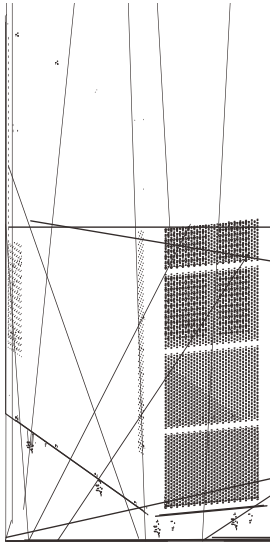
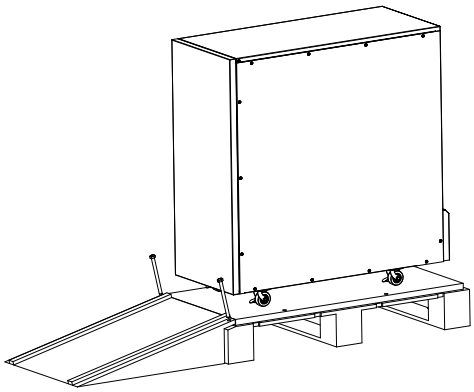
4257-2098 A

Uninterruptible Power Systems

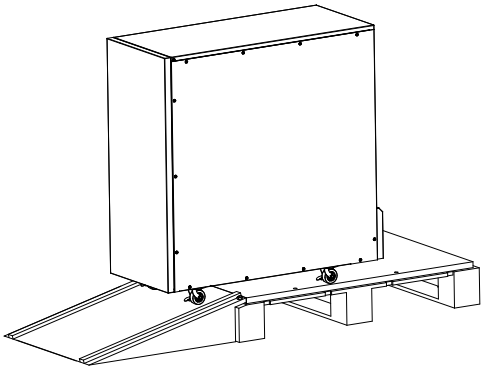
10~20kVA



Operation Manual

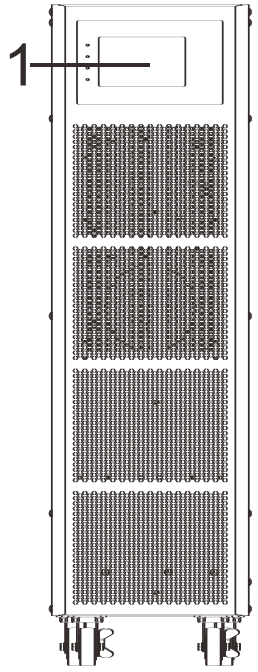


Place the incline board to the ground, use the screws unfastened from the last step to fasten the incline board with pallet.

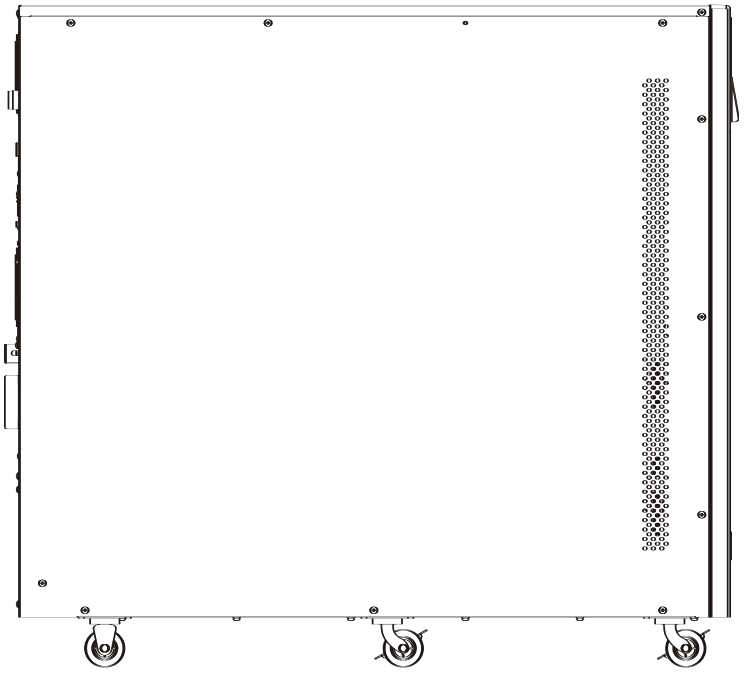


Slowly slide down the cabinet from pallet.

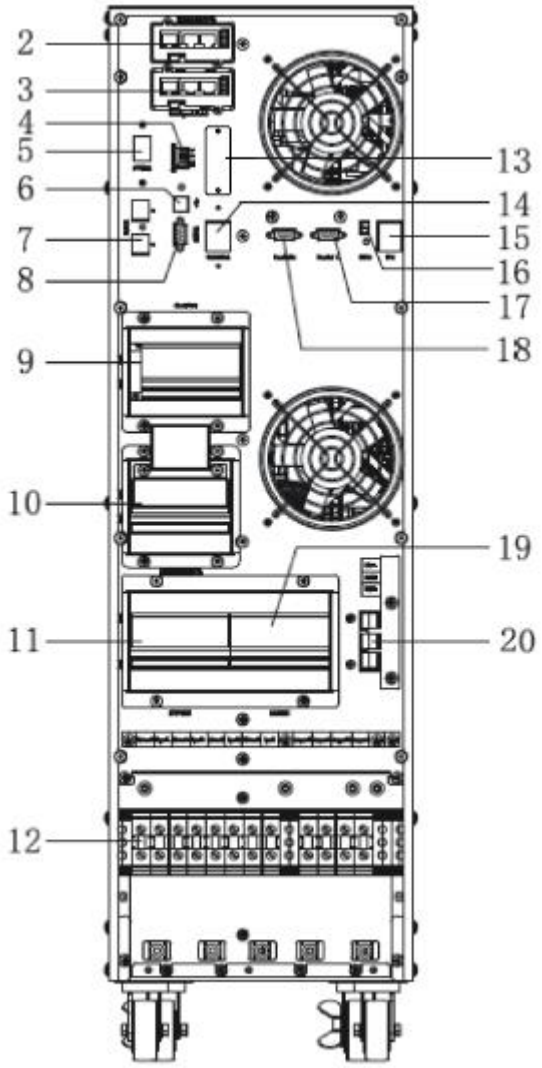
Cabinet Outlook



Front View

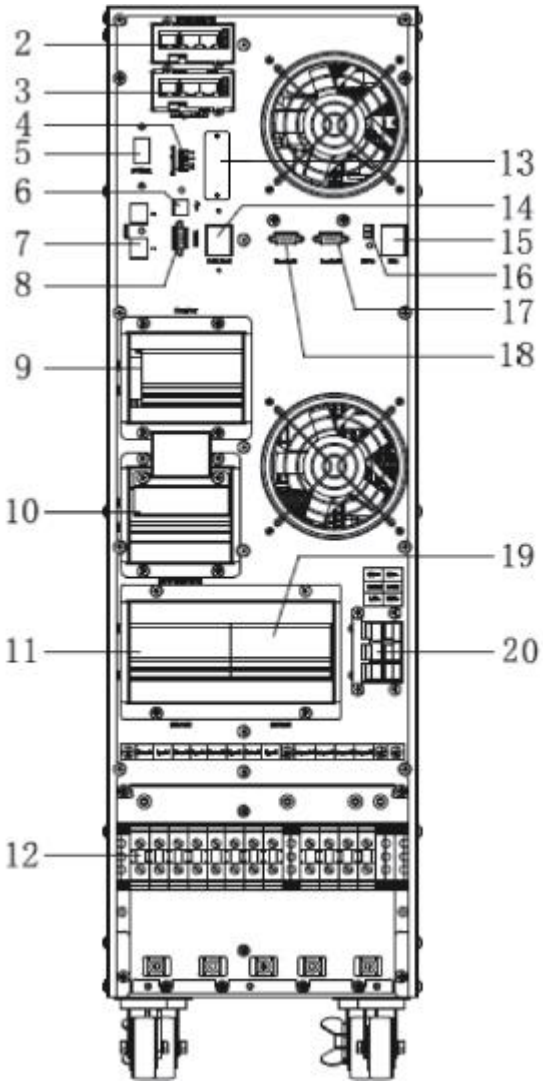


Side View



10kVA Rear View (terminal block without cover)

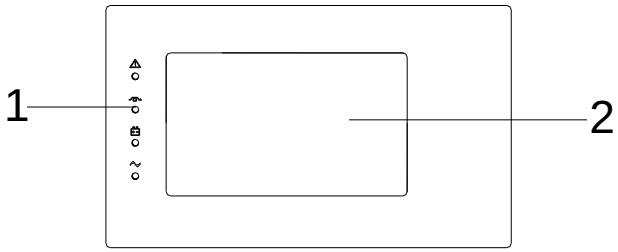
(1) LCD panel	(2) Intelligent Slot 1 (SNMP card/ Relay card)
(3) Intelligent Slot 2 (SNMP card/ Relay card)	(4) Dry contact port
(5) Power Switch	(6) USB port
(7) RS485 port	(8) RS232
(9) O/P Switch	(10) Maintenance switch & its cover
(11) Bypass Switch	(12) Terminal block for Input, output & GND
(13) EVENTS port	(14) Cold start button
(15) EPO switch	(16) REPO port
(17) Parallel port 2	(18) Parallel port 1
(19) I/P Switch	(20) Terminal block for battery



15-20kVA Rear View (terminal block without cover)

(1) LCD panel	(2) Intelligent Slot 1 (SNMP card/ Relay card)
(3) Intelligent Slot 2 (SNMP card/ Relay card)	(4) Dry contact port
(5) Power Switch	(6) USB port
(7) RS485 port	(8) RS232
(9) O/P Switch	(10) Maintenance switch & its cover
(11) Bypass Switch	(12) Terminal block for Input, output & GND
(13) EVENTS port	(14) Cold start button
(15) EPO switch	(16) REPO port
(17) Parallel port 2	(18) Parallel port 1
(19) I/P Switch	(20) Terminal block for battery

LCD control panel



LCD control panel introduction

ä1åLEDäIURP WRS WR ERWWRP ¯DODUP° å¯E\SDVV° ¯EDWWHU\° ¯

ä2åLCD display

Installation notes

·Please place the UPS in a clean, stable environment, avoid the vibration, dust, humidity, flammable gas and liquid, corrosive. To avoid from high room temperature, a system of room extractor fans is recommended to be installed. Optional air filters are available if the UPS operates in a dusty environment.

·The environment temperature around UPS should keep in a range of 0 : 40 . If the environment temperature exceeds 40 , the rated load capacity should be reduced by 12 á per 5 . The max temperature can't be higher than 50 .

·If the UPS is dismantled under low temperature, it might be in a condensing condition. The UPS can't be installed unless the internal and external of the equipment is fully dry. Otherwise, there will be in danger of electric shock.

·Batteries should be mounted in an environment where the temperature is within the required specs. Temperature is a major factor in determining battery life and capacity. In a normal installation, WKH EDWWHU\ WHPSHUDWXUH LV PDLQWDLQHG EHWZHHQ from heat sources or main air ventilation area, etc.

WARNING!

Typical battery performance data are quoted for an operating temperature EHWZHHQ r& DQG r& 2SHUDWLQJ LW DERYH WKL **battery life while operation below this range will reduce the battery capacity.**

·Should the equipment not be installed immediately it must be stored in a room so as to protect it against excessive humidity and or heat sources.

CAUTION!

An unused battery must be recharged every 6months Temporarily connecting the UPS to a suitable AC supply mains and activating it for the time required for recharging the batteries.

·The highest altitude that UPS may work normally with full load is 1500 meters. The load capacity should be reduced when this UPS is installed in place whose altitude is higher than 1500 meters, shown as the following table:

(Load coefficient equals max load in high altitude place divided by nominal power of the UPS)

Altitude(m)	1500	2000	2500	3000	3500	4000	4500	5000
Load coefficient	100%	95%	90%	85%	80%	75%	70%	65%

·The UPS cooling is depending on fan, so it should be kept in good air ventilation area. There are many ventilation holes on the front and rear, so they should not be blocked by any exotic obstacles.

External Protective Devices

For safety reasons, it is necessary to install an external circuit breaker at the input AC utility and to the battery.

External Battery

The UPS and its associated batteries are protected against the effect of over-current through a DC compatible thermo-magnetic circuit breaker located close to the battery.

UPS Output

Any external distribution board used for load distribution shall be fitted with protective devices so as to avoid the risk of UPS overload.

Over-Current Protection

A protection device shall be installed at the distribution panel of the incoming utility power, and should identify the power cables current capacity as well as the overload capacity of the system.

CAUTION!

Select a thermo-magnetic circuit-breaker with an IEC 60947-2 trip curve C (normal) for 125% of the current as listed below.

10kVA: 50A Input Circuit Breaker required.

15kVA: 63A Input Circuit Breaker required.

20kVA: 80A Input Circuit Breaker required.

Power Cables

The cable design shall comply with the voltages and currents provided in this section, and in accordance with local electrical codes.

WARNING!

UPON STARTING, PLEASE ENSURE THAT YOU ARE AWARE OF THE LOCATION AND OPERATION OF THE EXTERNAL ISOLATORS WHICH ARE CONNECTED TO THE UPS INPUT/BYPASS SUPPLY OF THE UTILITY DISTRIBUTION PANEL.

CHECK TO SEE IF THESE SUPPLIES ARE ELECTRICALLY ISOLATED, AND POST ANY NECESSARY WARNING SIGNS TO PREVENT ANY INADVERTENT OPERATION

Cable Sizes

UPS MODEL	CABLE SIZES (THHW wiring a W r &			
	AC INPUT	AC OUTPUT	DC INPUT	GROUNDING
10kVA	8 awg	8 awg	6 awg	8 awg
15kVA	6 awg	6 awg	2*6 awg	6 awg
20kVA	4 awg	4 awg	2*6 awg	4 awg

Recommended installed screw torque

	Position		
	ACINPUT	ACOUTPUT	GROUNDING
Screw type	M6	M6	M6
Recommended torque(Nm)	6.5	6.5	6.5

CAUTION!

Protective earth ground cable: connect each cabinet to an earth ground, following the shortest route possible.

WARNING!

FAILURE TO FOLLOW ADEQUATE GROUNDING PROCEDURES MAY RESULT IN ELECTROMAGNETIC INTERFERENCE OR IN HAZARDS INVOLVING ELECTRICAL SHOCK AND FIRE.

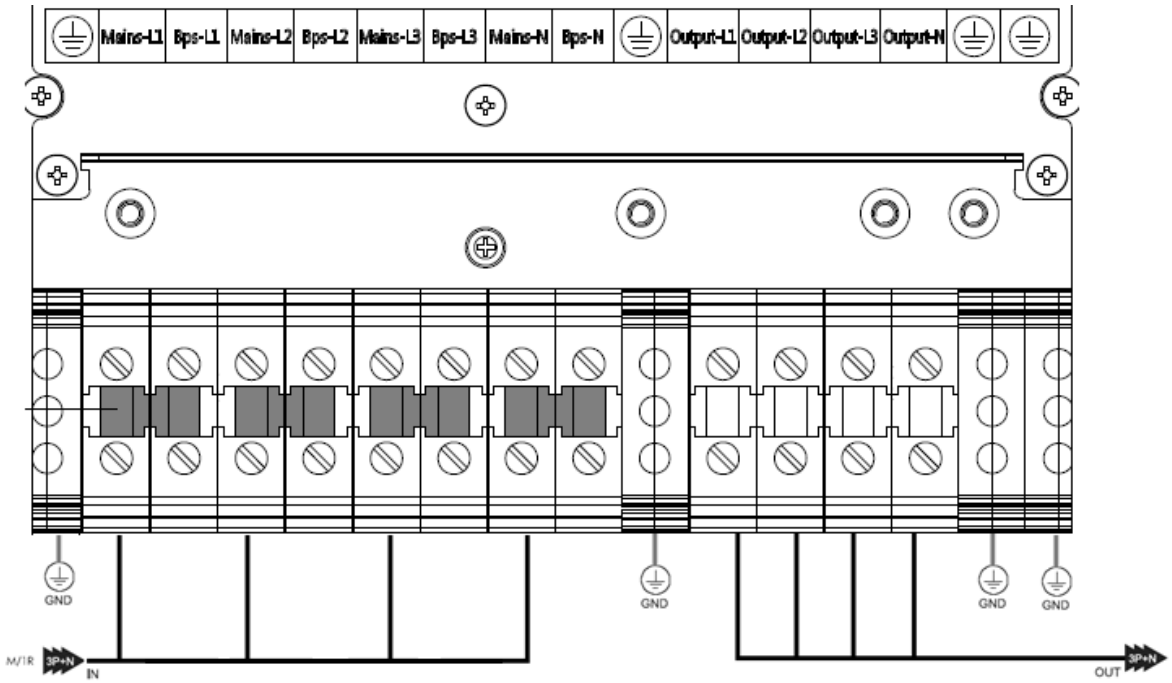
Power cable connect

Once the equipment has been finally positioned and secured, connect the power cables as described in the following procedure.

Verify the UPS is totally isolated from its external power source and also all power isolators of the UPS are open. Check to see if they are electrically isolated, and post any necessary warning signs to prevent their inadvertent operation.

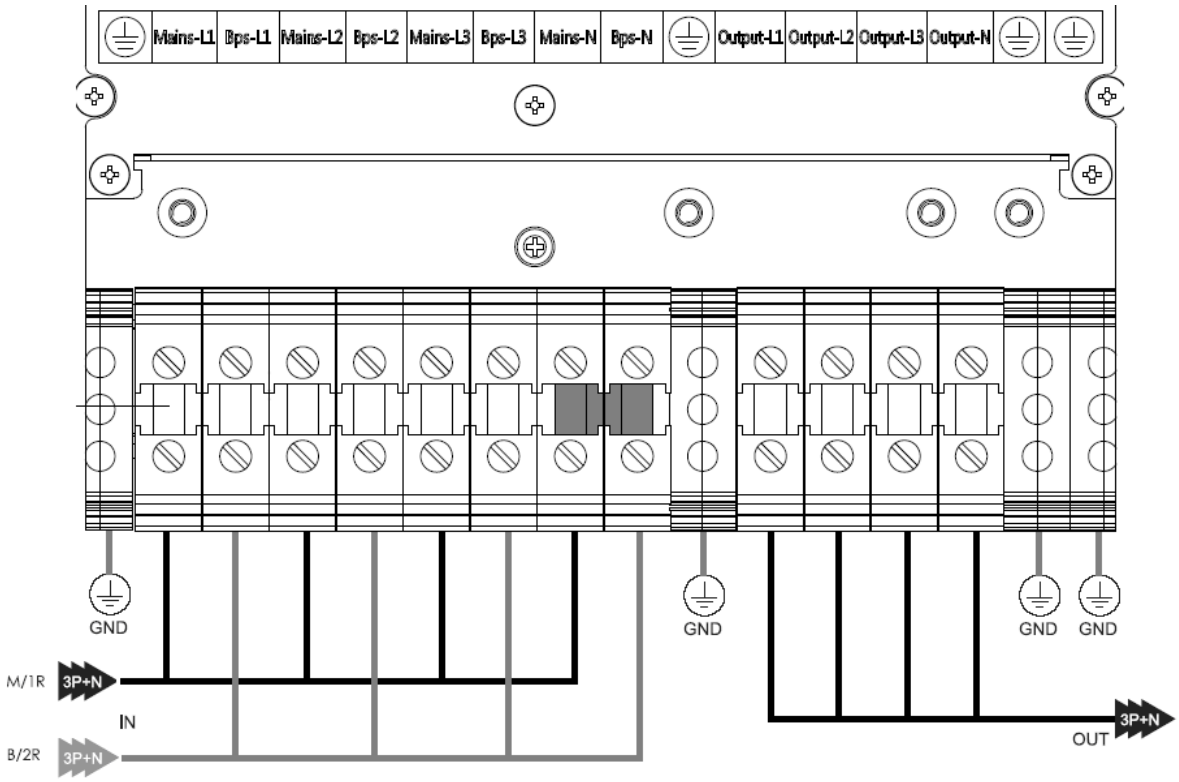
Open the UPS rear panel; Remove the cover of terminals for wiring easily.

Common input connection



M/1R Primary input Line	**IN/OUT** Input / Output
	Output-L1: Output Phase L1
Input -L1: Primary input Phase L1	**Output-L2:** Output Phase L2
Input -L2: Primary input Phase L2	**Output-L3:** Output Phase L3
Input -L3: Primary input Phase L3	**Output-N:** Output Neutral
Input-N: Input Neutral for primary and secondary input	**GND:** Grounding
	BAT+: Positive terminal of the batteries string
	BATN: Neutral terminal of the batteries string
	BAT-: Negative terminal of the batteries string

Split input connection

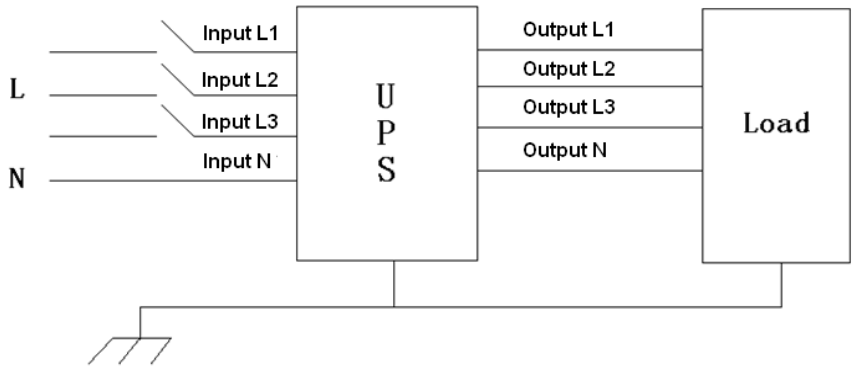


M/1R Primary input Line	**IN/OUT** Input / Output
B/2R Secondary/Bypass input line (optional)	**Output-L1:** Output Phase L1
Mains-L1: Primary input Phase L1	**Output-L2:** Output Phase L2
Mains-L2: Primary input Phase L2	**Output-L3:** Output Phase L3
Mains-L3: Primary input Phase L3	**Output-N:** Output Neutral
Input-N: Input Neutral for primary and secondary input	**GND:** Grounding
Bps-L1: Secondary input Phase L1	**BAT+:** Positive terminal of the batteries string
Bps-L2: Secondary input Phase L2	**BATN:** Neutral terminal of the batteries string
Bps-L3: Secondary input Phase L3	**BAT-:** Negative terminal of the batteries string

Warning

In the case of split bypass operation, the AC input and the AC bypass input lines have been removed. The AC input and the AC bypass supplies must be referenced to the same neutral point.

Choose appropriate power cable. ä Refer to the table above å and pay attention to the diameter of the connection terminal of the cable that should be greater than or equal to that of the connection poles;



WARNING!

If the load equipment is not ready to accept power on the arrival of the commissioning engineer then ensure that the system output cables are safely isolated at their ends

Connect the safety earth and any necessary bonding earth cables to the copper earth screw located on the floor of the equipment below the power connections. All cabinets in the UPS must be grounded properly.

CAUTION!

The earthling and neutral bonding arrangement must be in accordance with local and national codes of practice.

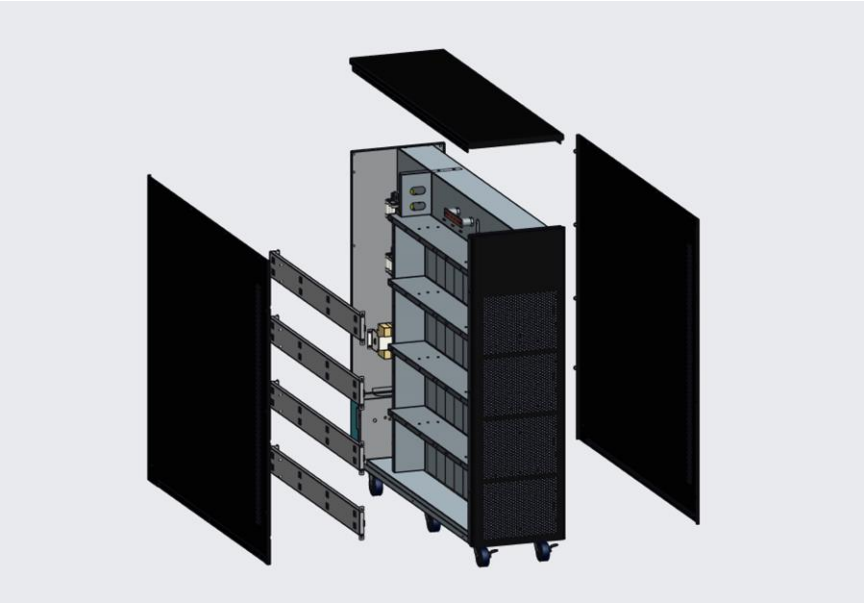
Battery Pack Connection

The specification of UPO33-(10,15,20) HF(L)AX three input three output series battery box is 250*900*868mm ä W*D*H å .The battery box with built-in battery cables, breaker, fuse and terminals can hold 80pcs of 12V/7AH or 12V/9AH batteries at most and the outpu W Y R O W D J H F D Q E H s 9 E connection. four groups of batteries are connected in parallel for use, which consist of BAT+ ì N ì BAT ¦. The following Fig.1 shows the overall chassis

The battery box installation

Remove the chassis shell

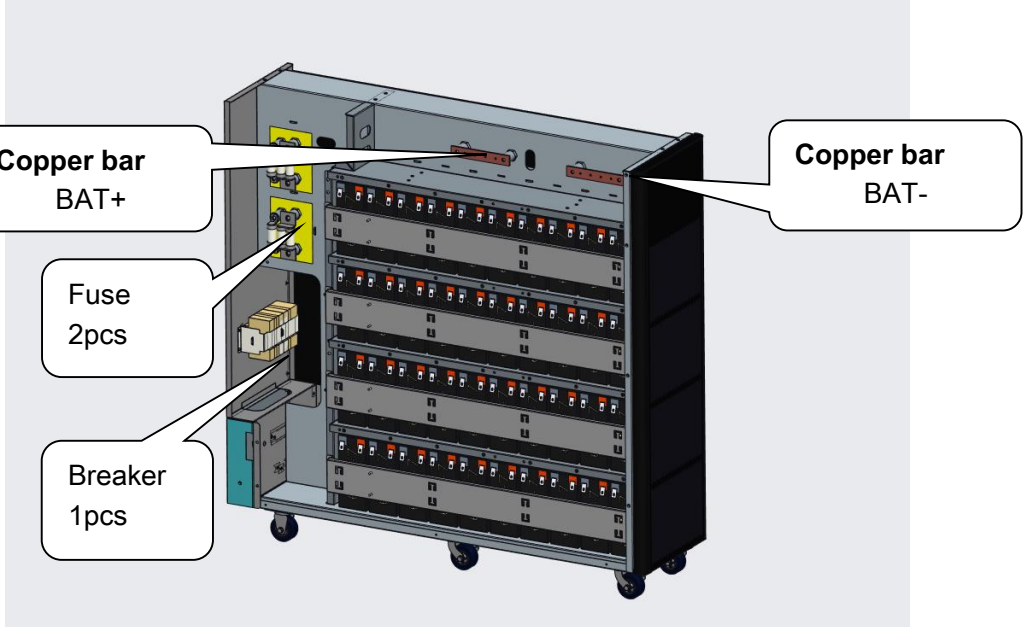
Place the battery box; remove the top, front, left and right panels. Remove the right and left cover plate of the battery pack and the battery flapper to install the batteries conveniently.



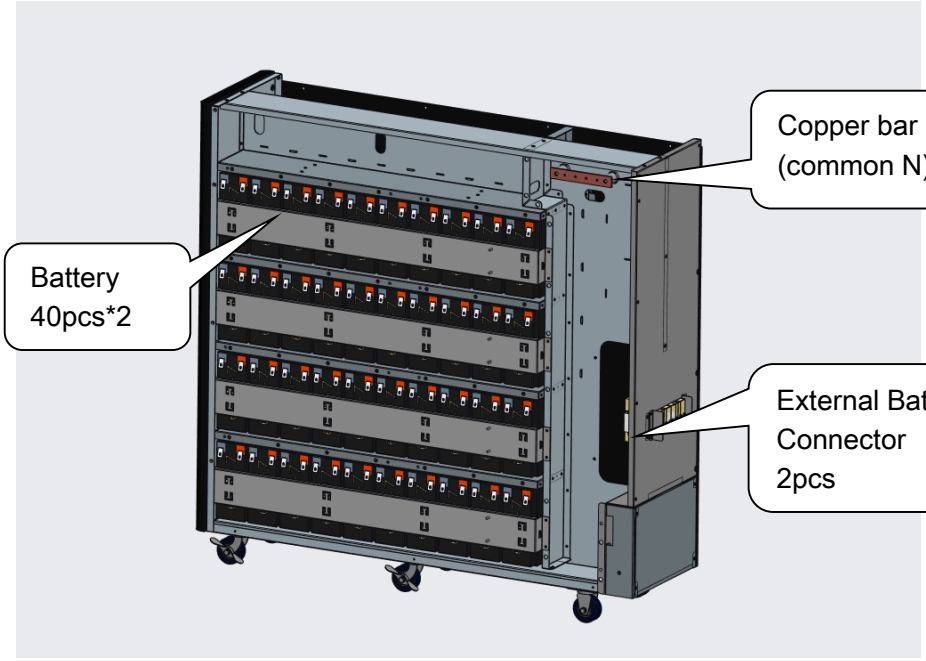
Battery installation and connection

40/60/80pcs of batteries can be selected to divide into two groups, three groups or four groups or four groups connected in parallel for use. Each group has 20pcs of batteries in series (BAT+, N and BAT-). Three modes of connection are as follows:

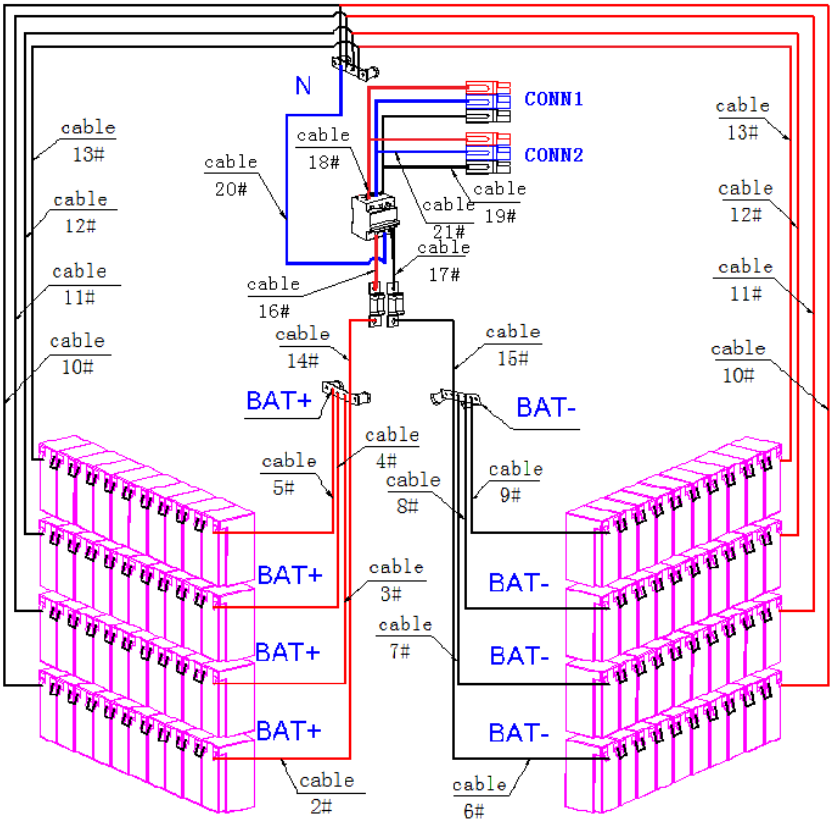
80pcs of batteries installation and connection ö Place the battery from the bottom to top one by one, and then connect the battery cables according to the wiring diagram as following



Installation of 80pcs of batteries



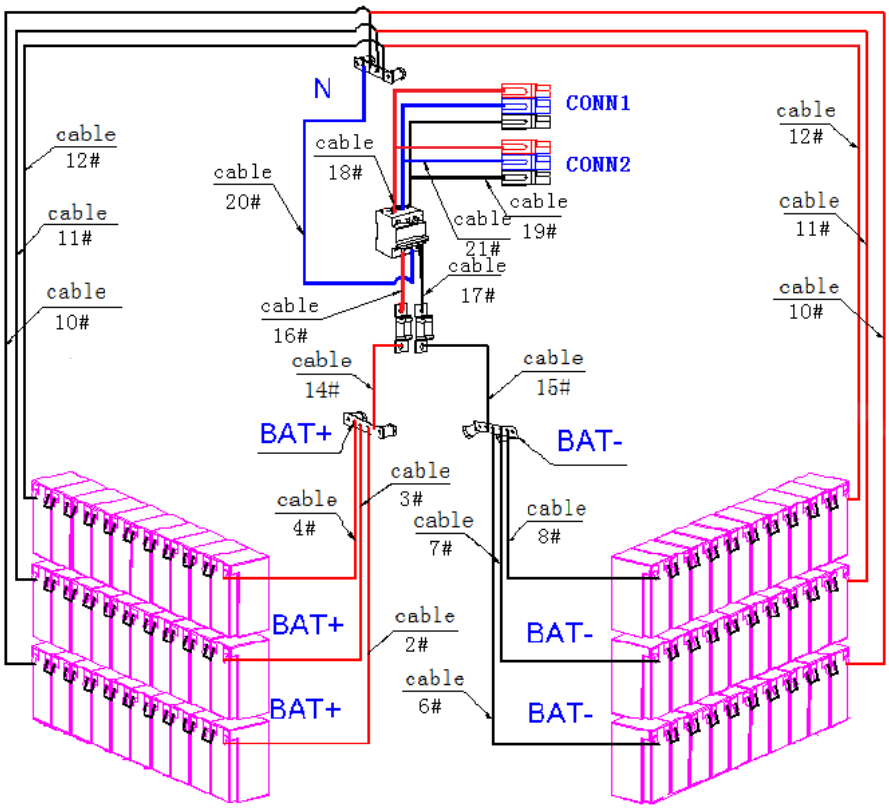
Installation of 80pcs of batteries



Wiring diagram for 80pcs of batteries installation

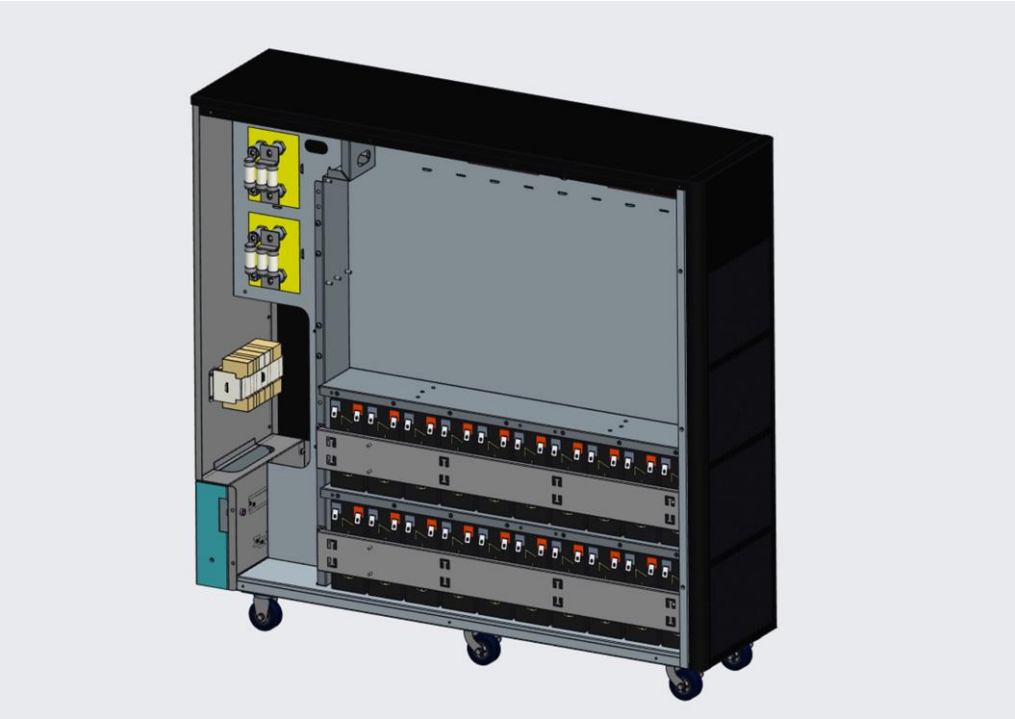
60pcs of batteries installation and connection ö Place the battery from the bottom to top one by one, and then connect the battery cables according to the wiring diagram as following

Installation of 60pcs of batteries

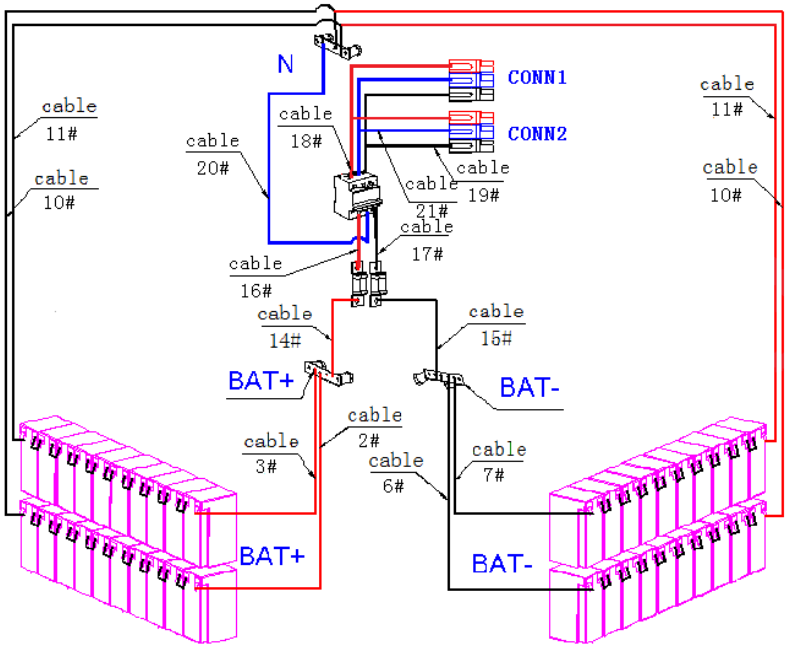


Wiring diagram for 60pcs of batteries installation

40pcs of batteries installation and connection ö Place the battery from the bottom to top one by one, and then connect the battery cables according to the wiring diagram as following



Installation of 40pcs of batteries



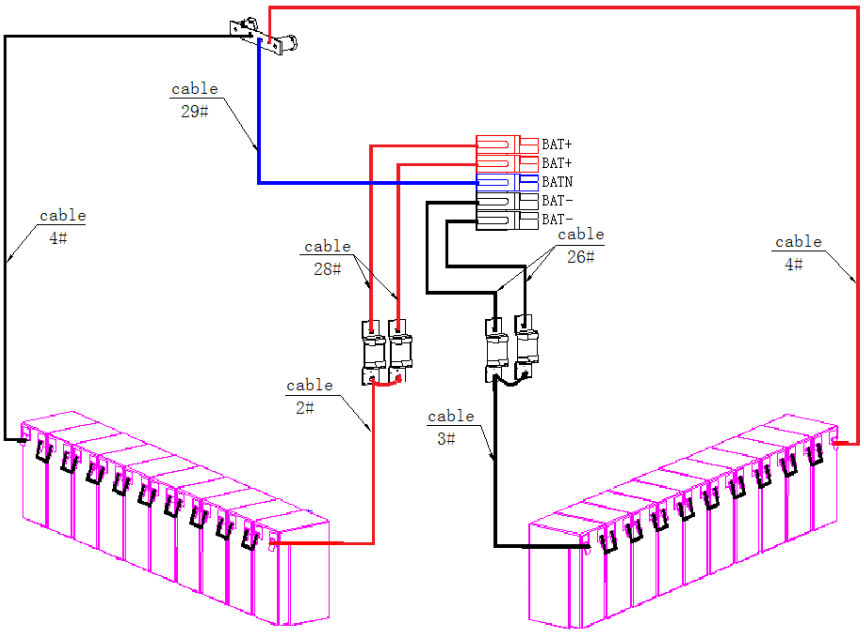
Wiring diagram for 40pcs of batteries installation

When the battery installation and connection is completed, use a multi-meter or other instrument to check if the voltages between BAT+ and N, N and BAT- are normal. If normal, lock the chassis cover.

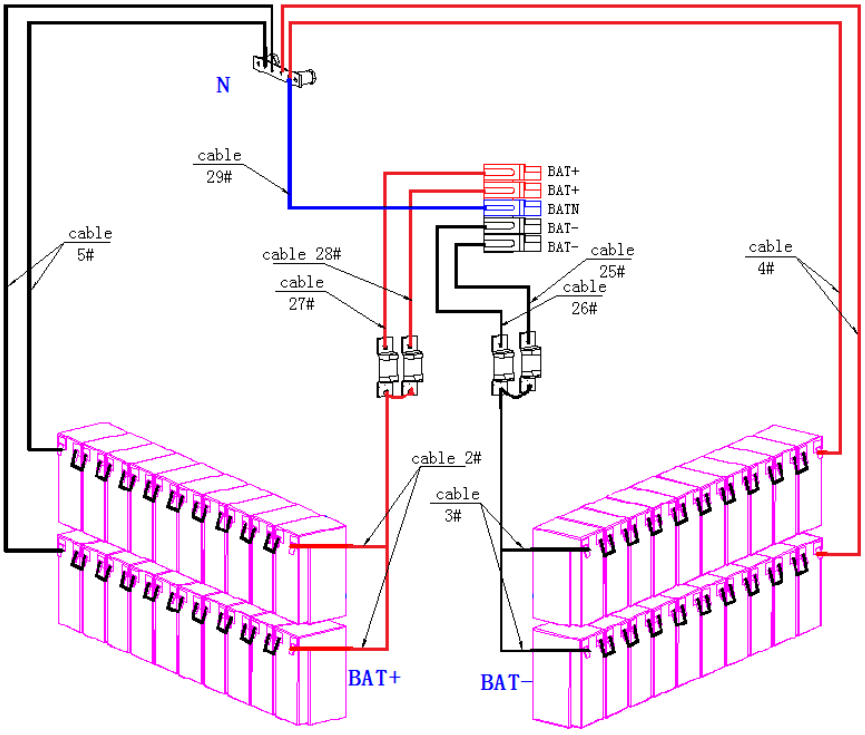
Note ÑThe positive and negative of battery cannot be reversed or short circuit; otherwise it will damage the battery or cause some accidents. Do not touch the battery positive and negative at the same time; try to realize the single-person operation. Before replacing or removing the batteries, please disconnect the breaker, pull up cell terminals and remove the screws of the copper bar. Or else, it may cause the accidents. The battery is installed for H UPS, 40pcs of batteries installation must be chosen.

Battery connection

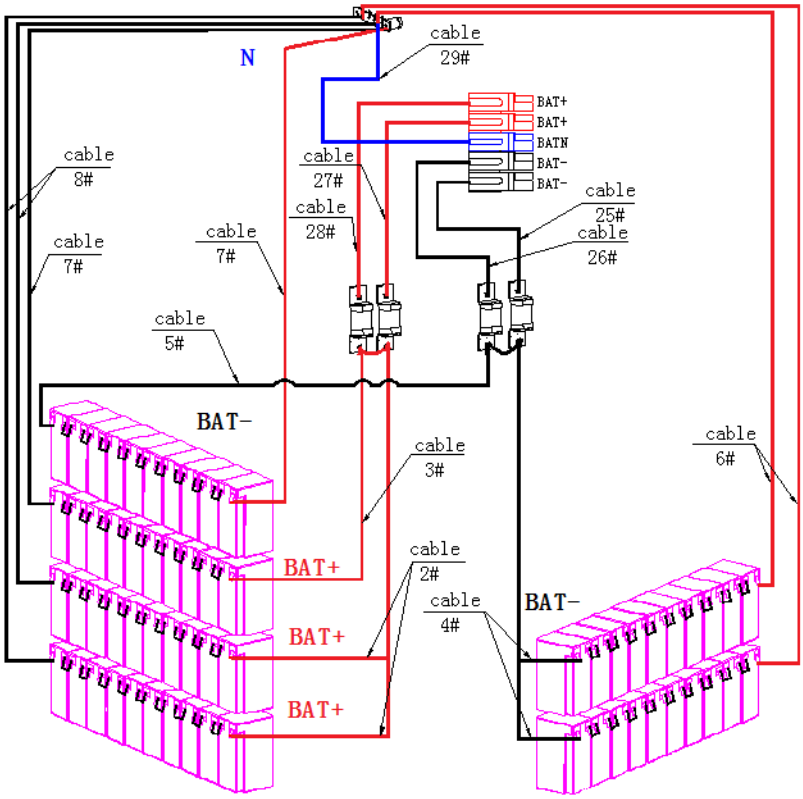
Internal battery connection in standard unit:



Wiring diagram for 20pcs of batteries installation



Wiring diagram for 40pcs of batteries installation



Wiring diagram for 60pcs of batteries installation

Note Ñ

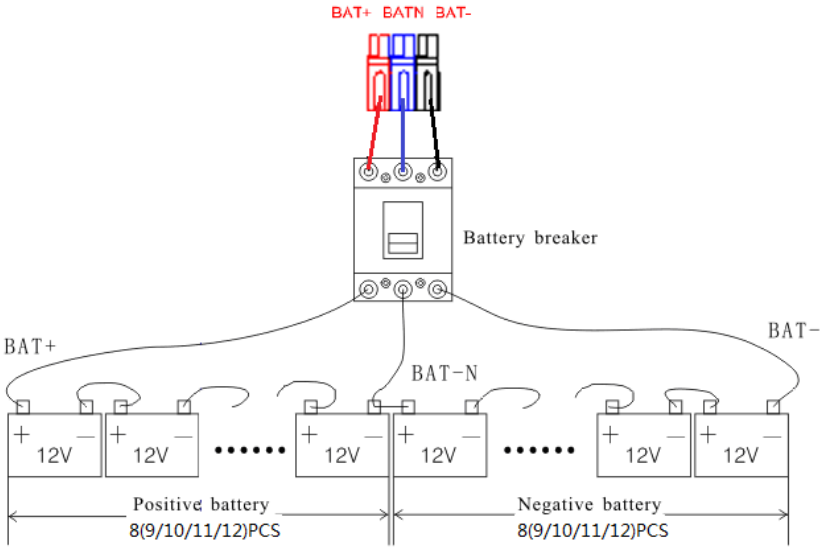
The BAT+ of the UPS connect poles is connected to the anode of the positive battery, the BAT-N is connected to the cathode of the positive battery and the anode of the negative battery, the BAT- is connected to the cathode of the negative battery í

Factory setting of the standard unit is battery quantity---20/40/60pcs, battery capacity---Maximum 12V9AH.

External battery connections for long-run units.

The UPS adopts positive and negative double battery framework, totally 16pcs (optional 18/20) in series. A neutral cable is retrieved from the joint between the cathode of the 8th (9th/10th) and the anode of the 9th (10th/11th) of the batteries. Then the neutral cable, the battery Positive and the battery negative are connected with the UPS respectively. The battery sets between the Battery anode and the neutral are called positive batteries and that between neutral and cathode are called negative ones. The user can choose the capacity and the numbers of the batteries according to their desire.

External battery connections for long-run units.



Note Ñ

The BAT+ of the UPS connect poles is connected to the anode of the positive battery, the BAT-N is connected to the cathode of the positive battery and the anode of the negative battery, the BAT- is connected to the cathode of the negative battery.

Factory setting of the long-run unit is battery quantity---16pcs, battery capacity---12V40AH (charger current 6A). When connecting 18/20/22/24 batteries, please re-set desired battery quantity and its capacity after UPS starts at AC mode. Charger current could be adjusted automatically according to battery capacity selected. All related settings can be done through LCD panel or monitoring software

CAUTION!

Ensure correct polarity battery string series connection. I.e. inter-tier and inter block connections are from (+) to (-) terminals.

Don Đmix batteries with different capacity or different brands, or even mix up new and old batteries, either.

WARNING!

Ensure correct polarity of string end connections to the Battery Circuit Breaker and from the Battery Circuit Breaker to the UPS terminals i.e. (+) to (+) / (-) to (-) but disconnect one or more battery cell links in each tier. Do not reconnect these links and do not close the battery circuit breaker unless authorized by the commissioning engineer.

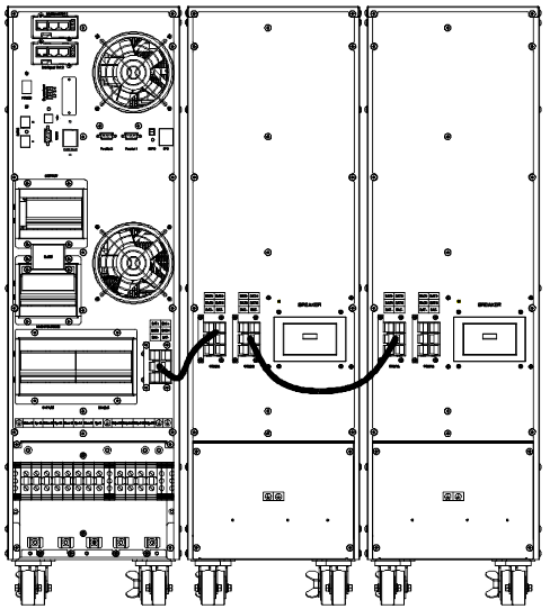
Multiple Battery Pack Connections

CAUTION!

Ensure correct polarity of the battery string series connection. DO NOT mix batteries with different capacity or different brands, or new or old batteries.

WARNING!

ENSURE CORRECT POLARITY OF STRING END CONNECTIONS TO THE BATTERY CIRCUIT BREAKER, AND FROM THE
BATTERY CIRCUIT BREAKER TO THE UPS TERMINALS (I.E. (+) TO (+) / (-) TO (-) / (N) TO (N)). DISCONNECT ONE OR
MORE BATTERY CELL LINKS IN EACH TIER. DO NOT RECONNECT THESE LINKS AND DO NOT CLOSE THE BATTERY
CIRCUIT BREAKER UNLESS ALL CONNECTIONS ARE PROPERLY CHECKED AND APPROVED.



UPO33-(10,15,20) HF(L)AX **battery connection**

Installation and Setup

Note: Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. Please keep the original packing material in a safe place for future use.

Unpacking & Inspection

Attention: Any damage to packing should be noted at the time of receipt with the delivery carrier

Remove the rail kit, battery enclosure, and battery modules from the packaging.

Note: The battery modules are very heavy, be cautious when unpacking and lifting the unit to avoid injury.

Selecting Installation Position

It is necessary to select a proper environment to install the unit, in order to minimize the possibility of damage to
the battery system and extend the life of the batteries. Please follow the instructions below:

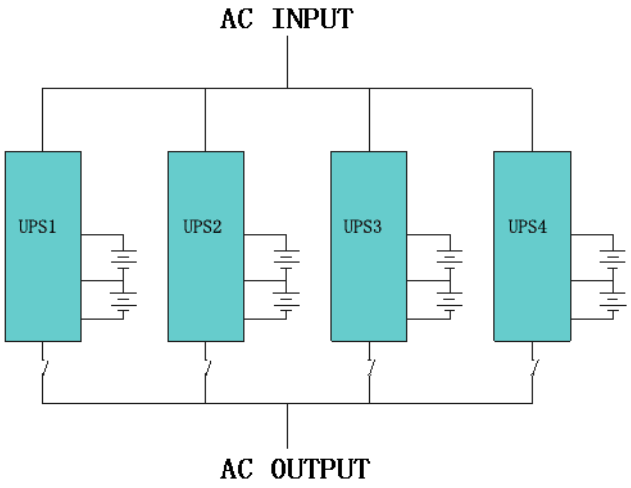
1. Do not block the air-flow to the ventilation openings of the unit.
2. Please ensure the installation site environmental conditions are in accordance with the unit's working
   specifications to avoid overheat and excessive moisture.
3. Do not place the unit in a dusty or corrosive environment or near any flammable objects.
4. This unit is not designed for outdoor use.

UPS parallel Installation

The following sections introduce the installation procedures specified to the parallel system.

Cabinet installation

Connect all the UPS needed to be put into parallel system as below picture.



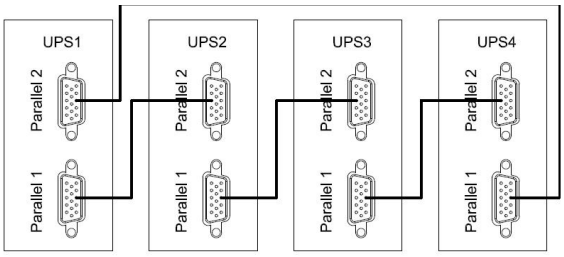
Make sure each UPS input breaker is in "off" position and there is no any output from each UPS connected.

WARNING!

Make sure the N, L1, L2, L3 lines are correct, and grounding is well connected.

Parallel cable installation

Shielded and double insulated control cables available must be interconnected in a ring configuration between UPS units as shown below. The ring configuration ensures high reliability of the control.



Requirement for the parallel system

A group of paralleled UPS behaves as one large UPS system but with the advantage of presenting higher reliability. In order to assure that all UPS are equally utilized and comply with relevant wiring rules, please follow the requirements below:

1) All UPS must be of the same rating and be connected to the same bypass source.

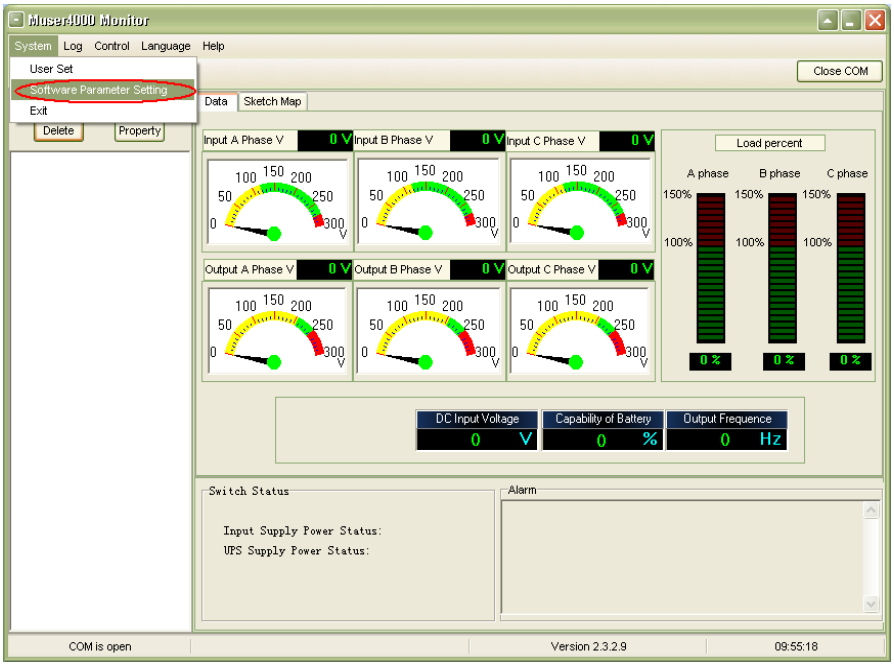
2) The outputs of all the UPS must be connected to a common output bus.

3) The length and specification of power cables including the bypass input cables and the UPS output cables should be the same. This facilitates load sharing when operating in bypass mode.

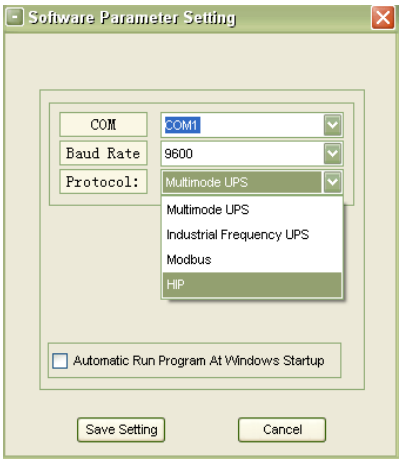
Computer access

·One end of a USB cable connect to the computer, the other end connect to the USB port on the UPS.

·Open the software Muser4000, click "system" button.

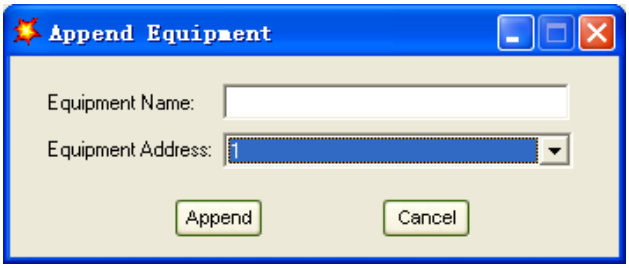


·A window of "Software Parameter Setting" comes out as below, COM choose according to the UPS , baud rate choose 9600, protocol choose "HIP", then save this setting.



·On the main page of Muser4000, click the button of "Append", then goes to a window of "Append equipment":

·Put the UPS name into "Equipment Name", and UPS ID address into "Equipment address".



·Click the button "Append", then the connection between UPS & computer is accomplished.

CAUTION!

When the UPS worked on inverter. If you want to use PC to set the output voltage and frequency. Must shut down the inverter first

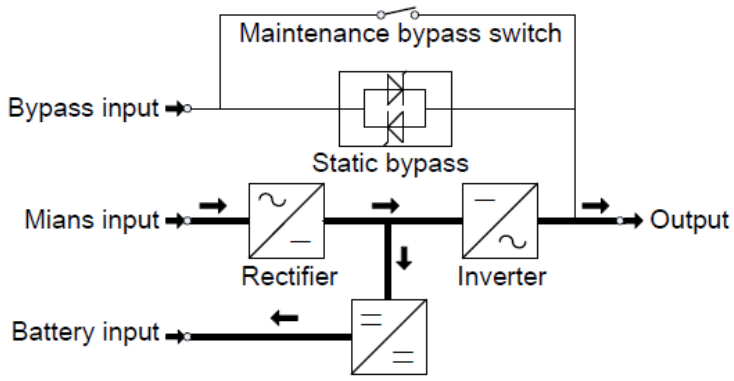
Operation

Operation Modes

The UPS is a double-conversion on-line UPS that may operate in the following alternative modes ö

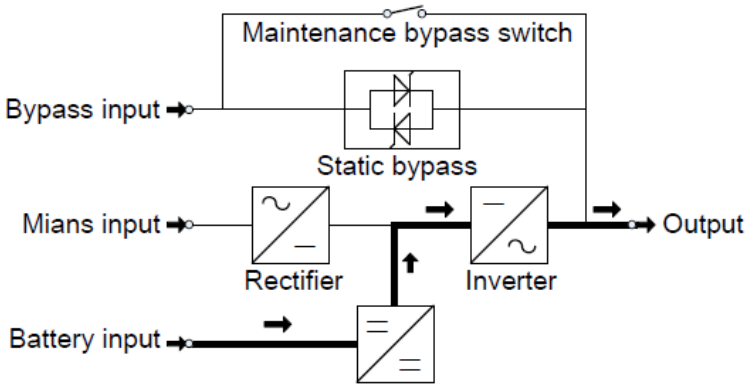
!**Normal mode**

The rectifier/charger derives power from the AC Mains and supplies DC power to the inverter while floating and boosting charge the battery simultaneously. Then, the inverter converts the DC power to AC and supplies to the load.



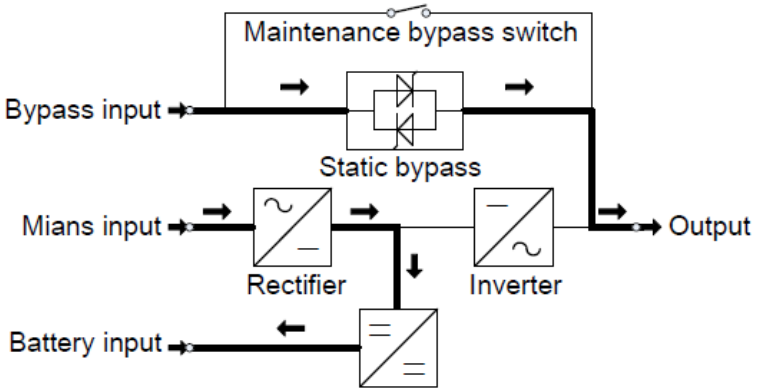
!**Battery mode (Stored Energy Mode)**

If the AC mains input power fails, the inverter, which obtains power from the battery, supplies the critical AC load. There is no power interruption to the critical load. The UPS will automatically return to Normal Mode when AC recovers.



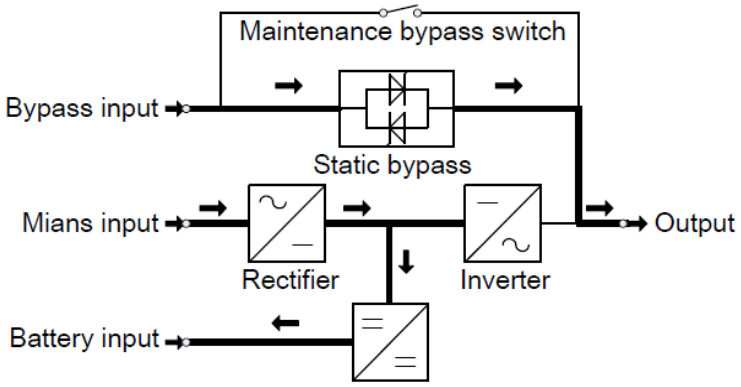
!**Bypass mode**

If the inverter is out of order, or if overload occurs, the static transfer switch will be activated to transfer the load from the inverter supply to bypass supply without interruption to the critical load. In the event that the inverter output is not synchronized with the bypass AC source, the static switch will perform a transfer of the load from the inverter to the bypass with power interruption to the critical AC load. This is to avoid paralleling of unsynchronized AC sources. This interruption is programmable but typically set to be less than an electrical cycle e.g. less than 15ms (50Hz) or less than 13.33ms (60Hz).



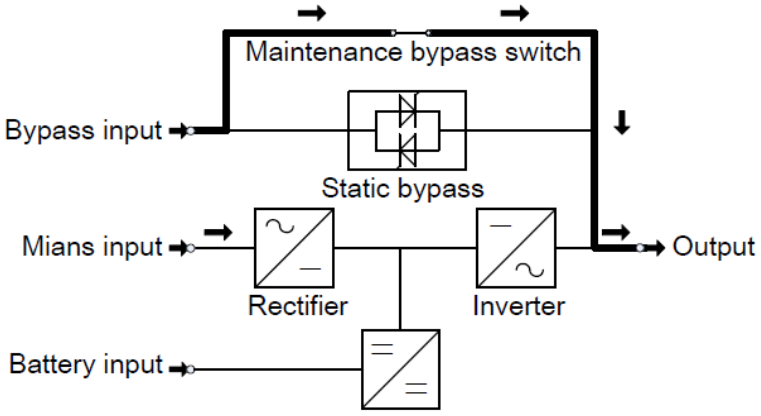
!**ECO Mode**

When the UPS is at AC Mode and the requirement to the load is not critical, the UPS can be set at ECO mode in order to increase the efficiency of the power supplied. At ECO mode, the UPS works at Line-interactive mode, so the UPS will transfer to bypass supply. When the AC is out of set window, the UPS will transfer from bypass to Inverter and supplies power from the battery, and then the LCD shows all related information on the screen.



!**Maintenance mode (Manual Bypass)**

A manual bypass switch is available to ensure continuity of supply to the critical load when the UPS is out of order or in repair and this manual bypass switch bears for equivalent rated load.



Turn on/off UPS

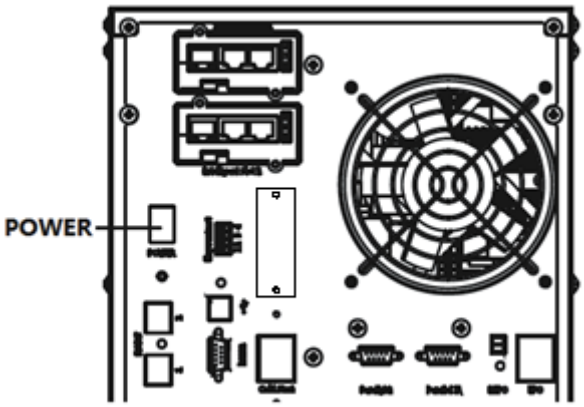
Restart procedure

CAUTION!

Make sure grounding is properly done!

· 6 H W W K H % D W W H U \ %fdlnXS Nnife UPS W R W K H ¯2 1 °

· Switch ON the power switch for standard UPS.



CAUTION!

Check to see if the load is safely connected with the output of the UPS. If the load is not ready to receive power from the UPS, make sure that it is safely isolated from the UPS output terminals

· Switch ON UPS input switch

If the Rectifier input is within voltage range, the rectifier will start up in 30 seconds then the inverter will start up after then.

· Switch ON UPS output switch

If the rectifier fails at startup, the bypass LED will light up. When the inverter starts up, the UPS will transfer from bypass mode to inverter mode, and then the bypass LED extinguishes and the inverter LED lights up.

No matter whether the UPS can work normally or not, all the status will be shown on the LCD display.

Test procedure

CAUTION!

The UPS is operating normally. It may take 60 seconds to boost up the system and perform self-test completely.

· Switch off the MAINS to simulate utility failure, the rectifier will turn off and the battery should feed the inverter without interruption. At this time, the LEDs of battery should be turned on.

· Switch on the MAINS to simulate utility recovery, the rectifier will restart automatically after 20 seconds and the inverter will supply to the load. It is suggested to use Dummy loads for testing. The UPS can be loaded up to its maximum capacity during load test.

MAINTENANCE BYPASS

To supply the load via Mains, you may simply active the internal mechanical bypass switch.

CAUTION!

The load is not protected by the UPS when the internal mechanical bypass system is active and the power is not conditioned.

Switch to mechanical bypass

CAUTION!

If the UPS is running normally and can be controlled through the display, carry out steps 1 to 5; otherwise, jump to Step 4.

- Open the cover of maintenance switch, the UPS turns to bypass mode automatically.
- Turn on MAINTANCE breaker;
- Switch OFF BATTERY breaker;
- Switch OFF the MAINS breaker,
- Switch OFF OUTPUT breaker;

At this time the bypass source will supply to the load through the MAINTENANCE breaker.

Switch to normal operation (from mechanical bypass)

CAUTION!
Never attempt to switch the UPS back to normal operation until you have verified that there are no internal UPS faults

- Switch ON the output breaker.
- Switch ON the input breaker.

The UPS powers from the static bypass instead of the maintenance bypass, then the bypass LED will light up.

- Switch OFF the maintenance bypass breaker, then the output is supplied by the static bypass of the UPS.
- Put on the maintenance switch cover.

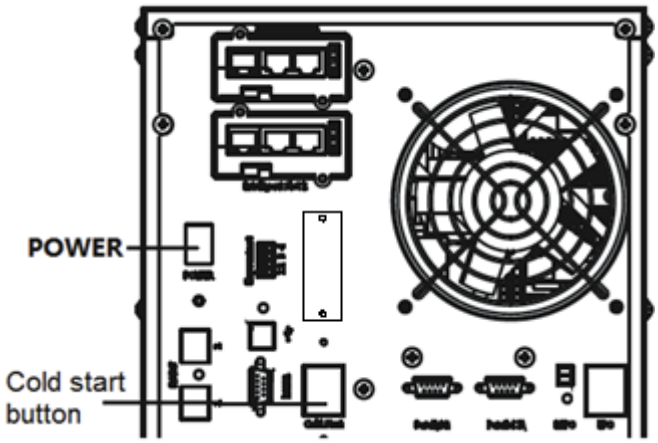
The rectifier will operate normally after 30 seconds. If the inverter works normally, the system will be transferred from bypass mode to normal mode.

Cold start procedure

CAUTION!

Follow these procedures when the input AC Utility Failure, but battery is normal

- 6HW WKH %DWWHU\ %UHDNHU WR WKH ¯21° IRU ORQJ UXQ
- Switch ON the power switch for standard UPS.
- Turn on the Output switch.
- Switch ON the power switch (power will feed to auxiliary power board).



· Trigger the cold start button.

When battery normal, rectifier starts operation, 30s later, inverter starts and operates and battery LED on

CAUTION!

Please press the close start button after 30 seconds until closing the battery switch.

Shut down procedure

CAUTION!

This procedure should be followed to completely shut down the UPS and the LOAD. After all power switches, isolators and circuit breakers are opened, there will be no output.

On-line mode:

· Press OFF to shut down the UPS, waiting about 30s.

· Switch OFF the BATTERY breaker for long run UPS. Open the battery power switch for standard UPS.

· Switch OFF the input breaker.

· Switch OFF the OUTPUT breaker. The UPS shuts down;

· To completely isolate the UPS from AC Mains, all input switches of Utility shall be completely off.

· The primary input distribution panel, which is often located far away from the UPS area, so a label should be posted to advise service personnel that the UPS circuit is under maintenance.

Battery mode:

· Press OFF to shut down the UPS, waiting about 30s.

· Switch OFF the BATTERY breaker for long run UPS. Open the battery power switch for standard UPS.

· Switch OFF the OUTPUT breaker. The UPS shuts down.

WARNING!

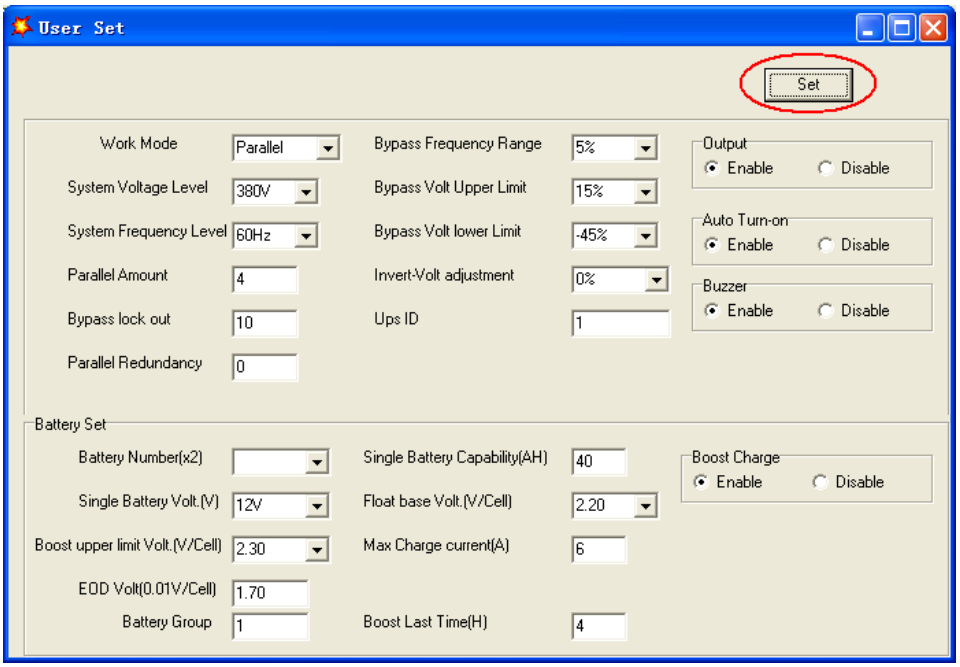
Wait for about 5 minutes for the internal D.C. bus bar capacitors to be completely discharged.

Parallel setting

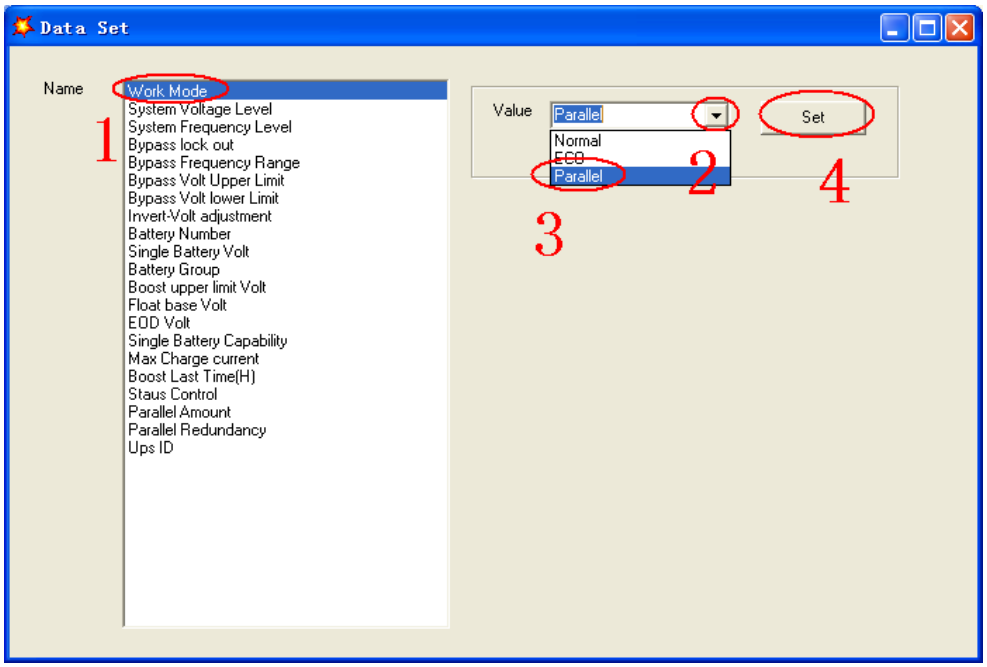
·Connect the UPS with computer. Power on the UPS.

·Open Muser4000 software, after connecting with the UPS successfully, click ¯System °> ¯User Set °

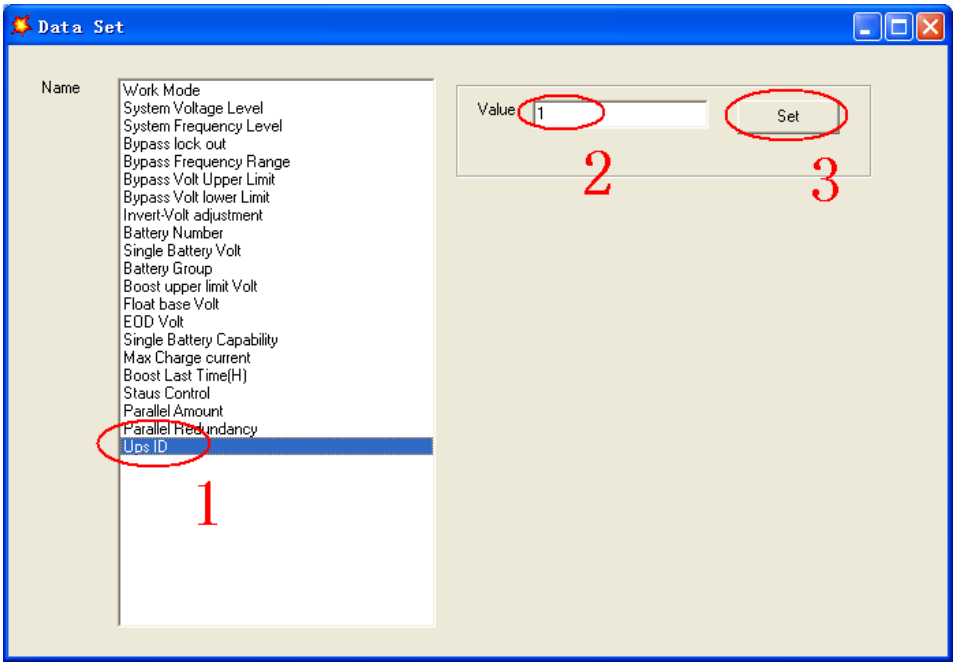
·Click ¯Set °at ¯User Set °window;



·At the window of 'Data Set', click 'Work Mode', choose 'Parallel' for the value, then click 'Set' as shown in below picture. If the UPS sounds a 'beep', that means the setting is correct.



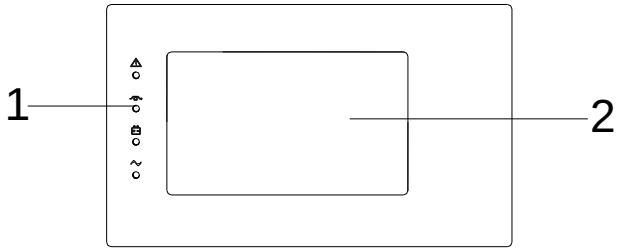
·At the window of 'Data Set', click 'Ups ID', write a value for the parallel UPS ID at the right side, such as '1', then click 'Set' as shown in below picture. If the UPS sounds a 'beep', that means the setting is correct.



CAUTION!

After changing the parallel system ID, the connection between Muser4000 and equipment might be interrupted. If it occurs, please re-connect in accordance with the instruction described before.

The LCD Display



LCD control panel introduction

ä1åLEDäIURP WRS WR ERWWRP ¯DODUP° å¯E\SDVV° ¯EDWWHU\° ¯

ä2åLCD display

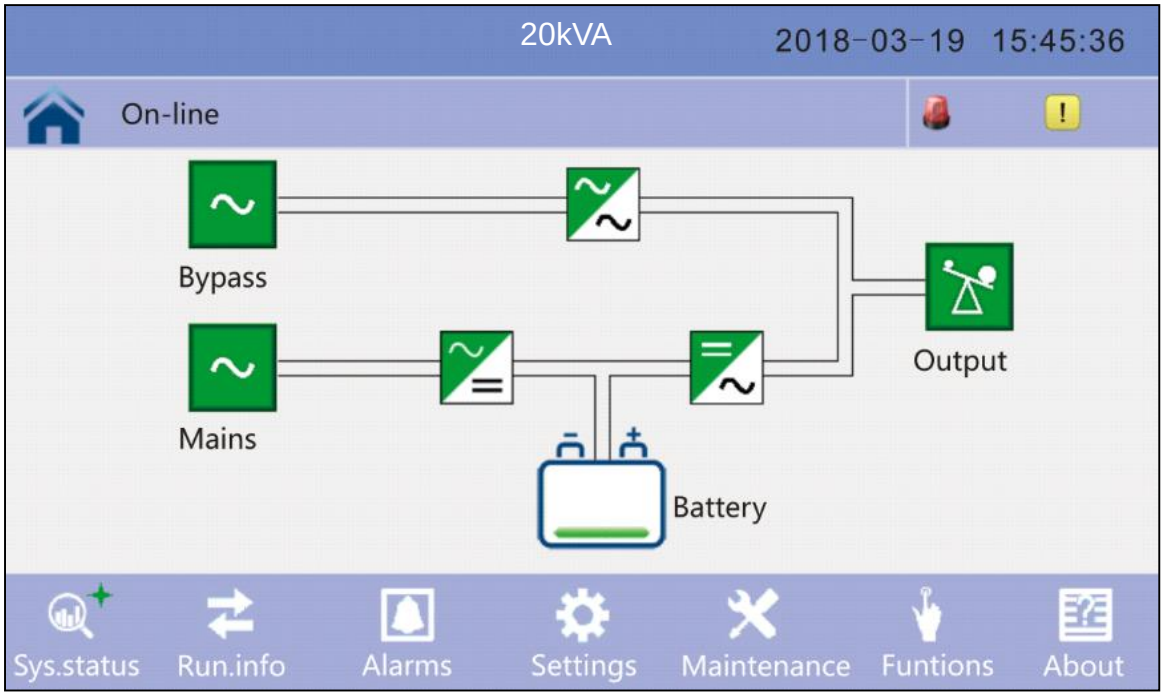
Introduction

The display provides more functions than those described in this manual.

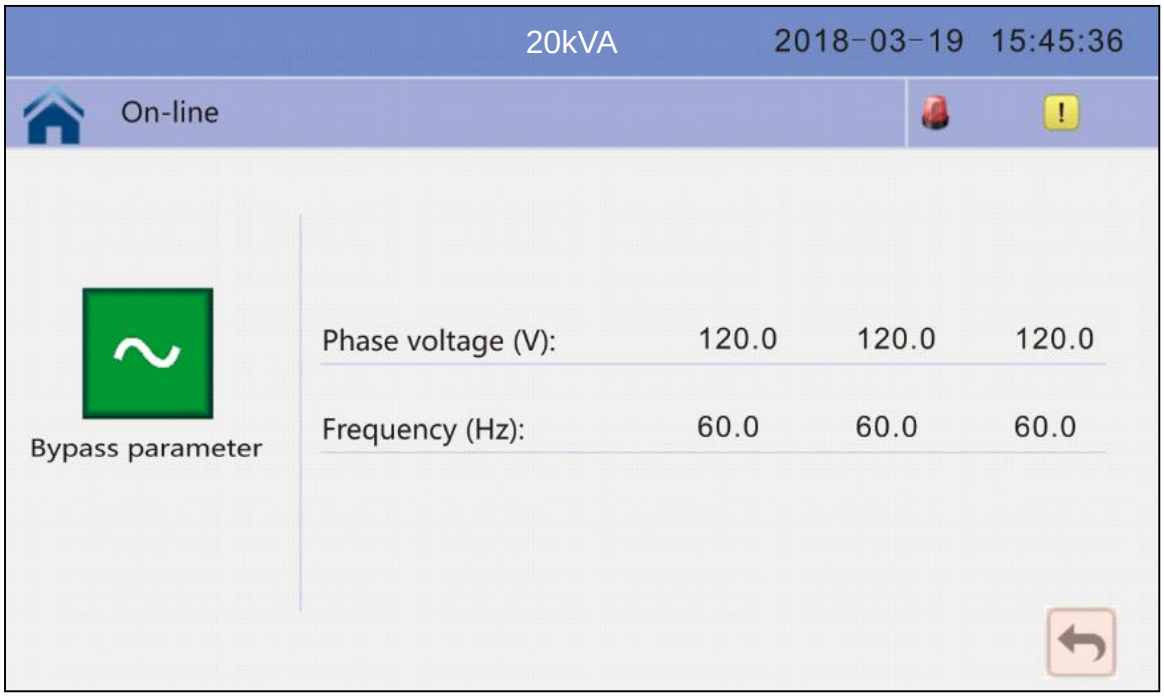
CAUTION!

The setting of most parameter cannot be set when the UPS is in inverter mode.

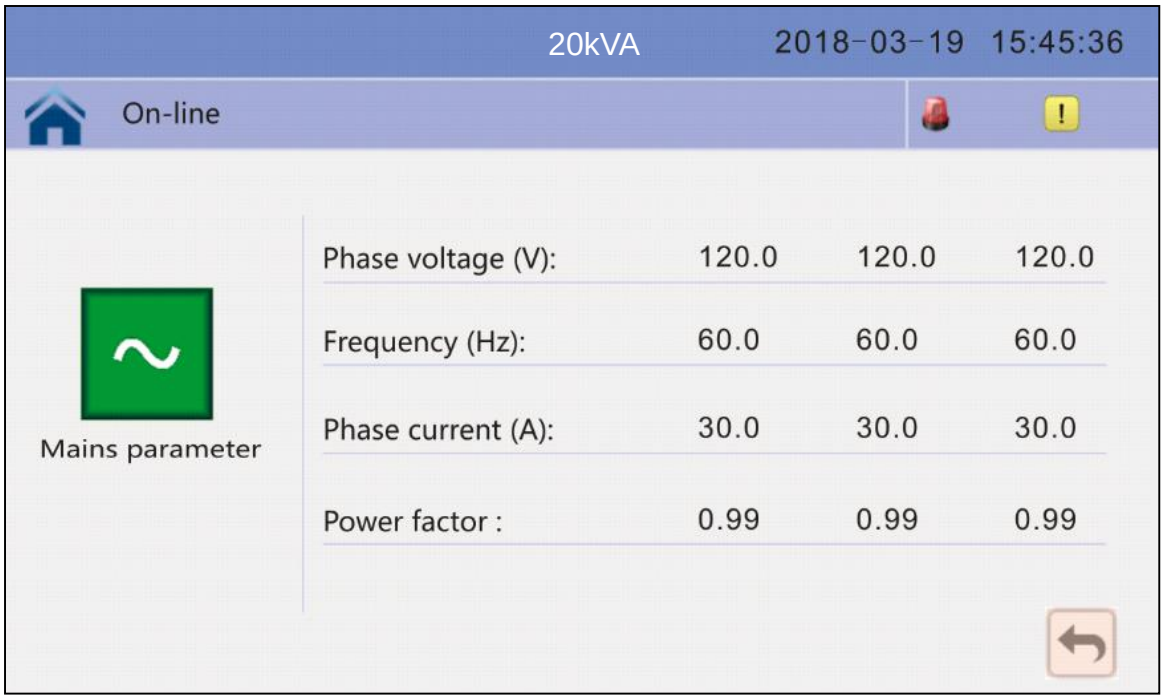
Home page 1, show the UPS operating flow chart, and there are the data entrance of input, output, battery.



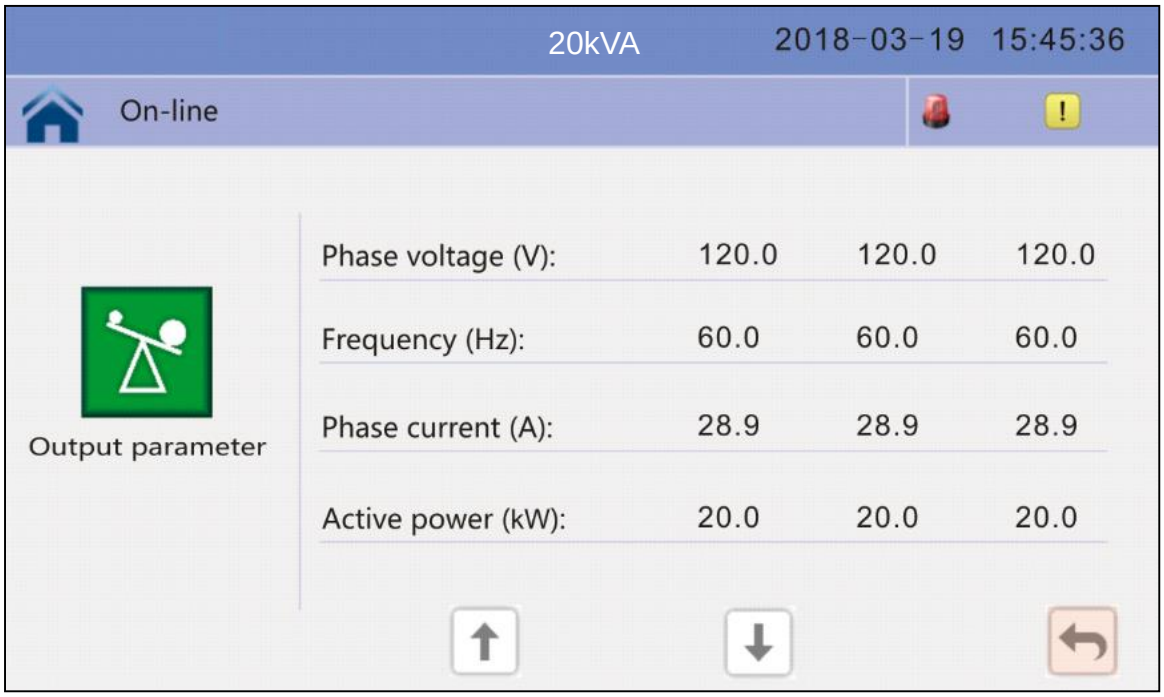
1) Click on the bypass icon to enter the bypass data window, click on the back icon return to last window and click on the homepage icon jump to main page.



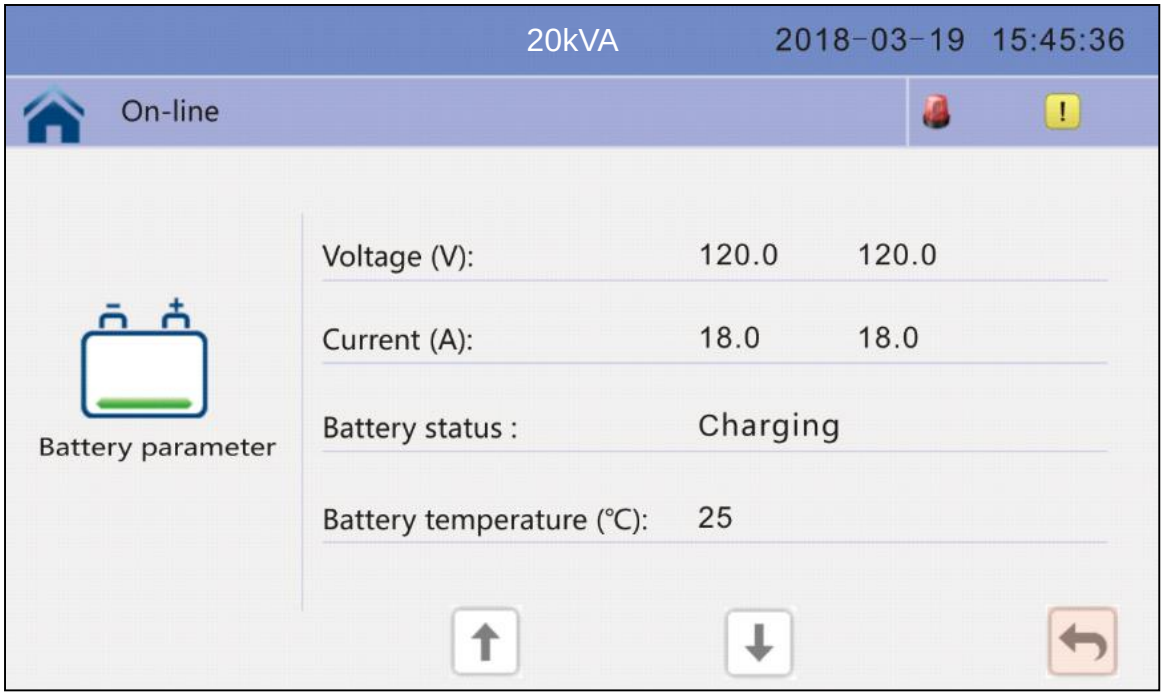
2) Click on the mains icon to enter the mains data window, click on the back icon return to last window and click on the homepage icon jump to main page.



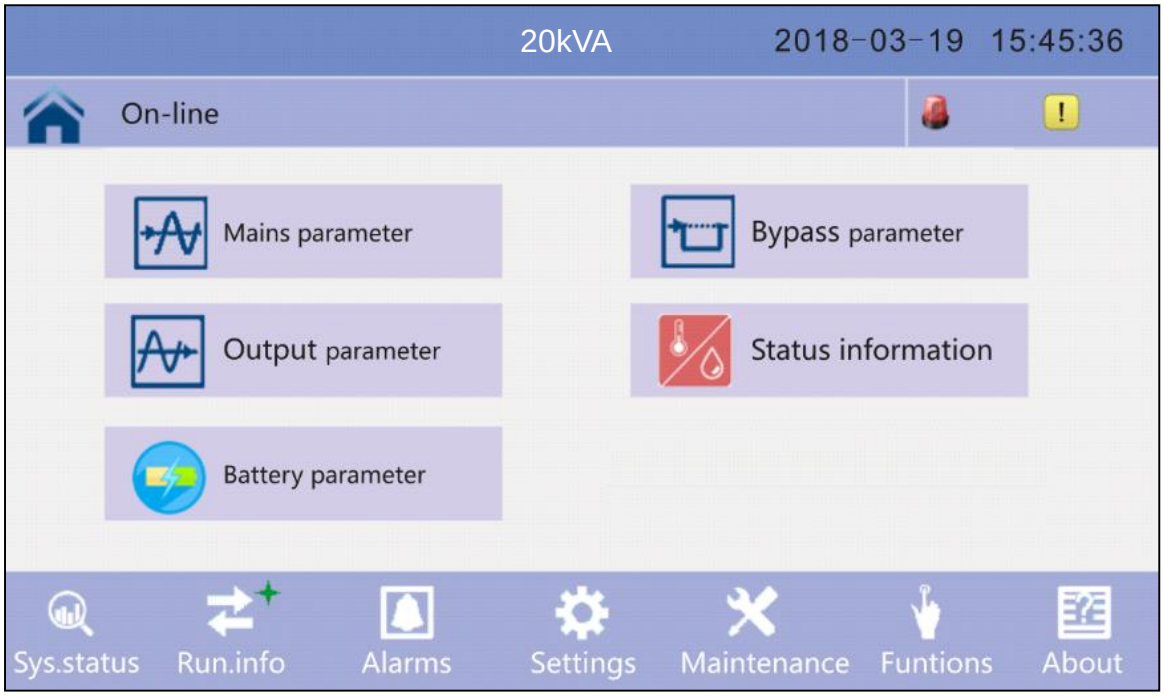
3) Click on the Load icon to enter the output data window, click on the back icon return to last window and click on the homepage icon jump to main page.



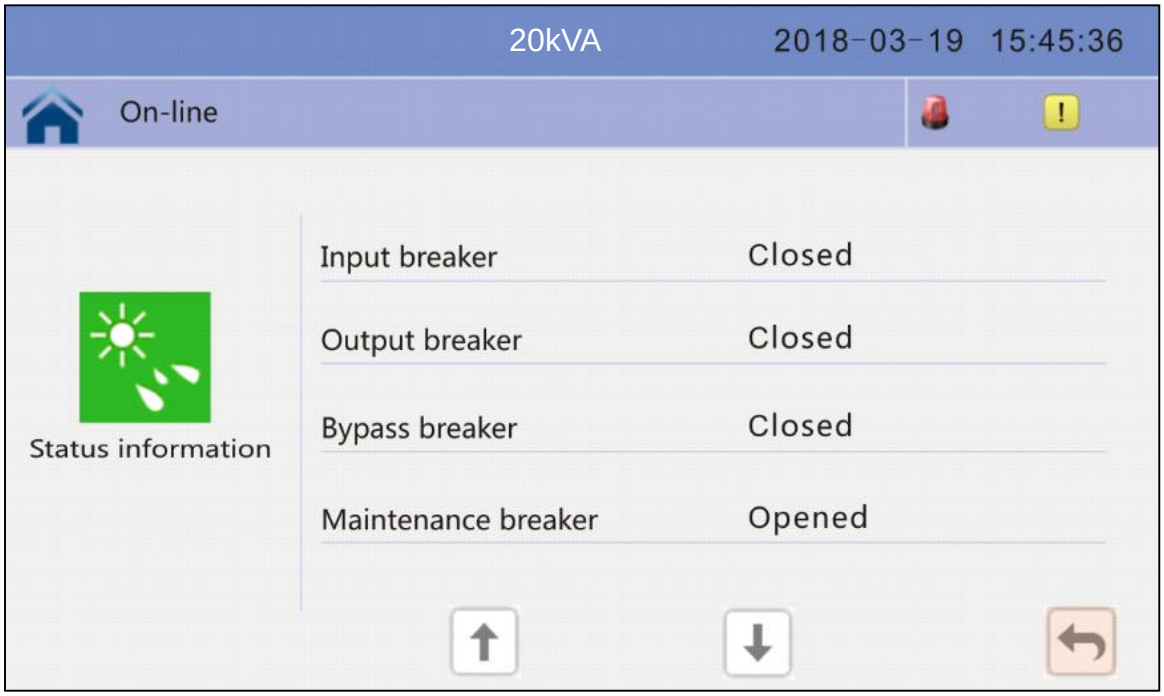
4) Click on the battery icon to enter the battery data window, click on the back icon return to last window and click on the homepage icon jump to main page.



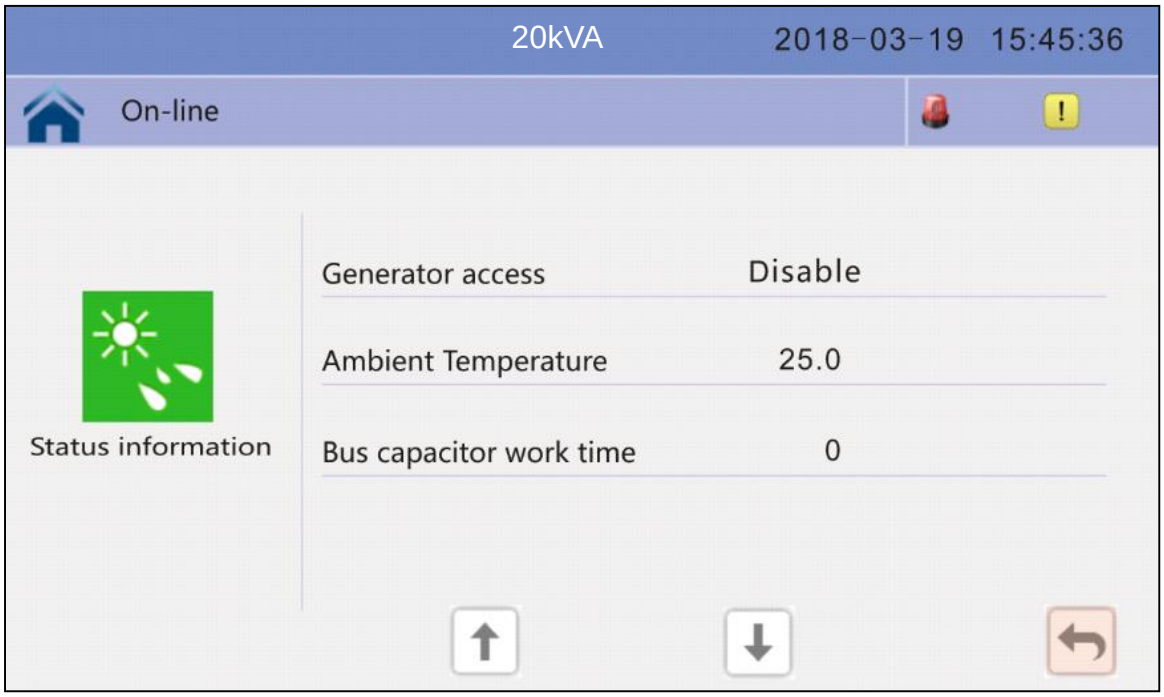
Click on Runn. info icon to enter the information page.



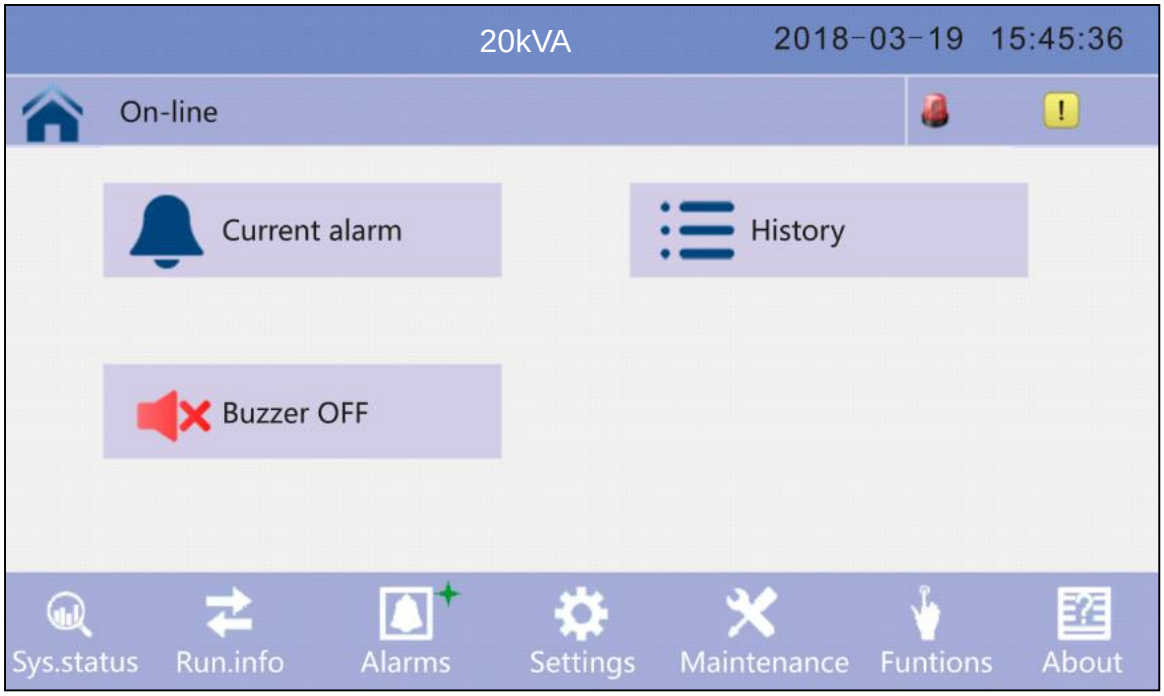
1) Click on the Run time icon to enter the status data window, can see the breaker status, click on the back icon return to last window and click on the homepage icon jump to main page.



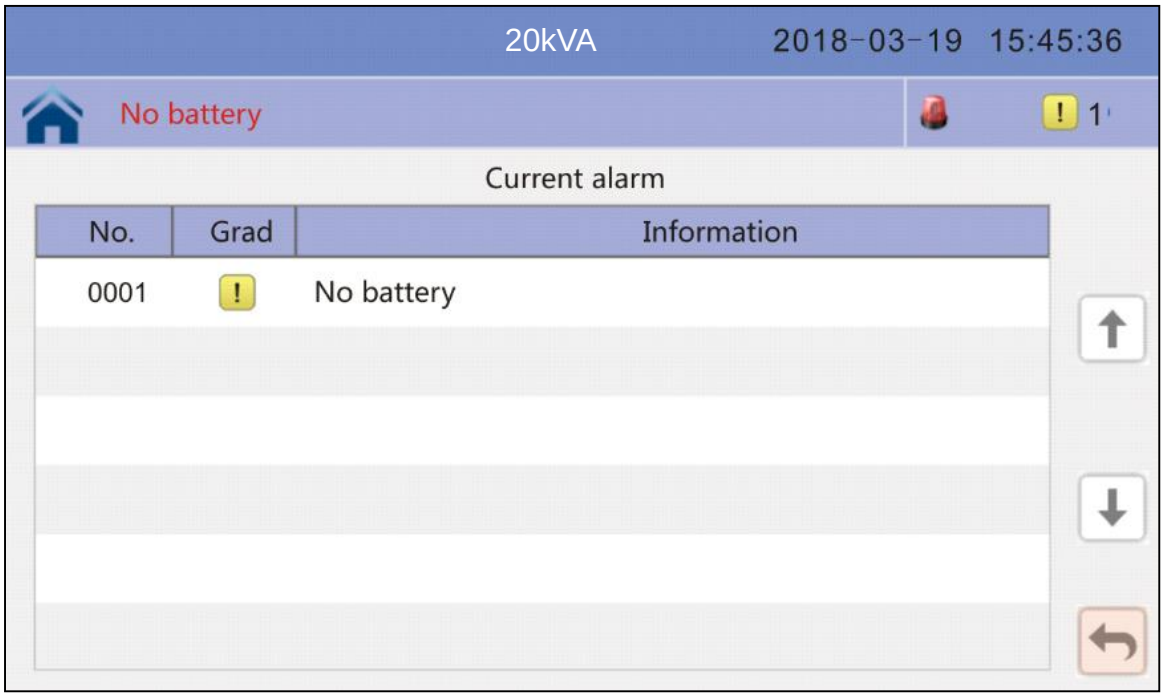
2) Click on the ENV data icon to enter the status data window, can see the temperature data after connected to temperature sensor, click on the back icon return to last window and click on the homepage icon jump to main page.



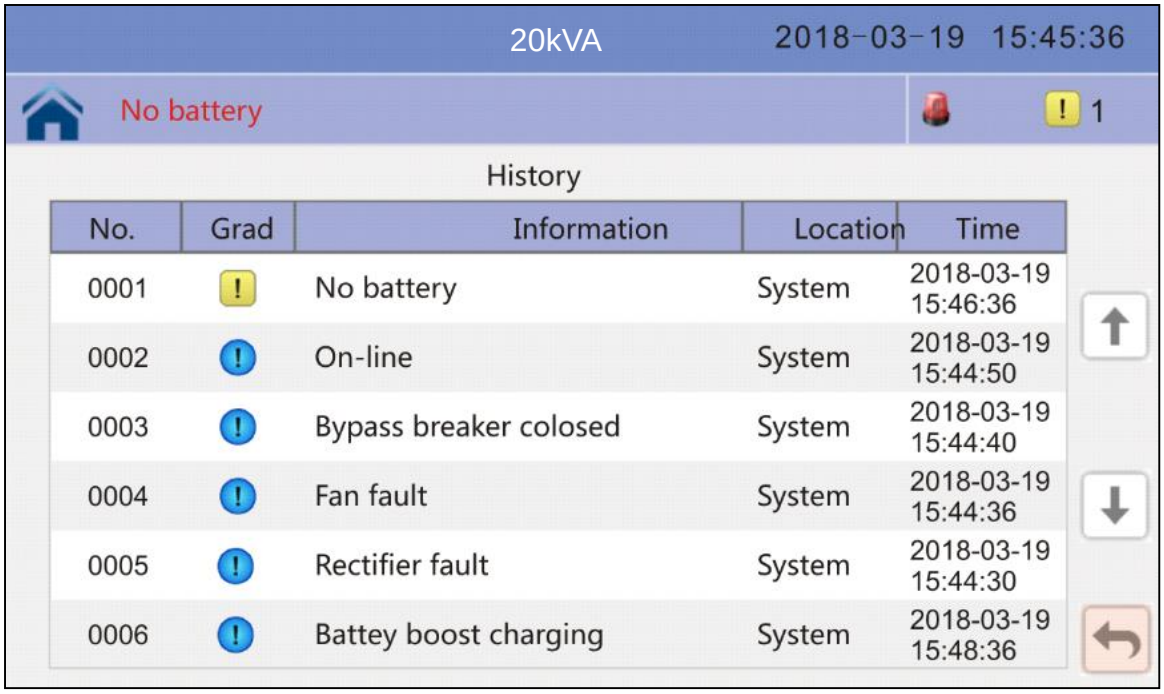
Click on Alarm icon to enter the alarms page.



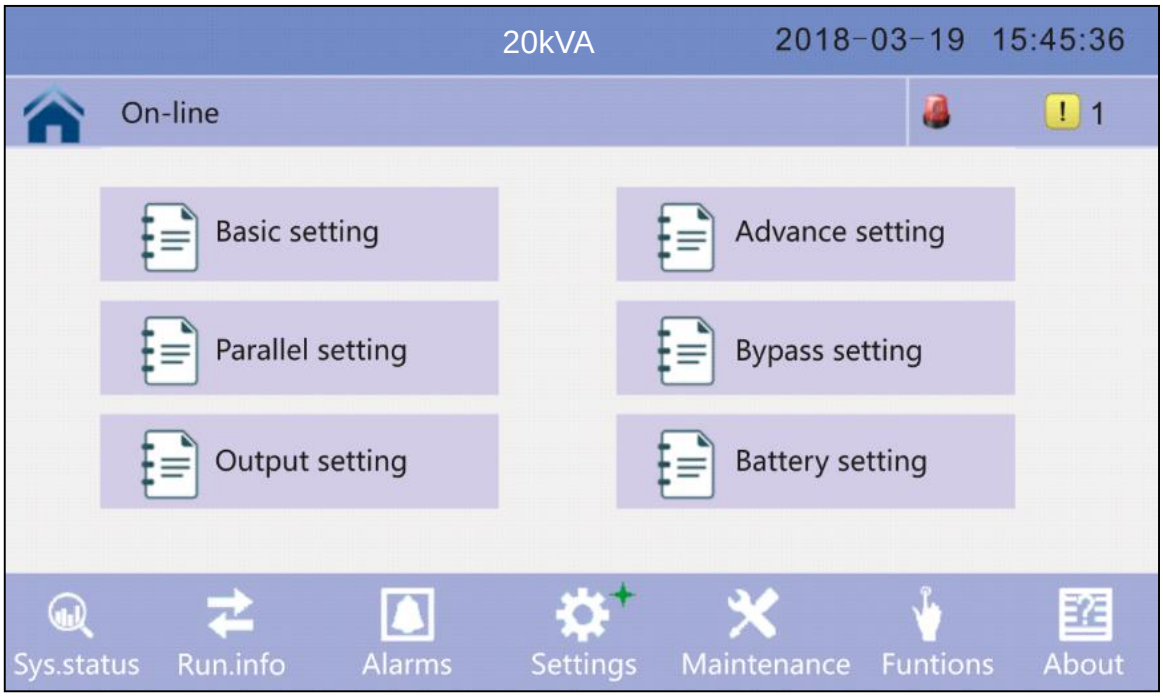
1) Click on the active Alarm icon to enter the module data window, can see the alarm data, click on the back icon return to last window and click on the homepage icon jump to main page.



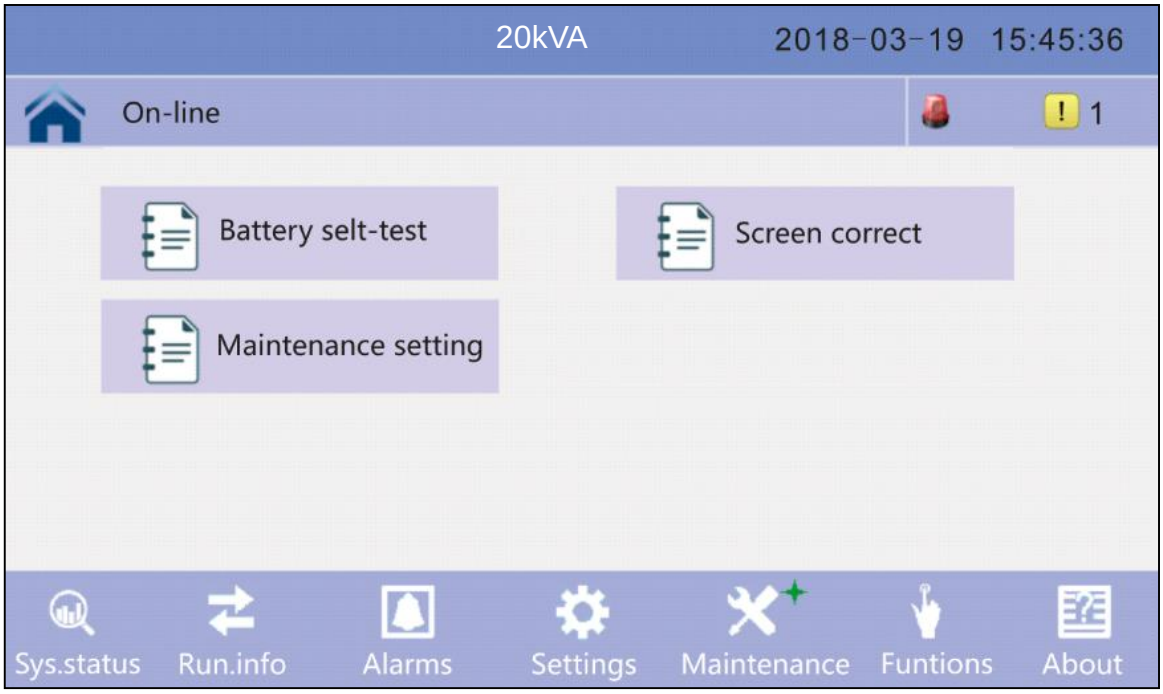
2) Click on the history icon to enter the histoty window, can see the history data, click on the back icon return to last window and click on the homepage icon jump to main page.



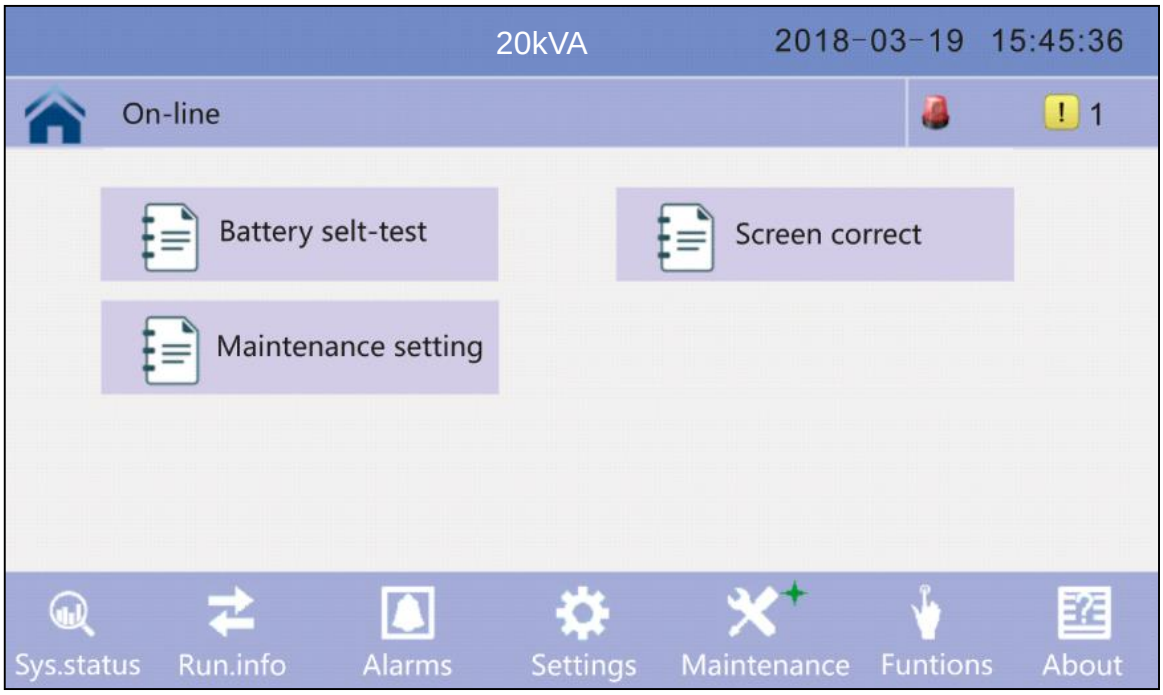
Click on setting icon to enter setting page, click on the back icon return to last window and click on the homepage icon jump to main page



Click on Maintenance icon to enter setting page, click on the back icon return to last window and click on the homepage icon jump to main page



Click on Function icon to enter setting page, click on the back icon return to last window and click on the homepage icon jump to main page



Parallel system commissioning

Parallel system should be commissioning when the stand-alone are all intact.

Take 4 units in parallel for example.

1) Confirm the input/output wires connection and input phase sequence are correct; switch off the battery breaker, and measure the +/- bat voltage of all battery group are normal.
2) Connect the parallel cable; it should be formed loop connection.
3) Switch on the input breaker of unit 1, and access LCD setting interface to setting the working mode, ID, parallel number ì redundant number. Require setting the in series number, capacity of battery. The output voltage level and Bypass protection range are default setting.
4) Turn off the input breaker of Unit 1, and make sure the UPS is off. Turn on the input breaker of Unit 2,access the LCD setting interface, setting the parallel working mode, ID äNO.2 å, parallel 4 units, redundant number .The other setting are the same as UPS 1 operation.
5) For Unit 3 and Unit 4 UPS, the operation setting is all the same as Unit 1 and 2.
6) Turn on Bypass/input/output breaker of all the paralleled UPS, and then confirm all the setting are correct. Each UPS has their owed different ID.
7) Turn on the entire battery breaker and confirm the parameter (V/I) are normal.
8) Connected the Load, and check whether the output current are balance.

Switch on and off the utility breaker to test all the UPS converters system from Utility to battery and restored function are working find

Display Messages/Troubleshooting

This section lists the event and alarm messages that the UPS might display. The messages are listed in alphabetical order. This section is listed with each alarm message to help you troubleshoot problems.

Display messages

Operational Status and Mode(s)

Code (ST)	Information stand for	LED			
		Fault	Bypass	Battery	Inverter
1	Initialized	**EXTINGUISH**	**EXTINGUISH**	**EXTINGUISH**	**EXTINGUISH**
2	Standby Mode	**EXTINGUISH**	**EXTINGUISH**	X	**EXTINGUISH**
3	No Output	**EXTINGUISH**	**EXTINGUISH**	X	**EXTINGUISH**
4	Bypass Mode	**EXTINGUISH**	**LIGHT**	X	**EXTINGUISH**
5	Utility Mode	**EXTINGUISH**	**EXTINGUISH**	X	**LIGHT**
6	Battery Mode	**EXTINGUISH**	**EXTINGUISH**	**LIGHT**	**EXTINGUISH**
7	Battery Self-diagnostics	**EXTINGUISH**	**EXTINGUISH**	**LIGHT**	**EXTINGUISH**
8	Inverter is starting up	**EXTINGUISH**	X	X	**EXTINGUISH**
9	ECO Mode	**EXTINGUISH**	X	X	X
10	EPO Mode	**LIGHT**	**EXTINGUISH**	X	**EXTINGUISH**
11	Maintenance Bypass Mode	**EXTINGUISH**	**EXTINGUISH**	**EXTINGUISH**	**EXTINGUISH**
12	Fault Mode	**LIGHT**	X	X	X

CAUTION Ñ"X" means it is determined by other conditions

Alarm Information

Fault code (Err)	UPS Alarm Warning	Buzzer	LED
1	Rectifier Fault	Beep continuously	Fault LED lit
2	Inverter fault(Including Inverter bridge is shorted)	Beep continuously	Fault LED lit
3	Inverter Thyristor short	Beep continuously	Fault LED lit
4	Inverter Thyristor broken	Beep continuously	Fault LED lit
5	Bypass Thyristor short	Beep continuously	Fault LED lit
6	Bypass Thyristor broken	Beep continuously	Fault LED lit
7	Fuse broken	Beep continuously	Fault LED lit
8	Parallel relay fault	Beep continuously	Fault LED lit
9	Fan fault	Beep continuously	Fault LED lit
10	Reserve	Beep continuously	Fault LED lit
11	Auxiliary power fault	Beep continuously	Fault LED lit
12	Initialization fault	Beep continuously	Fault LED lit
13	P-Battery Charger fault	Beep continuously	Fault LED lit

14	N-Battery Charger fault	Beep continuously	Fault LED lit
15	DC Bus over voltage	Beep continuously	Fault LED lit
16	DC Bus below voltage	Beep continuously	Fault LED lit
17	DC bus unbalance	Beep continuously	Fault LED lit
18	Soft start failed	Beep continuously	Fault LED lit
19	Rectifier Over Temperature	Twice per second	Fault LED lit
20	Inverter Over temperature	Twice per second	Fault LED lit
21	Input neutral loss	Twice per second	Fault LED lit
22	Battery reverse	Twice per second	Fault LED lit
23	Cable connection error	Twice per second	Fault LED lit
24	CAN comm. Fault	Twice per second	Fault LED lit
25	Parallel load sharing fault	Twice per second	Fault LED lit
26	Battery over voltage	Once per second	Fault LED blinking
27	Mains Site Wiring Fault	Once per second	Fault LED blinking
28	Bypass Site Wiring Fault	Once per second	Fault LED blinking
29	Output Short-circuit	Once per second	Fault LED blinking
30	Rectifier over current	Once per second	Fault LED blinking
31	Bypass over current	Once per second	BPS LED blinking
32	Overload	Once per second	INV or BPS LED blinking
33	No battery	Once per second	Battery LED blinking
34	Battery under voltage	Once per second	Battery LED blinking
35	Battery low pre-warning	Once per second	Battery LED blinking
36	Internal Communication Error	Once per 2 seconds	Fault LED blinking
37	DC component over limit.	Once per 2 seconds	INV LED blinking
38	Parallel Overload	Once per 2 seconds	INV LED blinking
39	Mains volt. Abnormal	Once per 2 seconds	Battery LED lit
40	Mains freq. abnormal	Once per 2 seconds	Battery LED lit
41	Bypass Not Available		BPS LED blinking
42	Bypass unable to trace		BPS LED blinking
43	Inverter on invalid		
44	Reserve		
45	inverter not on		
46	Output switch not ON	Once per 3 seconds	

Options

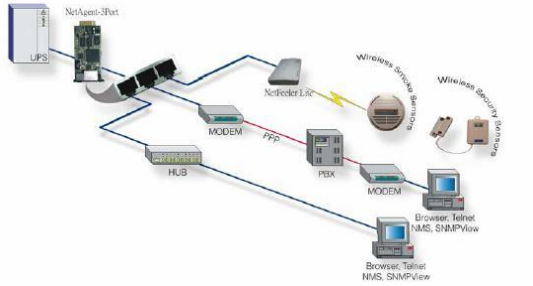
SNMP card: internal SNMP / external SNMP optional

- Loosen the 2 torque screws (on each side of the card).
- Carefully pull out the card. Reverse the procedure for re-installation

The slot called SNMP supports the MEGAtec protocol. We advise that NetAgent II-3 port is also a tool to remotely monitor and manage any UPS system

NetAgent II-3Ports supports the Modem Dial-in (PPP) function to enable the remote control via the internet when the network is unavailable.

In addition to the features of a standard NetAgent Mini, NetAgent II has the option to add NetFeeler Lite to detect temperature, humidity, smoke and security sensors. Thus, making NetAgent II a versatile management tool. NetAgent II also supports multiple languages and is setup for web-based auto language detection.



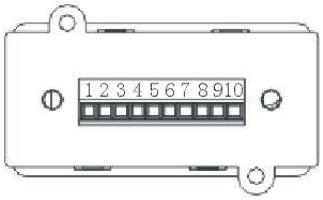
Typical topology of the UPS Network Management

Relay card

A 10-pin terminal is supported to offer the signals of Bypass, Utility Failure, Inverter On, Battery Low, UPS fault, UPS Alarm, and UPS Shutdown.

The relay communication card contains six dry contact outputs and one dry input. The inputs and outputs are factory programmed according to functions listed in the table

Table: Relay Contacts (communication card)



Pin	Function Description	Input or Output
1	Utility Failure	Output
2	Battery Low	
3		
4	Bypass On	
5	UPS Fault	
6	Inverter On	
7	Summary Alarm	
8	common	
9	Remote Shutdown +	Input (5~12V)

Appendix 1 Specifications

Model			UPO33-10 HF AX UPO33-10 HFL AX	UPO33-15 HF AX UPO33-15 HFL AX	UPO33-20 HF AX UPO33-20 HFL AX
Capacity (VA/Watts)			10k / 10k	15k / 15k	20k / 20k
INPUT					
Rectifier input	Rated AC Input Voltage		208/120Vac or 220/127Vac, 50/60Hz, 3-Phase, 4-Wire Plus Ground		
	Input Voltage Range (Startup/Operating)		-20%, +25% (96-150Vac or 102-159Vac), Full load		
	Input Voltage Range (Operating)		-40%, +25% (72-150Vac or 76-159Vac) , <50% Load		
	Frequency		50 or 60Hz (40-70Hz Range)		
	Power Factor		0.99 (40% linear load)		
	Harmonic distortion (THDi)		7 Q R Q O L Q H D U O R D G		
Bypass input	Rated AC Voltage		208/120Vac or 220/127Vac, 50/60Hz, 3-Phase, 4-Wire Plus Ground		
	Bypass voltage Range		Upper limit: +10,+15,+20 or 25% (default:+20)		
			Lower limit:-10,-20,-30 or -40 (default:-30)		
	Bypass frequency Range		s		
	Synchronization - Window		s s s s s R S W L R Q D O G H I D		
	Max current (A)		Breaker50A	Breaker63A	Breaker 80A
	Upstream protection, bypass line		Thermomagnetic circuit-breaker, rated up to 125% of nominal output current. IEC 60947-2 curve C.		
	Current rating of neutral cable (A)		™ , Q		
Generator Input			Support		
OUTPUT					
Inverter Output	Power factor		1.0		
	Rated AC Voltage 1		208/120Vac or 220/127Vac, 50/60Hz, 3-Phase, 4-Wire Plus Ground		
	Voltage Regulation		s		
	Transient Voltage Response		s O L Q H D U O R D G		
	Phase Balance		r s r X Q E D O D Q F H G O R D		
	Frequency		1.Line Mode: synchronize with input; when input frequency ú s s s s s R S W L R Q D O R X W S X ' % D W W H U \ 0 R G H s +]		
	Crest factor		3:1		
	Harmonic distortion (THD)		< 1% (linear load), <3% (non linear load)		
	Overload Capacity	AC Mode	/ R D G 7 O D Vè W 7 P L Q D V W è 7 P L Q O D V 1min è ú 150% turn to bypass immediately		

		Bat. Mode	/ R D G 7 O D Vè W 7 P L Q D V W è 7 P L Q O D Vè W ú 150% shut down UPS immediately		
Efficiency	Normal mode		Up to 94%		
BATTERY					
Battery	Battery voltage	Standard unit	s 9 G F S F V 12V9AH); (2x20pcs 12V9AH; 3x20pcs 12V9AH optional)	s 9 G F [12V9AH); (3x20pcs 12V9AH optional)	s 9 G F [S 12V9AH);
		Long run unit	s 9 s 9 s 9 s 9 s 9 G F E D W W H U \ T X D		
	Float Voltage		2.25V/cell (selectable from 2.20-2.29V/cell) Constant current and constant voltage charge mode		
	Boost Charge Voltage		2.30V/cell (selectable from 2.30-2.40V/cell) Constant current and constant voltage charge mode		
	End of Discharge		1.75 V/cell (selectable from 1.60 or 1.90V/cell)		
	Charge Current(A) (charge current can be set according to battery capacity installed)		Standard unit: 1.35A (2.7;4.05A optional) Long run unit: Max. current 20A (limited by input current)	Standard unit: 2.7A (4.05A optional) Long run unit: Max. current 20A (limited by input current)	Standard unit: 4.05A Long run unit: Max. current 20A (limited by input current)
SYSTEM FEATURES					
Transfer Time	Synchronous transfer		Utility to Battery : 0ms; Utility to bypass: 0ms		
	Asynchronous transfer		Asynchronous transfer: 15ms (50 Hz), 13.3ms (60 Hz)		
Alarms			overload, utility abnormal, UPS fault, battery low, etc.		
Protection			short circuit, overload, over temperature, battery low, fan fault alarm.		
Communication Interface			USB, RS232,RS485, Parallel port, Dry contact, Intelligent slot, SNMP card (optional), Relay card (optional),Battery temperature sensor(optional)		
ENVIRONMENTAL					
Environment	Operating Temperature		0 : 40		
	Storage Temperature		-25 : 55 (no battery)		
	Humidity		0 : 95% non condensing		
	Acoustical Noise		<55dB from 1M distance		<58dB from 1M distance
	Altitude		< 1500m.When>1500m,lower the rated power for use		
PHYSICAL					
' L P H Q V L R Q ' ™ : ™ + P P			900x250x868		
Net weight (Kg)			136/77	188/78	239/79
STANDARDS					
Safety certifications			UL 1778, IEC/EN 62040-1, IEC/EN 60950-1		
EMC			FCC Part 15:2015, IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8		

Matching Battery Pack		
Model	**Weight(Kg)**	**' L P H Q V L R Q ' ™ : ™**
UPO33HF-BC8009-10	260	900x250x868
UPO33HF-BC8009-20	261	900x250x868

Appendix 2 Problems and Solution

In case the UPS cannot work normally, it might be wrong in installation, wiring or operation. Please check these aspects first. If all these aspects are checked without any problem, please consult with local agent right away and provide below information.

ä1 å Product model name and serial number.

ä2 å Try to describe the fault with more details, such as LCD display info, LED lights status, etc.

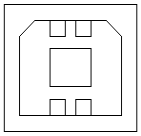
Read the user manual carefully, it can help a lot for using this UPS in the right way. Some FAQ (frequently asked questions) may help you to troubleshoot your problem easily.

No.	Problem	Possible reason	Solution
1	Utility is connected but the UPS cannot be powered ON.	Input power supply is not connected; Input voltage low; The input switch of the UPS is not switched on.	Measure if the UPS input voltage/frequency is within the window. Check if UPS input is switched on
2	Utility normal but Utility LED does not light on, and the UPS operates at battery mode	The input breakers of the UPS are not switched on; input cable is not well connected	Switch on the input breaker; Make sure the input cable is well connected.
3	The UPS does not indicate any failure, but output do not have voltage	Output cable does not well connected; Output breaker do not switch on	Make sure the output cable is well connected; Switch on the output breaker.
4	Utility LED is flashing	Utility voltage exceeds UPS input range.	If the UPS operates at battery mode, please pay attention to the remaining backup time needed for your system.
5	Battery LED is flashing but no charge voltage and current	Battery breaker does not switch on, or batteries are damaged, or battery is reversely connected. Battery number and capacity are not set correctly.	Switch on the battery breaker. If batteries are damaged, need to replace whole group batteries, Connect the battery cables correctly; Go to LCD setting of the battery number and capacity, set the

			correct data.
6	Buzzer beeps every 0.5 seconds and LCD display ¯output overload °	Overload	Remove some load
7	Buzzer long beeps, LCD display ¯29 ¶ault code	The UPS output is in short circuit	Make sure the load is not in short circuit, and then restart the UPS.
8	The UPS only works on bypass mode	The UPS is set to ECO mode	Set the UPS working mode to Normal mode
9	Cannot Black start	Battery switch is not properly closed: Battery fuse is not open: Or Battery low: Battery quantity set wrong; Power breaker in the rear panel not switch ON.	Close the battery switch: Change the fuse: Recharge the battery: Power ON the UPS with AC to set the battery quantity &quantity; Switch on the power breaker.
10	Buzzer beeps continuously and LCD indicates 1,3,5,9,15, etc fault codes	UPS is out of order	Consult with your local agent for repair

Appendix 3 USB communication port definition

Definition of port ö



Connection between PC USB port and UPS USB port.

PC USB port	UPS USB port	Description
Pin 1	Pin 1	PC : +5V
Pin 2	Pin 2	PC : DPLUS signal
Pin 3	Pin 3	PC :DMINUS signal
Pin 4	Pin 4	Signal ground

Available function of USB

- Monitor UPS power status.
- Monitor UPS alarm info.
- Monitor UPS running parameters.
- Timing off/on setting.

Communication data format

Baud rate ---------- 9600bps

Byte length ---------- 8bit

End bit ---------- 1bit

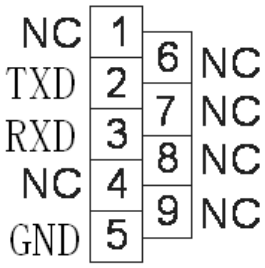
Parity check ---------none

CAUTION!

USB, RS232 and RS485 interface cannot be used at the same time, you can only use one of them at one time.

Appendix 4 RS232 communication port definition

Definition of Male port ö



Connection between PC RS232 port and UPS RS232 port

PC RS232 port	UPS RS232 port	
Pin 2	Pin 2	UPS send,PC receive
Pin 3	Pin 3	PC send,UPS receive
Pin 5	Pin 5	ground

Available function of RS232

- Monitor UPS power status.
- Monitor UPS alarm info.
- Monitor UPS running parameters.
- Timing off/on setting.

RS-232 communication data format

Baud rate ---------- 9600bps

Byte length ---------- 8bit

End bit ---------- 1bit

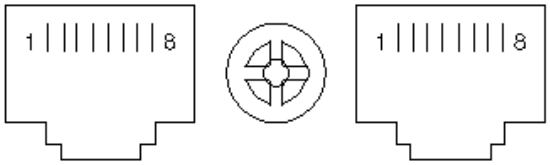
Parity check ---------none

CAUTION!

USB, RS232 and RS485 interface cannot be used at the same time, you can only use one of them at one time.

Appendix 5 RS485 communication port definition

Definition of port ö



Connection between the Device s RS485 port and UPS RS485 port.

device(RJ45)	UPS(RJ45)	Description
Pin 1/5	Pin 1/5	485+ Ā °
Pin 2/4	Pin 2/4	485 - B °
Pin7	Pin7	+12Vdc
Pin8	Pin8	GND

Available function of RS485

- Monitor UPS power status.
- Monitor UPS alarm info.
- Monitor UPS running parameters.
- Timing off/on setting.
- Battery environment temperature monitoring.
- Charging voltage modulation depending on batteries temperature

Communication data format

Baud rate ---------- 9600bps

Byte length ---------- 8bit

End bit ---------- 1bit

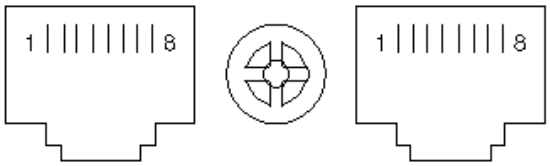
Parity check ---------none

CAUTION!

USB, RS232 and RS485 interface cannot be used at the same time, you can only use one of them at one time.
RS485 port pin7 is 12Vdc!

Appendix 6 BAT_T communication port definition

Definition of port ö



Connection between the Temperature senator RJ45 port and UPS RJ45 port.

Temperature senator ä RJ45)	UPS BAT_T ä RJ45 å	Description
Pin 1/5	Pin 1/5	TX
Pin 2/4	Pin 2/4	RX
Pin 7	Pin 7	12V
Pin 8	Pin 8	GND

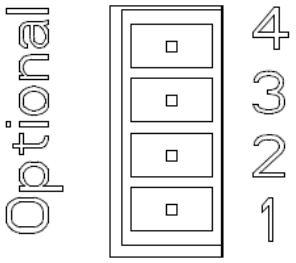
Available function of BAT_T

·Battery environment temperature monitoring.

·Charging voltage modulation depen G L Q J R Q E D W W H U L H V ¬ W H P S H U D W X U H

Appendix 7 Optional port definition

Definition of Male port ö



Instruction:

UPS	Instruction
Pin1	Normally NC
Pin2	Normally NO
Pin3	/
Pin4	Common

Function 1 description (Optional):

· Drive the bypass breaker when feedback alarm.

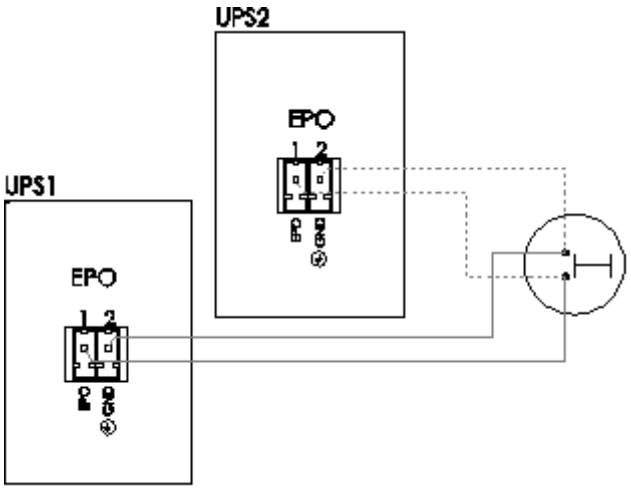
Function 2 description (Optional):

· Drive the battery breaker when battery voltage low.

Appendix 8 REPO instruction

Definition of port ö

Connection diagram ö



Connection between the button and UPS REPO port.

Button	UPS REPO	Description
Pin 1	Pin 1	EPO
Pin 2	Pin 2	GND

·A remote emergency stop switch (Dry contact signal and ¯normally open °- not provided) can be installed in a remote location and connection through simple wires to the REPO connector.

·The remote switch can be connected to several UPS in a parallel architecture allowing the user to stops all units at once.