VOLTCRAFT®

GB Operating instructions

V-Charge Field 200 multifunctional charger

Item No. 1688224

CE

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GB

1. Introduction

Dear customer,

Thank you for purchasing this Voltcraft® product.

Voltcraft® produces high-quality measuring, charging and network devices that offer outstanding performance and innovation.

With Voltcraft®, you will be able to cope with even the most difficult tasks whether you are an ambitious hobby user or a professional user. Voltcraft® offers you reliable technology at an extraordinarily favourable cost-performance ratio.

We are confident that starting to use Voltcraft® will also be the beginning of a long, successful relationship.

We hope you enjoy your new Voltcraft® product!

If there are any technical questions, please contact:

International: www.conrad.com/contact

United Kingdom: www.conrad-electronic.co.uk/contact

2. Explanation of symbols

The symbol with an exclamation mark in a triangle is used to highlight important information in these operating instructions. Always read this information carefully.

The arrow symbol indicates special information and advice on how to use the product.

3. Intended use

The processor-controlled charger is intended for charging and discharging NiCd/NiMH (1 – 16 cells), LiPo/Li-ion/LiFe/LiHV (1 – 6 cells) rechargeable batteries and lead-acid rechargeable batteries (1 – 12 cells, 2 V – 24 V). The charging current can be set between 0.1 A and 10.0 A. The maximum charging power is 200 W.

Furthermore, rechargeable batteries can also be discharged; the discharge current can be 0.1 – 3.0 A. The maximum discharge power is 8 W.

A colour graphic display with menu and a knob with press function make operation easier.

The charger may only be operated at 9 – 32 V/DC. The DC power source must supply sufficient current to reach the output data. The input power of the power source can be preset from 50 to 220 W. The charger thus ensures reliable operation even with lower-performance power sources.

For lithium rechargeable batteries, a balancer is integrated in the charger. The balancer compensates for voltage differences in multi-cellular lithium rechargeable battery packs during charging/discharging. Non-uniformly charged cells reduce the capacity of the entire accumulator pack. The balancer is suitable for lithium rechargeable battery packs with 1 to 6 cells. The charge level is displayed individually for each cell.

Do not connect non-rechargeable primary batteries (zinc-carbon, alkaline, etc.).

The polarity of the connection cables and the balancer must be observed!

Operation under adverse ambient conditions is not permitted.

Adverse conditions include:

- Damp or excess air humidity.
- Dust and flammable gases, vapours or solvent,
- Strong vibrations.

Any use other than that described above is not permitted and may damage the product. Furthermore, there are dangers such as short circuit, fire, electric shock etc.

The product must not be modified or reassembled!

The safety instructions, the operating instructions of the rechargeable battery pack used and the charging instructions of the respective rechargeable battery manufacturer must be strictly observed!

4. Delivery content

- Charging treasure
- Connection cable with XT60 socket and 2 crocodile clips
- Quick start guide
- Software CD with detailed operating instructions

Up-to-date operating instructions

Download the latest operating instructions via the link www.conrad.com/downloads or scan the QR code. Follow the instructions on the website.

5. Safety instructions

These instructions contain important information on how to use the multimeter correctly. Please read them carefully before using the multimeter for the first time.

Damage caused due to failure to observe these instructions will void the warranty. We shall not be liable for any consequential damage.

We shall not be liable for damage to property or personal injury caused by incorrect handling or failure to observe the safety information! Such cases will void the warranty/guarantee.

- For safety and licensing reasons, the unauthorised conversion and/or modification of electrical devices is not allowed.
- Do not leave the charger, and the rechargeable batteries that are connected to it, unattended while in operation.
- To ensure safe operation, the user must follow the safety instructions and warning notices that are included in these operating instructions.
- Chargers and accessories should be kept away from children! They are not toys.
- Always comply with the accident prevention regulations for electrical equipment when using the product in commercial facilities.
- In schools, training centres, hobby and self-help groups, the use of chargers and accessories must be supervised by trained personnel in a responsible manner.
- Improper use (too high charging current or incorrect polarity) can supercharge or damage the rechargeable battery. In the worst case, the battery can explode and thereby cause serious damage.
- Never connect the device to the rechargeable battery pack immediately after it has been brought from a cold environment to a warm one. The condensation which forms can damage the device. Allow the device to reach ambient temperature before connecting it.
- If you suspect that safe operation is no longer possible, discontinue use immediately and prevent unauthorized use.
- Safe operation can no longer be assumed if:
  - There are signs of damage
  - The device does not function properly
  - The device was stored under unfavourable conditions for a long period of time
  - The device was subjected to rough handling during transport.
- Make sure that you always have these instructions at hand to ensure safe operation. Keep these operating instructions in a safe place and hand them over to a subsequent owner. When connecting and operating the charger, a set of safety instructions must be observed.
- The charger contains various safety measures. Despite these precautions, the user is solely responsible for configuration it makes and its accuracy. Furthermore, the user must ensure that all safety measures for charging have been taken. In addition, please observe the following notes.

- Place the device in a secure place so that it is absolutely secure and cannot fall down! Otherwise, this could cause injuries. Never place the charger and the rechargeable battery on a flammable surface (e.g. carpet). Always use a suitable, non-flammable, heatproof surface.
- Ensure that there is sufficient ventilation during operation. Never cover the charger and/or the connected rechargeable battery. Allow enough space (at least 20 cm) between the charger, the rechargeable battery and other objects.
- Never insert any objects in ventilation openings! This can cause a risk of contact with live parts and short circuits with serious consequences.
- For safety reasons, make sure you use the built-in balancer when charging or discharging lithium cells.
- Only cells of the same capacity and the same brand may be charged together.
- Do not charge rechargeable batteries that are almost or even fully charged.
- Never charge rechargeable batteries with higher charging currents than those specified by the manufacturer.
- Always keep rechargeable batteries away from flammable materials, both during and after charging. Charge and store rechargeable batteries in a fireproof container.
- Never charge defective or damaged rechargeable batteries.
- Never charge rechargeable batteries connected to an electrical circuit.

6. Notes on rechargeable batteries

- Despite the fact that batteries, both rechargeable and non-rechargeable, have become a normal part of today's life, there are still numerous dangers and problems involved. Specifically when using LiPo/Li-ion/LiFe rechargeable batteries with high energy content (compared to conventional NiCd or NiMH rechargeable batteries), different instructions must be followed in order to avoid explosion and fire hazards.
- Therefore, always make sure that you have read and understood the following information and safety instructions before handling rechargeable batteries.
- Also read and observe the notes provided with the rechargeable battery!

a) General information

- Rechargeable batteries are not toys. Keep rechargeable batteries away from children.
- Do not leave rechargeable batteries lying around unattended. Children or pets may swallow them. If rechargeable batteries have been swallowed, seek medical attention immediately!
- Rechargeable batteries must not be short-circuited, disassembled or thrown into a fire. This may cause a fire or explosion!
- Leaking or damaged rechargeable batteries can cause corrosive injuries in case of contact with the skin. Therefore you should use suitable protective gloves for this.
- Do not recharge normal, non-rechargeable batteries. This may cause a fire or explosion!

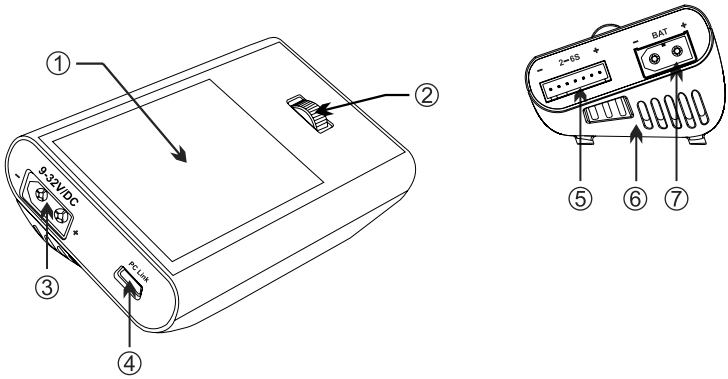
- Non-rechargeable batteries are meant to be used once only and must be disposed of properly when empty.
- Only charge rechargeable batteries that are suitable for this purpose and use a suitable battery charger.
- Rechargeable batteries must not be wet or damp.
- Do not leave rechargeable batteries unattended while charging/discharging.
- Pay attention to the correct polarity (positive/+ and negative/-). Both the device and the rechargeable battery will be damaged if rechargeable batteries are improperly installed. This may cause a fire or explosion!
- This charger has a mechanism that protects against connecting the poles incorrectly. It is nonetheless possible that improperly installed rechargeable batteries can cause damage under certain conditions.
- In case the product will not be used for a long time (for example, during storage), disconnect all connected rechargeable batteries from the charger and disconnect the charger from the power supply.
- Do not charge/discharge rechargeable batteries that are still hot (for example, due to the high discharge current of this product). Before charging or discharging rechargeable batteries, allow them to cool down to room temperature.
- Do not charge/discharge damaged, leaking or deformed rechargeable batteries. This may cause a fire or explosion! Dispose of unusable rechargeable batteries in an environmentally friendly manner. Such rechargeable batteries must no longer be used.
- Do not use rechargeable battery packs that consist of different cell types.
- Charge rechargeable batteries approximately every 3 months; otherwise, there is a risk of the rechargeable battery becoming completely discharged due to self-discharge. If this is the case, such rechargeable batteries are no longer usable.
- Remove fully charged rechargeable batteries from the charger.
- Do not damage the outer shell of rechargeable batteries. This may cause a fire or explosion!
- Do not charge/discharge rechargeable batteries directly in the model. First, remove rechargeable batteries from the model.
- Place the charger and rechargeable battery on a non-flammable, heat-resistant surface (e.g. stone tiles). Maintain enough distance from flammable objects. Allow enough space between the charger and the rechargeable battery. Do not place the rechargeable battery on the charger.
- Adequate ventilation must be ensured since both the charger and rechargeable batteries become hot during charging/discharging. Never cover the charger and rechargeable batteries!

b) Additional information on lithium rechargeable batteries

- Modern lithium rechargeable batteries not only have a notably higher capacity than NiMH or NiCd rechargeable battery packs, but they are also much lighter. Therefore, this rechargeable battery type is of particular interest for model making. The so-called LiPo rechargeable batteries (lithium polymer) are very often used in model making.
- LiPo rechargeable batteries (as well as Li-ion, LiHV, and LiFe rechargeable batteries that can be charged with this charger) require special care during charging/discharging, as well as during operation and handling.
- Therefore, in the following chapters you will find information about hazards and measures to prevent such hazards in order to ensure that such rechargeable batteries maintain their performance over a long period of time.
- The outer shell of LiPo rechargeable batteries normally consists only of a very thick film and is extremely sensitive.
- Never destroy or damage the rechargeable battery, do not drop it or puncture with any objects. Protect the rechargeable battery from mechanical stresses and do not pull on its connection cables! This may cause a fire or explosion!

- These instructions must also be followed when inserting or removing the rechargeable battery from the model.
- Make sure that the rechargeable battery does not overheat during use, charging, discharging, transport and storage. Do not place the rechargeable battery near heat sources (e.g. model control, motor) and protect it from direct sunlight. This may cause the battery to overheat, which can cause a fire or explosion!
- The temperature of the rechargeable battery must not exceed +60 °C (also note all other manufacturer information!).
- Stop using the rechargeable battery if it is damaged (for example, after the crash of an aeroplane or helicopter model) or its outer shell is bloated/swollen. Do not recharge it. This may cause a fire or explosion!
- Handle rechargeable batteries with care; use suitable protective gloves.
- Dispose of rechargeable batteries in an environmentally friendly manner.
- Use only a suitable charger to charge lithium rechargeable batteries and observe the correct charging method. Do not use conventional chargers for lithium rechargeable batteries in order to avoid fire and explosion hazards!
- When charging lithium rechargeable batteries with more than 1 cell, use a so-called “balancer” (already integrated in this charger).
- Charge LiPo rechargeable batteries with a charging current of max. 1 C (unless otherwise stated by the battery manufacturer!). The charging current must not exceed the capacity printed on the rechargeable battery (for example, rechargeable battery capacity 1000 mAh, max. charging current 1000 mA = 1 A).
- For lithium rechargeable batteries, observe the manufacturer’s instructions.
- The discharge current must not exceed the value printed on the rechargeable battery. For example, when a value of “20 C” is printed on the rechargeable battery, the discharge current is 20 times the rechargeable battery capacity (for example, battery capacity 1000 mAh, max. discharge current 20 C = 20 × 1000 mA = 20 A). If these instructions are not followed, the rechargeable battery will overheat and thus can deform or swell or cause explosions and fire!
- The printed value (for example, “20 C”) does not necessarily refer to the constant current, but to the maximum current that the rechargeable battery can generate in a short time. The constant current should not be higher than one half of the given value.
- Lithium rechargeable battery cells may only be discharged to a certain voltage; otherwise, the rechargeable battery will be destroyed. Standard values are listed in the tables below.
- If the model does not provide protection against total discharge or possess a visual display indicating a low battery, remember to switch off the model in time.

7. Overview of parts



1 Graphical display

2 Adjusting wheel with sensor function

3 Input power supply XT60 (9 – 32 V/DC)

4 PC Link interface

5 Balancer terminal block

6 Ventilation openings

7 XT60 charge/discharge output connector

8. Setup

When connecting batteries, always observe the polarity and the charging instructions of the battery manufacturer concerned.

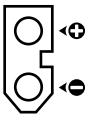
Always supply the charger with power before connecting the rechargeable battery. This also applies to the balancer connection.

After use, disconnect the charger from the power source and unplug the rechargeable battery.

Setting up power supply

Power is supplied via the side XT60 connector (3) on the left. The rechargeable battery is connected via the side XT60 connector (7) on the right.

The polarity is specified by the connector geometry. When using the included XT60 connection cable, please pay attention to the correct polarity when connecting it. The red crocodile clip corresponds to the positive pole and the black crocodile clip corresponds to the negative pole. If you use a self-configured connection cable, the polarity shown must be indicated on the XT60 socket.



After a brief system test, the parameters will be shown on the display.

9. Operation

Supply the charger with power. The charger will start with a system test and fan test confirmed by a beep.

Some presets must be made before operating the charger.

To operate the charger, use a knob with press function (2). To select menu items, turn the knob. To confirm the selection, press the knob. This procedure applies to all settings (system and programme settings).

The setup menus are largely self-explanatory and can be easily set up using predetermined parameters.

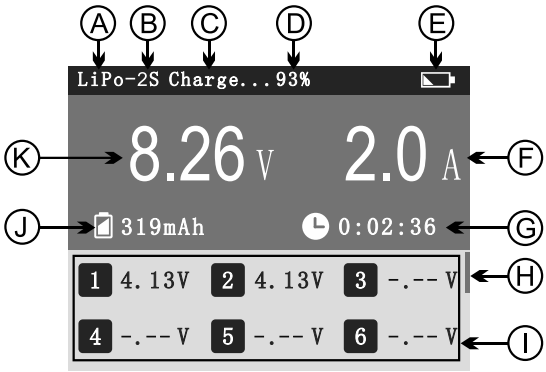
a) Main display

The main display shows basic parameters of the currently connected rechargeable battery/rechargeable battery pack.

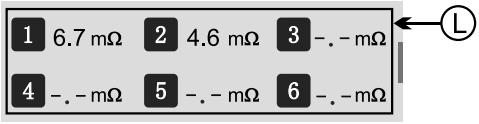
The main display colour also provides information about the current status:

- Grey background colour = standby
- Blue background colour = charging mode
- Green background colour = rechargeable battery is charged
- Red background colour = discharge mode

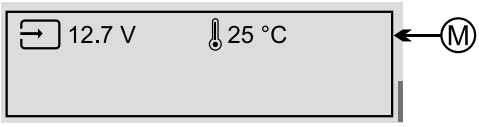
A Rechargeable battery type
B Number of cells
C Charging programme
D Battery charge level in %
E Low battery charge level icon
F Charging/discharge current
G Charging/discharge time
H Display marker
I Display of cell voltages
J Capacity (charging/discharge)
K Rechargeable battery voltage



Turn down the knob to display other parameters. The display marker (H) will show the current display field.



L Display of internal cell resistances
M Power supply and system temperature display



b) “System Setup” system settings

In the system menu, you can make general settings the charger requires for operation. To enter the system menu, press and hold down the knob for approx. 2 seconds. The system menu will be displayed with a beep.

The “System Setup” menu contains the following settings:

Menu item	**Meaning**	**Value**
Language	System language	English
MAX Input Power	Here you can set the maximum power of the voltage source to avoid overload. The formula is: P = U x I. Power in W (P) = voltage in V (U) x current in A (I). P = U x I. Leistung in W (P) = Spannung in V (U) x Strom in A (I).	220 W (50 – 200 W in 10 W increments)
MIN Input Voltage	Here you can set an undervoltage level. This is useful when rechargeable batteries are used as the power source. If the value is below the lower limit, the charging/discharging process will be interrupted. This prevents deep discharge of sensitive rechargeable battery types.	12.0 V (9.0 – 24.0 V in 0.1 V increments)
Capacity Cut	Here you can set the maximum capacity. If the set value is exceeded, the charging/discharging process will be interrupted.	15000 mAh (OFF 100 – 50000 mAh in 100 mAh increments)
Time Cut	Here you can set the maximum charging/discharge time. The timer prevents infinite charging in case of defective rechargeable batteries.	180 min (OFF 1 – 720 min in 1 min increments)
Backlight	Here you can adjust the display brightness.	Medium (Low (dark) Medium High (bright))
Volume	Here you can adjust the beep volume.	High (OFF Low (quiet) Medium High (loud))
About	Here you can display the firmware and hardware version number.	
Factory Reset	Here you can reset the device to factory settings.	No Yes
Back	Ends the system setup and returns to the main display.	

Turn the knob until the selection bar shows the menu item. Press the knob to confirm the selection. The menu item will open.

Proceed with the selection of parameters shown. Follow the menu selection.

To exit the system menu, select the last “Back” menu item and press the knob.

c) Program Settings

In the programme menu, you can preset all parameters for the rechargeable battery care. To enter the programme menu, briefly press (for less than 1 second) the knob. The programme menu will be displayed with a beep (unless the beep has been disabled in the system menu).

The “Programme” menu contains the following settings.

The values without brackets are preset, and the values in brackets describe the possible adjustment range.

Menu item	Meaning	Value
Battery	Here you can set the rechargeable battery type.	LiPo (LiPo, LiFe, Li-ion, LiHV, NiMH, NiCd, Pb)
Cells	Here you can set the number of cells of the rechargeable battery (S = cells).	LiPo 6S (1 – 6S) LiFe 6S (1 – 6S) Li-ion 6S (1 – 6S) LiHV 6S (1 – 6S) NiMH Auto NiCd Auto Pb 6S (1–12S)
Mode	Here you can set the charging/discharge programme.	Charge (Charge Discharge Storage (store))
Current	Here you can set the maximum charging current.	2.0 A (0.1 – 10.0 A in 0.1 A increments)
TVC	Here you can set the end-of-charge voltage per cell.	LiPo 4.20 V (4.18 – 4.24 V) LiFe 3.60 V (3.58 – 3.65 V) Li-ion 4.10 V (4.08 – 4.20 V) LiHV 4.35 V (4.25 – 4.35 V) NiMH 1.80 V NiCd 1.80 V Pb 2.40 (2.30 – 2.40 V)
Start	Here you can start the selected programme.	
Back	Ends the programme setup and returns to the main display.	

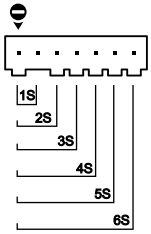
Follow the menu selection. Start with the first menu item and then select all other menu items.

⟶ **Make sure that the set parameters match the rechargeable battery before connecting it. The rechargeable battery and the charger may be damaged if the charger is not properly configured. Overcharging may cause an explosion or fire. Take extreme care when configuring. Please note the data in the table below if there are no specific rechargeable battery parameters**.

	Rated voltage/ cell	End-of-charge voltage/cell	Storage voltage/ cell	Max. charge rate	End-of-discharge voltage/cell
LiPo	3.70 V	4.20 V	3.80 V	≤ 1 C	3.00 – 3.30 V
Li-ion	3.60 V	4.10 V	3.70 V	≤ 1 C	2.90 – 3.20 V
LiFe	3.20 V	3.60 V	3.30 V	≤ 4 C	2.60 – 2.90 V
LiHV	3.80 V	4.35 V	3.90 V	≤ 1 C	3.10 – 3.40 V
NiCd	1.20 V	1.40 V	---	1C – 2C	0.5 – 1.10 V
NiMH	1.20 V	1.40 V	---	1C – 2C	0.5 – 1.10 V
Lead-acid (Pb)	2.00 V	2.40 V	---	≤ 0.4 C	1.80 – 2.00 V

10. Connecting the rechargeable battery and starting the programme

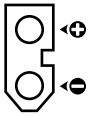
a) Balancer-connection



When the charger is supplied with power, connect the XH balancer connector of the rechargeable battery pack to the balancer terminal block (5), observing the correct polarity. Always align the connector with the negative contact on the negative pole of the balancer terminal block. If necessary, use suitable adapters.

It is recommended that you always charge lithium rechargeable batteries with the balancer connector. However, you can also charge rechargeable batteries without a balancer.

b) Connecting the rechargeable battery



The rechargeable battery is connected via the side XT60 connector (7). The polarity is specified by the connector geometry. The XT60 socket should be connected as shown.

If all parameters are set correctly and the rechargeable battery is connected, you can start the selected programme using the “Start” menu item.

To exit the programme menu in advance, select the last “Back” menu item and press the knob.

c) “PC Link” interface

This interface allows the charger to be controlled and read by a Windows® compatible computer. The free “Charge Master” software provides all setup functions that can also be set on the device. In addition, you can create and save your own charging/discharge programmes.

The free software allows operation of the charger using a computer. All parameters are displayed on the computer in real time. The charged capacity, rechargeable battery voltage or charging current can be displayed as real-time diagrams with zoom function (double-click with the left and right mouse buttons) and scroll function.

To install the software, insert the included CD into your computer and follow the instructions on the computer screen for installation. If necessary, start the “Setup” programme. After installation, connect the charger to your computer with a mini USB cable (not included). The charger will be detected automatically.

11. Troubleshooting

- The charger is very user-friendly thanks to the menu navigation and plain text displays. However, there may be problems detailed below together with possible remedies.
- Make sure that all charger settings you have made exactly match the connected rechargeable battery!
- Check the connection between the power supply and the charger for problems (cuts or other cable damages). Furthermore, you should check whether the charging cable connectors are intact and not undersized. This can often be recognised by excessive heat. The charging cables should not be longer than 30 cm with a minimum conductor cross section of 2.5 mm².
- When operating with a car battery, make sure that the connectors are properly connected to the battery poles. Many charger related problems are due to problems with connection cables and terminals.
- Try charging another rechargeable battery; the rechargeable battery could be in poor condition and cause problems.
- Try charging a different rechargeable battery type. For example, switch to a NiMH rechargeable battery if you have problems with lithium cells. If you also experience problems with the other rechargeable battery type, the charger could be defective. Anyway, check everything very thoroughly again.
- Contact our service, give full details and provide a description of the problem, including the type of power supply, rechargeable battery and number of cells.
- If a connection problem is displayed, make sure that all rechargeable battery connections are properly set up. Specifically check the balancer connection. If everything is fine, clean the contacts of connectors from scale. Make sure you use a high-performance switched-mode power supply or a fully charged car battery with a high capacity value. Try charging another lithium rechargeable battery from another manufacturer, preferably with a different balancer connector system to exclude any possible errors.
- Never attempt to tamper with the device, as it is too dangerous and you will thus automatically invalidate any warranty claims! The charger must only be repaired by qualified personnel. Improper repairs can cause fires and/or electric shocks. Send the charger to our service for repair.

12. Disposal

Electronic devices are recyclable waste and must not be placed in household waste. At the end of its service life, dispose of the product according to the relevant statutory regulations.

Remove the inserted batteries and dispose of them separately from the product.

Disposal of flat accumulators

You are required by law to return all used batteries **(battery ordinance)**. **They must not be placed in household waste!**

Batteries that contain hazardous substances are labelled with these symbols to indicate that disposal in household waste is forbidden. The designations for the heavy metals involved are: **Cd** = Cadmium, **Hg** = Mercury, **Pb** = Lead. Used batteries can be returned to local collection points, our stores or battery retailers.

That way you fulfil your statutory obligations and contribute to the protection of the environment!

13. Technical data

Number of charging channels.....1

Suitable rechargeable battery type.....NiMH, NiCd, LiPo, Li-ion, LiFe, LiHV, lead-acid (Pb)

Suitable for LiPo/Li-ion/LiFe/LiHV.....1 – 6 cells

Suitable for NiCd/NiMH .....1 – 16 cells

Suitable for lead-acid rechargeable battery.....2 – 24 V (1 – 12 cells)

Max. charging current.....10 A

Max. charging power .....200 W

Discharge current .....0.1 – 3 A

Discharge power max.....8 W

Balancer current per cell.....max. 0.5 A

Plug-in system XT60

Plug-in balancer.....XH

Colour LC display .....6.1 cm, 320 x 240 pixels

Operating Temperature.....0 to +40 °C

Storage temperature.....-20 to +60 °C

Power supply.....9 - 32 V/DC

Product dimensions (L x W x H) .....87 x 57 x 41 mm

Weight .....111 g

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