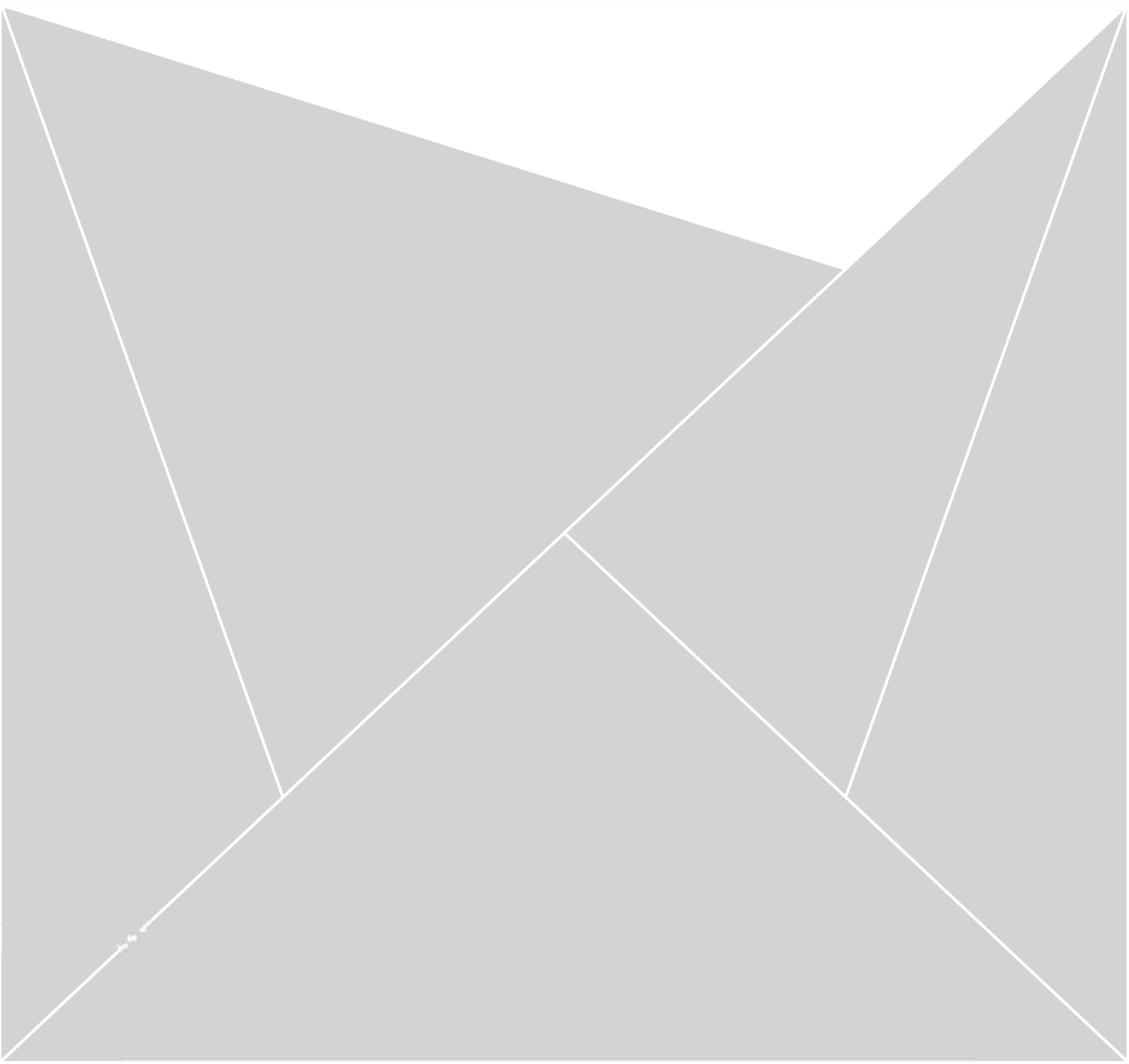


Qoltec®



OPERATING INSTRUCTIONS

3-PHASE UPS POWER SUPPLY

10 kVA | 15 kVA | 20 kVA

MODEL 53983, 53984, 53985

INTRODUCTION

Thank you for choosing a Qoltec UPS. In order to ensure user safety and the correct and reliable operation of the device, please read this manual carefully before installation, start-up, operation or servicing.

Particular attention should be paid to the warnings, notes and safety information contained in this document. Failure to follow the recommendations may result in damage to the device, loss of warranty or danger to health and life.

ABOUT THE PRODUCT

The Qoltec UPS is a three-phase online uninterruptible power supply system with a power rating of 15 kVA / 12 kW (model 53984) 10 kVA/8 kW (model 53983) 20 kVA/16 kW (model 53985), designed to protect critical equipment such as servers, network systems and industrial infrastructure. Thanks to double conversion technology, it provides a pure sine wave voltage and stable output parameters regardless of the quality of the mains supply.

The device works with an external battery bank (18–20 × 12V / 9Ah), allowing for flexible backup time adjustment. It is equipped with built-in SNMP, RS-232, USB-B communication interfaces and an EPO port, allowing for remote monitoring and secure management of the power supply system.

Power supply design

Illustration 1

Communication interface and management

The UPS is equipped with an extensive communication system that allows both local and remote management of the device.

Available interfaces:

- ✓ USB-B
- ✓ RS-232
- ✓ SNMP (LAN)
- ✓ EPO (Emergency Power Off)

The built-in SNMP module enables remote monitoring of UPS operating parameters via LAN, alarm management and secure shutdown of IT systems.

The RS-232 and USB-B ports enable direct connection to a computer and cooperation with monitoring software.

The EPO port allows for immediate emergency shutdown of the device in emergency situations.

SAFETY INFORMATION

The device complies with the requirements of the PN-EN 62040 standard for uninterruptible power supply (UPS) systems and the requirements of European directives on electrical safety and electromagnetic compatibility.

Failure to follow the recommendations contained in this manual may result in:

- a) electric shock,
- b) serious injury,
- c) damage to the device,
- d) loss of warranty,
- e) fire hazard.

CAUTION:

Inspect the device before installation. Ensure that no components inside the packaging have been damaged during transport. Do not switch on the device and immediately inform the seller and carrier if you find any damage or missing parts. Keep the original packaging in a safe place for possible future use.

1. The device operates at dangerous three-phase voltage (3×380 VAC) and high DC battery voltage (up to 273 VDC). Failure to follow safety rules may result in electric shock, serious injury or death.
2. The device is not intended for use by persons without the appropriate qualifications. Installation, service and maintenance work may only be carried out by qualified personnel with the appropriate electrical qualifications in accordance with applicable national regulations.

3. The device must be properly connected to a protective earth (PE) conductor.
4. The UPS must be operated in a room with a temperature between 0°C and +40°C.
5. The fuse must only be replaced with the same type and rating to avoid the risk of fire.
6. Do not disassemble the UPS.
7. Even after disconnecting the device from the mains, the internal components of the UPS may remain live due to the energy stored in the batteries, which poses a potential hazard.
8. Do not disassemble the device housing or tamper with its design without the manufacturer's authorisation. Unauthorised tampering will void the warranty and may pose a safety hazard.
9. Do not:
 - a) install the device near flammable materials,
 - b) cover the ventilation openings,
 - c) use fuses with parameters other than those recommended.
10. If you smell burning, smoke or hear unusual noises, immediately:
 - a) switch off the device,
 - b) disconnect the power supply,
 - c) disconnect the batteries,
 - d) contact the service department.

Precautions when working with batteries

1. Batteries may:
 - a) cause electric shock,
 - b) generate very high short-circuit currents,
 - c) pose a fire or explosion hazard.
2. During maintenance work, you should:
 - a) remove watches, rings and other metal objects,
 - b) use only tools with insulated handles,
 - c) use personal protective equipment (electrical insulating gloves, safety glasses),
 - d) avoid short circuits between terminals.
3. When replacing batteries, use:
 - a) the same number of batteries,
 - b) the same type and parameters (12V / 9Ah),

- c) the correct series configuration in accordance with the required system voltage.

Fuses

1. Fuses should only be replaced with components of the same type.
 - a) of the same type,
 - b) with the same rated value,
 - c) in accordance with the manufacturer's specifications.

Caution: Using the wrong fuse may cause a fire or damage the device.

Battery configuration (long-run model, without built-in batteries)

The UPS requires connection to an external high-voltage DC battery bank. The recommended configuration is 20 batteries with a capacity of 9 Ah connected in series (depending on the device version and manufacturer's requirements).

The charging voltage is 273 VDC $\pm 1\%$. In practice, this value most often corresponds to a configuration of 20 batteries (240 VDC). Before connecting the battery bank, it is essential to confirm the required number of batteries for the model in question on the device's nameplate or in the manufacturer's documentation.

Note: An incorrect number of batteries or incorrect polarity may damage the UPS and batteries and pose a risk to the user.

Power supply button operation

Button	Function
ON / Enter	• Switching on the UPS: Press and hold the button for more than 0.5 seconds to start the device. • Enter: Press the button to confirm your selection in the settings menu.
OFF / ESC	• Switching off the UPS: Press and hold the button for more than 0.5 seconds to switch off the device. • Esc: Press the button to return to the previous menu in the settings.

Button	Function
Test / Up	• Battery test: Press and hold the button for more than 0.5 seconds to start the battery test in AC or CVCF mode. • Up: Press the button to move to the next option in the settings menu.
Mute / Down	• Alarm mute: Press and hold the button for more than 0.5 seconds to mute the audible signal. For details, refer to section 3-4-9. • Down: Press the button to display the previous option in the settings menu.
Test/Up + Mute/Down	• Press and hold both buttons simultaneously for more than 1 second to enter or exit the settings menu.

* CVCF stands for Constant Voltage Constant Frequency mode.

LED indicators and LCD panel

There are 4 LEDs on the front panel indicating the current operating status of the UPS:

- ✓ BYPASS
- ✓ LINE
- ✓ BATTERY
- ✓ FAULT

UPS operating status – LED indication

Operating mode	Bypass	Line	Battery	Fault
UPS Power On	●	●	●	●
No Output mode	○	○	○	○
Bypass mode	●	○	○	○

Operating mode	Bypass	Line	Battery	Fault
AC mode	☐	☒	☐	☐
Battery mode	☐	☐	☒	☐
CVCF mode	☐	☒	☐	☐
Battery Test	☒	☒	☒	☐
ECO mode	☒	☒	☐	☐
Fault	☐	☐	☐	☒

Explanations:

● – LED is lit

○ – LED off

Meaning of abbreviations displayed on the LCD screen

The table below shows the abbreviations that appear on the LCD display and their meanings.

Abbreviation	Meaning
ENA	Enabled / Active
DIS	Off / Inactive
ATO	Automatic mode
BAT	Battery
NCF	Normal mode (not CVCF)
CF	CVCF mode (constant voltage and constant frequency)
SUB	Subtract
ADD	Add
ON	On
OFF	Off
FBD	Not permitted

OPN	Permitted
RES	Reserved
N.L	Loss of neutral wire
CHE	Check
OP.V	Output voltage
PAR	Parallel operation mode (001 indicates the first UPS in the system)
AN	Phase one (L1)
BN	Phase two (L2)
CN	Phase three (L3)
AB	First line (L1-L2)
BC	Second line (L2-L3)
CA	Third line (L3-L1)

Technical notes

CVCF (Constant Voltage Constant Frequency) mode means voltage and frequency stabilisation regardless of input parameters.

The designations AN, BN, CN refer to phase voltages relative to the neutral conductor.

The designations AB, BC, CA refer to phase-to-phase voltages.

The PAR parameter is used only in parallel operation configuration.

The N.L message indicates the absence of a neutral wire and may cause warning code 02.

LCD settings

The UPS allows you to configure operating parameters via the LCD panel.

There are three parameter levels in the configuration system:

Parameter 1 – programme selection (function number).

Parameter 2 – setting options.

Parameter 3 – value of the selected parameter.

Parameter 1 is used to select the configuration programme.

Parameters 2 and 3 specify specific settings or values for the selected programme.

To change the programme or parameter value, use the 'UP' or 'DOWN' buttons.

List of available programmes for Parameter 1

Code	Function description	Bypass / No output	AC mode	ECO mode	CVCF mode	Battery mode	Battery test
01	Output voltage	Y*					
02	Output frequency	Y					
03	Voltage range for bypass	Y					
04	Frequency range for bypass	Y					
05	ECO mode on/off	Y					
06	Voltage range for ECO mode	Y					
07	Frequency range for ECO mode	Y					
08	Bypass mode settings	Y	Y				
09	Maximum battery discharge time	Y	Y	Y	Y	Y	Y
10	Reserved	—	—	—	—	—	—
11	Reserved	—	—	—	—	—	—
12	Neutral wire loss detection	Y	Y	Y	Y	Y	Y
13	Battery voltage calibration	Y	Y	Y	Y	Y	Y
14	Charger voltage regulation	Y	Y	Y	Y	Y	Y
15	Phase A inverter voltage regulation		Y	Y	Y		
16	Phase B inverter voltage regulation		Y	Y	Y		
17	Phase C inverter voltage regulation		Y	Y	Y		
18	Phase A output voltage calibration		Y	Y	Y		
19	Phase B output voltage calibration		Y	Y	Y		
20	Phase C output voltage calibration		Y	Y	Y		

Explanations

Y – parameter available in a given operating mode.

Y* – parameter that can only be set in this mode.

Programmes marked as "Reserved" are reserved for future functions.

Parameters are saved only after the UPS has been shut down correctly (internal or external battery must be connected).

Normal shutdown means switching the UPS to bypass mode / no output and turning off the input switch.

Interface	Settings
01: Output voltage Figure 2	Parameter 3: Output voltage In parameter 3, you can select one of the following output voltage values: 208: Sets the output voltage to 208 Vac 220: Sets the output voltage to 220 Vac 230: Sets the output voltage to 230 Vac 240: Sets the output voltage to 240 Vac
02: Output frequency (60 Hz mode, CVCF) Figure 3	Parameter 2: Output frequency Output frequency setting. Parameter 2 can be set to one of the following options: 50.0Hz: Sets the output frequency to 50.0 Hz 60.0Hz: Sets the output frequency to 60.0 Hz ATO: Automatically selects the frequency based on the input frequency.

	If the input frequency is between 46 and 54 Hz, the output will be set to 50 Hz. If the input frequency is between 56 and 64 Hz, the output will be set to 60 Hz.
02: Output frequency (50 Hz mode, Normal) Figure 3	Parameter 3: Frequency mode Frequency setting in CVCF or normal (non-CVCF) mode. CF: Sets CVCF mode. The output frequency will be fixed (50 Hz or 60 Hz according to parameter 2). NCF: Sets normal mode (non-CVCF). The output frequency synchronises with the input frequency in the range: 46–54 Hz → 50 Hz 56–64 Hz → 60 Hz The synchronisation range depends on the setting in parameter 2. If parameter 2 is set to ATO, parameter 3 displays the current frequency.

Note (as in the original – below the table)

In the case of a single unit, the bypass output may be active for a few seconds after the device is started.

To avoid interference with connected devices, it is recommended to use an additional output relay card in CVCF applications.

Interface	Settings
03: Voltage range for bypass Figure 4	Parameter 2: Setting the lower bypass voltage threshold Range setting: from 110 V to 209 V.

	Default value: 110 V. Parameter 3: Upper bypass voltage threshold setting Range setting: 231 V to 276 V. Default value: 264 V.
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Interface	Settings
04: Frequency range for bypass Figure 5	Parameter 2: Lower bypass frequency setting 50 Hz system: setting range from 46.0 Hz to 49.0 Hz 60 Hz system: setting range from 56.0 Hz to 59.0 Hz Default value: 46.0 Hz / 56.0 Hz Parameter 3: Upper bypass frequency setting 50 Hz system: setting range from 51.0 Hz to 54.0 Hz 60 Hz system: setting range from 61.0 Hz to 64.0 Hz Default value: 54.0 Hz / 64.0 Hz

Interface	Settings
05: Enable/disable ECO mode Figure 6	Parameter 3: Enable or disable ECO function Available options: DIS: ECO function disabled ENA: ECO function enabled If the ECO function is disabled, it is possible to set the voltage and frequency range for ECO mode, but these settings will only be active once the ECO function is enabled.

Interface	Settings
06: Voltage range for ECO mode Figure 7	Parameter 2: Lower voltage threshold in ECO mode Setting range: from -5% to -10% of rated voltage Parameter 3: Upper voltage threshold in ECO mode Setting range: from +5% to +10% of rated voltage

Interface	Settings
07: Frequency range for ECO mode Figure 8	Parameter 2: Lower frequency in ECO mode 50 Hz system: range from 46.0 Hz to 48.0 Hz 60 Hz system: range from 56.0 Hz to 58.0 Hz Default value: 48.0 Hz / 58.0 Hz Parameter 3: Upper frequency in ECO mode 50 Hz system: range from 52.0 Hz to 54.0 Hz 60 Hz system: range from 62.0 Hz to 64.0 Hz Default value: 52.0 Hz / 62.0 Hz

Interface	Settings
08: Bypass mode settings Figure 9	Parameter 2: OPN: Bypass permitted. The UPS can operate in bypass mode depending on the shutdown settings.

	FBD: Bypass not permitted. Operation in bypass mode is not permitted under any circumstances. Parameter 3: ENA: Bypass enabled. Once activated, bypass can be enabled. DIS: Bypass disabled. Automatic bypass is permitted, but manual bypass is not available. Manual bypass means that the user switches the device to bypass mode (e.g. pressing the OFF button in AC mode switches to bypass mode).
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Interface	Setting
09: Setting the maximum battery discharge time Figure 10	Parameter 3: 000–999: Set the maximum battery discharge time in the range of 0 to 999 minutes. The UPS will automatically shut down to protect the battery if the set discharge time is reached before the battery reaches a low voltage condition. Default value: 990 minutes. DIS: Disable battery discharge time protection. The backup time will depend solely on the battery capacity.

Interface	Setting
10: Reserved Figure 11	Reserved for future functions.
11: Reserved Figure 12	Reserved for future functions.

Interface	Setting
12: Neutral wire loss detection Figure 13	Parameter 2: N.L: Neutral wire loss detection function. Parameter 3: DIS: Disable neutral wire loss detection function. The UPS will not detect neutral wire loss. ATO: Automatic neutral wire loss detection. If the neutral wire is lost, an alarm will be generated. If the UPS is switched on, it will switch to battery mode. When the neutral wire is restored, the alarm will be automatically silenced and the UPS will return to normal mode. CHE: Manual detection of neutral wire loss. If the neutral wire fails, an alarm will be generated and the UPS will switch to battery mode. When the neutral wire is restored, the alarm will not be silenced automatically and the UPS will not return to normal mode on its own. To restore operation, you must: 1. Silence the alarm. 2. Enter this menu and press the "Enter" button to make the CHE label flash. 3. Press "Enter" again to activate the detection function. If the neutral wire has been restored, the alarm will be silenced and the UPS

	will return to normal mode. If the neutral wire is still not detected, the alarm will remain active until the next manual check. CHE is the default setting.
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Interface	Setting
13: Battery voltage calibration Figure 14	Parameter 2: Select the Add or Sub function to adjust the battery voltage to the actual value. Parameter 3: Voltage adjustment range from 0 V to 9.9 V. Default value: 0 V.

Interface	Setting
14: Charger voltage adjustment Figure 15	Parameter 2: Select Add or Sub to adjust the charger voltage. Parameter 3: Voltage adjustment range from 0 V to 9.9 V. Default value: 0 V. NOTE: Before adjusting the charger voltage, disconnect all batteries to obtain an accurate charging voltage. All modifications must comply with the battery specifications.

Interface	Setting
15: Phase A inverter voltage adjustment Figure 16	Parameter 2: Select Add or Sub to correct the phase A inverter voltage. Parameter 3: Voltage adjustment range from 0 V to 9.9 V. Default value: 0 V.

Interface	Setting
16: Phase B inverter voltage adjustment Figure 17	Parameter 2: Select Add or Sub to correct the voltage of phase B inverter. Parameter 3: Voltage adjustment range from 0 V to 9.9 V. Default value: 0 V. The number 1 will be displayed under Add or Sub, indicating the voltage adjustment of phase B inverter.

Interface	Setting
17: Voltage adjustment of phase C inverter Figure 18	Parameter 2: Select Add or Sub to correct the voltage of the C-phase inverter. Parameter 3: Voltage adjustment range from 0 V to 9.9 V. Default value: 0 V. The number 2 will be displayed under Add or Sub, indicating the voltage adjustment of the C-phase inverter.

Interface	Setting
18: Calibration of phase A output voltage Figure 19	Parameter 2: Always displays OP.V as the output voltage. Parameter 3: Displays the internal measurement value of phase A output voltage. This value can be calibrated by pressing the Up or Down button according to the reading from an external voltage meter. The calibration result is saved when the Enter button is pressed. Calibration range: ± 9 V.

	This function is typically used in parallel operation.
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Interface	Setting
19: Calibration of phase B output voltage Figure 20	Parameter 2: Always displays OP.V as the output voltage. Parameter 3: Displays the internal measurement value of phase B output voltage. This value can be calibrated by pressing the Up or Down button according to the reading from an external voltage meter. The calibration result is saved when the Enter button is pressed. Calibration range: ± 9 V. This function is typically used in parallel operation. The number 1 will be displayed under OP.V, indicating the output voltage of phase B.

Interface	Setting
20: Calibration of phase C output voltage Figure 21	Parameter 2: Always displays OP.V as the output voltage. Parameter 3: Displays the internal measurement value of the phase C output voltage. This value can be calibrated by pressing the Up or Down button according to the reading from an external voltage meter. The calibration result is saved when the Enter button is pressed. Calibration range: ± 9 V. This function is typically used in

	parallel operation. The number 2 will be displayed under OP.V, indicating the output voltage of phase C.
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Description of operating modes / status

The table below shows how information is displayed on the LCD screen depending on the operating mode and current status of the device.

(1) Normal operation

When the UPS is operating in normal mode, the LCD display will show a series of information screens displayed cyclically. These include:

three-phase input voltages (An, Bn, Cn),

phase-to-phase voltages (Ab, Bc, Ca),

input frequency.

These parameters are displayed alternately.

(2) Parallel Mode

If the UPS system is operating in parallel configuration, an additional screen will be displayed containing:

the PAR designation in parameter 2,

the number assigned to the unit in parameter 3.

By default:

the master unit is assigned the number 001,

slave units are assigned numbers 002 or 003.

The numbers assigned to the units can be changed dynamically during system operation.

OPERATING MODES

Operating status

UPS activation	Descrip tion	After switching on the UPS, the device enters initialisation mode for a few seconds. During this time, the processor (CPU) and control system are initialised.
	LCD	(start screen – system initialisation) Figure 22
No output voltage mode	Descrip tion	If the bypass voltage or frequency is outside the permissible range or the bypass is disabled (locked), the UPS will enter no output mode when the device is switched on or off. This means that the UPS does not supply voltage at the output. An audible alarm sounds every two minutes.
	LCD	(no output mode screens – displayed input parameters, no output voltage) Figure 23
AC Mode	Descrip tion	If the input voltage is within the permissible range, the UPS supplies clean and stable alternating current (AC) at the output. In AC mode, the UPS simultaneously charges the connected battery bank.
	LCD	(screens showing phase voltages An, Bn, Cn, interphase voltages Ab, Bc, Ca and frequency 50/60 Hz – input and output within the standard) Illustration 24

Operating status		
ECO Mode	Descrip tion	If the input voltage is within the set voltage regulation range and ECO mode is enabled, the UPS transfers the voltage from the bypass directly to the output in order to save energy.
	LCD	(screens showing phase voltages An, Bn, Cn, interphase voltages Ab, Bc, Ca and frequency – input and output in line, operating in energy bypass mode) Illustration 25
CVCF mode	Descrip tion	If the output frequency is set to "CF", the inverter generates a constant output frequency (50 Hz or 60 Hz). In this mode, the UPS does not operate in bypass

		mode, but continues to charge the connected battery bank.
	LCD	(screens showing phase voltages An, Bn, Cn, interphase voltages Ab, Bc, Ca and a constant output frequency of 50 Hz or 60 Hz — CF marking visible on the screen) Illustration 26

Operating status		
Battery Mode	Descrip tion	If the input voltage or frequency exceeds the permissible range or if the mains power supply fails, the UPS will switch to battery power. In battery mode, an audible alarm sounds every 4 seconds.
	LCD	(screens showing phase voltages An, Bn, Cn, interphase voltages Ab, Bc, Ca and current output frequency — active battery icon indicating battery operation) Figure 27
Bypass Mode	Descrip tion	If the input voltage is within the acceptable range and the bypass function is enabled, the device will switch to bypass mode when the UPS is switched off. In bypass mode, an audible alarm sounds every two minutes.
	LCD	(screens showing phase voltages An, Bn, Cn, interphase voltages Ab, Bc, Ca and frequency — output power directly from bypass, bypass icon active) Figure 28
Battery Test	Descrip tion	When the UPS is operating in AC or CVCF mode, press and hold the "Test" button for more than 0.5 seconds. The UPS will emit a single beep and start the battery test procedure. The line between the input (I/P) icon and the inverter icon will flash to remind you that the test is in progress. This function is used to check the battery status.

	LCD	(screens showing phase voltages and a flashing line between the I/P input icon and the inverter icon – active battery test) (screens showing bc and ca phase-to-phase voltages and frequency screen during active battery test – test icon visible and active line between I/P and inverter) Illustration 29
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Display status		
Warning status	Descrip tion	If errors occur in the UPS (but the device is still operating correctly), an additional screen will be displayed informing you of the warning status. The ⚠ icon will flash on the warning screen, and the display may show up to 3 warning codes simultaneously. Each code represents a separate error. The meaning of the codes can be found in the warning code table.
	LCD	(warning screen with flashing warning icon and codes displayed, e.g. 09, 3C, etc.) Figure 30
Fault Status	Descrip tion	In the event of a serious UPS fault, the inverter will be blocked. The error code will be displayed on the screen and the ⚠ icon will light up continuously. The meaning of the error code can be found in the fault code table.
	LCD	(screens displaying the error code, e.g. 43, and the warning icon active – no output voltage) Figure 31

ERROR CODES

Error code	Fault description	Icon
01	DC bus failure (Bus start failure)	None
02	DC bus overvoltage (Bus over)	None
03	DC bus voltage too low (Bus under)	None
04	DC bus imbalance	None
06	Converter overcurrent	None

11	Inverter start failure	None
12	Inverter voltage too high	None
13	Inverter voltage too low	None
14	Short circuit at inverter output A (line-neutral)	SHORT
15	Short circuit at inverter B output (line-neutral)	SHORT
16	Short circuit at inverter C output (line-neutral)	SHORT
17	Short circuit at inverter output A (line-line)	SHORT
18	Short circuit at inverter B output (line-line)	SHORT
19	Short circuit at inverter C output (line-line)	SHORT
1A	Negative power fault in phase A inverter	None
1B	Negative power fault in phase B inverter	None
1C	Negative power fault in phase C inverter	None
21	Short circuit in the battery SCR circuit	None
24	Inverter relay short circuit	None
29	Battery fuse damage	None
31	Communication error in parallel operation	None
36	Output current imbalance in parallel operation	None
41	Overheating	None
42	DSP communication error	None
43	Overload	OVER LOAD
46	Incorrect UPS configuration	None
47	MCU communication error	None
48	Software version mismatch between two DSP modules	None
49	Input and output phase incompatibility	None

Technical notes

Codes 14–19 indicate a short circuit at the UPS output and require immediate disconnection of the loads.

Code 29 indicates a damaged battery fuse – at voltages up to 273 VDC, work may only be performed by authorised personnel.

Code 41 (overheating) may be caused by insufficient ventilation or excessive ambient temperature.

Code 43 (overload) indicates that the permissible power of 12 kW has been exceeded.

Codes 31 and 36 relate to parallel operation and do not occur in a single UPS configuration.

Warning indicators

The table below shows the warning messages displayed on the LCD panel together with audible signals.

Warning	Icon (flashing)	Audible signal
Low battery	LOW BATT	Signal every 1 second
Overload	OVER LOAD	Signal twice per second
Battery disconnected	BATT OPEN	Signal every second
Battery overcharge	Battery symbol	Signal every 1 second
Active EPO	EP	Signal every 1 second
Fan failure/overheating	Fan symbol	Signal every 1 second
Charger failure	Charger symbol	Signal every 1 second
Input fuse damaged	Fuse symbol	Signal every 1 second
Overload 3 times in 30 minutes	Warning symbol	Signal every 1 second

Technical notes

The "Battery low" warning indicates that the backup time is coming to an end.

"Battery unconnected" in the long-run model indicates no voltage on the external battery bank.

"Over charge" indicates incorrect charging voltage (nominal 273 VDC $\pm$ 1%).

"Input fuse broken" may refer to one of the input phases L1/L2/L3.

A warning about overload 3 times in 30 minutes may result in bypass mode being blocked.

Warning codes

The table below shows the warning codes displayed on the LCD screen.

Warning code	Event
01	Battery disconnected
02	Loss of neutral wire (N)
04	Incorrect input phase
05	Incorrect bypass phase
07	Battery overload
08	Low battery level
09	Overload
0A	Fan failure
0B	Active EPO
0D	Overheating
0E	Charger failure
10	Damaged input fuse L1
11	Damaged input fuse L2
12	Damaged input fuse L3
21	Phase differences in parallel system
22	Various bypass states in a parallel system
33	Blocking in bypass mode after 3 overloads in 30 minutes
34	Converter current imbalance
35	Damaged battery fuse
3A	Service door open (if equipped with sensor)
3C	Severe mains voltage asymmetry
3D	Unstable bypass

Important information

Alarms marked in the documentation as relating to a "single input unit" refer to a configuration with a single power input (does not apply to versions with a separate bypass input).

TROUBLESHOOTING

If the UPS system malfunctions, identify the problem using the diagnostic table below.

Problem	Possible cause	Recommendations
No display or alarm on the front panel despite mains power being present	No AC input voltage	Check that the power cord is properly connected to the mains and that voltage is present on all phases.
Warning icon is lit, "EP" is displayed on the LCD, alarm sounds every second	EPO circuit activated	Check that the EPO switch is in the position that allows operation. Set the EPO circuit to the closed position to deactivate the emergency shutdown function. Incorrect EPO connection prevents the UPS from starting up.
Warning icon and "BAT FAIL" message flashing, alarm sounding every second	Incorrect connection of the external battery bank or internal battery error (if applicable)	Check that all batteries are connected correctly and check the total voltage of the bank.
The "OVER LOAD" icon flashes, alarm twice per second	UPS overload	Disconnect excess loads from the UPS output.
UPS overloaded – devices powered directly from the mains via bypass	Prolonged overload	Reduce the load. If necessary, switch off the UPS and restart it once the load has stabilised.
Error code 43, "OVER LOAD" icon lit, continuous alarm	Prolonged overload causes: Switch to bypass mode Protective shutdown (code 43)	Disconnect some of the loads and restart the device. Check: Current load level (%) Whether the receivers generate high starting

		current Whether there are any non-linear loads causing a high peak factor After removing the excess load, you should: Switch off the UPS Wait 30 seconds Restart the device
Error code 14, "SHORT" icon lit, continuous alarm	Short circuit at the UPS output	If the "SHORT" error is displayed: Disconnect all loads from the UPS output. Check the resistance between L-N and L-PE. Verify that there is no damage to the output cable. Check the load switchboard. Do not restart the UPS before removing the short circuit.
Other error codes, continuous alarm	Internal device fault	Contact an authorised service centre or dealer.
Backup time shorter than nominal	Batteries not fully charged	Charge the batteries for at least 7 hours, then check the backup time again.
	Damaged batteries	Contact a service centre to replace the batteries.
Warning icon and fan symbol flashing, alarm sounding every second	Fan blocked or excessive internal temperature	Check the ventilation openings for blockages and the condition of the fans. Contact the service department if necessary.
Warning code 02 displayed, warning icon flashing, alarm sounding every second	Neutral wire (N) disconnected	Check that the neutral wire is connected correctly. If it is connected correctly, go to the LCD settings and check parameter 3

		"CHEF". If the parameter is set to "Enter", press and hold the "Enter" button while the "CHEF" symbol flashes on the to clear the alarm. If the warning persists, check the L2 and L3 phase fuses.
	Damaged L2 or L3 input fuse	Replace the fuse with one of the same rating.

STORAGE AND MAINTENANCE

Before long-term storage, connect the unit to the mains power supply and charge it for at least 7 hours to fully charge the batteries.

The UPS should be stored:

in an upright position,

in a dry, clean and dust-free place,

in a room with a stable temperature,

away from sources of heat and moisture.

During storage, we recommend periodically recharging the batteries according to the table below:

Storage temperature	Recharging frequency	Charging time
-25°C ~ 40°C	Every 3 months	1-2 hours
40°C ~ 45°C	Every 2 months	1-2 hours

Note: Failure to follow these recommendations may result in permanent damage to the batteries and loss of capacity.

Before performing any maintenance work, you must:

1. Switch off the device.
2. Disconnect the mains power supply.

3. Disconnect the external battery bank.
4. Wait until the DC bus capacitors are completely discharged.
5. Verify that there is no voltage using appropriate measuring instruments.

Caution: Even after disconnecting from the mains, the device may remain live due to energy stored in capacitors and batteries.

DISPOSAL

The device and batteries must be disposed of in accordance with:

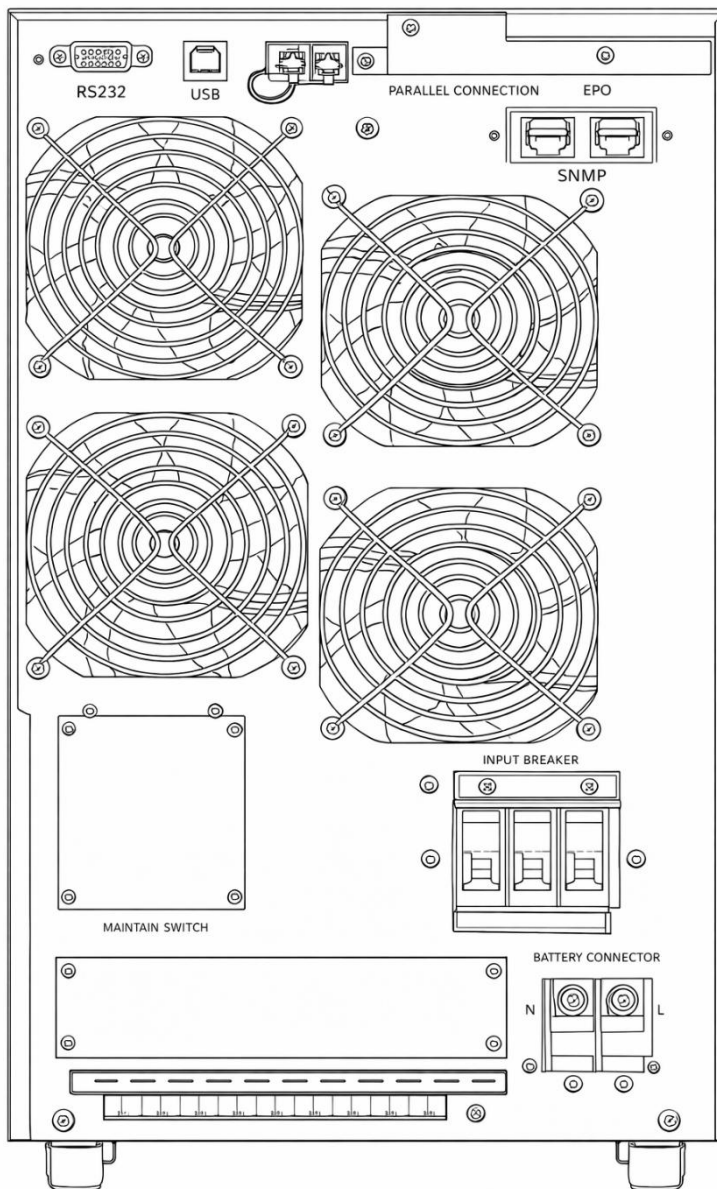
1. regulations concerning waste electrical and electronic equipment,
2. regulations concerning batteries and accumulators,
3. local environmental regulations.

Used batteries must be disposed of in accordance with applicable regulations on hazardous waste and the directive on batteries and accumulators.

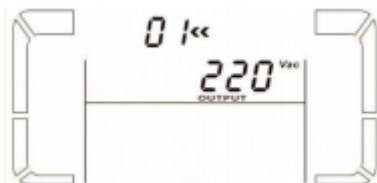
Caution: Do not dispose of batteries by burning them. This may cause an explosion. Dispose of used batteries in accordance with applicable laws.

Do not open or destroy the batteries. Leaking electrolyte can cause skin and eye irritation and is a potentially toxic substance.

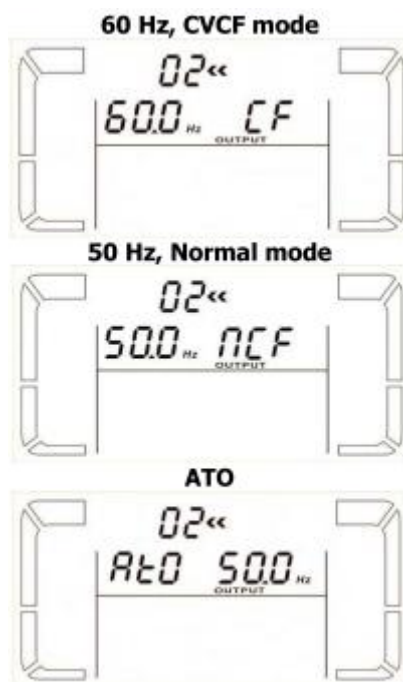
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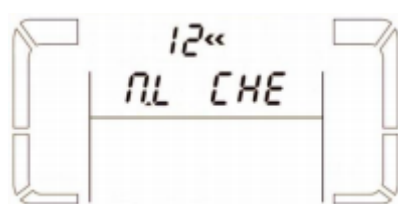
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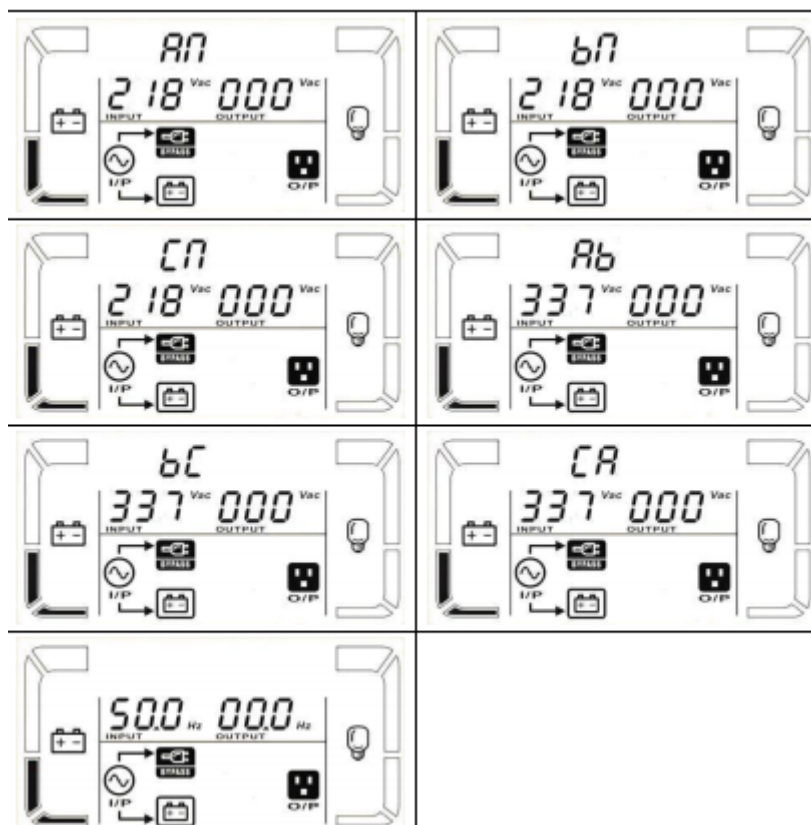
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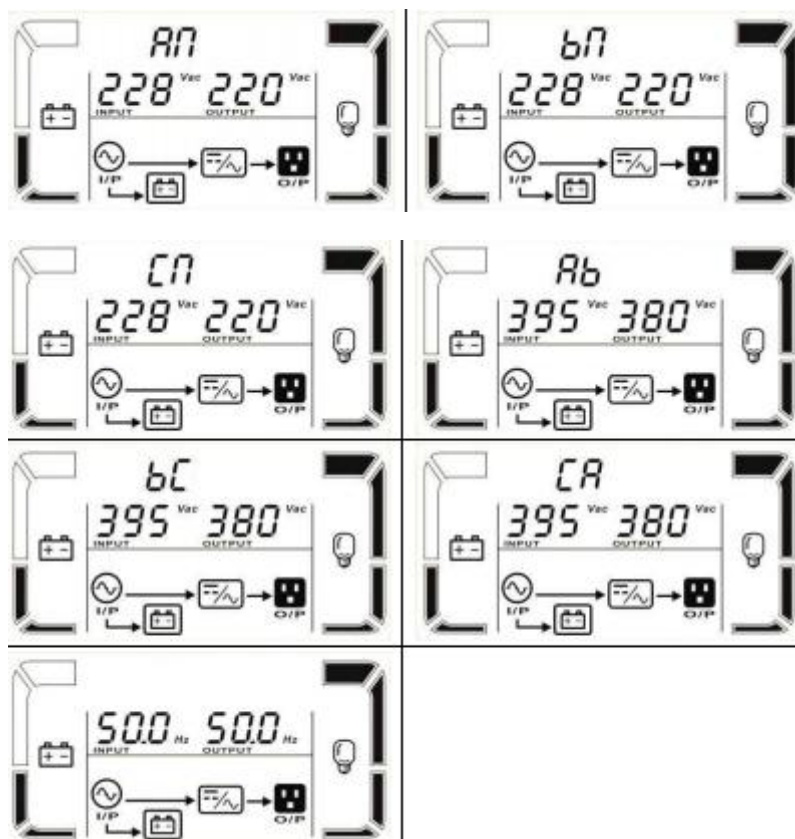
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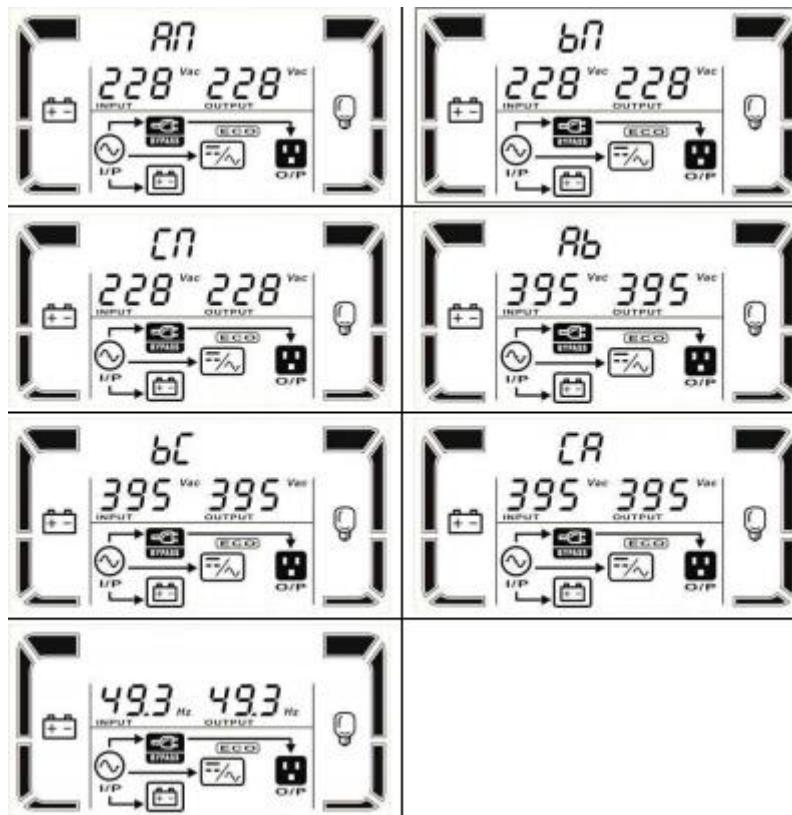
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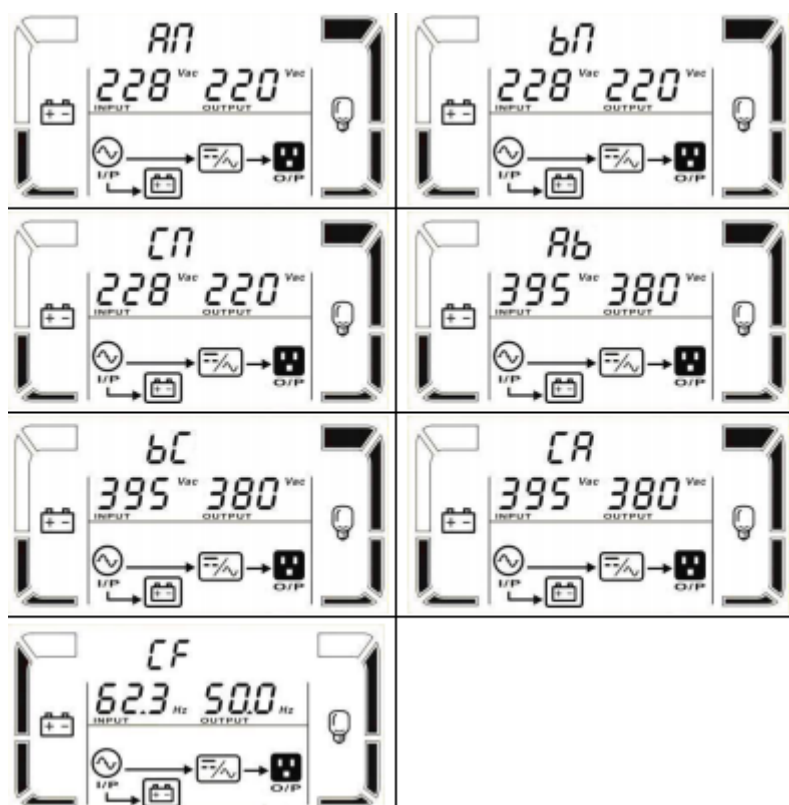
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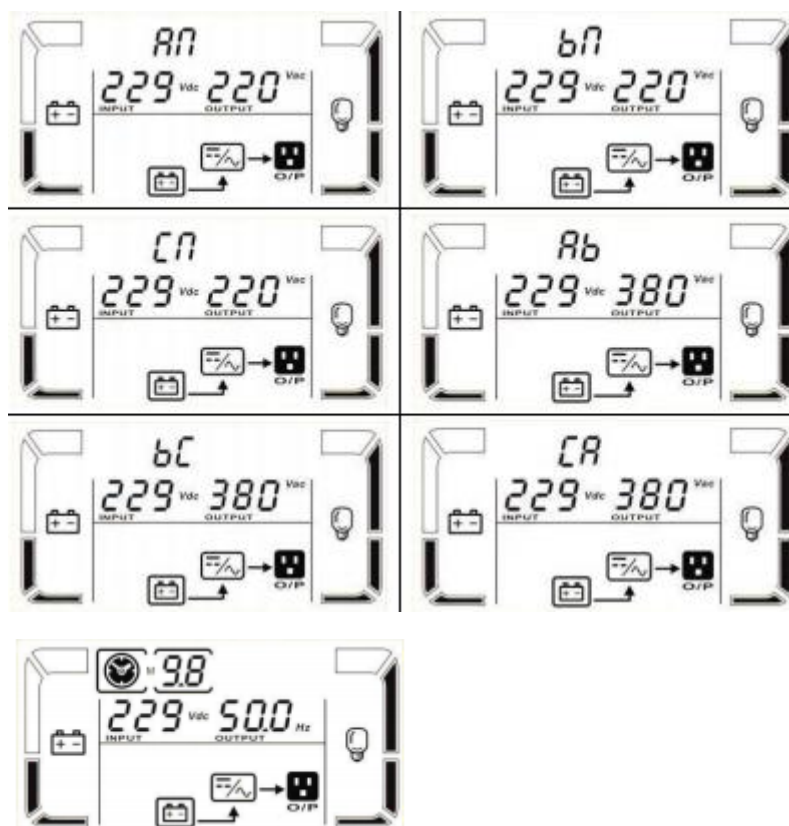
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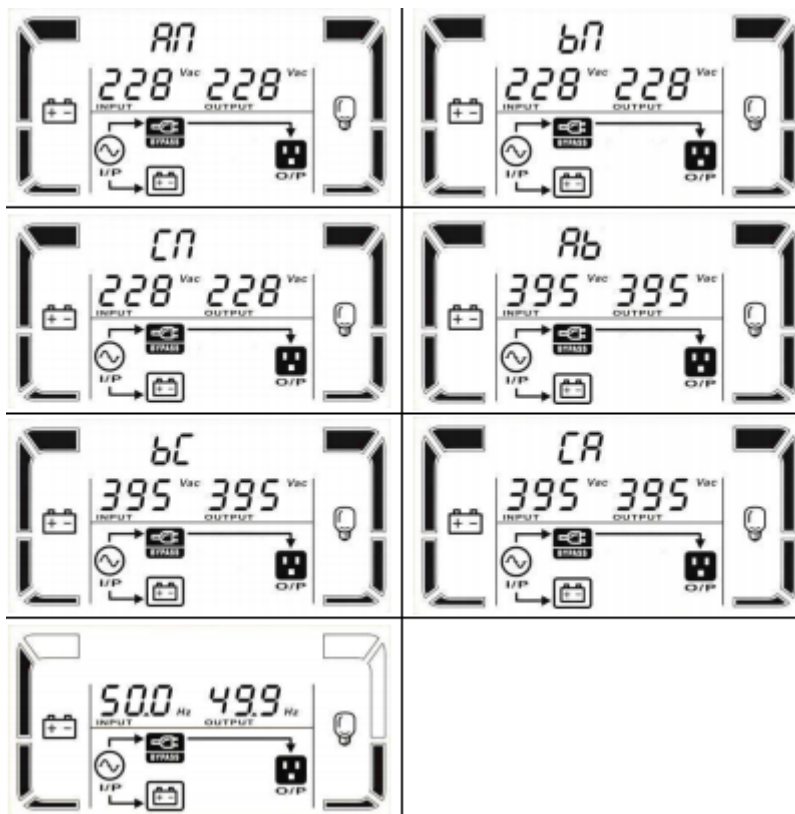
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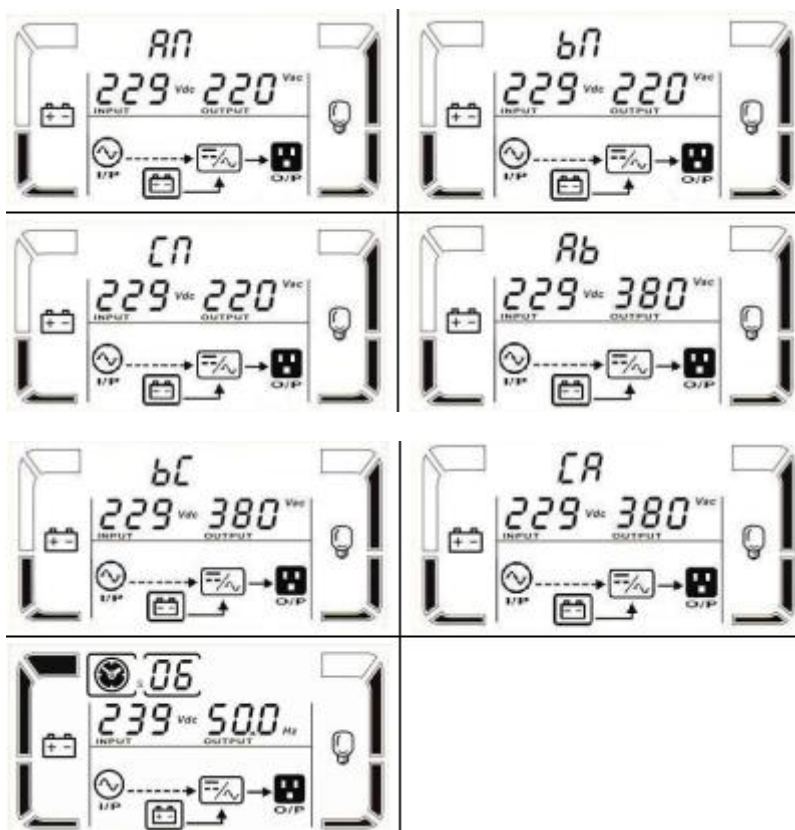
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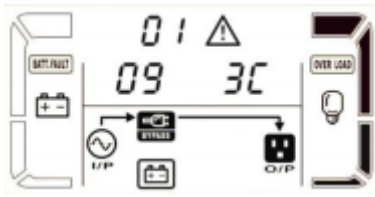
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