

Ⓜ Operating Instructions

Laboratory Power Supply

Item no: 3438794 (CSP-100)

Item no: 3438792 (CSP-120)

Item no: 3438793 (CSP-140)

Item no: 3438796 (CSP-160)

Item no: 3438795 (CSP-180)

Item no: 3438790 (CSP-200)

Item no: 3438791 (CSP-220)

Item no: 3438553 (CSP-240)

Item no: 3438555 (CSP-300)

Item no: 3438556 (CSP-310)

Item no: 3438554 (CSP-320)

Item no: 3438557 (CSP-400)



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1 Operating Instructions for download

Use the link www.conrad.com/downloads (alternatively scan the QR code) to download the complete operating instructions (or new/current versions if available). Follow the instructions on the web page.

2 Intended use

The product is a laboratory power supply. The product is intended to be used as a potential-free source of power for the operation of low-voltage units. It has been developed for universal use in the research, development, manufacturing, service and training fields.

The product is designed for private and commercial use.

In commercial institutions, the accident prevention regulations of the Employer's Liability Insurance Association for Electrical Systems and Operating Materials are to be observed.

The product can be used in schools and training centres. The use must be supervised by trained personnel.

The product is intended for indoor use only. Do not use it outdoors.

Contact with moisture must be avoided under all circumstances.

If you use the product for purposes other than those described, the product may be damaged.

Improper use can result in short circuits, fires, electric shocks or other hazards.

The product complies with the statutory national and European requirements.

For safety and approval purposes, you must not rebuild and/or modify the product.

Read the operating instructions carefully and store them in a safe place. Make this product available to third parties only together with the operating instructions.

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3 Delivery contents

- Product

- Mains cable and Power adapter (Best.-Nr. 3438555, 3438556, 3438554, 3438557)
- Operating instructions

4 Description of symbols

The following symbols are on the product/appliance or are used in the text:



The symbol warns of hazards that can lead to personal injury.



The symbol warns of dangerous voltage that can lead to personal injury by electric shock.



Protection class 2 (double or reinforced insulation, protective insulation).

5 Safety instructions



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

5.1 General

- The product is not a toy. Keep it out of the reach of children and pets.
- Do not leave packaging material lying around carelessly. This may become dangerous playing material for children.
- If you have questions which remain unanswered by this information product, contact our technical support service or other technical personnel.
- Maintenance, modifications and repairs must only be completed by a technician or an authorised repair centre.

5.2 Personal safety

- Conduct measuring works only in dry clothing and in rubber shoes, i.e. on isolating mats.
- Comply with the warning labels and other information on the equipment.

5.3 Limitations

- Never exceed the technical limitations and ratings of the product. Refer to the "Technical data" for details.

5.4 Handling

- Handle the product carefully. Jolts, impacts or a fall even from a low height can damage the product.

5.5 Electrical safety

- While using the product, do not carry any conductive metal objects or jewelry such as chains, bracelets, rings, etc.
- Do not place water-filled containers on the product.
- Never pour any liquids over electrical devices or put objects filled with liquid right next to the device. If liquid or an object enters the interior of the device nevertheless, first power down the respective socket (e.g. switch off circuit breaker) and then pull the mains plug from the mains socket. Do not operate the product anymore afterwards, but take it to a specialist workshop.
- Do not use the product as a charger.
- Do not insert metal objects into the equipment by way of the ventilation slots.
- Do not touch live electrical connections.

5.6 Li-ion battery

Note:

Applicable to: Item no: 3438555 (CSP-300), Item no: 3438556 (CSP-310), Item no: 3438554 (CSP-320), Item no: 3438557 (CSP-400)

- Never damage the rechargeable battery. Damaging the casing of the rechargeable battery might cause an explosion or a fire!

- Never short-circuit the contacts of the rechargeable battery. Do not throw the battery or the product into fire. There is a danger of fire and explosion!
- Charge the rechargeable battery regularly, even if you do are not using the product. Due to the rechargeable battery technology being used, you do not need to discharge the rechargeable battery first.
- Never charge the rechargeable battery of the product unattended.
- When charging, place the product on a surface that is not heat-sensitive. It is normal that a certain amount of heat is generated during charging.

5.7 Mains cable



Do not modify or repair mains supply components including mains plugs, mains cables, and power supplies. Do not use damaged components. Risk of death by electric shock!

- The mains outlet must be located near to the device and be easily accessible.
- Never plug in or unplug the mains plug when your hands are wet.
- Never pull the mains plug from the socket by pulling at the cable. Always pull it from the mains socket using the intended grips.
- Unplug the mains plug from the mains socket if you do not use the device for an extended period of time.
- Disconnect the mains plug from the mains socket in thunderstorms for reasons of safety.
- Make sure that the mains cable is not squeezed, bent, damaged by sharp edges or put under mechanical stress.
- Avoid excessive thermal stress on the mains cable from extreme heat or cold.
- Do not modify the mains cable. Otherwise the mains cable may be damaged. A damaged mains cable can cause a deadly electric shock.
- Do not touch the mains cable if it is damaged.
 - First, power down the respective mains socket (e.g. via the respective circuit breaker) and then carefully pull the mains plug from the mains socket.
 - Never use the product if the mains cable is damaged.

- A damaged mains cable may only be replaced by the manufacturer, a workshop commissioned by the manufacturer or a similarly qualified person, so as to prevent any danger.
- Ensure that cables are not pinched, kinked or damaged by sharp edges.
- Always lay cables so that nobody can trip over or become entangled in them. This poses a risk of injury.

5.8 Power adapter

Note:

Applicable to: Item no: 3438555 (CSP-300), Item no: 3438556 (CSP-310), Item no: 3438554 (CSP-320), Item no: 3438557 (CSP-400)



Do not modify or repair mains supply components including mains plugs, mains cables, and power supplies. Do not use damaged components. Risk of death by electric shock!

- Connect the appliance to a wall socket that can be accessed easily.
- As power supply, only use the supplied mains adaptor.
- Only connect the power adaptor to a normal mains socket connected to the public supply. Before plugging in the power adaptor, check whether the voltage stated on the power adaptor complies with the voltage of your electricity supplier.
- Never connect or disconnect power adaptors if your hands are wet.
- Never unplug the power adaptor from the mains socket by pulling on the cable; always use the grips on the plug.
- For safety reasons, disconnect the power adaptor from the mains socket during storms.
- Do not touch the power adapter if there are any signs of damage, as this may cause a fatal electric shock! Take the following steps:
 - Switch off the mains voltage to the socket containing the power adapter (switch off the corresponding circuit breaker or remove the safety fuse, and then switch off the corresponding RCD protective switch).
 - Unplug the power adapter from the mains socket.

- Use a new power adapter of the same design. Do not use the damaged adapter again.
- Ensure that cables are not pinched, kinked or damaged by sharp edges.
- Always lay cables so that nobody can trip over or become entangled in them. This poses a risk of injury.

5.9 Operating environment

- In commercial institutions, the accident prevention regulations of the employer's liability insurance association for electrical systems and operating facilities are to be observed.
- Use the product only in a temperate climate, never in a tropical climate.
- Do not place the product under any mechanical stress.
- Protect the appliance from extreme temperatures, strong jolts, flammable gases, steam and solvents.
- Protect the product from high humidity and moisture.
- Protect the product from direct sunlight.
- Do not switch the product on after it has been taken from a cold to a warm environment. The condensation that forms might destroy the product. Allow the product to reach room temperature before you use it.
- Do not have any open flames in the direct vicinity of the laboratory power supply and do not place any containers with liquids on or near the device.
- Choose a location for the laboratory power supply that is stable, even, clean and sufficient in size.
- Do not operate the product in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.

5.10 Operation

- Only connect the product to a normal mains socket connected to the public supply. Before plugging in, check whether the voltage stated on the rating plate complies with the voltage of your electricity supplier.
- Before and during use, make sure that your hands, shoes, clothing, the floor and the device itself are dry.
- The product is not approved for use on persons or animals.

- Never leave the product unattended during use.
- Allow the equipment to stabilize at room temperature before taking up measurement (important for exact measurement).
- Do not place the equipment face-down on any table or work bench to prevent damaging the controls at the front.
- Consult an expert when in doubt about the operation, safety or connection of the product.
- Do not use the device shortly before or after a thunderstorm (lightning/high-power surges). Make sure that your hands, shoes, clothing, the floor, the measuring device/test leads, circuits and circuit components are dry.
- Take particular care when dealing with voltages exceeding 25 V/AC or 35 V/DC. Touching electrical conductors with these voltages may cause a fatal electric shock.
- The product will heat up during operation; ensure appropriate ventilation. Do not cover the ventilation openings on the device!
- Do not leave the product and connected consumers in operation unattended.
- Do not disassemble the product! An electric shock can be life-threatening! Capacitors inside the device may still be charged, even if the device has been disconnected from all voltage sources.
- The product is not designed for use on humans or animals.
- If it is no longer possible to operate the product safely, take it out of operation and protect it from any accidental use. DO NOT attempt to repair the product yourself. Safe operation can no longer be guaranteed if the product:
 - is visibly damaged,
 - is no longer working properly,
 - has been stored for extended periods in poor ambient conditions or
 - has been subjected to any serious transport-related stresses.

5.11 Defects

- Make sure that the insulation of the product, of the safety plugs, of all connected cables and the power supply components are not damaged or destroyed.

5.12 Cooling

- Never cover the product to ensure adequate cooling.
- The product generates heat during operation. Do not obstruct the ventilation in any way.

5.13 Repairs and modifications

- Do not modify the product in any way.
- Be aware that capacitors located in the product may still be charged even when the device is unplugged.
- Disconnect the device from the power outlet before opening it.
- Opening the equipment and any service and repair work must be performed by qualified service personnel. Repair work should be performed in the presence of a second person trained to administer first aid, if needed.

5.14 Fuses

- Only use fuses of the specified type and rated current. Repaired fuses must not be used.

5.15 Connections

- Do not use bare wires for connections. There is a risk of short-circuit and fire.
- Use test leads that meets the voltage and current specifications of this device. There is a risk of fire due to overvoltage.

5.16 Connected devices

- Also observe the safety and operating instructions of any other devices which are connected to the product.

6 Setting up

1. Switch the power switch to the "OFF" position to switch the product off.
2. Disconnect the load.
3. Place the product on a sturdy and even surface.
4. (Product with mains cable) Connect the power cable to the mains supply.

5. (Product with power adaptor) Connect the DC input connector to the DC input port on the product. Connect the power adaptor to the mains supply.

7 Installing rechargeable batterie(s)

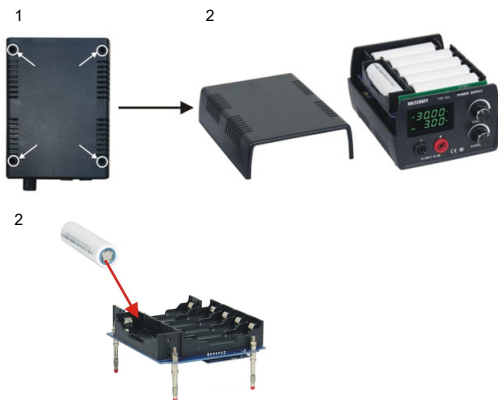
The product can be operated via the power adaptor or via the rechargeable battery pack. Rechargeable batteries are not supplied.

Note:

Applicable to: Item no: 3438555 (CSP-300), Item no: 3438556 (CSP-310), Item no: 3438554 (CSP-320), Item no: 3438557 (CSP-400)

Important:

- Rechargeable batteries are not supplied.
- Use only 18650 3.7V Li-ion rechargeable batteries of the same type. Do not mix old and new batteries.

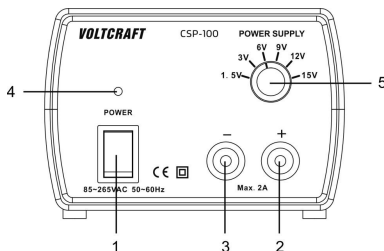


1. Switch the product off using the power switch.
2. Disconnect all connections including the power plug.

3. Loosen the four screws on the bottom.
→ Screws are loosened. See 1.
4. Remove the cover.
5. Remove the battery holder.
→ Battery holder is removed. See 2.
6. Replace the old batteries with new ones.
→ New batteries are installed. See 3.
7. Attach the cover.
8. Install and tighten the screws on the bottom of the power supply.

8 Operation [CSP-100] (Item no. 3438794)

8.1 Product overview



1

Power switch

Switch the product on (position I) and off (position 0).

2

DC output terminal (+)

Connect the positive terminal of the load.

3

DC output terminal (-)

Connect the negative terminal of the load.

4

Indicator

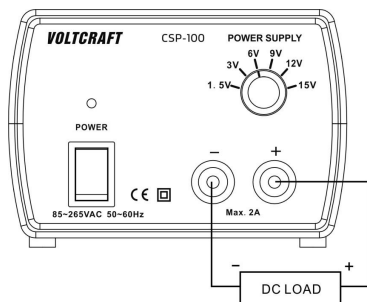
The indicator lights up if the product is powered on.

5

Voltage knob

Set the output voltage value in steps

8.2 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

Note:

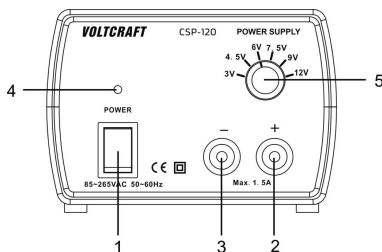
For high precision adjustments, use an external measuring instrument to monitor the output.

1. Switch off the product using the power switch.

2. Rotate the voltage knob to select the desired voltage.
3. Connect the load as shown in the diagram.
4. Switch on the product using the power switch.
5. After use and before disconnecting loads, switch the product off.

9 Operation [CSP-120] (Item no. 3438792)

9.1 Product overview



1

Power switch

Switch the product on (position I) and off (position 0).

2

DC output terminal (+)

Connect the positive terminal of the load.

3

DC output terminal (-)

Connect the negative terminal of the load.

4

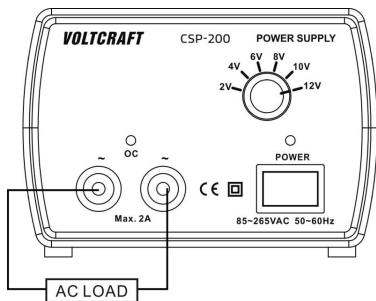
Indicator

The indicator lights up if the product is powered on.

Voltage knob

Set the output voltage value in steps

9.2 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

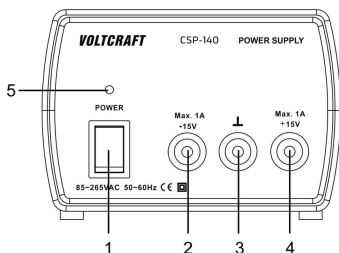
Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

1. Switch off the product using the power switch.
2. Rotate the voltage knob to select the desired voltage.
3. Switch off the product using the power switch.
4. Connect the load as shown in the diagram.
5. Switch on the product using the power switch.
6. After use and before disconnecting loads, switch the product off.

10 Operation [CSP-140] (Item no. 3438793)

10.1 Product overview



1

Power switch

Switch the product on (position I) and off (position 0).

2

DC output terminal (-)

Connect the negative terminal of the load.

3

Output center terminal

Connect the 0 V reference; this is the 0V point

4

Output terminal (+)

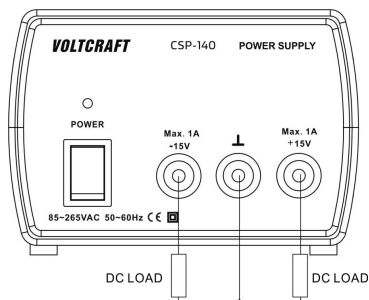
Connect the positive terminal of the load.

5

Indicator

The indicator lights up if the product is powered on.

10.2 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

Connection choices:

- For +15V output, connect the load to the center terminal and the positive terminal.
- For -15V output, connect the load to the negative terminal and the center terminal.
- For 30V output, connect the load to the negative terminal and the positive terminal.

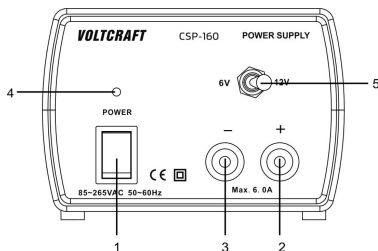
Operation:

1. Switch off the product using the power switch.
2. Connect the load as shown in the diagram.

3. Switch on the product using the power switch.
4. After use and before disconnecting loads, switch the product off.

11 Operation [CSP-160] (Item no. 3438796)

11.1 Product overview



1

Power switch

Switch the product on (position I) and off (position 0).

2

DC output terminal (+)

Connect the positive terminal of the load.

3

DC output terminal (-)

Connect the negative terminal of the load.

4

Indicator

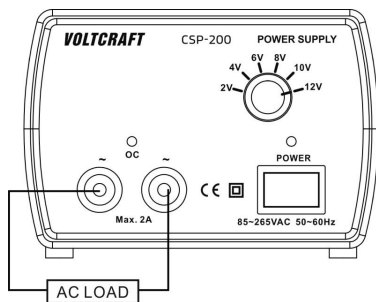
The indicator lights up if the product is powered on.

5

Voltage selection switch

Set the output voltage value.

11.2 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

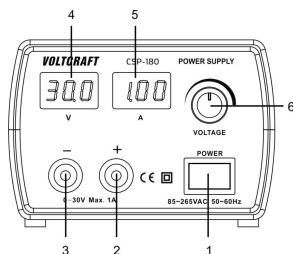
Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

1. Switch off the product using the power switch.
2. Rotate the voltage knob to select the desired voltage.
3. Switch off the product using the power switch.
4. Connect the load as shown in the diagram.
5. Switch on the product using the power switch.
6. After use and before disconnecting loads, switch the product off.

12 Operation [CSP-180] (Item no. 3438795)

12.1 Product overview



1

Power switch

Switch the product on (position I) and off (position 0).

2

DC output terminal (+)

Connect the positive terminal of the load.

3

DC output terminal (-)

Connect the negative terminal of the load.

4

Voltage display

Shows the output voltage.

5

Current display

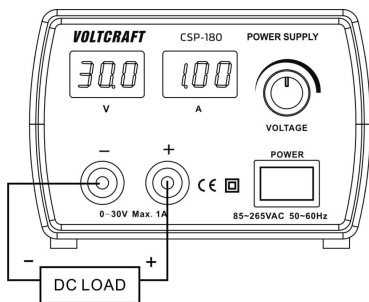
Shows the output current.

6

Voltage knob

Adjust/set the output voltage

12.2 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

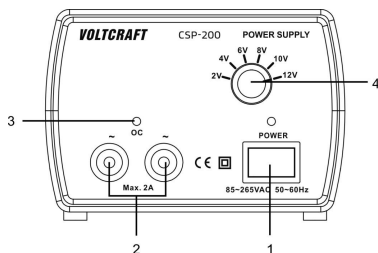
Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

1. Switch off the product using the power switch.
2. Disconnect the load.
3. Switch on the product using the power switch.
4. Turn the voltage knob to select the desired output voltage.
5. Switch off the product using the power switch.
6. Connect the load as shown in the diagram.
7. Switch on the product using the power switch.
8. After use and before disconnecting loads, switch the product off.

13 Operation [CSP-200] (Item no. 3438790)

13.1 Product overview



1

Power switch

Switch the product on (position I) and off (position 0).

2

Fixed AC output terminal

Connect to the AC load

3

Overcurrent protection indicator

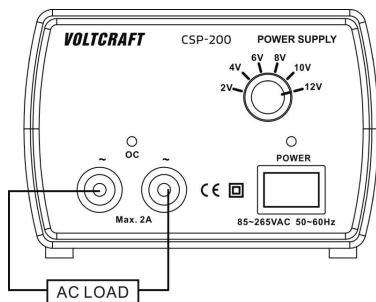
If the product enters overcurrent protection, the red indicator lights up.

4

Voltage knob

Adjust/set the output voltage

13.2 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

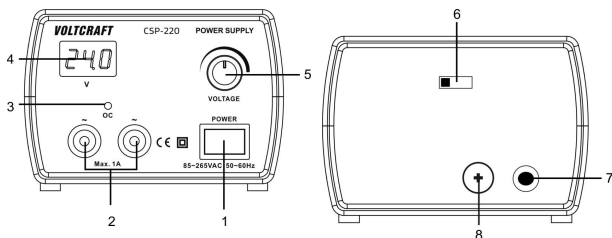
Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

1. Switch off the product using the power switch.
2. Rotate the voltage knob to select the desired voltage.
3. Switch off the product using the power switch.
4. Connect the load as shown in the diagram.
5. Switch on the product using the power switch.
6. After use and before disconnecting loads, switch the product off.

14 Operation [CSP-220] (Item no. 3438791)

14.1 Product overview



1

Power switch

Switch the product on (position I) and off (position 0).

2

AC output terminal

Connect the load.

3

Overcurrent protection indicator

If the product enters overcurrent protection, the red indicator lights up.

4

Voltage display

Shows the output voltage.

5

Voltage adjustment knob

Adjust the output voltage continuously.

6

Output frequency selection switch

Switch between 50Hz, 60Hz, and line tracing mode.

7

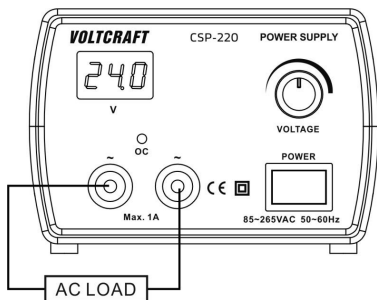
Power cable

8

Fuse

Input fuse

14.2 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

Note:

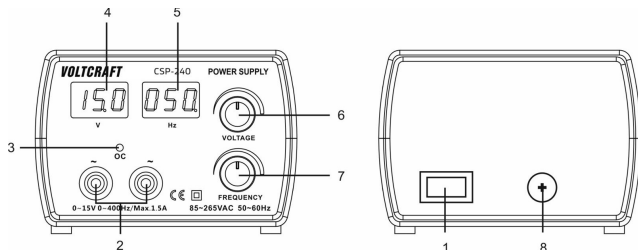
Set the output frequency before switching on the power supply. After switching on, you cannot change the frequency.

1. Switch off the product using the power switch.

2. Disconnect the load.
3. Switch on the product using the power switch.
4. Select the output frequency with the output frequency selection switch.
5. Turn the voltage knob to set the desired output voltage.
6. Switch off the product using the power switch.
7. Connect the load as shown in the diagram.
8. Switch on the product using the power switch.
9. After use and before disconnecting loads, switch the product off.

15 Operation [CSP-240] (Item no. 3438553)

15.1 Product overview



1

Power switch

Switch the product on (position I) and off (position 0).

2

AC output terminal

Connect to the AC load.

3

Overcurrent protection indicator

If the product enters overcurrent protection, the red indicator lights up.

4

Voltage display

Shows the output voltage (normal state) or the setup voltage (decimal point flashing).

5

Frequency display

Shows the frequency of output AC power (normal state) or the setup frequency (decimal point flashing).

6

Voltage adjustment knob (rotate)

Adjust the output voltage continuously / Overcurrent reset (press): reset the product to normal state.

7

Frequency knob (rotate)

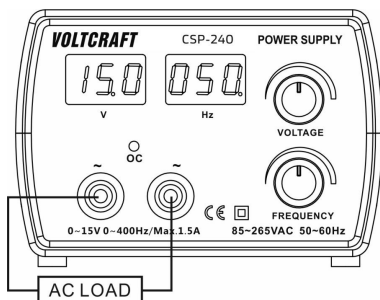
Adjust the output AC frequency continuously / Frequency preset (press): quickly load commonly used preset frequencies (50Hz, 60Hz, 100Hz, 400Hz).

8

Fuse

Input fuse

15.2 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

Note:

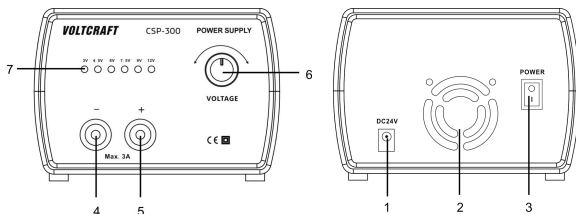
If setting the output voltage or frequency, the display shows the setup value with the decimal point flashing (not the output value). The display returns to normal and displays the output value after a few seconds when setup is finished.

1. Switch off the product using the power switch.
2. Disconnect the load.
3. Switch on the product using the power switch.
4. Set the output voltage with the voltage knob.
5. Set the output frequency with the frequency knob. Press the frequency knob to load commonly used frequencies.

6. Switch off the product using the power switch.
7. Connect the load as shown in the diagram.
8. Switch on the product using the power switch.
 - (In case of overload) If the power supply enters overcurrent protection, the indicator **OC** lights up. Remove the AC load and resolve the overload problem, reconnect, then press the voltage knob to reset the output state.
9. After use and before disconnecting loads, switch the product off.

16 Operation [CSP-300] (Item no. 3438555)

16.1 Product overview



1

DC input port

Connect the power adaptor to power the product.

2

Cooling fan

3

Power switch

Switch the product on (position I) and off (position 0).

4

DC output terminal (-)

Connect the negative terminal of the load.

5

Output terminal (+)

Connect the positive terminal of the load.

6

Multifunction knob

Adjust voltage; Switch battery charging on/off;

7

Output voltage indicator

The indicators indicate the current output voltage.

16.2 Charging the rechargeable battery

Note:

Power cannot be output while the rechargeable battery is being charged.

1. Connect the power adapter to the DC input port.
2. Press and hold the voltage knob for 3 seconds to activate the charging mode. The output voltage indicators indicate the charging progress.
 - If the currently selected output voltage is indicated again, the rechargeable battery is fully charged.

16.3 Selecting battery or power supply mode

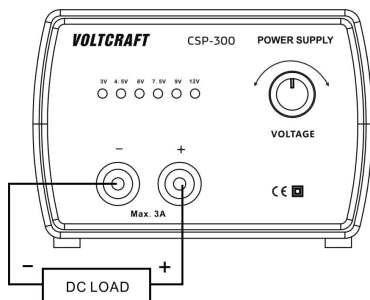
Switch the unit between battery and power supply operation modes.

Important:

If the rechargeable battery is empty, the power supply cuts off the output and all voltage indicators flash.

1. To operate in power supply mode, connect the power adapter to the DC input port.
2. To operate in battery mode, disconnect the power adapter from the DC input port.

16.4 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

1. Switch off the product using the power switch.
2. Disconnect the load.
3. Switch on the product using the power switch.
4. Turn the voltage knob to select the desired output voltage.
5. Switch off the product using the power switch.
6. Connect the load as shown in the diagram.
7. Switch on the product using the power switch.
8. After use and before disconnecting loads, switch the product off.

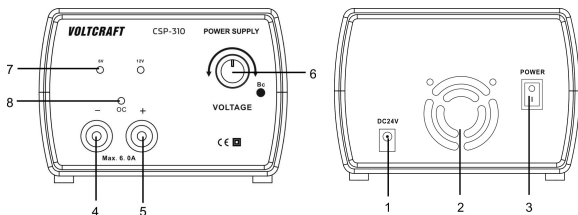
16.5 Resolving overcurrent or short-circuit state

If the product enters the short-circuit or overcurrent state, all voltage indicators flash. In overcurrent mode, current is limited to 3 A.

1. Turn off the power supply and disconnect the load.
2. Check and resolve the load issue.
3. Reconnect the load.
4. Switch on the product using the power switch.

17 Operation [CSP-310] (Item no. 3438556)

17.1 Product overview



1

DC input port

Connect the power adaptor to power the product.

2

Cooling fan

3

Power switch

Switch the product on (position I) and off (position 0).

4

DC output terminal (-)

Connect the negative terminal of the load.

5

Output terminal (+)

Connect the positive terminal of the load.

6

Multifunction knob

Adjust voltage; Switch battery charging on/off;

7

Output voltage indicator

The indicators indicate the current output voltage.

8

Overcurrent indicator OC

Indicates a short-circuit or overcurrent

17.2 Charging the rechargeable battery

Note:

Power cannot be output while the rechargeable battery is being charged.

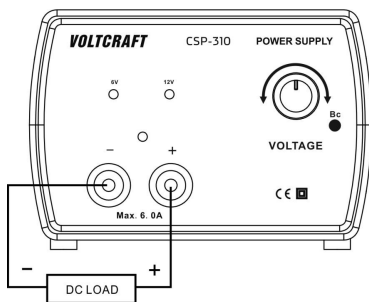
1. Connect the power adapter to the DC input port.
2. Press the voltage knob for 3 seconds to activate the charging mode. The output voltage indicators flash to indicate the charging progress.
→ If the recharge is complete, the currently set voltage is displayed again.

17.3 Selecting battery or power supply mode

If the battery is empty, the power supply cuts off the output and all voltage indicators flash.

1. To operate in power supply mode, connect the power adapter to the DC input port.
2. To operate in battery mode, disconnect the power adapter from the DC input port.

17.4 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

1. Switch off the product using the power switch.
2. Disconnect the load.
3. Switch on the product using the power switch.
4. Turn the voltage knob to select the desired output voltage.
5. Switch off the product using the power switch.
6. Connect the load as shown in the diagram.
7. Switch on the product using the power switch.
8. After use and before disconnecting loads, switch the product off.

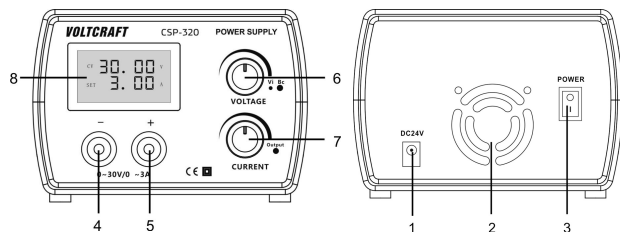
17.5 Resolving overcurrent or short-circuit state

If the product enters short-circuit or overcurrent state, the indicator OC lights up and the output is cut off.

1. Turn off the power supply and disconnect the load.
2. Check and resolve the load issue.
3. Reconnect the load.
4. Switch on the product using the power switch.

18 Operation [CSP-320] (Item no. 3438554)

18.1 Product overview



1

DC input port

Connect the power adaptor to power the product.

2

Cooling fan

3

Power switch

Switch the product on (position I) and off (position 0).

4

DC output terminal (-)

Connect the negative terminal of the load.

5

Output terminal (+)

Connect the positive terminal of the load.

6

Voltage setup button

Set the output voltage

7

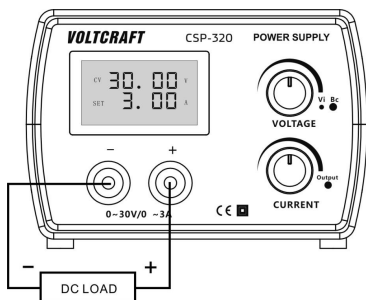
Multifunction knob

Adjust current; Switch input voltage display on/off

8

Display

18.2 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

1. Switch off the product using the power switch.
2. Disconnect the load.
3. Switch on the product using the power switch.
4. Turn the voltage knob to select the desired output voltage.
5. Turn the current knob to select the output current.
6. Switch off the product using the power switch.
7. Connect the load as shown in the diagram.
8. Switch on the product using the power switch.
9. Press the current knob to start output.

→ The display shows "OUT" (output state).

10. (For battery power supply) Press the voltage knob to display the battery input voltage.
11. To temporarily interrupt the power supply, press the current knob to start output.
→ The display shows "SET".
12. After use and before disconnecting loads, switch the product off.

18.3 Charging the rechargeable battery

Note:

Power cannot be output while the rechargeable battery is being charged.



1. Connect the power adapter to the DC input port.
2. Press the current knob until the display shows SET (preset state).
3. Press the voltage knob for 3 seconds to activate charging mode.
 - The display indicates charging progress.
 - If charging is complete, the display returns to the preset state.

18.4 Selecting battery or power supply mode

Switch the unit between battery and power supply operation modes.

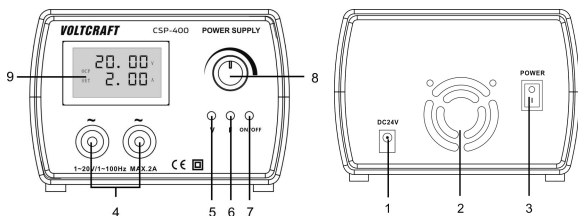
Important:

If the battery is empty, the power supply cuts off the output and all output voltage indicators flash.

1. To operate in power supply mode, connect the power adapter to the DC input port.
2. To operate in battery mode, disconnect the power adapter from the DC input port.

19 Operation [CSP-400] (Item no. 3438557)

19.1 Product overview



1

DC input port

Connect the power adaptor to power the product.

2

Cooling fan

3

Power switch

Switch the product on (position I) and off (position 0).

4

AC output terminal

Connect to the AC load.

5

Voltage setup button

Set the output voltage

6

Frequency button

Set the output frequency

7

Output on/off

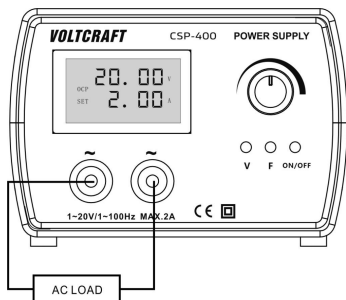
Switch the product output on or off

8

Multifunction knob

Adjust voltage and frequency; Display output current; Control charging of re-chargeable battery

19.2 Operation



Important:

Switch off loads before connecting and disconnecting the loads from the product. If the loads are switched on while connecting/disconnecting, sparking can occur and cause damage to the output sockets and plugs.

Note:

For high precision adjustments, use an external measuring instrument to monitor the output.

Note:

Current values that can be displayed differ between battery mode and power supply mode: max. 1 Arms (battery mode), max. 2 Arms (power supply mode).

1. Switch off the product using the power switch.
2. Disconnect the load.
3. Switch on the product using the power switch.
 - The display shows "SET" (preset state).
4. Press the voltage button, then turn the multifunction knob to select the output voltage.
5. Press the voltage button to confirm the output voltage.
6. Press the frequency button, then turn the multifunction knob to select the output frequency.
7. Press the frequency button to confirm the frequency.
8. Switch off the product using the power switch.
9. Connect the load as shown in the diagram.
10. Switch on the product using the power switch.
11. Press the on/off button to start output.
 - The display shows "OUT" (output state).
 - If the output is overloaded, the "OCP" indicator shows on the display.
Switch the product off and remove the load that caused the overload.
12. To show the current, press the multifunction knob 2x. Press the multifunction knob again to show the default display.
13. To temporarily interrupt the power supply, press the on/off button.
14. After use and before disconnecting loads, switch the product off.

19.3 Charging the rechargeable battery

Note:

Power cannot be output while the rechargeable battery is being charged.



1. Connect the power adapter to the DC input port.
2. Switch off the output by pressing the on/off button.
3. Press the multifunction knob for 3 seconds to activate charging mode.
 - The display indicates charging progress.
 - If charging is complete, the display returns to the preset state.

19.4 Selecting battery or power supply mode

Switch the unit between battery and power supply operation modes.

Important:

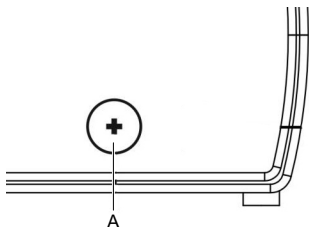
If the battery is empty, the power supply cuts off the output and all voltage indicators flash.

1. To operate in power supply mode, connect the power adapter to the DC input port.
2. To operate in battery mode, disconnect the power adapter from the DC input port.

20 Replacing the fuse

Note:

Applicable to: CSP-100 (Item no. 3438794), CSP-120 (Item no. 3438792), CSP-140 (Item no. 3438793), CSP-160 (Item no. 3438796), SP-180 (Item no. 3438795), CSP-200 (Item no. 3438790), CSP-220 (Item no. 3438791), CSP-240 (Item no. 3438553),



A Fuse holder

1. Switch on the product using the power switch.
 2. Disconnect all connections including the power supply.
 3. Remove the mains plug from the mains socket.
 4. Use a suitable screwdriver to remove the input fuse holder (A) at the rear of the product.
 5. Replace the faulty fuse with a new fuse of the same type and rated current (refer to "Technical data").
 6. Carefully insert the fuse cartridge into the fuse holder.
 7. Install the fuse holder.
 8. Check that the lab power supply operates correctly.
- The lab power supply is ready for use.

21 Cleaning

Important:

- Do not use aggressive cleaning agents, rubbing alcohol or other chemical solutions. They damage the housing and can cause the product to malfunction.
- Do not immerse the product in water.

1. Switch off the product using the power switch.
2. Disconnect the load.
3. Let the product cool down to ambient temperature.
4. Clean the product with a dry, fibre-free cloth.

22 Disposal

22.1 Product



This symbol must appear on any electrical and electronic equipment placed on the EU market. This symbol indicates that this device should not be disposed of as unsorted municipal waste at the end of its service life.

Owners of WEEE (Waste from Electrical and Electronic Equipment) shall dispose of it separately from unsorted municipal waste. Spent batteries and accumulators, which are not enclosed by the WEEE, as well as lamps that can be removed from the WEEE in a non-destructive manner, must be removed by end users from the WEEE in a non-destructive manner before it is handed over to a collection point.

Distributors of electrical and electronic equipment are legally obliged to provide free take-back of waste. Conrad provides the following return options **free of charge** (more details on our website):

- in our Conrad offices
- at the Conrad collection points

- at the collection points of public waste management authorities or the collection points set up by manufacturers or distributors within the meaning of the ElektroG

End users are responsible for deleting personal data from the WEEE to be disposed of.

It should be noted that different obligations about the return or recycling of WEEE may apply in countries outside of Germany.

22.2 (Rechargeable) batteries

Remove batteries/rechargeable batteries, if any, and dispose of them separately from the product. According to the Battery Directive, end users are legally obliged to return all spent batteries/rechargeable batteries; they must not be disposed of in the normal household waste.



Batteries/rechargeable 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 (name on (rechargeable) batteries, e.g. below the trash icon on the left).

Used (rechargeable) batteries can be returned to collection points in your municipality, our stores or wherever (rechargeable) batteries are sold. You thus fulfil your statutory obligations and contribute to environmental protection.

Batteries/rechargeable batteries that are disposed of should be protected against short circuit and their exposed terminals should be covered completely with insulating tape before disposal. Even empty batteries/rechargeable batteries can contain residual energy that may cause them to swell, burst, catch fire or explode in the event of a short circuit.

23 Technical data

23.1 Technical data [CSP-100] (Item no. 3438794)

Power supply	85 - 265 V/AC 50/60 Hz
Output voltage	1.5 V/DC, 3 V/DC, 6 V/DC, 9 V/DC, 12 V/DC, 15 V/DC
Output current.....	max. 2 A
Load regulation.....	150 mV
Line regulation	20 mV
Ripple and noise.....	20 mVrms
Output accuracy	±5 %
Short-circuit protection	Yes
Overcurrent protection	Yes
Protection class	II
Operation time	max. 8 hours
Fuse.....	T1.5AL250V
Power cord length.....	1.5 m
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 × 74 × 140 mm
Weight	300 g

23.2 Technical data [CSP-120] (Item no. 3438792)

Power supply	85 - 265 V/AC, 50/60 Hz
Output voltage	3 V/DC, 4.5 V/DC, 6 V/DC, 7.5 V/DC, 9 V/DC, 12 V/DC
Output current.....	max. 1.5 A
Load regulation.....	50 mV
Line regulation.....	15 mV
Ripple and noise.....	2 mVrms
Output accuracy	±5 %
Short-circuit protection	Yes
Overcurrent protection	Yes
Protection class	II
Operation time	max. 8 hours
Fuse.....	T1.5AL250V
Power cord length.....	1.5 m
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 × 74 × 140 mm
Weight	300 g

23.3 Technical data [CSP-140] (Item no. 3438793)

Power supply	85 - 265 V/AC 50/60 Hz
Output voltage	±15 V/DC
Output current.....	max. 1 A
Load regulation.....	50 mV

Line regulation	5 mV
Ripple and noise	3 mVrms
Output accuracy	±5 %
Short-circuit protection	Yes
Overcurrent protection	Yes
Protection class	II
Operation time	max. 8 hours
Fuse.....	T1.5AL250V
Power cord length.....	1.5 m
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 × 74 × 140 mm
Weight	300 g

23.4 Technical data [CSP-160] (Item no. 3438796)

Power supply	85 - 265 V/AC 50/60 Hz
Output voltage	6/12 V/DC
Output current.....	max. 6 A
Load regulation.....	150 mV
Line regulation	15 mV
Ripple and noise.....	35 mVrms
Output accuracy	±5 %
Short-circuit protection	Yes
Overcurrent protection	Yes

Protection class	II
Operation time	max. 8 hours
Fuse.....	T1.5AL250V
Power cord length.....	1.5 m
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 × 74 × 140 mm
Weight	300 g

23.5 Technical data [CSP-180] (Item no. 3438795)

Power supply	85 - 265 V/AC 50/60 Hz
Output voltage	0 - 30 V (DC)
Output current.....	max.1 A
Load regulation.....	150 mV
Line regulation.....	15 mV
Ripple and noise.....	70 mVrms
Output accuracy	±(0.5 % Rdg + 2 digital)
Short-circuit protection	Yes
Overcurrent protection	Yes
Protection class	II
Display.....	LED
Display accuracy	±(0.5% Rdg + 2 digital)
Operation time	max. 8 hours
Fuse.....	T1.5AL250V

Power cord length.....	1.5 m
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 × 74 × 140 mm
Weight	300 g

23.6 Technical data [CSP-200] (Item no. 3438790)

Power supply	85 - 265 V/AC 50/60 Hz
Output voltage	2 Vrms, 4 Vrms, 6 Vrms, 8 Vrms, 10 Vrms, 12 Vrms
Output current.....	max. 2 A
Output frequency	50 Hz, 60 Hz, line tracing
Output accuracy	Voltage: 1 % for full load ($V \geq 4V$), Frequency: 1 %
Short-circuit protection	Yes
Overcurrent protection	Yes
Protection class	II
Operation time	max. 8 hours
Fuse.....	T1.5AL250V
Power cord length.....	1.5 m
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 × 74 × 140 mm

Weight 350 g

23.7 Technical data [CSP-220] (Item no. 3438791)

Power supply 85 - 265 V/AC 50/60 Hz

Output voltage 0 - 24 V_{rms}

Output current..... max. 1 A

Output frequency 50 Hz, 60 Hz, line tracing

Output accuracy Voltage: 0.5 % + 2 digits ($\geq 2V$), Frequency: 1 % ($\geq 2V$)

Short-circuit protection Yes

Overcurrent protection Yes

Protection class II

Display LED

Display accuracy Voltage: 0.5 % + 2 digits ($\geq 2V$)
Frequency: 1 % ($\geq 2V$)

Operation time max. 8 hours

Fuse..... T1.5AL250V

Power cord length..... 1.5 m

Operating temperature 0 to +40 °C

Operating humidity 20 - 85 %

Storage temperature..... 0 to +40 °C

Storage humidity..... 20 - 85 %

Dimensions (W x H x D) 110 × 74 × 140 mm

Weight 350 g

23.8 Technical data [CSP-240] (Item no. 3438553)

Power supply	85 - 265 V/AC 50/60 Hz
Output voltage	1 - 15 Vrms
Output current.....	max. 1.5 A
Output frequency	0 - 400 Hz (with presets)
Output accuracy	Voltage: $\pm(0.5 \% \text{ Rdg} + 2 \text{ digits}) @ 50 \text{ Hz}$ Frequency: 2% (<20Hz), 1% (20 - 400 Hz) (Voltage $\geq 2\text{V}$)
Short-circuit protection	Yes
Overcurrent protection	Yes
Protection class	II
Display.....	LED
Display accuracy	Voltage: $\pm(0.5\% \text{ Rdg} + 2 \text{ digits}) @ 50\text{Hz}$ Frequency: 2% (<20Hz), 1% (20 - 400 Hz) (Voltage $\geq 2\text{V}$)
Operation time	max. 8 hours
Fuse.....	T1.5AL250V
Power cord length.....	1.5 m
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 × 74 × 140 mm
Weight	350 g

23.9 Technical data [CSP-300] (Item no. 3438555)

Power supply (adapter input)....	100 - 240 V/AC, 50/60 Hz
Power supply adapter output....	24 V/DC, max. 5 A
Input	24 V/DC, max. 5 A 
Rechargeable battery power supply	6x 3.7 V 18650 Li-ion battery
Output voltage	3 V/DC, 4.5 V/DC, 6 V/DC, 7.5 V/DC, 9 V/DC, 12 V/DC
Output current.....	max. 3 A
Load regulation.....	<100 mV
Line regulation.....	15 mV
Ripple and noise.....	15 mVrms
Output accuracy	±3 %
Short-circuit protection	Yes
Overcurrent protection	Yes
Protection class	II
Operation time	max. 8 hours
Fuse.....	T6.3AL250V
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 × 74 × 140 mm
Weight	800 g

23.10 Technical data [CSP-310] (Item no. 3438556)

Power supply (adapter input)....	100 - 240 V/AC, 50/60 Hz
Power supply adapter output....	24 V/DC, max. 5 A
Input	24 V/DC, max. 5 A 
Rechargeable battery power supply	6x 3.7 V 18650 Li-ion battery
Output voltage	6 V/DC 12 V/DC
Output current.....	Max. 6 A (adapter mode) Max. 2 A (battery mode)
Load regulation.....	<100 mV
Line regulation	15 mV
Ripple and noise.....	40 mVrms
Output accuracy	± 3 %
Short-circuit protection	Yes
Overcurrent protection	Yes
Protection class	II
Operation time	max. 8 hours
Fuse.....	T6.3AL250V
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 x 74 x 140 mm
Weight	800 g

23.11 Technical data [CSP-320] (Item no. 3438554)

Power supply (adapter input)....	100 - 240 V/AC, 50/60 Hz
Power supply adapter output....	24 V/DC, max. 5 A
Input	24 V/DC, max. 5 A 
Rechargeable battery power supply	6x 3.7 V 18650 Li-ion battery
Output voltage	0 - 30 V/DC
Output current.....	0 - 3 A (adapter mode) 0 - 1 A (battery mode)
Load regulation	CV 100mV, CC 50 mA
Line regulation	CV 15 mV, CC 15 mA
Ripple and noise	CV 10 mVrms, CC 10 mArms
Output accuracy	$\pm(0.5 \% \text{ Rdg} + 2 \text{ digits}) (>8\text{V})$ $\pm(1\% \text{ Rdg} + 2 \text{ digits}) (<8\text{V})$
Short-circuit protection	Yes
Overcurrent protection	Yes
Protection class	II
Operation time	max. 8 hours
Fuse.....	T6.3AL250V
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 x 74 x 140 mm
Weight	800 g

23.12 Technical data [CSP-400] (Item no. 3438557)

Power supply (adapter input)....	100 - 240 V/AC, 50/60 Hz
Power supply adapter output....	24 V/DC, max. 5 A
Input	24 V/DC, max. 5 A 
Rechargeable battery power supply	6x 3.7 V 18650 Li-ion battery
Output voltage	1 - 20 Vrms
Output current.....	Max. 2 Arms (adapter mode) max. 1 Arms (rechargeable battery mode)
Output frequency	1 - 100 Hz (1 Hz adjusting)
Output accuracy	Voltage: 0.5%+20 digits @50Hz, Frequency: 1 %
Short-circuit protection	Yes
Overcurrent protection	Yes
Protection class	II
Display.....	LCD
Display accuracy	Voltage: 0.5%@50Hz Frequency: 1%
Operation time	max. 8 hours
Fuse.....	T6.3AL250V
Operating temperature	0 to +40 °C
Operating humidity	20 - 85 %
Storage temperature.....	0 to +40 °C
Storage humidity.....	20 - 85 %
Dimensions (W x H x D)	110 × 74 × 140 mm
Weight	800 g



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