

IMPORTANT

- **Always connect the batteries first.**
- **Use for 12V battery system only 12V (36 cells) solar panel array.**
- **Use for 24V battery system only 24V (72 cells) solar panel array.**

BlueSolar Charge Controller

12V | 24V | 20A

1. DISCRIPTION

1.1 General

The BlueSolar Charger series uses Pulse Width Modulation (PWM) charge voltage control combined with a multistage charge control algorithm. This leads to superior charging and enhanced battery performance. The filtered PWM power control system uses highly efficient and reliable power MOSFET transistors.

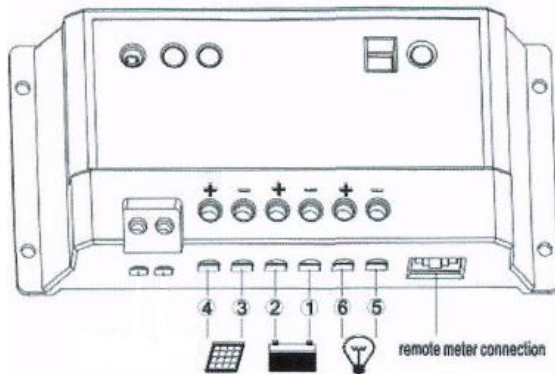
Fully automatic temperature compensation of charge voltage is available to improve charge control and battery performance.

1.2 Features

- ✧ Internal temperature sensor.
- ✧ Three stage battery charging [bulk – absorption – float]
- ✧ Protected against over current.
- ✧ Protected against short circuit.
- ✧ Protected against reverse polarity connection of the solar panels and/or battery.
- ✧ Low voltage load disconnect.
- ✧ Intelligent software control.
- ✧ PWM charging mode.

2. INSTALLATION

Important note: Always connect the batteries first.



Connect the individual components as shown.

- Solar panel(s)
- Battery and loads in order indicated 1-6.

Install the regulator near the battery. The installation environment should be indoor, dry and nonflammable. The cables should be as short as possible and have a suitable cable diameter size to minimize loss, e.g. use 2.5 mm² at 10A; use 5 mm² at 20A

1. Mount the controller on a vertical surface. Allow space above and below the controller for air flow.
2. Connect the battery to the controller. If the connection is correct, the battery indicator will be on.

3. If the battery is connected with inverse polarity, the output polarity will also inverse.
4. A 20A fuse should be inserted in the positive wire to the battery.
5. Connect the photovoltaic module to the charge regulator. If there is sunshine, the charging indicator should turn on.
6. Connect the load to the charge controller; press the ON/OFF button to start.

3. LED INDICATORS



Green LED is ON when solar is charging the battery.
In case of system over voltage the green LED blinks.



Green LED is ON when the battery voltage is in the right range.

Green LED is slowly flashing when the battery is fully charged.

Yellow LED is ON when the battery voltage is low.



Red LED is ON when the load is cut off.

In case of overload the red LED is slowly flashing
(The load current is 1.25 times of rated current for 60 seconds, or
the load current is 1.5 times of rated current for 5 seconds)



Red LED is fast flashing in case of short-circuits.

Red LED is ON when the push button is ON.
Red LED is OFF when the push button is OFF.

Please note:

1. The load output will cut off in case of over load or short circuit. After the first overload or short circuit the controller will resume to work automatically after 30 seconds. Please check the load and press the start push button to start when it happens again.
2. After over discharge, the load will reconnect when the battery is charged to 13.1V/26.2V.
3. After over discharge, the load can be reconnected manually by pressing the on/off push button, if the battery voltage exceeds 12.6V/25.2V.

4. TO CORRECT PROBLEMS

1. Check wires
2. Reduce load if needed
3. Reset controller by pressing the push button

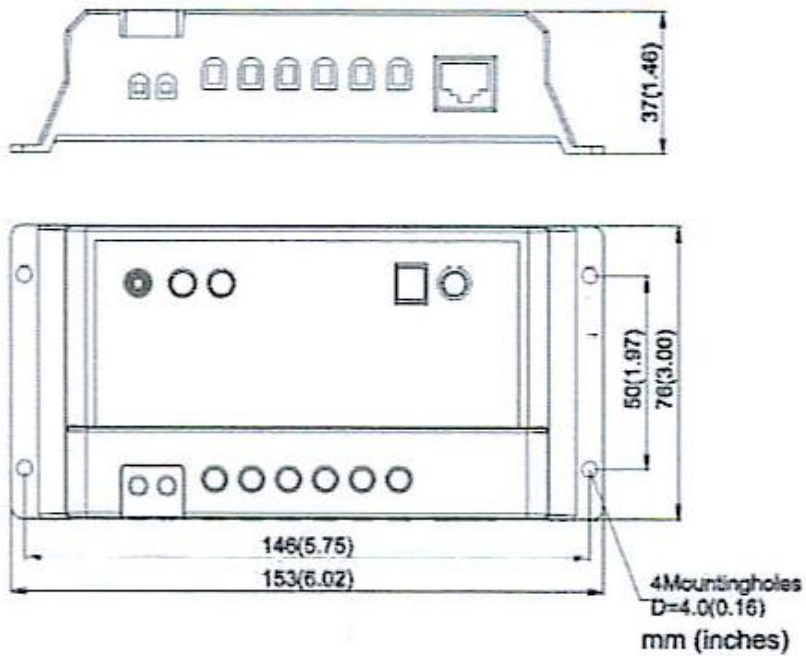
5. SPECIFICATIONS

BlueSolar 12/24-20A	12V/20A	24V/20A	
Battery voltage	12V/24V Auto Select*		
Rated charge current	20A		
Recommended solar panel array	36 cell	72 cell	
Maximum solar voltage*	28V	55V	
Over load, short circuit protection	1.25 times: 60 seconds 1.5 times: 5 seconds		
Self consumption	6mA		
Battery type**	SEL Sealed generic	GEL generic**	FLD Flooded generic
Default settings			
Absorption voltage	14.2V/28.4V	14.4V/28.8V	14.6/29.2V
Float voltage	13.7V/27.4V	13.7V/27.4V	13.7V/27.4V
Load Disconnect	11.1V		22.2V
Load Reconnect	12.6V (manual) 13.1V (automatic)		25.2V (manual) 26.2V (automatic)
Battery temperature sensor	Yes (Internal sensor)		
Temperature compensation	10mV/°C		20mV/°C
Protection class	IP20		
Enclosure			
Terminal size	6mm ² /AWG10		
Weight	180gr		
Dimensions (h x w x d)	76 x 153 x 37 mm		
Mounting	Vertical wall mount. Indoor only		
Humidity	Max. 95%		
Operating temperature	-10°C to +40°C		
Cooling	Natural convection		
Standards			
Safety	EN60335-1		
EMC	EN61000-6-1, EN61000-6-3		

* For 12V use 36cells solar panels and for 24V use 72cells solar panels.

** Factory settings: Gel Battery. To change the battery type use the LCD remote meter display.

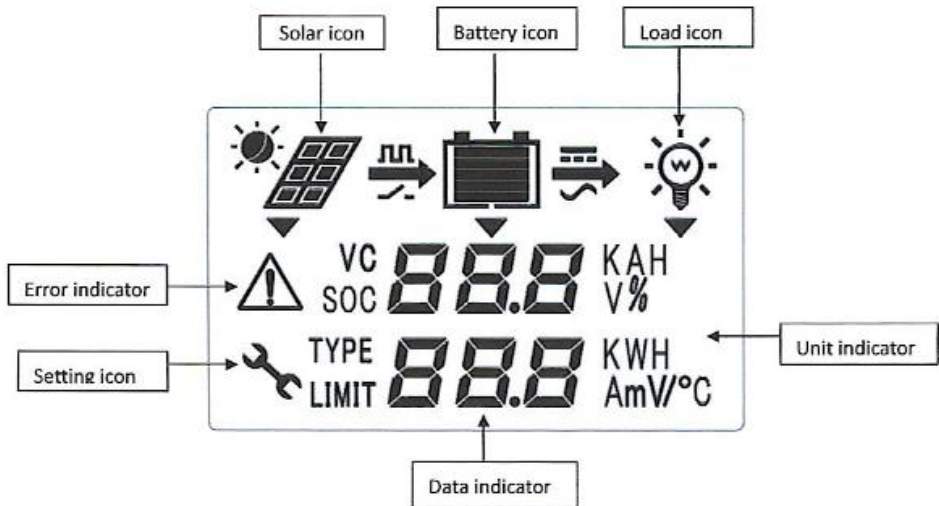
6. MECHANICAL DRAWING



7. REMOTE METER DISPLAY [OPTION]

Features

- ◇ LCD display: all systems parameters in digital value and symbols for system status.
- ◇ Battery type setting.
- ◇ Battery Ah setting.
- ◇ Temperature compensation setting.



7.1 General

Two LED indicators above LCD:

- Green on when charging.
- Red on when error.

The meter backlight has two backlight levels:

- High level for 15 seconds after pressing one of the push buttons.
- Low level during the next 15 seconds.

7.2 Remote meter operation instructions

Push button functions from left to right:

- K1: Set
- K2: Left←
- K3: Right→
- K4: ON/OFF/ESC

7.2.1 Meter display options by pressing K2 or K3

- solar panel voltage, solar panel charge current
- battery voltage, charge current
- load voltage, load current
- battery capacity (Ah), temperature
- battery capacity percentage, battery temp compensation
- battery capacity (Ah), battery type
- total charged Ah, total charged Wh
- total discharged Ah, total discharged Wh



7.2.2 Data setting operation:

The following parameters can be adjusted:

- battery capacity
- battery temperature compensation
- battery type

Procedure:

- Use K2 or K3 to select the display option with data to be adjusted.
- Press K1 to enter setting mode.
- Press K2 or K3 to modify data.
- Press K1 to save the modified setting, or press K4 to return to previous setting.

7.2.3. More about the adjustable parameters

Battery capacity:

- Range: from 10Ah to 900Ah, in 10Ah steps.
- Default value: 200Ah.

Battery temperature compensation:

- Range: from 0 to 10mV/Cell/°C.
- Default value: 5mV/Cell/°C.

Battery type:

Three battery types can be chosen:

- Sealed generic (SEL),
- Flooded generic (FLD),
- GEL generic (GEL).

The default setting is GEL.

The corresponding charge voltages are given in section 5. Please choose the charge voltage that is closest the recommendation of the battery manufacturer.

7.2.4. Resetting total charged/discharged values

1. Use K2 or K3 to select the “total charged” or “total discharged” screen.
2. Press K1 to enter setting mode.
3. Press K4 to reset to zero.

7.3 Error Icon

The red LED and the error icon will flash in case of an error.

Please:

1. Check wires
2. Reduce load if needed
3. Reset the controller by pressing K4

7.4 Data updating

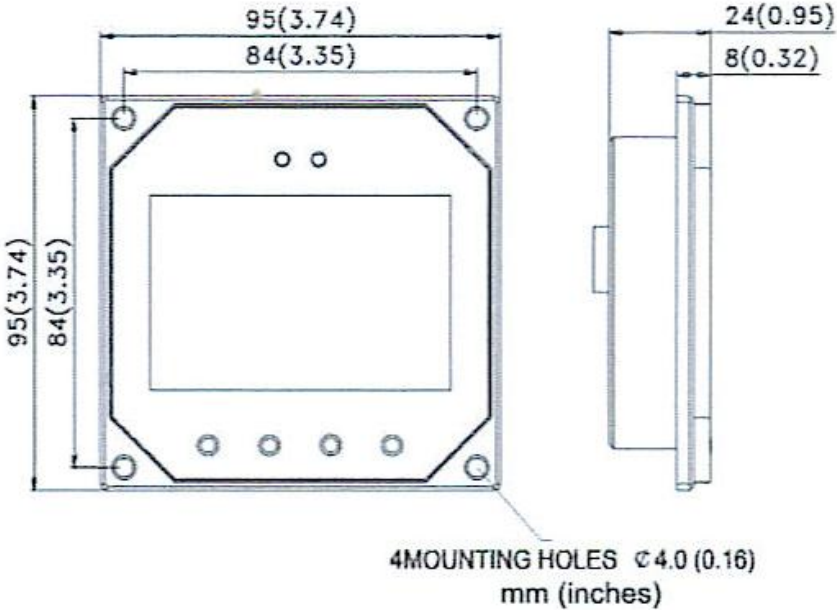
The display is updated every 10 seconds.

The charged/discharged Ah and Wh counters are updated every minute.

8. SPECIFICATIONS

Remote meter LCD specification	
Current consumption	High level backlight on: < 23mA, 15 seconds Low backlight on: < 20mA, 15 seconds Backlight and LED indicator off < 15mA
Communication cable & port	1.5 meters RJ45
Weight	150 gr
Dimensions (h x w x d)	95 x 95 x 24 mm

9. MECHANICAL DRAWING



Victron Energy Blue Power

Distributor:

Serial number:

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