User Manual

ESS-1KW

Energy Storage System





WIFI APP download page: ftp-smartree.y66.dnsnd.com/WIFImonitor.apk

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1. About the user manual

1-1 Purpose

This manual describes the assembly, installation, operation and troubleshooting of the energy storage system. Please read this manual carefully before installation and operation, and keep this manual for future reference.

1-2 Range

This manual provides safety guidelines and installation guidelines as well as installation tool specifications and connection cable specifications.

2.Safety Guidelines



WARNING: This manual contains important safety and operating instructions, read and save this manual for future reference.

1). Before using this product, please read all instructions and warnings signs on the case of this product, as well as the battery connection instructions and all relevant sections in this manual.

2). Do not open the case of this product without authorization. If you need maintenance or repair, take it to a professional or qualified service center. Improper reassembly may result in electric shock or fire.

3). To reduce risk of electric shock, disconnect all wires before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.

4). Caution: Only qualified personnel can install this energy storage system.

5). For optimum operation of this inverter, please follow required specification to select appropriate cable size. It is very important to correctly operate this system.

6). Be very cautious when working with metal tools on or around the energy storage system. Dropping a tool may cause a spark or short circuit in batteries or other electrical parts, even cause an explosion.

7). 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.

8). Never cause AC input/output and DC input short circuited. Do not connect to batteries or solar panel when DC input short circuits.

9). Caution: Only qualified personnel are allowed to repair or test this products. If still problems after troubleshooting, please send the product back to the local dealer or service center for service.

3. Introduction

This energy storage system built inside with MPPT solar charger, hybrid solar inverter, AC charger, mode switch, lithium battery pack, LED display and remote WIFI monitor. The user can operate and set on the APP.

4. Product Features

★ Select the work mode as grid-tied or off grid.

★LED display working mode switch.

★ SOC of energy storage capacity displayed via RGB lights.

rightarrow Overload, over temperature, short circuit protection.

★ Remote WIFI function, can check lots of the system's data such as working status, solar power generation, power consumption, metering power, battery SOC, battery cycle times, voltage of each battery cells through the mobile phone APP. At the same time user can turn on or turn off through the mobile phone APP, whether it is in timing mode or smart mode.

★ It can be used for timing mains charging and timing grid-tied or discharge.

5. Warranty Policy

1). This product gets 12 months warranty since the purchasing date. (Except for other warranty agreements or non-standard products).

2). This product enjoys lifetime service from the date of purchase from the manufacturer.

3). Disclaimer: Product failures caused by the following reasons are not covered by free warranty service :

(1) The user does not operate this energy system according to the "User Manual";

(2) The user repairs or modifies the product without authorization and leads to the failure;

(3) The user doesn't follow up the technical parameters of this product when they use it;

(4) The poor working environment leads to the abnormal aging or failure of product components;

(5) Product damage caused by force majeure factors such as earthquakes, fires, wind and water disasters, lightning strikes, abnormal voltage or other natural disasters;

(6) The product is damaged due to the improper transportation or other external force intrusion. (The transportation methods should be properly selected by the user, and the seller just assist to send them to the shipment agent).

4. Under the following circumstances, the manufacturer will not provide free warranty service:

(1) When the brand, trademark, serial number, nameplate and other marks marked by the manufacturer on the product are damaged or unrecognizable;

(2) When the user fails to clear the payment according to the "Sales Contract" signed by both parties;

(3) When the user deliberately conceals the improper use of the product during installation, wiring, operation, maintenance or other processes.

6. Basic system structure

The following schematic diagram shows the basic application of the energy storage system. It includes the following main components:

*Mains, Solar modules.

*Output load (light tube, fan, TV, computer, mobile phone charger).

You can contact with the system integrator for other accessories such as solar brackets. The energy storage system can provide emergency power supply for home, such as lamp, fans, TV, computers and mobile phone chargers.



7. Installation

7.1 Disassembling and inspection

Before installation, please check the product and its accessories carefully. Make sure all components are included without missing. The following items are included in the package:

- * Energy storage 1 SET
- * User manual 1PC
- * AC cable
- * PV cable 1PC
- * Base 1PC
- * Base bracket 1PC
- * Hanging bracket 1PC
- * Screw KM5*10mm 4PCS (To fix the hanging bracket to the base)
- * Expansion screws M6*60mm 3PCS (To install the system on the wall)
- * Screw M6*15mm 3PCS (To install the system on the wall)
- * Antenna

7.2 Installation of the energy storage system

Please confirm the following points before installation:

1PC

1PC

- * Do not install the energy storage system on the flammable materials device.
- * Install the system on the solid surface to prevent falling off.
- * Install the energy storage system at eye level to allow the LCD display to be read or operated at all times

* For proper air circulation to dissipate heat, minimum clearance of approx. 20cm to the side, and the ambient temperature should be between 0^{50} °C to ensure optimal operation.

* Install the energy storage system in a dry, cool, and well ventilated environment; Make sure this product is free from rain or wet environment to avoid short circuit or damage.

7.3 Two installation methods

7.3.1 Vertical mounting

Step 1 Install the base and base bracket (4 sets of screws with specification as KM5*10mm)





7.3.2 Wall mounted installation

Step 1 Fix the hanging bracket to the wall with 3 sets of expansion screws (M6*60mm) and 3 sets of screws (KM5*10mm). The screws must be fixed tightly to avoid falling off and hurt others.



Step 2 Place the energy storage system to hanging bracket.

Attention: When place the energy system to the hanging bracket, the suggested distance to both side is approx. 50cm to dissipate heat to avoid overheat problem.



7.4 The connection ports introduction

7.4.1 Back connection ports



1: AC input over-current reset breaker

2: AC input port

3: Reserve lithium battery balancing port (If the internal lithium battery cells get unbalanced after years' use, they can be balanced via this port with external balancer.

4: Battery breaker



The detail introduction to the button, LED indicator and ports as follows:

Code	Namo	Eunction	Function description in details	
No.	Name	runction		
		On Grid Mode	 Smart grid-connected mode (default setting) : 4 conditions must be met before the smart grid-connected mode is entered. Grid-connected power is adjusted in real time according to the solar power generation. 1: The SOC of the battery is more than 90% 2: Solar is charging 3: The grid power grid is normal and in the input range 4: Work mode switch is selected to the grid-connected mode 	
5	Work mode switch	Standby Mode	Timing grid-connection mode (can be set via APP) : can set the start time of grid-connection, grid-connection working time, grid-connection current, SOC value.	
			In this mode, can not work in off grid mode or on grid mode, but the battery will continue to be charged if there is solar energy.	
		Off Grid Mode	In this mode, the system works in off-grid mode, and the AC output port have AC power and can power some small AC loads, such as TV sets, fans, LED lights and computers. If there is solar, the battery will be charged also	

			Before turning on the power switch, the main battery switch
		Power on	must be closed. Touch the power switch, and all the indicators
			connected in advance the power will automatically turn on)
			In emergency case, the system can not work normally, can press
		Reset	the power button for more than 10 seconds, the system will
			enter to the reset status, all the indicators will self-check and
			light up again.
6	Power On/Off		If the settings are out of order in APP and need reset to factory
	Button	Depart to factory acting	settings, you can press the button for 8 times continuously, the
		Reset to factory setting	system will enter the factory restoration mode and restore the
			system default parameters.
			Press the button for 10S, the indicator will flash and the system
			will be power off. When power off the system, should meet the
		Power On/Off	following 3 conditions, otherwise can not be powered off:
		Condition 1: No Solar	
			Condition 2: No Grid power
			Condition 3: The work mode switch is in standby mode.
		1.When it is on grid mode	e and feeds power to grid, the indicator keeps light.
7	On grid indicator	2.When it is on grid mode	e and in standby status, it flashes every 3 seconds.
		3.When it is on grid mode	e and AC keeps charging, it flashes every 0.5 second.
8	Off grid indicator	The system works in off-g	grid mode, and the battery is discharging with load.
	Solar charge	1.In fast charge, it flashes	s every 0.5 second.
9	indicator	2.It will keep light in float	charge.
	malcator	3.It will not light when no	o solar charge.
10	Error code	It will be lighted in low	battery voltage, over temperature, overload protection or other
	indicator	damage.	
11	WIFI	WIFI Antenna installation	port
12.13	AC output Port	The 2 sockets have powe	r only in off grid mode
		1.Light in red color 0-25%	, 5
14	SOC	2.Light in blue color 26-5	0%
	300	3.Light in green color 51-75%	
		4.Light in white color 76-	100%

8. WiFi Setting

No.	ltem	Setting format for reference	Explanation
1	PCS Switch	1: Turn on(Default) 2: Standby	When the system is in on-grid or off-grid work model, if select as "Standby"state, the system will be in standby state and need reset the work model as "Turn On" state before the system re-start work
2	1 st Start charging Time	00: 00	Setting between 0-23 hour and 0-59 minute. For example, set as 07:30, it means that the 1 st charge period will start at 7:30

			Set between 0-11 hour and 0-59 minute. For example, the
2	1 st Charge period	00 00	setting is 01:20, it means the 1 st charging period is 1 hour
5	1 st Charge period	00: 00	and 20 minutes (if the timing mode is started, but don't
			then 1 st charge period will not work)
			Set between 20%-100% for example set as 50% it means
			the SOC of the 1 st charge period will stop working once
			charging to 50%. The SOC will be compared with the
			charging time, whichever arrives first and which stons first
			For example:
			SOC is set as 50%, while the charging time is set as 10
			minutes and the battery is only charged to 40% in 10
	Max. SOC of 1 st		minutes, the system will also stop charging after 10
4	Charge period	50%	minutes before SOC reaching to 50%.
			Another example:
			SOC is set as 50% and the charging time is set as 10 hours.
			If the battery is charged to 50% less than 5 hours, the
			system will also stop charging before reach the set time.
			(This charging here refers to the mains charging instead of
			solar charging.For solar charger, it will be automatically
			charged as long as there is solar power).
Charger curren		20.0	Set between 1-40A. For example: 20.0 means the charge
	Charger current of 1 st Charge period		current of 1 st charging period is 20A. (This charging here
5			refers to the mains charging instead of solar charging.For
			solar charger, it will be automatically charged as long as
			Setting between $0-23$ bour and $0-59$ minute. For example
6	2 nd Start charging	00.00	set as $11:00$ it means that the 2^{nd} charge period will start
Ŭ	Time	00.00	at 11:00.
			Set between 0-11 hour and 0-59 minute. For example, the
	2 nd Charge period		setting is 00:20, it means the 2 nd charging period is 0 hour
7		00: 00	and 20 minutes (if the timing mode is started, but don't
			want it charge, change the charge period to 00:00 directly,
			then 2 nd charge period will not work)
			Set between 20%-100%; for example, set as 70% it means
			the SOC of the 2 nd charge period will stop working once
			charging to 70%. The SOC will be compared with the
			charging time, whichever arrives first and which stops first.
			For example:
_	Max. SOC of 2 nd	700/	SOC is set as 70%, while the charging time is set as 10
8	Charge period	/0%	minutes and the pattery is only charged to 40% in 10
			minutes, the system will also stop charging after 10
			Another example:
			SOC is set as 70% and the charging time is set as 10 hours
			If the battery is charged to 70% less than 10 hours the
			system will also stop charging before reach the set time
8	Max. SOC of 2 nd Charge period	70%	 charging to 70%. The SOC will be compared with the charging time, whichever arrives first and which stops first. For example: SOC is set as 70%, while the charging time is set as 10 minutes and the battery is only charged to 40% in 10 minutes, the system will also stop charging after 10 minutes before SOC reaching to 70%. Another example: SOC is set as 70% and the charging time is set as 10 hours. If the battery is charged to 70% less than 10 hours, the system will also stop charging before reach the set time.

			(This charging here refers to the mains charging instead of
			solar charging.For solar charger,it will be automatically
			charged as long as there is solar power).
			Set between 1-40A. For example: 10.0 means the charge
			current of 2 nd charging period is 10A. (This charging here
9	Charger current of	10.0	refers to the mains charging instead of solar charging.For
	2 nd Charge period		solar charger, it will be automatically charged as long as
			there is solar power).
			Setting between 0-23 hour and 0-59 minute. For example,
	1 st Start discharging		set as 08:00, it means the system will discharge battery
10	Time	00: 00	power to the grid (feed to grid) from 08:00 in 1 st
			discharging period.
			Set between 0-11 hour and 0-59 minute. For example, the
			setting is 03:20, it means the 1 st discharging period is 3
11	1 st discharge period	00: 00	hour and 20 minutes (if the timing mode is started, but
			don't want it discharge, change the discharge period to
			00:00 directly, then 1 st discharge period will not work)
			Set between 20%-100%;for example,set as 50% it means
			the system will stop discharge battery power to the grid
			(feed to grid) once the battery SOC reaches to 50% in the
			1 st discharge period. The SOC will be compared with the
			discharge time, whichever arrives first and it stops first. For
			example:
			SOC is set as 50%, while the discharging(feeding to grid)
			time is set as 10 minutes. When battery SOC discharges to
12	Mini. SOC of 1 st	500/	60%, but the discharge time already reach to 10 minutes,it
12	discharge period	50%	will stop discharging(feeding to grid) also.
			Another example:
			SOC is set as 50% and the discharging time is set as 10
			hours. If the battery is discharged to 50% less than 10
			hours, the system will also stop discharging to grid before
			reach the set time.
			(This discharging/feeding to grid has nothing to do with
			solar power.For solar charger, it will be automatically
			charged as long as there is solar power).
			Set between 1-20A. For example: 20.0 means the charge
	Discharge current of		current of 1 st discharging period to grid is 20A. (This
13	1 st discharge period	20.0	discharging here refers to battery power feeds to grid.For
			example, if it set as 20A, the battery power feeds to grid is:
			26V*20A=520).
			Setting between 0-23 hour and 0-59 minute. For example,
14	2 nd Start discharging	00.00.	set as 12:00, it means the system will discharge battery
_ _	Time		power to the grid (feed to grid) from 12:00 in 2 nd
			discharging period.
			Set between 0-11 hour and 0-59 minute. For example, the
15	2 nd discharge period	00: 00:	setting is 04:00, it means the 2 nd discharging period is 4
			hour(if the timing mode is started, but don't want it

			discharge, change the discharge period to 00:00 directly,	
16	Discharge current of 2 nd discharge period.	30%	Set between 20%-100%;for example,set as 30% it means the system will stop discharge battery power to the grid (feed to grid) once the battery SOC reaches to 30% in the 2 nd discharge period. The SOC will be compared with the discharge time, whichever arrives first and it stops first. For example: SOC is set as 30%, while the discharging(feeding to grid) time is set as 10 minutes. When battery SOC discharges to 50%, but the discharge time already reach to 10 minutes,it will stop discharging(feeding to grid) also. Another example: SOC is set as 30% and the discharging time is set as 10 hours. If the battery is discharged to 30% less than 10 hours,the system will also stop discharging to grid before reach the set time. (This discharging/feeding to grid has nothing to do with solar power.For solar charger,it will be automatically charged as long as there is solar power).	
17	Discharge current of 2 nd discharge period	20.0	Set between 1-20A. For example: 20.0 means the charge current of 2 nd discharging period to grid is 20A. (This discharging here refers to battery power feeds to grid.For example, if it set as 20A, the battery power feeds to grid is: 26V*20A=520).	
18	Year/Month/Day/Hou	2022-12-14	Set based on the current time according to the format	
19	Function Switch	1:Smart Mode (Default) 2:Timing Mode	 Intelligent grid-tied mode, this mode is recommended first to ensure that the battery is fully charged; Smart grid-tied mode (default setting): Four conditions need to be met to enter the smart grid-tied mode, and the grid-tied power is adjusted in real time according to the solar power generation. Battery SOC is more than 90% With solar charging The grid power is normal and the voltage is within the input range The mode switch is selected in grid-tied mode Timed grid-tied mode: work according to the set start time, duration, SOC, and current 	
When ye	When you set the parameters in the APP and find that the settings are messed up, you need to restore the factory			
settings	, you can press the ON/O	FF button for 8 times,	the system will restore the factory settings, and return to	

the default set

9. System Wire Connection

9.1 Disassemble the wiring cover (use a screwdriver to remove the 4 screws on the wiring cover)



Screw

9.2. The wiring connection of solar panel with energy storage system.

Caution: Do not reverse connect the positive and negative poles of solar panel. Be careful of electric shock.

9.2.1 Place all connection wires at the back side of the energy storage system

9.2.2 Adopts PV cables. Make sure all wires are fixed properly and tightly to avoid heating caused by loose or poor contact.



9.3. The wiring connection of AC input with energy storage system.

9.3.1. Before do AC input wire connecting, make sure disconnect all breaker to ensure personal safety.

9.3.2. Connect the AC cable attached in the package to the AC input port of energy system, Make sure all wires are fixed properly and tightly to avoid heating caused by loose or poor contact.

9.3.3 Place all connection wires at the back side of the energy storage system



9.4. The wiring connection of AC output with energy storage system.

9.4.1. Before do AC input wire connecting, make sure disconnect all breaker to ensure personal safety.



9.5. The wiring connection of AC output with energy storage system.

9.5.1. Fix the attached antenna to the energy storage system



10. Switching Operation Steps

- 10.1. Double check if all wires are connected correctly and tightly.
- 10.2. After double confirmation, turn on the battery breaker.



10.3. Press the power switch, all the LED indicators will be lighted one by one, and then the system can works.



10.4 Select the switch to the grid-tied mode or the off-grid mode according to the actual situation. After select the work mode, the corresponding mode indicator will be lighted after 30 seconds, and the system will start working at the same time. If it is the off-grid mode, the AC The output socket will have AC output power.



Work mode switch. The upper side is grid-tied mode, the middle side is standby mode, and the bottom side is off-grid mode.

10.5 Connect with solar panel, the solar charging indicator will be lighted after waiting for about 1 minute,

10.6 Connect with the grid power (if the system meets the conditions of intelligent grid-tied mode, the system will run automatically).

10.7 If the grid power fails or is abnormal, it needs work as off-grid mode, can connect small household loads to the AC output socket (running in off-grid mode).

10.8 Turning off steps are reversed.

11. Solar panel selection

Before select the proper solar panel, the following parameters will be considered:

1) . The Voc of solar panel can not exceed the system's max PV Voc .

2) . The Voc of solar panel should be in the allowable range.

Item	ESS-1KW
Max PV Voltage (Voc)	150dc
MPPT Voltage Range	36Vdc-150Vdc

Take 400W solar panel for example, the recommend solar panel for ESS 1KW energy storage system is as follows:

Power Output (Pmax)	370W	
Voltage at Pmax (Vmpp)	34.4V	
Current at Pmax (Impp)	10.89A	1pc or 2pcs or 3pcs in series connection
Open-circuit Voltage (Voc)	41.6V	
Short-circuit Current (Isc)	11.45A	

12. Trouble Shooting.

ltem	Problems	Possible Reasons
	Hardware failure	The possible reason: The output is overloaded, or the output load is short-circuited, or the battery is low-voltage protected, or the inverter is damaged. Can try to restart it to check if it works normally.
PCS Warning	PCS Over heated	The load is too heavy or the system is installed in somewhere with high temperature and bad ventilation
	AC voltage failure	The grid power is abnormal
	Batter voltage failure	The battery voltage is too low or the battery is in low voltage protection
	The communication of PCS with main control system	The main control system failed to communicate with PCS
	Battery voltage is low	No battery power, need be charged
	Solar panel is over-current	Connect too much solar panel
MPPT Solar Charger Failure	PV input is over-voltage	Too much panel in series connection, and the PV input voltage exceeds 150Vdc. Check if the solar panel connection and qty are correct.
	Controller is over temperature	The solar panel power exceeds the max PV input power, or the solar panel is installed in somewhere with high temperature and poor ventilation
	The LiFePO4 cell is over-voltage protection	The internal cell is over charged. Just disconnect charging, and discharge the battery with the load
	The LiFePO4 cell is low-voltage protection	No power in the battery. Need be charged in time or some LiFePO4 cell is damaged.
	The LiFePO4 pack is over-voltage protection	The battery is over charged, just discharge the battery with the load.
	The LiFePO4 pack is low-voltage protection	No battery power, need be charged in time
	Over temperature	The set charge current is too big, or the product is installed in
	protection in charging	somewhere with high temperature and poor ventilation
Lithium Battery Protection	Low temperature protection in charging	The ambient temperature is too low to charge
	Over temperature	Too much load or the product is installed in somewhere with high
	protection in discharging	temperature and poor ventilation
	Low temperature protection in discharging	The ambient temperature is too low to discharge
	Over-current protection In charging	The charging current setting is too high
	Over-current protection In discharging	Too much load
	Short circuit protection	The load is too heavy or the battery is short-circuited or the internal BMS is damaged

13. Technical Parameters.

	Model no.	ESS-1KW
Ι	Storage information	
1	Normal Battery Voltage(Vdc)	25.6VDC
2	Low Battery Warning Voltage	SOC 20%
3	Low Battery Protection Voltage	SOC 20%
4	Over Protection Voltage	29.2VDC
5	Battery type	LiFePO4
6	Cell brand	CATL
7	The capacity of each cell	3.2V 20AH
8	Cell QTY	24PCS
9	Normal Capacity (25℃ 0.2C) (WH)	1536wh
10	Cells Cycle life (25 $^\circ C$, 0.2C, 80%	≥2000cycles&25 °C
10	SOH)	≥1500cycles&45 °C
II	Grid input Parameters	
1	Max. Power Feed to Grid	600W Max.
2	AC Input Current	0-40A(Adjustable)
3	AC Input Range	90-265VAC
4	AC Input Frequency Range	50HZ ±3HZ
5	тны	3%
6	Rectification efficiency	90% Max.
ш	Off Grid Output Parameters	
1	Continuous AC Output Power	1000W
2	Output peak power (W)	If the load \ge 1100W, shut off after 1 minute; If the load \ge 2000W, shut off after 200ms
3	Ac Output Voltage	220VAC
4	Power factor	1.0
5	Output waveform	Pure sine wave
6	Output frequency	50HZ
7	Inverter Efficiency	90% max.
IV	Solar charge controller data	
1	Туре	МРРТ
2	Rated battery voltage	25.2V

3	Charging current	30A max
4	Equalizing charging voltage	29.2V
5	Floating charge voltage	27.6V
6	Overcharge protection	29.4V
7	PV input voltage range	36-150VDC
8	PV input power	1200W max.
9	PV charging power	800W max.
10	Conversion efficiency	96%max
11	PV charging power	1 String
v	Display	
1	LED Display	
2	Remote WIFI APP supports Android the system working mode: such as	and Iphone (through the APP, you can check the working parameters and set off-grid mode, grid-tied mode) and other functions
VI	Protection Functions	
7.1	IP Level	IP21
7.2	Protection	Overcharge protection, Over-discharge protection, Over-current protection, Short-circuit protection, Over-temperature protection, Anti-Islanding
		Protection
VII	Environment	Protection
VII 9.1	Environment The noise	Protection 60dB Max (1 meter)
VII 9.1 9.2	Environment The noise Operating Temperature	Protection 60dB Max (1 meter) '0°C to 50°C
VII 9.1 9.2 9.3	Environment The noise Operating Temperature Humidity	Protection 60dB Max (1 meter) '0°C to 50°C 5% to 95% Relative Humidity(Non-condensing)
VII 9.1 9.2 9.3 9.4	Environment The noise Operating Temperature Humidity Operating Temperature	Protection 60dB Max (1 meter) '0°C to 50°C 5% to 95% Relative Humidity(Non-condensing) '-10°C to 60°C
VII 9.1 9.2 9.3 9.4 9.5	Environment The noise Operating Temperature Humidity Operating Temperature Altitude	Protection 60dB Max (1 meter) '0°C to 50°C 5% to 95% Relative Humidity(Non-condensing) '-10°C to 60°C Below 1,500 meters above sea level. When the altitude is higher than 1500 m , derating is required.
VII 9.1 9.2 9.3 9.4 9.5 VIII	Environment The noise Operating Temperature Humidity Operating Temperature Altitude SIZE	Protection 60dB Max (1 meter) '0°C to 50°C 5% to 95% Relative Humidity(Non-condensing) '-10°C to 60°C Below 1,500 meters above sea level. When the altitude is higher than 1500 m , derating is required.
VII 9.1 9.2 9.3 9.4 9.5 VIII 1	Environment The noise Operating Temperature Humidity Operating Temperature Altitude SIZE Products size (L*W*H)	Protection Frotection Frotec
VII 9.1 9.2 9.3 9.4 9.5 VIII 1 2	Environment The noise Operating Temperature Humidity Operating Temperature Altitude SIZE Products size (L*W*H) Packing size (L*W*H)	Protection 60dB Max (1 meter) '0°C to 50°C 5% to 95% Relative Humidity(Non-condensing) '-10°C to 60°C Below 1,500 meters above sea level. When the altitude is higher than 1500 m , derating is required. L794*W420*H160mm L853*W483*H253mm
VII 9.1 9.2 9.3 9.4 9.5 VIII 1 2 IX	Environment The noise Operating Temperature Humidity Operating Temperature Altitude SIZE Products size (L*W*H) Packing size (L*W*H) Weight	Protection 60dB Max (1 meter) '0°C to 50°C 5% to 95% Relative Humidity(Non-condensing) '-10°C to 60°C Below 1,500 meters above sea level. When the altitude is higher than 1500 m , derating is required. L794*W420*H160mm L853*W483*H253mm
VII 9.1 9.2 9.3 9.4 9.5 VIII 1 2 IX 1	Environment The noise Operating Temperature Humidity Operating Temperature Altitude SIZE Products size (L*W*H) Packing size (L*W*H) Weight N.W. (kgs)	Protection 60dB Max (1 meter) '0°C to 50°C 5% to 95% Relative Humidity(Non-condensing) '-10°C to 60°C Below 1,500 meters above sea level. When the altitude is higher than 1500 m , derating is required. L794*W420*H160mm L853*W483*H253mm