed both inside and outside. It can also be used in private, semi-public and public areas, depending on the settings activated at the time of commissioning.

The wall box operates with various configurations depending on the charge methods, whether CCS, CHADEMO or both which cannot be used at the same time.

Each configuration provides for a wireless router and an electric panel to which one or more cables are connected. There are also provided specifically designed media for the connectors which offer an IP54 degree of protection and allow to put away the cables when not used for charging in an orderly manner.

The station dispenses 25kW nominal at 45°C. There is a 30kW version at 40°C.

RELEASE OF LIABILITY AND PURPOSE OF THIS MANUAL

Wall Box BE-D should be installed, commissioned, used and repaired by skilled personnel only. SCAME PARRE S.p.A. shall not be held liable for any consequences resulting from improper use of this material.

The technical documentation is part and parcel of this product. Always keep it within reach until the end of the life cycle of the unit, given that it provides important information. Furthermore it should be shared with all involved people should the product be sold, transferred or lent to others. This guide should be fully read along with the other correlated documents.

Do not use extensions to connect the vehicle. Do not use adaptors or conversion adaptors either.

ACCESS CONTROL AND IDENTIFICATION METHODS

You may start a charging session on Wall Box BE-D by selecting various access profiles, depending on the site of installation and the involved use situations.

The access profile should be configured through the Scame local management system.

To access the management system connect via LAN to the station's IP address and enter the credentials; you do not have to install any software.

IP address (DEFAULT): 192.168.30.126

Username: administrator

Password: Admin123-

NOTE

The initial password will be kept until the first login, after which the user will be asked to enter a new password.

It is recommended to write it down before confirming.

OPERATING MODES

The charging station may be configured according to the operating modes below:

- FREE: access to charging takes place freely, i.e. without the need for identification
- NET: access to charging takes place with or without identification according to the rules defined on the Management System Scame

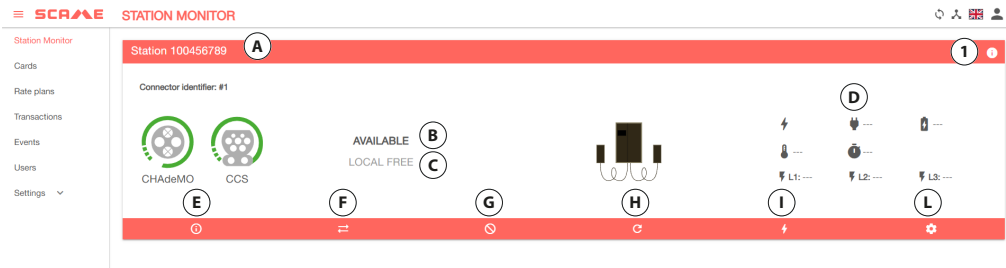
FREE OPERATING MODE

In controlled access locations, for example enclosed areas, the unit is typically set in free mode, that is any one capable of physically accessing the station is authorised to use it by default. In other words, there is no need for explicit identification of the user to start or stop, for example, the charging sessions. The integrated RFD card reader is then deactivated.

The operating mode configured in the charging station is shown in the interface of the management system under the item "Stations monitor" of the menu.

Station monitor

This screen displays the charging stations and the status of the respective connectors.



1. View more station details

Connector detail screen

In the connector detail screen you can view more details and perform various actions.

- A. Station reference
- B. Connector status
- C. Operating and identification mode
- D. Charging session status information
- E. Connector details: to find information on connector identifier and name.

In the "name" field, it is possible to add a description of the charging point.

The description will be visible in the Management System Scame in the "station monitor" screen.

- F. Change identification rule: Local Free (without identification) Local Net (with required identification)

- LOCAL FREE: access to charging takes place freely, i.e. without the need for identification
- LOCAL NET: access to charging takes place through identification with card (RFID card reading) or using the “Start charging” command from the Management System Scame
- G. Enabling/Disabling the connector
- H. Hard Reset of the connector
- I. Adjustment of the maximum power that can be delivered by the individual connector
- L. Hardware Configuration: allows enabled users to change the connector system parameters and upgrade the Firmware.

NOTE

In the local net mode there is provided for the option of starting the charging session from the Management System Scame by selecting the card number (Tag)

WEB/NET OPERATING MODE

BE-D stations come with the Management System Scame.

Stations may access charging with or without identification as a function of the rules defined in the Management System Scame.

The Management System Scame allows for the WEB/NET operating mode to be configured in:

- **LOCAL:** the entire system is managed by the Management System Scame
- **OCPP:** the system is managed by an external provider (supported by OCPP FREE)

To change the operating mode from Local to Ocpp, see the SETTINGS section in the Management System Scame paragraph

Authentication access mode

Access to a charging session may be limited to approved users.

This operating mode can be installed anywhere and whenever there arises the need to adjust access to the charging stations.

Authorisations can be managed in one of the two possible ways:

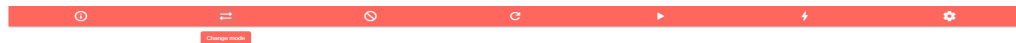
- Locally through the Scame local management system
- From remote through an OCPP central station

Authorisation through user cards (Local Net)

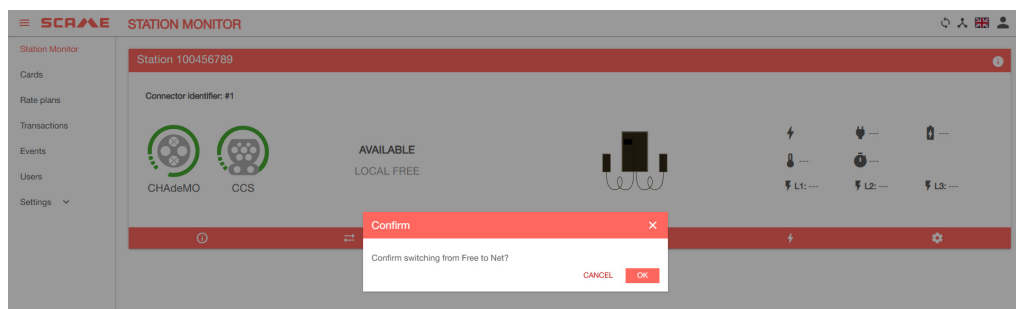
In this case, the RFD card reader is enabled and the unit is set so as to respond only to the users holding the RFID card and who had been authorised previously.

User cards are registered directly authorised in the Management System Scape of the individual unit.

In order to configure this mode, click on the “change identification rules” interface button



Then confirm switch to the “Net” mode



Once the station has been set to the “Net” operating mode, the administrator may perform the various station management and control actions.

Cards and tariff plans

- In "Local Free" mode, the identification rules set out in the "Cards" and "Tariff Plans" screens are not considered since access to charging takes place freely and does not require user identification.
- In "Local Net" mode, it is possible to view and manage the enabling of the cards registered in the Management System Scame and their possible validity date.

SCAME CARDS		DELETE CARDS UPDATE ADD CARD EXPORT TO EXCEL IMPORT CARD SHOW FILTERS				
Station Monitor						
Cards						
Rate plans						
Transactions						
Events						
Users						
Settings						

ID Tag	Description	Active	Expiry date (dd/MM/yyyy)	Rate plan	Operations
99A32781	Red Card				
08F0C8E5	White Card				

1/2 of 2

In the "Cards" screen, it is possible to view, add and change the enabling/disabling of cards.

If you want to add a new card and don't have the corresponding card code, you can acquire it directly using the RFID reader integrated into the charging station.

Proceed as follows:

1. Hold the user card close to the station's RFID reader.
2. Access the "Cards" menu.
3. Click the "Update" button.
4. Select the "Card Information" icon.
5. The "Card Information" screen will appear, with the "Card Code" automatically populated.

Before saving the card in the system, in addition to enabling it and entering a description, you can:

- Define an expiry date after which the card will no longer be enabled for FREE charging.
- Associate a "Tariff Plan" to define further charging limitations

In the "Rate Plans" screen, it is possible to view, change and create new tariff plans.

Tariff Plans consist in defining certain limitations that can be applied to the charging session.

The following variables can be defined:

- **Maximum number of charging sessions** – corresponds to the maximum number of charging sessions that can be started by a card. Each time a charging session is started, the card will deduct one unit regardless of the time or power output.
 - **Total Time:** a total value of time available to be used within the expiry date of the card
 - **Partial Time:** a maximum value of time available per charging session
 - **Total Energy:** a total value of deliverable energy to be used within the expiry date of the card
 - **Partial Energy:** a maximum value of deliverable energy per charging session.
 - In "OCPP" mode, it is possible to view the "Local List" and the "Cache" defined by the OCPP protocol.
- The identification rules are managed in the central station of the OCPP provider

Transactions

In this screen, it is possible to view and export the list of charging transactions carried out on the charging stations.

SCAME

CHARGING TRANSACTIONS

Station Monitor

Cards

Rate plans

Transactions

Events

Users

Settings

DELETE TRANSACTIONS

UPDATE

EXPORT TO EXCEL

SHOW FILTERS

Id	Id Connector	Card	Status	Error	Start (dd/MM/yyyy)	Stop (dd/MM/yyyy)	Duration	Energy	Operations
1	1	Red Card	Closed		09/08/2024, 16:59:27	09/08/2024, 17:03:23	00:03 hh:mm	1.39 kWh	<div><div></div><div></div></div>
1-1 of 1									

Price and screensaver customisation

Charging stations equipped with the TFT display offer the possibility of customisation by uploading an image for the screensaver and for displaying the charging price.

UPLOADING IMAGES:

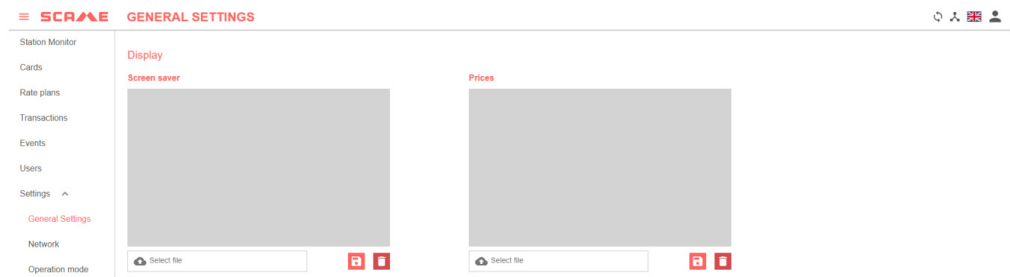
Images and screensavers for displaying the charging prices can be uploaded in the specific section:

"Menu --> Settings--> General"

REQUIREMENTS FOR IMAGES TO BE UPLOADED:

- Supported file format: .jpg, .jpeg
- Maximum dimension: 1 MB

In order to ensure proper operation, check whether the images meet the requirements.



Users

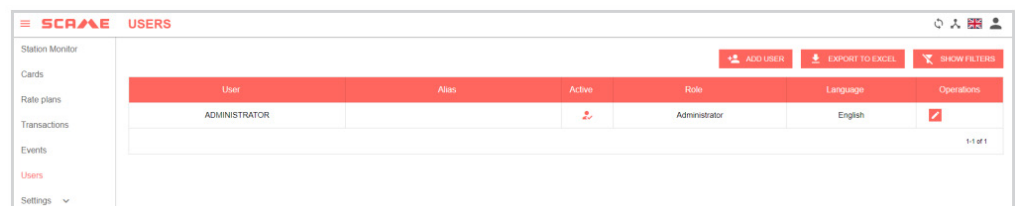
In this screen, it is possible to define the users who have access to the system. Each user can be assigned a Role, which defines their access permissions to the Management System Scame.

Roles

- Administrator: has full access to the system
- Data manager: has access to the "Cards" and "Tariff Plans" screens only
- Operator: has access to the "Transactions" screen only

NOTE

there can be several users with the same position.



Configuration

In this section, it is possible to configure the following settings of the "Management System Scape".

- General: language and time zone configurations
- Network: network configurations for remote access to the station
- Operating mode: change of operating mode, from LOCAL to OCPP, and configuration of OCPP protocol parameters
- Load Balancing: configurations corresponding to the balancing of the power output of the charging stations (See specific paragraph)
- Advanced: in this screen, it is possible to:
- Update the software and firmware of the entire charging system

NOTE

To perform firmware upgrade of a specific connector, go to the "Hardware Configuration" in the "Connector Monitor" screen

- Restart the hardware and restart the software

Load balancing

The Management System Scame allows to define various rules with which to manage the balancing of the power that can be dispensed by the charging system.

Should the system not have power sufficient for all charging points

to dispense the minimum power required for the proper performance of a charging session, any new sessions would be suspended temporarily. Charging sessions that have been temporarily suspended will be automatically re-initialised at the end of one of the ongoing charging sessions

NOTE

The Load Balancing Scame functionality may be active in all WEB/NET operating modes (Local Free, Local Net, OCPP).

- Disabled: the system does not perform load balancing
 - Dynamic Load Balancing: This feature allows for a maximum power threshold (Set Point) for each phase of the system (R-S-T) for the entire system. In the event that the sum of the instantaneous powers delivered by the charging points in use exceeds this threshold, the "Dynamic Load Balancing" algorithm will be activated. This will re-distribute the power available by the entire system.
 - Set Point: is the maximum power threshold which is defined for the whole system, which verifies whether the sum of the instantaneous power dispensed by the charging stations does not exceed this value. The system takes into account possible absorption of other loads.
- ◇ Dynamic: The system takes into account any absorption of other loads.

NOTE

To allow the system to take into account the consumption of other loads, it will be necessary to install an Energy Meter upstream of the system to be monitored. See the following paragraph for further details.

Energy meter installation and configuration

For Dynamic Load Balancing operation with Dynamic Set-Point, an energy meter must be installed upstream of the system to be monitored.

The following Energy Meter models are compatible with the Management System Scafe:

- Algodue UEM6C-A E (1113.0021.0001)
- Lovato DMG300 + EXM1013
- Gayazzi EM24-DIN.AV5.3.X.E1.X

Scame has a compatible energy meter in its catalogue, code 208.PM06.

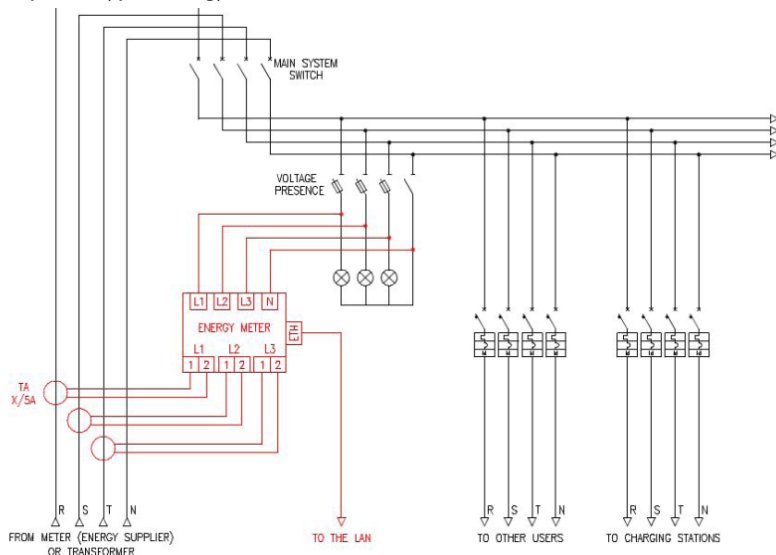
In order for the energy meter to be able to detect the absorption on the line, it is necessary to connect:

- 3 polarized current probes (one for each phase):
 - ◇ The probe is made with a current transformer (TA) with 5A output
 - ◇ It is recommended to size the CT according to the size of the cable and the current to be measured
 - ◇ To make installation and maintenance easier, it is advisable to choose an openable type CT
- 3 voltage probes (one for each phase):
 - ◇ The probe is made with a simple electrical connection.
 - ◇ To make installation and maintenance easier, it is advisable to connect the energy meter downstream of the voltage presence protections (if present)

NOTE

Check the installation regulations in force in the country of use.

Below is an example of a typical energy meter connection:



In order for the energy meter to be reachable from the Management System Scame, it is necessary to configure its network parameters: refer to the documentation accompanying the designated energy meter to set:

- IP Address, Subnet mask, Gateway:
 - ◇ To be expressly requested from your network administrator.
- Primary DNS:
 - ◇ To be requested from your network administrator, if not strictly necessary you can leave default 8.8.8.8
- Secondary DNS:
 - ◇ To be requested from your network administrator, if not strictly necessary you can leave default 8.8.4.4
- Modbus Address:
 - ◇ Default 01
- Modbus Port
 - ◇ Default 502 for models: Algo2 and Gavazzi
 - ◇ Default 1001 for models: Lovato

TFT DISPLAY

The charging station comes with a high resolution 7-inch colour TFT display, designed to ensure a clear and intuitive interface at any stage of the charging process.

The system integrates:

- an environmental light sensor that automatically regulates the intensity of the display as a function of the outdoor light conditions, ensuring excellent readability and visual comfort;
- a proximity sensor which detects the presence of the user and activates the functionalities of the display so as to ensure energy saving for the station.

MAIN FUNCTIONS

The display has an intuitive graphical interface which allows the user to:

1. Start and manage the charging

- Select the authentication method
- Display the vehicle connection status
- Monitor the charging progress in real time

2. Display the charging information

- Charging energy output (kWh)
- Charging power in real time (kW)
- Duration of charging session
- Battery charge percentage (%)

3. Display station information

- Station and connector general information
- Graphic interface language choice
- Tariffs and costs (see specific chapter for configurations)
- Customised screensaver (see specific chapter for configurations)

4. Managing interruptions and notifications

- Station malfunction alerts
- End of charging and disconnection instructions alert

Instruction for use

- The display is designed for simple interaction: follow the displayed instructions to carry out the charging.
- For a better use experience, keep the surface of the display clean and avoid contact with sharp or dirty objects.

CONNECTIVITY

Each individual model supports a standard wired Ethernet connection and it is provided with an integrated wireless router which also provides 4G (LTE)/3G/2G and WiFi mobile connectivity. The 4G(LTE)/3G/2G mobile communication requires that a SIM card be inserted into the router.

The SIM card will be activated after agreement with the customers.

SPECIFICATIONS

General information	
Description	Wall Box SCAME CC, 7-inch TFT touch display, RFID reader, CEM Class A
Technical data	
Output power	25 kW (30 kW special version)
EV connector number	(Type-2 CCS) 1 piece (CHAdeMO) 1 piece
Cable length	4,5 m / 7,5 m (special version)
Minimum output voltage (Vout)	150 V CC
Maximum output voltage (Vout)	(Type-2 CCS) 1000 V CC (CHAdeMO) 500 V CC
Maximum output current (Iout)	60 A CC (80 A special version)
Input supply connection CA	3P + N + PE
Power supply voltage	400 V CA +/- 10% (50 Hz or 60 Hz)
CA supply	Nominal 27 kW, 40 A (32,5 kW, 48A special version)
Efficiency	94% at nominal power
Mechanical dimensions	794 mm (A) x 594 mm (L) x 252 mm (P)
Weight	Approximately 70 kg, cables excluded
Input degree of protection	IP54
Degree of resistance to impacts	IK10
Ambient temperature	from -30 to +50 °C (thermal derating beyond 45°C) from -30 to +40 °C (special version)
Storage temperature	from -30 to +60 °C
Altitude	2500 m max
Humidity	from 5% to 95% without condensation
Acoustic noise	< 55dB in all directions
Network connections	GSM 3G/4G modem 1 x LAN 10/100Mbps Ethernet port WiFi IEEE 802.11b/g/n, access point (AP), station (STA)
Guaranteed mains bandwidth	3G up to 42 Mbps, 4G up to 150 Mbps 10Mbps Ethernet
Authentication method	RFID ISO1443A MiFare Classic, MiFare Plus, MiFare DESFire
HMI interface	7-inch TFT touch display with adjustable backlighting as well as motion and ambient light sensor
Communication	OCPP 1.6 JSON
CA power meter	Class B MID (3P+N 63A Modbus MID power meter)

PRODUCT RULES AND REGULATIONS

CE conformity marking with relevant EU directives:
2014/35/EU, Low Voltage Directive (LVD, to guarantee safety)
2014/30/EU, Electromagnetic compatibility (CEM)
2014/53/EU, Radio equipment directive (RED) pending approval
2011/65/EU (RoHS2)

CEM emission: Class A, IEC 61000-6-4, CEM immunity: IEC 61000-6-2 industrial environments
IEC 61851-1
IEC 61851-21-2
IEC 61851-23
IEC 61851-24
IEC 61439-7
60529 - IEC
REACH regulation
UNI EN 17186

DIN SPEC 70121
Base CCS
CHAdEMO ver. 0.9, ver. 1.1, ver. 1.2 edition 4.

ERRORS

ALARM CODE DISPLAYED	MEANING ALARM	CAUSE	ACTION
LIDE	Door open	The front door is open	<ol style="list-style-type: none"> 1. Check that the door is closed 2. Check the condition of the switch inside the panel (refer to an image) 3. Check that the connection between the switch and the board is in good condition
BLCK	CHAdEMO socket blocking error	The station is unable to block the CHAdEMO connector	<ol style="list-style-type: none"> 1. Check the CHAdEMO connector and replace it if necessary 2. Check the CHAdEMO charge cable connections inside the station
CPSE	Short-circuited CP signal	There is a short-circuit to ground problem with the CP signal on the CCS2 connector	<ol style="list-style-type: none"> 1. Check that the problem does not persist with another vehicle 2. Check that the CCS2 connector is in good condition 3. Check the CCS2 charge cable connections inside the station
CPLS	CP signal lost	There is a CP signal loss problem on the CCS2 connector	<ol style="list-style-type: none"> 1. Check that the problem does not persist with another vehicle 2. Check that the CCS2 connector is in good condition 3. Check the CCS2 charge cable connections inside the station
VBUS	No power supply	There is no power supply to the station	<ol style="list-style-type: none"> 1. Check whether the protections on the power line have tripped 2. Check the quality of the connection of the signal that detects the presence of the power supply inside the station
MFRE	RFID reader error	An error occurred with the RFID card reader	<ol style="list-style-type: none"> 1. Check that the reader is not damaged 2. Try restarting the station 3. Check that the connection between the reader and the SPU controller board is in good condition
EMTR	AC energy meter error	A communication error occurred with the AC energy meter inside the station	<ol style="list-style-type: none"> 1. Check that power is being supplied to the station 2. Try restarting the station 3. Check that the energy meter inside the station is on and functioning
OVCE	Short circuit on DC output	A short circuit occurred on the DC charge line	<ol style="list-style-type: none"> 1. To reset the error, the station must be switched off for 10 min and then switched on again 2. Try charging another vehicle, if the problem persists, check the condition of the charge cables and connectors, if damaged they must be replaced 3. The power module is damaged, it will need to be replaced
HGTP	High temperature detected	High station temperature alarm	<ol style="list-style-type: none"> 1. Wait for the temperature to lower and the station to become available again 2. Possible temperature sensor fault, the SPU controller board must be replaced

ALARM CODE DISPLAYED	MEANING ALARM	CAUSE	ACTION
HTCC	High CCS2 temperature detected	The CCS2 charge connector contacts have reached a high temperature (above 90°C)	<ol style="list-style-type: none"> 1. Check that the problem does not persist with another vehicle 2. Check that the CCS2 connector is in good condition 3. Check the condition of the CCS2 charge cable connections inside the station
USDE	uSD card error	There are errors linked to the uSD memory card	<ol style="list-style-type: none"> 1. Check that the uSD memory is properly inserted in the SPU controller board 2. Check that the uSD memory is functioning, otherwise replace it with a new one (provide code for purchase)
CHDM	CHAdEMO charge error	A communication error occurred with the CHAdEMO charge type	<ol style="list-style-type: none"> 1. Check that the connector is inserted correctly 2. Check that the problem does not persist with another vehicle 3. Check that the cable and connector are in good condition, otherwise they must be replaced 4. Check the condition of the CHAdEMO charge cable connections inside the station
CCS2	CCS2 charge error	A communication error occurred with the CCS2 charge type	<ol style="list-style-type: none"> 1. Check that the connector is inserted correctly 2. Check that the problem does not persist with another vehicle 3. Check that the cable and connector are in good condition, otherwise they must be replaced 4. Check the condition of the CCS2 charge cable connections inside the station
PWME	Power module error	An error occurred with the power module	<ol style="list-style-type: none"> 1. Check that the station is powered correctly 2. Switch off the station for 10 min and then switch it on again and check that the fault has cleared 3. Check that the internal connection between the SPU controller board and the power module is in good condition
DGIF	Charge cable earth leakage error	An insulation loss occurred between the DC output and earth.	<ol style="list-style-type: none"> 1. Check that the charge connector is in good condition, otherwise replace it 2. Check that the problem does not persist with another vehicle
EMRG	Stop	Stop button pressed	<ol style="list-style-type: none"> 1. Check whether the stop button has been released correctly 2. Check that the connection between the stop button and the SPU control board is in good condition
EVSA	Abnormal stop	Charging was abnormally stopped	<ol style="list-style-type: none"> 1. Check that the problem does not persist with another vehicle 2. Restart the station

MAINTENANCE

Wall Box is an actual electric panel. Maintenance shall be carried out by qualified and authorised personnel only.

Before opening the front door of the Wall Box, you must disconnect the power supply from the main switch to avoid the risk of electric shock or injury.

Do not remove or bypass the envisaged protection devices.

Every six months:

- the ventilation filters shall be displaced by authorised personnel (code 208.AP64).
- visually check the charging cables. The cabling must be replaced if the corresponding cable has visual signs of fraying, deformation or any other type of damage.
- Visually inspect the charging connectors. Cabling must be replaced if the corresponding connector has structure damage to the mechanical body, exposed conductors, traces of rust or arching of the live parts, or any other sign of damage.

The end user is informed that the diagnostic and maintenance operations will be carried out by a technician authorised by SCAME who will connect to the devices with credentials provided by SCAME

WARRANTY

THIS LIMITED WARRANTY IS EXPRESSLY RESERVED TO THE ORIGINAL BUYER OF THE BE-D SCAME BATTERY CHARGER.

DISPOSAL INSTRUCTIONS



"Implementation of Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE)" on the reduction of the use of hazardous substances in electrical and electronic equipment and the disposal of waste".

The crossed-out wheeled bin symbol on the equipment or its packaging indicates that the product must be disposed of separately from other waste at the end of its life.

The user must then dispose of discarded equipment at appropriate separate collection centres for electrical and electronic waste.

For further details, contact the appropriate authorities.

Proper separate collection of equipment for subsequent recycling, treatment or environmentally sound disposal helps to prevent harm to the environment and human health and promotes reuse and/or recycling of equipment materials.

Unauthorised disposal of the product by the user will result in the enforcement of administrative sanctions as prescribed by current legislation.

SCAME

InfoTECH	
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