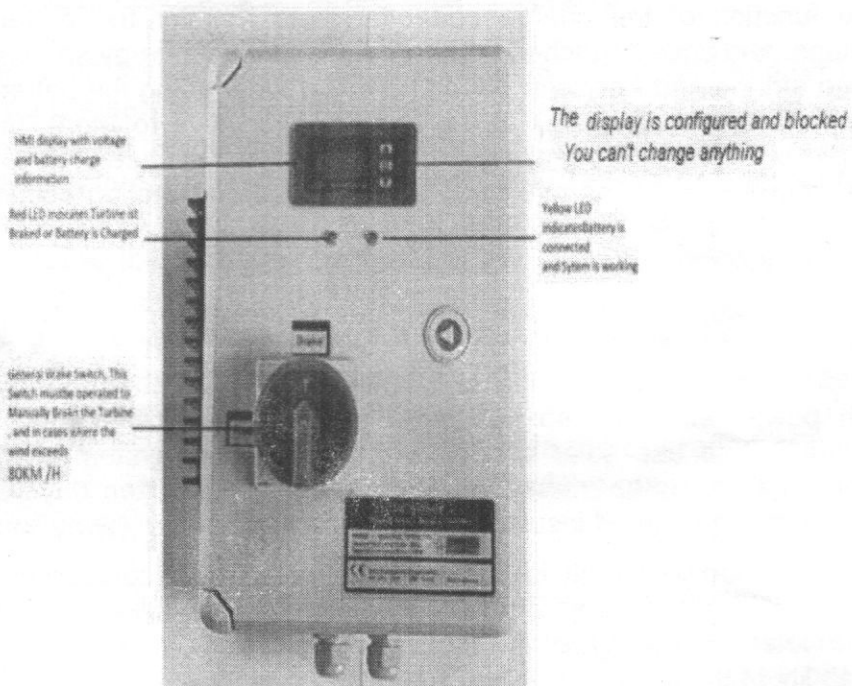


1.

Istapower

Hybrid wind and solar controller

Please read the instructions before installing



2.

Istapower Charge Controller

Introduction

The function of the charge controller is to monitor the battery voltage, and once it reaches full charge, disconnect energy sources (wind turbine and / or solar panel), to avoid overloading the battery bank. Furthermore, at risk to the turbine (excessive rotation), the controller actuates the braking automatically. Also, in case of risk to the controller, such as over temperature, load interruption occurs and braking of the turbine. Other protections are also present, such as input voltage limits.

The Istapower controller allows direct connection of wind generator (three-phase turbine with permanent magnets,) and 12/24/48V battery bank, to generate a complete solution to battery charge with power wind. It also has input for solar cell panel (600W maximum), to use solar and wind energy (hybrid system). The hybrid system as an interesting combination, since often days of little wind exhibit good insulation, and vice versa.

All the controller circuit is designed with electronic components without the use of electromechanical components (relays). This contributes to a long service life and substantially increases the reliability of the installation.

The whole set is packaged in a metal housing of high mechanical strength which removes the heat generated efficiently, avoiding overheating.

3.

Connection

The controller has the following connections:

The main connector has seven contacts: three contacts for the three phases of the wind turbine (PHASE A, B, C), a contact to the positive terminal of the battery (BATTERY+), a contact to the negative terminal of the battery (BATTERY-), a contact to the negative terminal of the solar panel (SOLAR-), and a contact to the positive terminal of the solar panel (SOLAR+). Internally there is a 40A fuse protect the circuit in the event of a short circuit. Normally, this fuse should not burn because there is protection against reverse polarity, both the battery and solar panel.

Two LED lights (yellow and red) indicate the operation of the controller. They are located to the left of the main connector (front view), as shown in the drawing.

As the braking is based on dynamic friction, that is, the energy generated by the turbine itself, will not necessarily completely stopping. A braked wind turbine could continue to rotate, but with a low speed. In case of strong winds (above 35 km / h) may occur that the turbine falls your speed when there is a wind temporary interruption, allowing your downswing. Once at low speed, the turbine will remain so until manual braking is off, even if the wind returns to levels above 45 km / h.

4.

Operation

The mechanical assembly of the controller must always be vertical, with connectors for battery connection, wind turbine and solar panel in the lower position. This ensures efficient cooling by convection.

Connect the battery bank to the controller. The wiring to the battery bank must have a 6 mm² of copper in diameter and preferably as short as possible (less than 3 meters between controller and battery bank). After a moment, the two LEDs (red and yellow), indicating system startup. Soon after, the yellow LED should be activated, indicating that the controller measured the voltage of the battery bank, and initialize its internal constants properly

When connecting pay attention to the polarity battery. If reversed there will be no damage to the system, but the controller will remain de-energized.

Once energized the controller, place the three wind turbine wires shorted together to force the turbine stop. Beware of terminals open turbine, since this situation can arise high voltages if the propeller is moving. Wait about 30 seconds to perform complete cycle of braking, then remove the short circuit between the turbine wires and connect to the corresponding terminals (phase A, B, C). The order of the wires is irrelevant. Do not do this operation if there is strong wind, because the little time with open wires may be sufficient to speed propeller and generate high voltages at its terminals. In this case, first stop mechanically the propeller spinning before handling the wires of the wind generator.

5.

Warning: the wires of wind generator open can generate very high voltages if the propeller is moving, with electrical shock hazard. Always should do short circuit the terminals or stop mechanically the turbine before handling it.

If the installation has solar panel connect it to the controller. The system is connected and ready to operate. Press the manual brake button to release the brake. If the turbine was mechanically immobilized can be released.

When reach full charge voltage, the red LED is turned on and the charge of the battery bank is interrupted.

Characteristics

- Input for wind generator 800/100/2000W.
- Input for solar panel 600W.
- Operation in 12/24/48V.
- Reverse polarity protection on the battery.
- Short-circuit protection (internal fuse 40A).
- Reverse polarity protection on the solar panel.
- Reverse Current protection at night in the solar panel.
- Disconnection and brake of the turbine by overspeeding.
- Turbine brake soft, avoiding mechanical shock.
- Turbine brake operates without even energy.
- Manual brake Switch
- Status display via two LED lights.

6.

Technical specifications

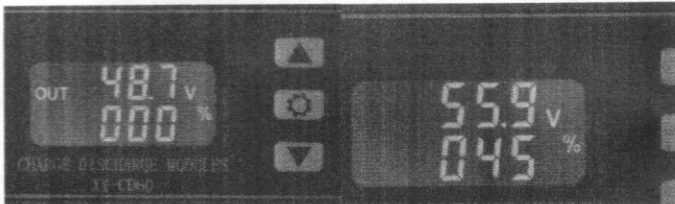
| | 12V battery | 24v Battery | 48v Battery |
|---------------------------------------|-------------------|-------------------|------------------|
| Minimum voltage to controller startup | 6,0 V | 6 v | 6V |
| Voltage for battery charge start | 12,5V | 24,5V | 48,8V |
| Voltage for battery charge end | 14,8 V | 28,5V | 58,5,5 V |
| Minimum voltage to detect battery | 6,0V | 17,5 V | 17,5 V |
| Maximum input voltage | 60,0 V | 60,0 V | 80,0 V |
| Wiring recommended for battery bank | 6 mm ² | 6 mm ² | 4mm ² |
| Maximum distance for battery bank | 3 m | 3 m | 3 m |
| Maximum current to charge | 40A | 40A | 35A |
| Maximum speed turbine | 2500 rpm | 1500 RPM | 1200RPM |
| Maximum power inwind turbine | 800W | 1000 W | 2000 W |
| Maximum power insolar input | 600W | 600W | 600W |
| Recommended minimum battery | 12V / 100Ah | 24V /100A | 4 x 12v 100A |
| Internal fuse | 50A | 50A | 40A |

see your controller voltage on the label attached to the door

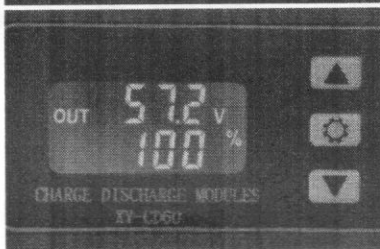
7.

Information about the Display

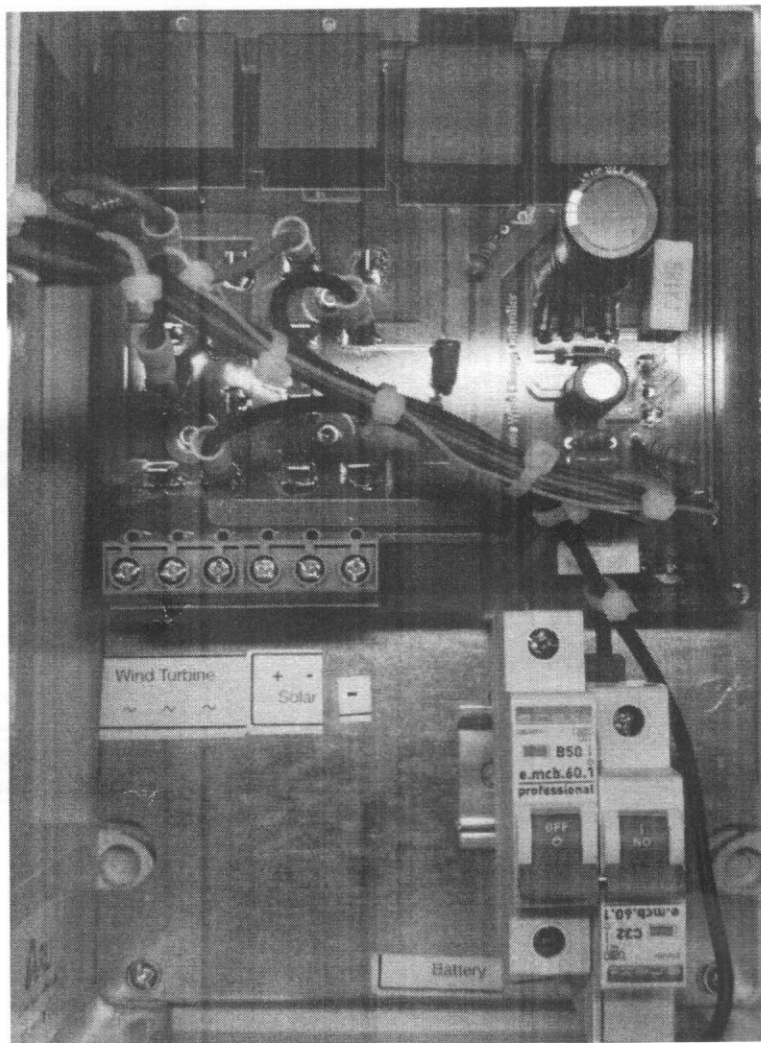
1. Out -battery charging program
2. 48.7V Current battery voltage
3. 0.00% Percentage linked to the wind turbine brake; this percentage is not linked to the battery charge but to the wind turbine brake based on the Voltage coming from the wind turbine
4. the Display is factory locked and it is not possible to change the brake voltage parameters
5. the display will flash when the turbine is braked, just press the central button once and it will stop flashing



6.



8.



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