

Specifications

Nominal battery charging voltage:	12 / 24 / 48V - switch-selectable, switch located beneath cover
Minimum battery charging voltage:	9 / 18 / 36V
Typical generator voltage:	3 × 120VAC unloaded (other rating upon request)
Maximum charging current:	60A @ all voltages (higher rating upon request)
Max. generator current:	max. 50A / phase
Regulator's cut-off voltage at 25°C:	14,1 / 28,2 / 56,4V
Max. open circuit voltage:	60-80V
Max. short circuit current:	200A
Max. current consumption:	3mA
Operating temperature:	-20 ... +50 °C
Enclosure:	Metal housing with paint finish
Screw terminals:	16 mm ² - reachable from outside
Dimensions (H×W×L):	125 × 400 × 325 mm
Weight:	6 kg

Voltage and Current meters

- Measuring voltage:	10 ... 60V
- Voltage resolution range:	0,1 V
- Measuring current:	0 ... 60A
- Current resolution range:	100mA

Suggested dump-load:	DL-24 (24V / 60A, NiCr 80 in aluminium touch-free cage)
- Weight:	2 kg

Switching frequency:	Approx. 1 kHz
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OPERATING INSTRUCTIONS

PWR60 type wind charge controller 12/24/48 V - 60A



Dear Customer,

Thank you for buying our product. You have bought one of the most powerful, compact and reliable units of its class. Please read the operating instructions carefully before use.

WARNING!!! Safety Instructions!!!

- Do not use the unit:
In places, which are dusty, damp, in a high-humidity area (over 80% rel. humidity), at temperatures above 50°C, in areas containing inflammable materials (liquids/solvents, gas). Do not immerse in water.
- Use only in closed, dry and hot areas.
- Should the unit fail to operate, or show signs of not operating properly disconnect it immediately and make sure that the unit is not put into further operation. Do not use the unit when visible signs of damage - due to transport or inadequate storage are noticeable.
- Use only wind or hydro generators with corresponding characteristics as power source!
- To prevent the risk of explosion, install the battery in a well-ventilated place.
- To prevent a short-circuit between wind charger unit and battery, always install a fuse on the positive battery pole.
- Follow installation instructions strictly when connecting the unit!
- The unit should be disconnected in reverse order (see installation procedures).

Description of operation

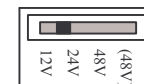
Wind Charge Controller Unit 12/24/48V 60A with:

- 12 / 24 / 48V selector switch
- LCD display for system voltage and current
- Dump-load protection against battery overcharging
- Convection cooled

The PWR60 wind charge controller is suitable of charging lead battery banks with max. 60A nominal charging current, which is supplied by an AC 3-phase permanent magnet generator. The 12/24/48V selector switch adapts the wind battery charger unit to various battery voltages. The wind charge controller has a battery overcharge protection function using the so-called dump-load technique. The excess energy of the generator is transferred to a resistive dump-load (e.g. heating element), which keeps the generator under loaded condition. This prevents the rotor from overspinning and saves it from any resulting damages.

12/24/48 V selector switch

The unit can be used for charging 12V, 24V and 48V battery banks. Please switch the selector to the appropriate position prior to connecting the charge controller to any system component. The selector switch is located beneath the cover on the PCB.



Battery overcharge protection and dump-load

When the battery has reached a fully charged state, the excess current from the generator is transferred to a dump-load heat element via solid state MOSFETs. The filament of DL-24 dump-load is made of NiCr material, which prevents the humming noise during operation, which is a typical characteristic of ferrite-based heating elements.

LCD indication

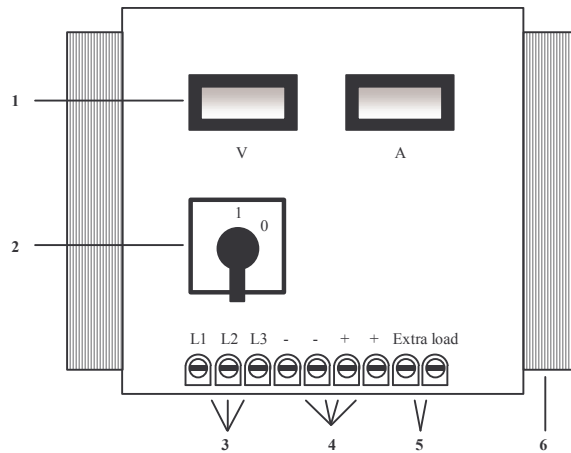
The actual battery voltage and the actual battery charging current is shown on the two LCD displays.

Protections

A blocking diode protects the batteries from alternating DC currents, which has a lifetime decreasing effect on the batteries. A capacitor permits the disconnection of the battery terminals in all circumstances.

Connection and operating elements

- 1) LCD display for battery voltage and current
- 2) Main switch
- 3) Generator input (3 phase)
- 4) Battery terminals
- 5) Extra load output
- 6) Heat-sinks

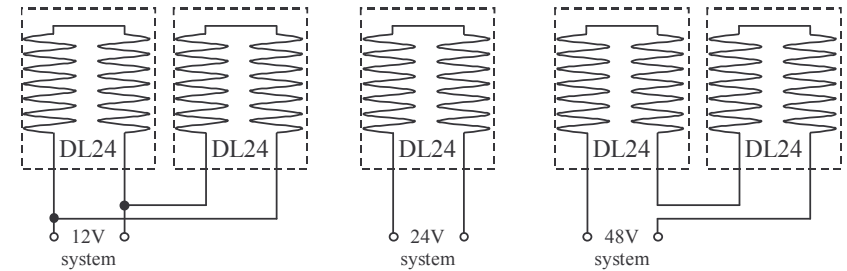
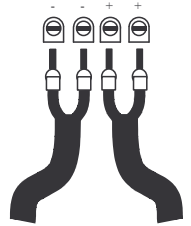


Installation - Warning: Make sure of the right polarity!!!

The wind charge controller unit should be placed in close proximity to the battery and be sufficiently protected against the weather. Make sure to place the battery in a well-ventilated place. To guarantee that the unit functions properly it must be connected to the wind or hydro generator, the lead-battery bank and the extra load (dump-load) at the same time.

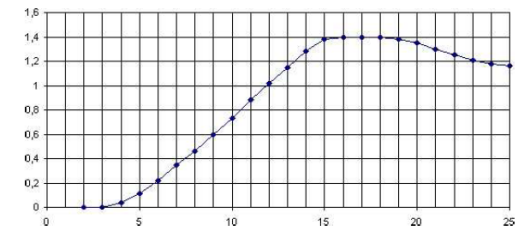
Each part of the system – wind or hydro generator, lead battery and extra load - should have the appropriate nominal ratings. Please carefully check each component before connection, when in doubt, contact a specialist! Take careful attention of the following installation instructions:

1. Make sure that the main switch (2) is in “0” position. This switch operates as a “break switch” which short circuits the 3 phases of the AC generator.
2. Connect the battery to the corresponding terminals (- - + +) on the wind charge controller. In order to prevent the screw terminals to overheat at high currents, the power is shared between four terminals (two positive, two negative). Divide each battery cable end into two parts and connect them to the screw terminals after preparing them appropriately. To prevent voltage losses in the cabling, please use min. 16 mm² cable diameter (up to 1-2 m). Only when an additional "short-circuit-protection" device is already installed, can the battery be operated without a fuse. Otherwise a fuse must be connected to the + battery pole in order to prevent possible short circuit of the battery cables. Both components must be installed close together in the same room.
3. Connect the dump-load to the corresponding terminals (**Extra load**). When charging a 12V battery bank, use two DL-24 dump-load connected in parallel, when charging a 24V battery bank, use one DL-24 dump-load and when charging a 48V battery bank, use two DL-24 dump-load connected in series (see picture below). The dump-load can be any 12/24/48Vdc, max. 60A rated equipment, such as lights, water pump, motors, etc.



VERY IMPORTANT!!! NEVER USE THE WIND CHARGE CONTROLLER WITHOUT A SUITABLE DUMLOAD! THIS WOULD CAUSE GENERATOR OVER-SPINNING AND WOULD DESTROY BOTH WIND GENERATOR AND THE CHARGE CONTROLLER ELECTRONICS!

4. Connect the AC generator to the corresponding terminals (L1 L2 L3). Please use a 3-phase AC generator with typical (1400W) output shown on the right, unless otherwise agreed with manufacturer.
Diagram: kW per m/s



5. You can start the unit by turning the main switch (2) into position “1”. Before turning on the unit, please make sure that all conditions are safe and appropriate for starting the operation.

Maintenance

As the cooling of the wind charge controller is achieved by convection cooling (no fans, no moving parts inside), the charger basically does not require maintenance. The two heat sinks (6) should occasionally be made free of dust to allow free air movement.