Technical Specifications: Portable AC Charger WEMOB EASY

ELECTRIC VEHICLE CHARGING EQUIPMENT IC-CPD
(In-Cable Control and Protection Device)
Mode 2 Charging Cable – Type 2

PRODUCT FEATURES

The WEMOB EASY is a portable charger specially designed for mobile use as a home charging station or as an emergency charging cable on the road.
For use with standard household outlets, electric and plug-in hybrid cars can be charged easily and safely anywhere.
100% user-friendly. Simply plug in. WEMOB EASY is connected directly to the mains and performs important overcurrent, overtemperature, overvoltage, undervoltage and other protective functions.

- Electrical equipment for electric vehicles design in compliance with IEC standards, charging system for electric vehicles (IEC 61851-1).
- In-cable control and protection device (IEC 62752).
- Vehicle connector type 2 (IEC 62196).
- Ergonomic solid connector/coupling design.
- Robust design.
- Run over pressure resistant.
- Housing with LED status indicator and button for selecting the output current.
- Current adjustment button. Four level current adjustment. When other currents are needed for charging, click the current button to switch; the current switching sequence is 6 A→10 A→16 A→20 A (adjustable only in standby mode).
- Wall bracket (accessory sold separately).
  - Security: lockable by attaching a lock (not included).

(*) Wall mount bracket is an accessory sold separately.

SAFETY FUNCTIONS

- Self-test on start.
- Leakage current detection (6 mA DC/ 30 mA AC).
- Charge monitoring with communication to vehicle (Control Pilot).
- Detection of incorrect PE wiring in the wall outlet (PE).
- Overcurrent detection.
- Surge protection.
- Automatic charging current reduction (derating) in the event of overheating of the power plug or IC-CPD device and undervoltage.
- Over and undervoltage detection.
- Automatic continuation of the charging process following power interruption.
- The charging procedure is automatic and ends as soon as the battery is fully charged.
- Run over pressure resistant.
- Relay welding detection.
- Control box protection type IP65/IK10.

PROTECTIONS

- **Autotest Function:** The WEMOB EASY station performs an autotest during startup to check the hardware condition, voltage, and temperature levels, such as: checking of the operation of the residual current monitor (RCM), checking of the relay contacts (welded relay), undervoltage, overvoltage, ground fault, temperature, and others. If a problem is found, the station will not allow starting a charging operation.

- **Power interruption:** If a power outage occurs while charging a vehicle, the charging operation automatically resumes once the power is restored.

- **Overtemperature:** Electrical outlets may wear out with normal use or may become damaged over time, making them unsuitable for charging electric vehicles. A deteriorated outlet, with worn-out electrical contacts or that cannot supply the required charging power may heat up, increasing the chances of fire, for example, or cause unnecessary economic losses due to overtemperature during the charging of electric vehicles.

The WEMOB EASY station has sensors on the power plug and inside for continuous temperature monitoring.

When the phenomenon of overheating occurs during charging, it will automatically enter the charging current reduction mode (derating), limiting the current to the minimum value of 6 A (example of derating: 20 A → 16 A → 10 A → 6 A) or even temporarily suspend the charging operation. When the temperature reaches safe levels, the charging operation will resume with the maximum output current selected by the user.

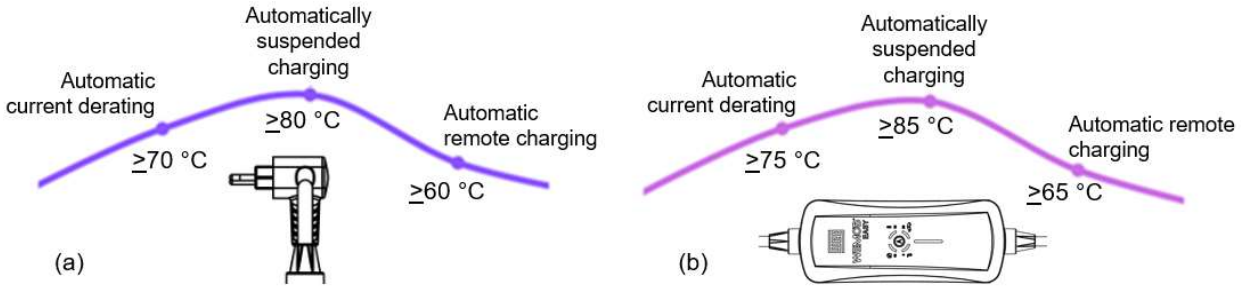

Figure 01: Overtemperature protection actuation levels on the power plug (a) and on the charging station (b)

For a better performance, install the WEMOB EASY in environments where the ambient temperature remains between -30 °C and 50 °C. Charging current derating is automatic and requires no user action, returning to the initial current level when the temperature lowers.

- **Overcurrent:** If the current measured by the station is above 10% of the maximum current set by the user for three seconds (3 s), the station will suspend the charging operation for up to four (4) times. After four (4) cycles in this condition, charging will stop immediately and can only be restarted after removing and reinserting the connector.

If the measured current is above 20% of the maximum current set by the user, charging will stop immediately, and it will be necessary to restart the station by removing the power plug and plugging it in again.

- **Voltage Drop, Undervoltage and Overvoltage:** The WEMOB EASY charging station can be connected to single-phase or two-phase power supply lines (without neutral), with a rated voltage of 100 to 240 V ±10% (50/60 Hz).

The power supply voltage is read during the station startup and updated before starting charging. If, during an ongoing charging operation, a voltage drop greater than 10% occurs, the station will automatically go into the charging current derating mode, limiting the current to the minimum of 6 A — example of derating: 20 A → 16 A → 10 A → 6 A.

When the supply voltage returns to the voltage level greater than or equal to the initial charging level, the charging operation will resume with the maximum output current selected by the user.
If the measured supply voltage is below 90 V or above 280 V**,** the station will not allow start charging or will immediately interrupt the process if charging is in progress. Charging can only be resumed after removing and reinserting the connector, as long as the voltage reading is within the limits of 90 to 280 V.

- **Welded Relay:** The contacts of power relays may undergo excessive heating due to very abrupt electrical fluctuations in the load, which can generate an electric arc that causes these contacts to overheat, melting the contact surface and, in extreme cases, causing a “welding” effect, in which, they are permanently attached to each other, remaining activated involuntarily.
The WEMOB EASY charging station continuously checks the states of the relay contacts in order to determine whether they have changed state without the proper command. If a problem is found, the station will not allow starting a charging operation.

- **Power supply surges:** To protect against surges in the power supply, the WEMOB EASY charging station is protected by varistors (MOV).

- **EV communication fault:** The WEMOB EASY charging station has a signal cable (Control Pilot — CP) next to the charging cable. It is used to transmit control information between the station and the vehicle, eliminating the possibility of electric shock on the charging connector when it is not connected to the vehicle, or if it is inadvertently disconnected during charging. If a communication problem with the vehicle is detected, the charging operation will be interrupted immediately, or it will not start in this condition.

- **Grounding Monitoring:** The WEMOB EASY charging station constantly checks the presence of a protective earth connection (PE). Any temporary protective earth (PE) failures are solved automatically.

DANGER!
- Only connect the charging station to a properly grounded electrical outlet. Using the station without grounding monitoring may cause a risk of short circuit, fire, explosion, serious injury and potentially fatal electric shock.
- Only use the grounding monitor deactivation feature in temporary and non-permanent situations.
- If the electrical outlet is not properly grounded, ask a qualified electrician to ground the PE pin.

The ground monitor can be deactivated after the fault is signaled by the station. Keep the  button pressed for ten seconds (10 s); after a period of five seconds (5 s), the station signals by flashing the red LEDs once and after ten (10 s), flashing twice.

NOTE!
- The grounding monitoring remains disabled for subsequent charges.
- The grounding monitoring is activated again after disconnecting from the power supply.

- **Insulation:** On the WEMOB EASY charging station, the power and charging cables and plugs are completely insulated, with no live parts exposed, in order to protect against electric shock. The controller and charging plug have ergonomic design, are impact resistant, can withstand an accidental vehicle running over and do not spread flames. The cables are highly resistant to abrasion, wear, tensile strength, oils, and grease and do not propagate flames. The controller has an IP65 degree of protection for internal or external use.

- **Leakage current detection:** The electric vehicle casing is connected to the ground wire. As time goes by, the rubber insulation of the car body gradually ages. If there is a problem with the insulation of the car, the casing may be energized, which would pose a great security risk for the user. The WEMOB EASY has one residual current monitor (RCM) for leakage current detection (6 mA DC/ 30 mA AC).

INDICATION

The LEDs located on the front cover provide visual information about the selected maximum output current and the current operational status of the charging station.

It consists of four (04) bicolor LEDs located around the  button, which may light up (solid light) or flash (intermittent light).
The green LED indicates the maximum output current set and charging current derating. If a fault occurs, the green LED will turn off and the fault will be indicated in red corresponding to the fault group represented by the  icons, with each group indicating a fault code according to the number of LED blinks.

Table 01: Fault groups

Symbol	Description
	This error state will display if there is an overtemperature problem
	This error state will display if there is a problem detected with the domestic power supply to the charger
	This error state will display if there is a problem on the control box.
	This error state will display if there is a problem on the vehicle side

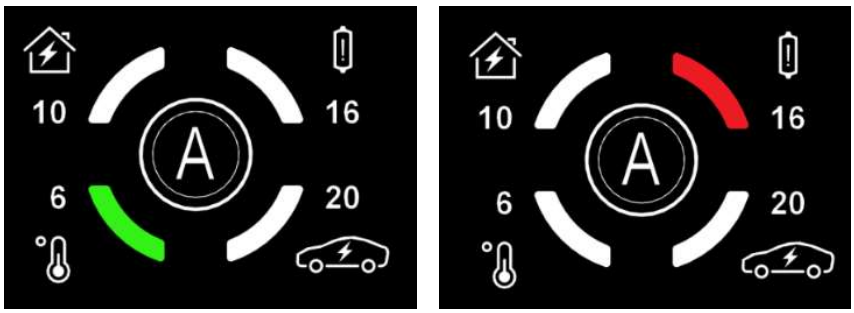

Figure 02: Bicolor LEDs: GREEN (selection of maximum output current/derating; RED represents failure)

The LED indicator bar on the product indicates the charging status, as follows.

Table 02: Charging status indication

Status Bar	LED color	Status	Description
		**STARTING**	Charging station in autotest
		**OFF**	Charging station without power supply
		**READY**	Station ready for use
		**WAITING**	Electric vehicle connected and in process of recognition
			Charging complete or suspended
		**CHARGING**	Charging in progress
		**FAULT**	Charging station needs intervention
			Charging station will automatically recovery

Table 03: Fault/derating indication

Symbol	LED color	Light flashes number	Description
		1	Internal overtemperature
		2	Overtemperature on the power plug
		3	Internal temperature reading failed
		4	Open or short-circuited temperature sensor
		1	Ground lost or incorrect wiring (Line/Neutral) in the AC input side
		2	Undervoltage protection
		3	Overvoltage protection
		1	Relay is welded
		2	RCM AutoTest Failure
		3	Failure in the communication with the vehicle
		4	Failure to read voltage or current
		1	Leakage Protection
		2	Overcurrent protection (10% above the setting)
		3	Overcurrent protection (20% above the setting)
DERATING		1	Charging current derating due to undervoltage
		2	Charging current derating due to internal overtemperature
		3	Charging current derating due to overtemperature on the power plug

TECHNICAL CHARACTERISTICS

Electrical data	
Supply voltage	100 ~ 240 VAC ±10% (P+N+E/P+P+E)
Frequency	50/60 Hz ±5%
Maximum output power	4.8 kW (240 VAC @ 20 A)
Output voltage	According to supply voltage
Output current	6 to 20 A (output adjustable)
General data	
Charging mode	Mode 2 (IEC 61851-1)
Power Plug	Type N 20 A (NBR 14136)
Infrastructure cable length	1.5 m
Number of outlets	1
Connector type	Type 2 
Connection length with plug	5 m
Mechanical life	no-load plug in / pull out > 10000 times
User interaction (HMI)	LEDs indicator and press button
Weight	2.5 kg
Dimension without connector H x W x D	300 x 97 x 60 mm
Environmental conditions	
Protection rating	IP65 (Working condition)
Application site	Indoor/Outdoor
Impact rating	IK10
Ambient temperature	-30 to 50 ºC (-22 to 122 ºF)
Storage Temperature	-30 to 80 °C (-22 to 176 ºF)
Air relative humidity	5% to 95% non-condensing.
Altitude	2000 m (6562 ft) above sea level

Data is subject to change without notice.

DIMENSIONS

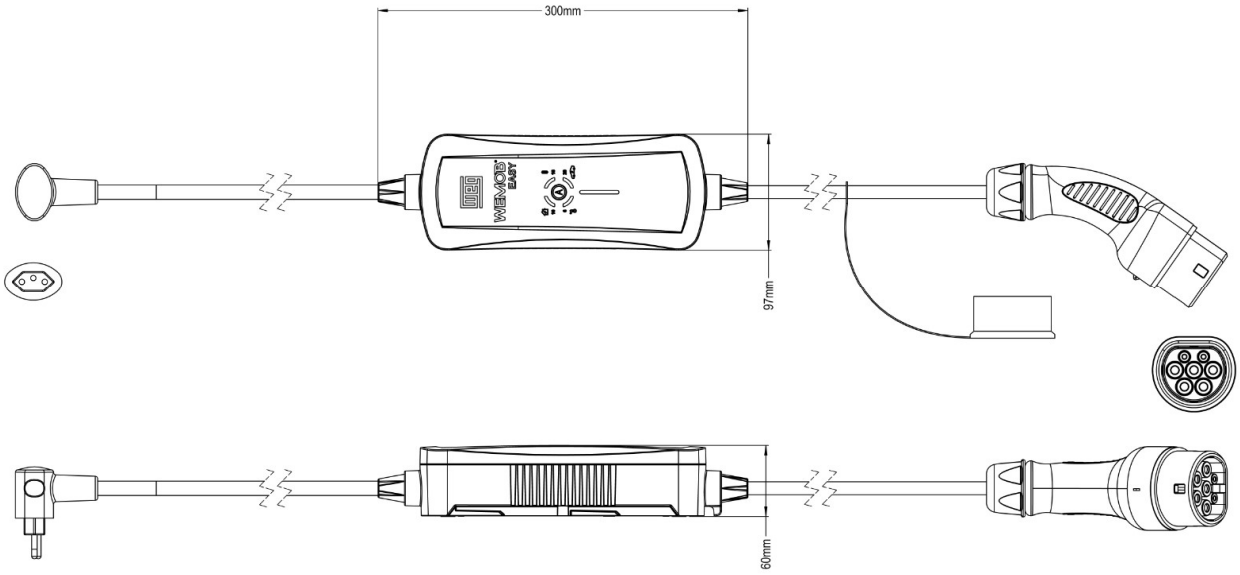

Figure 03: Dimensions of the WEMOB-EASY charging station

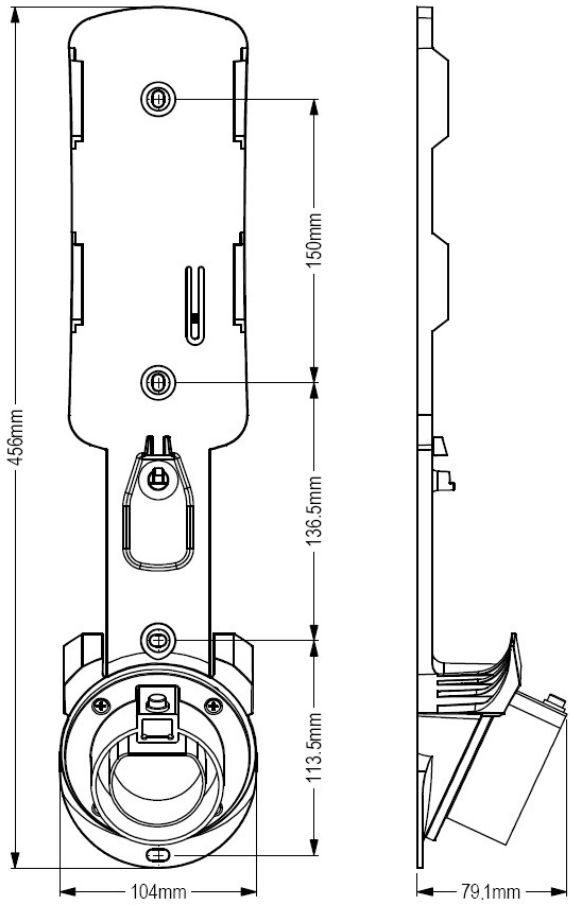

Figure 04: Dimensions of the wall bracket