User Manual

In order to prevent improper operation before use, please carefully read this manual.

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1. Introduction

The document describes the installation, commissioning, maintenance and troubleshooting of the following high voltage battery listed below.

EQ

Note: EQ = EQ-M + EQ-S

The battery chemistry of these products is Lithium Iron Phosphate. This manual is designed for qualified personnel only. The tasks described in this document should be performed by authorized and qualified technicians only.

After Installation the Installer must explain the user manual to the end user.

2. Symbols

	Symbol Explanation CE mark. The inverter complies with the requirements of the applicable CE guidelines.
	This mark indicates compound UK product safety certification requirements.
	Caution, risk of electric shock.
	Do not place nor install near flammable or explosive materials.
	Install the product out of reach of children.
	Prohibit the use of water to extinguish fires.
	Prohibition of private maintenance.
	Prohibit Connector Reversal.
	Read the instruction manual before starting installation and operation.
	Do not dispose of the product with household wastes.

	Disconnect the equipment before carrying out maintenance or repair.
	Observe precautions for handling electrostatic discharge sensitive devices.
	PE conductor terminal
	Caution, risk of electric shock, energy storage timed discharge.

3. Safety

Any work on the batteries should be handled by purchaser approved installer and hence it is understood that the purchaser approved installer should familiarize themselves with the contents of this manual before any maintenance or installation is carried out on the system.

3.1 Handling

- Do not expose battery to open flame.
- Store in a cool and dry place with ample ventilation.
- Do not store the product near water sources.
- Store the product on a flat surface.
- Recommend to store the product out of reach of children and animals.
- Do not damage the unit by dropping, deforming, impacting, cutting or penetrating with a sharp object. It may cause leakage of electrolyte or fire.
- Do not touch any liquid spilled from the product. There is a risk of electric shock or damage to skin.
- Always handle the battery wearing the insulated gloves.
- Do not step on the product or place any foreign objects on it. This can result in damage.
- Do not charge or discharge damaged battery.

3.2 Installation

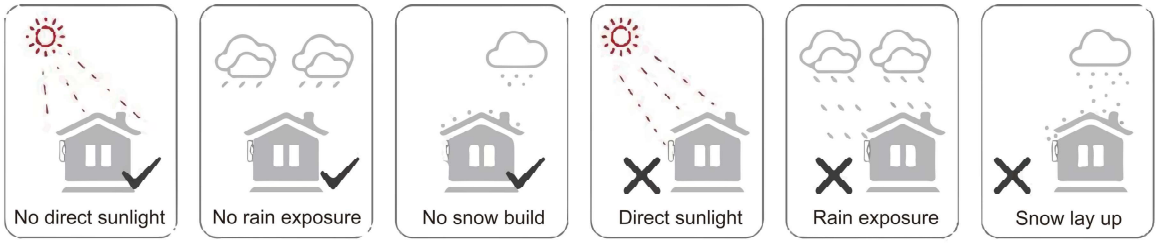
- Do not connect the battery directly to inverter conductors or PV conductors. This will damage the battery and may result in explosion.
- After unpacking, please check the product for damages and missing parts.
- Make sure that the inverter and battery is completely turned off before commencing installation.
- Do not interchange the positive and negative terminals of the battery.
- Ensure that there is no short circuit of the terminals or with any external device.
- Do not exceed the battery voltage rating of the inverter.
- Do not connect the battery to any incompatible inverter.
- Do not connect different battery types together.
- Please ensure that all the batteries are grounded properly.
- Do not open the battery to repair or disassemble. Only Fox ESS is allowed to carry out any such repairs.
- In case of fire, use only dry powder fire extinguisher. Liquid extinguishers should not be used.

- Please refrain from installing the battery near any water source to prevent accidental submersion.
- Recommend to install the battery away from children or pets.
- Do not use battery in high static environment where the protection device might be damaged.
- Do not install with other batteries or cells.
- Please ensure on installation site that the deviation of voltages between new batteries and every single present battery is less than 0.5V.
- Recommend to check the new batteries mounted on-site comply to the warranty scope or have ever been re-charged within 5 months; on top of that, please make sure the SOC of present battery system onsite is 50%±5%.

3.3 Mounting

Make sure the installation site meets the following conditions.

- Not in direct sunlight.
- Not in areas where highly flammable materials are stored.
- Not in potential explosive areas.
- Not in the cool air directly.
- Not within two meters from heat source such as radiator.
- Not near the television antenna or antenna cable.
- Not higher than altitude of about 2000m above sea level.
- Not in environment of precipitation or humidity(>95%).
- Under good ventilation condition.
- Suitable for Indoor and outdoor.
- Please avoid direct sunlight, rain exposure, snow laying up during installation and operation.



4. Response to Emergency Situations

The batteries comprise of multiple batteries connected in series. It is designed to prevent hazards or failures. However, Fox ESS cannot guarantee their absolute safety.

Under exposure to the internal materials of the battery the following recommendations should be carried out by the user.

- If there has been inhalation, please leave the contaminated area immediately and seek medical attention.
- If there has been contact with eyes, rinse the eyes with running water for 15 minutes and seek medical attention immediately.
- If there has been contact with the skin, wash the contacted area with soap thoroughly and seek medical attention immediately.
- If there has been ingestion, induce vomiting and seek medical attention.

Fire Situation

In situations where the battery is on fire, if it is safe to do so, disconnect the battery pack by turn off the circuit breaker to shut off the power to the system. Use FM-200 or Co2 fire extinguisher for the battery and an ABC fire extinguisher for the other parts of the system.

Under any fire situation, please evacuate the people from the building immediately before trying to extinguish it.

Water Situation

The battery modules are not water resistant. Hence care should be taken not to get it wet. If you find the battery completely or partially submerged in water do not try to open. Contact an authorized personnel or Fox ESS for further instructions.

5. Fire Protection Function

Despite the extremely stable chemical properties of lithium iron phosphate batteries and the multiple protections, each battery unit is equipped with a fire protection module to further ensure the safety and reliability of Fox ESS batteries. This innovative module utilizes a new type of aerosol fire extinguishing device with features such as pressure-free storage, no maintenance required, high extinguishing efficiency, non-toxic and harmless characteristics.

5.1 Fire Extinguishing Mechanism

The fire extinguishing mechanisms of common agents mainly include isolation, smothering, cooling, and chemical suppression, with different agents exhibiting varying mechanisms. The fire extinguishing mechanism of thermal aerosols involves two main mechanisms: the cooling effect from endothermic decomposition and the chemical suppression effects in both gas and solid phases, which work synergistically. Additionally, the gaseous components in the products of the aerosol extinguishing agent also play a supportive role.

Cooling Fire Extinguishing Effect from Endothermic Decomposition

The cooling effect of thermal aerosol extinguishing agents is primarily due to the endothermic decomposition of metal oxides and carbonates. When a fire occurs, the solid particles in the aerosol rapidly absorb heat from the fire source, resulting in a decrease in flame temperature. This reduction minimizes the heat radiating to the burning surface and lowers the energy required to dissociate vaporized combustible materials into free radicals. As a result, the combustion reaction is effectively suppressed.

Gas Phase Chemical Suppression Effect

Under thermal conditions, vaporized metal ions, such as strontium (Sr), potassium (K), and magnesium (Mg), exist as vapors and participate in multiple chain reactions with active combustion radicals, including hydrogen (H•), hydroxyl (•OH), and oxygen (O•). For example:

$Sr+2{\bullet}OH \rightarrow Sr(OH)2$

$Sr+O{\bullet} \rightarrow SrO$

$Sr(OH)2+2H{\bullet} \rightarrow Sr+2H2O$

Through continuous action, this process consumes active combustion groups, significantly reducing their concentration and effectively suppressing combustion.

Solid Phase Chemical Suppression Effect

The solid particles in thermal aerosol extinguishing agents can adsorb intermediates such as •OH, H•, and O• from chain reactions, catalyzing their recombination into stable molecules. This interrupts the essential branching chain reactions in the combustion process. For example:

$K2O\ (s)+2H\ (g) \rightarrow 2KOH\ (s)$ $KOH\ (s)+OH\ (g) \rightarrow KO\ (s)+H2O\ (g)$

$K2O\ (s)+O\ (g) \rightarrow 2KO(s)$ $KO(s)+H(g) \rightarrow KOH$

5.2 Technical Specifications

Activation method: Thermal activation

Thermal activation temperature: ≥ 170°C

Discharge time: ≤ 5 seconds

Notes:

Please contact Fox ESS for immediate replacement if the fire protection module is activated.

Non-professionals should not disassemble the battery without authorization.

Do not touch the device until the casing has cooled after the internal fire extinguisher has been activated,

to prevent burns.
For further assistance, please contact an authorized personnel or Fox ESS for further instructions.

6. Heating Function

In low-temperature climates at high altitudes or latitudes, particularly during winter, the charging and discharging performance of batteries can significantly decline due to cold temperatures. To address this, Fox ESS has introduced a "Battery Heating" feature, enabling the battery system to operate effectively a t extremely low temperatures. This feature is exclusively available in the heated versions.

6.1 During Full Heating Period

When the battery temperature is between -30°C and 0°C, the system will heat the battery to 10°C. Heating will stop once this temperature is reached, but if the battery temperature falls below 0°C again, the heating system will reactivate.

The heating system prioritizes energy from the photovoltaic (PV) system. If PV power is insufficient, it will draw energy from either the battery or the grid, depending on the state of charge (SOC) of the battery:
- If the battery SOC > 40%, energy will be drawn from the battery, following the priority order:
PV > Battery > Grid.
- If the battery SOC < 40%, energy will be sourced from the grid, with the following priority order:
PV > Grid > Battery.

6.2 During PV Heating Period

The battery will only be heated when surplus energy is available from the PV system.

The full heating function is turned off by default and must be enabled through the web interface or inverter settings when required. After activation, the heating periods must be configured as follows:

Inverter LCD settings: Main page- setting- battery heating- heating period with full power
- heating period 1: start time 0:00, end time 0:00
- heating period 2: start time 0:00, end time 0:00
- heating period 3: start time 0:00, end time 0:00

Note: The three time segments may overlap but cannot be mutually exclusive. Any time outside these segments will utilize PV energy only for heating.

Important Notes

1. The battery can only discharge when the battery temperature is above -10°C. It can only charge when the battery temperature is above 0°C.
2. Please check that the wiring is properly connected and that all batteries are the heated versions; otherwise, the heating function will not operate.
3. Heating control is based on the internal cell temperature of the battery, rather than the ambient temperature. Typically, the cell temperature will be higher than the ambient temperature under normal operating conditions.

For further assistance, please contact an authorized personnel or Fox ESS for further instructions.

Note:

Products with "(w)" suffix, such as EQ2900(w) and EQ4300(w), among others, have Battery Heating. Without the "(w)" suffix, like EQ2900 and EQ4300, among others, they do not have the Battery Heating function.

7. Product Information

1. EQ-S is the battery module, and EQ-M includes system controller and battery module;
2. EQ-M contains the controller of the entire system, so each system must have one EQ-M;
3. Our system consists of at least 1*EQ-M + 1*EQ-S and up to 1*EQ-M + 6*EQ-S.

7.1 EQ2900 Specifications

7.1.1 EQ2900-S Specifications

Specifications for EQ2900-S	
Model NO.	EQ2900-S
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~40
Humidity (%)	5~95
Nominal voltage (V)	57.6
Nominal capacity (Ah)	50
Nominal energy (kWh)	2.88
Battery voltage range (V)	52.2~65.7
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	25
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*155
Weight (Kg)	31±1
Communication interfaces	CAN

7.1.2 EQ2900-M Specifications

Specifications for EQ2900-M	
Model NO.	EQ2900-M
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~40
Humidity (%)	5~95
Nominal voltage (V)	57.6
Nominal capacity (Ah)	50
Nominal energy (kWh)	2.88
Battery voltage range (V)	52.2~65.7
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	25
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*170
Weight (Kg)	35±1
Communication interfaces	CAN

7.1.3 Battery System Specifications for EQ2900

Specifications for EQ2900						
Model No.	EQ2900-L2	EQ2900-L3	EQ2900-L4	EQ2900-L5	EQ2900-L6	EQ2900-L7
Technical Properties						
Battery designation*	IFpP/41/149/102/[(18S)2S]E/-10+40/90	IFpP/41/149/102/[(18S)3S]E/-10+40/90	IFpP/41/149/102/[(18S)4S]E/-10+40/90	IFpP/41/149/102/[(18S)5S]E/-10+40/90	IFpP/41/149/102/[(18S)6S]E/-10+40/90	IFpP/41/149/102/[(18S)7S]E/-10+40/90
The number of batteries	1EQ2900-M+1EQ2900-S	1EQ2900-M+2EQ2900-S	1EQ2900-M+3EQ2900-S	1EQ2900-M+4EQ2900-S	1EQ2900-M+5EQ2900-S	1EQ2900-M+6EQ2900-S
Nominal voltage (V)	115.2	172.8	230.4	288.0	345.6	403.2
Nominal capacity (Ah)	50	50	50	50	50	50
Nominal energy (kWh)	5.76	8.64	11.52	14.40	17.28	20.16
Battery voltage range (V)	104.4~131.4	156.6~197.1	208.8~262.8	261.0~328.5	313.2~394.2	365.4~459.9
Max. charge/discharge current (A)	50/50					
(CC-CV) Standard charging current (A)	25					
Constant current and constant voltage charging cut-off current (A)	2					
Peak discharge Current (60s) (A)	65					
Storage temperature (°C)	-10~40					
Operating Temperature range (°C)	Charge: 0~55 Discharge: -10~55					
Discharge capacity (Ah)	35@-10±2°C @1C 50@25±2°C @1C 47@55±2°C @1C					
Cycle life	≥6000 @25°C @ 70%SOH					
Ingress protection	IP65					
Protective class	Class I					
Dimensions (L*W*H) (mm)	570*380*350	570*380*470	570*380*590	570*380*710	570*380*830	570*380*950
Weight (kg)	71.1	102.9	134.7	166.5	198.3	230.1
Communication interfaces	CAN					

7.2 EQ2900 (w) Specifications

7.2.1 EQ2900-S (w) Specifications

Specifications for EQ2900-S (w)	
Model NO.	EQ2900-S (w)
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~40
Humidity (%)	5~95
Nominal voltage (V)	57.6
Nominal capacity (Ah)	50
Nominal energy (kWh)	2.88
Battery voltage range (V)	52.2~65.7
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	25
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*155
Weight (Kg)	31±1
Communication interfaces	CAN

7.2.2 EQ2900-M (w) Specifications

Specifications for EQ2900-M (w)	
Model NO.	EQ2900-M (w)
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~40
Humidity (%)	5~95
Nominal voltage (V)	57.6
Nominal capacity (Ah)	50
Nominal energy (kWh)	2.88
Battery voltage range (V)	52.2~65.7
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	25
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*170
Weight (Kg)	35±1
Communication interfaces	CAN

7.2.3 Battery System Specifications for EQ2900 (w)

Specifications for EQ2900 (w)						
Model No.	EQ2900-L2 (w)	EQ2900-L3 (w)	EQ2900-L4 (w)	EQ2900-L5 (w)	EQ2900-L6 (w)	EQ2900-L7 (w)
Technical Properties						
Battery designation*	IFpP/41/149/102/[(18S)2S]E/-10+40/90	IFpP/41/149/102/[(18S)3S]E/-10+40/90	IFpP/41/149/102/[(18S)4S]E/-10+40/90	IFpP/41/149/102/[(18S)5S]E/-10+40/90	IFpP/41/149/102/[(18S)6S]E/-10+40/90	IFpP/41/149/102/[(18S)7S]E/-10+40/90
The number of batteries	1EQ2900-M (w)+1EQ2900-S (w)	1EQ2900-M (w)+2EQ2900-S (w)	1EQ2900-M (w)+3EQ2900-S (w)	1EQ2900-M (w)+4EQ2900-S (w)	1EQ2900-M (w)+5EQ2900-S (w)	1EQ2900-M (w)+6EQ2900-S (w)
Nominal voltage (V)	115.2	172.8	230.4	288.0	345.6	403.2
Nominal capacity (Ah)	50	50	50	50	50	50
Nominal energy (kWh)	5.76	8.64	11.52	14.40	17.28	20.16
Battery voltage range (V)	104.4~131.4	156.6~197.1	208.8~262.8	261.0~328.5	313.2~394.2	365.4~459.9
Max. charge/discharge current (A)	50/50					
(CC-CV) Standard charging current (A)	25					
Constant current and constant voltage charging cut-off current (A)	2					
Peak discharge Current (60s) (A)	65					
Storage temperature (°C)	-10~40					
Operating Temperature range (°C)	Charge: 0~55 Discharge: -10~55					
Discharge capacity (Ah)	35@-10±2°C @1C 50@25±2°C @1C 47@55±2°C @1C					
Cycle life	≥6000 @25°C @ 70%SOH					
Ingress protection	IP65					
Protective class	Class I					
Dimensions (L*W*H) (mm)	570*380*350	570*380*470	570*380*590	570*380*710	570*380*830	570*380*950
Weight (kg)	71.1	102.9	134.7	166.5	198.3	230.1
Communication interfaces	CAN					

7.3 EQ3300 Specifications

7.3.1 EQ3300-S Specifications

Specifications for EQ3300-S	
Model NO.	EQ3300-S
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~40
Humidity (%)	5~95
Nominal voltage (V)	64
Nominal capacity (Ah)	50
Nominal energy (kWh)	3.2
Battery voltage range (V)	58.0~73.0
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	25
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*170
Weight (Kg)	36±1
Communication interfaces	CAN

7.3.2 EQ3300-M Specifications

Specifications for EQ3300-M	
Model NO.	EQ3300-M
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~40
Humidity (%)	5~95
Nominal voltage (V)	64
Nominal capacity (Ah)	50
Nominal energy (kWh)	3.2
Battery voltage range (V)	58.0~73.0
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	25
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*180
Weight (Kg)	41±1
Communication interfaces	CAN

7.3.3 Battery System Specifications for EQ3300

Specifications for EQ3300					
Model No.	EQ3300-L2	EQ3300-L3	EQ3300-L4	EQ3300-L5	EQ3300-L6
Technical Properties					
Battery designation*	IFpP/41/149/102/[(20S)2S]E/-10+40/90	IFpP/41/149/102/[(20S)3S]E/-10+40/90	IFpP/41/149/102/[(20S)4S]E/-10+40/90	IFpP/41/149/102/[(20S)5S]E/-10+40/90	IFpP/41/149/102/[(20S)6S]E/-10+40/90
The number of batteries	1EQ3300-M+1EQ3300-S	1EQ3300-M+2EQ3300-S	1EQ3300-M+3EQ3300-S	1EQ3300-M+4EQ3300-S	1EQ3300-M+5EQ3300-S
Nominal voltage (V)	128.0	192.0	256.0	320.0	384.0
Nominal capacity (Ah)	50	50	50	50	50
Nominal energy (kWh)	6.4	9.6	12.8	16.0	19.2
Battery voltage range (V)	116.0~146.0	174.0~219.0	232.0~292.0	290.0~365.0	348.0~438.0
Max. charge/discharge current (A)	50/50				
(CC-CV) Standard charging current (A)	25				
Constant current and constant voltage charging cut-off current (A)	2				
Peak discharge Current (60s) (A)	65				
Storage temperature (°C)	-10~40				
Operating Temperature range (°C)	Charge: 0~55 Discharge: -10~55				
Discharge capacity (Ah)	35@-10±2°C @1C 50@25±2°C@1C 47@55±2°C @1C				
Cycle life	≥6000 @25°C @ 70%SOH				
Ingress protection	IP65				
Protective class	Class I				
Dimensions (L*W*H) (mm)	570*380*375	570*380*510	570*380*645	570*380*780	570*380*915
Weight (kg)	82.2	118.2	154.2	190.2	226.2
Communication interfaces	CAN				

7.4 EQ3300 (w) Specifications

7.4.1 EQ3300-S (w) Specifications

Specifications for EQ3300-S (w)	
Model NO.	EQ3300-S (w)
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~40
Humidity (%)	5~95
Nominal voltage (V)	64
Nominal capacity (Ah)	50
Nominal energy (kWh)	3.2
Battery voltage range (V)	58.0~73.0
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	25
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*170
Weight (Kg)	36±1
Communication interfaces	CAN

7.4.2 EQ3300-M (w) Specifications

Specifications for EQ3300-M (w)	
Model NO.	EQ3300-M (w)
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~40
Humidity (%)	5~95
Nominal voltage (V)	64
Nominal capacity (Ah)	50
Nominal energy (kWh)	3.2
Battery voltage range (V)	58.0~73.0
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	25
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*180
Weight (Kg)	41±1
Communication interfaces	CAN

7.4.3 Battery System Specifications for EQ3300 (w)

Specifications for EQ3300 (w)					
Model No.	EQ3300-L2 (w)	EQ3300-L3 (w)	EQ3300-L4 (w)	EQ3300-L5 (w)	EQ3300-L6 (w)
Technical Properties					
Battery designation*	IFpP/41/149/102/[(20S)2S]E/-10+40/90	IFpP/41/149/102/[(20S)3S]E/-10+40/90	IFpP/41/149/102/[(20S)4S]E/-10+40/90	IFpP/41/149/102/[(20S)5S]E/-10+40/90	IFpP/41/149/102/[(20S)6S]E/-10+40/90
The number of batteries	1EQ3300-M (w)+1EQ3300-S (w)	1EQ3300-M (w)+2EQ3300-S (w)	1EQ3300-M (w)+3EQ3300-S (w)	1EQ3300-M (w)+4EQ3300-S (w)	1EQ3300-M (w)+5EQ3300-S (w)
Nominal voltage (V)	128.0	192.0	256.0	320.0	384.0
Nominal capacity (Ah)	50	50	50	50	50
Nominal energy (kWh)	6.4	9.6	12.8	16.0	19.2
Battery voltage range (V)	116.0~146.0	174.0~219.0	232.0~292.0	290.0~365.0	348.0~438.0
Max. charge/discharge current (A)	50/50				
(CC-CV) Standard charging current (A)	25				
Constant current and constant voltage charging cut-off current (A)	2				
Peak discharge Current (60s) (A)	65				
Storage temperature (°C)	-10~40				
Operating Temperature range (°C)	Charge: 0~55 Discharge: -10~55				
Discharge capacity (Ah)	35@-10±2°C @1C 50@25±2°C@1C 47@55±2°C @1C				
Cycle life	≥6000 @25°C @ 70%SOH				
Ingress protection	IP65				
Protective class	Class I				
Dimensions (L*W*H) (mm)	570*380*375	570*380*510	570*380*645	570*380*780	570*380*915
Weight (kg)	82.2	118.2	154.2	190.2	226.2
Communication interfaces	CAN				

7.5 EQ4300 Specifications

7.5.1 EQ4300-S Specifications

Specifications for EQ4300-S	
Model NO.	EQ4300-S
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~50
Humidity (%)	5~95
Nominal voltage (V)	57.6
Nominal capacity (Ah)	75
Nominal energy (kWh)	4.32
Battery voltage range (V)	52.2~65.7
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	37.5
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*173
Weight (Kg)	37±1
Communication interfaces	CAN

7.5.2 EQ4300-M Specifications

Specifications for EQ4300-M	
Model NO.	EQ4300-M
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~50
Humidity (%)	5~95
Nominal voltage (V)	57.6
Nominal capacity (Ah)	75
Nominal energy (kWh)	4.32
Battery voltage range (V)	52.2~65.7
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	37.5
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*170
Weight (Kg)	40±1
Communication interfaces	CAN

7.5.3 Battery System Specifications for EQ4300

Specifications for EQ4300						
Model No.	EQ4300-L2	EQ4300-L3	EQ4300-L4	EQ4300-L5	EQ4300-L6	EQ4300-L7
Technical Properties						
Battery designation*	IFpP/40/150/112/[(18S)2S]E/-10+50/90	IFpP/40/150/112/[(18S)3S]E/-10+50/90	IFpP/40/150/112/[(18S)4S]E/-10+50/90	IFpP/40/150/112/[(18S)5S]E/-10+50/90	IFpP/40/150/112/[(18S)6S]E/-10+50/90	IFpP/40/150/112/[(18S)7S]E/-10+50/90
The number of batteries	1EQ4300-M+1EQ4300-S	1EQ4300-M+2EQ4300-S	1EQ4300-M+3EQ4300-S	1EQ4300-M+4EQ4300-S	1EQ4300-M+5EQ4300-S	1EQ4300-M+6EQ4300-S
Nominal voltage (V)	115.2	172.8	230.4	288.0	345.6	403.2
Nominal capacity (Ah)	75	75	75	75	75	75
Nominal energy (kWh)	8.64	12.96	17.28	21.60	25.92	30.24
Battery voltage range (V)	104.4~131.4	156.6~197.1	208.8~262.8	261.0~328.5	313.2~394.2	365.4~459.9
Max. charge/discharge current (A)	50/50					
(CC-CV) Standard charging current (A)	37.5					
Constant current and constant voltage charging cut-off current (A)	2					
Peak discharge Current (60s) (A)	65					
Storage temperature (°C)	-10~50					
Operating Temperature range (°C)	Charge: 0~55 Discharge: -10~55					
Discharge capacity (Ah)	56@-10±2°C @0.5C 75@25±2°C @0.5C 73@55±2°C @0.5C					
Cycle life	≥6000 @25°C @ 70%SOH					
Ingress protection	IP65					
Protective class	Class I					
Dimensions (L*W*H) (mm)	570*380*368	570*380*506	570*380*644	570*380*782	570*380*920	570*380*1058
Weight (kg)	82.2	118.2	154.2	190.2	226.2	262.2
Communication interfaces	CAN					

7.6 EQ4300 (w) Specifications

7.6.1 EQ4300-S (w) Specifications

Specifications for EQ4300-S (w)	
Model NO.	EQ4300-S (w)
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~50
Humidity (%)	5~95
Nominal voltage (V)	57.6
Nominal capacity (Ah)	75
Nominal energy (kWh)	4.32
Battery voltage range (V)	52.2~65.7
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	37.5
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*173
Weight (Kg)	37±1
Communication interfaces	CAN

7.6.2 EQ4300-M (w) Specifications

Specifications for EQ4300-M (w)	
Model NO.	EQ4300-M (w)
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~50
Humidity (%)	5~95
Nominal voltage (V)	57.6
Nominal capacity (Ah)	75
Nominal energy (kWh)	4.32
Battery voltage range (V)	52.2~65.7
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	37.5
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*170
Weight (Kg)	40±1
Communication interfaces	CAN

7.6.3 Battery System Specifications for EQ4300 (w)

Specifications for EQ4300 (w)						
Model No.	EQ4300-L2 (w)	EQ4300-L3 (w)	EQ4300-L4 (w)	EQ4300-L5 (w)	EQ4300-L6 (w)	EQ4300-L7 (w)
Technical Properties						
Battery designation*	IFpP/40/150/112/[(18S)2S]E/-10+50/90	IFpP/40/150/112/[(18S)3S]E/-10+50/90	IFpP/40/150/112/[(18S)4S]E/-10+50/90	IFpP/40/150/112/[(18S)5S]E/-10+50/90	IFpP/40/150/112/[(18S)6S]E/-10+50/90	IFpP/40/150/112/[(18S)7S]E/-10+50/90
The number of batteries	1EQ4300-M (w)+1EQ4300-S (w)	1EQ4300-M (w)+2EQ4300-S (w)	1EQ4300-M (w)+3EQ4300-S (w)	1EQ4300-M (w)+4EQ4300-S (w)	1EQ4300-M (w)+5EQ4300-S (w)	1EQ4300-M (w)+6EQ4300-S (w)
Nominal voltage (V)	115.2	172.8	230.4	288.0	345.6	403.2
Nominal capacity (Ah)	75	75	75	75	75	75
Nominal energy (kWh)	8.64	12.96	17.28	21.60	25.92	30.24
Battery voltage range (V)	104.4~131.4	156.6~197.1	208.8~262.8	261.0~328.5	313.2~394.2	365.4~459.9
Max. charge/discharge current (A)	50/50					
(CC-CV) Standard charging current (A)	37.5					
Constant current and constant voltage charging cut-off current (A)	2					
Peak discharge Current (60s) (A)	65					
Storage temperature (°C)	-10~50					
Operating Temperature range (°C)	Charge: 0~55 Discharge: -10~55					
Discharge capacity (Ah)	56@-10±2°C @0.5C 75@25±2°C @0.5C 73@55±2°C @0.5C					
Cycle life	≥6000 @25°C @ 70%SOH					
Ingress protection	IP65					
Protective class	Class I					
Dimensions (L*W*H) (mm)	570*380*368	570*380*506	570*380*644	570*380*782	570*380*920	570*380*1058
Weight (kg)	82.2	118.2	154.2	190.2	226.2	262.2
Communication interfaces	CAN					

7.7 EQ5000 Specifications

7.7.1 EQ5000-S Specifications

Specifications for EQ5000-S	
Model NO.	EQ5000-S
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~50
Humidity (%)	5~95
Nominal voltage (V)	64
Nominal capacity (Ah)	77
Nominal energy (kWh)	4.92
Battery voltage range (V)	58.0~73.0
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	38.5
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*170
Weight (Kg)	43.5±1
Communication interfaces	CAN

7.7.2 EQ5000-M Specifications

Specifications for EQ5000-M	
Model NO.	EQ5000-M
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~50
Humidity (%)	5~95
Nominal voltage (V)	64
Nominal capacity (Ah)	77
Nominal energy (kWh)	4.92
Battery voltage range (V)	58.0~73.0
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	38.5
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*180
Weight (Kg)	48.5±1
Communication interfaces	CAN

7.7.3 Battery System Specifications for EQ5000

Specifications for EQ5000					
Model No.	EQ5000-L2	EQ5000-L3	EQ5000-L4	EQ5000-L5	EQ5000-L6
Technical Properties					
Battery designation*	IFpP/40/150/112/[(20S)2S]E/-10+50/90	IFpP/40/150/112/[(20S)3S]E/-10+50/90	IFpP/40/150/112/[(20S)4S]E/-10+50/90	IFpP/40/150/112/[(20S)5S]E/-10+50/90	IFpP/40/150/112/[(20S)6S]E/-10+50/90
The number of batteries	1EQ5000-M+1EQ5000-S	1EQ5000-M+2EQ5000-S	1EQ5000-M+3EQ5000-S	1EQ5000-M+4EQ5000-S	1EQ5000-M+5EQ5000-S
Nominal voltage (V)	128.0	192.0	256.0	320.0	384.0
Nominal capacity (Ah)	77	77	77	77	77
Nominal energy (kWh)	9.84	14.76	19.68	24.60	29.52
Battery voltage range (V)	116.0~146.0	174.0~219.0	232.0~292.0	290.0~365.0	348.0~438.0
Max. charge/discharge current (A)	50/50				
(CC-CV) Standard charging current (A)	38.5				
Constant current and constant voltage charging cut-off current (A)	2				
Peak discharge Current (60s) (A)	65				
Storage temperature (°C)	-10~50				
Operating Temperature range (°C)	Charge: 0~55 Discharge: -10~55				
Discharge capacity (Ah)	56@-10±2°C @0.5C 77@25±2°C @0.5C 73@55±2°C @0.5C				
Cycle life	≥6000 @25°C @ 70%SOH				
Ingress protection	IP65				
Protective class	Class I				
Dimensions (L*W*H) (mm)	570*380*375	570*380*510	570*380*645	570*380*780	570*380*915
Weight (kg)	97.2	140.7	184.2	227.7	271.2
Communication interfaces	CAN				

7.8 EQ5000 (w) Specifications

7.8.1 EQ5000-S (w) Specifications

Specifications for EQ5000-S (w)	
Model NO.	EQ5000-S (w)
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~50
Humidity (%)	5~95
Nominal voltage (V)	64
Nominal capacity (Ah)	77
Nominal energy (kWh)	4.92
Battery voltage range (V)	58.0~73.0
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	38.5
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*170
Weight (Kg)	43.5±1
Communication interfaces	CAN

7.8.2 EQ5000-M (w) Specifications

Specifications for EQ5000-M (w)	
Model NO.	EQ5000-M (w)
Max. charge/discharge current (A)	50
Operating temperature (°C)	Charge: 0~55 Discharge: -10~55
Storage temperature (°C)	-10~50
Humidity (%)	5~95
Nominal voltage (V)	64
Nominal capacity (Ah)	77
Nominal energy (kWh)	4.92
Battery voltage range (V)	58.0~73.0
Max. Continuous discharge/charge current (A)	50/50
(CC-CV) Standard charging current (A)	38.5
Constant current and voltage charging cut-off current (A)	2
Peak discharge current (60s) (A)	65
Altitude (m)	≤2000
Dimensions (L*W*H) (mm)	570*380*180
Weight (Kg)	48.5±1
Communication interfaces	CAN

7.8.3 Battery System Specifications for EQ5000 (w)

Specifications for EQ5000 (w)					
Model No.	EQ5000-L2 (w)	EQ5000-L3 (w)	EQ5000-L4 (w)	EQ5000-L5 (w)	EQ5000-L6 (w)
Technical Properties					
Battery designation*	IFpP/40/150/112/[(20S)2S]E/-10+50/90	IFpP/40/150/112/[(20S)3S]E/-10+50/90	IFpP/40/150/112/[(20S)4S]E/-10+50/90	IFpP/40/150/112/[(20S)5S]E/-10+50/90	IFpP/40/150/112/[(20S)6S]E/-10+50/90
The number of batteries	1EQ5000-M (w)+1EQ5000-S (w)	1EQ5000-M (w)+2EQ5000-S (w)	1EQ5000-M (w)+3EQ5000-S (w)	1EQ5000-M (w)+4EQ5000-S (w)	1EQ5000-M (w)+5EQ5000-S (w)
Nominal voltage (V)	128.0	192.0	256.0	320.0	384.0
Nominal capacity (Ah)	77	77	77	77	77
Nominal energy (kWh)	9.84	14.76	19.68	24.60	29.52
Battery voltage range (V)	116.0~146.0	174.0~219.0	232.0~292.0	290.0~365.0	348.0~438.0
Max. charge/discharge current (A)	50/50				
(CC-CV) Standard charging current (A)	38.5				
Constant current and constant voltage charging cut-off current (A)	2				
Peak discharge Current (60s) (A)	65				
Storage temperature (°C)	-10~50				
Operating Temperature range (°C)	Charge: 0~55 Discharge: -10~55				
Discharge capacity (Ah)	56@-10±2°C @0.5C 77@25±2°C @0.5C 73@55±2°C @0.5C				
Cycle life	≥6000 @25°C @ 70%SOH				
Ingress protection	IP65				
Protective class	Class I				
Dimensions (L*W*H) (mm)	570*380*375	570*380*510	570*380*645	570*380*780	570*380*915
Weight (kg)	97.2	140.7	184.2	227.7	271.2
Communication interfaces	CAN				

Note:The battery designation is a series of numbers that represent the battery's positive and negative electrode types, structure and size, charge and discharge rate, and operating temperature range.

8. Product Features

8.1 Battery System Features

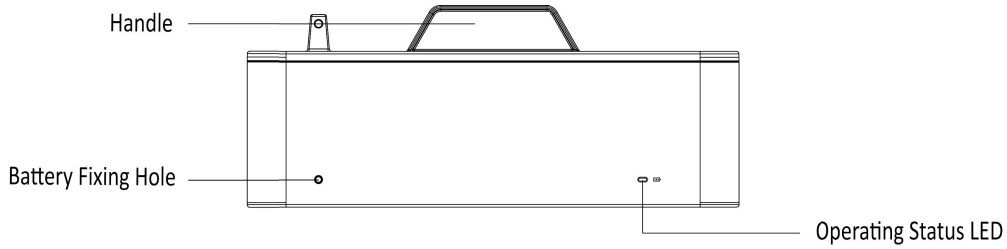
The batteries have been fitted with multiple protection systems to ensure the safe operation of the system. Some of the protection system includes:

- Inverter interface protection: Over voltage, Over current, External Short Circuit, Reverse Polarity, Ground Fault, Over Temp, In rush current
- Battery Protection: Internal Short Circuit, Over voltage, over current, over temp, Under voltage

The battery system contains the following Interface to allow it to connect and operate efficiently.

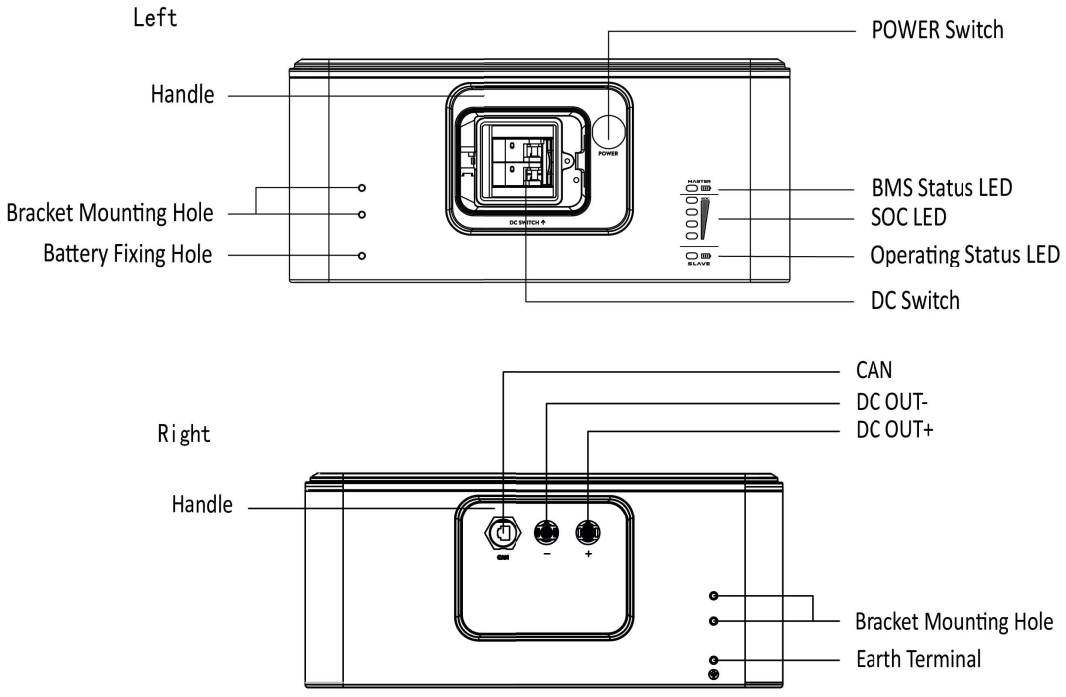
EQ-S Features:

- interface:



EQ-M Features:

- interface:



DC switch

Power switch, battery charge and discharge circuit switch.

DC OUT +

Connect bat + of inverter.

DC OUT -

Connect bat - of inverter.

POWER switch

System power on switch, press and hold switch for 3 seconds, and then release the switch, the system starts to work.

BMS Status LED and SOC LED

LED display specific alarm information and battery system power.

Operating status LED

This LED is used to indicate if the battery is operating effectively. A green light on this LED means the battery is ON and operating normally. If the battery is operating failure, a red light on this LED means the battery is operating abnormally.

9. Installation

9.1 Items in the package

Please check if following items are including with the package:

For EQ-S

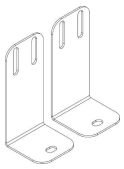
A

B

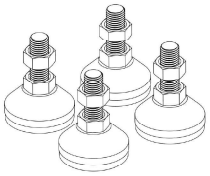
No.	Items
A	Mounting screw pack
B	Installation guide

For EQ-M

C



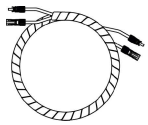
D



E

F

G



H

I

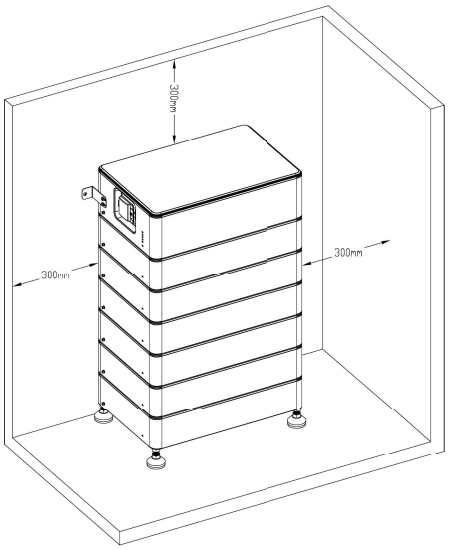
J

K

L

No.	Items	No.	Items
C	Mounting screw pack	H	DC output cable
D	Fixing bracket	I	Installation guide
E	Footstand	J	Expansion tube*2 & Expansion screw*2
F	Communication cable (BMS-Inverter)	K	Waterproof cover
G	Grounding cable	L	RJ45

9.2 Clearance



Note:Make sure to leave a space of at least 300 mm. A clearance of at least 300 mm must be left around the battery pack for proper cooling.

Note: Make sure that the battery pack is always exposed to the ambient air. The battery pack is cooled by natural convection. If the battery pack is entirely or partially covered or shielded, it may cause the battery pack to stop operating.

9.3 Tools

The following tools will be required to install EQ-M and EQ-S.

6mm Magnetic Phillips Screwdriver

Crimpers

Safety Shoes

Multimeter

Safety Gloves

Safety Glasses

Plier

Cable Ties

Hammer Drill @φ8mm

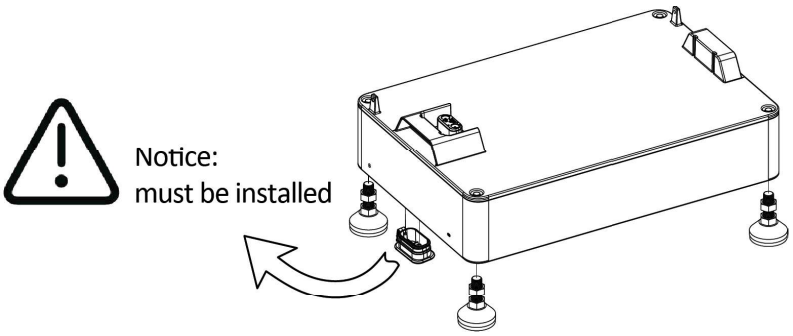
Spirit Level

Tape

Marker

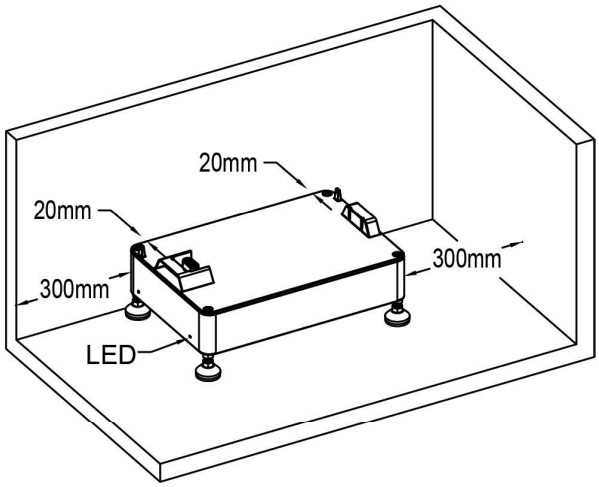
9.4 Installation Steps

Step 1: Install a EQ-S with four footstand (Item E) and place it on the ground and adjust it to the level. After installing the footstand, use a track level bar to confirm the level. Insert the waterproof cover(Item K) into the bottom of the battery and lock it in place with the clip.

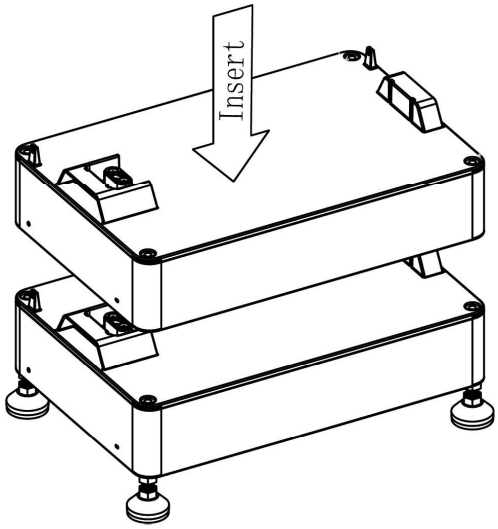


Step 2: Place the battery 20mm against the wall.

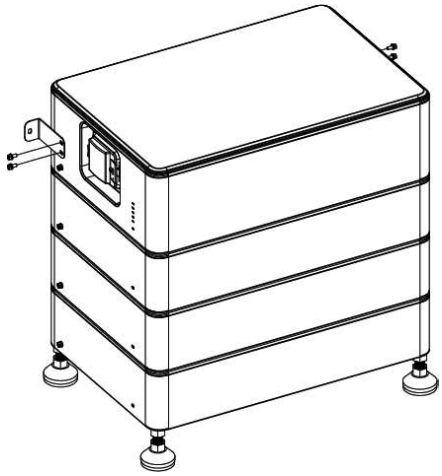
Note: Please make sure the Operating Status LED is on your left handside when you facing the battery model.



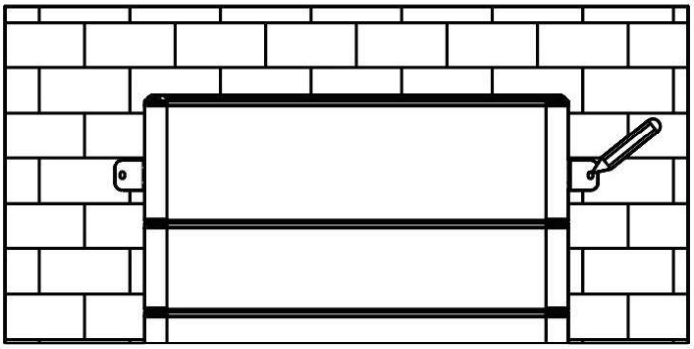
Step 3: Stack the batteries one by one.



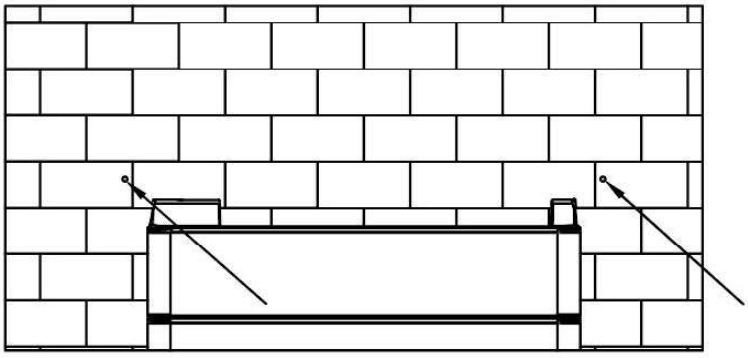
Step 4: Place the two fixing brackets (Item D) close to the wall and install them on both sides of the battery.



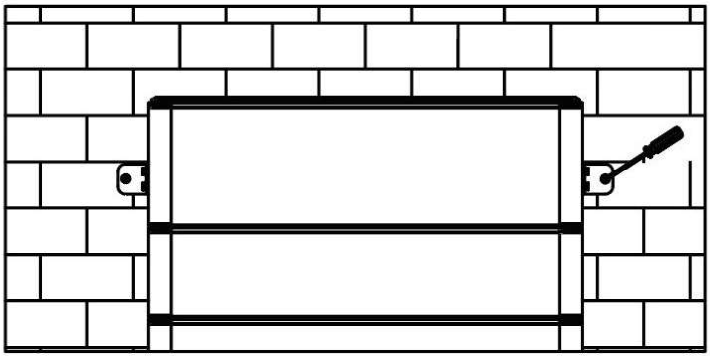
Step 5: Mark the wall through the bracket hole.



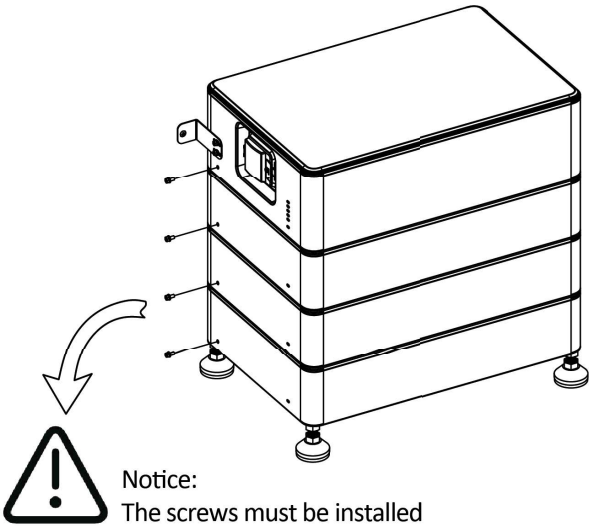
Step 6: Punch after removing the EQ-M. Drill holes with electric drill, make sure the holes are at least 50mm deep, and then tighten the expansion tubes (Item J).



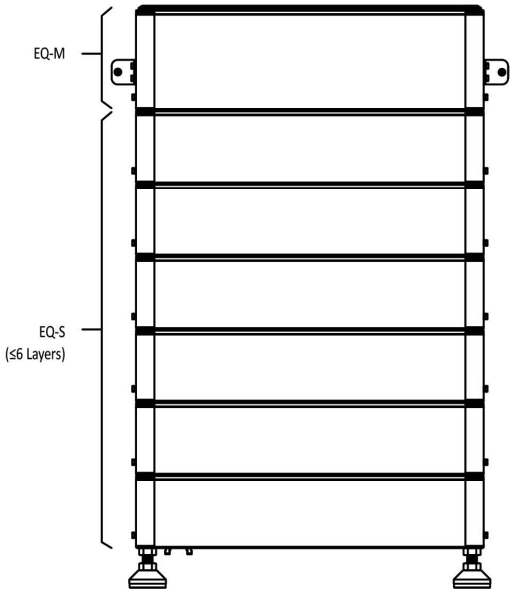
Step 7: After stacking EQ-M again, fix the battery on the wall.



Step 8: Fix the mounting screw packs (Item C) on both sides of the battery, the installation is over.



Note: Please make sure each system including 1 EQ-M and 1 EQ-S. EQ-S less than 6(1~6) pieces:



Note: When used with an inverter, the battery system voltage must meet the inverter battery port voltage range.

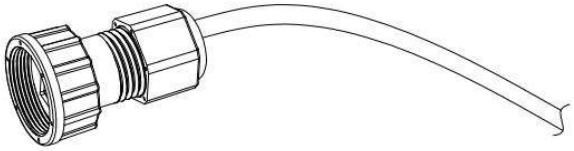
9.5 Wiring Steps

A: Connect the inverter to make sure the wiring position is correct, as shown in the figure below.
Note: Inverter wiring refer to the inverter user manual.

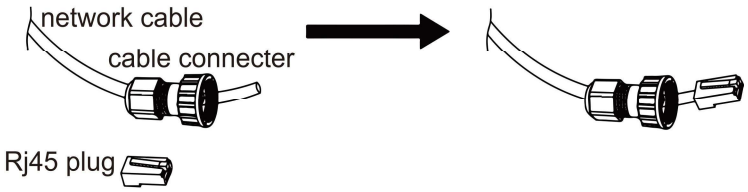
For outdoor use,please use item L and proceed as follows

Connection steps:

Step 1: Prepare a standard network cable and cable connector, then insert the network cable through the cable connector.

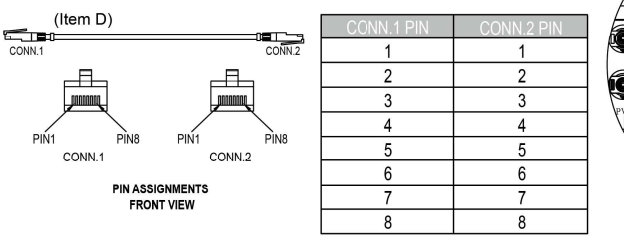


Step 2: Crimp the cable with a Rj45 plug which is inside of the cable connector.



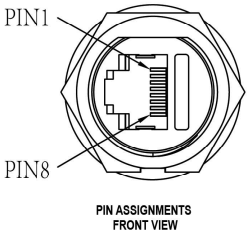
If the usage is indoor, please use item F

Step 3: Insert the cable connector into BMS port at the bottom of inverter and screw it tightly.

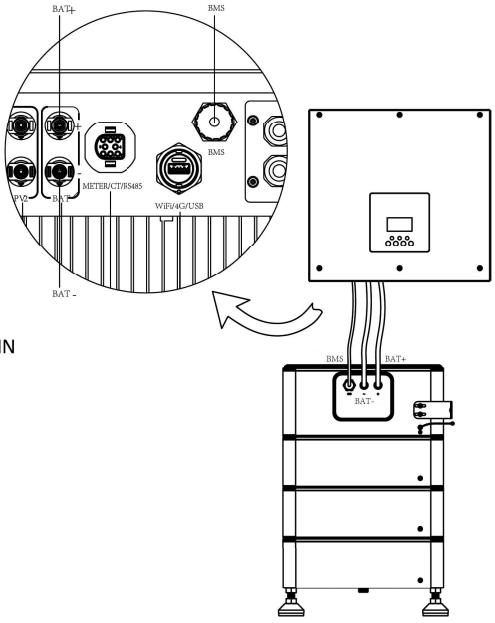


CONN.1 PIN	CONN.2 PIN
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

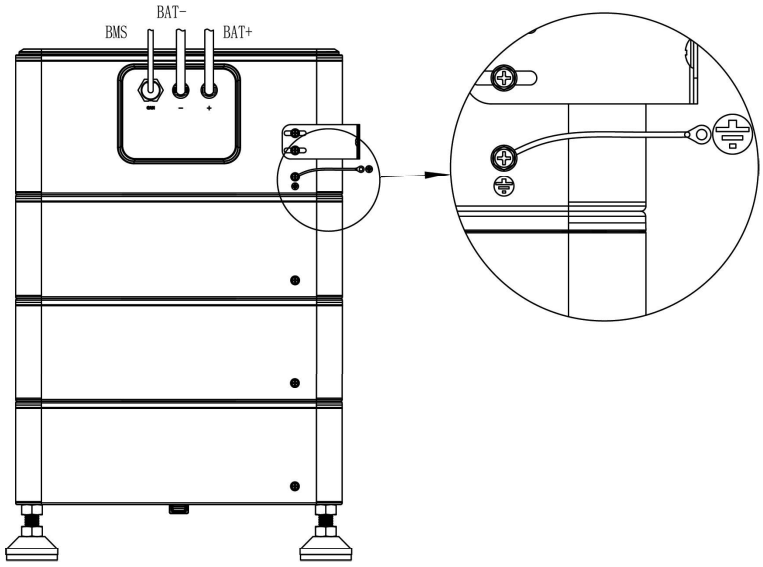
Note: Default wire harness PIN to PIN



PIN	Function Definitions
1	A-START
2	GND
3	RS485-B
4	BMS-CANL
5	BMS-CANH
6	BMS-CANH
7	BMS-CANL
8	RS485-A



B: Connect the grounding cable to ensure that all batteries are grounded. The wiring method can be referred to as shown in the figure below.



Note:

Make sure that the power cable connected to the battery is connected vertically and that the vertical length is greater than 30 cm. If the cable is bent close to the terminals, it may cause poor line contact and result in burnt terminals.

9.6 System Operation

- When the grid connected system is started, the inverter should be turned on first to avoid the current pulse of the inverter increasing to the battery pack.
- All installation and operation must comply with local electrical standards.
- Check all power cables and communication cables carefully.

System Start Up:

When the inverter is connected to the PV and the grid and both are operating normally, turn on the battery DC Switch. Press the POWER Switch and hold it for 3 seconds, then release. The Status LED is blinking green and indicates that the system is working normally.

System Shut Down:

Press and hold the POWER switch for at least 5 seconds until all of the Master LEDs (BMS Status LED and SOC LED) begin blinking. Once they start blinking， release the switch. The lights will automatically turn off after 5 seconds. Then, turn off the DC switch.

System Black Start:

Under special circumstances when both PV and Grid power are out of order, the battery can be activated through the "Black Start" function. This means that our energy storage inverter and battery can continue to operate. The startup steps for black start are as follows:

- Turn on the DC switch, press and hold the power button for 3 seconds, then release.
- Press the “Power Switch” button three times in succession within 4 seconds Complete within 30 seconds after the battery system starts up.
- The Status LED remains solid green, indicating successful activation of Black start mode.

Note:

Ensure correct battery-inverter connection prior to Black Start. No wiring modifications during black start.

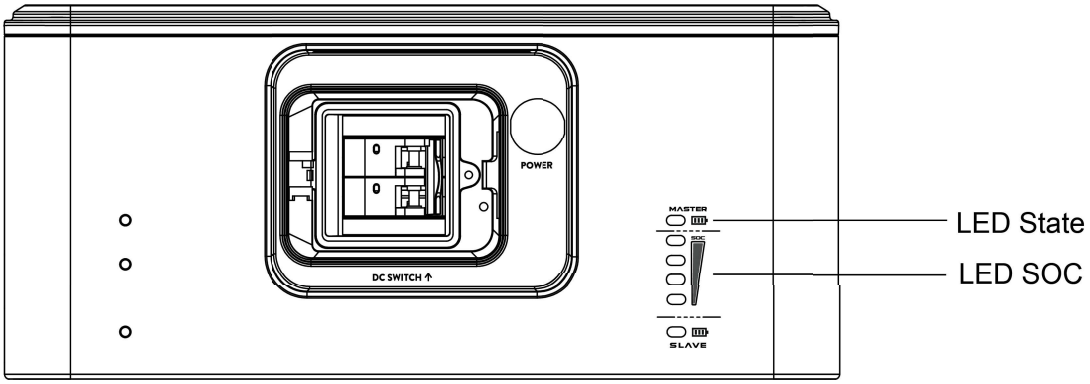
10. Commissioning

The operating status light on the left side of the battery pack shows its working status.

For EQ-S

Green LED	Red LED	Batteries Status
On for 0.5s, Off for 0.5s	On for 0.5s, Off for 0.5s	Runing in boot
On for 0.1s, Off for 0.1s	On for 0.1s, Off for 0.1s	Upgrading
On for 1s, Off for 1s	Off	Normal Working
Off	On for 1s, Off for 1s	Alarm

For EQ-M



SOC	System Status	LED State	LED SOC			
=100%	Standby	■	●	●	●	●
100% > SOC >= 75%		■	●	●	●	●
75% > SOC >= 50%		■	/	●	●	●
50% > SOC >= 25%		■	/	/	●	●
25% > SOC >= 0%		■	/	/	/	●
=100%	Discharge	●	●	●	●	●
100% > SOC >= 75%		●	●	●	●	●
75% > SOC >= 50%		●	/	●	●	●
50% > SOC >= 25%		●	/	/	●	●
25% > SOC >= 0%		●	/	/	/	●
=100%	Charge	●	■	■	■	■
100% > SOC >= 75%		●	■	■	■	■
75% > SOC >= 50%		●	/	■	■	■
50% > SOC >= 25%		●	/	/	■	■
25% > SOC >= 0%		●	/	/	/	■

Fault	LED State	LED SOC			
Under voltage fault	■	/	/	/	●
Over voltage fault	■	/	/	●	/
Over temperature fault	■	/	/	●	●
Under temperature fault	■	/	●	/	/
Discharge over current	■	/	●	/	●
Charge over current	■	/	●	●	/
Discharge over power	■	/	●	●	●
Charge over power	■	●	/	/	/
Pre-Charge failed	■	●	/	/	●
Short circuit Protection	■	●	/	●	/
AFE communication failed	■	●	/	●	●
Module Addressing failed	■	●	●	/	/
IVU Communication failed	■	●	●	/	●
BMU Communication failed	■	●	●	●	/
PCS Communication failed	■	●	●	●	●
HVB FUSE fault	●	/	/	/	●
Module FUSE fault	●	/	/	●	/
Power failed	●	/	/	●	●
Internal total voltage sampling failed	●	/	●	/	/
Temperature sampling failed	●	/	●	/	●
Relay adhesion	●	/	●	●	/
Relay Not Close	●	/	●	●	●
Relay drive failed	●	●	/	/	/
Single Cell "0V" fault	●	●	/	/	●
Temperature high permanent failed	●	●	/	●	/
The Single voltage high permanently failed	●	●	/	●	●
SOH low protection	●	●	●	/	/
AFE failed （UV/OV/UT/OT）	●	●	●	/	●
Shutdown failed	●	●	●	●	/
Other fault	●	●	●	●	●

Remark:

■: LED flash display (on: 0.5s, off: 0.5s)

●: LED on display

11. Exclusion

The warranty shall not cover the defects caused by normal wear and tear, inadequate maintenance, handling, storage faulty repair, modifications to the battery or pack by a third party other than Fox ESS or Fox ESS agent, failure to observe the product specification provided herein or improper use or installation, including but not limited to the following.

- Damage during transport or storage.
- Incorrect Installation of battery into pack or maintenance.
- Use of battery pr pack in inappropriate environment.
- Improper, inadequate, or incorrect charge, discharge or production circuit other than stipulated herein.
- Incorrect use or inappropriate use.
- Insufficient ventilation.
- Ignoring applicable safety warnings and instructions.
- Altering or attempted repairs y unauthorized personnel.
- In case of force majeure (ex: lightning, storm, flood, fire, earthquake, etc.).
- There are no warranties-implied or express-other than those stipulated herein. Fox ESS or Fox ESS shall not be liable for any consequential or indirect damages arising or in connection with the product specification, battery or pack.

12. Troubleshooting and Maintenance

12.1 Maintenance

A. Regularly check whether the service environment of the battery meets the requirements, and the installation position should be far away from the heat source.

B. The battery module should be stored in an environment with a temperature range between -20℃-+55℃, and charged regularly according to the table below with no more than 0.5 C(A C-rate is a measure of the rate at which a battery is discharged relative to its maximum capacity.) to the SOC of 50% after a long time of storage.

Storage environment temperature	Relative humidity of the storage environment	Storage time	SOC
Below -20℃	/	Not allowed	/
-20~35℃	5%~70%	≤ 6 months	20%≤SOC≤60%
35~55℃	5%~70%	≤ 3 months	20%≤SOC≤60%
Above 55℃	/	Not allowed	/

NOTICE
Damage to the system due to under voltages ● Charge the over-discharged system within seven days when the temperature is above 25℃. ● Charge the over-discharged system within seven days when the temperature is below 25℃.

C. Regularly check whether the battery and its supporting terminals, connecting cables and indicator lights are normal.

- Expanded capacity requirement

If a battery is replaced or added for capacity expansion, each battery's SOC should be consistent. The max. SOC difference should be between±5%.

If users want to increase their battery system capacity, please ensure that the SOC of the existing system capacity is about 50%. The manufacturer date of the new battery shall not exceed 12 months; in case of exceeding 12 months. please charge the new battery to around 50%.

12.2 Troubleshooting

When the red / green LED on the panel is flashing or normally on, it does not mean that the EQ is abnormal, it may be just an alarm or protection. Please check the 'LED status indicators' in chapter 10 for the detailed faulty definition before any trouble-shooting steps. In general, the alarm indication is normal without manual intervention. When the alarm triggering state is removed, EQ will automatically return to normal use.

- Problem determination based on the following points

1) Whether the green light on the power switch is on;
2) Whether the buzzer in EQ-M on;
3) Whether the battery system can be communicated with inverter;
4) Whether the battery can be output voltage or not.

- Preliminary determination steps

Battery system cannot work, when DC switch on and POWER on, the LED doesn't light up or flash, please consider contact the local distributor.

1) The LED display of EQ-M and EQ-S is normal, but it cannot charge and discharge. Observe the display screen of inverter and there is no SOC. Please check whether the CAN communication between EQ-M to inverter is well connected. If the connection is good, please replace a CAN communication cable. If the SOC is still not visible on the inverter display screen, please contact the local distributor.
2) After the battery system is powered on, if you can see the alarm information on the LED and inverter display screen at the same time, please contact the local distributor.

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