2011

POWERCOM
Complete Power Solution™

ONL-33 Ⅱ Series

Uninterruptable Power Supply
User Manual - English

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www.pcmups.com.tw

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1.0 Introduction

1.1 Abstract

The ONL-33 II Series UPS System uses the advanced DSP chip as the Core Processor of the system and is designed and developed especially for computers, precision instrument, semiconductors and SMT related industrial equipment. It possesses high reliability and fast transient response performance. In addition, the ONL-33 II Series is developed by focusing on people in that it emphasizes user-friendly operation, compact structure, easy maintenance and energy savings as the main design targets.

In the wake of increasing energy demand, electricity is now widely used in a variety of complicated ways, and diversified electrical appliances are flourishing as they are launched one after another. This has also led to a degradation of power quality at the user end, such as serious power distortion, stronger surges, significant phase contrast and instable voltage, etc. On account of this, the UPS is required to form an additional layer of safety protection to provide the purest power quality in the Linear ONL-33 II Series without any surge, impact wave and trapped wave, etc. Further, it provides a full-area protection mechanism for the user to avoid the change of input power that may result in the breakdown of the Primary Unit and even affect the load and lead to system failure. As such, it is incomparable to conventional UPS, which uses analog control mode.

1.2 Safety Instructions and Cautions

To ensure safety in operation, the following signs are to alert holdings of ONL-33 II series.

Do Not Touch

Danger! High Voltage

Illustrated above are the warning signs used for this System. The location tagged with "Danger! High Voltage" means that high DC voltage exists and the user must not touch it.

Under city power shutdown and battery discharge mode, do not turn off BAT switch or disconnect battery's box switch to avoid hazard.

When putting aside the UPS for a long time, it is recommended to remove battery's fuse or turn off battery's box switch or remove the battery.

UPS operates as power system requires grounding to neutralize outer case. Therefore, all loads bound or connected to the system are required to set up groundings individually.

Note: Any change or modification by the manufacturer on this user manual is not required to notify or inform users.

2.0 System Diagram
2.1 ONL-33 II Block Diagram

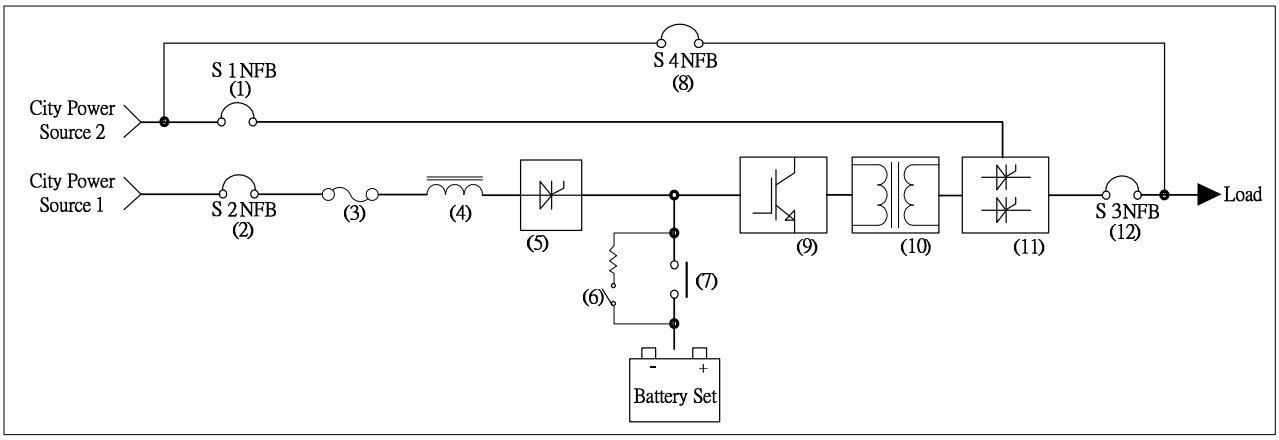


Fig. 2-1

(1) Secondary (Bypass) Power Input Switch (S1)
(2) Main Power Input Switch (S2)
(3) Input Fuse
(4) 3-phase AC Inductor
(5) Rectifier/Charger Module
(6) Battery Auxiliary Relay
(7) Battery Electromagnetic Switch
(8) Maintenance Bypass Switch (S4)
(9) Inverter Module
(10) Isolation Transformer of the Inverter
(11) Static Switch Module
(12) Output Switch (S3)

2.2 Introduction of System Operating Modules

2.2.1 Rectifier

1. The Rectifier Module uses the SCR component to transform the AC to DC voltage.
2. The CPLD and DSP redundant control theories are incorporated in the Rectifier Module to achieve more stabilized and reliable performance for the Rectifier.
3. Well-arranged over-voltage protection system.
4. DC voltage soft starting function.
5. Supports Float Charge and Equal Charge mode.
6. Equal Charge mode time settable on the display panel.
7. It can perform the battery testing without shutting down the power.
8. The manual or automatic cyclic battery testing function can be set on the display panel.
9. Charge current settable on the display panel.
10. To meet the modern requirement for distortion of input low harmonic, the Rectifier is designed with 12-pulse function. The 6-pulse rectifier is of standard specification; whereas, the 12-pulse is an optional function.

2.2.2 Inverter

1. It uses the new-generation IGBT as the power component.
2. The output section includes the Isolation Transformer.
3. The state-of-art DSP technology is applied in the Inverter Module to achieve fully digitalized control design.
4. The DSP digitalized control function is used in processing to improve analog parts aging and temperature deviation problems while reducing the number of parts in order to enhance system reliability.
5. Integrated A/D signal processing method to provide 12-bit resolution and high-speed conversion ability.
6. With a well-based heat-dissipating structure design in conjunction with temperature protection, higher reliability is achieved.

2.2.3 Static Transfer Switch

1. It uses SCR as power component with INVERTER and BYPASS static transfer switch functions are designed to adapt to any environment.
2. High-frequency technology with isolate trigger circuit applied to control SCR to achieve zero-interruption between both circuits.
3. It is completely controlled by DSP to disable, bypass and invert circuit triggering status.

2.2.4 Emergency Power off Device

During operation when system is required for immediate shutdown by external factors or any emergency reasons, users can simply activate the emergency switch-off device (shown in figure 2-2-4) by press the EPO button till it lights, indicating the UPS is completely switched off with no outputs. To turn on the system, press the EPO button again till the light switched off, Press Inverter off button on HMI display panel, click on Yes button to restart UPS.

Figure 2-2-4

Photo on the left shows when EPO button switched on that no output is generated by UPS.
Photo on the right shows when EPO button is switched off and UPS back in functional.

2.3 System Operating Modes

2.3.1 Line Mode

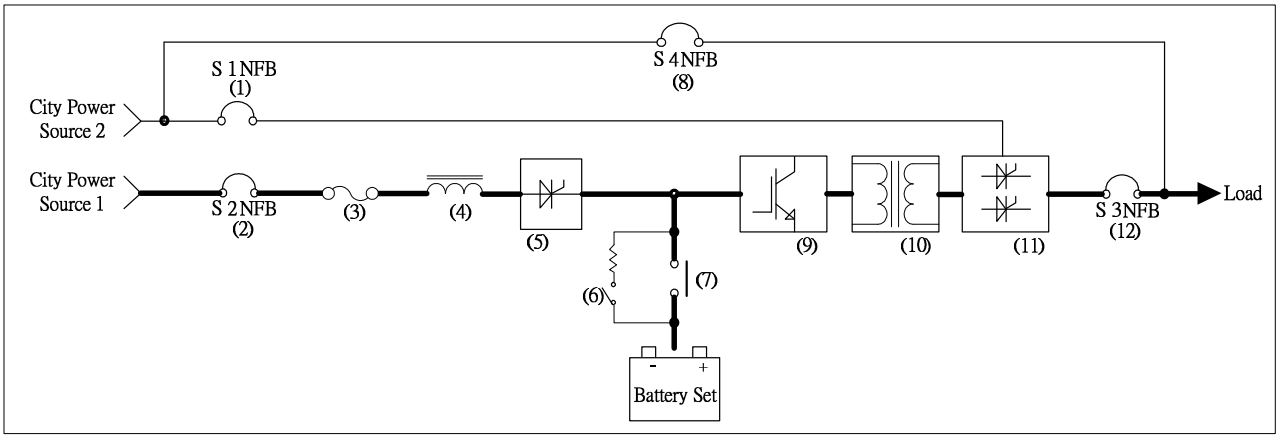


Figure 2-3-1 Line mode

Under such an operation mode, the input power will be transmitted to the Rectifier Module first, then pass through the Inverter Transformer Module, Static Switch Module and finally to the output load. In this case, the power is supplied by the INVERTER.

2.3.2 Bypass Mode

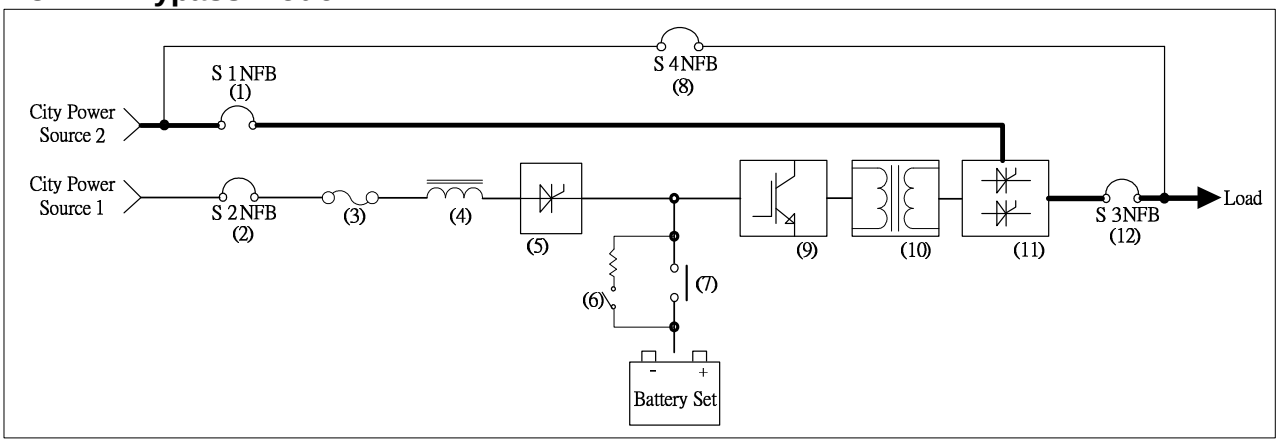


Figure 2-3-2 Bypass mode

Under such an operation mode, the input power will be transmitted to the Bypass Circuit first, then pass through the Static Switch Module and finally to the output load. In this case, the power is supplied by City Power.

2.3.3 Battery Backup Mode

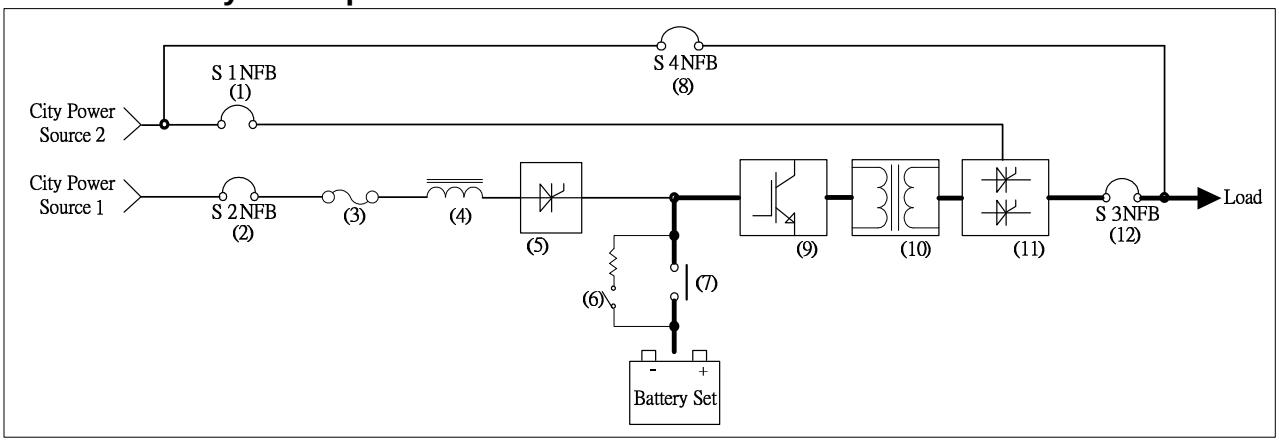


Figure 2-3-3 Battery backup mode

When such a mode is operated without city power input, the power will be transmitted to the Inverter Transformer Module first, then pass through the Static Switch Module and finally to the output load. In this case, the power is supplied by City Power. When using the battery, the power

supply time will vary depending on the number of battery cells and the load capacity. When the city power is disconnected, it is recommended to execute the data saving and normal shutdown program action.

2.3.4 Manual Bypass Mode

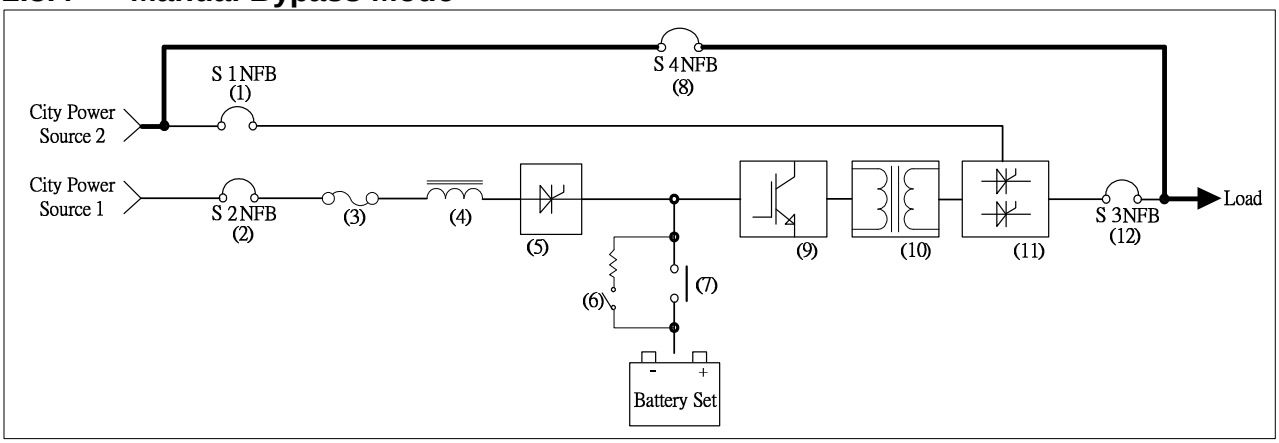


Figure 2-3-4 Manual bypass mode

Under such an operation mode, the power will be supplied from city power, pass through the Manual Service Switch Module and finally to the output load. In this case, the electrical wire of the load end is supplied by City Power. Further, such a system shall be operated by professional maintenance personnel only in order to carry out proper caring, cleaning and maintenance for the components inside the UPS.

2.3.5 Emergency Power Off Mode

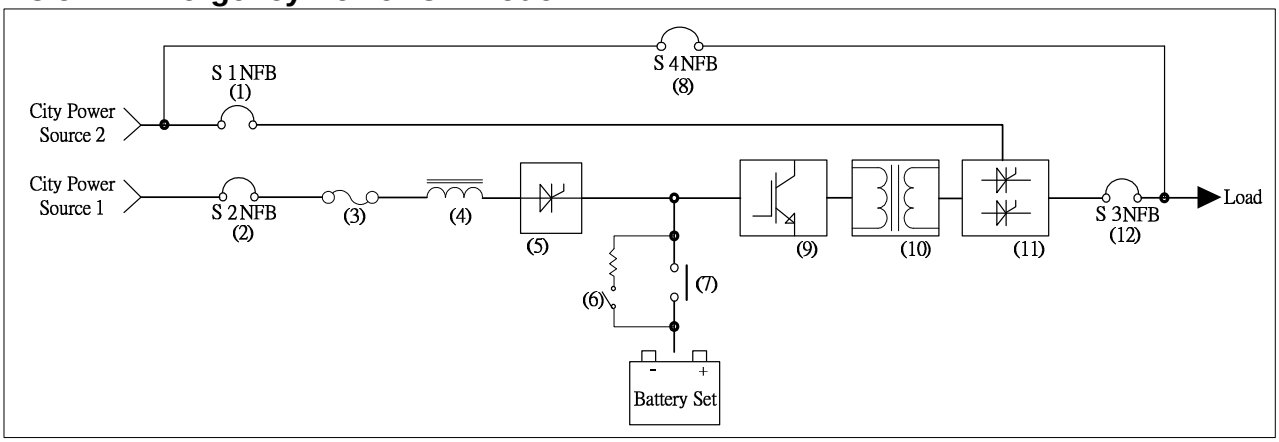


Figure 2-3-5 Emergency power off mode

If such a mode is operated without city power input, then it must be activated till after the situation is confirmed by UPS as an emergency; otherwise, the UPS will be forced to shut down upon activating such function and voltage will not be supplied accordingly.

3.0 HMI Display Panel

3.1 Introduction on Touch Panel Interface

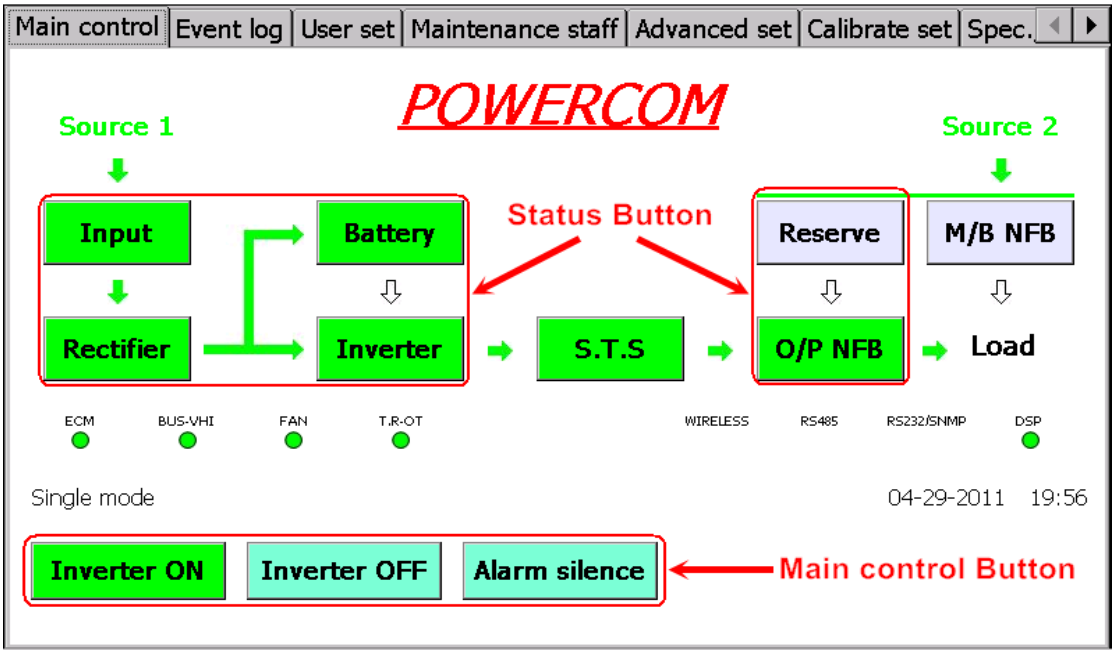


Figure 3-1

Figure above is an image of the touch panel human-machine-interface (HMI) positioned at the front side of ONL-33 II series. All system information and parameters are displayed on the panel where users can also approach for settings. The HMI display is implemented with an 800*480 pixels, colored, touch-screen, TFT LCD panel to provide users high-definition control system, whereas users can simply click on buttons on the touch panel to inquire data and information, switch on systems, set up parameters, maintenance, etc. Through a user-friendly interface, users can collect results and set up systems effectively and rapidly.

3.2 LCD Functions

The HMI panel can subject to 7 functions: Main control, Event log, User set, Maintenance staff, Advanced set, Calibrate set, Spec./Services. Each of the functionality is described in the following paragraphs.

3.2.1 Main control

The Main Control Page displays the system operation status and the flowchart contains six status keys; they are Input, Rectifier, Battery, Inverter, Bypass and Output Switch, which can be accessed by a simple clicking. Detailed information will then be displayed.

Main Control Key function:

Inverter ON: Inverter starting button

Inverter OFF: Inverter shutdown button

Alarm silence: Voice alarm stop/start button

3.2.2 Event log

The event log contain and display maximum 400 items on each of the overall 6 pages, as shown in figure 3-2-2-1. The total 2400 events stored in the system address information and occurred time of each event to assist technicians in analysis, solution, and service. Other functions included in event log are,

1. Dual displays for events comparison, shown as figure 3-2-2-2;
2. Information downloadable to external storage or portable hard drive;
3. Event removable.

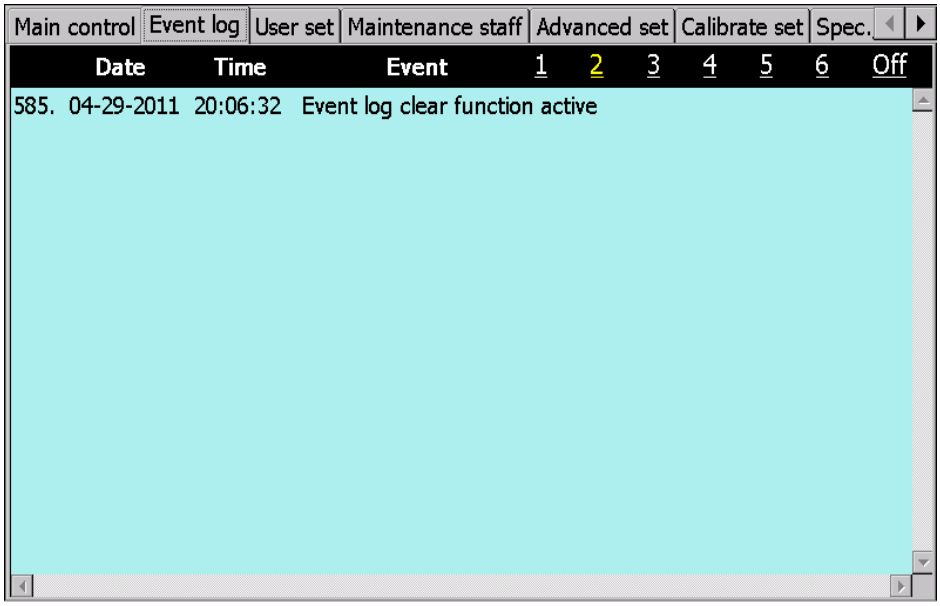


Figure 3-2-2-1

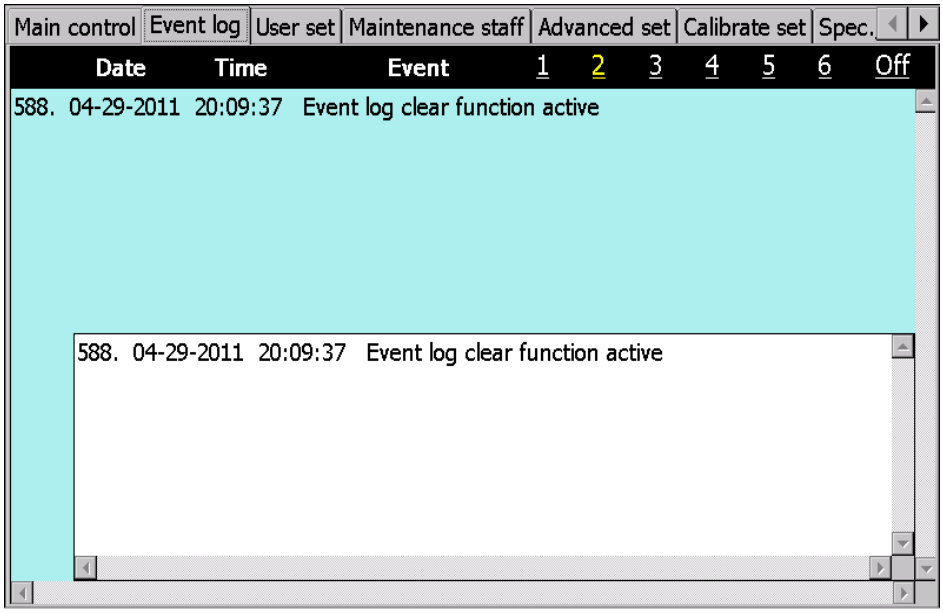


Figure 3-2-2-2

3.2.3 User set

The User set are designated to end users for interface set up, such as languages, battery test, battery charge procedure, communication, change password, programmable dry contact, logo and service information. Actual operation page is shown as per figure 3-2-3-1.

To enter User set, users must input passwords in the box. Initial password is 000000; when correct password is entered, system will display image as figure 3.2.3.2.

Click on safe after settings and then click on Enter to lock down access for security concern.

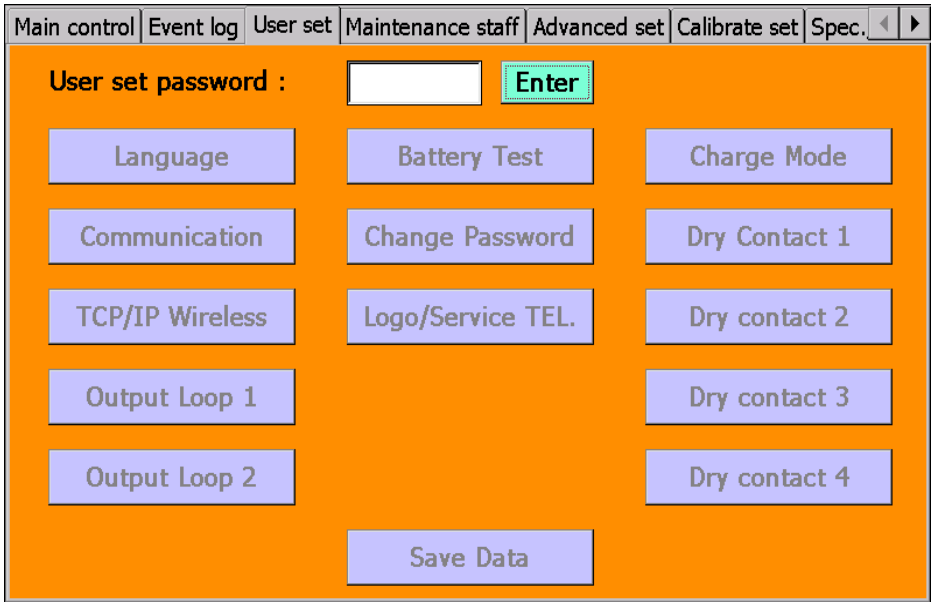


Figure 3-2-3-1

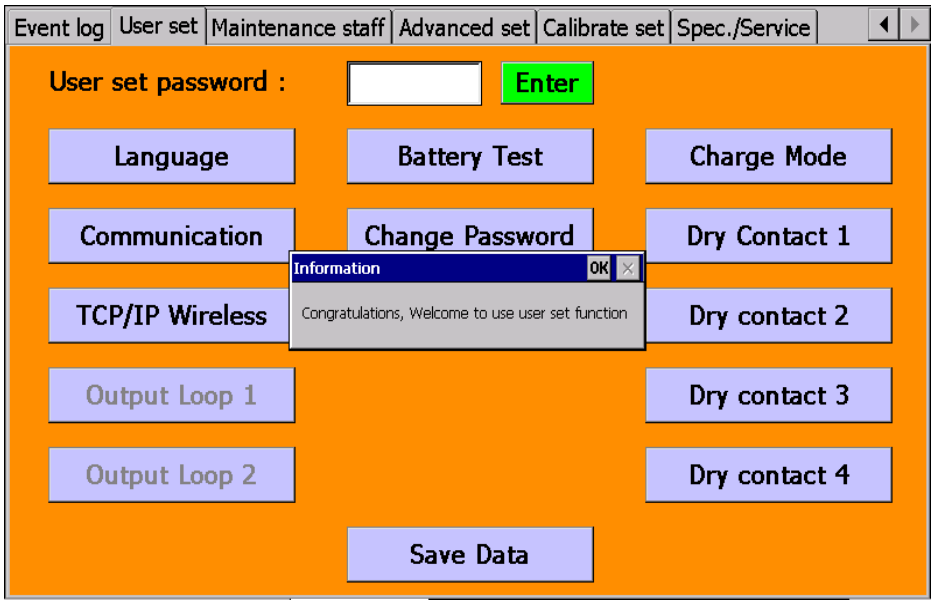


Figure 3-2-3-2

3.2.4 Maintenance staff

This function is designated for maintenance by technicians or engineers in rapidly and effectively complete issue analysis and problem solving. Image of maintenance staff is shown as figure 3-2-4-1.

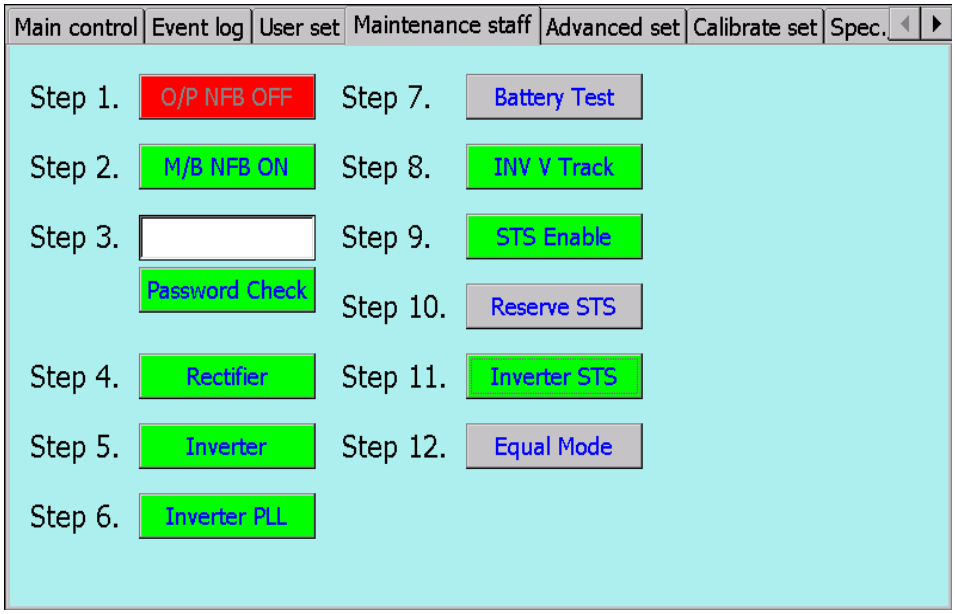


Figure 3-2-4-1

3.2.5 Advanced set

Advanced set are designated to technicians and engineers for special settings including model, input system, reserve voltage, input and output transformer, input voltage, output system, output voltage, output frequency, charge current, equal charge time, battery data, other data, event log set, other set, reload data, save data, export set file. Image of advanced set is shown as figure 3-2-5-1.

Click on password box to enter password; the password for advanced set will automatically change every year. For more information, please contact manufacturer.

Click on safe after settings and then click on Enter to lock down access for security concern.

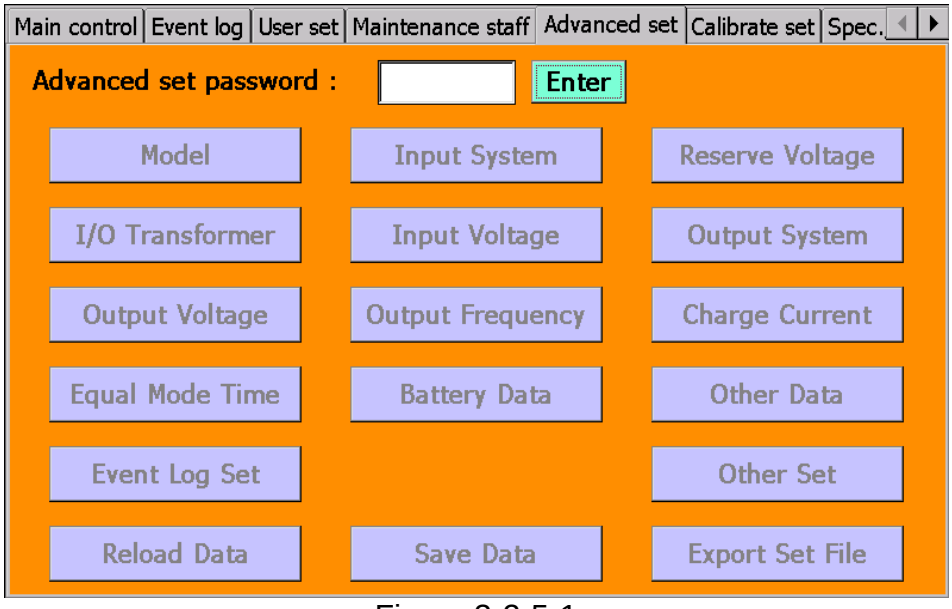


Figure 3-2-5-1

3.2.6 Calibrate set

Calibrate set is designated to technicians and engineers for key parameter settings, including all voltages, currents, temperatures, etc. Image of calibrate set is shown as figure 3.2.6.1.

To enter calibrate set, users must input passwords in the box.

Click on safe after settings and then change to advanced set page click on Enter to lock down access for security concern.

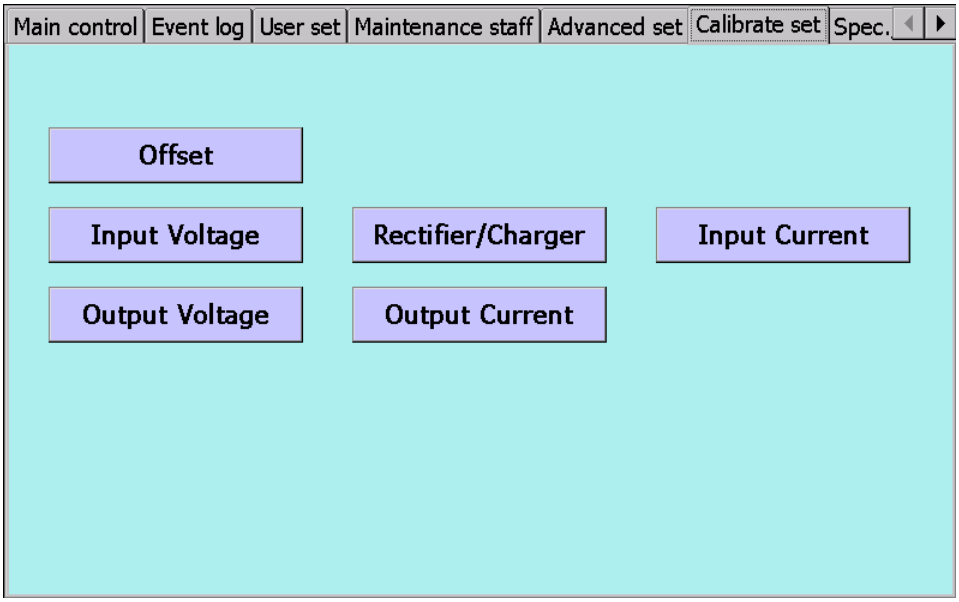


Figure 3-2-6-1

3.2.7 Spec./Service

Spec./Service are designed to identify product specification and service information. Image of Spec./Services is shown as figure 3-2-7-1.

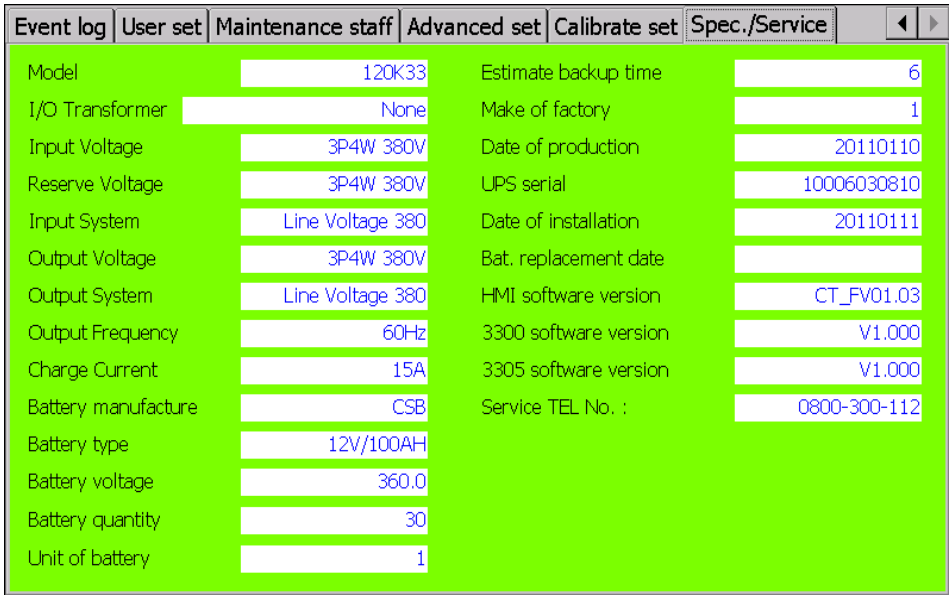


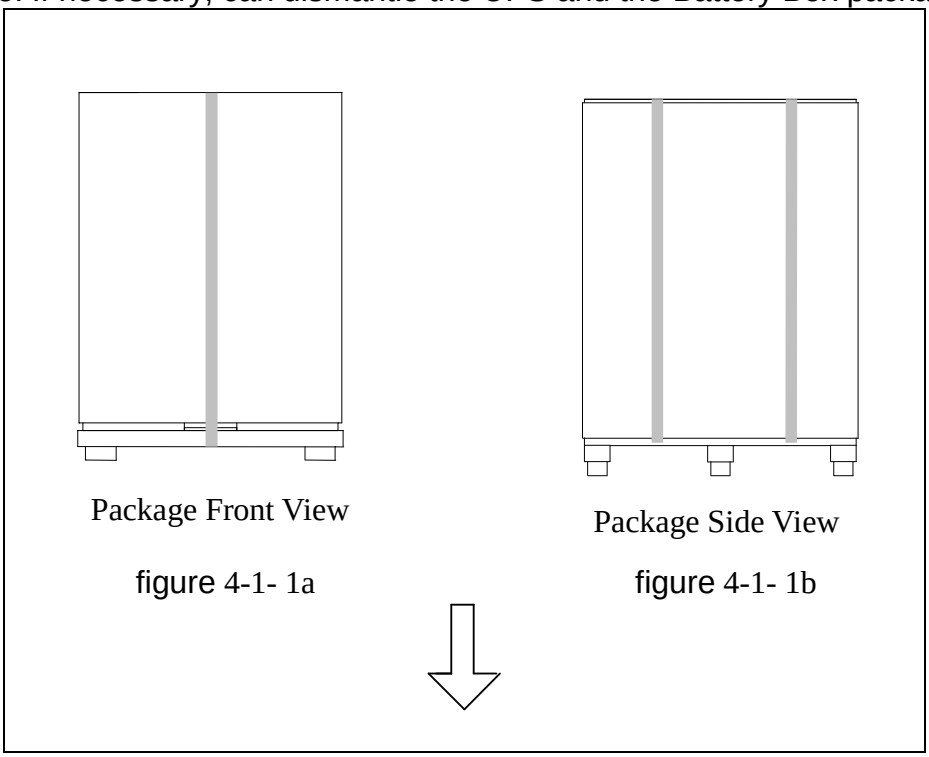
Figure 3-2-7-1

4.0 Stationing and Installation

4.1 Stationing Procedure

4.1.1 Transporting

1. Shown in figure 4-1-1a and figure 4-1-1b, a is the UPS Packaging Diagram, which differs in product SPEC and models.
2. During transportation, the system shall be arranged according to the loading direction symbol marked on the external box and should not be placed upside down or in a tipping position.
3. When transporting by truck, be sure to place the UPS or the Battery Box at the center of the front section of the vehicle to prevent the vehicle from leaning to one side as to cause danger when passing through a curve. The UPS and the Battery Box should be placed parallel to the linear side of the vehicle and must be secured with linen rope for fastening to the deck to prevent the UPS or the Battery Box from dislocating as to cause danger when the vehicle passes through a curve and runs up or down a slope, as per figure 4-1-1c.
4. During transportation, don't dismantle the package to protect the UPS or the Battery Box and to minimize the impact of external force as to damage the body.
5. During transportation, please attention waterproofing measures.
6. Do not let the machine fall or be struck to protect all components within from damage.
7. When moving the UPS from the truck to the designated position, please use the Manual Forklift or Electric Forklift because the UPS or the Battery Box weighs over 100 kg, as per figure 4-1-1d and figure 4-1-1e.
8. When moving the UPS from a lower floor to a higher one, which can use the elevator, but need to know the load bearing limit and the measurement limit of the elevator in advance. If necessary; can dismantle the UPS and the Battery Box package.



Package Front View

figure 4-1- 1a

Package Side View

figure 4-1- 1b

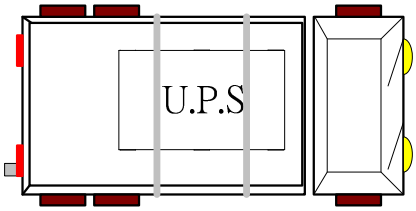


figure 4-1- 1c

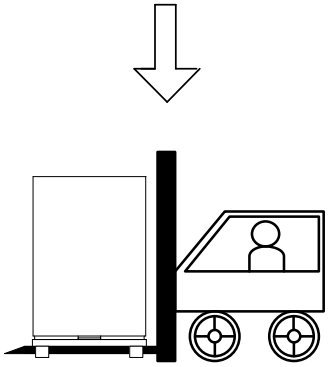


figure 4-1- 1d

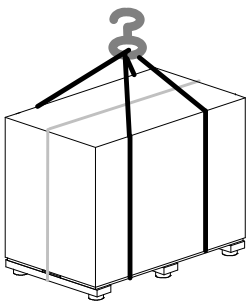


figure 4-1- 1e

4.1.2 Unpacking

(1) First, cut apart the wrapping rope and packaging materials, as per figure 4-1-2a, 4-1-2b and 4-1-2c.
(2) Remove the protection PE film by rotating it along the four sides.
(3) Remove the screws of L-shape Fixing Frame that are secured to the pallet and the UPS Base Plate as per figure 4-1-2d and figure 4-1-2e.
(4) Following the figure 4-1-2f ,place the ramp behind the UPS and then lower the machine to the ground according to the arrow direction shown.

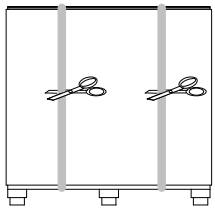


figure 4-1-2a

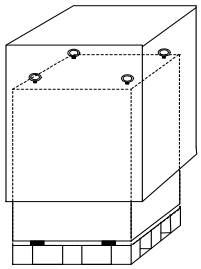


figure 4-1-2b

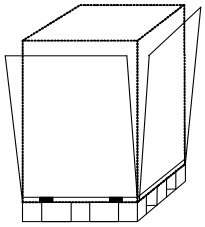


figure 4-1-2c

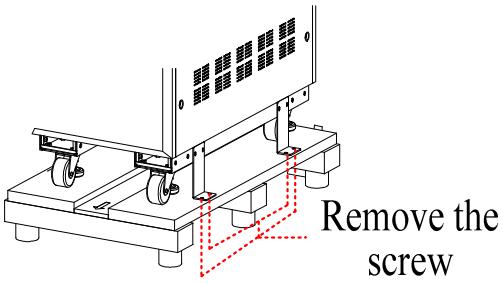


figure 4-1-2d

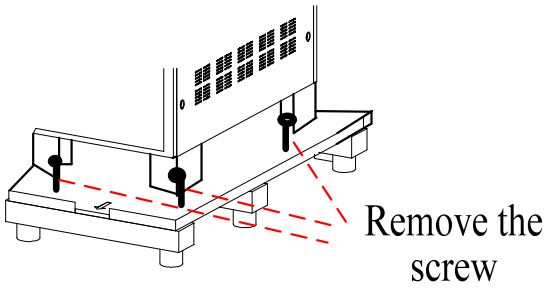


figure 4-1-2e

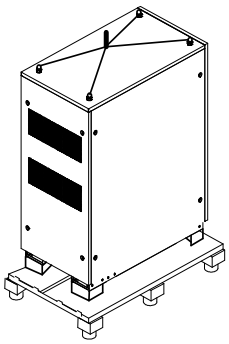


figure 4-1-2f

4.1.3 Cautions for Position and Environment

(1) The engine room environment must be kept clean and provided with an A/C System, the temperature don't exceed 0℃ ~ +28℃. If exceed ing the range, the lifespan of the UPS and Battery Box will be shortened. The appropriate operating temperature must be set within 10℃ ~ +25℃.
(2) The air inlets are set at both sides and the bottom of the UPS, and the air outlet is arranged at the backside, as per figure 4-1-3a. Do not pile any things in the air path.
(3) The system positioning, the front ,it is necessary to reserve the space when open the main entrance ,and both side can reserve 15cm distance, and back necessary to reserve 50cm at least for facilitate heat dissipation and maintenance. As per figure 4-1-3b and figure 4-1-3c.
(4) The BTU value consumed by the ONL-33 II Series is shown in Table 4-1-3d.
(5) The engine room must be provided with sufficient lighting, and an emergency fire fighting system must be installed.

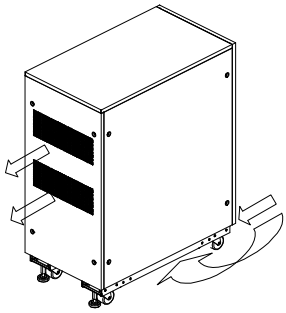


figure 4-1-a

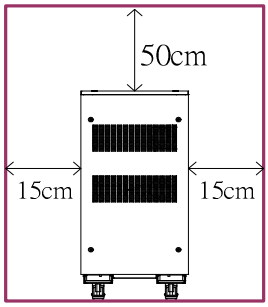


figure 4-1-3b

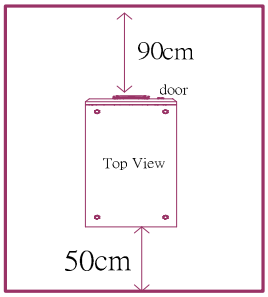


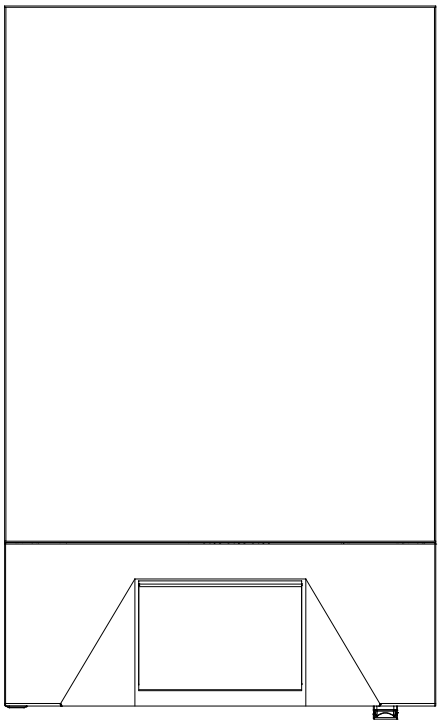
figure 4-1-3c

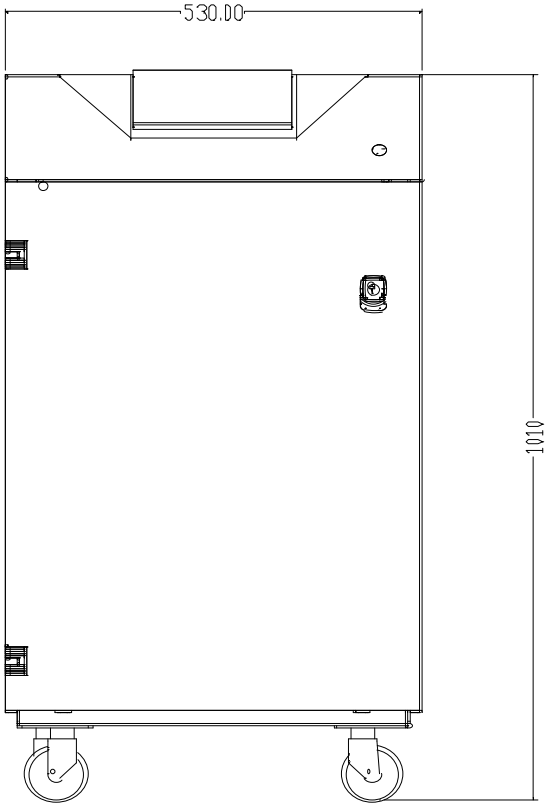
Table 4-1-3d: BTU Value for the respective Capacity

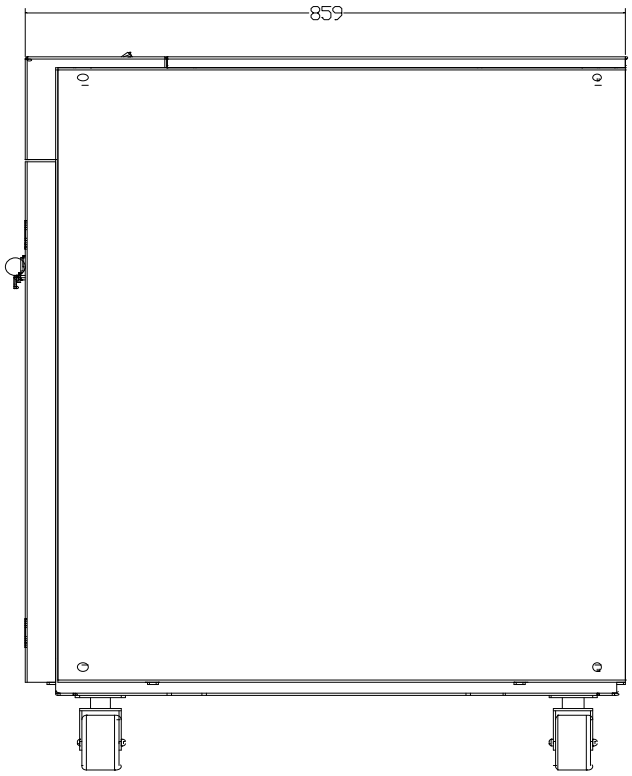
Model No.	BTU	Model No.	BTU
ONL-10K33 II	3542	**ONL-100K33 II**	24520
ONL-15K33 II	5313	**ONL-120K33 II**	29424
ONL-20K33 II	6539	**ONL-160K33 II**	34873
ONL-30K33 II	9808	**ONL-200K33 II**	43592
ONL-45K33 II	13486	**ONL-250K33 II**	51084
ONL-60K33 II	16347	**ONL-300K33 II**	57214
ONL-80K33 II	21796	**ONL-400K33 II**	70837

4.1.4 Outward appearance dimensions chart

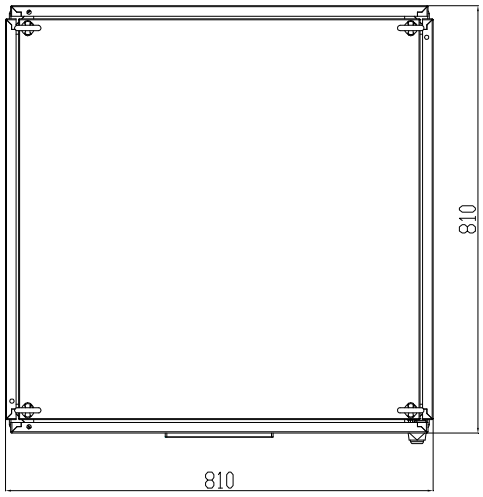
10/15/20/30K II 120V/208V & 220V/380V Model

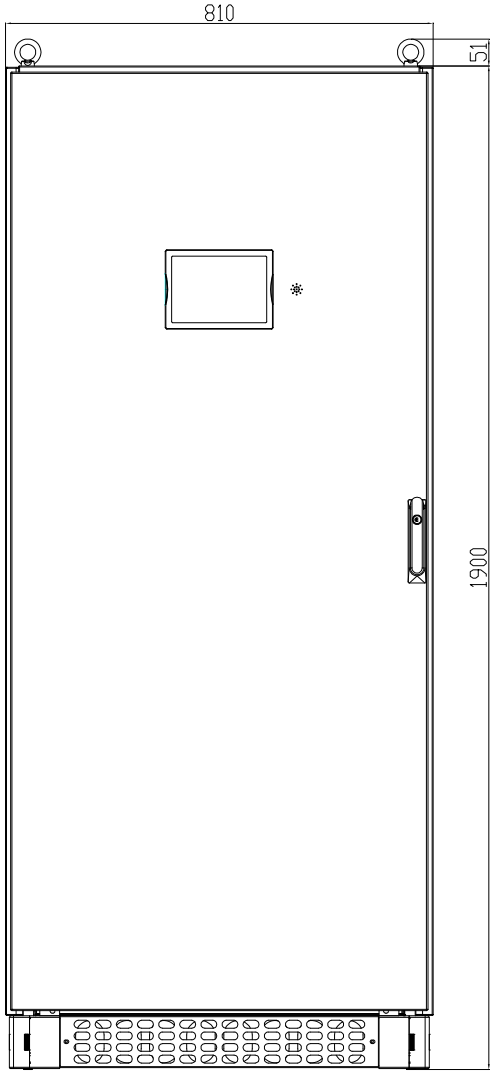


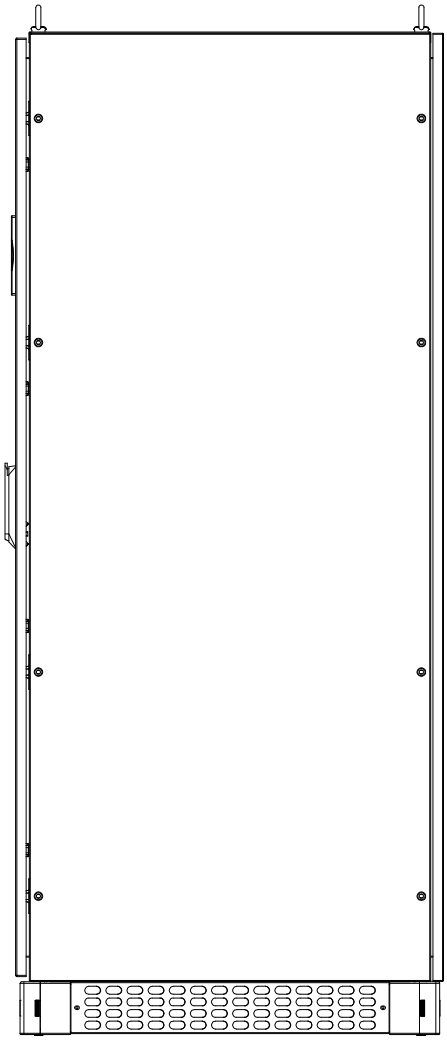




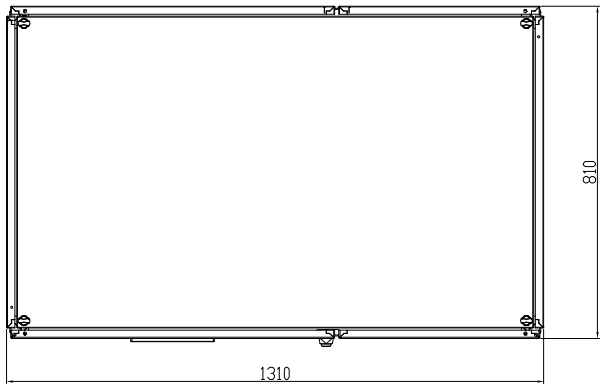
45/60K II 120V/208V & 45/60/80/100/120K II 220V/380V Model

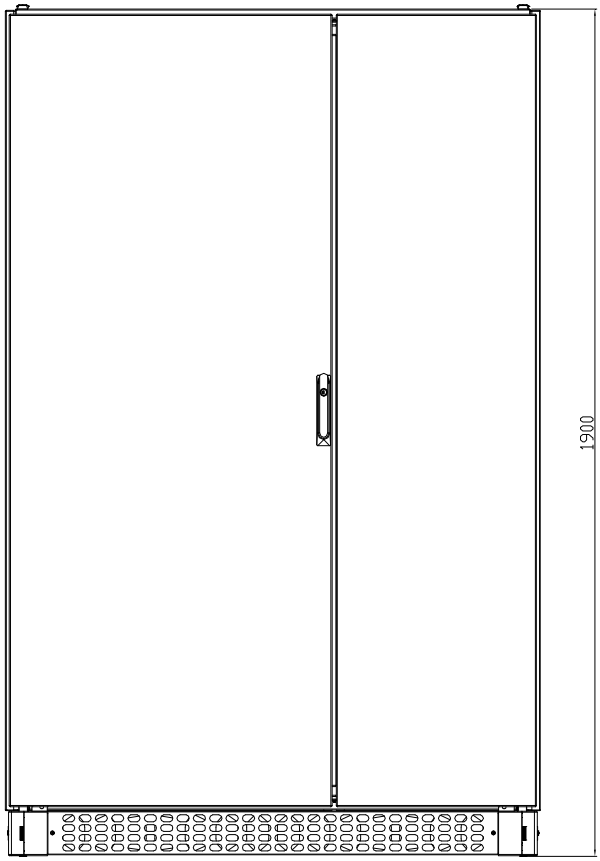


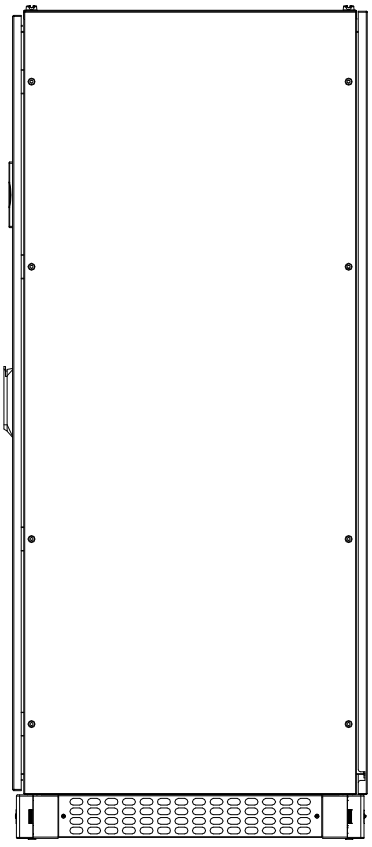




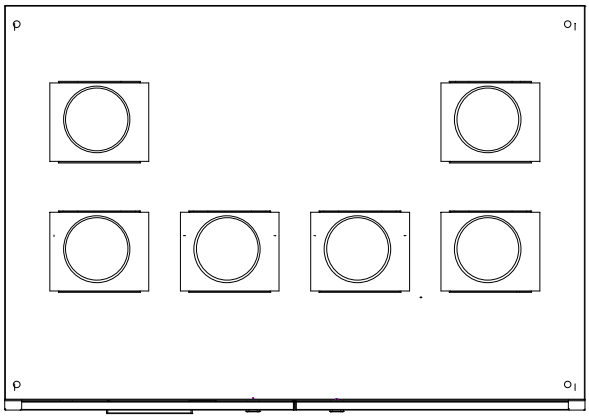
80/100/120K II 120V/208V　Model

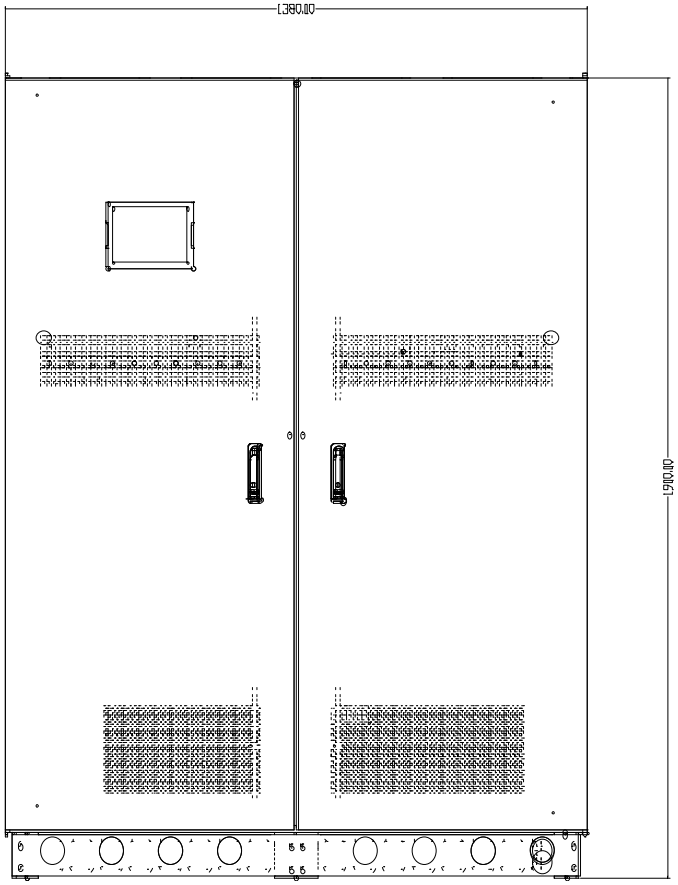


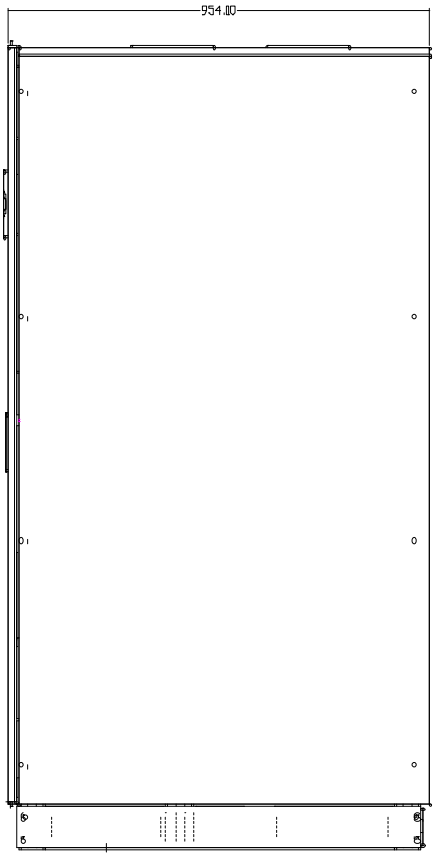




160/200/250K II 220V/380V Model







4.2 Installation Operation

4.2.1 UPS Input/Out Power Specifications

System Input Specifications: 50Hz/60Hz
3-phase/3-wire plus earth wire: 220Vac, 380Vac
3-phase/4-wire plus earth wire: 110/190Vac, 115/200Vac. 120/208Vac, 127/220Vac, 220/380Vac, 240/400Vac, 240/415Vac, 254/440Vac

System Output Specifications: 50Hz/60Hz
3-phase/4-wire plus earth wire: 110/190Vac, 115/200Vac, 120/208Vac, 127/220Vac, 220/380Vac, 230/400Vac, 240/415Vac, 254/440Vac

Refer to the input/output NFB Switch specifications in Table 4-2-1.

Table 4-2-1: Input and Output Switch Specifications and electric current data

Capacity	Voltage Spec.	Max. Input Current	Input Switch	Max. Output Current	Output Switch	Max. Neuter Current
10KVA	120/208V	47A	3P/50A	28A	3P/30A	48.5A
	220/380V	27A	3P/30A	14A	3P/15A	24.2A
15KVA	120/208V	69A	3P/75A	42A	3P/50A	72.7A
	220/380V	39A	3P/40A	23A	3P/30A	39.8A
20KVA	120/208V	90A	3P/100A	56A	3P/60A	96.9A
	220/380V	49A	3P/50A	28A	3P/30A	48.4A
30KVA	120/208V	124A	3P/125A	83A	3P/100A	143.7A
	220/380V	74A	3P/75A	45A	3P/50A	77.9A
40KVA	120/208V	176A	3P/200A	111A	3P/125A	192.2A
	220/380V	99A	3P/125A	61A	3P/75A	105.6A
45KVA	120/208V	197A	3P/200A	124A	3P/125A	214.7A
	220/380V	111A	3P/125A	68A	3P/75A	117.7A
50KVA	120/208V	218A	3P/225A	139A	3P/150A	240.7A
	220/380V	121A	3P/125A	74A	3P/75A	128.1A
60KVA	120/208V	261A	3P/300A	167A	3P/175A	289.2A
	220/380V	145A	3P/150A	91A	3P/100A	157.6A
80KVA	120/208V	343A	3P/350A	222A	3P/225A	384.5A
	220/380V	190A	3P/200A	121A	3P/125A	209.5A
100KVA	120/208V	425A	3P/500A	278A	3P/300A	481.5A
	220/380V	235A	3P/250A	149A	3P/150A	258A
120KVA	120/208V	512A	3P/600A	333A	3P/350A	576.7A
	220/380V	284A	3P/300A	182A	3P/200A	315.2A
160KVA	220/380V	378A	3P/400A	242A	3P/250A	419.1A
200KVA	220/380V	468A	3P/500A	303A	3P/350A	524.8A
250KVA	220/380V	578A	3P/600A	379A	3P/400A	656.5A

4.2.2 Wire Specifications

600V PVC Allowable Ampere of Insulated Copper Conductors
Insulated Hard-drawn copper strand wire safety current table
(60℃ insulation，under 30 degree temperature)

Wire Type	Area (mm^2)	No./mm	Current (A)	Area(mm^2)	No./mm	Current (A)
Hard-drawn copper strand wire	**3.5**	7/0.8	37	**80**	19/2.3	257
	5.5	7/1.0	49	**100**	19/2.6	298
	8	7/1.2	61	**125**	19/2.9	344
	14	7/1.6	88	**150**	37/2.3	395
	22	7/2.0	115	**200**	37/2.6	469
	30	7/2.3	139	**250**	61/2.3	556
	38	7/2.6	162	**325**	61/2.6	650
	50	19/1.8	190	**400**	61/2.9	745
	60	19/2.0	217	**500**	61/3.2	842

UL certified wire type do not fit with the temperature and safety current above mentioned, it is higher operation temperature, reality temperature and normal rated current.

4.2.3 Distribution Wiring Gauge

According to section 4.2.2, choose the applicable wire to connect with battery pack. The wiring gauge as shown in table 4-2-3-1.

Table 4-2-3-1

Capacity	Voltage	Input (mm^2)	Output (mm^2)	Neutral (mm^2)	Ground (mm^2)	Battery (mm^2)
10KVA	120/208V	8	5.5	8	2.0	14
	220/380V	5.5	3.5	3.5	1.6	3.5
15KVA	120/208V	14	8	22	5.5	22
	220/380V	8	3.5	5.5	2.0	8
20KVA	120/208V	22	14	30	5.5	30
	220/380V	14	5.5	8	2.0	14
30KVA	120/208V	38	22	50	8	50
	220/380V	22	8	22	5.5	22
40KVA	120/208V	60	38	80	8	30
	220/380V	30	14	30	8	
45KVA	120/208V	80	38	100	8	38
	220/380V	38	14	38	8	
50KVA	120/208V	100	50	125	14	50
	220/380V	38	22	38	8	
60KVA	120/208V	125	60	150	14	60
	220/380V	50	22	60	8	
80KVA	120/208V	200	100	250	14	100
	220/380V	80	38	100	14	
100KVA	120/208V	250	150	325	22	125
	220/380V	125	50	125	14	
120KVA	120/208V	325	200	400	22	150
	220/380V	150	80	150	14	
160KVA	220/380V	250	125	250	22	250
200KVA	220/380V	325	150	400	22	400
250KVA	220/380V	400	250	500	30	500

4.2.4 Definition of the connector

I/R : Input Rectifier R Phase
I/S : Input Rectifier S Phase
I/T : Input Rectifier T Phase
I/N : Input Neutral Wire
I2/R : Slave Unit Input R Phase
(In parallel system: The Slave unit output R phase connect to this place)
I2/S : Slave Unit Input S Phase
(In parallel system: The Slave unit output S phase connect to this place)
I2/T : Slave Unit Input T Phase
(In parallel system: The Slave unit output T phase connect to this place)
BP/R : Bypass Input R Phase
BP/S : Bypass Input S Phase
BP/T : Bypass Input T Phase
BP/N : Bypass Input N Phase
O/N : Output Neutral Wire
O/R : Output R Phase
O/S : Output S Phase
O/T : Output T Phase
B+ : Battery Input Positive Pole
G : Grounding
B- : Battery Input Negative Pole

4.2.5 Cautions of the Distribution

Cautions for Battery Connection:

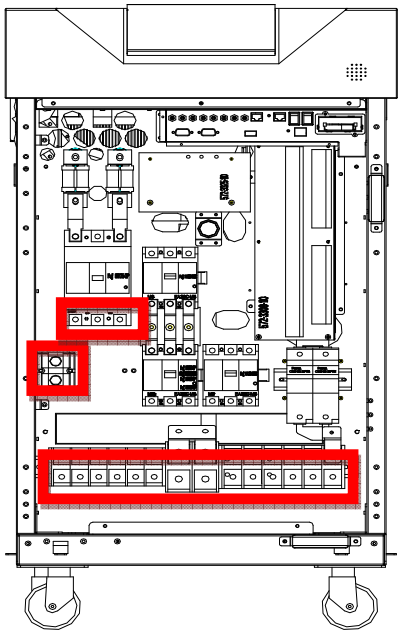
(1)For the sake of safety, all workers shall put on insulating gloves and the handle of the construction tool shall be insulated as well. Further, more than two workers shall be assigned.
(2)Before starting the dismantling work, be sure to confirm if the earth wire is properly connected and if hands and feet are dry. After disconnecting the battery circuit, start the dismantling work.
(3)When dismantling the battery, please disconnect B+ and B- at the front section and then dismantle the electrical wires connected to the respective layer to minimize construction hazards.
(4)When dismantling the copper plate or electrical wires connecting the batteries, do not touch the adjacent battery cell to avoid shorting.
(5)When loading the batteries, assemble the Battery Set of each layer first and then execute the inter-layer connection. Finally connect B+ and B- to the circuit breaker device.
(6)After loading the batteries, measure the Switch Circuit Breaker on the same side with a Current Meter to see if the voltage and the polarity are identical. If yes, start the power supply.

Finishing wire Harness after, please in the order check the following items:

(1) Whether each contact power distribution is correct
(2) Whether is the ground wire correct connect
(3)Whether each contact screws is locking
(4)Confirm the UPS and battery box all of the switch
(5)Whether output Distribution Panel and circuit is short circuit
(6)Whether battery cable positive and negative is same the crimping mach label

4.2.6 Drawing of the terminal block

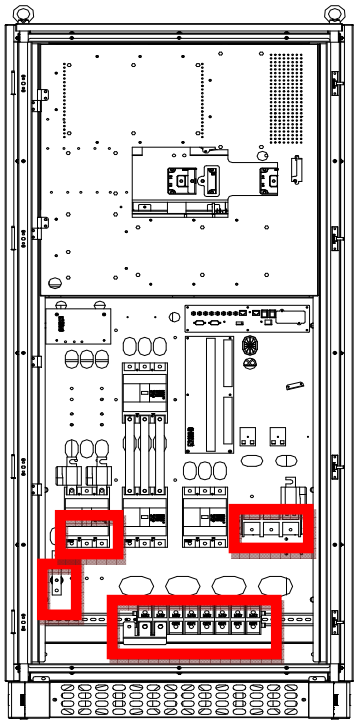
10/15/20/30K : 120V/208V
10/15/20/30K : 220V/380V



Master Unit / Slave Unit Terminal Board

I/R	**I/S**	**I/T**											
I/N													
I2/R	**I2/S**	**I2/T**	**BP/R**	**BP/S**	**BP/T**	**BP/N**	**O/N**	**O/R**	**O/S**	**O/T**	**B+**	**G**	**B-**

45/60K : 120V/208V
45/60/80/100/120K : 220V/380V



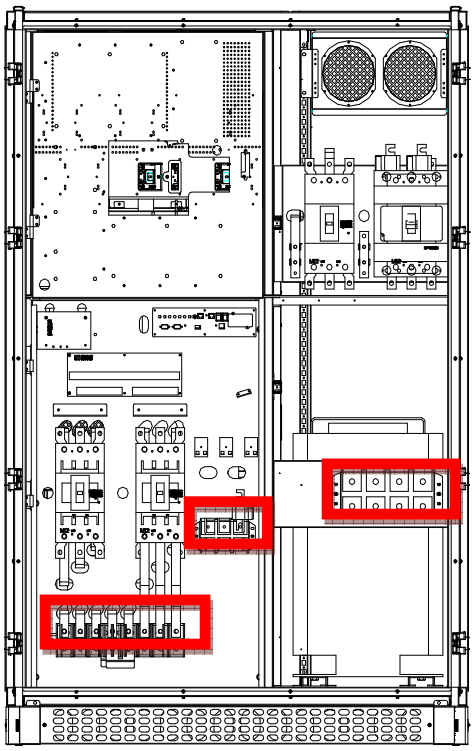
Master Unit Terminal Board

I/R	**I/S**	**I/T**						**B+**	**G**	**B-**
I/N										
I2/R	**I2/S**	**I2/T**	**BP/R**	**BP/S**	**BP/T**	**BP/N**	**O/N**	**O/R**	**O/S**	**O/T**

Slave Unit Terminal Board

I/R	**I/S**	**I/T**				**B+**	**G**	**B-**
I/N								
I2/N	**BP/N**	**O/N**	**BP/R**	**BP/S**	**BP/T**	**O/R**	**O/S**	**O/T**

80/100/120K : 120V/208V



Slave Unit Terminal Board

								I/R	I/S	I/T	I/N
					B+	G	B-				
BP/R	BP/S	BP/T	BP/N	O/N	O/R	O/S	O/T				

5.0 Operation Procedure

5.1 Starting Operation Procedure

5.1.1 Initial Starting Power Supply Operation Procedure

(1) Name and function of each switch:

BAT switch: For battery on.
SPS switch: For switch power board on.
S1 switch: For secondary power source.
S2 switch: For main Power source.
S3 switch: For output on.
S4 switch: For maintenance.

(2) Input Phase Sequence Test:

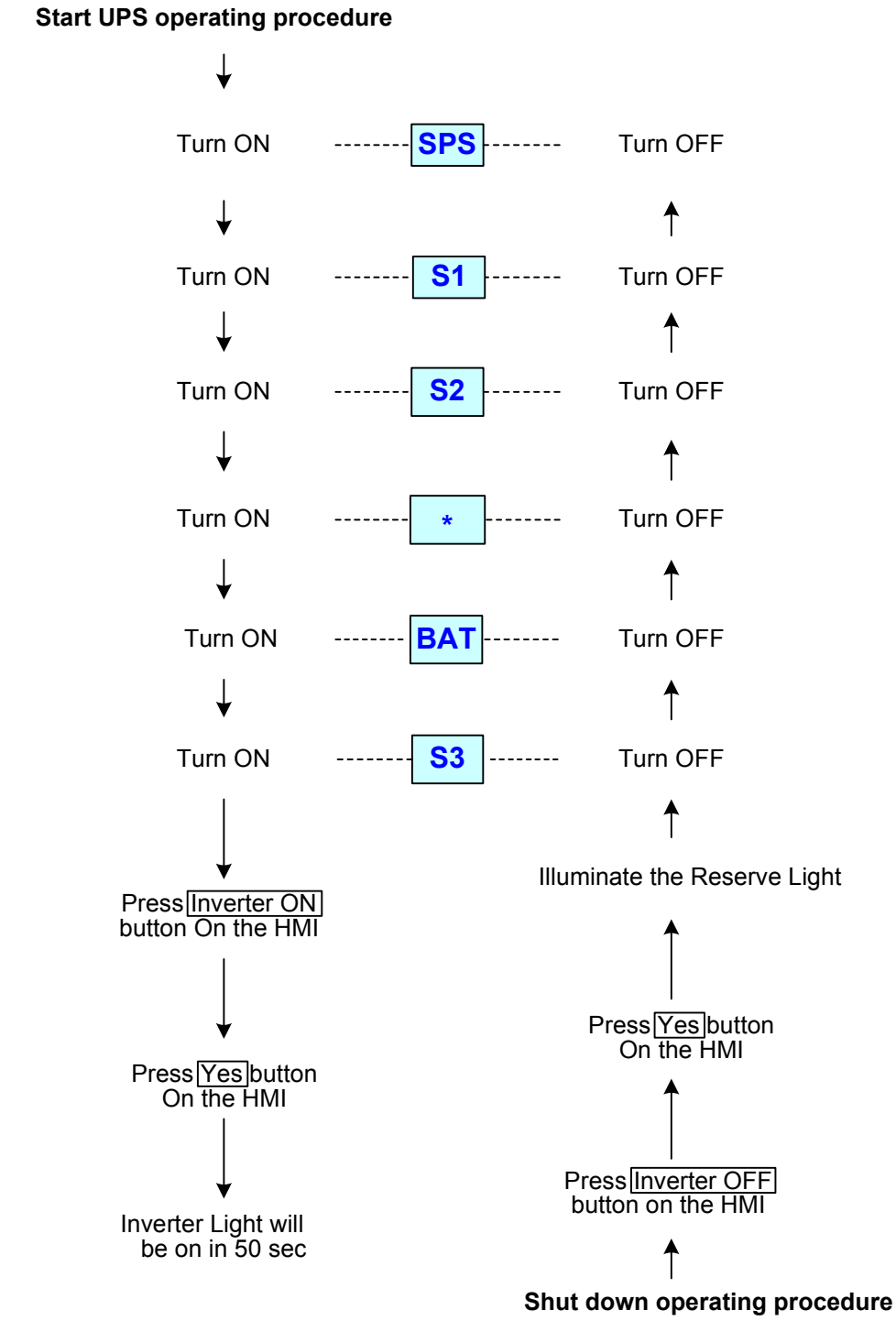
First, turn on the switch of the Distribution Panel and supply power to the Input and Bypass Terminal block. Test the voltage of each point to see if it meets the specifications of the UPS, and then measure the input phase sequence with the 3-phase Sequence Tester. If correct, proceed to the next step of machine operation. If the phase sequence is reversed, disconnect the external power. Exchange the S and T wires of the input end and supply the external power again, and then measure the sequence of 3 phases. If correct, proceed to the next step of machine operation.

(3) Initial UPS Starting Steps:

First, confirm that the load power wires from the UPS are entirely removed or that the Load Power Switch is disconnected, and then turn on, in order, Battery box switch(Fuse) turn on. BAT switch on. SPS switch on. waiting HMI program completed. Turn on S1 / S2 / S3 switch. then press Inverter ON button on HMI panel. when confirm dialog to pop, please choose and press YES button. the system will be transferred to the Inverter through the Bypass after three minutes and it shows the window to inform the output by the Inverter supply measure the output of Terminal block O/R、O/S、O/T with a Meter to judge if the voltage frequency is correct and whether measure the voltage of Terminal block B+ and B- is correct. As per the Operation Flowchart shown in figure 5-1-1

5-1-2 General Starting Operation Procedure

If general shutoff is made and it is required to restart the system following the initial starting, execute such a step according to the following operation procedure: Press the Inverter ON button and the panel will pop out confirm dialog. At this time, press YES button. After 3 minutes have elapsed, the UPS output power is supplied by the inverter.



(＊) 10KVA~30KVA needs put DC Fuse in Fuse holder

figure 5-1-1 System On/Off Process

5.2 Shutdown Operation Procedure

5.2.1 General Shutdown Operation Procedure

When it is required to shut down the machine during the system normal operating process, this procedure can be used to execute the shutdown. The operation procedure will be as follows: Press the Inverter OFF button and the panel will pop out confirm dialog. At this time, press YES button. At this time, the Inverter indicator will extinguish and the Bypass indicator will illuminate for the UPS to supply power to the bypass.

5.2.2 Entire Machine Shutdown Operation Procedure

Please execute the operation according to the system shutdown procedure shown in figure 5-1-1.

5.3 Maintenance Operation Procedure

5.3.1 Maintenance Operation Procedure

As per the operation process shown in figure 5-3.

5.3.2 Battery Replacing 10K33 / 15K33 Step

(1) Enter maintenance bypass condition.
Set the UPS to maintenance bypass condition according to figure 5-3.

(2) Replace battery.
Dismantle the back cover and battery fix holder then disconnect battery connecting wire and then replace it with a new battery. Restore the connection according to the original wiring method between battery cells.

(4) Restart the UPS.
Restore the UPS operation to Inverter according to figure 5-3.

5.4 Maintenance Reset Operation Procedure

As per the operation process shown in figure 5-3.

5.5 Emergency Shutdown Device Operation Procedure

The EPO (Emergency Power Off) is a power disconnection device used under emergency conditions. The UPS will disconnect this switch when the machine encounters special problems that render the system uncontrollable or upon encountering external hazards. After turning off this switch, it will initiate the following actions:

1. The Inverter will stop operating immediately.
2. The S.T.S (Static Transfer Switch) will stop operating immediately and no output will be executed by the system.
3. The Charging System of the Rectifier will stop acting immediately.

The HMI display will log the EPO action time and restoration time while maintaining smooth communication for the UPS. When restoring the EPO, shut off the switch. At this time, press Inverter OFF button and the panel will pop out confirm dialog. At this time, press YES button and the UPS output will be transferred to Bypass. About 3 minutes afterwards, the UPS System will transfer the Bypass to Inverter to supply power.

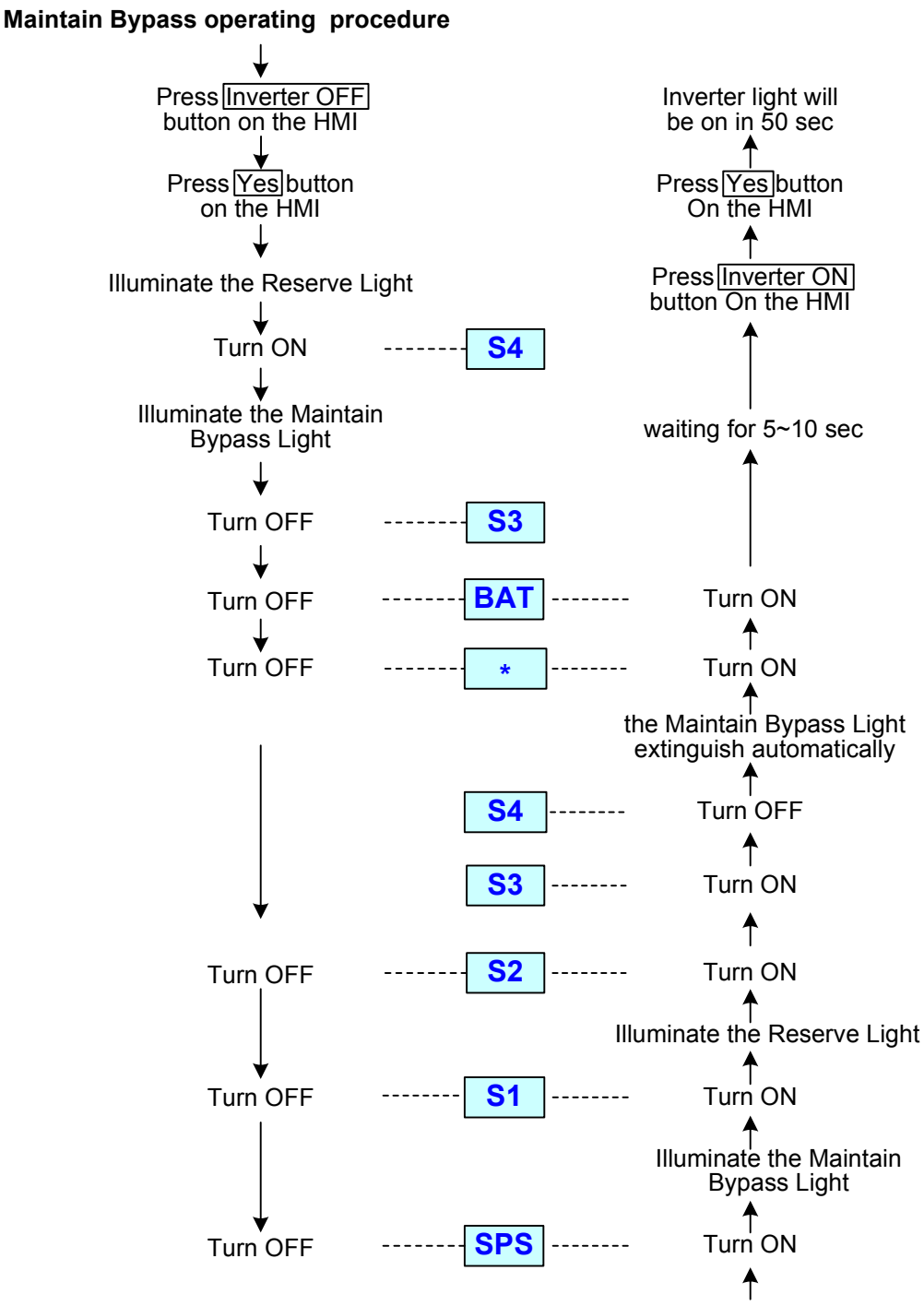


figure 5-3 Maintenance Operation Procedure Flowchart

5.6 Dry contact / Communication

(1) PCB-3308 dry contact outside view, shown in figure 5-7-1

(2) PCB-3308 to definition the functional of the dry contact board, shown in Table 5-7-2.

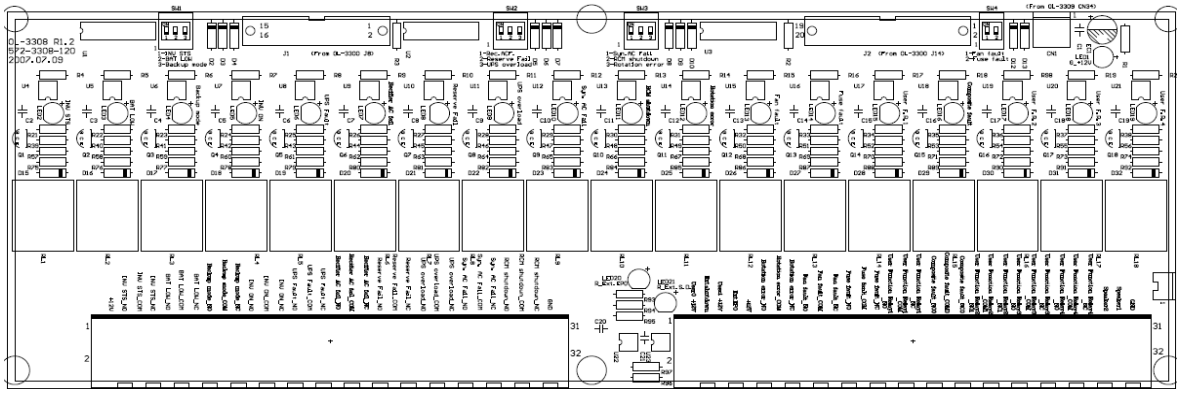


figure 5-7-1: Remote Monitoring Board Detailed Configuration

Terminal Block contact	CN2	CN3
1	+12V	USER0 +12V
2	INV STS_NO	EXT. SHUTDOWN
3	INV STS_COM	USER1 +12V
4	INV STS_NC	EXT. EPO
5	BAT LOW_NO	+12V
6	BAT LOW_COM	ROLATION ERROR_NO
7	BAT LOW_NC	ROLATION ERROR_COM
8	BACKUP MODE_NO	ROLATION ERROR_NC
9	BACKUP MODE_COM	FAN FAULT_NO
10	BACKUP MODE_NC	FAN FAULT_COM
11	INV ON_NO	FAN FAULT_NC
12	INV ON_COM	FUSE FAULT_NO
13	INV ON_NC	FUSE FAULT_COM
14	UPS FAULT_NO	FUSE FAULT_NC
15	UPS FAULT_COM	FUNCTION RELAY1_NO
16	UPS FAULT_NC	FUNCTION RELAY1_COM
17	RECIFIER AC FAIL_NO	FUNCTION RELAY1_NC
18	RECIFIER AC FAIL_COM	COMPOSITE FAULT_NO
19	RECIFIER AC FAIL_NC	COMPOSITE FAULT_COM
20	RESERVE FAIL_NO	COMPOSITE FAULT_NC
21	RESERVE FAIL_COM	FUNCTION RELAY2_NO
22	RESERVE FAIL_NC	FUNCTION RELAY2_COM
23	UPS OVERLOAD_NO	FUNCTION RELAY2_NC
24	UPS OVERLOAD_COM	FUNCTION RELAY3_NO
25	UPS OVERLOAD_NC	FUNCTION RELAY3_COM
26	SYN. AC FAIL_NO	FUNCTION RELAY3_NC
27	SYN. AC FAIL_COM	FUNCTION RELAY4_NO
28	SYN. AC FAIL_NC	FUNCTION RELAY4_COM
29	RCM SHUTDOWN_NO	FUNCTION RELAY4_NC
30	RCM SHUTDOWN_COM	SPEAKER1
31	RCM SHUTDOWN_NC	SPEAKER2
32	GND	GND

Table 5-7-2 Dry contact board signal

6.0 Maintenance and Storage Instructions

(1) Attention the engine room clean ordinarily, the machine inner clean on per half a year at least.

(2) Recharge and discharge the battery once every 3 months to mitigate the change of internal properties and extend the service life.

(3) Note the temperature and humidity of the engine room.

(4) When storing the machine, use the PE film to wrap the entire unit, complete the input/output, and confirm that all battery wires are disconnected.

(5) Completely shut down and then log on, if discovery the HMI control panel's date or time wrong, needs to change the lithium battery of inner.

7.0 ONL-33 Series Convenient Troubleshooting

Please following HMI panel to indicate that how to exclude the UPS events、status of the breakdown. Image of Troubleshooting is shown as figure 7-1.

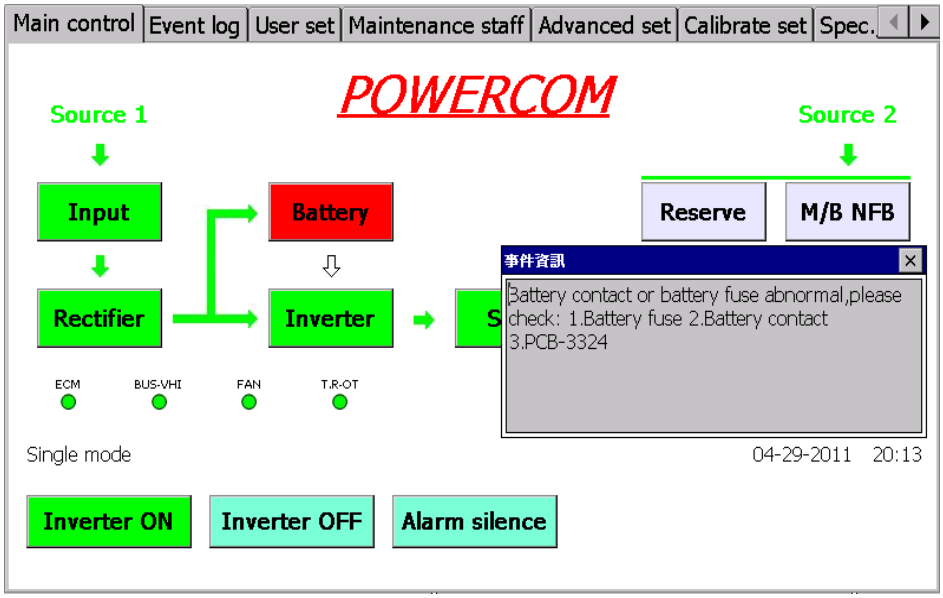


Figure. 7-1

8.0 ONL-33 II Series UPS Electrical Specifications

Model		10K33	15K33	20K33	30K33	45K33	60K33	80K33	100K33	120K33	160K33	200K33	250K33	320K~500K33
Rated Power		8KW	12KW	16KW	24KW	36KW	48KW	64KW	80KW	96KW	128KW	160KW	200KW	256K~400KW
P.F		0.8												
Input	Phase	3-phase 4-wire or 3-phase 3-wire plus earth wire												
	Voltage	10K~120K 120V/208V or 220V/380V 160K~250K 220V/380V ±20%												
	Frequency	Automatic detection: 50Hz/60Hz ±5Hz												
	Rectifier	6 pulse(standard) / 12 pulse(optional)												
	DC Voltage	10K~30K 120V/208V DC220V / 10K~120K 220V/380V DC410V									DC435V			
	Rectifier Efficiency	>97%												
Output	Phase	3-phase 4-wire or 3-phase 3-wire plus earth wire												
	Voltage	120V/208V or 220V/380V												
	Voltage Stability	±1%												
	Transient	Restore to 90% after 4 cycles												
	Overload	>100% tripped to bypass 30 minute after. ≧125% tripped to bypass 10 minute after. ≧150% tripped to bypass 1 minute after.												
	Inverter Design	IGBT design; DSP control; 20K Hz pulse modulated sinusoidal.												
	Frequency	50Hz / 60Hz												
	Frequency Stability	±0.1%												
	Phase Lock	±5Hz												
	Lock-back	±3Hz												
	Waveform	Sinusoidal												
	THD V	Linear load less than 3%												
	Efficiency	>88%		>89%		>90		>91		>92		>93%		
S.T.S	Recovery Time	Bypass to Inverter : 0ms. Inverter to Bypass : 0ms.												
	Efficiency	>99%												
Charger	Voltage	DC220V / DC410V / DC435V												
	Current	Depending on the model used, the 1.5/2.5/3/5/10/15/20/30/40/50A – Automatic current limiting												
	Time	Recharged to 90% after 100% discharge for 8 hours (depending on battery specifications).												
Whole	Battery	DC192V : 12V 16pcs DC360V : 12V 30pcs				DC360V : 12V 30pcs					DC384V : 12V 32pcs			
	Noise	50~55dBA				60~65dBA					65~70dBA			
	Working Temperature	0~40℃												
	Storage Temperature	-25℃~55℃												
	Humidity	Frost-free, 90%												
Dimension	Width(mm)	530				810					1380			1380*2 Two cabinet
	Depth(mm)	869				810					954			954
	Height(mm)	1010				1900					1800			1800
Weight	120V/208V (G.W)													
	220V/380V (G.W)				410kg		567Kg	677Kg	680Kg					