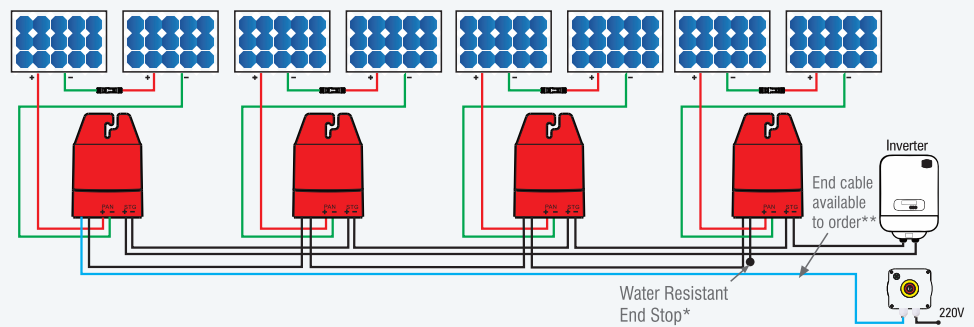# Solar Panel Rapid Shutdown Safety Solution

Application

BFS series solar panel rapid shutdown is designed for solar roof systems safety, offer 3 ways to shut down the solar panels to 0 volts. Including lockable emergency switch for manual shut down the panels and restart the system. The BFS rapid shutdown brings only safety and is compatible with all string inverters. Easy to install and use and fully compliant with NEC 2017 690.12

Purely module-level rapid shutdown device

- 1 rapid shutdown unit per 2 panels
- Plug-play and easy to install
- Automatic shutdown the panels to 0V on AC power loss
- Automatic shutdown the panels to 0V at >85℃
- Emergency button switch for manual shutdown and restart
- Compatible with any string inverters with MC4 connectors
- NEC 2014 & 2017 690.12 , UL and SunSpec certificated
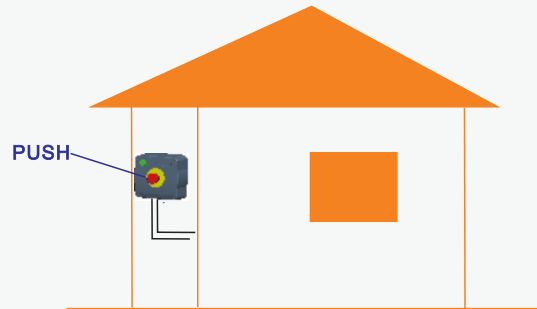
Installation

Parameter

	BFS-11/BFS-12
Emergency Shutdown Cable	2x1mm² cable + Communication SuperSeal 2-pole plug/connector (male/female)
DC Power Supply*	24VDC
Maximum System Input Power	1200W (600W per panel)
Maximum System Input Voltage	120V (60V per panel - 2 in series)
Maximum System Input Current	12A
Maximum Isolation Voltage	1500V
Input Protection	Over voltage & transient voltage supression
Maximum System Output Current	12A (99.5% efficiency)
Breakdown Voltage	1500VAC for 1 minute
Maximum System Output Voltage	120V (60V per panel)
Output Protection	Over voltage, over current & transient voltage suppression
Max. Input Short Circuit Current	12A
Operating Temperature	-30℃ to +95℃
Ambient Operating Temperature	-30℃ to +55℃
IP Class Protection	>IP68 (designed to comply with NEMA 4X)
PV Casing	Flame retardant ABS - UL94-V0
Warranty	BFS-1X:20Years,BFS-ESWXX(-K):5Years
Weight (with cables)	894g
Panel Cable Length	155mm
String & Signal Cable Length	1800mm
Standard Compliance	EN 61000, EN 61646, EN 61215, IEC 62716 draft C (NH₃ resistant), VDE-AR-E 2100-712, BS 7671-712, UL 1741
PV Connectors	Multi contact MC4

3 WAYS to Shut down

Manual switch off

After push the emergency switch button, the solar panels go to 0V within 1S.Lockable button is optional for safe operation on the roof.Restart the system by pull out the button.The emergency switch should be installed at the place easy and fast to reach.

PUSH

Automatic shutdown at AC power loss

Disconnection of the external AC supply, by any means, caused automatic remote operation of the emergency rapid shutdown switch and solar panel shutdown.

Temperature rise trigger

Automatic shutdown occurs if the temperature sensor onboard the BFS detects an ambient temperature rise above its programmed trigger level. The two versions available shutdown in different ways.

The **BFS-11** shuts down only the panel(s) connected to it upon sensing an ambient temperature rise above 85°C (185°F). Provided the temperature does not exceed 92°C (198°F), the unit will re-engage the panel(s) if the temperature drops back below 85°C(185°F), otherwise a manual reset of the Emergency Switch is required.

The **BFS-12** shuts down the entire string connected to it upon sensing an ambient temperature rise above 92°C (198°F) and resetting of the Emergency Switch by a professional installer is then required. The shut-down signal can be configured to provide connection to the building's central alarm system or notification via mobile communication (SMS, email etc.).

EMERGENCY SHUTDOWN SWITCH

The Emergency Shutdown Switches offer manual way of shutdown the solar panels on the roof by pushing the button switches are installed at easy to reach site.

A 24VDC power supply suitable for up to 60 panels operation. The 24VDC power is supplied by solar inverter AC side, so when the AC power loss at solar.
inverter brings rapid shutdown units off. (ON indicates the 24VDC supply is live).

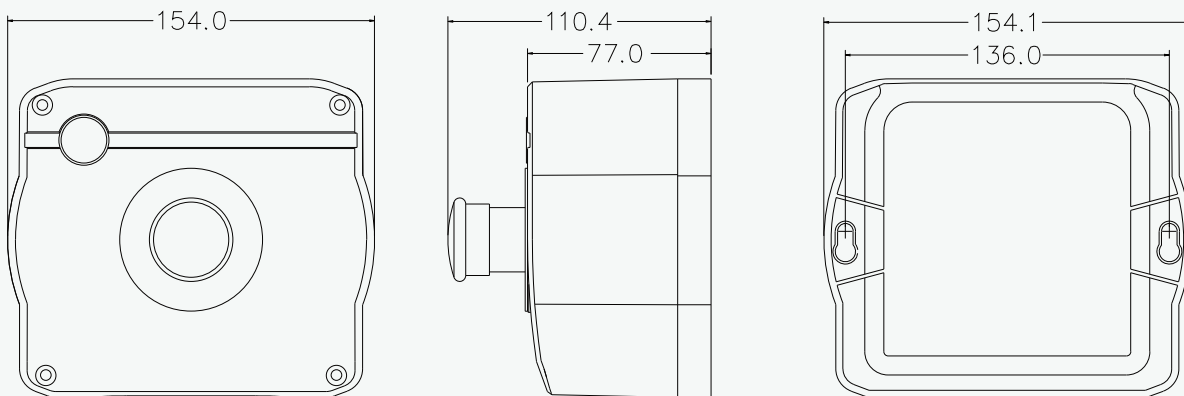The max distance allowed from button switch to RSD: 150M.

SPECIFICATION

Part Number	Description
BFS-11	Rapid Shutdown Unit for connection to 2 solar panels
BFS-12	Rapid Shutdown Unit with Temp Alert for connection to 2 solar panels
BFS-ESW11	Emergency Rapid Shutdown Switch for BFS-11, max 120 solar panels (60 units BFS)
BFS-ESW12	Emergency Rapid Shutdown Switch for BFS-11, max 200 solar panels (100 units BFS)
BFS-ESW11-K	Emergency Rapid Shutdown Switch with Key Lock for BFS-11, max 120 solar panels (60 units BFS)
BFS-ESW12-K	Emergency Rapid Shutdown Switch with Key Lock for BFS-11, max 200 solar panels (100 units BFS)
BFS-ESW21	Emergency Rapid Shutdown Switch for BFS-12, max 120 solar panels (60 units BFS)
BFS-ESW22	Emergency Rapid Shutdown Switch for BFS-12, max 200 solar panels (100 units BFS)
BFS-ESW21-K	Emergency Rapid Shutdown Switch with Key Lock for BFS-12, max 120 solar panels (60 units BFS)
BFS-ESW22-K	Emergency Rapid Shutdown Switch with Key Lock for BFS-12, max 200 solar panels (100 units BFS)
EFS-CCABLE	2m signal cable with female communication connector for end of string
EFS-CCABLES	2m signal cable with male and female communication connectors for between strings or panels.

INSTALL DIMENSION   mm

BFS-ESW11-(K)/BFS-ESW21-(K)

Note: Customized solutions are available