### ENERGY TECHNOLOGIES BUILD LIFE BETTER



# SQ Ecco Series Hybrid Inverter

**User Manual** 



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# **1** Preface

This manual describes the assembly, installation, operation of this unit. Please read this manual carefully before installations and operations. The manual may be update periodically. Please obtain the latest version and more information from the official website.

# 1.1 Applicable Model

This manual applies the follow models Hybrid Storage Inverter

- •SQ-4KW-LV-1P Ecco
- SQ-6KW-LV-1P Ecco
- •SQ-8KW-LV-1P Ecco

# 1.2 Applicable Personnel

Only applicable to professionals who are familiar with local regulations, standards, electrical systems, have undergone professional training, and are familiar with the relevant knowledge of this product

# **1.3 Symbol Definition**

### A DANGER

Indicates a highly potential danger that, if not avoided, could result in death or serious injury to personnel.

# 

Indicates a moderate potential danger, if not avoided, could lead to death or serious injury.

# 

Indicates a low potential danger that, if not avoided, may result in moderate or mild injury to personnel.

### NOTICE

Emphasizing and supplementing the content may also provide tips or tricks for optimizing product usage, which can help you solve a problem or save you time.

# **2** Safety Instructions

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, charge only deep-cycle lead acid type rechargeable batteries. Other types of batteries may burst, causing personal injury and damage.

3. Do not disassemble the unit. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or 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 battery.

6. NEVER charge a frozen battery.

7. For optimum operation of this inverter/charger, please follow required spec to select appropriate cable size. It's very important to correctly operate this unit.

8. 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.

9. Please strictly follow installation procedure when you want to disconnect AC or DC terminals. Please refer to INSTALLATION section of this manual for the details.

10. GROUNDING INSTRUCTIONS -This inverter/charger should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.

12. NEVER cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.

13. Warning!! Only qualified service persons are able to service this device. If errors still persist after following troubleshooting table, please send this inverter back to local dealer or service center for maintenance.



### Introduction 3

This is a multi-function inverter, combining functions of inverter, solar charger and battery charger to offer uninterruptible power support with portable size. Its comprehensive LCD display offers user-configurable and easy-accessible button operation such as battery charging current, the battery charge/discharge period, the battery discharge limit. acceptable input voltage based on different applications.

# 3.1 Product Overview



2. Power ON/OFF Switch **3.Battery Input Connectors** 4. Inverter LED Indicators 10.CAN Battery BMS

# 3.2 Basic System Architecture

The following illustration shows basic application for this inverter. It also includes following devices to have a complete running system:



Consult with your system integrator for other possible system architectures depending on your requirements.

This inverter can power all kinds of appliances in home or office environment, including motor-type appliances such as tube light, fan, refrigerator and air conditioner.

# 3.3 Features

Pure sine wave inverter

- Built-in MPPT Charger and AC Charger
- Support WIFI and Bluetooth
- Configurable battery charging current based on applications via LCD setting
- Compatible with mains voltage or generator power
- Overload / Over temperature/ short circuit protection
- Smart battery charger design for optimized battery performance

# **4** Installation

# 4.1 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:



# 4.2 Preparation

Before connecting all wirings, please take off bottom cover by removing two screws as shown below.



# 4.3 Mounting the Unit

- Consider the following points before selecting where to install:
- Do not mount the inverter on flammable construction materials.
- Mount on a solid surface.
- Install this inverter at eye level in order to allow the LCD display to be read at all times.
- For proper air circulation to dissipate heat, allow a clearance of approx.20 cm to the side and approx. 50 cm above and below the unit.
- The ambient temperature should be between 0°C and 55°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 diagram to guarantee heat dissipation and to have enough space for removing wires.



# 4.4 Battery Connection

### CAUTION:

For safety operation and regulation compliance, it's requested to install a separate DC over-current protector or disconnect device between battery and inverter. It may not be requested to have a disconnect device in some applications, however, it's still requested to have over-current protection installed. Please refer to typical amperage in below table as required fuse or breaker size.

### WARNING!

All wiring must be performed by a qualified personnel.

### WARNING!

It's very important for system safety and efficient operation to use appropriate cable for battery connection. To reduce risk of injury, please use the proper recommended cable as below.

### Recommended battery cable size:

Model	Wire Size	Max Current(A)	Cable(mm^2)
4.0KW	2 AWG	80	33.6
6.0KW	0 AWG	130	53.5
8.0KW	2AWG	80*2	33.6





# 4.5 AC Input/Output Connection

### CAUTION!!

Before connecting to AC input power source, please install a separate AC breaker between inverter and AC input power source. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of AC input. The recommended spec of AC breaker is 60A for 6KVA.

### CAUTION!!

There are two terminal blocks with "IN" and "OUT" markings. Please do NOT mis-connect input and output connectors.

WARNING! All wiring must be performed by a qualified personnel.

WARNING! It's very important for system safety and efficient operation to use appropriate cable for AC input connection. To reduce risk of injury, please use the proper recommended cable size as below.

### Suggested cable requirement for AC wires+

Model	Wire Size	Max Current(A)	Cable(mm^2)
4.0KW	10AWG	18	5.26
6.0KW	8AWG	26	8.37
8.0KW	6AWG	36	13.3

### Please follow below steps to implement AC input/output connection:

1. Before making AC input/output connection, be sure to open DC protector or disconnector first. 2. Remove insulation sleeve 10mm for six conductors. And shorten phase L and neutral conductor N 3 mm.

3. Insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect PE protective conductor ( $(\underline{\perp})$ ) first.

4. Then, insert AC output wires according to polarities indicated on terminal block and tighten terminal screws. Be sure to connect PE protective conductor (
) first.
5. Make sure the wires are securely connected

### CAUTION:

Appliances such as air conditioner are required at least 2~3 minutes to restart because it's required to have enough time to balance refrigerant gas inside of circuits. If a power shortage occurs and recovers in a short time, it will cause damage to your connected appliances. To prevent this kind of damage, please check manufacturer of air conditioner if it's equipped with time-delay function before installation. Otherwise, this inverter/charger will trig overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner.



### 4.6 PV Connection

### CAUTION:

Before connecting to PV modules, please install separately a DC circuit breaker between inverter and PV modules.

### WARNING!

It's very important for system safety and efficient operation to use appropriate cable for PV module connection. To reduce risk of injury, please use the proper recommended cable size as below.

Model	Wire Size	Max Current (A)	Cable(mm^2)
4.0KW	11AWG	15	4.17
6.0KW	10AWG	15X2	5.26
8.0KW	8AWG	23X2	8.37



#### **PV Module Selection:**

Before you connect the solar panels to the inverter, a suitable specification of cables should be selected. The selection of cables specifications is according to the total power and the connecting method of solar panels. You should calculate the maximum current that will transit through the cables, we mark it as Imax. First, calculate the total Pmax of the solar panels that will be connected to the inverter, we mark it as TPmax, then calculate the total Voc of them, we mark it as TVoc.



Because same model PVs will be connected in series mostly, so:

1) Imax = Imp. 2) TPmax = N\*Pmax. 3) TVoc = N\*Voc.

TVoc should be > 150V and < 500V. 150V is the min. PV string voltage that will reach at the installation side(according to the max. Temperature) and 500V is the max. PV string voltage that will reach at the installation side(according to the min. Temperature).

Example of determining the sizing of the PV cable is conducted under the assumption of using 10 of 400W solar panels, with Pmax = 400W; Voc=41.2V; Vmp = 34.2V; Imp = 11.7A.

#### Series Connection:

1) Imax = Imp=11.7A. 2) TPmax = 10\*400W = 4000W. 3) TVoc = 10\*41.2V = 412V.

Hence, based on Imax = 11.7A, refer to American Wire Gauge Chart, Max current column. The corresponding cable should be 11AWG (refer to American Wire Gauge Chart(on the next page), Max current column).

Here are some suggestions for each of the cable listed. However, each individual system will need to do some calculations in order to find the optimal cable based on the circumstances described in the examples above.

### 4.7 Ground Connection

All wiring must be performed by a qualified personnel.

It's very important for system safety and efficient operation to use appropriate cable for the Ground connection.

# 4.8 CT Connection

The CT Coil is one of the most important parts of the inverter. This device reduces the power of the inverter to prevent feeding power to the grid. This feature is also known •Fit the coil around the live cable on the main fuse feeding the building and run the cable back to the inverter. This cable can be extended up to an extra 10m using a similar cable. •Connect the other end of the CT coil into the inverter terminals marked as CT coil

### IMPORTANT

If the CT Coil is clamped to the live cable in the wrong way, then this CT power will have negative values instead of positive values when the power is flowing into the house/inverter.



### 4.9 Communication Connection

•The unit built-in WIFI & Bluetooth

• Use an Ethernet cable to connect the BMS communication port between the battery and the inverter

# 4.10 Final Assembly

After connecting all wirings, please put bottom cover back by screwing two screws as shown below.



# 5 Work Mode

# 5.1 UPS

The UPS mode is a critical feature designed to ensure a continuous power supply during grid outages. When UPS mode is enabled and a grid failure occurs, the system draws power from the solar system or battery storage to maintain electricity for the household. This feature helps prevent downtime and ensures that essential devices continue to operate seamlessly.

UPS mode is particularly valuable in regions with unreliable grid service, providing peace of mind that power will remain available during disruptions. In this mode, the system functions as a backup power source, delivering energy instantly with no noticeable delay. The key point to consider is whether the grid is available.

### Notice:

- Energy is only supplied via the AC output to essential loads
- The "charge from AC" option must be enable

# The grid is available

### 1)The solar is unavailable

In this case, the grid supplies power to the essential load and charges the battery until the battery is fully charged.



#### 2)The solar is available

#### a)the battery power is not full

In this case, if the solar power is insufficient, the grid supplies power to the essential load, and both the grid and solar charge the battery together until it is fully charged.



If the solar power is sufficient, it charges the battery, and the surplus power, along with the grid power, supplies the essential load.



#### b)the battery power is full

in this case, if the solar power is insufficient, both the grid and solar supply power to the essential load.



### If the solar power is sufficient, it supplies power to the essential load.



# The grid is unavailable

### 1)The solar is unavailable

In this case, only the battery supplies power to the essential load.



### 2)The solar is available

If the solar power is insufficient, both the solar and battery supply power to the essential load



if the solar power is sufficient, the solar supplies power to the essential load while simultaneously charging the battery until it is fully charged.



# 5.2 SELF USE

This mode is designed to prevent any surplus solar energy from being exported to the grid. When enabled, this mode prioritizes solar energy for powering loads, with any surplus energy stored in the battery for later use, and none being sent back to the grid.

This feature is particularly beneficial in regions with strict regulations or policies that restrict the export of solar energy. It gives users full control over their energy consumption and storage, ensuring that no energy is wasted and helping to minimize electricity costs. The system continuously monitors energy demand, adjusting the energy flow to maintain zero export levels.

This mode can be programmed to activate automatically during certain hours or conditions, offering a convenient and hands-off approach. Additionally, it enhances grid stability by reducing the strain on local infrastructure caused by unpredictable energy exports. The key point to consider is whether solar energy is available. There are two charge periods and four discharge periods that can be set.

### Notice:

- The WIFI CT or mesh CT must be connected correctly
- The "charge from AC" option must be enable
- •Arrange the charging and discharging time periods based on local electricity prices
- Configure the suitable discharge power for battery

### The grid is available

### 1)The solar is unavailable

a)The battery discharge period

In this case, if the battery power is sufficient and the set discharge power is greater than the essential load power, the battery supplies power to the essential load. The surplus power is supplied to other home loads via the AC input ports and is not fed back to the grid.



If the set battery discharge power is less than the essential load power, the grid also supplies power to the essential load.







b)The battery charge period

The grid charges the battery until it reaches the target voltage or SOC.



### 2)The solar is available

a)The battery discharge period

• The solar is insufficient

If the Solar power and battery discharge power are insufficient to supply the essential load, the grid also supplies power.



If the PV can't supply all the load, the battery will supply power together.



#### • The solar is sufficient

WORK MODE

In this case, the solar supplies power to the essential load and home load, and the surplus power charges the battery.



b)The battery charge period

• The solar is insufficient

In this case, the grid supplies power to all loads, and both the grid and solar charge the battery together.



# The grid is unavailable

### 1)The Solar is unavailable

The charge and discharge period settings are not applicable. Only the battery supplies power to the essential load.



### 2)The solar is available

a)the solar is insufficient In this case, both the solar and battery supply power to the essential load.



### b)the solar is sufficient

The solar supplies power to the essential load, and the surplus power charges the battery until it is fully charged.



# 6 Operation

# 6.1 Power ON/OFF



Once the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the button of the case) to turn on the unit.

# 6.2 Operation

The operation and display panel, shown in below chart, is on the front panel of the inverter. It includes three indicators, four function keys and a LCD display, indicating the operating status and input/output power information.



#### Led Indicator

LED Indicator		Message	
	Blue	The Grid is connect	
	Green	The unit work in inverter mode	
CHARGER	Yellow	Battery charging	
CHARGER		Battery discharge	
ΕΔΙΗΤ	Red	Fault occurs in the inverter	
		Inverter is Normal	

#### Led Indicator

Function Key	Description		
	Function setting, Long press it than 3 seconds, will enter the setting functions, then short press it ,will change to next Function options.		
	change the value, Short press it, number plus 1, long press it, quick continuous plus.		
	change the value, Short press it, number minus 1, long press it, quick continuous minus.		
	Long press it than 3 seconds, will back to the main display screen, short press it, will change to previous Function options.		

### 6.2.1 Real-time Data

When the unit is running, the main screen displays the information, short the key will switch the real time data.

•Left half displays the PV and battery information, press (3) or (1) to switch.

•Right half displays the AC input and inverter output information, press (a) or (v) to switch.



# 6.2.2 Setting functions

### Setting Function Table :

Function		Descriptions	Options	Factory default setting
	FQ 1	Blacklight setting	00: The blacklight will automatically turn off after 30 seconds 01: the blacklight is always on	01
	FD2	Beep setting	00: Turn on the sound alarm 01: The sound will automatically turn off after 30 seconds 01: the sound is always on	01
- 88	F03	Multiple work mode	00: standalone mode no use No use for Ecco	00
88	FOY	Multiple work mode address	No use for Ecco	01
88	FØS	Overload protection restarts setting	00:Disable 01:Enable	01
88	F06	Over temperature protection restarts setting	00:Disable 01:Enable	01
88	F01	Battery type setting	00: User 01: Battery pack	00
188	F88	Battery capacity setting(AH)		100
	F89	Work mode setting	00: UPS 01: SELF USE	00
88	F 10	AC coupling	00: Disable 01: Enable	00

Function	Descriptions	Options	Factory default setting
<u>F24</u> []]*****	1st AC charge the battery end time setting	long press (i) to switch between hours and minutes. press the (a) or (v) adjust the value	00:00
<u>88</u> , F25 <u>0</u> F F	1st AC charge the battery target voltage & ON/OFF	long press to switch between Voltage and ON/OFF.press the or adjust the value	VOLT:56V SOC:80% OFF
	2nd AC charge the Battery start time setting	- Same as F23-F25	00:00
	2nd AC charge the battery end time setting		00:00
<u>88</u> , f28 <u>of f</u>	2nd AC charge the battery target voltage & ON/OFF		VOLT:56V SOC:80% OFF
	1st battery discharge start time setting ong press	00:00	
	1st battery discharge end time setting	to switch between hours and minutes.	00:00
<u> </u>	1st battery discharge target voltage & ON/OFF	long press to switch between Voltage and ON/OFF. press the () or () adjust the value	VOLT:49V SOC:25% ON
<u> </u>	1st battery discharge limit power	4k: 0.00-4.00 6k:0.00-6.00	2.00kw

Function	Descriptions	Options	Factory default setting
	Grid type	00:220V 01:230V 02:240V	01
<u> </u>	Frequency setting	00:50Hz 01:60Hz	00
<u>480</u> F I 3	Battery low voltage protection setting		45
<u> </u>	Max discharge current(to loads) setting		4k:50.0 6k:100A
<u>59.0</u> ° f 15	Recovery voltage setting	Press the ()	50.0
<u>56.0</u> ° f 16	Boost charge voltage setting		56.0
<u>560</u> FI	Float charge voltage setting		56.0
5 <u>10</u> F 18	Equalize charge voltage setting	aujust the value	57.0
60 F 19	Equalize charge time setting (minutes)		60
90 F20	Equalize charge interval time setting(Days)		90
80 · FS I	Maximum charge current setting		50
	Real time setting	long press to switch between hours and	
	1st AC charge the Battery start time setting	or v adjust the value	00:00

Function	Descriptions	Options	Factory default setting
	2nd battery discharge start time setting	same as F29-F32	10:00
	2nd battery discharge start time setting		13:30
88, F35 <u>of</u> F	2nd battery discharge target voltage & ON/OFF		VOLT:52V SOC:25% ON
<u>80</u> , F36 <u>100</u> "	2nd battery discharge limit power		2.50kw
	3rd battery discharge start time setting	same as F29-F32	13:30
	3rd battery discharge end time setting		17:00
80, F39 <u>off</u>	3rd battery discharge target voltage & ON/OFF		VOLT:53V SOC:25% ON
80, fyð <u>100</u> *	3rd battery discharge limit power		1.00kw
	4th battery discharge start time setting	arge start etting     same as F29-F32       ittery arge end etting     same as F29-F32       ittery arge target e & ON/OFF     ittery	
	4th battery discharge end time setting		
88. <sup>F43</sup> of F	4th battery discharge target voltage & ON/OFF		
<u> </u>	4th battery discharge limit power		

Function	Descriptions	Options	Factory default setting
<u>60</u> ° F45	Max Discharge to Home load Current Setting	press the  ar  or  adjust the value	
<u> </u>	Charge From AC	00: Disable 01: Enable	00
<u> </u>	Voltage Or SOC	00: Disable 01: Enable	25
F48	Cut off SOC	00: Voltage 01: SOC	25
88 F49	Recover SOC	0-100	25
<u> </u>	BMS Protocol	0 PYLCON 1 KG 2 GROWATT 3 VICTRON 4 DEYE 5 GINLONG 6 GUOODWE 7 LXP 8 SMA 9 SOFAR 10 JIKONG 11 Felicity	
<u> </u>	Recover to Default	00:hold the setting 01: recover to default setting	

Error code	Description	Solutions
E14	When off grid usage, the battery discharge current has exceeded the "maximum discharge current" set in the battery settings page	1.Disconnect some AC loads from AC output. 2.Set the "maximum discharge current" setting much higher in the battery settings page if it is possible.
E15	AC output has short-circuited or has been connected With very big load	<ol> <li>Check the AC output.</li> <li>Don't connect too big load to AC output.</li> </ol>
E16	AC over current fault of hardware	<ol> <li>Please check whether the back load power is within the range or not</li> <li>Restart and check whether it is normal state;</li> <li>Seek help from us, if it can't go back to normal state</li> </ol>
E20	DC over current fault of the hardware	<ol> <li>Check PV module connect and battery connect;</li> <li>Turn off the DC switch and AC switch and then wait one minute, then turn on the DC/AC switch again;</li> <li>Seek help from us, if it can't go back to normal state</li> </ol>
E35	AC over load	Check the connected AC loads, if total loads power is higher than rated power, reduce the loads
E60	Heat sink high temperature failure	Heat sink temperature is too high 1.Check whether the work environment temperature is too high; 2.Turn off the inverter for 10 minutes and restart; 3.Seek help from us, if it can't go back to normal state
E61	DC BUS voltage is too high	Check the battery voltage If too many PCS battery packs were connected in series, you need to remove some of them
E62	DC BUS voltage is too low	Check the battery voltage 1.If the battery voltage is too low, using PV or grid to charge the battery; 2.If too few battery packs were connected in series, you need to add some battery packs

# 8 Maintenance

Heat dissipation performance is important when the inverter works in high-temperature environment. Proper heat dissipation can help to reduce the failure rate of inverter due to excessive heat. The inverter adopts natural cooling with the heat dissipated from the top of the heat sink. Ensure that the temperature is within the permissible range for both the inverter and the battery.

When using the battery, please pay attention to the following things:

Caution: Do not dispose of batteries in a fire. The batteries may explode.

**Caution:** Do not open or damage batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

**Caution:** A battery can present a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on batteries:

•Remove watches, rings or other metal objects.

- •Use tools with insulated handles.
- •Wear rubber gloves and boots.
- •Do not lay tools or metal parts on top of batteries.
- •Disconnect charging source prior to connecting or disconnecting battery terminals.

•Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).

If the inverter fails to work properly due to over-temperature or under-temperature, please proceed as follows:

•Check if the air duct of the heat sink is properly installed. Choose an appropriate position before installation.

•Check if the battery temperature is excessively high. If so, you need to ensure proper ventilation and cool the battery down

•Check if the battery temperature is lower than the specified threshold, which might e low-temperature protection. The fault will disappear once the temperature is within the permissible range.

### Note:

•Servicing of batteries should be performed or supervised by personnel knowledge about batteries and the required precautions.

•When replacing batteries, replace with the same type and number of batteries

- •General instructions regarding removal and installation of batteries
- •In order to protect the safety of the operation of the system, the inverter needs to be maintained and cleaned as follows.
- •Check whether the grounding wire is loose.
- •Whether the terminals are loose.

•Keep the metal housing of the inverter clean, Regularly clean the dust cover.

# 9 Specifications

Model	SQ 4kW-LV-1P Ecco
Battery Input Parameters	
Supported battery type	LiFePO <sub>4</sub> or Lead-acid
Battery input voltage range	40~60 V
Max. charge / discharge current	60 A (Configurable) / 90 A (Configurable)
Battery capacity (Recommend)	70~1000 Ah
Battery Communication	CAN
PV String Input Parameters	
Max. DC input power	4800 W
Max. DC input voltage	500 V
MPPT voltage range	120 ~ 450 V
Start-up voltage	150 V
Max. input current	15 A // 1 MPPT channels
AC Output Parameters (Back-I	Jp) (Feed to essential load)
Max. output power	4000 W
Max. / Peak output apparent power	4000 VA / 8000 VA
Max. output current	18 A
Nominal output voltage	220 V / 230 V / 240 V (Configurable) single phase
Nominal output frequency	50Hz / 60Hz (±0.2%) (Configurable)
Max. bypass current	40 A
Shift time (Bypass and inverter)	10ms
Output THD (Resistor load)	<3%
AC Input Parameters (Bypass	to essential load & Charge the battery/ Feed to home load)
Max. (apparent) power for bypass/ battery charging / home load feeding	4000 W
Nominal input / output voltage	220 V / 230 V / 240 V (Auto adjusted)
Nominal input / output frequency	50Hz / 60Hz (Auto adjusted)
Efficiency	
Max. efficiency	97.60%
Europe efficiency	97.60%
MPPT efficiency	99.90%
Max. battery to load efficiency	94.00%
Protection	
Protection	Battery over charge / discharge, Over temperature, Output over load, Output short circuit, Output over voltage
Monitoring&HMI	
Monitoring	WIFI / Bluetooth
HMI	indicators+LCD
Certifications & Standards Con	npliance
Grid regulation	IEC 61727 / IEC 62116 / MEA, PEA (more available upon request)
Safety regulation	IEC / EN62109-1/2, IEC 62477-1
EMC	IEC / EN61000-6-1/3
General Parameters	
Ingress protection	IP20
Operating temperature range	-25°C~60°C
Net weight / Gross weight	9.5 kg / 11 kg
Product size / Packing size (WxDxH)	307×133×430 mm / 423×230×518 mm

Model	SQ 6kW-LV-1P Ecco	
Battery Input Parameters		
Supported battery type	LiFePO <sub>4</sub> or Lead-acid	
Battery input voltage range	40~60 V	
/lax. charge / discharge current	120 A (Configurable) / 130 A (Configurable)	
Battery capacity (Recommend)	100~2000 Ah	
Battery Communication	CAN	
V String Input Parameters		
Max. DC input power	4000 x 2=8000 W	
/ax. DC input voltage	500 V	
/IPPT voltage range	120 ~ 450 V	
Start-up voltage	150 V	
/lax. input current	15 x 2 =30 A // 2 MPPT channels	
AC Output Parameters (Back-I	Jp) (Feed to essential load)	
Aax. output power	6000 W	
Max. / Peak output apparent power	6000 VA / 12000 VA	
Max. output current	27 A	
Jominal output voltage	220 V / 230 V / 240 V (Configurable) single phase	
Jominal output frequency	50Hz / 60Hz (+/-0.2%) (Configurable)	
Max. bypass current	40 A	
Shift time (Bypass and inverter)	10ms	
Dutput THD (Resistor load)	<3%	
C Input Parameters (Bypass	to essential load & Charge the battery/ Feed to home load)	
/lax. (apparent) power for bypass/	6000 W	
attery charging / home load feeding		
Nominal input / output voltage	220 V / 230 V / 240 V (Auto adjusted)	
Vominal input / output frequency	50Hz / 60Hz (Auto adjusted)	
fficiency		
lax. efficiency	97.60%	
urope efficiency	97.60%	
/IPPT efficiency	99.90%	
lax. battery to load efficiency	94.00%	
Protection		
Protection	Battery over charge / discharge, Over temperature, Output over load, Output short circuit, Output over voltage	
Ionitoring&HMI		
Aonitoring	WIFI/Bluetooth	
IMI	Indicator+LCD	
Certifications & Standards Cor	mpliance	
Grid regulation	IEC 61727 / IEC 62116 / MEA, PEA (more available upon request)	
Safety regulation	IEC / EN62109-1/2, IEC 62477-1	
MC	IEC / EN61000-6-1/3	
General Parameters		
ngress protection	IP 20	
Operating temperature range	-25°C~60°C	
Vet weight / Gross weight	13.7 kg / 16 kg	
Product size / Packing size (WxDxH)	353×134×500 mm / 475×240×620 mm	
Protection Protection Aonitoring&HMI Aonitoring MI Certifications & Standards Cor Orid regulation Safety regulation EMC Seneral Parameters Ingress protection Deperating temperature range Net weight / Gross weight Product size / Packing size (WxDxH)	Battery over charge / discharge, Over temperature, Output over load, Output short circuit, Output over voltage WIFI/Bluetooth Indicator+LCD mpliance IEC 61727 / IEC 62116 / MEA, PEA (more available upon request) IEC / EN62109-1/2, IEC 62477-1 IEC / EN61000-6-1/3 IEC / EN61000-6-1/3 IP 20 -25°C~60°C 13.7 kg / 16 kg 353×134×500 mm / 475×240×620 mm	

Model	SQ 8kW-LV-1P Ecco		
Battery Input Parameters			
Supported battery type	LiFePO <sub>4</sub> or Lead-acid		
Battery input voltage range	40~60 V		
Max. charge / discharge current	150 A (Configurable) / 180 A (Configurable)		
Battery capacity (Recommend)	100~2000 Ah		
Battery Communication	CAN		
PV String Input Parameters			
Max. DC input power	5000 x 2=10000 W		
Max. DC input voltage	500 V		
MPPT voltage range	120 ~ 450 V		
Start-up voltage	150 V		
Max. input current	23 x 2 =46 A // 2 MPPT channels		
AC Output Parameters (Back-Up) (I	Feed to essential load)		
Max. output power	, 8000 W		
Max. / Peak output apparent power	8000 VA / 16000 A		
Max. output current	36 A		
Nominal output voltage	220 V / 230 V / 240 V (Configurable) 1 phase		
Nominal output frequency	50Hz / 60Hz (+0.2%) (Configurable)		
Max. bypass current	42 A		
Shift time (Bypass and inverter)	10ms		
Output THD (Resistor load)	<3%		
AC Input Parameters (Bypass to es	sential load & Charge the battery/ Feed to home load)		
Max. (apparent) power for bypass/ battery charging / home load feeding	8000 W		
Nominal input / output voltage	220V / 230V / 240V (Auto adjusted)		
Nominal input / output frequency	50Hz / 60Hz (Auto adjusted)		
Efficiency			
Max. efficiency	97.60%		
Europe efficiency	97.60%		
MPPT efficiency	99.90%		
Max. battery to load efficiency	94.00%		
Protection			
Protection	Battery over charge / discharge, Over temperature, Output over load, Output short circuit, Output over voltage.		
Monitoring&HMI	· · · · · · · ·		
Monitoring	WIFI / Bluetooth		
HMI	indicators+LCD		
Certifications & Standards Complia	ance		
Grid regulation	IEC 61727 / IEC 62116 / MEA, PEA (more available upon request)		
Safety regulation	IEC / EN62109-1/2, IEC 62477-1		
EMC	IEC / EN61000-6-1/3		
General Parameters			
	IP20		
	11 20		

-25°C~60°C

20.5 kg / 23 kg

450×119×539 mm / 580×230×660 mm

# **10 More Support**

MORE SUPPORT

For app usage and support, please scan the QR code below or enter the website address and reach us for help.



https://www.eenovance.com/contact-us

Operating temperature range

Product size / Packing size (WxDxH)

Net weight / Gross weight