MPPT SOLAR CHARGE CONTROLLER
USER MANUAL

EX-10ASC

DISCLAIMER

While every precaution has been taken to ensure the accuracy of the contents of this guide, Expion360 assumes no responsibility for errors or omissions. Note as well that specifications and product functionalities may change without notice.

IMPORTANT

Please be sure to read the manual in its entirety before using the products. Misuse may result in damaging the products, causing harm, or incurring serious injury. This manual will update periodically without notice.

ABOUT US

- **Safety**

Expion360 lithium batteries use lithium iron phosphate ($LiFePO_4$/LFP) chemistry, which is the best choice for RV, marine, and off-grid power storage applications, because of its high degree of safety and long cycle life.

- **Quality**

With all the Li-ion manufacturers in the market, Expion360 strives to ensure that our products meet the highest quality standards to maintain our advantage over the competition. Expion360 battery uses cylindrical 26650, stainless steel encased $LiFePO_4$ cells. The cells are UL 1642 recognized (File No. MH64383). They are certified to the highest standard in safety and performance. Instead of soldering, all internal connections are mechanically fastened to reduce resistance and ensure long-term durability.

The Expion360 proprietary case contains internal structural support to protect the battery pack and BMS inside from the effects of vibration and movement. The innovative oversized terminals and bus bars provide substantial electrical connections to accommodate high ampacity cables.

1. Safety Information

Read all instructions in this manual before installation!

- The controller will be damaged if the solar input is above 10 A.
- DO NOT disassemble or attempt to repair the controller.
- Always disconnect the solar module before disconnecting the battery.
- Power connections must remain tight to avoid excessive heating from a loose connection.
- Charge only LiFePO4 batteries with this charge controller.
- Battery connection may be wired to one battery or a bank of batteries.
- Risk of electric shock. Please use caution.

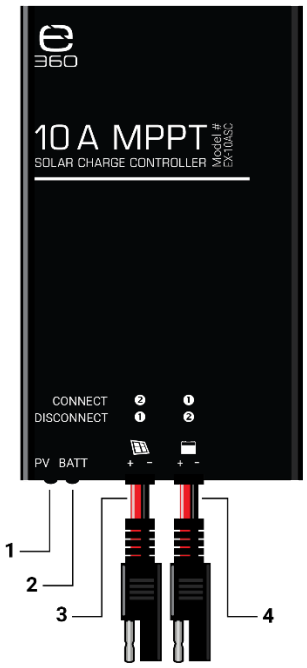
2. Overview

The MPPT charge controller uses an advanced algorithm to optimize solar power conversion to electricity as efficiently as possible. The charge controller has the following benefits:

- Quality internal components for a long lifespan.
- Wide window of operating temperatures.
- Lithium battery compatible and preset for Expion360 batteries.
- Maximum conversion efficiency of 98%.
- PV power limitation function.
- Aluminum housing with heat sink for cooling.
- IP67 rated.

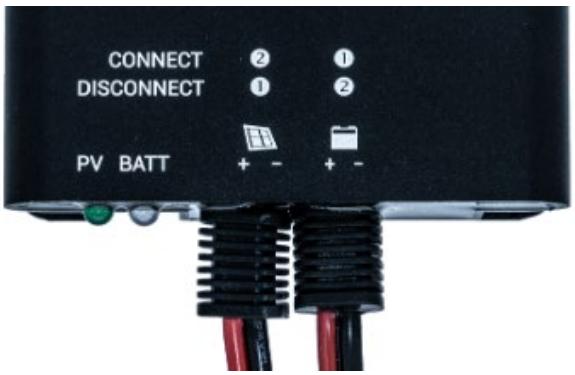
3. Product features

1	Solar PV LED (Green) (off or on)
2	Battery LED (Green, Orange, or Red)
3	Solar PV SAE input connection
4	Battery SAE output connection



4. Wiring

Please note that extra care must be given to the polarity of cables when using SAE connectors. Most SAE connectors will have the red positive wire terminated at a shrouded female terminal. When a cable assembly with this orientation of connector and cable connects with the SAE connectors of the solar charger, the red wire becomes negative, and the black wire becomes positive. This is a potential source of confusion when wiring and may cause damage to the unit. To reduce confusion, please use the accessory cable (available on the website) to extend your SAE connections and remember to always consider polarity when making connections to your battery and your solar panel(s).



Connection Order

1) Connect the battery to the solar charge controller. After connecting the battery, verify the battery LED is green. If it is not green, refer to the troubleshooting section.
2) Connect the solar panel.
   Pay close attention to the polarity of the wires.

Disconnect Order

1) Disconnect the solar panel.
2) Disconnect the battery.

5. LED Indicators

Indicator	Color	LED Indication	Status
PV LED	Green	On, Solid	PV connection normal but low voltage from PV. No charging.
	Green	OFF	No PV voltage at the input. No charging.
	Green	Slowly Flashing (1x per second)	Charging.
	Green	Fast Flashing (4x per second)	PV over voltage. No charging.
BATT LED	Green	On, Solid	Normal.
	Green	Slowly Flashing (1x per second)	Full.
	Green	Fast Flashing (4x per second)	Over-voltage.
	Orange	On, Solid	Under-voltage.
	Red	On, Solid	Over-voltage.
	Red	Fast Flashing (4x per second)	Overheating or low temperature.
If PV LED is green and the battery LED is orange:			System voltage error.

6. Protection

Warning! The controller will be damaged if the solar input is above 10 A!

PV Over Current – The controller will limit battery charging current to 10 A. Adding additional extra solar panels will not increase the charging speed of the solar charge controller and can damage the charge controller.
Battery Over Voltage – When the battery voltage reaches the set point of 14.4 Vdc, the controller will stop charging the battery.
PV Short Circuit – The controller will stop charging if the solar panel connection is in a short circuit condition. Clear the short to resume normal operation.
PV Reverse Polarity – Solar can be connected in reverse polarity without damaging the charge controller **only** when:

- The battery is not connected.
- The battery is properly connected, and the open circuit voltage of the PV is lower than 85 V.

Reverse Battery Polarity – When the PV is not connected or the PV connection is reversed, the charge controller is fully protected against reverse battery polarity connection.

Warning! The controller will be damaged if the solar connection is correct, and the battery polarity is reversed!

7. Technical Specifications

Device	**EX-10ASC**
Nominal system voltage	12.8 Vdc
Rated charge current	10 A
Rated charge power	130 W (12.8 Vdc)
Max PV open circuit voltage	60 V
Maximum power point voltage range	Battery voltage + 2 V to 36 Vdc
Boost charging voltage	14.5 Vdc
Self-consumption	<13 mA
Working environment	-40 °F to 140 °F
Enclosure rating	IP67
Overall dimension	124 mm x 89 mm x 30 mm
Mounting hole size	3.5 mm
Mounting dimension	88 mm x 76 mm
Wire gauge	14 AWG
Connector	SAE
Weight	1.2 lb

8. Troubleshooting

Fault	Possible Cause	Solution
The solar PV LED is off despite the PV modules receiving sun exposure.	Solar PV is disconnected.	Check all wiring and connections.
No battery LED indicator.	Battery voltage may be less than 8.5 Vdc or disconnected.	Use a multimeter to check the battery voltage and check all connections.
The battery LED is blinking fast (green).	Battery over voltage.	Using a multimeter, measure the battery voltage and confirm it is less than 14.6 Vdc.

9. Warranty

This warranty does not apply under the following conditions:

- The product has incurred damage from improper use in an unsuitable environment.
- Visible dent marks or signs of abuse.
- Connected PV current, voltage, or power exceeding the rated value of the controller.
- The charge controller is used outside the working temperature window.
- Any attempt to disassemble the product by the user.