UPS-ENTERPRISE 800-2000 VA

PRODUCT MANUAL





UPS-ENTERPRISE 800-2000 VA

Tower and rack version PRODUCT MANUAL

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CERTIFICATE AND CONDITIONS OF WARRANTY

This SOCOMEC UPS uninterruptible power system is guaranteed against manufacturing and material defects, for a period of 12 months* from the date of purchase. This certificate of warranty must NOT be sent back, but must be kept by the customer together with the purchase receipt, to be used if the product should require interventions while under warranty.

The period of validity of the warranty is calculated from the date of purchase of the new product, by the final user, from an official reseller (the date shown on the purchase receipt is used as proof).

The warranty is of the 'carry-in' type: free supply of parts and labour for repairs, with return of a product to be replaced to SOCOMEC UPS, or authorized centres, at the customer's cost and risk.

In order to use the warranty service, the user must respect the following rules:

- the product must be returned exclusively in its original packaging. Any damage caused during shipping in packaging other than the original is not covered by the warranty;
- the product must be accompanied by proof of purchase: a document (bill, invoice, receipt) showing the date of purchase and the information necessary to identify the product (model, serial number). The number of the authorization for return for repairs must also be attached, with a detailed description of the defect found in the product. If any of these elements is missing, the warranty is invalid. The return authorization number is issued by the service centres by telephone on receiving notification of the malfunction;
- if it is not possible to provide proof of purchase, the serial number and date of production will be used to calculate expiry of the warranty, which may lead to a reduction in the product's warranty period.

The product is not covered by warranty for damage caused by negligence (use outside the tolerance ranges: electric power supply, lightning, humidity, temperature, bad ventilation, etc.), tampering or any unauthorized intervention. During the warranty period, SOCOMEC UPS may, at its discretion, decide to repair the product or replace the defective parts with new parts or with used parts that are equivalent to new parts in terms of functions and performance.

In the case of the battery, the warranty is valid if periodic recharging has been effected within the terms indicated on the packaging. It is advisable, therefore, after purchase, to check that the date of the next recharging has not passed.

Optionals

Warranty for the optionals is 12 months and is of the carry-in type.

Software products

Warranty for the software is 90 days. The software is guaranteed to function in compliance with the manual and the written material accompanying the product. Hardware accessories or supports (e.g. disks, cables, etc.) attached are guaranteed from material and manufacturing defects under normal use and service, for a period of 12 months from the date of purchase.

Under no circumstances will SOCOMEC UPS be responsible for damages (including, without limitations, damage for loss of earnings, interruption of activity, loss of data or other economic losses) deriving from the use of this product. The present conditions are subject to Italian law. All disputes to be heard by the Court of Vicenza.

^{*} Local warranty condition apply in addition to the general one.





1 SAFETY STANDARDS

This manual must be kept in the vicinity of the UPS, so that the operator may consult it at any time for clarifications on the correct use of the UPS.

Read the manual carefully before connecting the unit to the general mains power supply and to the devices to be powered.

Before putting the UPS (*Uninterruptible Power Supply*) into operation, the operator must be fully aware of the functions and positions of all the controls and of the technical and functional characteristics of the system, in order to avoid risks to persons and to the equipment.

- Before starting, the unit must be provided with an equipotential connection as established by the safety standards in force. The earth cable of the UPS is to be connected to an efficient earthing point.
- If the earth connection is not made, all devices connected to the UPS will be without equipotential connection. In this
 case the manufacturer declines all responsibility for damage or accidents caused by non-observance of the said
 standard.
- In case of mains failure (battery mode), do not disconnect the input cable from mains so to ensure the earth connection to the loads supplied.
- All subsequent maintenance operations must be carried out solely and exclusively by authorized personnel. Inside the
 system high electric voltages are generated which may endanger maintenance personnel who are not sufficiently
 prepared and trained for such tasks.
- If at any time during use a hazard condition is created, remove the mains power supply (if possible through the distribution panel upstream of the unit) and switch the UPS off completely following the appropriate procedure.
- When assembling and replacing the battery, the UPS should always be switched off and disconnected from the mains power supply.
- The UPS contains an internal power source which is the batteries. The UPS output may be powered even when the UPS is not connected to the mains power supply.
- Do not force, break or try to open the batteries. They are sealed and do not require any maintenance. Inside they
 contain substances that are toxic to health and that pollute the atmosphere. Do not switch the UPS on if there is any
 leak of liquid, or if a residual white powder is noted.
- Replace the fuses ONLY with other fuses of the same type.
- The sockets can be used as output isolating devices (EPO Emergency Power Off). When installing, leave a suitable
 space at the back of the UPS near the fuse holder unit for easy access to the fuse holders.
- Avoid contact of the UPS unit with water or liquids in general. Do not introduce foreign bodies.
- If the unit needs to be scrapped, it is essential to entrust the equipment solely and exclusively to specialist disposal
 companies. These are obliged to break up and dispose of the various components in accordance with the legal
 provisions in force nationally.
- The UPS generates a leakage current of about 1.5mA. To guarantee the maximum limit leakage current of 3.5mA, make sure that the maximum leakage current of the load is 2 mA. If the load leakage current exceeds this limit value, have qualified personnel connect the UPS to an industrial type, IEC 309 compliant power supply mains, with a current of correct dimensions for the UPS power rating.
- UPS-ENTERPRISE is intended for commercial and industrial use; it is not recommended for use in medical
 applications which are "essential" to the survival of the patient.
- Use the UPS in accordance with specifications shown in the technical data (paragraph 6).





2 GENERAL DESCRIPTION

UPS-ENTERPRISE: sure power supply for servers, graphics stations and network devices.

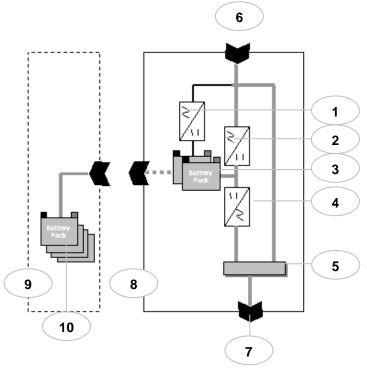
The main purpose of the UPS is to protect sensitive and critical equipment items from the electrical disturbances that can compromise operation. Black-outs, brown-outs, variations of voltage and frequency, lightning, electrostatic discharges and rapid overvoltages are phenomena found in all office and industrial environments and which cause hardware damage and data losses.

2.1 OPERATION

UPS-ENTERPRISE is based on the on-line, double conversion, VFI (Voltage and Frequency Independent) technology to guarantee the highest level of electrical protection. With this principle of operation, the voltage and the frequency at the input of the UPS are completely regenerated via a first AC/DC conversion followed by a DC/AC conversion in order to provide the consumer a stable waveform that is exempt of noise or distortions, and therefore completely independent of the input mains. In this double conversion process, the UPS also becomes a filter element in relation to the electrical network thus preventing the distorting absorption (typical of IT users) from being reflected on the power supply line.

In the event of a black-out, **UPS-ENTERPRISE** provides for generation of the output voltage without any disturbance, even transient, drawing the power from the internal batteries. During normal operation with the mains line present, **UPS-ENTERPRISE** recharges the batteries fully automatically and independently.

2.1.1 Wiring diagram



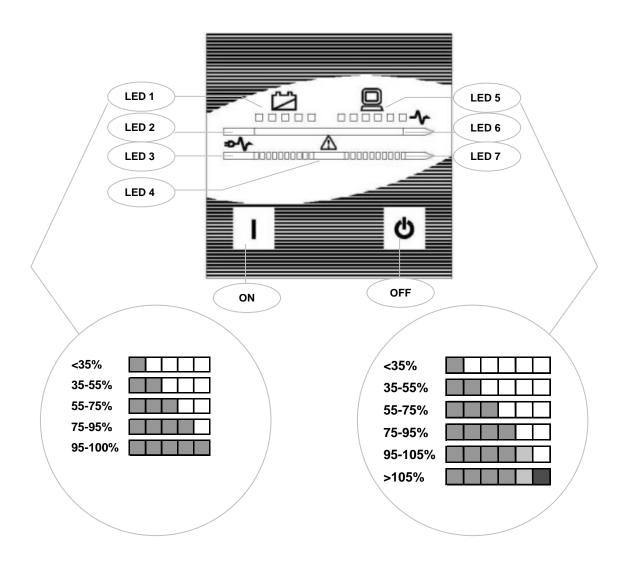
Key

- 1 Battery-charger
- 2 Rectifier (AC/DC)
- 3 Batteries for standard back-up
- 4 Inverter (DC/AC)
- 5 Automatic internal by-pass
- 6 Mains input
- 7 Power output for consumer lines
- 8 UPS
- 9 Back-up expansion unit
- 10 Batteries for back-up extensions (optional)





2.1.2 LED display and control panel



Key	
OŇ	On button (mute buzzer, reset alarms)
OFF	Off button (inverter OFF)
LED 1	Battery capacity % LED bar
LED 2	GREEN Mains up and regular
LED 3	YELLOW Auxiliary mains present and regular (bypass line)
LED 4	RED General alarm (stop or failure)
LED 5	Delivered power % LED bar
LED 6	GREEN no-break output
LED 7	YELLOW by-pass output





3 UNPACKING AND INSTALLATION

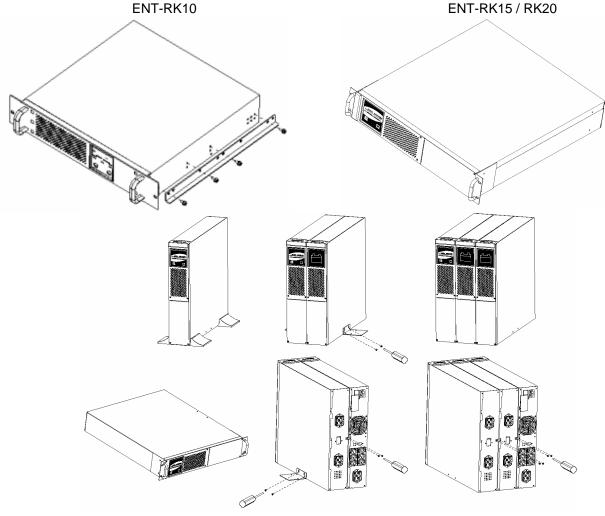
3.1 ENVIRONMENTAL REQUIREMENTS FOR INSTALLATION

Install the UPS after first checking the following:

- UPS-ENTERPRISE has been designed for use in closed environments.
- Place the UPS on a flat and stable surface, in a ventilated environment away from heat sources and exposure to direct sunlight.
- Keep ambient temperature between 0°C and 40°C and humidity less than 90% (non-condensing); the best temperature to guarantee longest possible battery life is 15-20°C.
- Ensure that the environment that the UPS will be installed in is not dusty, and leave a space of at least 20 cm around it to allow for adequate ventilation and access to the rear panel.
- Make sure not to set the UPS or any other heavy object on the cables.
- Check that the voltage and frequency preset for operation is right for your electrical power supply. The UPS data can be read on the plate on the rear panel.
- For the RS232 serial connection or with a LAN network, use only the manufacturer-supplied cables and accessories.

In case of RK models for installation in 19" standardized cabinets, the lateral brackets supplied must be mounted.

The pictures that follow illustrate the assembly depending on the configuration.





WARNING

Extract the UPS or the battery module and remove all the parts from the pack. It is strongly recommended to keep the packaging materials, which have been designed for safe shipping in cases where the unit has to be shipped back for maintenance.



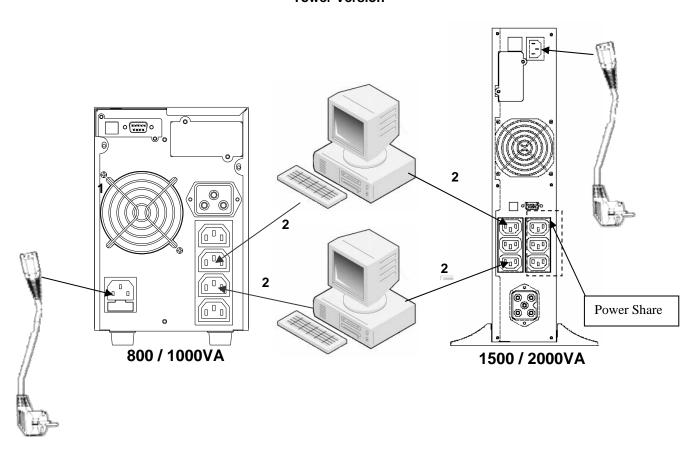


3.2 CONNECTION TO THE MAINS POWER SUPPLY AND CONNECTING THE LOAD

3.2.1 Settings for connections

Connection to the mains (1) and the connection of applications (2) should be made by using cables of appropriate cross-section and which conform to the standards in force. A distribution panel must be set up (if there is not one already) which can be used to isolate the mains upstream of the UPS. This panel must have an automatic switch of sufficient capacity for the current absorbed at full load and a differential breaking device. The mains input may be connected through the cable previously powering the server. For the output connections, use the two IEC320 cables supplied.

Tower Version



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3.2.2 Use of the battery expansions (optional)

Where long-life battery operation is required, back-up expansion units are available. By combining the UPS with a battery expansion unit, back-up times of up to 60 minutes may be obtained.

3.2.3 Putting an external battery expansion into operation

The table above indicates sizing of the back-up expansion depending on the consumers connected: a maximum of **two** battery expansion units may be connected to a UPS.



Danger

Make sure that the safety switch on the battery expansion is in the "OFF" position during the connection steps.

Set the battery expansion unit beside the UPS on the side that does not have the air vents. Connect the UPS and the battery expansion using the special cable supplied.

Disposition of the connection cables is shown in the example in the figure that follows.

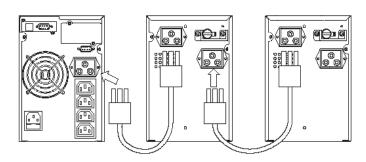
Once connection has been completed, to make the back-up expansion operative, put the safety switch on the battery expansion to the "ON" position and configure it through the special menu as described in chapter 4.

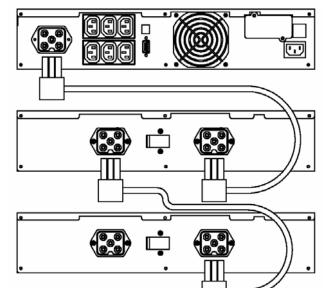


WARNING

In the event of operation with an external battery expansion, the charging process takes longer.

ENT-TW08 ENT-TW10





ENT-TW15 / TW20 ENT-RK15 / RK20

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4 CONFIGURATION AND START-UP

4.1 CONFIGURATION OF THE OUTPUT VOLTAGE/BATTERY EXPANSIONS



WARNING

The factory configuration is for operation with output voltage of 230V, without additional battery expansions.

For normal uses with standard back-up, no configuration work is required.

To enter configuration mode, put the "UPS in bypass" by pressing the OFF button (if switched off, simply insert the mains power plus):

- 1. Press both buttons together for 3 seconds until a beep is heard.
- 2. In configuration mode, the battery LED bar will be flashing.
- 3. If no action is taken within 10 seconds, the UPS exits from configuration mode.
- 4. Proceed with configuration by pressing the "OFF" button until the desired configuration is obtained, displayed as in the table that follows:

The battery LED bar stops flashing and the LEDs indicate the number of battery expansions included:

Display	Selection	Total battery capacity	Physical appearance
	0 expansions (default)	1 string	UPS only
	1 expansion	3 strings	UPS + 1 battery cabinet
	2 expansions	5 strings	UPS + 2 battery cabinets

After configuration of the battery expansion, wait for 10 seconds to automatically exit from the setting procedure.

If you want to configure the 230V output voltage (default) or 220V or 240V, then press the buttons again simultaneously for 3 seconds, before exiting from setting mode (within 10 seconds).

In output voltage setting mode, as well as the battery LED bar, the no-break output LED also flashes.

For configuration of the **voltage**, use the same arrangements as for the battery expansions with the "OFF" button for selection of the desired value, as shown in the table that follows.

Display	Selection
	220V
	230V (default)
	240V

After completing the configuration procedures, it is recommended to switch the UPS off; the new parameters will have effect the next time it is switched on.

4.2 Power Share Configuration (1500 / 2000VA version only)

Functionality of the Power Share sockets can be configured through the software (Net-Vision/Uni Vision).

The purpose of this group of extra sockets is, generally speaking, to feed part of the users (those with low priority) to be able to exclude them in critical situations and leave full availability of power supply to the privileged users connected to the main sockets.

Possible configurations: the Power Share outlet is disconnected in case of:

- (Default) Overload on the output with mains line up or load greater than 95% in battery operation.
- Residual battery capacity < XX % (user-selectable through the software)
- Residual battery back-up time < di XX min (user-selectable through the software)
- Emergency Lighting operation (user-selectable through the software)
 Emergency Lighting means activating the Power Share sockets only when the mains line is down; this is
 a contrary logic function, but one which is useful for activating an emergency lights line when the mains
 line is down without the need for additional circuitry.

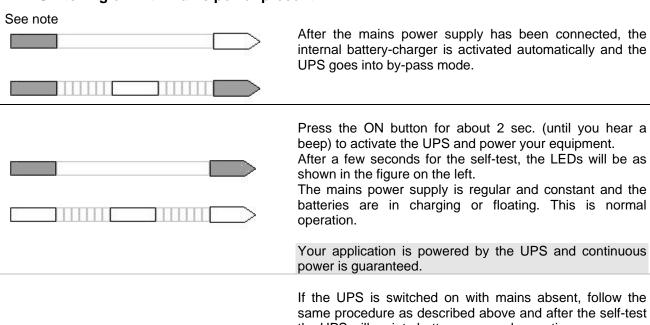


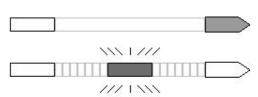
DISPLAYS & CONTROL 5

LED lit	LED off	LED flashing	Buzzer
			(((O)))
Key			

5.1 **COMMANDS AND SIGNALS**

5.1.1 Switching on with mains power present





the UPS will go into battery-powered operation.

The consumers are powered by the batteries, which will progressively discharge.

An intermittent acoustic and visual alarm will indicate that the UPS-ENTERPRISE is operating on battery power.

It is recommended to switch on in this way only if the protected equipment has to be switched on under emergency conditions and with the minimum indispensable load.

Your application is powered for the residual time given by the batteries

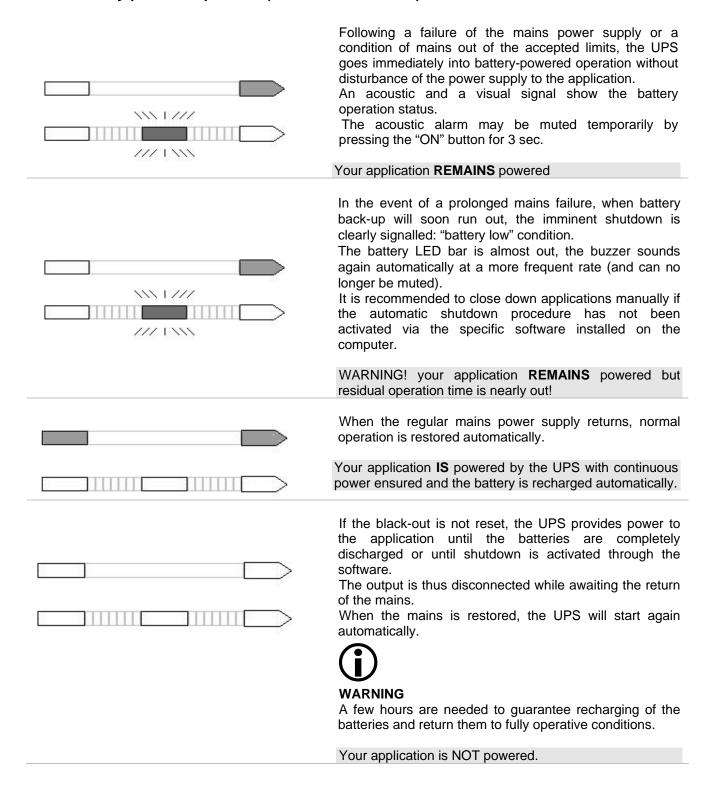
Note

Under normal conditions (mains present), the associated LED may be flashing, indicating inversion of the phase / neutral polarities: in this case, insert the plug the other way to eliminate the problem.





5.1.2 Battery-powered operation (in cases of black-out)



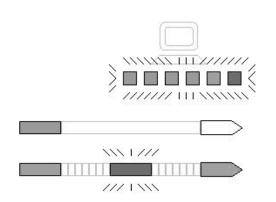
CERTIFICATE AND CONDITIONS OF WARRANTY



5.1.3 Operating failures

If for any reason the red LED comes on permanently, then there is an irregular operating condition. The UPS automatically goes into by-pass mode in order to protect the consumers connected.

Turn to the troubleshooting section for the solution to the problem.



The load LED bar displays the irregular absorption.



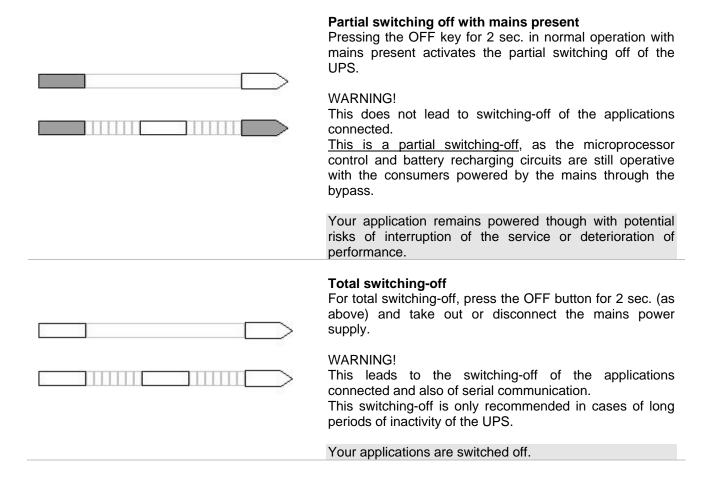
WARNING

Where the load demands more power than the nominal power of the UPS or if there is a peak of greater than 130%, the UPS enters bypass mode.

The UPS remains in this condition while waiting for the required absorption to return inside the limits.

Your application remains powered though with potential risks of interruption of the service or deterioration of performance.

5.1.4 Switching the UPS off







5.2 TEST PROCEDURES

5.2.1 Battery test

The battery test can be activated manually or via the SW (as long as the conditions are right).

The automatic test checks the efficiency of the batteries so that, if necessary, the user can be informed when they need to be replaced in order to guarantee sure service of the UPS.

If the test fails, an alarm condition is displayed.

For a <u>manual</u> test, press the ON button for more than 3 seconds (with the UPS in normal conditions); the test lasts for about 10 seconds with the LED bar flashing to indicate that the test is in progress. It is advisable to perform the test with batteries fully charged (LED bar fully lit up).

5.3 COMMUNICATION

All the UPS-ENTERPRISE models are provided with the RS232 serial communication interface and USB.

A DB9 serial cable is supplied and is to be used for direct connection to the server.

- Optional communication and signalling accessories are also available, such as:

 Uni Vision *local management software* with local shutdown functions for Windows systems
- Uni Vision pro *network management software* with local/remote shutdown functions on the leading operating systems based on JSC (Java Shutdown Client)
- Net Vision Web/SNMP manager* for control via LAN with TCP/IP protocol and remote shutdown management
- the relay card with 3 zero-potential dry contact signals and an isolated input (ESD)

5.3.1 RS232 interface

Communication with the server can take place directly via the **RS232** interface using the Jbus protocol. In addition to the local or networked shutdown it is possible to perform full monitoring of the electrical parameters of battery status and the automatic ON / OFF programming of the UPS.

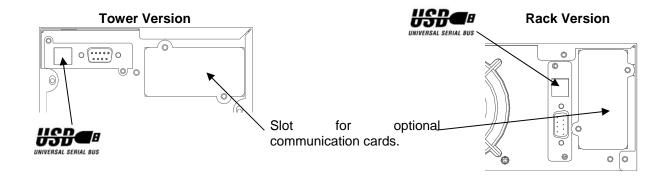
For a complete description of the software features, refer to the Uni Vision and Uni Vision Pro documentation.

5.3.2 USB interface

In addition to the RS232 serial link, it is also possible to establish communication directly through USB with the HID protocol, where available in the operating system.

In this case, it is not necessary to install any SW, a standard USB cable is used and, once connected, recognition takes place in the same way as for any peripheral.

The unit's control parameters may be managed directly through the operating system's service menu.

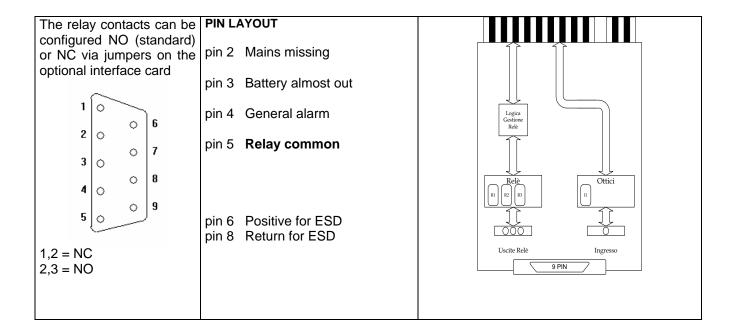


^{*} Net Vision permits direct connection of the UPS to a LAN (RJ45 ethernet) and remote control of the UPS through TCP/IP using a WEB browser.



6 USE OF SIGNAL RELAY

An optional card is available for insertion in the slot, which is able to handle 3 isolated contact signals with which to remote relay UPS status information.



The maximum voltage that can be applied to the contacts is 60Vdc and the maximum current is 500mA.

Pin DB 9	Signals	NC	NO	JUMPERS
4	General alarm	1-2	2-3	CN04
3	Battery almost out	1-2	2-3	CN02
2	Mains down or not in limits: UPS in back-up (20 sec)	1-2	2-3	CN03

Where required, it is also possible to switch off the UPS via a remote external contact.

The command is received by leaving the contact closed for 3 consecutive seconds.

The external contact must be closed between pin 6 and pin 8.



The external contact must be dedicated and at zero potential; if this condition is not respected, permanent damage may be caused to the UPS.





TECHNICAL DATA

Technical data		ENT-TW10 ENT-RK10	ENT-TW15 ENT-RK15	ENT-TW20 ENT-RK20
Power	800VA / 560W	1000VA / 700W	1500VA /1050W	2000VA /1400W
Technology	VFI (Voltage and Fre	quency Independer		nversion
Input	, ,	· · · ·	,	
Input voltage		160 ÷ 276	SVac (1ph)	
Frequency		50/60Hz (autor	matic selection)	
Power factor		_	.97	
Input current		Sinusoidal	absorption	
Output				
Output voltage (Vout)	2	230V (1ph) \pm 3% (see	electable* 220/240V)	
Voltage distortion		<4% on a	linear load	
Output frequency stability		50Hz or 60Hz (± 0.5	5% in battery mode)	
Automatic by-pass		Voltage sele	ected ± 15%	
Overload (with mains		130% for 1	10 seconds	
present)				
AC/AC efficiency	88%			
Crest factor	3:1			
Reference normatives				
Standard	European UPS standard EN50091 and CE marking			
Safety / EMC standards	EN50091-1-1 / EN50091-2			
Environmental data				
Operating temperature	0 +40°C (32-104°F)			
	for long		15°C to 25°C (59°F -	77°F)
Storage temperature (MAX)	-5 +50°C (23-122°F)			
Relative humidity HR	0 ÷ 90% non-condensing			
Maximum altitude (above sea level)	1,000mt (3,300ft) with no derating; maximum 3,000mt (10,000ft)			
Acoustic noise (ISO 3746)	< 45dB @ 1mt			
Physical data (weight including batteries)				
Dimensions (WxDxH) TW	145x405x225 mm 87x495x435		95x435	
TW weight	14 kg	15 kg	22 kg	23kg
Dimensions (WxDxH) RK	1	483x460x87 mm	483x49	5x87 mm
RK weight	1	16 kg	22 kg	23kg





8 MAINTENANCE



DANGEROUS electrical voltages are generated inside the UPS. All maintenance operations to be performed SOLELY AND EXCLUSIVELY by authorized personnel.

- Optimal operation of the unit is obtained by keeping it constantly powered (24 hours a day). This guarantees correct maintenance of the battery charge.
- If there is to be a long period when the equipment is not in use, wait until the batteries are fully charged before switching the UPS off completely (mains present for eight hours consecutively).
- While the unit is not in operation, the batteries should be recharged for 24 hours at least every 4 weeks.

8.1 TROUBLESHOOTING FOR MINOR PROBLEMS

This section describes some of the most likely problems that may compromise proper operation of the UPS, together with an attempt to identify the likely causes and possible solutions



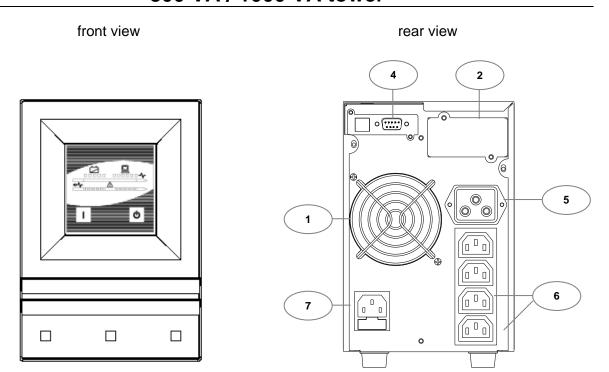
IMPORTANT: if after following the indications in this chapter, the problems persist or are repeated frequently, you should call the technical service centre providing a full description of the problem.

Problem	Possible cause	Solution
	The main switch is not inserted	Insert the main switch
	Mains voltage is missing	Have an electrician check the
The MAINS LED does not come		mains
on, the acoustic alarm sounds at intervals	Fuse on the input faulty.	Replace the fuse with another one of the same type.
The MAINS LED flashes	Phase and neutral inverted at the	Remove the connection plug
	input to the UPS	from the mains and insert it again inverted
The ALARM lamp is lit, the	UPS broken	Contact the customer support
acoustic alarm sounds		service.
continuously.	Overtemperature	Lower the ambient temperature
	Battery expansion switch in the "OFF" position	Turn the safety switch to "ON"
	The number of external expansion batteries is not set correctly	Correct the settings (see chapter 4)
Battery back-up time less than indicated	The batteries are not fully charged	Charge the batteries for at least 8 hours consecutively.
	The batteries are faulty	Contact the customer support service.
	The battery-charger is defective	Contact the customer support service.
OVERLOAD indicator lamp lit	Overload on the UPS output	Reduce the load connected to within the nominal value.
	Serial connection cable error	Use the cable provided.
No communication between UPS	The PC interface is busy with Check that other SW appl	
and PC	another process or defective	are not interfering.
	Interference on the data cable Change position of the cable.	



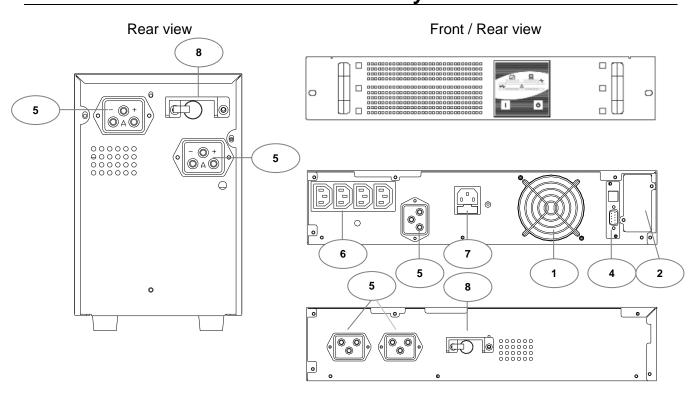


800 VA / 1000 VA tower



Battery extension tower

1000 VA rack 19" Battery extension rack 19"

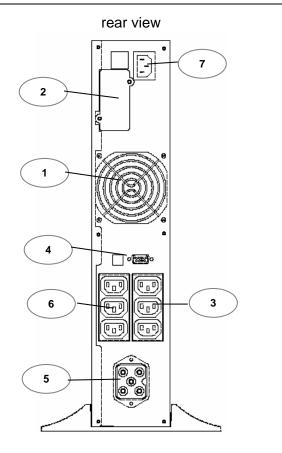


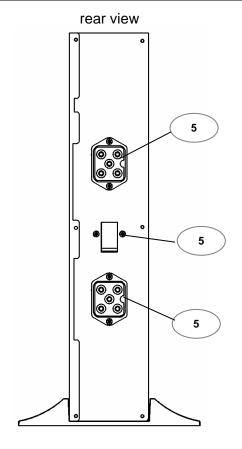




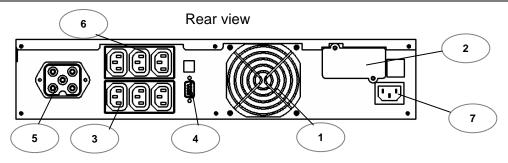
1500-2000 VA tower

Battery extension tower



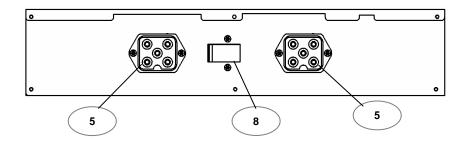


1500-2000 VA rack 19"



Battery extension rack 19"

Rear view



GB	F
1 Fan	1 Ventilateur
2 Slot for optional communication boards	2 Cache pour cartes de communication optionnelles
3 Output socket power share	3 Prise de sortie power share
4 RS232/USB serial port DB9	4 Connecteur série RS232/USB DB9
5 Battery connection for extension	5 Connecteur batterie pour extension externe
6 Output socket	6 Prise de sortie vers l'utilisation
7 Input socket and fuse	7 Prise arrivée réseau et fusible
8 Battery switch	8 Commutateur de batterie

1	D
1 Ventilatore	1 Lüfter
2 Slot per schede di comunicazione opzionali	2 Abdeckung für Kommunikationskarten (Option)
3 Presa di uscita power share	3 Ausgang power share
4 Connettore seriale RS232/USB DB9	4 Serieller Anschluß RS232/USB DB9
5 Connettore batteria per espansione esterna	5 Batterieanschluß für eine externe Erweiterung
6 Presa di uscita per utenze	6 Ausgang zur Last
7 Presa ingresso rete e fusibile	7 Netzeingang und Sicherung
8 Interruttore batterie	8 Batterieschalter

1 Ventilador 2 Slot para tarjetas de comunicación opcionales 3 Toma de salida power share 4 Conector serie RS232/USB DB9 5 Conector de batería para expansión externa 6 Toma de salida hacia utilización 7 Toma de entrada red y fusible 8 Interruptor de batería

