MA1101

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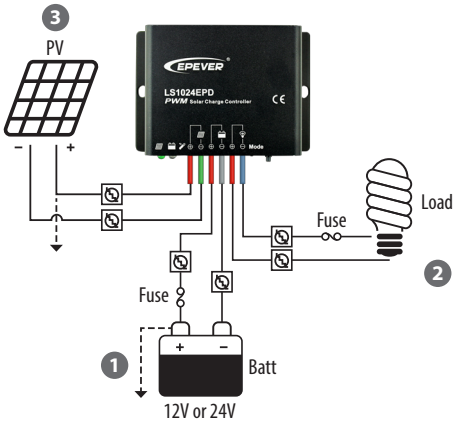
20 AMP SOLAR CHARGE CONTROLLER

GENERAL INFORMATION

LS-EPD series solar charge controller uses advanced digital technology and operates fully automatically. It is ideal for wet and dusty environments, and is sealed to an ingress protection rating of IP67. It features:

- Electronic protections against over-charging, over-discharging, overload, short circuit and reverse polarity
- High efficiency PWM charging, increasing battery life and improving solar system performance
- Automatic Day/Night recognition
- LED battery status indicator
- Single button operation
- Intelligent timer function for load operation
- Sealed against water and dust to IP67

FEATURES AND MOUNTING



1	Charging Status LED indicator	6	Load Terminals
2	Battery Status LED indicator	7	Digital Display
3	Temperature Sensor	8	Button
4	Solar Module Terminals	9	Aluminum Housing
5	Battery Terminals	10	Mounting Hole Φ5

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MOUNTING

1. Connect the system components to the charge controller in the order specified in the previous image – Battery first, then Load (if required), finally Solar Panels last. Be very careful to connect Positive (+) and Negative (-) correctly to each component to prevent damage to equipment!
2. After connecting the battery, the Battery Status LED Indicator should be a solid bright green, if not, please refer to the Troubleshooting section later in this instruction manual
3. Install the battery fuse as close to the battery as possible, ideally within 150mm

INDICATORS

DESCRIPTIONS AND OPERATION

Indicator Status Description

Charging Status LED indicator	Green	On Solid	Normal
	Green	Fast Flashing	Over voltage
Battery Status LED indicator	Green	On Solid	Normal
	Green	Slowly Flashing	Full
	Orange	On Solid	Under voltage
	Red	On Solid	Over discharged
Dot Point of Digital display (Load indicator)	Red	On Solid	Load ON
	Red	Slowly Flashing	Over Load
	Red	Fast Flashing	Short Circuit

The digital display is used to display and clear any fault codes, as well as program and operate the Load function. The Load can be programmed to turn on after loss of sunlight (there is a 10 minute delay) and stay on for a pre-set time – OR – The Load can be manually turned on and off as required. The screen displays the current setting when powered on and pressed briefly. To program, follow the steps below:

1. Press the button briefly to check there is power. If a number is displayed, continue to the next step. If no number is displayed, check the controller is correctly connected to a battery and that the green battery status indicator is lit.
2. Consult the table following these instructions to determine required setting.
3. To set, press and hold the button for 5 seconds, the current setting will be displayed, flashing on and off.
4. Press the button to cycle through the available programming options. Note: 6. Is the manual ON/OFF setting. When the desired setting is displayed flashing on the screen, do not touch the controller for 15 seconds. The display will stop flashing and the setting will be saved.

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INDICATORS
DESCRIPTIONS AND OPERATION (CONTINUED)

The following table displays the available settings. Please note:

- Other than Manual Control (6.) and Test Mode (7.) there will be a 10 minute delay before the load turns on after the panels stop receiving sunlight.
- (0) will turn the load on after sunlight stops hitting the panels, and leave it on until sunlight returns to the panels.
- (6.) is the manual ON/OFF setting

Value	Working mode	Value	Working mode
0	Light ON/OFF	0.	Light ON + 8 hours
1	Light ON + 1 hours	1.	Light ON + 9 hours
2	Light ON + 2hours	2.	Light ON + 10 hours
3	Light ON + 3hours	3.	Light ON + 11 hours
4	Light ON + 4 hours	4.	Light ON + 12 hours
5	Light ON + 5 hours	5.	Light ON + 13 hours
6	Light ON + 6 hours	6.	Manual Control
7	Light ON + 7 hours	7.	Test Mode

TECHNICAL SPECS
(CHARGE CONTROLLER)

Nominal System Voltage	12/24VDC (AUTO)
Max Solar Panel Input Voltage	50VDC
Rated Output Current	20 Amps
Max Load Function Current	20 Amps
Equalize Voltage	14.8V(12V) 29.6V(24V)
Boost Voltage	14.4V(12V) 28.8V(24V)
Float Voltage	13.7V(12V) 27.4V(24V)
Low Voltage Disconnect Level	11.2V(12V) 22.4V(24V)
Low Voltage Reconnect Level	12.6V(12V) 25.2V(24V)
Standby Current Consumption	12V: <4.58mA 24V: <6.01mA

Temp Compensation Coefficient	-5mV/C/2V (@25°C)
Working Temp Range	-35°C to +55°C
Enclosure IP Rating	IP67
Overall Dimensions	108.5mm x 75mm x 25.6mm
Mounting Dimension	100.5mm
Mounting Hole Size	Φ5mm
Cable Dimension	6mm^2
Net Weight	435g

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TROUBLESHOOTING

Fault	Cause	Remedy
Charging LED indicator is off when sunlight is hitting the panels properly	Panels not connected properly	Check panel connections and battery connections are correct and tight
Charging status LED indicator flashing quickly	Battery voltage is higher than over-voltage cut-off point	Disconnect solar panels and check battery voltage, possible fault with battery or charge controller
Battery LED indicator is RED and loads not working	Battery is over-discharged (voltage is too low)	The controller has shut down the load output automatically to protect the battery from damage. Indicator will return to green after battery voltage comes up via charging.
The dot point of the display is flashing quickly and the load is not working	Load short circuit	Correct the short circuit of the load. Load will automatically resume after 10 seconds (first time). For subsequent errors, fault can be cleared by pressing the button, or disconnecting and reconnecting the charge controller from power (battery and panels).
The dot point of the display is flashing slowly and the load is not working	Load current draw is too high	"Rated load current is 20 Amps When load power exceeds rated current by 1.25 to 1.5 times the load will be shut down after 60 seconds. When the load power exceeds rated current by 1.5 to 2 times the load will be shut down after 5 seconds. Over 2 times current will be shut down after 1 second. Reduce the load and press the button to clear the error, load will restart after 3 seconds, or restart the controller by disconnecting all power."