User Manual
JUICE BOOSTER 2

IMPORTANT:

Read this manual before you start using the device!

Failure to comply with these instructions may result in injury or death, damage to the device and harm to the environment.
Keep the manual in a safe place for future reference.

Portable charger for electric vehicles / Safety Charging Cable

IC-CPD (In-Cable Control and Protection Device for EV charging)

Manual as per DIN EN 82079-1:2013-06; Rel. 2.00 EN
valid for Item Nos.: EL-JB2*, EA-JB2* | P/N JTJB2-EU1R1…, JTJB2-EU1R2…, JTJB2-EU1R3…

1. General

This User Manual is for your JUICE BOOSTER 2. It contains important information about initial use and operation.

Read this user manual carefully before you start using the JUICE BOOSTER 2. It contains important instructions for the connection, safety and use of the device.

The User Manual is based on the standards and rules applicable within the European Union. Make sure you also comply with the respective country-specific directives and laws.

Keep this User Manual in a safe place for future reference and owners. If you pass the JUICE BOOSTER 2 on to a third party, you must also pass on this User Manual.

2. Symbol Legend

The following symbols and keywords are used in this manual, on the JUICE BOOSTER 2 or on the packaging.

DANGER **Mortal Danger!**	Indicates a high-risk hazard which, if not avoided, could result in death, serious injury or major damage to property.
WARNING **Electric Shock Hazard!**	Indicates a medium-risk hazard which, if not avoided, could result in death, injury or moderate damage to property.
ATTENTION **Risk of Damage!**	Indicates a low-risk hazard which, if not avoided, could result in minor or moderate injury or damage to property.

The following symbols are printed on the JUICE BOOSTER and mean:

CE

Declaration of Conformity. Products marked with this symbol meet all applicable community stipulations by the European Economic Area.

RoHS

Products marked with this symbol meet the requirements of the EU directive restricting the use of certain hazardous substances in electrical and electronic equipment.

This symbol indicates the lowest possible temperature in °C at which the device may be operated.

This symbol indicates the protection rating in respect of environmental factors and also the protection of people against potential hazards while using the device. IP67 means protected against dust in harmful quantities and immersion in water for short periods.

Protection class I. Products marked with this symbol comply with the DIN EN 61140 standard. In the event of a fault, all metal parts that may be live during operation and maintenance are connected to an earth conductor.

This symbol indicates that the earth conductor is fixed and permanently connected.

Indicates the disposal method. Waste electrical equipment may not be disposed of with domestic rubbish. All consumers are obliged to dispose of waste electrical equipment separately from domestic rubbish, i.e. by handing it in to a community collection point. Correct disposal prevents any negative impact on the environment.

This is the international symbol for recycling and indicates goods that can be recycled. Separate packaging by material type before disposal. Card and cardboard with waste paper/waste cardboard and film in the container for synthetic materials.

3. Table of Contents

4. Identification

4.1. Product brand and type

Product brand:	JUICE BOOSTER 2
Item description:	Mobile charger for electric vehicles
Item Nos.:	EL-JB2*, EA-JB2*
Product Nos. (P/N):	JTJB2-EU1R1…, JTJB2-EU1R2…, JTJB2-EU1R3…
Type	IC-CPD (In-Cable Control and Protection Device for EV charging)

4.2. Declaration of conformity with product standards

The JUICE BOOSTER 2 bears the CE mark. The EU declaration of conformity can be requested at the following address:

JUICE TECHNOLOGY AG, Gewerbestrasse 7, CH-6330 Cham, Switzerland
(N.B.: Do not send equipment or devices to this address)

5. Intended Use

This charging device is intended for use only with electric vehicles fitted with a Type 2 connector.

⚠ DANGER
Mortal Danger!

Only use the JUICE BOOSTER 2 as described in the User Manual. Any other use will be deemed improper and may result in severe injury or damage to property. The JUICE BOOSTER 2 is not a toy.

Only use JUICE CONNECTOR safety adapters and JUICE CONNECTOR safety extension cables from Juice Technology AG with automatic current detection. The use of other adapters and/or cables is prohibited and will be deemed improper use. Misuse of this nature can result in serious injury and/or major damage to property.

The manufacturer or dealer will not accept any liability for damage caused by improper use. Improper use will make the guarantee void.

6. Safety instructions and hazard warnings

⚠ DANGER
Electric Shock Hazard!

- **Never open the housing!** Touching live parts may be lethal.
- **To avoid exposure to electric shocks, never unplug the connecting plug while it is under load!** This can cause electrical sparks which may result in excessive wear to the Juice safety connector and couplings and reduce their service life. Stop the charging process in the car first before disconnecting the plug.
- Never use the device with the cables tangled or coiled. This can lead to overheating.
- **If this happens, never touch the parts with your hands because you could come into direct contact with live elements. Mortal Danger!**
- **Keep the JUICE BOOSTER 2 away from explosive vapours or gases**. During operation, the switching mechanisms inside the JUICE BOOSTER 2 housing may generate tiny electric sparks which could ignite an explosion.
- If you discover damage to the JUICE BOOSTER 2 and/or its components during operation, disconnect the device from the mains power immediately by switching off the main circuit breaker and contact the service centre. Do not touch any metal parts and/or cables and/or wet parts.
- Incorrect use of the JUICE BOOSTER 2 may be fatal!
- Always keep a mobile phone with you for emergencies.
- Make sure you are aware of how to deal with accidents involving electricity and what to do in case of an electrical fire. These points are described under Points 16 and 17 of this User Manual.

⚠ WARNING
Mortal Danger!

- Never leave packaging material lying around. Plastic film, plastic bags and other packaging components could become hazardous playthings in the hands of children. There is a danger of suffocation!
- First check the packaging and the device for possible damage during shipping. Always inspect the device for defects before installing and setting it up. Do not operate the device if you notice irregularities or damage to the housing, cables, plugs or sockets.
- Users must comply with their applicable national regulations regarding the operation, functional testing, repair and maintenance of electronic devices.
- Only connect the JUICE BOOSTER 2 to a correctly installed and properly grounded power socket.
- If the feed line has no earth conductor and you operate the JUICE BOOSTER 2 in “NORWAY” or “EARTH OFF” mode, a subtle tingling may be felt on the housing as is typical for the technology. This is caused by leakage current in the mA range and is both normal and non-hazardous.
- The power rating of the JUICE BOOSTER 2 must match that of the power supply network.
- Protect your device from standing water, excessive dust, corrosive liquids and fumes. Make sure that the device is not lying in a

puddle and that water cannot collect on or around the device (e.g. if it rains or if there is melting snow).

- Do not operate the JUICE BOOSTER 2 in the immediate vicinity of a heat source.

- During the charging process, regularly check the temperature of the power sockets and cables. If they are hot, stop charging immediately. “Hot” is when you cannot keep your hand around the cable or connector for more than 20 seconds.

- If the JUICE BOOSTER 2 is exposed to sunlight for long periods of time or is operated in a hot environment, the housing may feel hot. This is a sign of excellent heat dissipation and is not a problem. In such cases, hold the device by the cable or the rubber caps.

- Assembly, installation and repair work on this installation must be done only by trained professionals possessing the necessary know-how, experience and familiarity with the applicable standards and regulations enabling them to properly assess for themselves any potential hazards.

- Any improper usage of the supply line powering the socket to which the JUICE BOOSTER 2 is connected, including repair or installation work thereto, consititutes a serious danger to the user, for which the manufacturer is not liable.

- Persons who are not in possession of the necessary physical, sensory and intellectual capacity and the experience and know-how to safely operate the JUICE BOOSTER 2 must only use this device under the supervision or instruction of a responsible person.

- Do not allow children, infants, unauthorized persons or animals to approach the JUICE BOOSTER 2. Never allow children to play with the device.

⚠ ATTENTION
Risk of Damage!

- The product must only be operated within the temperature range from -25 °C to +45 °C. Avoid exposing the JUICE BOOSTER 2 or its cable to strong sunlight for any length of time.

- Do not use any sharp or pointed objects to open the packaging. This could damage the JUICE BOOSTER 2 or the cables.

- Check for any damage to the packaging, the device and any parts supplied, e.g. adapters etc. In the case of damage, do not operate the JUICE BOOSTER 2. Contact the manufacturer using the service address specified on the warranty card – and under Point 19 of this User Manual.

- Always keep the plug and the JUICE CONNECTOR connection completely dry. Plugs can never be waterproof when they are not plugged in, so always replace the protective cap when not in use.
  NOTE: E-vehicle charging connectors are high-tech, high-performance parts. Protect your investment by always keeping the connectors clean and dry.

7. Product description

7.1. Scope of supply

Standard equipment:

IC-CPD with the following plugs/connectors:

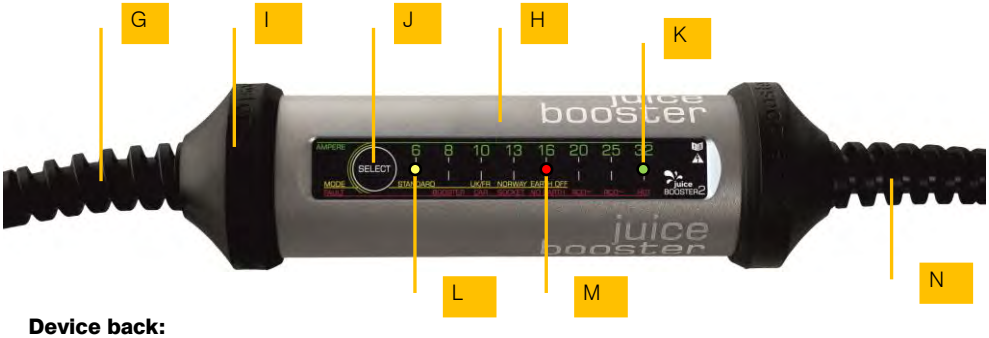
- Vehicle-end type 2 connector (or type 1 connector)
- Mains-end JUICE CONNECTOR safety connector
- One or more JUICE CONNECTOR safety adapters

Parts:

A. JUICE BOOSTER 2
B. JUICE CONNECTOR safety connector
C. Type 2 connector (for connection to the vehicle)
D. Mains adapter (various adapters available)
E. Mains plug (in this case CEE32 / 400 V, 32 A, 3-phase)
F. 400 V, 32 A, 3-phase heavy-duty cable with control signals

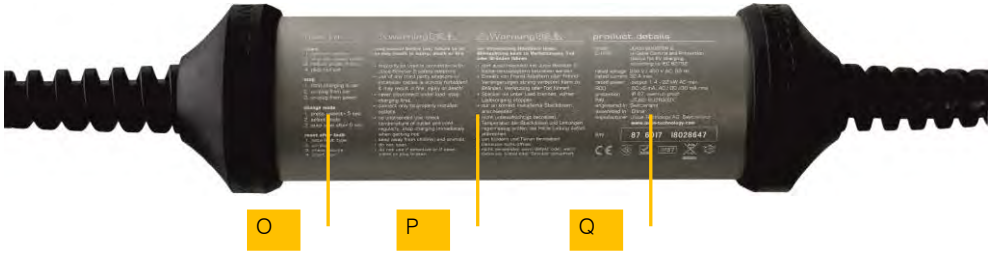
Device front:

G. Mains-end connection with JUICE CONNECTOR safety adapter
H. Housing
I. Non-slip protective rubber parts
J. Charge intensity/mode button
K. Green LED: AMPS (automatically set or individually reduced amp value)
L. Yellow LED: MODE (indicates the selected mode)
M. Red LED: FAULT (may indicate the cause of a fault)
N. Vehicle-end connection cable with type 2 connector (or type 1 alternatively)



Device back:

O. Quick start guide
P. Warnings
Q. Product details and serial number



JUICE CONNECTOR:

R. JUICE CONNECTOR safety connector (m), connects to the JUICE BOOSTER 2
S. JUICE CONNECTOR safety coupling (f) is part of the mains plug adapter
T. Mechanical guides only allow connection in the correct position (orange dots for correct alignment). Push together until a **click** is heard. Remove by pulling back the retaining ring (S).
U. Protective caps, supplied with all JUICE CONNECTORs.

7.2. Optional adapters

JUICE CONNECTOR safety adapters detect the current intensities of the respective sockets used for charging. The charger automatically sets the appropriate charging intensity.

We recommend various JUICE CONNECTOR safety adapters or adapter sets depending on the country - adapter sets. These are available separately from JUICE BOOSTER 2 outlets. You will find a selection listed on the Products page at **www.juice-technology.com** .

We recommend this type of adapter set for safe and universal connection to all standard power sockets. Examples of available adapters:

Adapter, e.g.	Use / Description	Class
CEE 7/7 Schuko	EU	Domestic
T13, T23	Switzerland	
Type L	Italy	
Type G	Commonwealth Countries (BS 1363)	
Type AUS	Australia	
T15, T25	Switzerland 400 V, 3-phase plug	
CEE16 / 230 V	Blue single phase plug (“camping plug”)	Industrial
CEE32 / 230 V	Blue single phase plug (UK, FR)	
CEE16 / 400 V	Red 3-phase plug	
CEE32 / 400 V	Red 3-phase plug	
Type 2 / 32 A	Plug for type 2 sockets	E-mobility
Type 3c	Plug for type 3 sockets (especially FR)	

The range of adapters is constantly growing. See **www.juice-technology.com/juice-booster** for a complete, up-to-date list of the over 25 adapters available.

7.3. Optional Extras

A safety lock for the JUICE CONNECTOR safety adapter is available to purchase separately to prevent it from being disconnected or even stolen by unauthorised third parties.

Optional extras such as a wall bracket for the private and semi-public sector, load management control unit etc. are available to purchase separately. This means that JUICE BOOSTER 2 can also be used as a perfect, highly secure and cost-effective wallbox. Good to know: It already has integral DC residual current detection (RCD Class B), which would otherwise be an expensive extra.

Extras (examples)				
				
Wall mount	**Juice Charger 2**	**Safety lock**	**Extension cord 5m**	**Extension cord 10m**
Open wall mount, lock optional.	Including charging management system module, certified meter. Payment and admission systems optional.	Prevents effectively adapters and extensions from being plugged out.	Note: not specified in the Standard, not CE-compliant therefore. However, as the connections are waterproof (IP67) and automatic adapter detection is transferred, the product is not dangerous and can be used safely.	

Please find the up-to-date list of extras and add-ons here:
www.juice-technology.com/juice-booster

8. Specifications

8.1. Construction

• Dimensions of the case	Length 265 mm, diameter 70 mm
• Weight	1.0 kg excluding cables, 3.2 kg with cables and plugs
• Material	aluminium anodized with rubber end-caps
• Thickness of material	3 mm
• Color	Metallic anthracite, black rubber caps and cables
• Protection class	IP67 (protects against damaging quantities of dust and immersion in water for short periods)
• Impact and drop-proof	Able to withstand a wheel load of 2,000 kg should you drive over it by mistake (the rubber casing may burst, and the housing and plug may be scratched or bent, but live components will not be exposed). Drop resistant for heights of up to 100 cm
• Temperature range	Storage: -30 °C to +60 °C (-22 °F to 140 °F) Operation: -25 °C to +45 °C (-13 °F to 113 °F)
• Mains-end plug	JUICE CONNECTOR safety connector, 400 V, 32 A 3-phase, highly conductive silver contacts, cable length 1.4 m
• Mains-end adapter	Various versions of the JUICE CONNECTOR safety adapter that can be connected to the JUICE BOOSTER 2 with the JUICE CONNECTOR safety connector. The safety adapter automatically tells the device the maximum obtainable amp value
• Vehicle-end connector	Type 2 (EN62196), 400 V, 32 A 3-phase, or Type 1 (EN62196), 400 V, 32 A single phase, highly conductive silver contacts, cable length 3.1 m

8.2. Electrical engineering data

• FI residual current, circuit breaker	RCD DC 6 mA, AC/DC 30 mA with protective conductor monitoring
• Input current	230 V, 6 – 32 A (single phase) or 400 V, 6 – 32 A (3-phase) AC
• Output	1.4 – 22.0 kW AC depending on input current

8.3. CE conformity

• Standards	IEC 62752, 62196, 61851 Mode 2, 61851 Mode 3 (with type 2/type 3c adapter plug), EMC, RoHS

9. Electrical power supply

9.1. Power connection/input voltage

Note the following maximum connection loads:

Item No..: EL-JB2 / EA-JB2	JUICE BOOSTER 2	32 A AC (3-phase), 400 V * / **

* Single-phase connection at the same amperage rating is possible but will only provide 1/3 of the charging power in kW.

** Connection is possible with lower amp values. For this, the JUICE BOOSTER 2 must first be connected at the mains end and the amperage must then be set. The charger can then be connected to the electric car and the charging process can begin.

9.2. Energy consumption

Power supply at 32 A and 400 V (3-phase AC):	max. 22 kW
Power supply at 16 A and 400 V (3-phase AC):	max. 11 kW
Power supply at 16 A and 230 V (3-phase, charging 2-phase):	max. 7.4 kW
Power supply at 32 A and 230 V (single-phase):	max. 7.4 kW
Power supply at 16 A and 230 V (single-phase):	max. 3.7 kW
Power supply at 8 A and 230 V (single-phase):	max. 1.8 kW
Standby (without charging)	< 1 W

Note on calculating costs: If a power output of 22 kW is used for one hour, then the energy consumption is 22 kWh. If a kWh (kilowatt hour) costs e.g. EUR 0.30, then 22 kWh cost approximately EUR 6.60.

The cost calculation formulae are as follows:
Amps * 230 V * phases = power in watts (W)
Power in W / 1000 = power in kilowatts (kW)
Power in kW * time in hours * price per kWh = power costs

Standby power usage: At home you can leave JUICE BOOSTER 2 plugged in all year round; it won't damage the device at all. The amount of power used on standby is extremely low, working out at around 1 CHF / EUR / USD a year.

9.3. Protection classes

- Protection class I 

10. Functions

10.1. Basic function

The JUICE BOOSTER 2 is used for recharging electric vehicles. Using the corresponding adapters, it is a fully-fledged portable charging station and also a charging cable to connect to public charging stations and wallboxes.

The JUICE BOOSTER 2 detects the mains adapter connected and thus the maximum permitted charging intensity. As soon as the cable is connected to an appropriate, functional outlet and then to the vehicle, and if the vehicle is ready to be charged, the charging process begins automatically.

For safety reasons, the JUICE BOOSTER 2 prevents any higher charging intensity from being set. The charge intensity can be reduced using the push button however. The JUICE BOOSTER 2 ignores any button presses during the charging process. This prevents unauthorised parties interrupting the charging process or changing the current.

Since, when locked, the vehicle does not release the connector even if charging is interrupted, unauthorised parties are unable to unplug the vehicle or steal the JUICE BOOSTER 2.

To protect adapters connected using the JUICE CONNECTOR safety connector from theft, they can be locked using the safety lock which is available separately. It makes disconnection and removal impossible.

10.2. Using type 2/type3c charging stations with locking mechanism

The connector is locked onto the vehicle and the charging station before the charging process begins.
Unlocking is only possible when the charging process is cancelled by means of a corresponding command in the electric car or possibly via app control of the vehicle. The connector can then be removed from the socket and the type 2 connector can be removed from the vehicle.

10.3. Use of domestic and industrial power sockets (without locking)

The charging process begins automatically as described in 13.2. The connection to the car is locked. The connection can be unlocked with a corresponding command in the car, by cancelling the charging process.

If unauthorised parties disconnect the cable from the outlet during the charging process, when it is plugged in again, charging will resume automatically at the last detected, or manually lowered, current.

⚠ ATTENTION
Risk of Damage!

Domestic and industrial power sockets do not have a locking mechanism. During the charging process, avoid disconnecting the mains-end connector or the JUICE CONNECTOR! It leads to flashing loss at the connectors. Furthermore, the charging electronic and equipment in your car and your JUICE BOOSTER 2 may become damaged.

10.4. Charging capacity

The following table shows the relationship between charging current and charging time:

Power outlet	Type 2 charging station	Industrial power outlet CEE 32 red	Industrial power outlet CEE 16 red	Domestic power outlet Schuko Germany
Input power	32 A	32 A	16 A	13 A
Voltage	400 V (3-phase)	400 V (3-phase)	400 V (3-phase)	230 V (single phase)
Power output	max. 22 kW	Max. 22 kW	max. 11 kW	max. 3.0 kW
Charging mode	3	2	2	2
Vehicle communication	Yes	Yes	Yes	Yes
Charging time*	approx. 1 h	approx. 1 h	approx. 2 h	approx. 6 h
Charge per hour**	approx. 100 - 150 km	approx. 100 - 150 km	approx. 50 - 75 km	approx. 13 - 20 km

* based on an integrated rectifier in the vehicle with an output equivalent to the input power, and a battery with 22 kWh. With different battery sizes the charging time will change accordingly.

** depending on the vehicle to be charged and driving style

10.5. Areas of application

At any correctly installed 8 – 32 A, single or three-phase power socket as well as on charging stations with a type 2 or type 3 socket. Please read the notes about setting up the charging infrastructure in Section 12.

10.6. Installation sites

The housing of the JUICE BOOSTER 2 is waterproof (IP67), including the buttons. It is suitable for use outdoors.

Plugs and connectors only reach their IP value when plugged in correctly. When they are unplugged, they must be covered with the protective caps provided to prevent water getting into the connectors and cables, and then into the device itself.

The JUICE BOOSTER 2 can be used lying directly on the ground or wall-mounted by means of separately available brackets.

11. Preparing the product for use

⚠ ATTENTION
Risk of Damage!

11.1. Transport and storage

- Stow the packaged JUICE BOOSTER 2 securely during transport to prevent damage.
- Store the JUICE BOOSTER 2 in dry rooms only.
- When not in use, protect all plugs from dust, humidity and other influences by using the protective caps provided. ATTENTION: Plugs are not waterproof and are susceptible to external influences when they are not plugged in.

11.2. Unpacking

- Remove all wrapping film and cardboard.
- After unpacking, inspect the JUICE BOOSTER 2 and all accessories for any visible damage. Under no circumstances should a damaged device be connected. A damaged JUICE BOOSTER 2 can endanger your safety!
- Check that all accessories and additionally supplied parts are present.
- Keep the packaging material out of the reach of children because it is a potential source of danger. If the device is to be repacked at a later stage, this packaging material can be reused to protect the device from damage during transport.

11.3. Disposing of the packaging material safely

The packaging is 100% recyclable and bears the recycling symbol. Please comply with the applicable local regulations for disposing of packaging materials.

12. Power socket requirements

12.1. DIN safety rules

DANGER
Electric Shock Hazard!

Modifications to the electrical installation may only be carried out by qualified professionals. If you are a qualified electrician, please observe the 5 safety rules laid down in DIN VDE 0105:

- Disconnect completely
- Secure against re-connection
- Check that power is off at all poles
- Remember to ground yourself before touching a component to prevent static discharges!
- Provide protection against adjacent live parts

These five safety rules should be applied in the above order before working on electrical installations. Once the work is completed, they are lifted in the reverse order.

12.2. Installation and sockets

The sockets in use have to be installed correctly, especially regarding the quality and the sequence of phase(s), neutral and PE, regarding the diameter of the power supply. the fuse, the RCDs etc.
The socket has to be free of defects and fully dry.

12.3. Connection to the mains power supply using adapters and extension cables

DANGER
Electric Shock Hazard, Fire Hazard!

- Only use JUICE CONNECTOR safety adapters from Juice Technology AG which feature automatic current detection.

- Only use extension cables fitted with JUICE CONNECTOR safety connectors and JUICE CONNECTOR safety couplings from Juice Technology AG. Use of other adapters and extension cables can result in fatal electric shock and/or fire. Moreover, the guarantee becomes void.

- Only use correctly installed, properly grounded power sockets fitted with neutral conductors. If necessary, check the technical specifications with the house owner or building services. Only connect the device if you are absolutely sure that the power socket is in good condition.

- In many countries, industrial sockets must be equipped with a Class A residual current circuit breaker. JUICE generally recommends the use of Class A RCDs for all types of sockets. Please note the regulations in the country of use, as these always take precedence.
  IMPORTANT: As JUICE BOOSTER 2 already has integral residual current detection, you don't have to allow for the considerable expense of installing Class B or A (EV) RCD systems.

13. Operating instructions

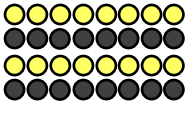
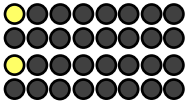
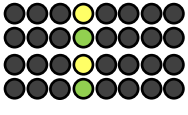
13.1. Starting conditions

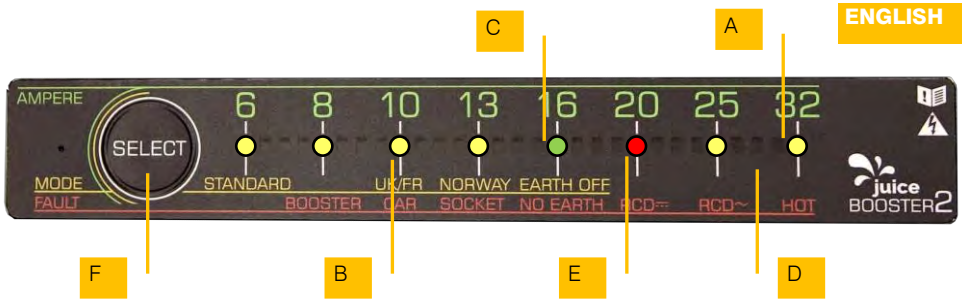
- Park your vehicle near a power outlet in accordance with Point 10.2 or 10.3.
- Ready the JUICE BOOSTER 2.
- Select the correct JUICE CONNECTOR safety adapter for the power outlet.
- Connect the JUICE CONNECTOR safety adapter to the JUICE BOOSTER 2. Mechanical cams only allow connection in the correct position (orange dots for correct alignment). **Push together until a click is heard.**
- If necessary, insert a JUICE CONNECTOR safety extension cable between the BOOSTER and the adapter.

⚠ DANGER

Electric Shock Hazard, Fire Hazard!

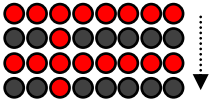
- Make sure that all cables being used are fully unwound and that there are no loops. Failure to do so can result in overheating. This can cause the insulation to melt and start a fire.
- Plug the mains adapter into the power outlet.
- Do not use any third party adapters or extensions, as they may affect the function and safety of the JUICE BOOSTER 2 and it would lead to the loss of warranty.
- Take note of the following status indicators:

Display	The LED(s)	Duration	Process
	**Yellow LEDs** All flashing yellow **(A)**	ca. 3 secs.	Device initialization, charge intensity is being detected by the device
	**Yellow LED** A single LED flashing yellow **(B)**	30 secs.	The device displays the selected mode (MODE)*
	**Green LED** Light up green at the amp value **(C)**	permanent	Amp value set, device is ready to charge (This status is also displayed once the vehicle charging has been properly completed)
	Flashes green and yellow alternately at the amp value **(B und C)**	30 secs.	Amp charge value and selected mode are in the same position, hence the dual display



13.2. Starting the charging process

- Connect the type 2 or the type 1 connector to the vehicle.
- The charging process will begin automatically at the detected, or manually reduced, charging intensity (unless JUICE BOOSTER 2 detects an error).
- The push-button **(F)** for selecting the charge intensity and charging mode can be pressed for up to 30 seconds after the vehicle is plugged in. After that it will be disabled. It is then no longer possible to change the charge intensity or charging mode while the JUICE BOOSTER 2 is connected to the vehicle. Therefore, if someone disconnects the mains while the vehicle is locked and then plugs it back in again, the charge intensity does not change, cannot be changed manually and the JUICE BOOSTER 2 independently resumes the charging process.

Display	The LED(s)	Duration	Process
	**Sequential flashing orange (D)**	permanent	Charging in progress
	**Green LED** A single LED lights up green	permanent	Indicates the charge intensity in amps
	**Green LED** A single LED lights up green, NO sequential flashing lights	permanent	Charging has not yet started (e.g. because charging has been scheduled for a specific time) or it has been ended by a proper signal from the vehicle.
	**Yellow LEDs** All light up yellow	permanent	Socket is wired wrong or mixed up.
	**Red LEDs** All LED flashing red, one individual red indicator at **(E)**	flashing at intervals	Error message. See Point 15. Individual red LEDs indicate the error detected

* Standard mode is unsuitable for UK, France and Norway. For these countries select a different mode (see Point 13.4)

⚠ WARNING

Fire Hazard!

Defective or incorrectly dimensioned cables, and/or defective or unauthorised fuse bridging can result in fire or smouldering in the cable or the outlet.

Notes:

- During the charging process, regularly check the temperature of the power sockets and cables. If they are hot, stop charging immediately. “Hot” is when you cannot keep your hand around the cable or connector for more than 20 seconds.
- If the electrical installation is particularly old, it may make sense to select a power level below the one suggested.
- If several cars are charging up simultaneously on the same fuse or if other devices are connected, it is advisable to adjust the boxes so that the total amperage of all devices does not exceed the tripping threshold of the load-breaker.

13.3. End the charging process

Always follow the sequence below:

- Interrupt or stop the charging process in the car.
- JUICE BOOSTER 2 will stop the charging process. The type 2 connector on the vehicle will be unlocked. If you are charging at a type 2 charging station, the connector will also be unlocked at that end.
- Remove the type 2 or the type 1 connector from the vehicle.
- Remove the mains adapter.
- Disconnect the JUICE CONNECTOR safety adapter from the JUICE BOOSTER 2 if preferred. To do this, pull the retaining ring on the JUICE CONNECTOR coupling back and pull the connectors apart.

13.4. Selecting / changing the operating mode (MODE)

You may need a different charging mode depending which country you are charging your electric car in. The factory setting is Standard mode. Proceed as follows to change the mode:

- After connecting to the mains – before plugging into the vehicle or up to 30 seconds after – hold the SELECT button **(F)** down for 5 seconds until all the LEDs flash yellow. Afterwards only one LED will flash yellow. This indicates the current mode set.
- Press the SELECT button repeatedly until the desired mode is reached in accordance with the diagram below. The selected mode will be saved automatically after approx. 5 seconds.
- Please check out the modes and their use on the following table:

Display	The LED	Use
	**Yellow LED** at **STANDARD**	All countries, **except** - UK and all other countries with Commonwealth plug (BS 1636, UK domestic plug) - France - Norway
	**Yellow LED** at **UK/FR**	This mode must be selected for charging in the United Kingdom and France (limits the Schuko plug to 10 A repectively 8 A /14 A for GreenUp).
	**Yellow LED** at **NORWAY**	This mode, and only this mode, must be selected for charging in Norway (configures the device for use in earthing-free IT networks).
	**Yellow LED** at **EARTH OFF**	Disables the device's internal earth conductor monitoring. **⚠ WARNING** **Mortal Danger!** This mode may only be used once you have checked that the electrical installation and earthing have been correctly connected. (Unbalanced loads and other inadequacies in the grid can result in the earth conductor monitoring detecting an irregularity with the earthing despite it being correctly connected. This circumstance can not resolved in any other way for technical reasons. This situation has been repeatedly observed in Italy among other places.)

13.5. Reducing the charge intensity

- Press the SELECT button before plugging the connector into the car or in the 30 seconds afterwards.
- The green LED starts to flash indicating that the vehicle is ready to charge. Press the SELECT button as many times as necessary until the LED is at the desired amperage.
- Pressing the button again after position 6 A causes the LED to jump back to the maximum value defined by the respective adapter in use.
- Reducing the charge intensity is always recommended for old installations and continuous operation. This may also be necessary if multiple e-cars are being charged at outlets that share fuses or where the outlets are fused for and specifically state lower amp values.

13.6. Increasing the charge intensity

- The charging intensity emitted by the JUICE BOOSTER 2 can not be increased for safety reasons.

14. Maintenance and cleaning

WARNING
Mortal Danger!

14.1. Cleaning

- Disconnect the JUICE BOOSTER 2 from the mains.
- Only clean the outside of the device. Use a soft, slightly damp or antistatic cloth. Do not use detergent or chemical agents to clean it.
- Always keep the connectors and couplings, particularly the contacts, clean and dry.

If plugs get wet, allow them to dry before using. Always fit protective caps when not plugged in.

14.2. Maintenance

The device requires no maintenance. Be aware that connectors and couplings are highly sensitive parts. Their contacts must always be kept clean and dry. Corrosion on the contacts can lead to impaired function, overheating or defects in the device.
Let humid or wet plugs dry completely. Always fit protective caps when not plugged in.

14.3. Repairs/Modifications

Repair work may only be carried out by qualified professionals.
Only the manufacturer may make modifications.

15. Malfunctions and faults

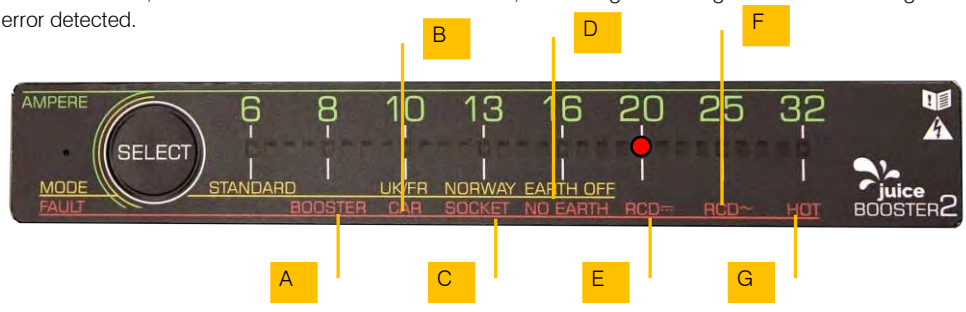
If one of the outlined procedures does not clear the problem, please contact Customer Services, Point 19.

15.1. Power failures/interruptions

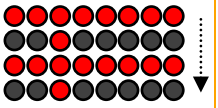
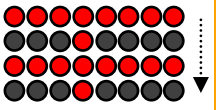
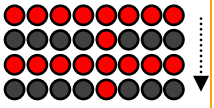
- After a power failure, the JUICE BOOSTER 2 automatically restarts the charging process at the charge intensity set at the beginning of the process.
- You can reset the JUICE BOOSTER 2 by switching off the power, disconnecting the plug from the mains and inserting it back into the mains. Never pull out the mains adapter during charging.

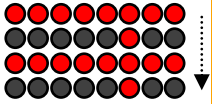
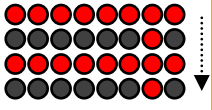
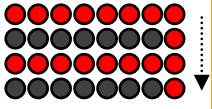
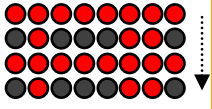
15.2. Fault indications

In case of faults, all of the LEDs will flash red at intervals, alternating with a single red LED indicating the error detected.



Display	The LED(s)	Possible cause	Action
●●●●●●●●	All LEDs off	No current from outlet	Check that all connectors are pushed in fully (JUICE CONNECTOR until click is heard). Check the wiring.
●●●●●●●● ●●●●●●●● ●●●●●●●● ●●●●●●●● ▼	Red LED at BOOSTER (A)	Initialization error. If the power is interrupted during the initialization process (e.g. by an incorrectly inserted mains adapter), the JUICE BOOSTER 2 will not initialize correctly.	**⚠ ATTENTION** **Risk of Damage!** Disconnect the JUICE BOOSTER 2 from the vehicle and the mains. Restart the process.
	ditto	If this occurs repeatedly and in succession at different sockets and with different adapters: hanging relay, stuck due to surge caused by the vehicle at the end of the previous charging process. This is particularly common with Renault cars.	**⚠ WARNING** **Mortal Danger!** Try to release the relay by dropping JUICE BOOSTER 2 onto the floor from a height of 20 cm. Repeat three times. Then start a new charging process as usual. If the fault does not disappear, stop using the device. Contact the manufacturer.

	ditto	If this error occurs repeatedly with different sockets and different adapters: error in device.	**WARNING** **Mortal Danger!** Stop using the device. Contact the manufacturer.
	Red LED at CAR (B)	Error on the car.	**WARNING** **Mortal Danger!** Check your vehicle and the vehicle connection socket. If no defects are observed, restart the entire charging process from the beginning. If the error recurs, contact your garage / car dealer.
	Red LED at SOCKET (C)	Defect in the outlet or line or incorrectly connected mains adapter.	**ATTENTION** **Risk of Damage!** Check the installation. Where applicable, stop using this outlet. Check that the adapter or mains adapter is undamaged and correctly connected. Narrow the fault down by using different adapters and different outlets.
	ditto	Sensor in the household adapter-plug reports high temperature.	**WARNING** **Electric Fire!** The charging process was controlled shut down and stopped for your safety.
	Red LED at NO EARTH (D)	Earth conductor monitoring failed. There may not be an earth conductor connected to this outlet.	**DANGER** **Electric Shock Hazard!** Do not charge at this installation. There is a risk of electric shock. Have the installation checked by a specialist. See also 13.4 – Unbalanced loads as triggers and charging in Norway.

	Red LED at RCD DC (E)	FI circuit breaker has been triggered. The car is sending residual direct current (DC) back into the mains network.	**WARNING** **Mortal Danger!** In such cases, the standard prohibits automatic resetting. Disconnect the JUICE BOOSTER 2 from the vehicle. Restart the process. If this fault occurs repeatedly in succession: have your vehicle checked by your garage.
	Red LED at RCD AC (F)	FI circuit breaker has been triggered. The car is sending residual alternating current (AC) back into the mains network.	**WARNING** **Mortal Danger!** In such cases, the standard prohibits automatic resetting. Disconnect the JUICE BOOSTER 2 from the vehicle. Restart the process. If this fault occurs repeatedly in succession: have your vehicle checked by your garage.
	Red LED at HOT (G)	Charger is overheating.	**ATTENTION** **Risk of Damage!** Stop the charging process at the vehicle. Allow the JUICE BOOSTER 2 to cool down. In the event of a fault, the device will also cool itself down automatically and restart the charging process as soon as the device temperature has dropped sufficiently. Do not expose the device to strong direct sunlight. Do not cover the device in order to avoid overheating.
	Red LEDs at A, E and F	Initialisation of the RCD protection function inside the device has failed.	**ATTENTION** **Risk of Damage!** If this fault occurs repeatedly in succession: Contact the manufacturer and have the device checked.

15.3. Special behaviour of Renault Zoe

Known problems with the **Renault Zoe** vehicle, mostly models with 43 kW charger. Request a technical update at your garage in order to resolve these problems.
JUICE BOOSTER 2 was tested in Renault's development centre in Paris-Guyancourt. These problems are not caused by JUICE BOOSTER 2 and relate to the relevant charging infrastructure. However, JUICE BOOSTER 2 does incorporate some unique optimized features and filters specifically to reduce the sensitivity of the Renault onboard charger.

LED glows green constantly for amp value set	Charging process interrupted, will restart again later by itself.	If no error message is displayed, the charging has been ended or paused by the vehicle by means of a normal command. This situation has been observed in the Renault Zoe in particular which stops the charging process when the battery gets hot among other reasons.
All LEDs off	Fuse blown or FI (RCD) triggered in the building's distribution network. The vehicle has previously charged at a higher amperage than that displayed on the JUICE BOOSTER 2.	It has been observed that the Renault Zoe ignores the default current value and sets its own value.
Charging does not start or does abort	Charging performance too low	The Renault Zoe has difficulty charging lower than 13 A with a 3-phase line and lower than 8 A with a single phase line (as also mentioned in the official car user's manual). The fault is in the design of the car's charging unit.
Charging does not start or does abort	Power network impacts	The Renault Zoe sometimes reacts very nervous on conditions in the public power network (e.g. impacts of other unclean users behind the same transformer station, current fluctuation, unbalanced current, ripple control signal etc.).
AC RCD and/or DC RCD repeatedly triggered	The vehicle is sending residual currents into the mains network or is producing a short circuit.	Sometimes, for various reasons, the Renault Zoe produces serious errors. The power supply quality can, but does not necessarily, act as a trigger (e.g. sudden unbalanced mains load or loss of a phase). The error is always generated by the vehicle however, always goes away spontaneously and is in no way related to the JUICE BOOSTER 2 which complies strictly with the standard and therefore has to interrupt the charging process for your safety.

15.4. Resetting error messages

Review the error message first and make sure you have recognised and noted down the error. Carry out the steps recommended above.

DANGER
Electric Shock Hazard!

If you wish to reset the error message and restart the charging process, make sure there is no risk from the car, the wiring system and line or from the JUICE BOOSTER 2. Disconnect the device at the vehicle and at the outlet to reset the fault detection.

Restart the charging process as usual.

15.5. Mechanical components fail to return to the basic status or connectors will not plug in

- Please consult our Service Centre.

WARNING
Mortal Danger!

- Check the components for damage. Do not touch any damaged parts and disconnect the socket from the power before disconnecting the device.

15.6. Obvious damage to the JUICE BOOSTER 2 or attached cables

- Stop using the JUICE BOOSTER 2. If necessary, disconnect the device from the power supply by activating the external FI switch or triggering the fuse.

WARNING
Mortal Danger!

- Mortal danger can result from live housing parts and bare cables!

16. What to do in the event of an accident involving electricity

1. Keep yourself insulated at all times and stay aware of the overall situation. Do not touch anything!

2. Turn the electricity off.
   Pull out the mains plug, trip the ground fault circuit interrupter (GFCI).
   If necessary, move the victim away from the live parts using a non-conductive object (e.g. insulating pole or rescue rod).

3. Call the emergency services. Call dialogue:
   - Who is calling?

- What happened?
- Where did it happen?
- How many people are injured/affected?

4. Instigate emergency first aid:

   If the victim is unconscious:
   Move the victim into the recovery position on his/her side. This is necessary even if the victim's breathing and pulse appear normal. Keep the victim's air passages free.

   If the victim is not breathing and has no pulse:
   Perform immediate mouth-to-nose or mouth-to-mouth resuscitation.
   Also apply chest compressions if there is no heartbeat (in some countries this can only be done by trained first-aiders)

The basic rule is: Anyone who has been in contact with electric current should always be checked over by a doctor – even if they are apparently uninjured. It is generally necessary to monitor their heart rate for a day to rule out the risk of sudden heart rhythm problems, which could be fatal.

17. What to do in the event of an electrical fire

1. Alert the fire service. Call dialogue:
   - Who is calling?
   - What happened?
   - Where did it happen?

2. Keep yourself safe. Even small quantities of smoke can be lethal!

3. If possible, trip the GFCI or trip the main fuse

4. Extinguish the fire with a fire-extinguisher that is approved for electrical fires (see label on fire-extinguisher). Maintain a minimum distance of 1 m.

18. Warranty and Guarantee

Our products undergo strict quality control. We are therefore very sorry if any article you have purchased from us does not function perfectly and we ask you to contact our Customer Services, as detailed below. Please contact us by phone or e-mail.

In addition to the statutory guarantee, we provide a warranty for all article purchased from us in accordance with the following conditions. This does not affect your common law rights.

18.1. Warranty period

- The warranty is valid for two years from the date of purchase and is regulated by law. Warranty claims must be made during the warranty period as soon as the defect is identified.

18.2. Guarantee period

- The guarantee period is 2 years from the date of purchase. The guarantee applies to the continent on which the device was purchased and takes the form of a Bring-In warranty/guarantee.

- During the guarantee period, devices that are faulty due to material or manufacturing defects shall either be repaired or replaced, at our discretion. Exchanged devices or parts thereof become our property. Exercise of the guarantee shall not extend the guarantee period or trigger a new warranty/guarantee.

- Claims under the guarantee (as with guarantee claims) must be made within the guarantee period as soon as the defect is discovered.

18.3. Making a warranty/guarantee claim

- Have the following documents to hand. They form the basis for making your claim:
  - Delivery note (your warranty runs from the delivery date)
  - Invoice (proof of purchase)
  - Warranty certificate with device serial number

- Please contact our Customer Services (Point 19) by e-mail, fax or telephone. They will open a warranty ticket, record your fault description and give you the ticket number and correct shipping address.

- **Please do not send your device to one of our warehouses or to our headquarters without first making contact,** as our Service Centres are located elsewhere. The parcel would be returned to you at your own expense.

- If the defect is covered by our warranty, you will receive a new or repaired device within a reasonable period of time. In such cases, JUICE TECHNOLOGY AG will cover the return postage costs to the following countries: DE, CH, LI, AT, FR, IT, UK, NL, BE, LU, DK.

18.4. Warranty/guarantee exclusion

Warranty/guarantee claims are void if:

- there is evidence of incorrect or inappropriate handling, operation or transportation
- the device has been used not as intended
- adapters and cables other than JUICE CONNECTOR safety adapters and cables have been used
- accessories/spare parts other than those recommended or supplied by the manufacturer have been used
- the JUICE CONNECTOR safety adapter or cable has been disconnected while under load

- the mains plug has been disconnected while under load
- there is corrosion to the connector contacts due to persistent dampness and/or wetness
- Ingress of water/liquids via unprotected or unplugged plugs and connectors and through water pipes.
- the operating instructions have not been followed
- major environmental factors (moisture, heat, overvoltage, dust etc.)
- damage caused by short circuits or overvoltages generated by the vehicle
- the device is returned in inadequately protective packaging
- accident or unforeseen events (e.g. lightning, water, fire, force majeure)
- the safety precautions applicable to the device have not been taken
- safety instructions and hazard warnings have not been heeded
- force has been used (e.g. the device has suffered a blow, impact, fall, overrun, crush, demolition)
- the device has been tampered with by someone other than our authorised Service Centre
- you have attempted to repair the device yourself
- modifications have been made by someone other than the manufacturer
- the housing, connectors, cables etc. have been opened or manipulated

The warranty/guarantee does not cover:

- any type of conventional wear and tear or wear to the housing, rubber parts, cables, cable sleeves and connectors.
- loss of the protection pins against contact on the JUICE CONNECTOR plug. This does not affect safety or function, is not required by any standard and is therefore excluded from the warranty.

18.5. Repairs

- We will be happy to repair any defects or damage to the device not (or no longer) covered by the warranty in return for a charge. Please contact our Customer Services for an individual quote. You are responsible for shipping costs.
- A processing fee will be charged for shipped devices that do not have any defects covered by warranty and that the client wishes not to have repaired.

19. Service information / Customer Services

www.juice-technology.com/service
Looking for the fast lane? In case of technical issues or for warranty claims, please fill in our online service form, address see above.
We will get back to you as soon as possible and assist you with our support.

Always contact our Service Centre by online-form, telephone or e-mail **before** sending the article to us. They will discuss with you how to proceed and, if necessary, will give you an **ticket number** and the **correct delivery address**:

JUICE TECHNOLOGY AG
Customer Service

Telefon +41 41 510 02 19
E-Mail service@juice-technology.com

20. Notes

We reserve the right to make changes in the interests of technical improvement.
JUICE TECHNOLOGY AG cannot guarantee that all requirements, specifications and standards are free of third-party intellectual property rights.

21. Supplier

JUICE TECHNOLOGY AG
CH-6330 Cham, Switzerland
www.juice-technology.com
E-Mail: info@juice-technology.com
Telefon: +41 41 510 02 19

Attention: Do not send devices or goods to this address. Warehouses and Service Centres are located elsewhere and are different for each country.
Goods sent to this address will be returned at the sender's expense. We regret that we must pass on any rerouting or customs costs.

Online form: **www.juice-technology.com/service**

22. Disposal / Recycling

Waste separation

Waste electrical equipment may not be disposed of with domestic rubbish.
Return to any electrical retailer for disposal.

After they have been dismantled (only by qualified professionals), obsolete devices must be rendered unusable to prevent subsequent accidents.

This device is labelled in accordance with Directive 2012/19/EU on Waste Electrical and Electronic Equipment–WEEE). The Directive provides for the return and recycling of waste equipment throughout the EU.

It is not permitted to dispose of this equipment with ordinary domestic waste. Dispose of this device at a recycling centre that collects electrical and electronic equipment separately.

The JUICE BOOSTER 2 is made of recyclable materials. Electrical and electronic products, including cables, connectors and accessories must be disposed of, separately if possible, in accordance with the local regulations.

Recycling

Recyclable goods

Separate packaging and the electrical device by material type for disposal. Card and cardboard with waste paper or waste cardboard, film in the container for synthetic materials and dispose of electronic parts with an electrical retailer or a community recycling centre.

juice CONNECTOR

Sicherheitsadapter
Safety adapters

Wachsende Auswahl | Growing range

Erweitern Sie Ihr persönliches Adapter-Sortiment mit Steckern für die ganze Welt, z.B.

Upgrade your personal choice of adapters with plugs for all over the world, e.g.