PAC 3200

Installation and User Manual

Advanced Battery Chargers

POWERFINN

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PAC 3200

Powerfinn PAC 3200 battery chargers use modern switching technology. The intelligent microcontroller extends the life of the battery by supervising the charging process. The charger is compact, lightweight and meets the EU safety and EMC requirements.

General

PAC chargers are available for a variety of battery types. The charger type is indicated on the label attached to the top cover of the charger.

Be sure to use always the correct type of charger. The charger type should correspond to the battery construction (sealed, vented, etc.) Attempting to charge a battery with the wrong type of charger may result in considerable damage.

Check the battery to ascertain that the “five hour capacity” (in ampere-hours, Ah5) is between 5 and 14 times greater than the nominal current (in amperes) of the charger. E.g. a 10A charger is suitable for charging batteries with a 5-hour capacity of 50Ah-140Ah.

Installation

The following points must be respected when choosing a location for the charger.

1. The unit is for indoor use and the protection class is IP20. The operation temperature range is 0°C to +40°C and the location must be dry and dust-free. A higher ambient temperature will limit the output power.

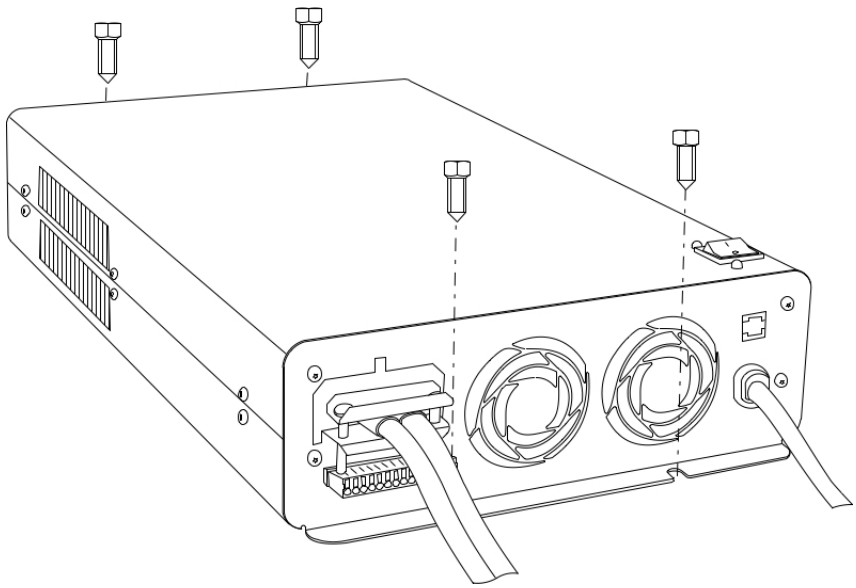
***Caution**: The charger is not waterproof. Keep the charger dry and away from areas with high humidity in order to avoid the risk of electrical shock and damage to the charger.*

2. The charger may be installed horizontally or vertically on a concrete or other non-combustible surface only. For unplugging the unit, make sure the wall socket is located in an easy access area.

3. To ensure sufficient ventilation, leave a free space of at least 10 cm around all sides of the charger. Do not cover the unit.

4. The charging process generates explosive hydrogen gas. Install the charger as far away from the battery as possible to prevent hydrogen gases from entering the charger. Keep the area well ventilated. Never use an open flame or equipment that produces sparks close to the battery and charger.

5. The charger can be mounted to a wall or bench with the two mounting holes on both ends of the charger unit as shown in the figure.



Operations

Read these operating instructions carefully before using the charger for the first time. Also *read the safety instructions in the next paragraph thoroughly*.

It must be ensured that children do not play with the device.

To charge a battery with the PAC charger, follow these instructions:

1. Ensure that the charger is switched off and that the work environment meets the conditions described in the previous paragraph.

2. Connect the charger cables to the battery terminals: the positive (+) cable to the positive (+) terminal and the negative (–) cable to the negative (–) terminal. The positive cable is red colored. The negative cable is black or blue. The positive battery cable is commonly marked with red.

   Warning: Explosive gases. Prevent flames and sparks. Provide adequate ventilation during charging.

3. Turn the power on by plugging the power cord in a mains outlet with protective earth and turn the switch on top of the charger to position ‘I’. The charger continuously monitors its own temperature level and reacts by controlling the charging current and fan speed.

4. Go to step 8 in case the charger is programmed for constant voltage charging.

5. During the charging process the STATUS LED is continuously orange. A constant red color indicates either too low or too high a voltage, or that the battery is not connected to the charger. Turn the power off by turning the switch to the ‘0’ position and make sure that the battery is suitable for the charger. The battery voltage should be 8-16V for a 12V charger and 16-32 V for a 24V charger. Check the cable connections and return to step 3.

6. The battery is fully charged as soon the STATUS LED is green.

7. The charger will switch to maintenance charging about 16 hours after beginning to charge the battery. The process will terminate and the STATUS LED will flash intermittent red in case the battery is not fully charged after the PAC switches to maintenance charging. This may occur if the battery has a defect, or if the charger and the battery are incompatible (see page 2 ‘General’).

8. Step 8 applies only to chargers programmed for constant voltage charging. During the charging process the STATUS LED is continuously orange. The charger does not check the cable connections and starts charging immediately after the power is switched on.
9. Always turn the supply power off before removing the charger cables by disconnecting the unit from the mains. This avoids heavy sparking.

   ***Note**: If the charger is not in use for a long time, disconnect the power cord from the mains outlet. The switch on top of the charger connects ON and OFF only the output, but the AC is still in the input side.*

Safety Instructions

In addition to the safety measures mentioned under ‘Operations’ (page 4), the following personal precautions should be taken whenever charging batteries.

1. For emergency situations ensure in advance that help is available in time of need.

2. Batteries contain acid that is harmful to the eyes, skin and clothes. Always wear overalls and safety goggles. Never touch the eyes with unwashed hands after handling batteries.

3. Ensure that a working, fresh water tap is available. If acid gets into the eyes or on the skin, immediately rinse the area with plenty of water for several minutes. If visible injury occurs, contact a physician immediately. In case of eye injuries, always contact a physician.

4. The charging process generates explosive hydrogen gas. Do not smoke or otherwise bring burning or sparking matter to the vicinity of the charger when it is in operation.

5. If a short circuit occurs, the battery may explode or the item causing the short circuit may melt. Keep the work area clear from tools and debris. Remove jewelry, watches etcetera before working with the battery.

6. The power cord should be unplugged and the battery must be disconnected from the charger in case the equipment is left unused for a longer period of time.

7. The charger must be situated away from heat sources like radiators and heat registers and in such a way that no objects can fall or liquid can be spilled into the cabinet openings.

8. This device is not meant to be used by children or people whose physical, sensory or mental attributes or lack of experience and knowledge prevent them from using the device safely unless a person responsible for their safety supervises them or has instructed them how to use the device.

Trouble–shooting and repair

The most common faults are described under ‘Operations’ (page 4).

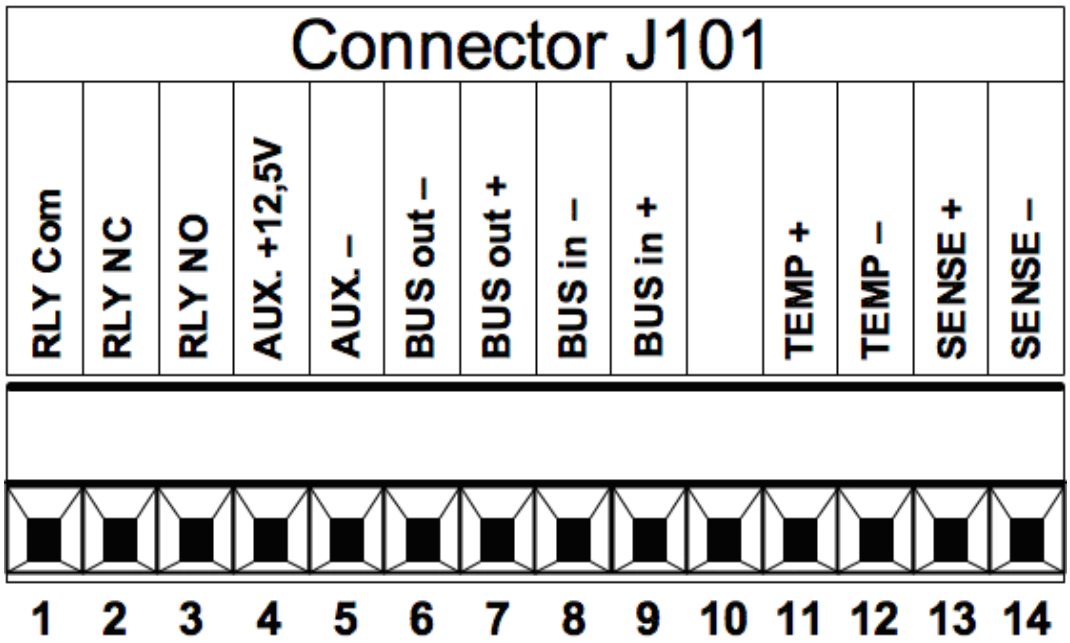
If the cause of malfunction cannot be found, contact your retailer or the manufacturer. Only authorized persons can repair the charger.

Guarantee

The charger has a guarantee of two years from the date of purchase. Guarantee covers manufacturing and component failures and is valid only if the equipment is installed and used according to the instructions in this manual.

Keep the receipt as evidence of the date of purchase.

J101 Connector

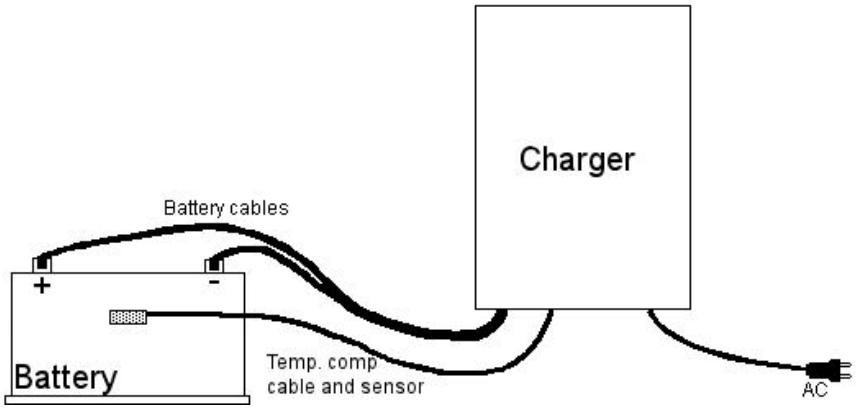


1. Alarm relay (common) *)
2. Alarm relay (nc) *)
3. Alarm relay (no) *)
4. Control voltage ext relay
5. External relay – **)
6. Serial bus out – *)
7. Serial bus out + *)
8. Serial bus in – **)
9. Serial bus in + **)
10. Not connected
11. Temperature sensor +
12. Temperature sensor – **)
13. Battery voltage sense +***)
14. Battery voltage sense –***)

*) These connectors are floating
**) Connected to the output –
***) Not available for voltage versions over 72V. MAX allowed voltage 72V!

Temp. sense

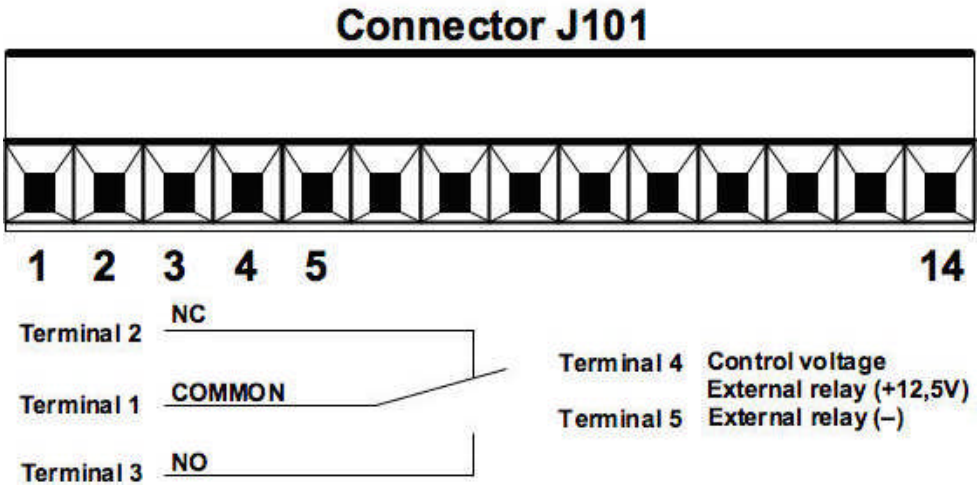
The temperature compensation wire enables the charger to adjust the output voltage in accordance with the battery voltage and changes in temperature. The temperature compensation wire battery voltage sense cables are connected to connector J101 terminals 11…14 (see above). Connect the cable to the battery as shown in the illustration. The temperature sensor is either glued 10 cm below the top edge of the battery or fixed to the cable tag connected to the minus terminal of the battery.



Alarm Relay

On models with an alarm relay, the internal alarm relay output indicates whether the output voltage is healthy or not and is connected to terminals 1…3 of connector J101 as shown below. The alarm signal is activated in case of an AC failure or charger failure. Both normally closed signals and normally open contacts are available.

Terminal 4 is an auxiliary control voltage for an external relay.
Terminal 5 is the – connection for the external relay.



Internal Alarm Relay

Common is connected to NC when the power is switched off. Common is connected to NO when the power is switched on.

Isolation:		Technical data:
Output to case:	500V	1A@24Vdc
Output to ground:	120V	0,5A@120Vdc

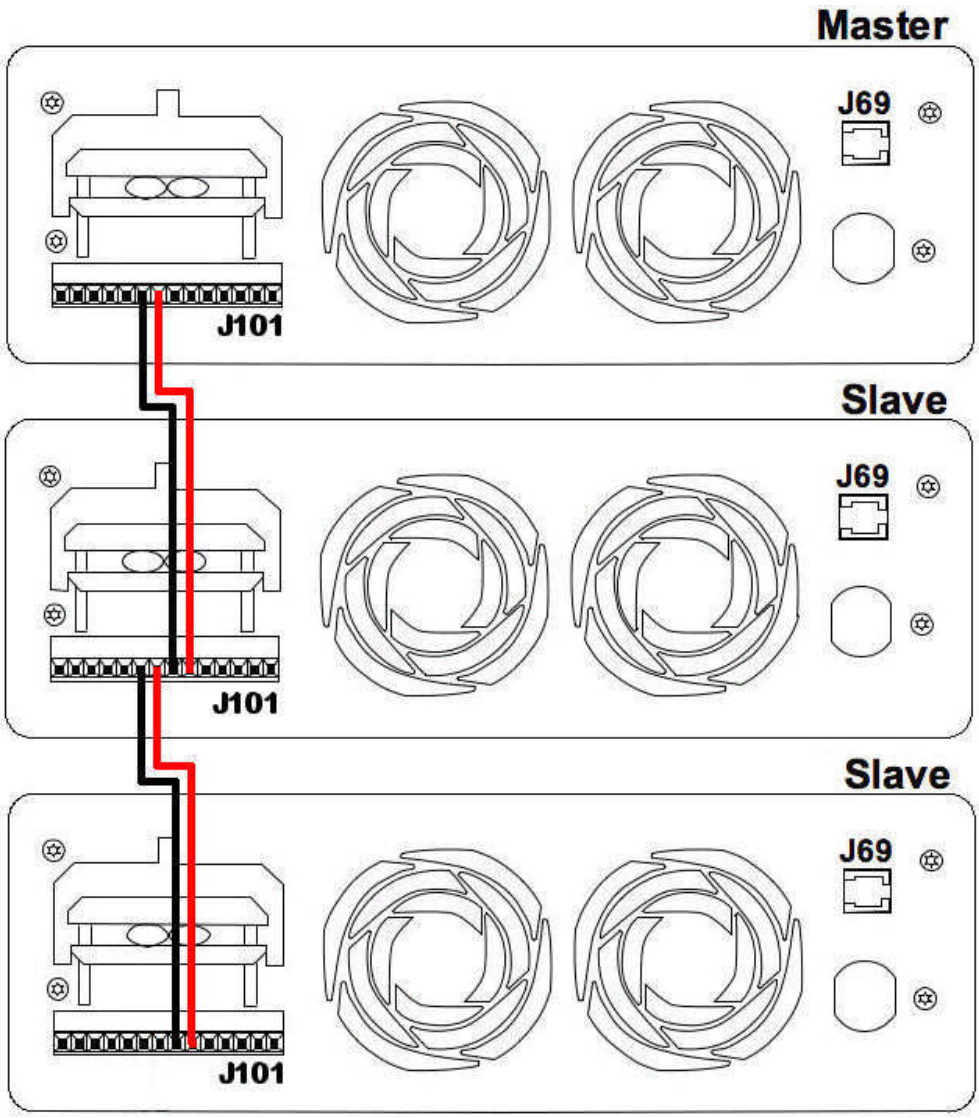
Master–Slave connection

Using a master charger together with a slave unit.

An unlimited number of slaves can be connected parallel with a master unit. The power supply's output terminals and the communication bus terminals are isolated.

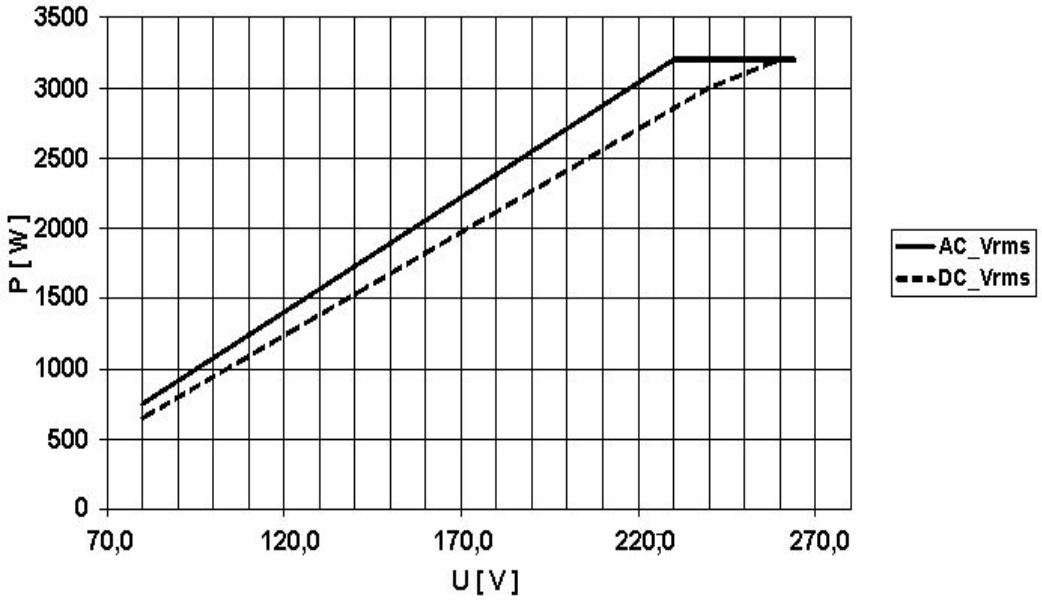
The bus cable is connected from the master unit (J101) to the slave unit (J101). The first unit, or master unit, has potentiometers for voltage and current adjustment. An erroneous connection of the bus cable does not cause any damage, but causes the slave unit to not follow the commands sent from the master unit.

Pin 7 of the master unit is connected to pin 9 of the slave unit. Pin 6 of the master unit is connected to pin 8 of the slave unit. An unlimited number of slaves can be connected to a master.



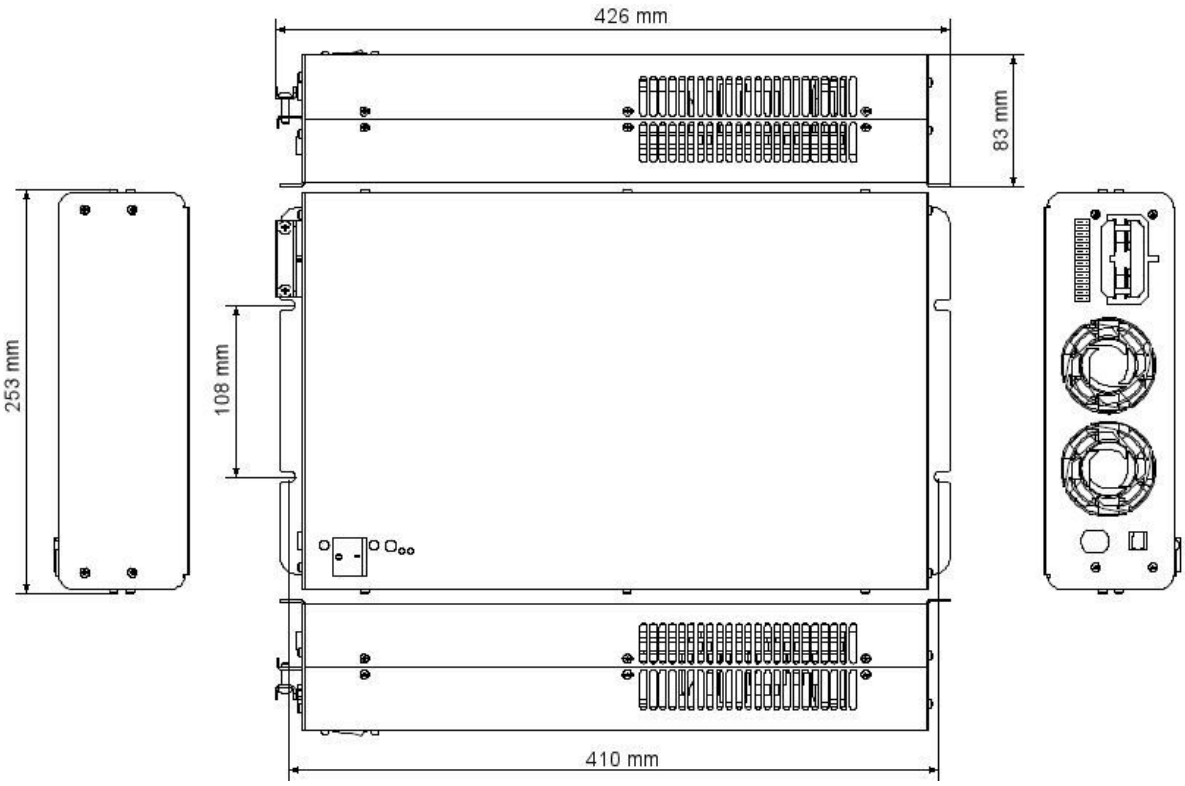
Appendix A

The following graphs show the effect input voltage has on output power.



Appendix B

Charger dimensions



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