felicity solar FLA48250 Battery System for Households User Manual

Contents

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felicity solar FLA48250 Battery System for Households

ABOUT THIS MANUAL

Purpose
This manual describes the introduction, installation, operation and emergency situations of the battery bank. Please read this manual carefully before installations and operations. Keep this manual for future reference.

Scope
This manual provides safety and installation guidelines as well as information on tools and wiring.

Safety Instructions

WARNING: This chapter contains important safety and operating instructions. Read and keep this ll,j manual for future reference.

1. Before using the unit, read all instructions and cautionary markings on the unit, the batteries and all appropriate sections of this manual.
2. **CAUTION** — To reduce risk of injury,damage,even burst. please use ii following using manual. In case of causing personal
3. Do not disassemble the battery. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of fire.
4. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
5. **CAUTION** – Only qualified personnel can install this device with inverter.
6. For optimum operation of this battery, please follow required spec to select appropriate cable size.
7. Be very cautious when working with metal tools on or around batteries. A potential risk exists to drop a tool to spark or short circuit batteries or other electrical parts and could cause an explosion or fire.
8. Please strictly follow installation procedure.
9. To support full output load, at least 2 sets of FLA48V for inverter larger than 6KVA in parallel connection.

10. GROUNDING INSTRUCTIONS – This System should be connected to a permanent grounded wiring system. Be sure to comply with local requirements.
11. NEVER cause AC output and DC input short circuited. Do not connect to the mains when DC input short circuits.
12. **Warning**!! Only qualified service persons are able to service this device.
13. Battery should be installed indoor and kept away from water, high temperature mechanical force and flames.
14. Do not install the battery in any environment of temperature below 0°C orover55°C,and humidity over BO%.
15. Do not put any heavy objects on the battery.

Can be connected in parallel

1. The batteries can be connected in parallel. Series connection is not allowed. Use in upright position only.
2. The batteries are not allowed to connected with PWM controller for charging.

Special Attention: Due to the built-in protection board of the lithium battery pack is with over-discharge protection function, it is strongly recommended to stop using the load when the battery pack is over-discharged. The battery pack cannot be repeatedly activated for discharge. Or the battery may be failed to be activated by the AC or PV activation cable (It requires a special charging activation method), so cannot be charged. Therefore, when the battery pack is low power, please charge the battery as soon as possible when main power or solar energy is available.

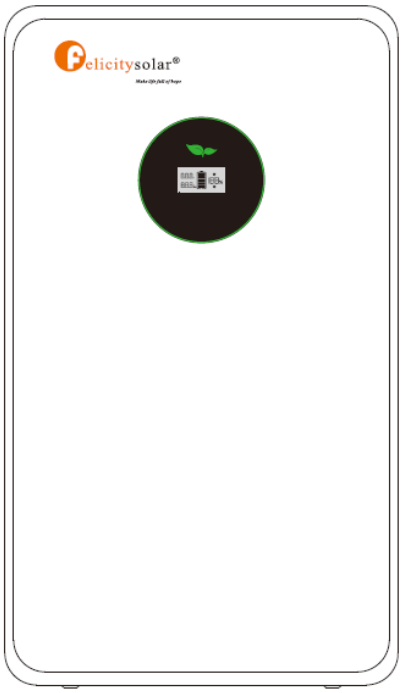
INTRODUCTION

The battery system main using solar power system for family house. Il also have a with to controller the battery easily and protect our Household application timely.

Features

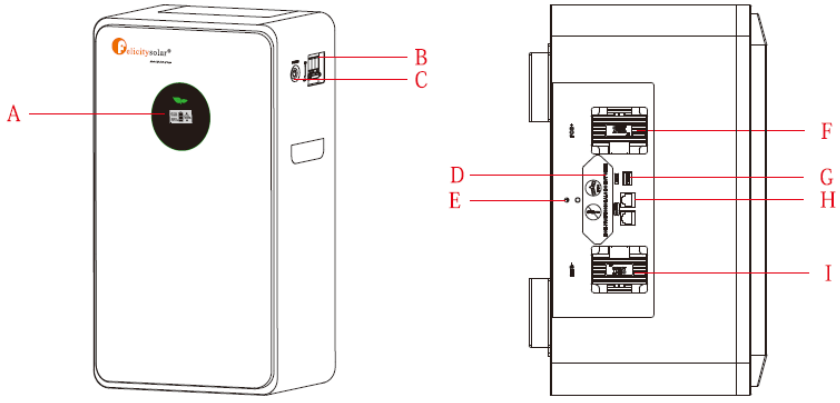
- LiFePO4: Higher safe performance and longer cycle life.
- Multiple Protection: Built-in smart BMS and Breaker.
- Flexible Installation: Wall-Mounted or Floor-Mounted.
- Wide Compatibility: Compatible with leading inverter brands.
- High Scalability: Capacity up to 187.5kWh.
- Long Warranty: 7 Years.

Product Overview



Code Name

- **A**. LCD display
- **B**. Breaker
- **C**. Power On/Charging indicator Fuse
- **D**. Earth wire
- **E**.Battery Positive +
- **G**. Switch
- **H**. Communication port
- **I**. Battery Negative –



Specifications

- Model FLA48250
- Capacity 12.5kWh
- Battery Type LiFePO4
- Nominal Voltage 51.2V
- Operating Voltage 44.8-57.6V

- Recommend Charge/Discharge Current[1] s 150A
- Recommend Charge/Discharge Power[1] S7,500W
- Maximum Charge/Discharge Current(15s) 200A
- Maximum Charge/Discharge Power(15s) 10,000W
- Depth of Discharge(DOD) 95%
- Scalability Up to 15 units in parallel
- Communication RS485 / CAN
- Protection Level IP21
- Cycle Life[2] 6000 Cycles
- Charging Temperature Range 0-55 C
- Discharging Temperature Range -20-55 C
- Display LCD+LED
- Installation Wall-Mounted / Floor-Mounted
- Protection Built-in smart BMS, Fuse
- Warranty 7 years
- Net Weight 97kg
- Gross Weight 115kg
- Product Dimension 783x450x27 4mm
- Package Dimension 900x570x450mm

1. Recommend charge/discharge current/power is affected by temperature and SOC.
2. Test conditions: 0.2C Charging/Discharging @25C , 80% DOD.

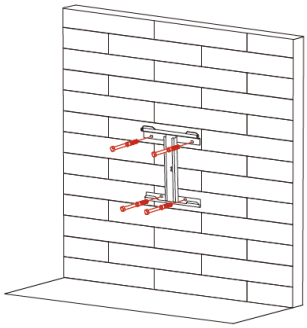
Recommended Settings
Lithium battery pack is not same as lead-acid battery, so for the devices which you connect with the battery pack for charging or discharging, such as inverters, MPPT charger controllers or UPS, please implement pre-settings as recommended settings as below before you launched them.

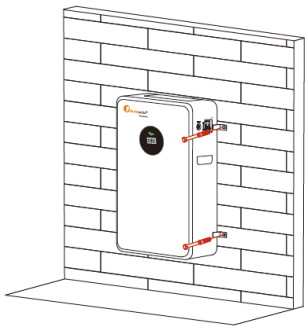
- Setting FLA48250
- Max. Charging Voltage 57.6V
- Floating charging Voltage 57.6V
- Max. Charging Current 150A*N
- Cut-off voltage 48V

Notes: “N” means the number of battery packs connected in parallel.

Installation Procedure

Setup Script





Using wall mounted components, first fix the wall mounted components to the wall, and then lift the machine onto the wall mounted components to secure it

Note: Do not use wall mounted components, place the chassis against the wall and secure it with fixing components

Tools

Screw Driver

Crimping Modular

Safety Shoes

Multimeter

Safety Gloves

Safety Goggles

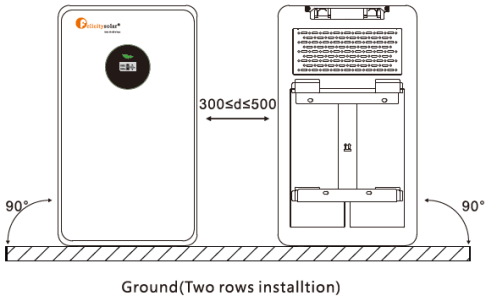
Plier

Ribbon

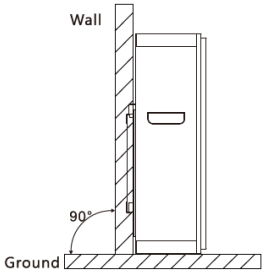
Electric drill

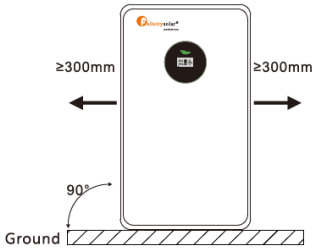
Floor Installation with Base

Installation Location Requirements

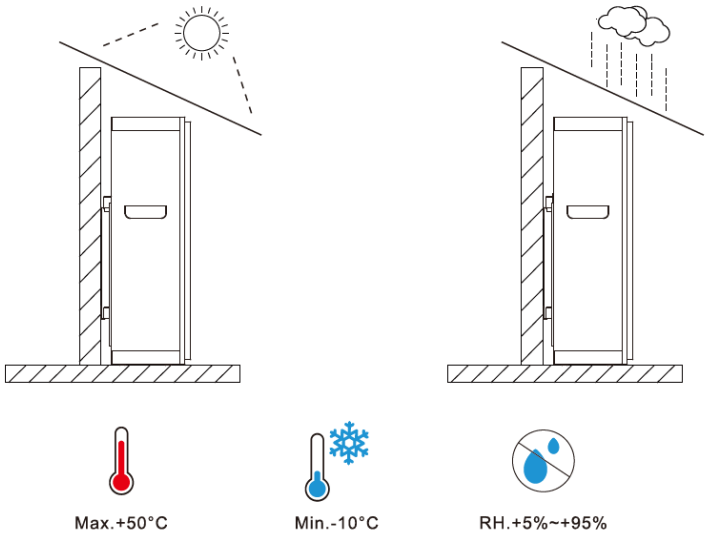


Ground(Two rows installtion)

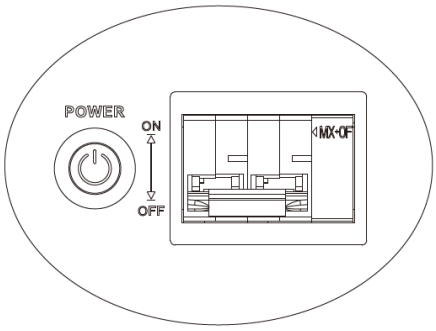




Installation Environment



Battery system switch operation



Power on battery system:
Turn the breaker to the “ON” state, press the POWER button 1 seconds, wait for the battery system LED light to light up, indicating that the boot is complete.

Power off battery system:
Turn the breaker to the “OFF” state, turn off the entire battery system.

INSTALLATION

Unpacking and Inspection
Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package.

NO	NAME	SPECIFICATION	PICTURE
1	CAN com line	Used for communication between batter y and PCS	
2	Lock wall components	Used for product transportation and wall fixation	
3	Cables	Used for battery parallel connection Wir e diameter 35mm’	
4	Usermanual	User manual	
5	Guaranteecard	Guaranteecard	
6	RS485 com line	Used for communication between batter y and PCS	
7	Screw	Mounting screw	
8	CAN/RS485 com lin e	Used for communication between batter y and PCS	
9	CAN/RS485 com lin e	Used for communication between batter y and PCS	
10	RS485 com line	Used for communication between batter y and PCS	
11	Communication line	Used for communication among batterie s	

Mounting the Unit
Consider the following points before selecting where to install:

- Do not mount the battery on flammable construction materials.
- The ambient temperature should be between 0° C and 45° C to ensure optimal operation.
- The recommended installation position is to be adhered to the wall vertically.
- Be sure to keep other objects and surfaces as shown in the right diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.

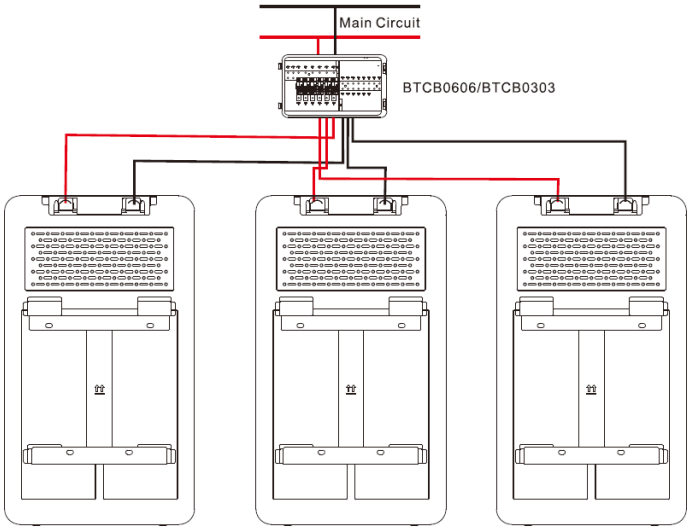
Please follow below steps to implement battery connection:

1. Assemble battery ring terminal based on recommended battery cable and terminal size.
2. Connect all battery packs as units requires. It’s suggested to connect at least 2 sets for inverter larger than 8KVAin parallel connection.

Note: If you need the battery wake-up when the grid is back, connect the battery with grid use power adapter and communication line 1 shown in the package list.

Connection for Parallel Mode

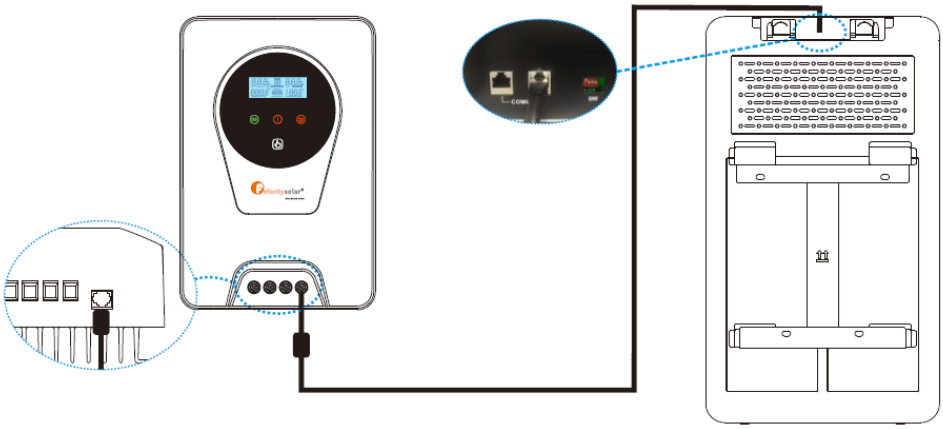
The FLA series battery support to be connected in parallel for expansion. If you need one more battery bank to work in parallel mode, connect the battery as shown in PIC 1.



Step: The schematic diagram of the parallel connection of three battery packs is shown in Figure 1.

Note: Afler completing the above steps, arbitrarily select the positive and negative poles of one of the battery packs to output. After confirming the correct connection of the inverter, controller and battery, you can turn on any of the switches and use the battery group happily.

For pure off grid system, the PV awake wire need to be connected with MPPT charge controller if the battery pack is charged by solar panels only. The connection diagram as below:



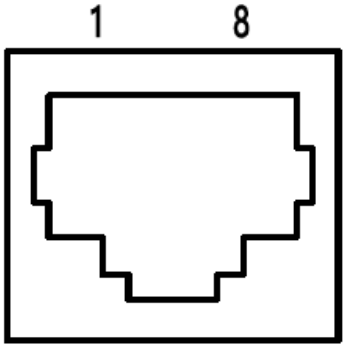
OPERATION

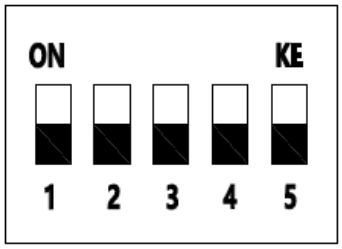
Once the batteries are connected well, close the breaker to the ON block, press On/Off button to enable the output of the battery pack.

Switch On/Off

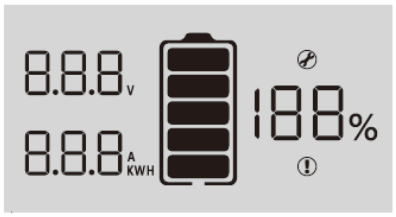
1. **Switch on:** press On/Off button to switch on the battery, then the battery will do self-inspection before enable output. The LCD will show the SOC.

2. **Switch off:** press and hold On/Off button for 1 to3 seconds, the battery will shut down directly. Description for Communication port

Picture	PIN	Description
		Trigger-GND
	2	Trigger-VCC
	3	CANL-PCS
	4	CANH-PCS
	5	RS485-B
	6	RS485-A
	7	CANL
	8	CANH

DIP SWITCH		
	1-4	Communication Address
	5	Termination Resister

LCD Display Icons



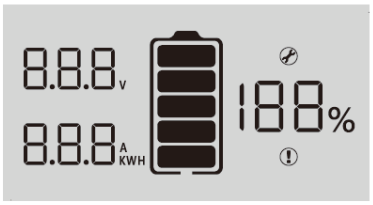
Icon	Function Description
Display Information	
8.8.8 V	Indicates battery voltage.
8.8.8 A KW	Indicates battery current or watt Short press the switch button to switch watt and current
188%	Indicate SOC.
Battery Information	
	Indicates battery level by 0-20%,21-40%, 41-60%61-80%,81-100%.(When charging,this icon is displayed for horse running;When discharging,the icon displays constant).
Fault information	
	Indicates a fault.
set information	
	Indicates settings.

BMS Information Page

The basic information will be displayed in turn after power on.

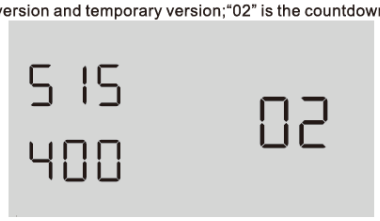
BMS power on information

BMS information is all on.



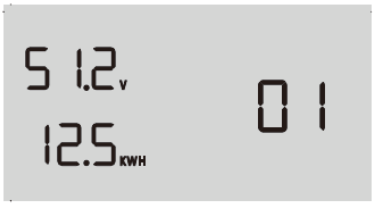
BMS version

Eg:"515" is the software version ;"400" is the IAP version and temporary version;"02" is the countdown.



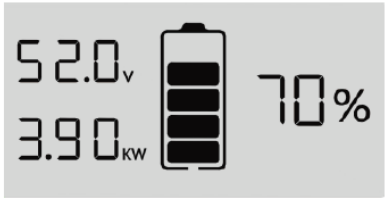
BMS type

Eg: Rated voltage is "51.2V"; model is "12. 5KWH", "01"is the countdown.



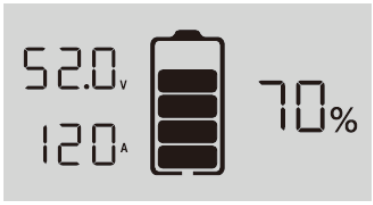
BMS data

Eg: "52.0V" / "3.90KW" / "70%" refers to battery voltage. power and SOC.



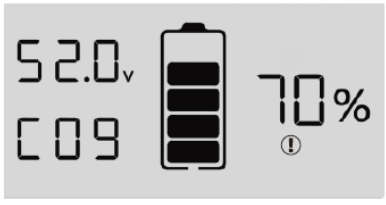
BMS data

Eg: "52.0V" / "120A" / "70%" refers to battery voltage. current and SOC.



BMS fault code / flag

Eg:"52.0V" / "C09" / "70%" are battery voltage, fault code and SOC respectively, and Fault icon constant.



Fault Code Table

Fault Code	Fault Information	Trouble Shooting
C01	Battery overvoltage	Restart the unit, If the error happens again, please return to repair center.
CO2	Battery undervoltage	Restart the unit, If the error happens again, please return to repair center.
C03	Cell overvoltage	Restart the unit, If the error happens again, please return to repair center.
C04	Cell undervoltage	Restart the unit, If the error happens again, please return to repair center.
co5	Charge overcurrent	Restart the unit, If the error happens again, please return to repair center.
C06	Discharge overcurrent	Restart the unit, If the error happens again, please return to repair center.
CO7	MOS overtemperature	1. The inner temperature is *over* the limitation. 2. Check whether the ambient temperature is too high.
CO8	MOS under-temperature	1. The internal temperature is lower than the limit range. 2. Check whether the ambient temperature is too low.

co9	Cell ovetemperature	Restart the unit, If the error happens again, please return to repair center.
C10	Cell undertemperature	Restart the unit, If the error happens again, please return to repair center.
C11	Abnormal current sampling	Restart the unit, If the error happens again, please return to repair center.
C12	Abnormal output impedance	Restart the unit, If the error happens again, please return to repair center.
C13	Parallel failed	1. Please check if single unit is installed to parallel system. 2. If this error happens during parallel installation, please check wires connectiotn. If they are connected correctly, please funish parallel installation first, and then restart the unit. 3. If the problem remains, please contact your installer.
C14	Output loss	1. Please check whether the circuit breaker is closed; 2. Please check whether the fuse is normal; 3. Restart the unit, If the error happens again, please return to repair center.

DIP Switch SW1-SW4 Description

DIP switch SW1-SW4 Description (j)						
Sw1	SW2	SW3	SW4	Remarks	DIP switch SW5 Description(2)	
0	0	0	0	means ID=O,communication address is0x00/0x1O@	SW5	Remari<s
	0	0	0	means I0=1,communication address is0x01@		means connect 1200 resistor
0		0	0	means I0=2,communication address is0x02		

1	1	0	0	means ID=3,communication address is0x03	0	means disconnect 1 200 resistor
0	0		0	means I0=4,communication address is0x04		
	0		0	means I0=5,communication address is0x05		
0			0	means ID=6,communication address is0x06		
			0	means I0=7,communication address is0x07		
0	0	0		means ID=B,communication address isOxOB		
1	0	0		means ID=9,communication address is0x09		
0		0		means 10=1O,communication address isOxOA		
		0		means I0=11,communication address isOxOB		
0	0			means ID=12,communication address isOxOC		
	0			means I0=13,communication address isOxOD		
0				means I0=14,communication address isOxOE		
				means ID=15,communication address isOxOF		

Remark(]): 1 in SW1-SW5 indicates ON status, and O indicates OFF status.

Remark(2): When multiple battery packs communicate, the last battery pack SW5 needs to be in the ON status, otherwise the communication may have interference.

Remark: When the battery pack ID is set to 0, it means stand-alone operation, and it is not necessary to detect whether the parallel condition is satisfied.

Remark: When the battery pack ID is set to 1-15, it means that the parallel operation is required, and it is necess ary to detect whether the parallel condition is satisfied.

Remark: The parallel condition is that the difference between the battery voltage of the local battery and all the b attery pack voltages is <3V, otherwise wait until the condition is satisfied

EMERGENCY SITUATIONS

Felicity cannot guarantee battery absolute safety.

Fire
In case of fires, make sure that the following equipment is available near the system.

- SCBA (self-contained breathing apparatus) and protective gear in compliance with the Directive on Personal Protective Equipment 89/686/EEC.
- NOVEC 1230, FM-200, or dioxide extinguisher.

Batteries may explode when heated above 150°C. KEEP FAR AWAY from the battery if it catches fire.

Leaking Batteries
If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed the leaked substance, immediately perform the cations described below.

- Inhalation: Evacuate the contaminated area, and seek medical attention.
- Contact with eyes: Rinse eyes with running water for 5 minutes, and seek medical attention.
- Contact with skin: Wash the affected area thoroughly with soap and water, and seek medical attention.
- Ingestion: Induce vomiting, and seek medical attention.

Wet Batteries
If the battery pack is wet or submerged in water, do not let people access it, and contact your supplier for help.

Damaged Batteries
Damaged batteries are not fit for use and are dangerous and must be handled with the utmost care. It may leak electrolyte or produce flammable gas. If the battery pack seems to be damaged, pack it in its original container, and then return it to your supplier.

Warranty
Products that are operated strictly in accordance with the user manual are covered by the warranty. Any violation of this manual may void the warranty.

Limitation of Liability
Any product damage or property loss caused by the following conditions, Felicity does not assume any direct or indirect liability.

- Product modified, design changed or parts replaced.
- Changed, or attempted repairs and erasing of series number or seals;
- System design and installation are not in compliance with standards and regulations;
- The product has been improperly stored in end user’s premises;
- Transport damage (including painting scratch caused by movement inside packaging during shipping). A claim should be made directly to shipping or insurance company.

Documents / Resources

	felicity solar FLA48250 Battery System for Households [pdf] User Manual FLA48250, 358-010366-00, FLA48250 Battery System for Households, FLA48250, Battery System for Households, System for Households, Households

References

- User Manual