

# ***VOLTCRAFT***<sup>®</sup>

Ⓞ Operating Instructions

**Charger “V-CHARGE ECO Quad Lipo”**

Item No. 1590606

**CE**

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# 1. Introduction

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Dear customer,

thank you for making the excellent decision of purchasing this Voltcraft® product.

Voltcraft® - This name stands for above-average quality products in the areas of measuring, charging and grid technology, characterised by technical competence, extraordinary performance and permanent innovation.

Whether you are an ambitious hobby electronics technician or a professional user - a product of the Voltcraft® brand family will provide you with the best solution for even the most sophisticated of tasks. Special features: We offer the sophisticated technology and reliable quality of our Voltcraft® products at a near-unbeatable price/performance ratio. We lay the groundwork for long, good and successful cooperation.

Enjoy your new Voltcraft® product!

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If there are any technical questions, please contact:

International: [www.conrad.com/contact](http://www.conrad.com/contact)

United Kingdom: [www.conrad-electronic.co.uk/contact](http://www.conrad-electronic.co.uk/contact)

## 2. Explanation of symbols

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This symbol is used to highlight important information in these operating instructions. Always read this information carefully.



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



This product is only intended to be installed and used in dry indoor spaces; it must not become damp or wet.



Always follow the instructions in this manual.

## 3. Intended use

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This "V-CHARGE ECO Quad Lipo" charger has four independent charging channels, each of which features a coloured LED indicator and a control button.

The charger is designed to charge LiPo rechargeable batteries with 3 (rated voltage = 11.1 V) or 4 (rated voltage = 14.8 V) cells.

The charging current for each channel can be set to 2 A, 3 A or 5 A. The maximum total charging power is 200 W (shared between the four channels). Each channel has a maximum charging power of 84 W.

The charger features a built-in balancer that monitors the voltage of each battery cell and ensures that all cells have the same voltage.

The charger features a DC input (11 - 32 V/DC) and can be powered with a suitable DC power adapter, a car lead-acid battery, or a suitably powerful LiPo rechargeable battery.

Always observe the safety instructions and all other information in these operating instructions!

Read the operating instructions carefully and keep them in a safe place for future reference. Always provide these operating instructions when giving the product to a third party.

Using this product for any purposes other than those described above may damage the product and result in a short circuit, fire or electric shock. This product must not be modified or reassembled. Do not attempt to open the device housing.

This product complies with statutory national and European regulations.

## 4. Delivery content

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- Charger
- Connection cable for DC input (XT30 to XT60)
- CD with operating instructions
- Safety sheet

### Up-to-date operating instructions

Download the latest operating instructions at [www.conrad.com/downloads](http://www.conrad.com/downloads) or scan the QR code on this page. Follow the instructions on the website.



# 5. Safety instructions

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Read the operating instructions and safety information carefully. If you do not follow the safety instructions and information on proper handling in this manual, we will assume no liability for any resulting personal injury or damage to property. Such cases will invalidate the warranty/guarantee.

## a) General information

- The unauthorized conversion and/or modification of the product is prohibited for safety and approval reasons. Never dismantle the product.
- Maintenance, modifications and repair work must be done by a technician or a specialist repair centre. This product does not contain any components that require maintenance.
- This product is not a toy and must be kept out of the reach of children.

The product must be installed, used and stored in areas that are inaccessible to children. The same applies to rechargeable batteries.

Exercise particular caution when children are present. Children may accidentally short-circuit the rechargeable battery/batteries, which can cause a fire or explosion. Fatal hazard!

- In schools, educational facilities, hobby and DIY workshops, the product must be operated under the supervision of qualified personnel.
- Always comply with accident prevention regulations for electrical equipment when using the product in industrial facilities.
- Do not leave packaging material lying around carelessly, as it may become dangerous playing material for children.
- Handle the product with care. Impacts or falls (even from a low height) may damage the product.
- If you are not sure how to operate the product correctly, or if you have any questions that are not answered in these operating instructions, contact us or another specialist.

## b) Setup location

- The charger must only be used in dry, enclosed indoor areas. It must not become damp or wet. Never place the product next to a bathtub, shower or other sources of moisture.
- Avoid direct sunlight, intense heat and cold temperatures. Keep the product and batteries away from dust and dirt.
- Do not use the product in rooms or in adverse conditions where flammable gas, vapours or dust may be present, as this may cause an explosion.
- Place the charger on a clean, level surface. Do not place the charger on flammable materials (e.g. a carpet or tablecloth). Always use a non-flammable, heatproof surface.
- Keep the charger away from flammable or combustible materials (e.g. curtains).
- Never cover the product, as this may cause it to overheat and catch fire. Do not insert any objects into the ventilation slots on the charger. Never interfere with the built-in fan.



- To prevent scratch marks and discolouration, always use suitable protection when placing the charger on valuable furniture. The same applies to the rechargeable batteries.
- Do not use the charger inside vehicles.
- The charger must be installed, used and stored in areas that are inaccessible to children. Children may accidentally short-circuit the rechargeable batteries, which can cause a fire or explosion. Fatal hazard!
- Do not use the charger in the immediate vicinity of strong magnetic/electromagnetic fields, transmitter aerials or HF generators. These may affect the electronic control system.
- Do not allow the power cable or battery cables to be squashed or damaged by sharp edges. Do not place any objects on the cables.
- Do not place any objects that contain liquid (e.g. vases or plants) on or next to the charger or power cable.

Liquids may destroy the charger and cause a fire. If liquids do get inside the charger, disconnect the charger from the power supply, and then remove all connected batteries. Discontinue use and take the charger to a specialist repair centre.

### c) Operation

- The charger can be powered by a stabilized direct voltage (11 - 32 V/DC), e.g. with a suitable power adapter, a car lead-acid battery, or a suitably powerful LiPo recharge battery.
- When handling the charger or rechargeable batteries, never wear metal or conductive objects (e.g. jewellery such as necklaces, bracelets or rings). This may cause a short circuit in the rechargeable battery or charging cable, which can lead to a fire or explosion.
- Never leave the product unattended during use. The charger comes with a range of safety mechanisms to ensure safe use. However, malfunctions may still occur from time to time.
- Ensure there is sufficient ventilation during use; never cover the charger. To prevent the charger from overheating and causing a fire, leave sufficient distance (min. 20 cm) between the charger and other objects.
- The charger is only suitable for charging LiPo rechargeable batteries with 3 or 4 cells. Never charge other types of rechargeable batteries or non-rechargeable batteries, as this may cause a fire or explosion!
- Batteries are connected to the charger via the balancer terminal. Make sure that the other cables connected to the battery cannot trigger a short circuit, as this may cause a fire or explosion!
- Do not connect several chargers together.
- The charger has four independent charging channels that can charge up to four batteries/battery packs at the same time. However, only one battery/battery pack can be connected to each charging channel. Never attempt to connect the charging channels together!
- Only use the product in temperate climates. It is not suitable for use in tropical climates. Refer to the "Technical data" section for information on the permitted ambient conditions.
- Never use the product immediately after it has been brought from a cold room into a warm one. This may generate condensation, which can cause the charger to malfunction or damage the interior components. Allow the product to reach room temperature before using it. This may take several hours.



- Do not use the charger in the immediate vicinity of strong magnetic or electromagnetic fields, transmitter aerials or HF generators. These may affect the electronic control system.
- If you suspect that safe operation is no longer possible, discontinue use immediately and prevent unauthorized use.

Disconnect the charger from the power supply and take it to a specialist repair centre, or dispose of it in an environmentally friendly manner.

- Safe operation is no longer possible if the product is visibly damaged or stops working, or if the product was stored in unfavourable conditions for an extended period or mishandled during transport.
- Keep the product in a cool, dry place out of the reach of children.

## 6. Battery information

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There are numerous hazards associated with the use of rechargeable batteries. Compared with conventional NiCd or NiMH rechargeable batteries, LiPo rechargeable batteries have a high energy content. For this reason, it is essential to comply with safety regulations to prevent the risk of a fire or explosion.

Always observe the following safety information when handling rechargeable batteries.

In addition, ensure that you observe any additional safety information provided by the battery manufacturer.

### a) General information

- Rechargeable batteries are not toys. Keep batteries out of the reach of children.
- Do not leave batteries lying around, as they constitute a choking hazard for children and pets. Seek immediate medical advice if a battery is swallowed.
- Rechargeable batteries must never be short-circuited, dismantled or thrown into fire. This may cause a fire or explosion!
- When handling leaking or damaged batteries, always use suitable protective gloves to avoid burning your skin.
- Never attempt to recharge non-rechargeable batteries, as this may cause a fire or explosion.

Non-rechargeable batteries are designed to be used once and must be disposed of properly when they are empty.

Only recharge compatible rechargeable batteries (see "Technical data").

- Batteries must not become damp or wet.
- Never use battery packs that are made of different types of cells.
- Disconnect the battery from your model before connecting it to the charger. Never leave the battery connected to a cruise control or autopilot system when it is charging. This may damage the charger, cruise control/autopilot system or the battery.
- Never charge/discharge a battery when it is inside a model. Always remove the battery from your model before connecting it to the charger.
- Place the charger and rechargeable battery on a non-flammable, heat-resistant surface (e.g. stone tiles). Keep the charger and battery away from flammable objects. Maintain a sufficient distance between the charger and the battery. Never place the battery on top of the charger.
- The charger and battery may heat up during the charging process. Always ensure that there is sufficient ventilation. Never cover the charger or the battery! Never interfere with the built-in fan.
- Never charge/discharge a battery when the charger is unattended.
- Always ensure that the battery is connected in the correct polarity (observe the plus/+ and minus/- symbols). Connecting the battery in the wrong polarity may damage the charger and/or battery and cause a fire or explosion!

The charger features a safety mechanism to prevent the battery from being connected in the wrong polarity. However, connecting the battery in the wrong polarity may still cause damage in certain scenarios.





- The charger has four independent charging channels that can charge up to four batteries/battery packs at the same time. However, only one battery/battery pack can be connected to each charging channel. Never attempt to connect the charging channels together.
- If you do not plan to use the charger for an extended period, disconnect any connected batteries from the charger, and then disconnect the charger from the power supply.
- Do not charge batteries when they are still hot (e.g. due to a high discharge current in your model). Allow the battery to cool down to room temperature before charging it.
- Never damage the casing of a rechargeable battery. This may cause a fire or explosion!
- Never charge damaged, leaking or deformed batteries. This may cause a fire or explosion! Discontinue use immediately and dispose of the battery in an environmentally friendly manner.
- Disconnect the battery from the charger when the battery is fully charged.
- Rechargeable batteries should be charged at least once every 3 months to prevent damage due to overdischarge.
- Store rechargeable batteries in a suitable indoor location with a smoke detector. Batteries present a fire hazard and may generate toxic fumes. This applies in particular to model toy batteries, which are subjected to high charging/discharge currents and vibrations.

## **b) Additional information about lithium rechargeable batteries**

Modern lithium rechargeable batteries have a significantly higher capacity than NiMH and NiCd batteries and are more lightweight. This makes lithium batteries (such as LiPo batteries) particularly suitable for use in models.

However, LiPo batteries require particular care to ensure safe use.

The following section provides an overview of the potential hazards associated with LiPo batteries and explains how these hazards can be avoided to ensure a long lifespan.

Please also refer to the battery safety information in section 6. a).

- The casing of many lithium batteries is made of a thick film, which is very sensitive.  
Do not dismantle, drop or insert any objects into lithium batteries. Do not apply mechanical loads or pull on the battery's connection cables. This may cause a fire or explosion!  
Always observe these instructions when inserting or removing a battery from your model.
- Ensure that the battery does not overheat during use, recharging, discharging, transport or storage. Do not place rechargeable batteries next to sources of heat (e.g. a cruise control system or motor) or expose them to direct sunlight. This may cause the battery to overheat, which can cause a fire or explosion!  
The temperature of the battery must not exceed +60 °C (or the maximum temperature stated in the manufacturer's instructions).
- If there are any signs of damage (e.g. if your model is subjected to an impact), or the battery casing is swollen, discontinue use immediately. Do not attempt to recharge the battery, as this may cause a fire or explosion!

Exercise caution when handling the damaged battery and use suitable protective gloves. Dispose of the battery in an environmentally friendly manner.



- Do not store damaged batteries indoors or in your garage. Damaged or swollen lithium batteries may catch fire.
- Always use a compatible charger to charge lithium batteries. Do not use NiCd, NiMH or lead-acid battery chargers, as these may cause a fire or explosion.

Always select the correct charging mode/current for your rechargeable battery.

- Always use a balancer when charging a lithium battery with more than one cell (the charger comes with a built-in balancer).
- The charge rate for LiPo batteries must not exceed 1C (or the value stated in the battery instructions). This means that the charging current must not exceed the battery capacity (e.g. battery capacity = 1000 mAh, max. charging current = 1000 mA = 1 A).
- The discharge current must not exceed the value stated on the battery.

For example, if "20C" is printed on the LiPo battery, the maximum discharge current is 20 times the battery's capacity (e.g. battery capacity = 1000 mAh, max. discharge current = 20C = 20 x 1000 mA = 20 A).

Exceeding the maximum current may cause the battery to overheat or become deformed, which can lead to a fire or explosion!

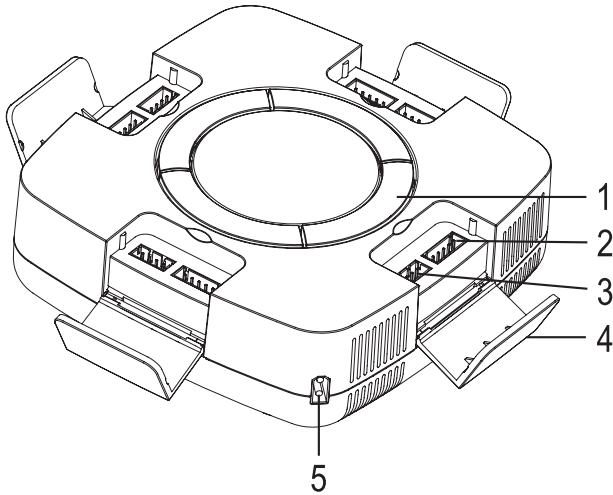
The printed value (e.g. 20C) indicates the maximum current that the battery can deliver for a short period. The continuous current should not be higher than one half of the stated value.

- Do not allow the individual cells of a lithium battery to become fully discharged, as this may cause permanent damage to the battery.

If your model does not have deep discharge protection or a low battery indicator, stop using it before the battery becomes empty.

# 7. Product overview

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- 1 Control button with LED indicator
- 2 XH connection to charge a 4-cell LiPo battery (rated voltage = 14.8 V)
- 3 XH connection to charge a 3-cell LiPo battery (rated voltage = 11.1 V)
- 4 Cover
- 5 DC input (11 - 32 V/DC stabilised voltage), e.g. for connecting to an external car lead-acid battery



The charger has four independent charging channels. Each charging channel has a connection (XH socket) for a 3 or 4-cell LiPo battery. Do not connect more than one battery to each terminal. The two sockets on each channel cannot be used at the same time.

# 8. Getting Started / Operation

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## a) Connecting the charger to the power supply

The charger has a maximum total charging power of 200 W (up to 84 W per channel). The power supply must be selected according to the actual charging power (this depends on the battery type, number of cells and the charging current).

→ When the charger delivers the maximum charging power of 200 W, the power consumption will be approximately 20 - 30 % higher due to conversion losses.

If the charger is powered with a fixed voltage power adapter, it must be able to deliver a sufficiently high current.

The input voltage must be at least 16.8 V in order for the charger to deliver the maximum 200 W charging power.

Ensure that the battery is connected in the correct polarity (observe the plus/+ and minus/- symbols).

The charger turns on automatically when it is connected to the power supply and is ready for immediate use.

## b) Connecting a battery to the charger



**Please read the following section carefully before connecting/charging a battery.**

- If you have not already done so, read the information in sections 5 and 6.
- Do you know the battery's specifications? Do not connect or charge a battery if the specifications are not printed on the casing.
- Never use an excessive charging current, as this may cause the battery to overheat, catch fire or explode.
- Are all cables and plugs intact? Do the plugs fit securely into the sockets? Worn-out plugs and damaged cables should be replaced.
- Never connect more than one battery/battery pack to each terminal or connect the terminals together. Each channel is independent.
- If you wish to charge a self-assembled battery pack, the cells must be identical (same type, capacity and manufacturer).
- Before connecting a battery/battery pack to the charger, disconnect the battery from your model (e.g. cruise control or autopilot system).
- The battery is charged via the built-in balancer. As a result, it is important to ensure that none of the other battery cables can cause a short circuit. A short circuit may cause a fire or explosion.
- It is not possible to charge batteries using a 'standard' two-pole connection. The battery charges via the balancer socket. If the battery does not have an XH plug, use an adapter cable (not included, available separately).

## c) Charging a battery



- The charger has four independent charging channels that can charge up to four batteries at the same time. Each charging channel has a connection (XH socket) for a 3 or 4-cell LiPo battery.
- Do not connect more than one battery to each terminal. The two sockets on each channel cannot be used at the same time.

Do not short circuit the contacts on the unused socket, as the pins for the first 3 cells are connected to each other. This may cause the battery to catch fire or explode!

- There are different types of balancer plug. Do not attempt to force the plug into the socket. If necessary, purchase a suitable adapter to connect the balancer plug to the charger.

Occasionally, some batteries with more than one cell have separate connections for each cell. These batteries are not strictly speaking 'multi-cell' batteries. Always refer to the design and voltage specifications provided by the battery manufacturer.

- When using self-assembled batteries, always ensure that the balancer plug is connected correctly. The black cable is the negative pole for the first cell. The next connection pin is the positive pole for the first cell; the subsequent connection pins are the negative poles for the second, third and fourth cells (depending on the number of cells).

The last connection pin on the balancer plug is the positive pole of the last cell. This means that the voltage between the two outer pins on the balancer plug is the same as the voltage on the two battery connections.

- The charging current depends on the battery capacity (see section 6. b). Always refer to the specifications in the manufacturer's instructions.

The charging process for LiPo batteries consists of two stages. During the first stage, the battery is charged with a constant current. When the maximum permitted cell voltage is reached (e.g. 4.2 V), the voltage is kept constant, which causes the charging current to drop. When the charging current drops below a certain threshold, the battery stops charging and the charging process is complete.

### To charge a battery, follow the steps below:

- Connect the charger to the power supply. The charger conducts a short test and the four LEDs will flash green.
- Open the cover (4) for the desired charging channel.
- Connect the battery to the XH socket.
  - 4-pin XH-socket = Connection for 3-cell LiPo battery (rated voltage = 11.1 V)
  - 5-pin XH-socket = Connection for 4-cell LiPo battery (rated voltage = 14.8 V)
- To set the charging current, press the control button (1) next to the cover. The LED indicator on the button shows the selected charging current:
  - Green LED = 2 A charging current
  - Yellow LED = 3 A charging current
  - Red LED = 5 A charging current

- Press and hold the control button for 2 seconds to start charging the battery. The LED on the button will start to flash to indicate that the battery is charging.

→ The built-in balancer ensures that each cell is charged to the same voltage. This prevents the cells from over or undercharging.

The balancer is designed to protect against overcharging, which can cause the battery to catch fire or explode. In addition, it also helps to ensure optimal battery performance for your model by charging each cell to the same voltage.



If the LED indicator on the control button flashes red and green, this indicates that there is an error. This may be due to a bad contact between the battery and charger or a defective battery/battery cell. In addition, the XH plug may not be inserted in the correct socket, or the charger may be overheating.

If this occurs, disconnect the battery from the charger. Check the XH plug on the battery. If necessary, measure the voltage of each cell. Allow the charger to cool down before using it again.

- The LED will flash quickly when the charging process is complete. Disconnect the battery from the charger.

→ Press the control button to stop the charging process.

- Disconnect the charger from the power supply when you have finished using it. Close all covers and ensure that they click into place. Keep the product in a cool, dry place out of the reach of children.

## 9. Maintenance and cleaning

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The product does not require any maintenance. Never attempt to dismantle the charger. Maintenance and repair work must be completed by a technician or a specialist repair centre.



Before cleaning the charger, disconnect all batteries, and then disconnect the charger from the power supply.

Never use aggressive detergents, rubbing alcohol or other chemical solutions, as these may damage the casing or cause the product to malfunction.

Use a dry, lint-free cloth to clean the product.

Dust can be removed using a clean, soft brush and a vacuum cleaner.

# 10. Disposal

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## a) Product



Electronic devices are recyclable waste and must not be placed in household waste. Always dispose of the product according to the relevant statutory regulations.

## b) Batteries

You are required by law to return all used batteries. They must not be placed in household waste.



Batteries containing hazardous substances are labelled with this symbol to indicate that disposal in household waste is forbidden. The abbreviations for heavy metals in batteries are: Cd = Cadmium, Hg = Mercury, Pb = Lead (indicated on the battery, e.g. below the trash icon on the left).

Used batteries can be returned to local collection points, our stores or battery retailers.

You thus fulfil your statutory obligations and contribute to the protection of the environment.

# 11. Technical data

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Operating voltage .....	11 - 32 V/DC
Maximum input current .....	Approx. 15 A
Charging channels.....	4
Charging current.....	2 A, 3 A or 5 A
Charging power .....	Up to 84 W per channel Up to 200 W in total
Compatible battery type .....	LiPo: 3-cell (3S, rated voltage = 11.1 V) 4-cell (4S, rated voltage = 14.8 V)
Connection type.....	XH
Balancer discharge current.....	400 mA per cell
End-of-charge voltage .....	4.2 V per cell
Built-in fan.....	Yes (turns on automatically)
Ambient conditions .....	Temperature 0 °C to +40 °C, Relative air humidity 0% to 90 % (non-condensing)
Dimensions.....	128 x 128 x 43.5 mm (L x W x H)
Weight .....	280 g

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