

E024U Solar Kit



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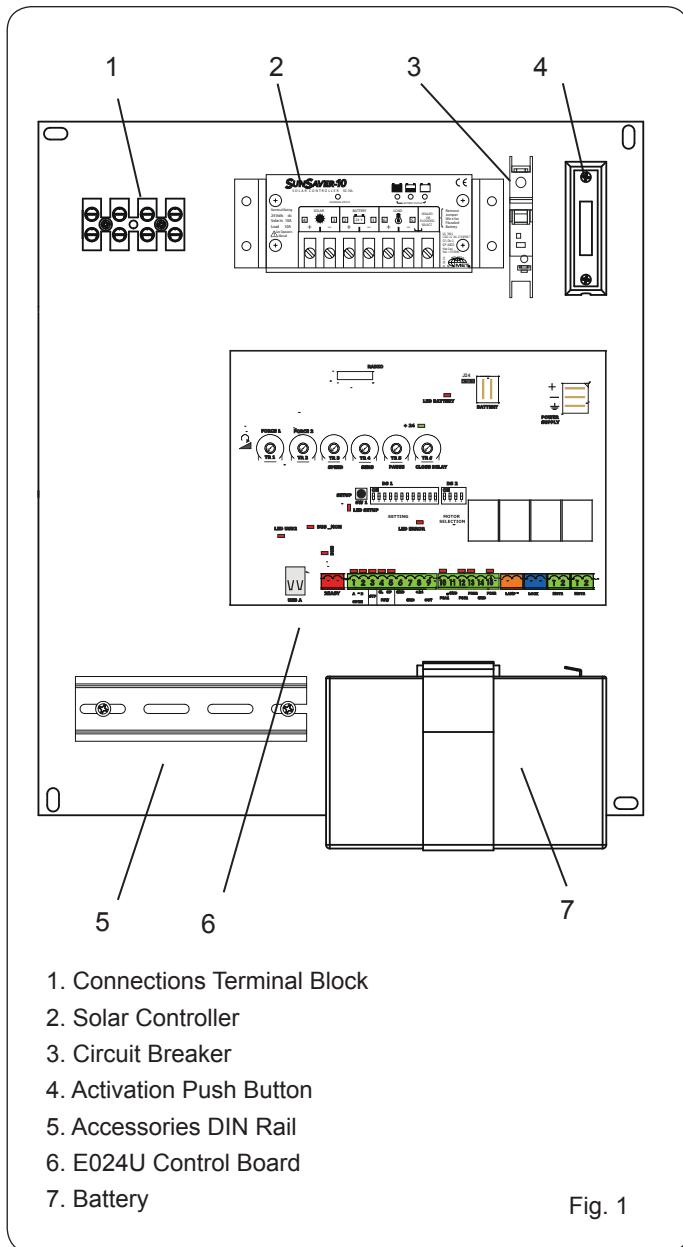
1. DESCRIPTION AND CHARACTERISTICS

This solar kit allows to use the E024U control board with the power generated by a solar panel. Thanks to the high performance built in solar charger/controller the battery can be charged quickly and reliably while the low power idle mode on the E024U allows for smooth operation

Due to the different power requirements of different operator types we have two versions of this kit:

3352.1 Kit for Electromagnetic operators

3353.1 Kit for Hydraulic operators



- 1. Connections Terminal Block
- 2. Solar Controller
- 3. Circuit Breaker
- 4. Activation Push Button
- 5. Accessories DIN Rail
- 6. E024U Control Board
- 7. Battery

Fig. 1

2. TECHNICAL SPECIFICATIONS

	3352.1	3353.1
Nominal system voltage	24 Vdc	
Solar panel power	30 W	
Max. solar input voltage	60 Vdc	
Max Solar current	10A	20A
Battery nominal voltage	24Vdc	
Maximum Load Current	10A	20A
Operating ambient temperature	-4°F +131°F	
Protections	short circuit, over-current, reverse polarity, high temperature, high voltage	

3. CHARGER / CONTROLLER FEATURES

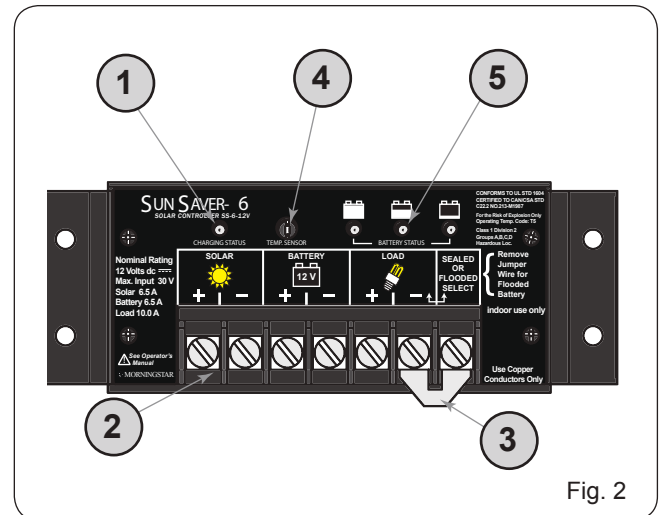


Fig. 2

- 1. Status LED
An LED indicator that shows charging status and also indicates when a solar input fault condition exists.
- 2. Power Terminal Block
Power terminations for system Solar, Battery, and Load connections.
- 3. Battery Select Jumper
A removable jumper to select the battery type.
- 4. Local Temperature Sensor
Measures ambient temperature. Battery regulation is adjusted based on ambient temperature changes.
- 5. Battery Status LEDs
Provides approximate battery state of charge indication and also indicates when a system or load fault condition exists.

4. WIRING

Connect the supplied cable with MC4 connectors to the solar panel terminal block, make sure to follow the drawing below for the proper polarity

Connect Earth Ground to the negative pole of the solar panel

Connect the battery to the corresponding terminal block. with the supplied cable. Make sure to follow the polarity

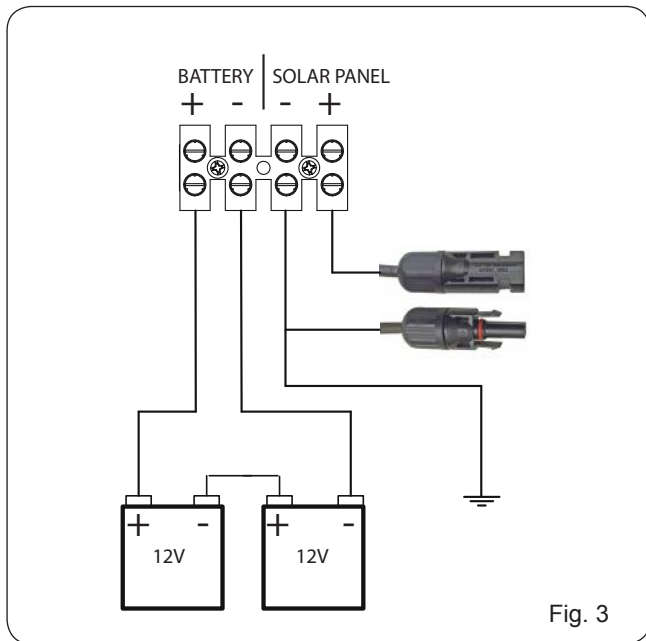
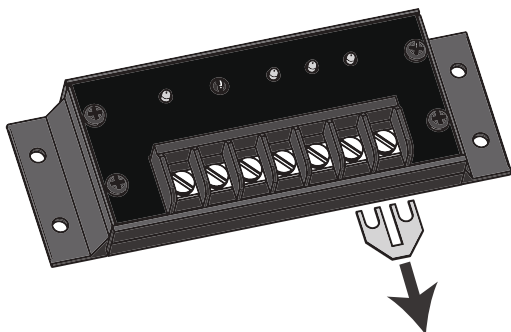


Fig. 3

NOTE:

The Charger / Controller is supplied by default for use with sealed batteries. If flooded batteries are used remove jumper (3)



As soon as the batteries are connected the solar controller will start a self checking procedure, the battery status LED will blink in sequence and stop at the corresponding charge level

Plug the solar panel to the cables that go to the terminal block:

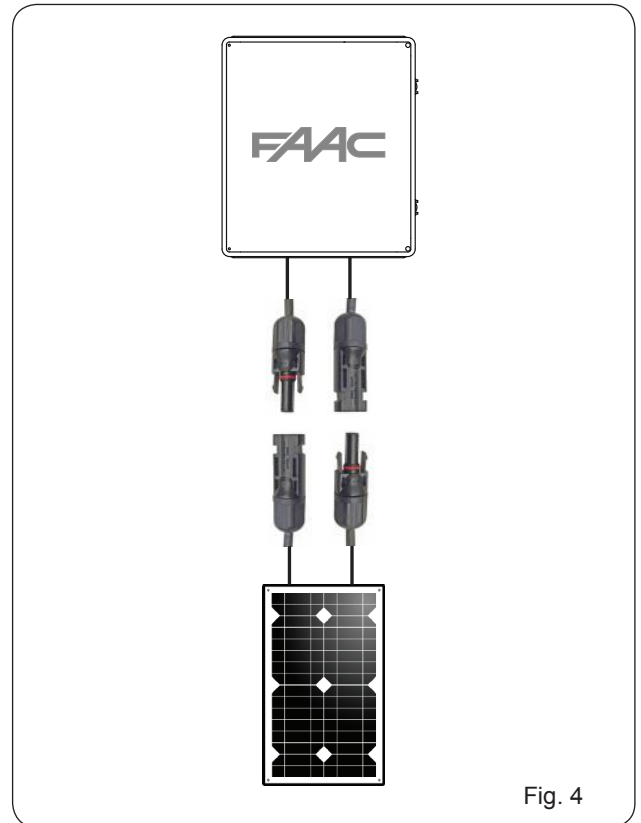


Fig. 4

If the solar panel has enough exposure to light the green Status LED will be ON

Turn the Control Board power ON using the circuit breaker. If the battery voltage is below 26V the board will turn on right away, if the battery voltage is above 26V the board will go through a batch of internal testing before turning on. The tests will last about 40 sec.

5. SOLAR CONTROLLER LED INDICATION

STATUS LED

The Status LED (Fig. 2 ref. (1)) indicates charging status and any existing solar input error conditions. The Status LED is on when charging during the day and off at night. The Status LED will flash red whenever an error condition(s) exists.

Status LED indications.

Color	Indication	Operating State
None	Off (with heart-beat ¹)	Night
Green	On Solid (with heartbeat ²)	Charging
Red	Flashing	Error
Red	On Solid	Critical Error

¹ Status LED heartbeat indication flickers ON briefly every 5 seconds

² Status LED heartbeat indication flickers OFF briefly every 5 seconds

BATTERY STATUS LEDS

The Battery Status LEDs (Fig. 2 ref. (5)) indicate the level of charge on the battery. The indication is based only on battery voltage setpoints, which provides an approximation of the actual state of charge of the battery.

Battery Status LED indications.

LED	Indication	Battery Status	Load-Status
Green	Flashing	Charging	ON
Green	Slow Flashing	Trickle Charge	ON
Green	On solid	Battery Full	ON
Yellow	On solid	Battery Half Full	ON
Red	Flashing	Battery Low	ON
Red	On solid	Battery Empty	OFF
None	No LEDS On	No Battery	OFF

6. TROUBLESHOOTING

Status LED (Fig 2 Ref (1)) Error Indications

- Solar overload Flashing Red
- High Voltage Disconnect Flashing Red
- High Temperature Disconnect Flashing Red
- Internal Damage Solid Red1

Battery Status LEDs (Fig 2 Ref (5)) Error Indications

- High Voltage Disconnect R - G Sequencing
- High Temperature Disconnect R - Y Sequencing
- Load Overload R&G - Y Sequencing
- Self-test Error R - Y - G Sequencing

Note:

A solid red Status LED indicates that a critical fault has been detected. Critical faults typically indicate that the controller is damaged and requires service.

LED error indications can be interpreted as follows:

“R - G sequencing” means that the Red LED is on, then the Green LED is on, then Red LED is on....

“R&G - Y sequencing” means that both the Red LED and Green LED are on, then just the Yellow LED is on, then Red and Green LED are on....

Solar Overload

If the solar current exceeds the maximum solar rating, the controller will stop charging until the solar current returns to within its operational rating.

High Voltage Disconnect

The battery voltage has exceeded the controller's maximum regulation limit of 30.6V . The solar and load will be disconnected until the battery voltage decreases to the reconnect threshold of 28V.

High Temperature Disconnect

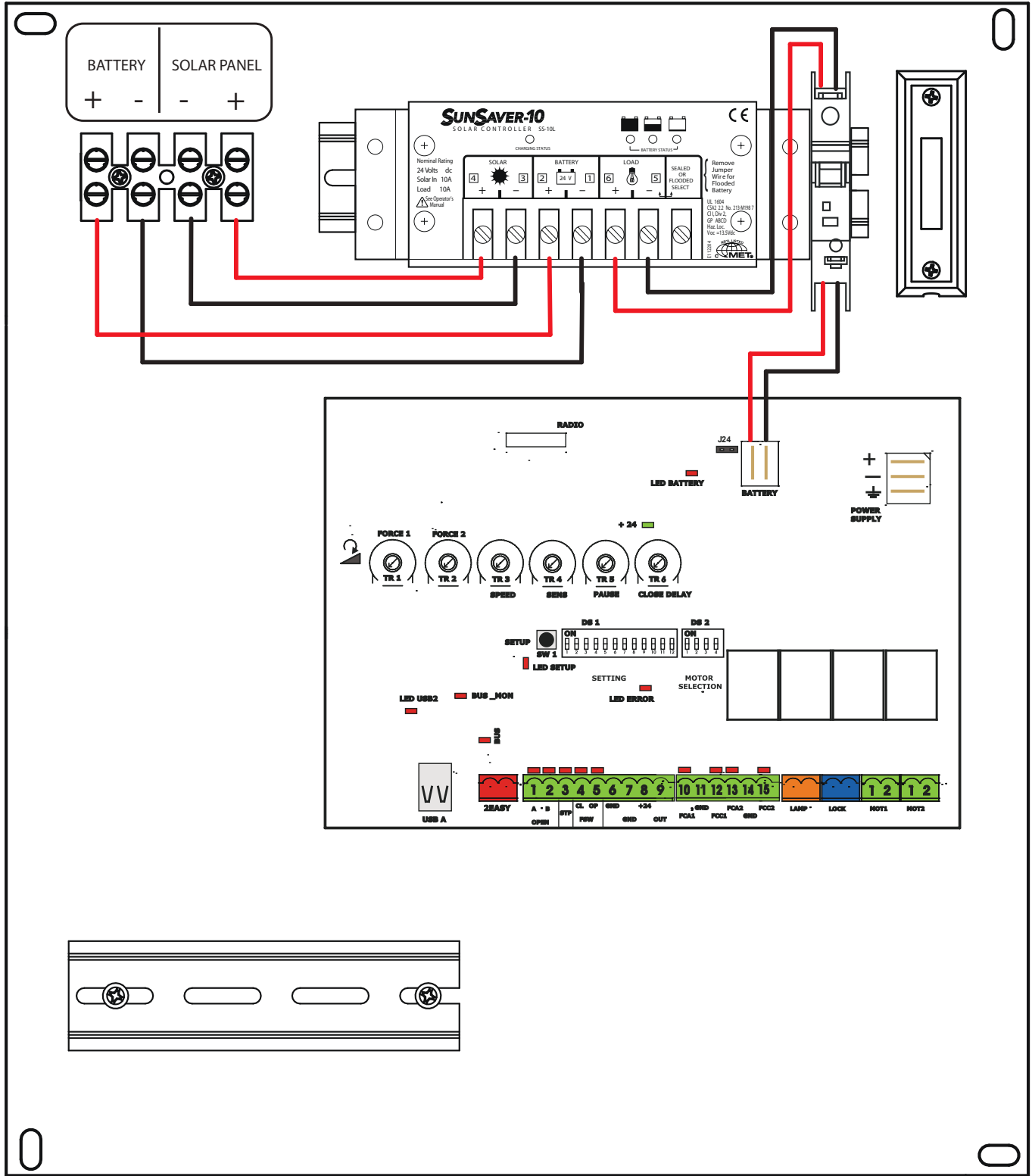
The heatsink temperature has exceeded 185 °F (85 °C) and the solar and load is disconnected. The controller will automatically reconnect when the heatsink cools to 176 °F (80 °C).

Load Overcurrent

If the load current exceeds the maximum load current rating, the controller will disconnect the load.

The controller will attempt to reconnect the load two (2) times approximately 10 seconds apart. If the overcurrent condition remains after the first two (2) attempts, the fault must be cleared by removing and reapplying power.

This error can also indicate a reverse polarity on the battery. Check wiring.



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