

PROJOY
electric

– Switch To Safety! –



User Manual

PEFS-PL Series

CONTENT

Operation Manual of Panel Level Rapid Shutdown

1. Scope and General	1
2 Safety instructions and regulations	1
2.1 Symbols explanation	1
2.2 Safety instructions	2
3 Technical Data/Specification and product information	2
3.1 Parameters Table	2
3.2 Product Information	2
4 Installation	2
5 Trouble shooting	3
6 Maintenance and Repair	4
7 Warranty commitment	4
8 Contact us	5

1 Scope and General

This manual is used to PEFS-PL series products only.

Version	Date	Remark	Chapter
V1.0	2022-01-15	First Edition	-

2 Safety instructions

For your safety and effective operation, please read the safety instructions thoroughly before using the products.

Safety Instructions should always be observed to prevent accident or risk during operating.

2.1 Symbols explanation



SYMBOLS	DIRECTIONS	NOTE
 DANGER	CAUTION – Hot surfaces – To reduce the risk of burns – Do not touch.	
 DANGER	Risk of electric shock from energy stored in capacitor, Do not remove cover until ____ minutes after disconnecting all sources of supply.	If there is capacitor 45 minutes
 DANGER	Risk of Electric Shock	
 WARNING	Risk of Electric Shock, Do Not Remove Cover. No User Serviceable Parts Inside. Refer Service To Qualified Service Personnel	
 CAUTION	The installation and operation can be operated by qualified people only	
	The product must not be disposed together with household waste	
	Do not touch	
	Read all documentations which accompanies with the product	

2.2 Safety instructions Caution!

- 1) Only qualified people who can install and operate
- 2) Read all documentations which accompanies with the product
- 3) Must follow the National Wiring Rules and local standards related.

3 Technical Data

3.1 Parameters Table

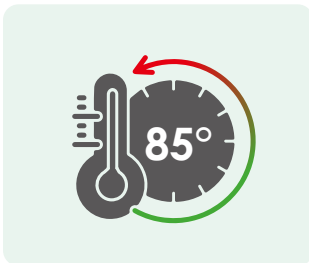
Technical Data

Type	PEFS-PL80S-11	PEFS-PL80S-21	PEFS-PL120S-11	PEFS-PL120S-21
Number of PV Inputs	1	2	1	2
Number of Modules Recommend	1	2	2	4
Maximum Allowed Input Voltage	80V	80V	120V	120V
Maximum Allowed Input Current	15A / 20A			
Maximum Output Voltage	80V	160V	120V	240V
System Voltage	1000V / 1500V			
Control Compliance	24VDC + 2 x 0.8mm ² Cable			
Control Requirements	21.6V~26.4V at nomi. 27~36mA/unit			
Ambient Operating Temperature	-30° C to +60° C			
Protection Temperature	85° C			
IP Level	>IP68, NEMA 4X			
Fire-proof Level	Flame retardant, UL94-V0			
Humidity	0%~90%			
PV Connectors	MC4 (Customized)			
Design Life Span	25 years			
Size	120*51.9*22.4mm	120*59*22.4mm	120*51.9*22.4mm	120*59*22.4mm
Weight	< 200g (Excluding Cables)			
Cable Length, PV1+ Input	120mm	120mm	1200mm	120mm
Cable Length, PV1- Input	1200mm	1200mm	1200mm	2400mm
Cable Length, PV2+ Input	/	1200mm	/	2400mm
Cable Length, PV2- Input	/	120mm	/	120mm
Cable Length, Power Output	650mm+650mm	1250mm+1250mm	1250mm+1250mm	2450mm+2450mm
Cable Length, 24Vdc Control Cable	650mm+650mm	1250mm+1250mm	1250mm+1250mm	2450mm+2450mm
Standard Compliance	NEC2017/2020 (690.12); UL1741; UL3741; IEC/EN62109; IEC/EN61000			

3.2 Product Information

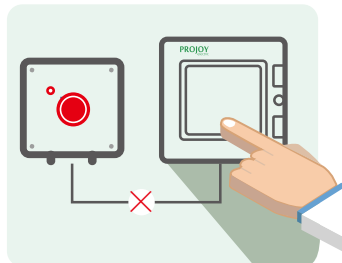
- 1) Fire-retardant V-0/UV resistant materials used, high temperature resistance, corrosion resistance and security impact resistance.
- 2) Clip installation design, simple and convenient
- 3) Long lifespan design for 25 years
- 4) Normal working temperature is at $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$
- 5) Auto off once the temperature in over 85°C .
- 6) The connection cable used is UL and TUV qualified.
- 7) 24Vdc wiring control way makes it more reliable and stable
- 8) More than 200m control distance , which is suitable for C&I solar systems.

Temperature Rise Trigger



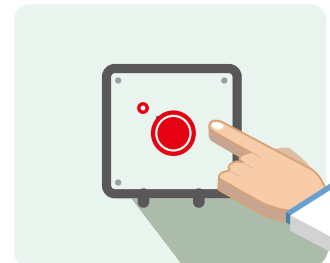
Automatic shutdown occurs if the temperature sensor on board of the RSD detects an ambient temperature rise above 85°C

AC Supply Cut-Off



Disconnection of the external AC supply, by whatever means, causes automatic remote operation of the Emergency Rapid Shutdown Switch and solar panel shutdown.

Manual Operation



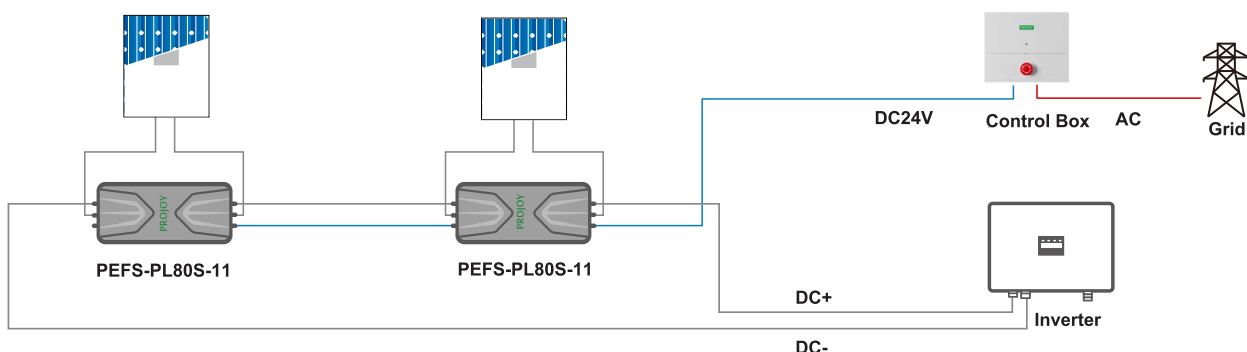
Manual shutdown is initiated within less than 0.1 second of operation by pressing the emergency pushbutton on the Emergency Rapid Shutdown Switch. The Emergency Switch can be conveniently located at ground level for easy access or multiple switches can be installed in different multi-level building zones.

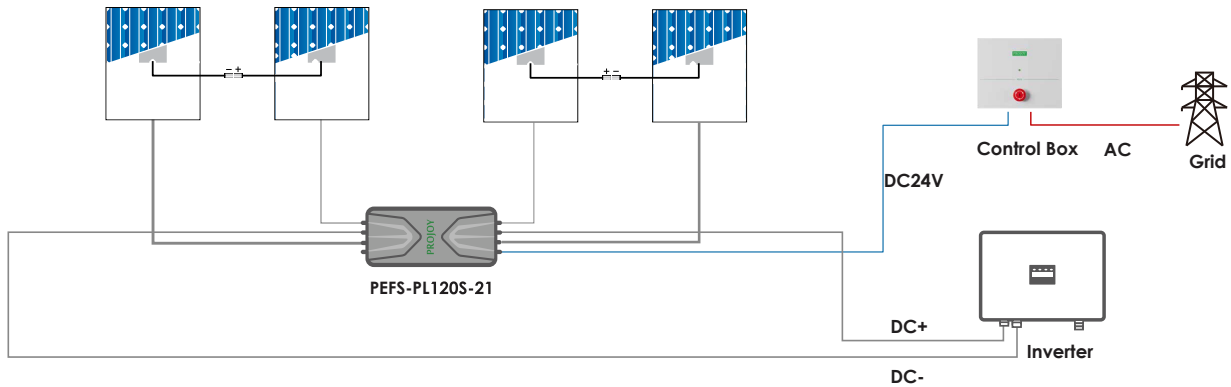
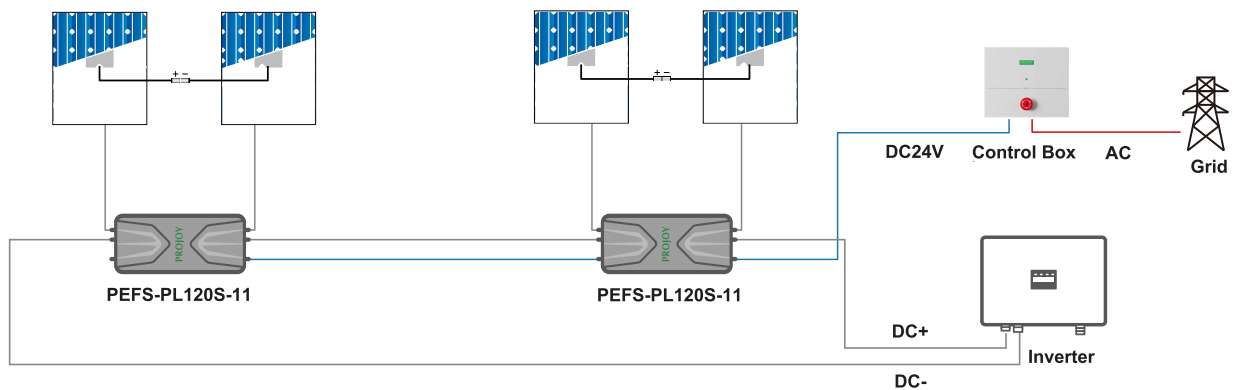
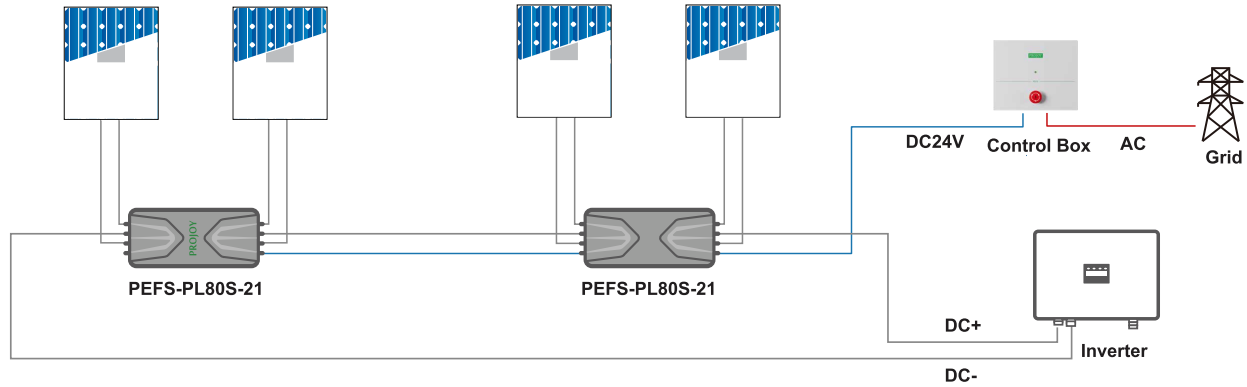
4 Installation

Normal installation of PEFS-PL series will be 1/2/4 PV panels VS 1 RSD unit. Typical wiring example below:

Connect the PV panel Positive (+) output connector to the RSD Positive (+) input connector.

Connect the PV panel Negative (-) output connector to the RSD Negative (-) input connector.





Notes:

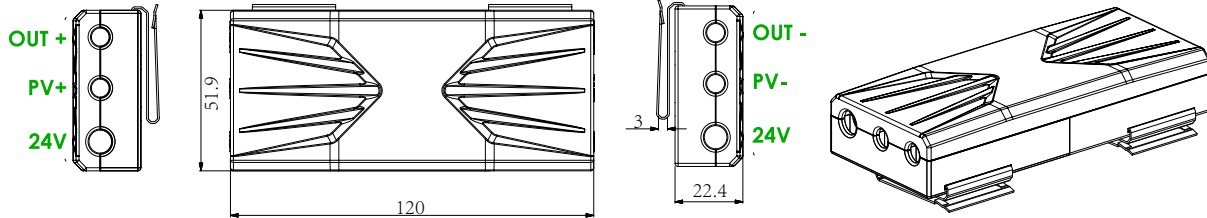
- 1) The 24VDC power source can be supplied separately with UL certificate and should be class 2 (AC/DC or DC/DC type) with fast shutdown function (<100ms).
- 2) Meanwhile, temperature degradation and voltage drop should be considered when selecting the DC power source. PEFS-PL80/120-11 type needs **0.8W** minimum, PEFS-PL80/120-21 type needs **1.5W** minimum. The control voltage is **21.6V** minimum.
- 3) In-line fuse should be used to protect the 24Vdc cable
- 4) 24V cable size is **2*0.8mm²** recommended

Installation Precautions:

1) Make sure cable wiring correctly

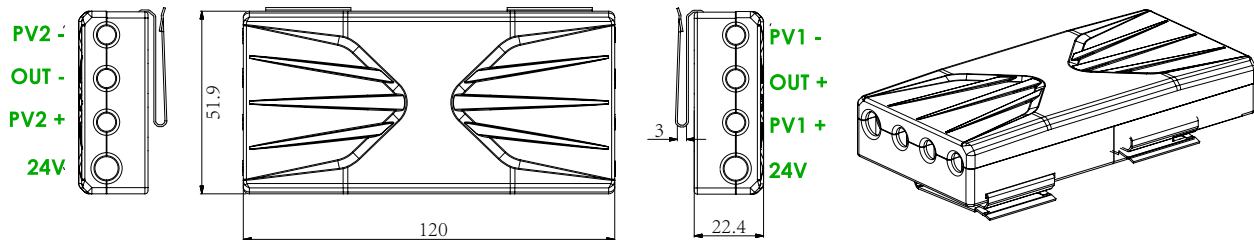
PEFS-PL80S-11
PEFS-PL120S-11

(Unit: ± 0.5 mm)

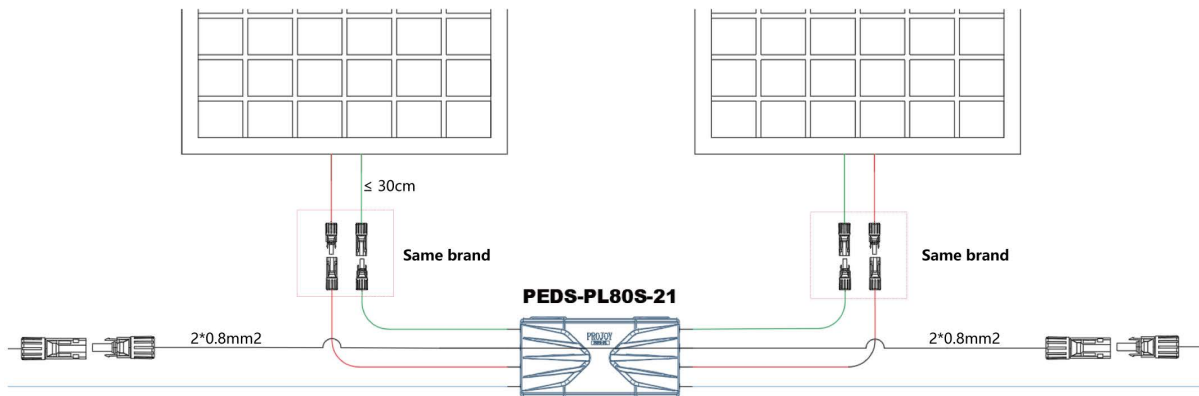


PEFS-PL80S-21
PEFS-PL120S-21

(Unit: ± 0.5 mm)



2) Make sure the MC4 connector of PV panel and RSD is the same brand or compatible



3) Make sure the installation environment is applicable



5 Trouble shooting

If RSD can not work properly, please follow the process below the check and resolve.

- 1) Check if the 24V power supply works properly
- 2) Check the 24Vdc cable connecting well or not
- 3) Check if the installation temperature of power source is too high or not ($< 50^{\circ}\text{C}$)
- 4) Check if the installation temperature of RSD is too high or not ($< 80^{\circ}\text{C}$)

6 Maintenance and Repair

Please check regularly. Specifically, you can press the control box to check whether the output of the whole string is stopped or the output voltage is less than 10V. If the output voltage is greater than 10V, it indicates that there is a fault in the system. Please contact Projoy after-service for handling.

7 Warranty commitment

7.1 Warranty

Projoy PEFS Series Module Level Rapid Shutdown Device: Up to 25 years lifespan design, which commencing from 3 months later of the manufacturing date. PROJOY will repair or replace any fault unit which is damaged or cannot work normally due to product quality issue. However, for the faults caused by following reasons, PROJOY would do service with charge even under warranty.

- 1) Inappropriate use or installation, self-modification or improper maintenance, etc.:
- 2) Beyond the prescribed scope of use;
- 3) Earthquakes, fires, lightning strikes, abnormal voltages, other natural disasters and secondary disasters, etc.
- 4) Any lost caused by any inappropriate use out of the scope defined in this manual, Projoy will not take the responsibility

7.2 Aftersales service

Please contact Projoy local distributors for after-sales service

1. Beyond the warranty period;
2. No valid quality assurance card and product serial number;
3. Transportation damage;
4. Improper use, operation and modification;
5. Operating in an environment beyond the specified in this manual;
6. Any installation and use beyond the scope specified in relevant international standards;
7. Damage caused by abnormal natural disasters (earthquake, fire, flood, etc.).

8 Contact us

Projoy Electric Co., Ltd.

Tell: +86-512-6878 6489

Web: <https://en.projoy-electric.com/>

Add: 2nd Floor, Building 3, No. 2266, Taiyang Road, Xiangcheng District, Suzhou