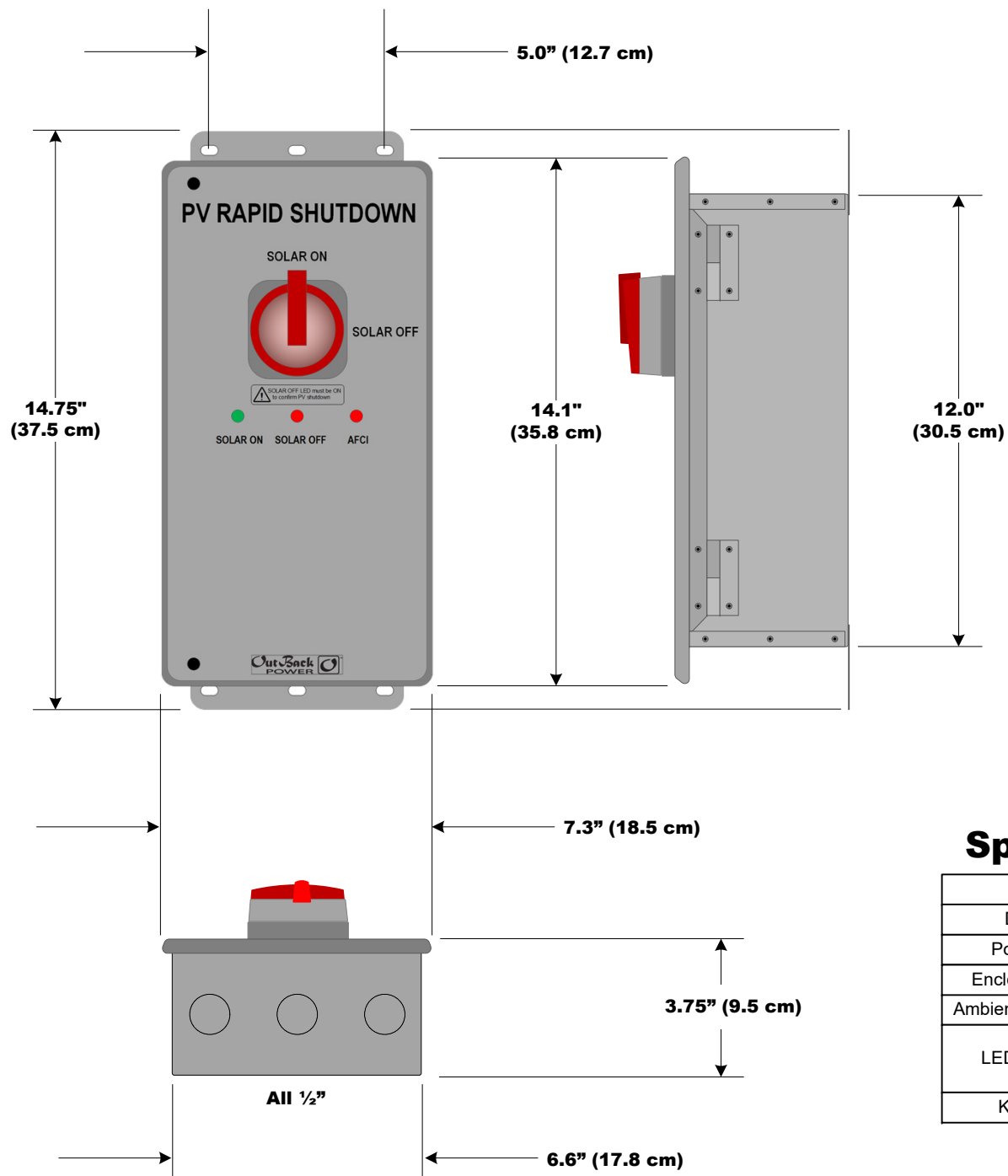


## Dimensions



## Specifications

Voltage	24 Vdc ± 3%
DC Input	24 Vdc ± 3%
Power Draw	0.06 Adc
Enclosure Rating	UL Type 3R
Ambient Temperature	-25 to 60°C
LED Indicators	SOLAR ON SOLAR OFF AFCI
Knockouts	½"

### Contact Information

Mailing Address: 17825 – 59<sup>th</sup> Avenue NE  
Suite B  
Arlington, WA 98223 USA  
Web Site: [www.outbackpower.com](http://www.outbackpower.com)

### Date and Revision

April 2020, Revision A

**IMPORTANT:**  
Not intended for use with  
life support equipment.



# Rapid Shutdown Initiator

## Audience

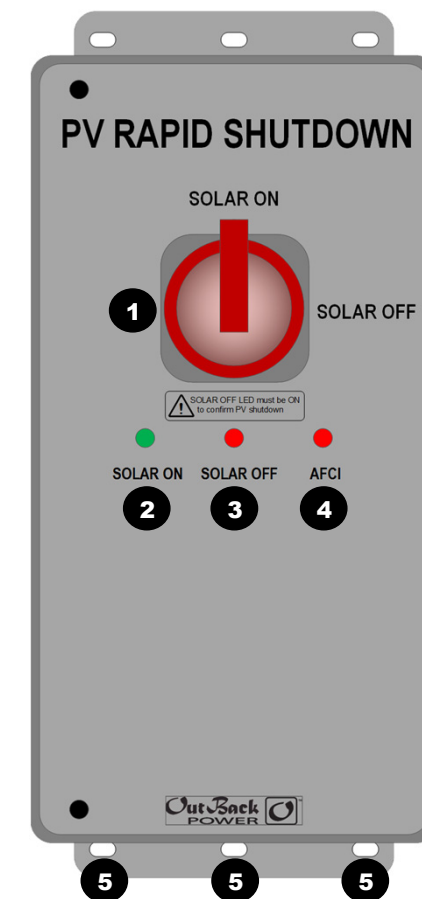
These instructions are for use by qualified personnel who meet all local and governmental code requirements for licensing and training for the installation of electrical power systems with AC and DC voltage up to 600 volts. Failure to install or use this equipment as instructed in the literature can result in damage to the equipment that may not be covered under the limited warranty. This product is only serviceable by qualified personnel.

## Product

The Rapid Shutdown Initiator (RSI) initiates the rapid shutdown function required for a PV array with module-level power electronics (MLPE) and other devices, as part of a rapid shutdown system, for compliance with 2017 NEC 690.

## Features

- 1 RAPID SHUTDOWN switch** Initiates the rapid shutdown function. Turning to the **SOLAR OFF** position removes the 24-volt signal enabling MLPE devices to operate. This switch can be secured with a padlock.
  - 2 SOLAR ON LED indicator** Green LED indicator. It illuminates when DC voltage is present and the **RAPID SHUTDOWN** switch is in the **SOLAR ON** position.
  - 3 SOLAR OFF LED indicator** Red LED indicator. **SOLAR OFF** must be illuminated to confirm PV shutdown. The **SOLAR OFF** indicator tells responders that the **RAPID SHUTDOWN** switch is in the **SOLAR OFF** position to create a “safe” condition.
  - 4 AFCI LED indicator** Red LED indicator; illuminates when receiving an “arc fault” signal from an ICS Plus combiner.
- NOTE:** The red **AFCI** indicator is not functional unless used with the ICS Plus family of PV combiners.
- 5 ½" Electrical knockouts (EKO) × 3** These accommodate conduit and a UL 514-compliant fitting for communication wires.



## Application with FireRaptor MLPE

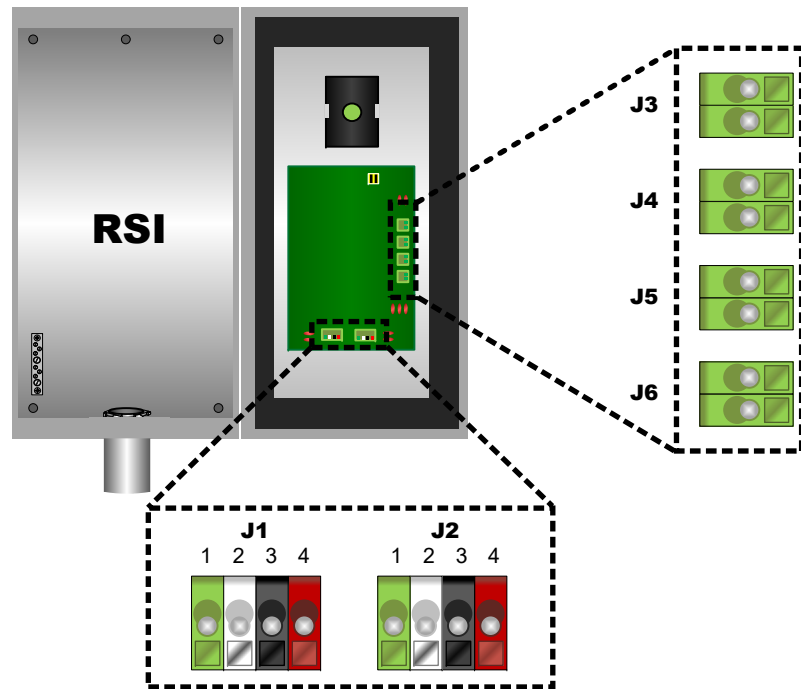
This product will activate the rapid-shutdown circuit of the FM100 charge controller if connected to MLPE devices. It may optionally activate an inverter on/off circuit to de-energize the inverter. This product is intended for installations requiring more than 40 IMO FireRaptor OBFERS-ESW1 units. Up to 114 FireRaptor units may be used per RSI. Up to six RSI units may be used on a single system.

When the RSI opens for a rapid shutdown event, it removes power from all FireRaptor devices. The RSI **Aux RSI COMMAND/STATUS OUTPUT** connection will place the FM100 controller into a rapid shutdown state. The controller’s rapid shutdown terminals may be connected to other FM100 controllers for a “daisy-chained” rapid shutdown configuration, or may be connected to the inverter’s on/off circuit. See the opposite side of this sheet for instructions.

## Other Applications

Similar applications are also possible with other MLPE products such as the TIGO TS4-A-S and TS4-A-F.

# Application with FireRaptor MLPE



## RSI Connections

The RSI is equipped with terminal connections for power, input signals, and output signals.

### Power Terminals

- **J1** provides power to the RSI itself. To power the RSI, an isolated Class 2 DC power supply (24 Vdc  $\pm$  3%, up to 1.5 Adc) must be used. Power supply negative (-) connects to pin 3 (black). Power supply positive (+) connects to pin 4 (red). This wire must be protected by an appropriately-sized overcurrent protection device.
- **J2** provides power to all PV combiners. In the illustration below, pins 3 and 4 (black and red) connect to a junction box which leads to the **PWR** port on the FireRaptor combiners.

### Accessory Terminals

- **J3** is the **AUX RSI COMMAND/STATUS OUTPUT**. These are dry contacts which report RSI status. The **J3** contacts can activate a local alarm or send status messages to the Web or other OutBack devices.
  - Open: Rapid Shutdown (**SOLAR OFF**)
  - Closed: Normal (**SOLAR ON**)
  - 30 Vdc or 15 Vac @ <2 A

- **J4** is the **RSI SAFE STATUS INPUT**. These are dry contacts which can receive external commands. An external switch or relay can send a "Safe" signal to **J4** from another location.
  - Open (all connections): Not "Safe"
  - Closed (any connection): "Safe" (Rapid Shutdown)



#### IMPORTANT: J4

If safe status input devices are not installed, a jumper must be installed on **J4**. With no connections, the **SOLAR OFF** ("safe") indicator will not light even if the **RAPID SHUTDOWN** switch is **OFF**.

- **J5** is the **AUX AFCI STATUS OUTPUT**. These are dry contacts which report AFCI status. The **J5** contacts can activate a local alarm or send status messages to the Web or other OutBack devices.
  - Open: Normal
  - Closed: Arc fault event
  - 30 Vdc or 15 Vac @ <2 A



#### IMPORTANT: J5

The AFCI status signal that triggers the **J5** output is not functional unless this product is used with the ICS Plus PV combiner.

- **J6** is the **AUX RSI EXTERNAL INPUT**. These are dry contacts in series with the **RAPID SHUTDOWN** switch. These (normally-closed) connections control a 24-Vdc rapid shutdown circuit. Opening any contacts constitutes a rapid shutdown command. An external switch or relay can serve as another rapid shutdown device if connected to the **J6** contacts from another location.
  - Closed: **J6** device + **RAPID SHUTDOWN** switch; normal operation (**SOLAR ON**)
  - Open: **J6** device or **RAPID SHUTDOWN** switch; rapid shutdown state (**SOLAR ON**)



#### IMPORTANT: J6

The factory-installed **J6** jumper must remain in place if an external switch is not connected. Leaving these contacts open will cause a continuous shutdown.

## System Wiring

- Install the PV modules in series strings using the FireRaptor MLPE devices (OBFRS-01). Connect these strings to the combiner.
  - The **STR** (string) terminals are used for series string connections. The **PAN** (panel) terminals are used for PV module connections. The **PWR IN** and **OUT** terminals receive and distribute power from the **J2** power supply in the RSI (which is powered by the class 2 power supply). It can power up to 114 OBFRS-01 devices per RSI.
  - One string is depicted. The FWPV4-FH600 combiner can receive up to 4 strings.
- Connect the combiner output to the charge controller. To use the integrated FM100 arc fault protection, this must utilize approved PV circuit breakers such as those on the GSLC.
- Connect the RSI J3 terminals to the charge controller's rapid shutdown terminals. The "daisy chained" terminals may be connected to other charge controllers or to the inverter's on/off circuit.
- Connect the Class 2 power supply to the RSI J1 terminals.

