

# Solar Module Level Rapid Shutdown Safety Solution With Aluminum Enclosure

BFS-A1/A2 Series



- Module Level Rapid Shutdown
- Manual Shutdown by button switch
- Automatic Shutdown on AC Power Loss
- Over temperature Automatic Shutdown
- Compatible with most string inverters and panels
- No cross-talk with inverter or WIFI



## Application

BFS-A1/A2 is a module-level rapid shutdown device designed to ensure safety for roofs and buildings equipped with photovoltaic (PV) systems, preserving rapid shutdown capabilities throughout the system's entire lifespan.

The product incorporates a novel metal casing and a heat dissipation structure, improving the maximum operating temperature, thereby enabling safer and more stable functionality even in extreme environmental conditions. It has industry-leading temperature adaptability, ranging from -40°C to 85°C.

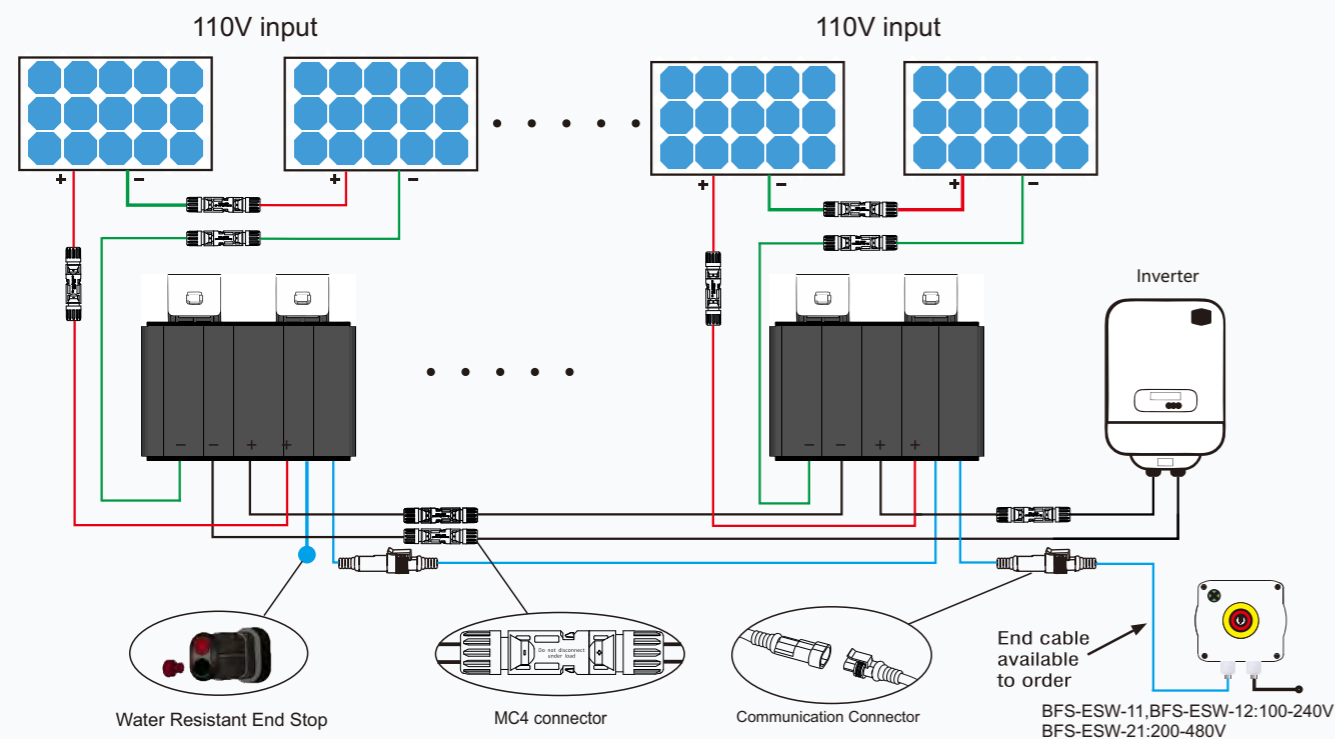
An emergency button switch is required to initiate the rapid shutdown operation, and the switch can be placed on the ground for easier operation.



## BFS-A1 RSD With Aluminum Enclosure

Model	BFS-A1
Maximum Input Voltage	110V
Maximum Input Current	20A
Maximum Power	2200W
PV Input and Output Cables	4.0mm <sup>2</sup> (12AWG) Cables + MC4 Connectors
PV Input Cables Length	180mm
PV Output Cables Length	1800mm
IP Protection	IP68
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Standard Compliance	EN 62109-1:2010, EN 61058-1:2018
PV Connectors	Staubli MC4 (Standard) Jinko connectors for option

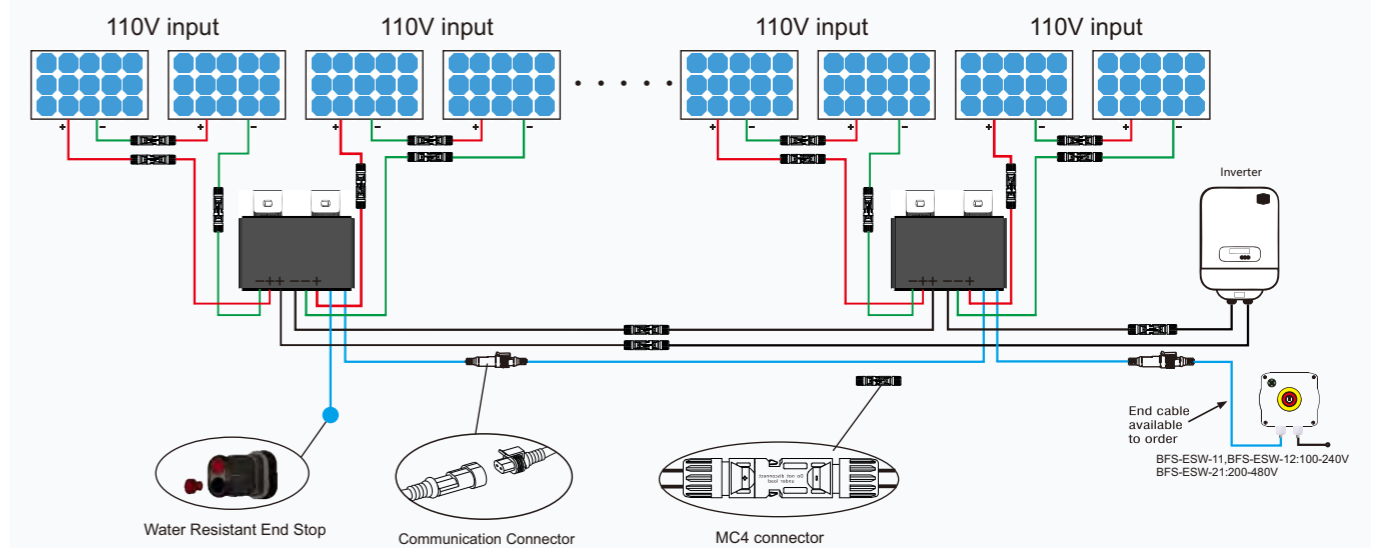
DC Power Supply for each RSD	
Voltage Range	14V ~ 28V
Maximum Current	8mA
Maximum Power	0.15W
Power Supply Cables (Signal Cables)	2x0.823mm <sup>2</sup> (18AWG) Signal Cables + Signal Connectors
Power Supply Cables Length	1800mm



## BFS-A2 RSD With Aluminum Enclosure

Model	BFS-A2
Maximum Input Voltage	110V*2
Maximum Input Current	20A
Maximum Power(Input1+Input2)	2200W*2
PV Input and Output Cables	4.0mm <sup>2</sup> (12AWG) Cables + MC4 Connectors
PV Input 1 Cables Length	180mm
PV Input 2 Cables Length	300mm
PV Output Cables Length	1800mm
IP Protection	IP68
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Standard Compliance	EN 62109-1:2010, EN 61058-1:2018
PV Connectors	Staubli MC4 (Standard) Jinko connectors for option

DC Power Supply for each RSD	
Voltage Range	14V ~ 28V
Maximum Current	12mA
Maximum Power	0.2W
Power Supply Cables (Signal Cables)	2x0.823mm <sup>2</sup> (18AWG) Signal Cables + Signal Connectors
Power Supply Cables Length	1800mm

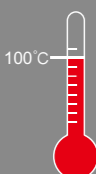


Each BFS-A1/BFS-A2 device can hold solar modules output max: 1500V total, the modules connect in series as solar string goes to inverter as PV system designing. The connection of BFS-A1/BFS-A2 RSD and button switch is via communication cable.

**Note:** If your market requires NEC2017/NEC2020 requirement, we recommend one RSD BFS-A1 connects 1 panel( $\geq 40V$ ) or 2 panels( $< 40V$ ); BFS-A2 connects 2 panels( $\geq 40V$ ) or 4 panels( $< 40V$ ).

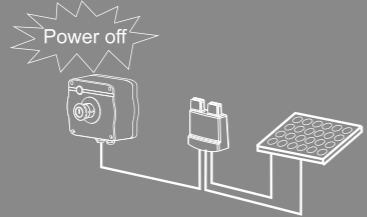
### A Complete RSD Solution

Method1



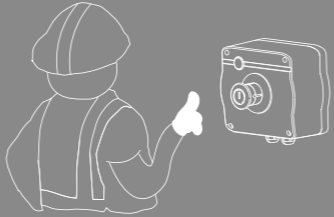
Automatic shutdown the panels when there is a temperature in the area higher than 100°C detected.

Method2



Automatic shutdown the panels when the power supply loss in the button switch box.

Method3



The fireman and people can manual the button switch to shutdown the panels when there is an emergency.



### Emergency Shutdown Switch



The Emergency Switch offers the manual shutdown of solar panels on the rooftop by pushing the button. AC power from grid or AC side at solar inverter both could be the power source for the emergency switch.

And when the AC power loss, automatically shuts down the DC panels at the meantime. (The green light is ON only indicates the AC power supply is live on).

### Emergency Button Switch Specifications

Model	BFS-ESW11(-K)	BFS-ESW12(-K)	BFS-ESW21(-K)
Input Voltage Range	100~240VAC		200V~480VAC
Maximum Working Current	0.5A	0.88A	0.7A
Input Frequency Range	47~63Hz		
Rated Output Voltage	24VDC		
Maximum Output Current	315mA	750mA	1250mA
Maximum Output Power	7.06W	18W	30W
Power Supply Cables	0.823mm <sup>2</sup> / 18AWG		
Cables Torque	0.5 NM/4.5lbin		
DIN Terminal Connector Wiring	0.5-4mm <sup>2</sup> /26AWG- 10(Note:BFS-11/BFS-12 uses communication connector 2x0.823mm <sup>2</sup> )		
DIN Terminal Torque	0.5-0.8Nm/4.5-7lbin		
Ambient Operating Temperature	-30°C to +70°C		-30°C to +85°C
BFS-A1	40 Units	90 Units	90 Units
BFS-A2	20 Units	45 Units	45 Units
Maximum Distance ( First RSD to the Emergency Button Switch )	150m		

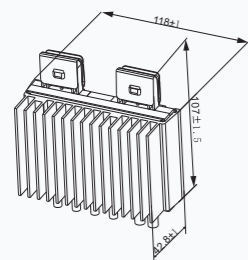


### Ordering Information

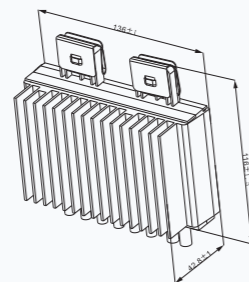
Model Number	Description
BFS-A1	Rapid Shutdown Unit for solar panel(s)
BFS-A2	Rapid Shutdown Unit for solar panel(s)
BFS-ESW11	Emergency Button Switch for BFS-A1/BFS-A2.(100-240V AC power input).
BFS-ESW12	Emergency Button Switch for BFS-A1/BFS-A2.(100-240V AC power input).
BFS-ESW11-K	Emergency Button Switch with Key Lock for BFS-A1/BFS-A2. (100-240V AC power input).
BFS-ESW12-K	Emergency Button Switch with Key Lock for BFS-A1/BFS-A2. (100-240V AC power input).
BFS-ESW21	Emergency Button Switch for BFS-A1/BFS-A2.(200V-480V AC power input).
BFS-ESW21-K	Emergency Button Switch with Key Lock for BFS-A1/BFS-A2. (200V-480V AC power input).
BFS-CCABLE	20m signal cable with female connector for end of string.
BFS-CCABLES	2m signal cable with male and female connectors for between strings or panels.

### Install Dimension

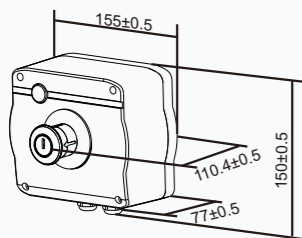
Unit: (mm)



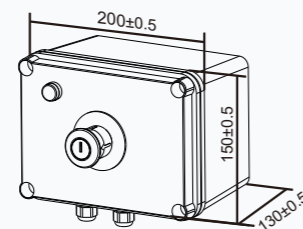
BFS-A1



BFS-A2



BFS-ESW11-(K)/BFS-ESW12-(K)



BFS-ESW21-(K)



CASE STUDY: Philippines with 1.2MW solar installation.



CASE STUDY: Pampanga, Philippines 1.3MW.