CertaUPS

C400 USER MANUAL

A COMPLETE INSTALLATION AND USER GUIDE

THE C400 SERIES

An uninterruptible power supply (UPS) incorporating online double conversion technology, which eliminates all mains power disturbances.

www.certaups.com

For assistance please contact your local CertaUPS partner.

Contents

SAFETY INFORMATION

KEEP THESE INSTRUCTIONS IN A SAFE PLACE
This section contains essential information and instructions that should be followed to ensure the safe handling, installation and maintenance of CertaUPS equipment and batteries.

USER MANUAL SYMBOLS

The following will be referenced throughout this document.

SYMBOL	DEFINITION
	Caution! Follow instructions carefully
	Caution, risk of electric shock
	Power On/Off
	Alternating current (AC)
	Direct Current (DC)
	Grounding
	Recycle
	Not to be disposed of in general waste Waste electrical equipment or electronic equipment (WEEE) should not be disposed of in the general waste. CertaUPS systems should always be disposed of at a proper recycling/hazardous waste disposal centre. Please see page 10 for disposal guidance.

HANDLING

UPS handling weight guidelines

<18kg (<40lb)	One-person
18 – 32 kg (40 – 70 lb)	Two-person
32 – 55 kg (70 – 120 lb)	Three-person
>55 kg (>120 lb)	Forklift

AUTHORISED PERSONNEL TO HANDLE ONLY
UPS systems contain both AC and DC when disconnected from the mains outlet and should only be serviced by qualified persons.

Before any handling please ensure that the following precautions are taken:

QUALIFIED PERSONNEL Any persons servicing the UPS must be qualified and knowledgeable in UPS technology and batteries	
CLOTHING Correct PPE should always be worn	
POWER OFF Ensure all mains power is disconnected before starting work	
TOOLS always use insulated tools. Do not lay tools down near the Ups or batteries. Follow all insolation procedures.	
UPS GROUNDING The UPS must always be properly grounded	

CAUTIONARY NOTES

Please be aware of the following risks when handling and operating CertaUPS units.

RISK TYPE	DETAILS
Electric shock	Even after the unit is disconnected from the mains power supply (building outlet socket), components inside the UPS are still energised from the battery which is potentially dangerous
	The battery circuit is not isolated from the input voltage. Hazardous voltages may occur between the battery terminals and the ground. Verify that no voltage is present before servicing.
Hazardous voltages	Repairs must be carried out only by qualified UPS Engineer.

FOR FURTHER INFORMATION ON REPLACEMENT PARTS AND SERVICING PLEASE CONTACT YOUR CertaUPS PARTNER.

OPERATING SAFETY

Before operating any UPS system, please read the following guidance:

DO NOT install the UPS in a humid environment or expose to liquids	
DO NOT block the ventilation of the UPS	
DO NOT expose the UPS to direct sunlight or source of heat	
DO NOT exceed ambient temperatures when operating or storing the UPS	
DO NOT allow excessive particulates or foreign bodies to enter the UPS	

DO follow all connection procedures and operational instructions in the order in which they appear within this manual	
DO check that the indicators on the rating plate correspond to the AC powered system and to the actual electrical consumption of all the equipment to be connected to the UPS	
DO ensure the outlet is installed near the UPS and is easily accessible	
DO store the UPS in a dry environment	
DO keep the UPS in a well-ventilated area	

Additional considerations:

- To reduce the risk of fire or injury the unit must be supplied by a circuit which is protected by overcurrent by means of an MCB or other protective devices.
- The upstream circuit breaker or local means of isolation must be easily accessible. The unit can then be disconnected from the AC power source by opening the circuit breaker/isolator.
- If An additional AC contactor is to be used for back feed protection, this must comply with IEC/EN 62040-1
- Disconnection and overcurrent protection devices shall be provided by others for permanently connected AC input and output circuits.
- The admissible storage temperature range is -15°C to +40°C with battery, -25°C to +60°C without battery.
- The operating temperature should be kept between 20 °C to 25 °C, failure to do so will reduce the expected battery design life

PRODUCT OVERVIEW

FULL PRODUCT DETAILS CAN BE FOUND AT WWW.CERTAUPS.COM/PRODUCT/CERTAUPS-C400/

The CertaUPS C400 series is an uninterruptible power supply (UPS) incorporating online double conversion technology, which eliminates all mains power disturbances.

THE MODEL LIST

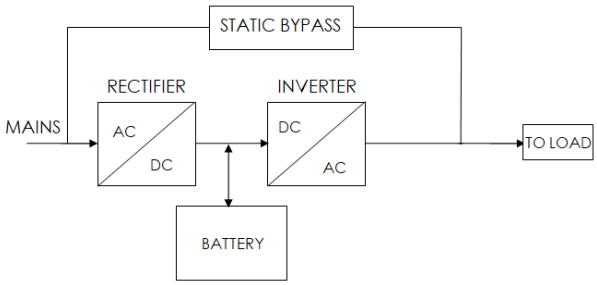
Please check that the unit you have purchased is correct by referring to the model number, which appears on the rear panel of the UPS unit.

ITEM	MODEL NAME	POWER RATING	MODEL TYPE	MODEL DESCRIPTION	OTHER
1	C400-010-B	1000VA/900W	Tower	Internal battery model	Single Phase input Single Phase output
2	C400-010-C	1000VA/900W	Tower	Charger model	Single Phase input Single Phase output
3	C400-020-B	2000VA/1800W	Tower	Internal battery model	Single Phase input Single Phase output
4	C400-020-C	2000VA/1800W	Tower	Charger model	Single Phase input Single Phase output
5	C400-030-B	3000VA/2700W	Tower	Internal battery model	Single Phase input Single Phase output
6	C400-030-C	3000VA/2700W	Tower	Charger model	Single Phase input Single Phase output

THE TECHNOLOGY

The C400 UPS series uses online double conversion technology, which ensures that clean and stable power is always provided. An online UPS operating in, line mode will always provide a consistent supply of AC power to the load. This is done by using the battery and the inverter to ensure a clean stable and supply. When the mains power fails, the battery is no longer supplied by the rectifier and the batteries begin to discharge.

Once the battery is depleted the UPS will no longer be able to generate AC power through the inverter and the output will in turn cease. Once the mains power is restored the rectifier will charge the batteries and then allow the inverter to provide power to the load once more.



Key features:

- Wide input voltage window
- 0.9 power factor
- Frequency converter feature
- EPO connection
- Future expansion or redundancy
- Internal manual bypass
- Small footprint

SUITABLE APPLICATIONS

Ideally suited for small to medium-sized offices, telecoms centres and security facilities. Please see list below (not exhaustive):

- Small data centres
- Server room
- IT facilities
- Telecoms
- Networking

ACCESSORIES

The following accessories are available to add to your C400 for enhanced functionality contact your CertaUPS supplier for further details.

PART	DESCRIPTION
C-NMC	SNMP Network management card
C-REL	Relay card
C-DB9REL	Relay card (DB9 Interface)
C-EMP	Environmental monitoring probe (SNMP required)
C-MOD1	Modbus interface
C-MBS 1-3	Rack-mountable Maintenance bypass switch

UPS STANDARDS

DESCRIPTION	STANDARD
Conduction/Radiation	IEC/EN 62040-2
Harmonic Current	IEC/EN 61000-3-2
Voltage Fluctuation	IEC/EN 61000-3-3
ESD	IEC/EN 61000-4-2
RS	IEC/EN 61000-4-3
EFT	IEC/EN 61000-4-4
Surge	IEC/EN 61000-4-5
CS	IEC/EN 61000-4-6
MS	IEC/EN 61000-4-8
Voltage Dips	IEC/EN 61000-4-11
Low frequency signals	IEC/EN 61000-2-2

PLEASE FIND UPS PRODUCT DIAGRAMS AND FULL TECHNICAL SPECIFICATIONS ON PAGE 32 OR VISIT WWW.CERTAUPS.COM/PRODUCT/CERTAUPS-C400/

UPS INSTALLATION

PLEASE ENSURE ALL SAFETY INSTRUCTIONS HAVE BEEN OBSERVED AND UNDERSTOOD PRIOR TO UNPACKING AND INSTALLING THE UPS

INSPECTION

Every effort is made to ensure that CertaUPS systems are packaged as safely as possible to ensure that no damage is incurred during shipment. Please visually inspect the UPS when it is received. Please keep all packaging in a safe place for future use.

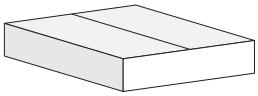
IF THE DEVICE IS DAMAGED, PLEASE NOTIFY THE CARRIER IMMEDIATELY

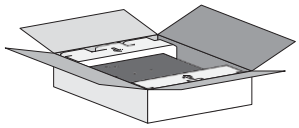
UNPACKING

The UPS unit must be positioned in a well-ventilated area that is free from excessive dust, heat and moisture. Please take note of the specified operating temperatures and remain within these guidelines.

- Unpacking the unit in a low-temperature environment may cause condensation to occur in and on the device. DO NOT install the UPS/ External Battery Module (EBM) until the inside and outside of the devices are clear of condensation.
- The UPS/EBM units are heavy. Follow any special precautions provided on the packaging.
- Unpack the equipment and remove all packaging materials. DO NOT lift the using the front panel and rear panel.

Rackmount/Tower model





PACKING MATERIALS MUST BE DISPOSED OF IN COMPLIANCE WITH ALL LOCAL WASTE MANAGEMENT REGULATIONS.

RECYCLING SYMBOLS ARE PRINTED ON THE PACKING MATERIALS TO FACILITATE SORTING.

C400 BOX CONTENTS CHECKLIST

C400 Series UPS	
USB A to B	
Software CD	
Quick Start Guide	
Warranty Card	

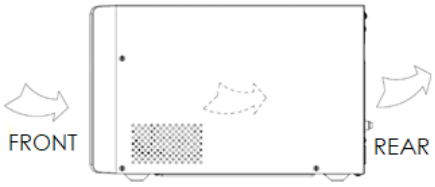
IF ANY OF THE ITEMS ARE MISSING FROM THE UPS BOX PLEASE NOTIFY YOUR SUPPLIER

DO NOT FORGET TO REGISTER THE UPS WARRANTY WWW.CERTAUPS.COM/SUPPORT/WARRANTY-REGISTRATION/

INSTALLATION

DO NOT MAKE ANY UNLICENSED MODIFICATIONS TO THE UPS. THIS MAY INCUR DAMAGE AND AFFECT THE UPS WARRANTY.

- DO NOT connect the UPS to a mains supply until installation is completed
- Ventilation of the UPS is important for proper operation. Ensure the air vents on the front, side and rear of the UPS are clear. Allow adequate space around the UPS. The airflow diagram is shown as below:



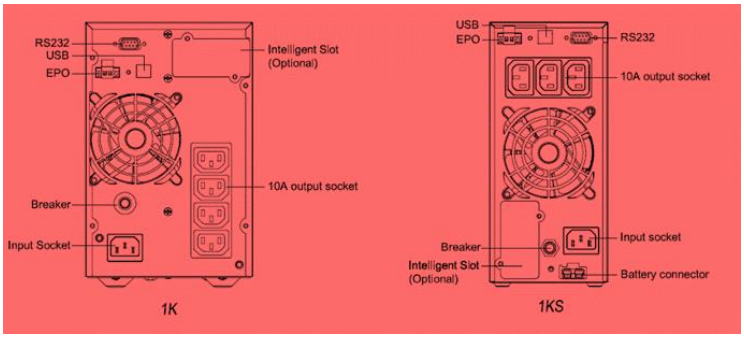
Installation considerations:

- The final location of the UPS unit must be on a flat stable surface in a well-ventilated environment
- DO keep at least 150mm of free space behind the rear panel
- If installing an additional unit, place it next to the first unit in its final location
- DO allow the UPS to reach ambient temperature before turning on
- The UPS needs to be fully charged to achieve full autonomy

C400 TOWER MODEL INSTALLATION

A QUICK START VIDEO GUIDE FOR THE C400 TOWER MODEL IS AVAILABLE AT WWW.CERTAUPS.COM/MEDIA

STEP ONE	Ensure utility power is switched off.
STEP TWO	Carefully place the UPS in its final location
STEP THREE	If not installing additional EBMs skip to step six. Position the EBM adjacent to the UPS, ensure adequate space for UPS ventilation.
STEP FOUR	Connect the EBM to the UPS
STEP FIVE	To connect to multiple EBMs the EBM cable is connected directly into the previously installed EBM
STEP SIX	After setting up the UPS, the load can then be connected. Please make sure the load equipment is turned off before connecting all loads into the output ports
STEP SEVEN	Plug the UPS into a mains power socket and turn Utility power on. The UPS will power on in bypass mode and begin charging
STEP EIGHT	To switch the UPS from bypass mode to online press and hold the 'ON/Silence' button for 1 second the unit will beep and the LCD display will show "LINE" signalling that the UPS is powered and protecting the equipment



C400 battery model tower variant.

A QUICK START VIDEO GUIDE FOR THE C400 RACKMOUNT/TOWER MODEL IS AVAILABLE AT WWW.CERTAUPS.COM/MEDIA

C400 SERIES STARTUP AND SHUTDOWN

STARTING THE UPS WITH MAIN POWER PRESENT

Please switch off the connected loads before turning on the UPS, and switch on connected devices one by one after the UPS is turned on. Switch off all connected loads before turning off the UPS.

The C400 Series UPS can be started either "hot" or "Cold", meaning the UPS can be activated regardless of whether the unit has a main supply (Hot) or if no mains power is available (Cold).

Verify that the total equipment ratings do not exceed the UPS capacity to prevent an overload alarm.

To start the UPS via mains power (Hot start):

1. Check all the connections are properly connected and correct.
2. Supply mains power to the UPS, the fans will start and the LCD will show the default UPS status summary screen displaying "byPA" to signify the unit is in internal bypass mode.
3. Hold the "On/Science" button continuously for 1 second, the buzzer will beep and the UPS will start to turn on.
4. After a few seconds, the UPS will start in Line mode. If the utility power is abnormal, the UPS will transfer to battery mode without output interruption to the UPS.
5. When the UPS is online "LINE" will be displayed on the LCD display

STARTING THE UPS FROM BATTERY

Before using this feature, the UPS must have been powered by utility power with output enabled at least once to ensure the unit is adequately charged.

After connecting the UPS to any EBMs you should wait for 10 seconds before pressing the "On/Silence" button for pre-charging the auxiliary power supply.

Battery start can be disabled.

To start the UPS via battery power (Cold start):

1. Check all the connections are properly connected and correct.
2. Press the "On/Silence" button continuously for more than 100ms and the UPS will power on. The fans will start and the LCD will show "STbY" on the default UPS status summary screen after finishing the initialisation self-test.
3. Press the "On/Silence" button continuously for 1 second the UPS will start to initialise.
4. After a few seconds, the UPS will transfer to battery mode. If the mains power comes back the UPS will transfer to Line mode without output interruption of the UPS.
5. When the UPS is running from battery power "bATT" will be displayed on the LCD display, when main power is restored the display will change to "LINE".

UPS SHUTDOWN WITH MAINS POWER

When in Bypass UPS output voltage is still present!

To shutdown the UPS with mains power:

1. Press the "OFF" button for 1 second.
2. After that, the UPS will transfer to bypass mode immediately and display "byPA" on the LCD.
3. In order to cut off the UPS output remove the mains power supply. A few seconds later the LCD will shut down and no output power is available from the UPS output terminal.

UPS SHUTDOWN WITHOUT MAINS POWER

To shutdown the UPS without mains power:

1. Power off the UPS by pressing the "OFF" button for 1 second, the buzzer will beep for 300ms and "STbY" will be displayed on the LCD at which point the UPS output will stop.
2. A few seconds later the LCD display will power off.

C400 SERIES OPERATION

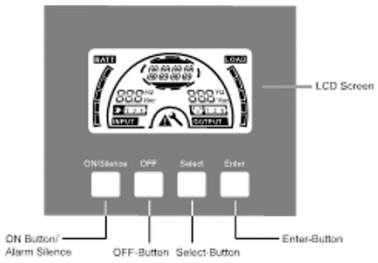
FRONT PANEL

The CertaUPS C400 has a four-button user interface and a graphical LCD. It provides useful information about the UPS itself, load status, events, measurements and settings. In the event of a critical alarm, the LCD backlight will illuminate red.

DISPLAY FUNCTIONS

The following table shows the function of each of the buttons:

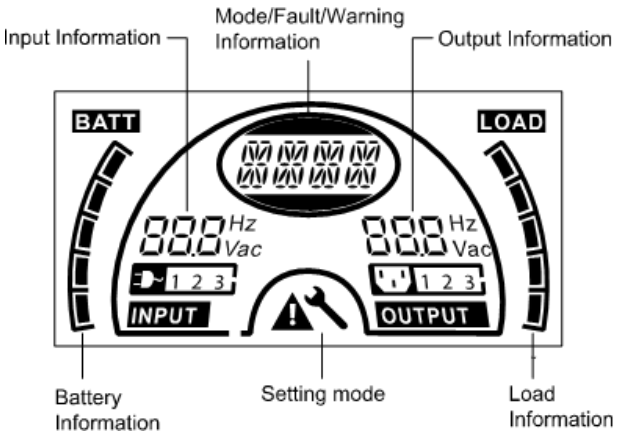
BUTTON	FUNCTION	DESCRIPTION
ON/Silence Button	Power on	When the unit has no mains power and batteries connected, press for >100ms to power on
	Turn on	When the unit is powered on and in Standby mode, press this button for >1s to turn on
	Battery test	By pressing this Button the UPS can do a battery test within Line mode, ECO mode or CVCF mode
	Silence alarm	Pressing the button for <1s will mute/unmute any alarms
OFF Button	Turn off	When mains power is normal, the UPS system switches to Bypass mode when pressed
	Clear fault	By pressing this button, the UPS can clear fault mode and EPO status
Select Button	Scroll down	The select Button allows configurable options to be selected.
Enter Button	Confirm selection	Allows confirmation of options displayed via Select button



IF AN ERROR CODE APPEARS PLEASE REFER TO THE ALARMS AND FAULTS SECTION OF THE MANUAL PAGE 29 OR CONTACT YOUR CertaUPS REPRESENTIVE

LCD DESCRIPTION

The table below gives details on the information provided by the UPS user display:



DISPLAY	FUNCTION
INPUT	
Hz Vac	(Left side) Alternates between displaying input voltage/frequency values.
1 2 3	Indicates the input is connected and supplied with mains AC.
OUTPUT	
Hz Vac	(Right side) Alternates between displaying input voltage/frequency values.
LOAD	
LOAD	Indicates the load level. Each segment represents 20% of the maximum rated load. One segment would be displayed if the level is 0~20%
BATTERY	
BATT	Indicates the battery capacity. Each segment represents 20% of the full charge capacity
MODE/FAULT/WARNING	
	Indicates the operating mode Fault type, Warning type or battery remaining time, several warning types at the same time will be displayed alternately.
	Indicates the UPS is in setting mode.
	Indicates the UPS is in Fault mode.

IF ANY OTHER STATUS APPEARS, OR FOR FURTHER GUIDANCE ON WHAT TO DO PLEASE SEE THE TROUBLESHOOTING SECTION ON PAGE 28 OR CONTACT A CertaUPS REPRESENTIVE

The UPS can be controlled and configured using basic button functions via the front panel, to make adjustments:

- Hold the "Enter" button for 1 second, the UPS will beep for 300ms and the will be displayed indicating the unit is in settings mode.
- "OPV" will be displayed to indicate the currently selected option, to select this option to edit hold "Enter" for a further 1 second or to move to the next option hold "select" for more than 1 second.
- When an option is selected hold the "Select" button for 1 second to change the configured option value. The value will flash while being edited.
- To set a value press and hold the "Enter" button.

BY DEFAULT, THE LCD WILL DISPLAY THE UPS STATUS SUMMARY SCREEN.

USER SETTINGS

The following table displays the options that can be changed by the user:

Most settings in this menu require the UPS to be in bypass to take effect.

OPTION	DESCRIPTION	AVAILABLE SETTINGS	DEFAULT SETTINGS
OPV	OUTPUT VOLTAGE	220V/230V/240V	230
OPF	OUTPUT FREQUENCY	50Hz/60Hz	ASF
bYPA	BYPASS MODE The UPS would turn to bypass mode within a few seconds if "Bypass Enable" (001) is selected, and turn to no output mode within a few seconds if "Bypass Disable" (000) is selected	000/001	001
MOdE	OPERATING MODE	UPS/ECO/CVCF	UPS
*EbAH	EXTERNAL BATTERY AH	005-300	000
bATT	BATTERY REMAINING TIME In battery mode or battery test mode, the display will alternate between battery time (in unit Min or Sec) and "bATT" on the LCD every 2s.	000/001	000
*CHG	CHARGING CURRENT	3.0/6.0 (for C400-010-C) 1.5/3.0/4.5/6.0 (for C400-020/030-C)	-

*Charger models only
** Consult your CertaUPS representative before adjusting any battery settings incorrect settings may damage your equipment.

Modes of operation

ECO mode (Economy mode)
Also called high-efficiency mode. After turning the UPS on in ECO mode, the output power will be supplied from mains power directly via an internal filter while the mains power is within a certain range, so the high-efficiency performance would be gained in ECO mode. Once the mains power is out of range, the UPS will transfer to battery mode and the load will be supplied continuously by the battery.
1) ECO Mode can be enabled through the LCD setting or the software (Winpower, etc.).
2) The transfer time of UPS output from ECO mode to battery mode is less than 10ms. It is suggested that this may not be suitable for applications involving sensitive loads.

CVCF mode
CVCF (Constant Voltage Constant Frequency) also called converter mode. The UPS will work in frequency free-run with a fixed output frequency (50Hz or 60Hz). Once the mains are lost or abnormal, the UPS will transfer to battery mode and the load is supplied continuously by the battery.
1) CVCF mode can be enabled through the LCD setting or the software (Winpower, etc.).
2) The normal power rating will be derated to 60% the converter mode.

Please contact your local CertaUPS partner for further information before configuring the UPS.

MISCONFIGURATION COULD RESULT IN FAILURE OF THE EQUIPMENT AND PERSONAL INJURY.

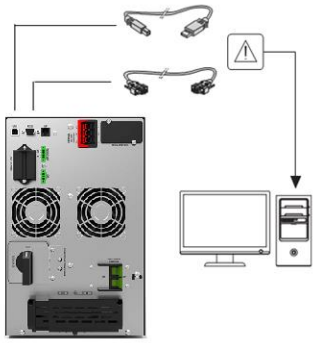
TO REGISTER A FAULT PLEASE VISIT WWW.CERTAUPS.COM/SUPPORT/FAULT-REPORTING/

COMMUNICATION PORTS

RS232/USB

The RS232 and USB communication ports cannot be used simultaneously.

- Connect the communication cable to the serial or USB port on the computer.
- Connect the other end of the communication cable to the RS232 or USB communication port on the UPS.

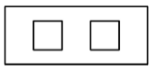


Both RS232 and USB connections allow for 2 way communication between the device connected and the UPS. This can be used for both issuing configuration commands, communicating with the UPS and issuing shutdown commands. When connected via USB to a PC the UPS will present itself as a HID compliant ACPI device allowing for zero configuration shutdown initiated by the UPS in the event of a power failure.

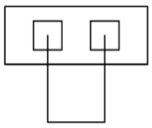
EPO CONNECTION

The EPO (Emergency Power Off) connection allows the UPS to be powered off by changing the state of a normally open circuit.

- Normally closed - Normally EPO connector is closed with a wire on the rear panel. Once the connector is open, the UPS will stop output until the EPO status is disabled.



ENABLE EPO STATUS



DISABLE EPO STATUS

INTERFACE CARDS (OPTIONAL)

The Network Management Card allows the UPS to communicate with monitoring devices by utilising network connectivity. The C400 series has one available expansion bay for the following connectivity cards:

- NMC/SNMP Card – this interface card provides SNMP and HTTP capabilities as well as monitoring through a Web browser interface using RJ45 10/100Mbps over TCP/IP.
- AS400 card - for RS485 communication protocol. Please contact your CertaUPS partner for details.

SOFTWARE

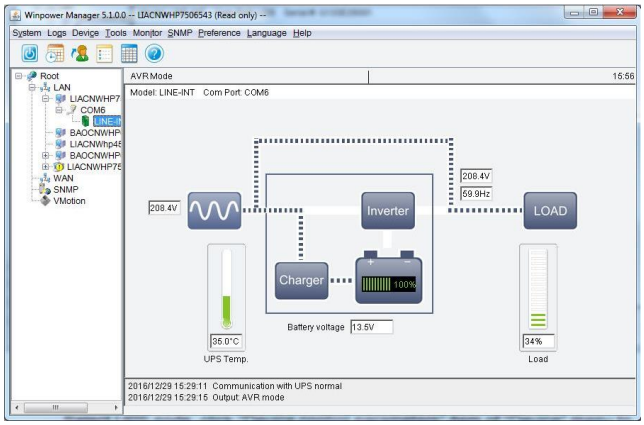
The C400 series is compatible with WinPower which is an open-source, online UPS monitoring and management software tool.

Key features:

- Power flow display for monitoring UPS status
- Scheduled system shutdown/restart
- Warning notification via E-mail / SMS / Windows system log*
- Scheduled UPS test
- Password security protection
- Remote monitor/control via LAN
- Safety to shutdown multi-system
- Selectable User Interface (Background)
- UPS parameter setting
- SNMP Central monitoring up to 1000 units
- Record logs for analysis
- Multi-language support: English, Italian, Turkish, Spanish, French, Portuguese, Polish, Thai, Germanic, Russian and Japanese.
  *Requires a GSM modem (not supplied)

WINPOWER INSTALLATION

STEP ONE	Go to: https://www.certaups.com/downloads/ download winpower
STEP TWO	Choose the operating system you need and follow the instruction described on the website to download the software.
STEP THREE	When downloading all the required files from the internet, enter the product key: **511C1-01220-0100-478DF2A**



WHEN THE INSTALLATION IS COMPLETE, WinPOWER WILL APPEAR AS A GREEN PLUG ICON LOCATED IN THE SYSTEM TRAY, NEAR THE CLOCK.

FOR FURTHER GUIDANCE ON UPS MONITORING, PLEASE CONTACT YOUR CertaUPS PROVIDER OR VISIT WWW.CERTAUPS.COM

UPS MAINTENACE

ADOPTING A PREVENTATIVE MAINTENANCE SCHEDULE IS CRITICAL TO ACHIEVING OPTIMUM UPS PERFORMANCE

UPS CARE

For the best preventive maintenance:

Keep the area around the equipment clean
Keep the equipment free from dust
Ensure the equipment is positioned in a well-ventilated area
For maximum battery life keep the equipment at an ambient temperature of 20-25°C (77°F max)
Carry out regular environmental and battery checks

The batteries are rated for a 3-5 year service life. The service life varies depending on the frequency of usage and ambient temperature. Batteries used beyond expected service life will often have severely reduced runtimes. Replace batteries at least every 4 years to keep units running at peak efficiency and prevent failure.

TRANSPORTING THE UPS

THE INTERNAL UPS BATTERIES MUST BE DISCONNECTED BEFORE TRANSPORT

The following procedure should be performed or supervised by personnel knowledgeable about batteries and the required precautions. Keep unauthorised personnel away from batteries. If the UPS requires any type of transportation, the batteries must be disconnected (but not removed) before the unit is transported:

Verify that the UPS is off and disconnected from mains power
Place the UPS on a flat stable surface with the front of the cabinet facing you
Remove the UPS front cover
Disconnect the internal battery connectors
Replace the UPS front cover

To avoid damage and to prevent DOA's always use a reputable courier for all equipment transportation.

STORING THE UPS

UPS BATTERIES MUST BE RECHARGED EVERY SIX MONTHS. ALWAYS CHECK THE BATTERY RECHARGE DATE ON THE SHIPPING CARTON BEFORE USE.

Where UPS equipment is stored for a long period of time, the batteries must be recharged every six months. The optimal storage vdc for VLRA batteries, depending on the environment is between 20-40%. This can be achieved by connecting the UPS to mains power.

DO NOT store the equipment in a warm, damp, dusty environment	
DO NOT use the equipment if the batteries have not been recharged/if the recharge date exceeds six months	
DO NOT Expose the UPS to direct sunlight or source of heat	

DO Store the equipment in a cool, dry, clean environment	
DO ensure the batteries are recharged every six months for a minimum of 48 hours	
DO ensure EBMs are recharged every six months for a minimum of 3 hours	

BATTERY REPLACEMENT

DO NOT DISCONNECT THE BATTERIES WHILE THE UPS IS IN BATTERY MODE

CONSIDER ALL WARNINGS, CAUTIONS, AND NOTES BEFORE REPLACING BATTERIES

ELECTRIC ENERGY HAZARD. DO NOT ATTEMPT TO ALTER ANY BATTERY WIRING OR CONNECTORS.

DO NOT Allow unauthorised personnel near the batteries. Servicing should be performed by qualified, knowledgeable personnel only	
DO NOT Dispose of batteries in a fire. Batteries may explode when exposed to flame	
DO NOT Open or modify the battery or batteries in any way. Released electrolyte is harmful to the skin and eyes and maybe extremely toxic	
DO NOT Attempt to alter any battery wiring or connectors. Attempting to alter wiring can cause injury	

DO Ensure personnel servicing the batteries are all knowledgeable on the required precautions for battery servicing	
DO Replace the batteries with the same type and number of batteries or battery packs	
DO Dispose of the batteries responsibly. Please refer to local regulations and disposal requirements	
DO Determine if the battery is inadvertently grounded. If inadvertently grounded, remove contact to ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of shock can be reduced if grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).	
DO Disconnect charging source prior to connecting or disconnecting battery terminals	

Batteries can present a risk of electrical shock or burn from high short circuit current. Observe the following precautions:

Remove watches, rings, or other metal objects
Use tools with insulated handles
Do not lay tools or metal parts on top of batteries
Wear rubber gloves and boots

REPLACING THE EBM (charger models only)

THE EBM IS HEAVY AND REQUIRES A MINIMUM OF 2 PEOPLE TO LIFT.

Turn the Main battery switch (MBS) to bypass on the back of the UPS and switch off the input. The EBM(s) are then ready to replace.

To replace the EBM(s):

1. Unplug the EBM power cable and battery detection cable from the UPS. If additional EBM(s) are installed, unplug the EBM power cable from each EBM
2. Replace the EBM(s)

A SMALL AMOUNT OF ARCING MAY OCCUR WHEN CONNECTING AN EBM TO THE UPS.
THIS IS NORMAL AND WILL NOT CAUSE SHOCK. INSERT THE EBM CABLE INTO THE UPS BATTERY CONNECTOR QUICKLY AND FIRMLY

- Plug the EBM cable(s) into the battery connector(s)
- Verify that the EBM connections are secure and that adequate bend radius and strain relief exist for each cable
- Connect the EBM cable to the UPS
- Reinstate the input supply to the UPS

Only use the correct battery pack for your UPS rating with voltage:
24VDCfor C400-010-C (2pcs of 12V batteries)
48VDC for C400-020-C (4pcs of 12V batteries)
72VDCfor C400-030-C (6pcs of 12V batteries)
Note: Connection of batteries more than or less than required will cause abnormality or permanent damage.

To test new batteries:

1. Charge the batteries for 48 hours.
2. Press the "ON" button when the UPS is turned on

The UPS should start a battery test if:

- The batteries are fully charged
- The UPS is in Normal mode with no active alarms
- Bypass voltage is acceptable

During the battery test, the UPS transfers to Battery mode and discharges the batteries for 10 seconds. The front panel displays "bATT".

RECYCLING A UPS

CONTACT YOUR LOCAL RECYCLING OR HAZARDOUS WASTE CENTRE FOR INFORMATION ON PROPER DISPOSAL OF THE USED EQUIPMENT.

DO NOT dispose of the battery or batteries in a fire. Batteries may explode. Proper disposal of batteries is required. Refer to your regulations for disposal requirements.

DO NOT open or modify the battery or batteries. Released electrolyte is toxic and harmful to the skin and eyes.

DO NOT discard the UPS or the UPS batteries in the general waste. This product contains sealed lead-acid batteries and must be disposed of responsibly. For more information contact your local recycling centre.

DO NOT discard of waste electrical or electronic equipment (WEEE) in the trash. For proper disposal contact your local recycling centre.

TROUBLESHOOTING

ALARMS SHOWN ON THE CONTROL PANEL DO NOT MEAN THAT THE OUTPUT POWER IS AFFECTED. INSTEAD THEY ARE PREVENTIVE ALARMS INTENDED TO ALERT THE USER

The C400 series is designed for durable, automatic operation. It also provides alerts whenever potential operating problems occur.

- Alarms are displayed on the LCD status screen with the logo blinking. Some alarms may be announced by a beep every 1 second. Example = "Battery low"
- Faults are announced by a continuous beep and red LCD backlight

ALARMS & FAULTS

TO REGISTER A FAULT PLEASE VISIT WWW.CERTAUPS.COM/SUPPORT/FAULT-REPORTING/

Use the following troubleshooting chart to determine the UPS alarm condition.

WARNING/FAULT	PROBLEM	CAUSE	SOLUTION
/	No indication, no warning tone even though the system is connected to the mains power supply	No input voltage/Breaker open	Check building wiring socket outlet and input cable, Check the Breaker.
/	No Communication data	RS232 wire is not matched/USB wire is not matched	Check or change the RS232/USB cable
/	Emergency supply period shorter than nominal value	Batteries not fully charged or require replacement	Charge the batteries until fully charged, contact your CertaUPS representative.
FANF	Fan fail	Fan RPM out of tolerance	Check if the fan is running
HIGH	Battery over voltage	The battery is overcharged	Switching to battery mode automatically, and after the battery voltage is normal and the mains is normal, the UPS would Switch to line mode automatically again.
bLOW	Battery low	Battery voltage is low	When audible alarm sounding every second, the battery is almost empty.
bOPN*	Battery open	The battery pack is not connected correctly	Confirm with battery test, Check the battery bank is connected to the UPS, Check the battery breaker
CHGF	Charger fail	The charger has failed	Contact your CertaUPS representative.
dCHF	Digital charger failure	The charger has failed	Contact your CertaUPS representative.
bUSH	Bus high	UPS internal fault	Contact your CertaUPS representative.

bUSL	Bus low	UPS internal fault	Contact your CertaUPS representative.
bSFT	Bus soft start fail	UPS internal fault	Contact your CertaUPS representative.
bUSS	Bus short	UPS internal fault	Contact your CertaUPS representative.
TEPH	Inverter temperature high	The inside temperature of the UPS is too high	Check the ventilation of the UPS, check the ambient temperature.
ITPH	Inner Ambient temperature high	The ambient temperature is too high	Check the environment ventilation.
INVH	Inverter high	UPS internal fault	Contact your CertaUPS representative.
INVL	Inverter low	UPS internal fault	Contact your CertaUPS representative.
ISFT	Inverter soft start fail	UPS internal fault	Contact your CertaUPS representative.
NTCO	Inverter NTC open	UPS internal fault	Contact your CertaUPS representative.
SHOR	Inverter short	Output short circuit	Remove all the loads. Turn off the UPS. Check whether the output of UPS and loads for short circuits. Make sure the short circuit is removed, and the UPS has no internal faults before turning on again.
OVTP	Over-temperature fault	Over-temperature	Check the ventilation of the UPS, check the ambient temperature and ventilation.
OVLD	Overload	Overload	Check the loads and remove some non-critical loads. Check whether some loads are failed.
SITE	Site fail	Phase and neutral conductor at the input of UPS system are reversed	Rotate mains power socket by 180° or connect the UPS system.
EPO	EPO active	EPO function is enabled	Plug into the EPO switch.

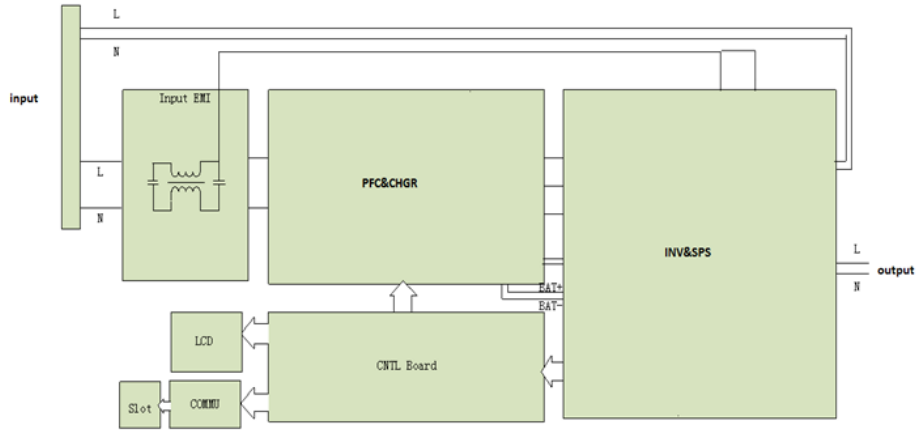
*Charger model only

Check the alarm condition and perform the applicable action to resolve the condition.

If an alarm status changes the alarm will need to be silenced again.

TECHNICAL DATA

BLOCK DIAGRAM



ELECTRICAL SPECIFICATION

INPUT						
Model No.	C400-010-B	C400-010-C	C400-020-B	C400-020-C	C400-030-C	C400-030-C
Phase	Single					
Frequency	40~70 Hz					
Current(A)	220/230/240VAC	220/230/240/250VAC	220/230/240VAC	220/230/240VAC	220/230/ 240VAC	220/230/240VAC
	4.9/4.7/4.5A		5.7/5.4/5.2A		9.7/9.3/8.9A	
OUTPUT						
Model No.	C400-010-B/C		C400-020-B/C		C400-030-B/C	
Power rating*	1000VA/900W		2000VA/1800W		3000VA/2700W	
Voltage	220Vac/230Vac/240Vac					
Frequency	50/60Hz					
Wave form	Sinusoidal					
BATTERIES						
Model No.	C400-060-B	C400-060-C (EBM)	C400-100-B	C400-100-C (EBM)	C400R-060-C (EBM	C400R-100-C (EBM)
Voltage	24V	24V	48V	48V	72V	72V
Capacity	9Ah	5Ah~120Ah	9 Ah	5Ah~120Ah	9 Ah	5Ah~120Ah

OPERATING ENVIRONMENT

Ambient Temperature	0 °C to 40 °C (Full load no de-rating) 40 °Cto50 °C output power derated to 50% load, Charger current derated 50%
Operating humidity	< 95% no condensing
Altitude	< 3000m
	3000m (Above 3000m altitude10% derating per 1000m)
Storage temperature	-25°C~55°C (-13 to 130°F)

*Above 3000m altitude10% derating per 1000m.

RUNTIMES

*

MODEL	EMB CODE	EBM QTY	RUNTIME @ 100%	RUNTIME @ 75%	RUNTIME @ 50%	RUNTIME @ 25%
C400-010-B	NA	0	3 Mins	5 Mins	11 Mins	26 Mins
C400-010-C	NA	0	0 Mins	0 Mins	0 Mins	0 Mins
C400-010-C	C400-BB1	1	19 Mins	29 Mins	49 Mins	110 Mins
C400-010-C	C400-BB1	2	49 Mins	73 Mins	117 Mins	249 Mins
C400-010-C	C400-BB1	3	84 Mins	118 Mins	191 Mins	300+
C400-010-C	C400-BB1	4	118 Mins	167 Mins	267 Mins	300+
C400-020-B	NA	0	3 Mins	6 Mins	12 Mins	28 Mins
C400-020-C	NA	0	0 Mins	0 Mins	0 Mins	0 Mins
C400-020-C	C400-BB2	1	20 Mins	31 Mins	52 Mins	115 Mins
C400-020-C	C400-BB2	2	51 Mins	77 Mins	124 Mins	262 Mins
C400-020-C	C400-BB2	3	87 Mins	125 Mins	202 Mins	300+
C400-020-C	C400-BB2	4	124 Mins	175 Mins	283 Mins	300+
C400-030-B	NA	0	3 Mins	6 Mins	12 Mins	28 Mins
C400-030-C	NA	0	0 Mins	0 Mins	0 Mins	0 Mins
C400-030-C	C400-BB3	1	12 Mins	18 Mins	31 Mins	73 Mins
C400-030-C	C400-BB3	2	31 Mins	45 Mins	78 Mins	166 Mins
C400-030-C	C400-BB3	3	52 Mins	78 Mins	125 Mins	268 Mins
C400-030-C	C400-BB3	4	78 Mins	110 Mins	176 Mins	300+

*Calculated to 20°C

DIMENSIONS AND WEIGHTS

Model No.	Dimensions W×H×D (mm)	Net Weight (kg)
C400-010-B	144x228x356	9.2
C400-010-C	102x228x346	3.9
C400-020-B	190x327x399	17.4
C400-020-C	102x327x390	6.4
C400-030-B	190x327x399	22.7
C400-030-C	102x327x390	6.4
C400-BB1	228x133x356	34
C400-BB2	327x190x327	40
C400-BB3	327x190x399	35

A FULL GLOSSARY OF TERMS CAN BE FOUND AT:
WWW.CERTAUPS.COM/SUPPORT/UPS-GLOSSARY/

FOR FURTHER INFORMATION OR ASSISTANCE, PLEASE CONTACT YOUR CertaUPS REPRESENTATIVE OR VISIT:
WWW.CERTAUPS.COM