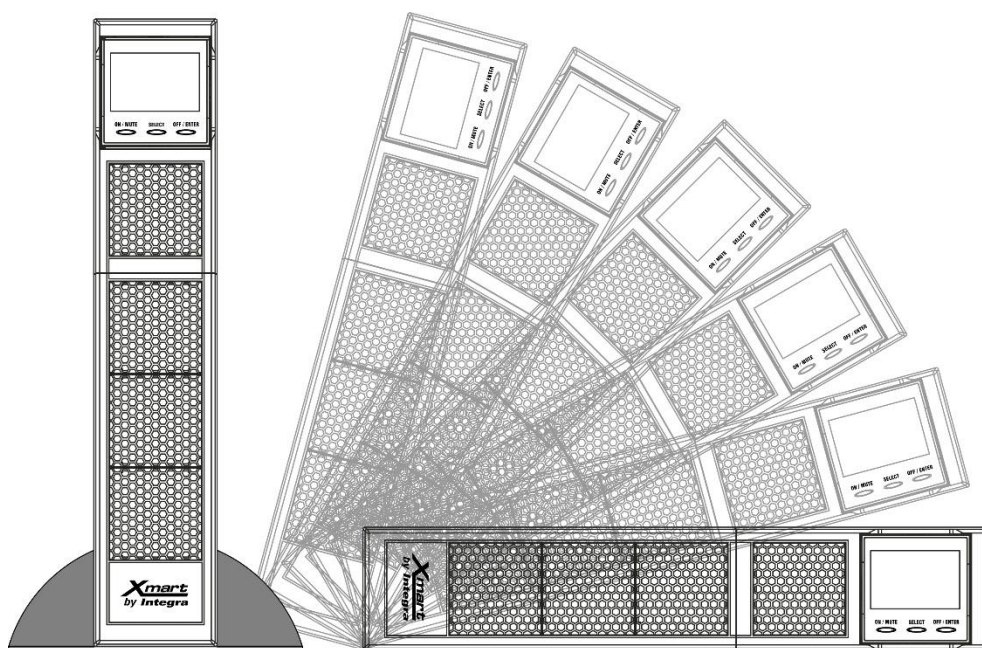


## USER MANUAL OPTIMA RT9W 6K/10K

### UPS ONLINE DOUBLE CONVERSION RACK / TOWER INSTALLATION

**OPTIMA-RT9W-06K-230V**  
**OPTIMA-RT9W-10K-230V**  
**ISOTX-06K-OPT-RACK**  
**ISOTX-10K-OPT-RACK**



- 
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## 1. GENERAL SAFETY INSTRUCTIONS

**WARNING:** It is required to read and understand this manual. Follow all instructions given in this manual for starting up and operating this product. Only qualified technician must start-up, operate and maintain this product. Keep manuals as a guide for future consults.

UPS manufacturer or distributor will never be responsible for any accident produced by lack of knowledge or negligent practices at the moment of install, starting up or maintain this product. UPS manufacturer or distributor is not liable for any damage that might rise from misusing this unit or defective installation.

### **SAFETY:**

#### **ELECTRIC SHOCK RISK**



This product operates with dangerous voltages. It must be installed, operated and maintained ONLY by qualified technicians trained for this kind of products. Service personnel MUST know and understand very well all electric risks related to this product.

If you are not qualified technician do not try to install, operate or repair this product.

**CAUTION:** There are dangerous voltages in the UPS power outlets although the equipment is not plugged to power line.

**CAUTION:** Inside this equipment, due to internal batteries, there are ALWAYS dangerous voltages, EVEN the UPS is OFF and unplugged.

**CAUTION:** There are dangerous voltages in internal DC Capacitors. Wait at least 10 minutes after turning off UPS before opening it to access inside.

**CAUTION:** Power off UPS and unplugged it from AC Line before opening it to Access inside this unit.

**CAUTION:** Before starting the opening procedure, remove all jewelry and metallic objects such as: Rings, Watches, Bracelets, etc., because they could contact conductive parts and components inside the UPS and this might cause discharges and/or short circuits. Make sure using tools properly isolated to avoid electrical risks.

**WARNING:** This product has been designed to be used indoors protected from water, direct sun light, dust and extreme temperature.

**WARNING:** Do not put any object on the UPS; do not apply any force over UPS. Do not cover UPS ventilation.

**WARNING:** This UPS must be connected to appropriate electrical service according to selected model. Technical specs label in the UPS shows the UPS power ratings. DO NOT connect this UPS to any of its own power outlets, this could damage the unit permanently.

**WARNING:** Do not connect AC motor based equipment without a careful sizing of the UPS based on inrush current instead of average current. Inrush current typical of motor based system could overload this UPS.

**WARNING:** In case of emergency, power-off UPS and turn it off by <OFF> button in front panel. Then call technical service.

### **INFORMATION FOR THE PROTECTION OF ENVIROMENT – UPS SERVICING**

This UPS and batteries make use of components dangerous for the environment (electronic cards, electronic components). The components removed must be taken to specialized collection and disposal centers.

### **NOTICE TO EUROPEAN UNION CUSTOMERS: DISPOSAL OF OLD APPLIANCES**



This product has been supplied from an environmentally aware manufacturer that complies with Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/CE. The “crossed-out wheeled bin” symbol at left is placed on this product to encourage you to recycle wherever possible. Please be environmentally responsible and recycle this product through your recycling facility at its end of life. Do not dispose of this product as unsorted municipal waste. Follow local municipal waste electrical and electronic equipment (WEEE).

## 2. SAFETY, QUALITY AND PERFORMANCE STANDARDS

<b>SAFETY - LOW VOLTAGE DIRECTIVE (2006/95/EC)</b> <b>UPS Part 1-1: General &amp; Safety UPS in accessible areas</b>	<b>IEC/EN 62040-1</b>
<b>ELECTROMAGNETIC COMPATIBILITY - EMC DIRECTIVE (2004/108/EC)</b>	
<b>UPS, Part 2, Electromagnetic Compatibility: Radiated &amp; Conducted</b>	<b>IEC/EN 62040-2 (Cat 3)</b>
Low Freq. Conducted Disturbances & Signals:	IEC/EN 61000-2-2
Electrostatic discharge immunity Test:	IEC/EN 61000-4-2 (Level 4)
Radiated radio Frequency immunity:	IEC/EN 61000-4-3 (Level 3)
Electrical Fast Transient / burst immunity:	IEC/EN 61000-4-4 (Level 4)
Surge immunity:	IEC/EN 61000-4-5 (Level 4)
Conducted Immunity:	IEC/EN 61000-4-6 (Level 3)
Power frequency magnetic field immunity:	IEC/EN 61000-4-8 (Level 4)
<b>PERFORMANCE:</b> <b>UPS Part 3: Methods of operation, specifications and test requirement</b>	<b>IEC/EN 62040-3</b>
<b>IT Equipment. SAFETY. Part 1: General Requirements</b>	<b>IEC/EN 60950-1</b>
<b>BATTERY SAFETY</b>	<b>EN 50272</b>
<b>CE</b>	<b>CE compliant</b>
<b>IP PROTECTION</b>	<b>IP20 (static)</b>
<b>QUALITY MANAGEMENT:</b>	Manufactured under: <b>ISO 9001 : 2000</b>
<b>ENVIRONMENTAL MANAGEMENT:</b>	Manufactured under: <b>ISO 14001 : 2004</b>
<b>TRANSPORTATION:</b>	IEC/EN 300019-2-2, Class 2.3

**WARNING:** Modifications made on the product or the use of this product as a part of a more complex system not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. It also could affect its performance and the compliance of regulations. XMART is not responsible of modifications made after manufacturing.

**WARNING:** This is a category C3 UPS product. This category includes UPS with an output current exceeding 16A and intended for use in the second environment. Such UPS are suitable for use in commercial or industrial installations having a minimum boundary of 30m from other buildings classified as first environment. Category C3 UPS shall meet category C3- UPS emission limits and withstand the immunity requirements of above table.

**WARNING:** This is a product for commercial and industrial applications in the second environment. Installation restrictions or additional measures may be needed to prevent disturbances.

### **DEFINITIONS:**

**First Environments:** Those sites directly connected without intermediate transformers to the public low-voltage mains supply, like residential buildings and small companies.

**Second Environments:** Those sites not connected directly to public low-voltage mains that supplies residential buildings like industries and big companies powered by its own intermediate transformer.

### 3. PRODUCT DESCRIPTION

This is an Uninterruptible Power Supply (UPS) ONLINE DOUBLE CONVERSION with IGBT technology at rectifier and inverter stages with PWM. It generates a pure SINEWAVE output free of noise and imperfections for powering and protecting your valuable system. This UPS is the right choice to protect hardware and data in critical workstations and server applications.

This product has been designed to operate under hostile electrical conditions but offering a reliable performance with outstanding features and characteristics. It is equipped with a powerful anti-surge system based on MOV technology and filtering circuits to eliminate electromagnetic interferences (EMI). It is 100% compatible to operate connected to low quality AC sources like power generators.

Our monitoring software allows configuring and controlling this UPS by any of available communications ports: USB/RS232 or LAN Ethernet optional card (under SNMP protocol).

This model can be installed in both tower format and inside 19" rack cabinets. Rack installation requires some mounting accessories not included with the product,

**This UPS comes with 2 main modules:**

**1- UPS Module:** This module contains electronic and power parts. It operates with 220/230V AC input and generates a 220/230V AC output. 6KVA model is 2U height meanwhile 10KVA is s 3U height module.

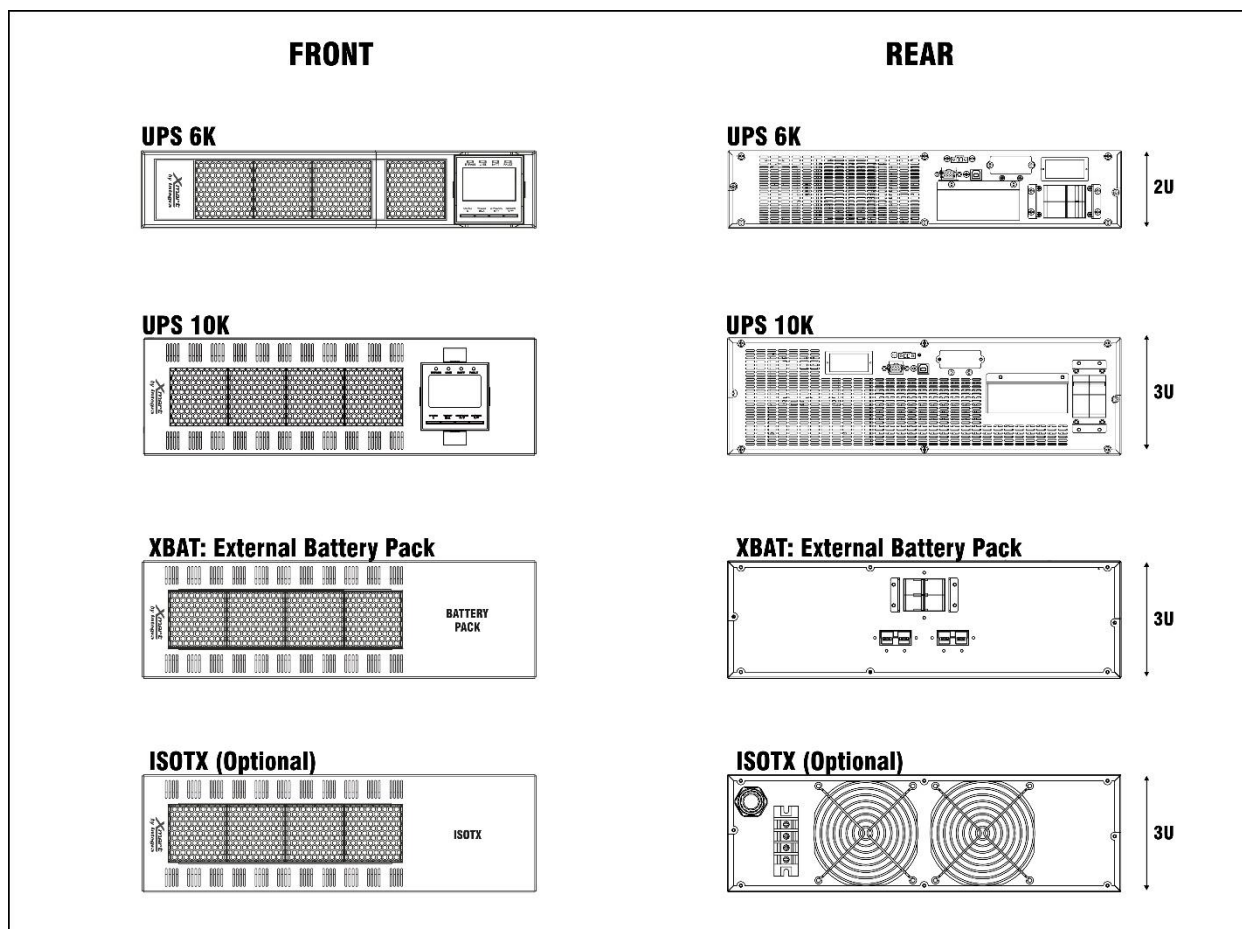
**2- Battery Module (XBAT):** This product includes 1 external Battery module named as XBAT. Inside this module are installed all batteries required by the UPS. It is a 3U height module.

**ISOTX (optional):** There is an additional and optional module named ISOTX. It is an isolated transformer that can be connected to UPS output. ISOTX generates 2 isolated outputs at 120Vac. It is a 3U height module.



**WARNING:**

In case of installing an optional external ISOTX module, the maximum power of the system will be about 7% lower than max. power of the UPS since part of the power (7% approx.) will be dissipated in the ISOTX.



## 4. INSTALLATION

This section of the manual covers installation procedure and instructions for this UPS series. Before doing installation you must revise and understand sections related to safety and site conditions.

### SAFETY INSTRUCTIONS



**WARNING:** Before revising this section you must read and understand very well section 1 of this manual: “GENERAL SAFETY INSTRUCTIONS”.

### WARNINGS, RECOMMENDATIONS AND LIABILITY LIMITATION

**REACH AND LIABILITY LIMITATION:** The preparation of the site, wiring and all protection devices must be supplied by end user and it will not be responsibility neither the UPS distributor nor the UPS technician in charge of the start-up.

The place will be conditioned by end user or electrical contractor and must fulfill with local normative and directives and UPS technical requirements.

This manual describes minimal conditions and technical requirements with which the site must accomplish. Directives and requirements described in this manual, do not pretend to substitute in any way local electrical directives or normative. In some cases, local directives or regulations might be more exigent than UPS technical requirements described by this manual. In that case end user electrical contractor must be sure to comply with all related local electrical regulations and directives.

- Installation and start-ups MUST be done by qualified personnel only complying with safety procedures.
- This kind of equipment has been designed to provide electrical output even when it is not powered-on.
- UPS output could be energized even when UPS is turned-off in case external bypass is activated.
- Internal or external battery banks always can generate risk of electrical shock because high DC voltage.
- External battery banks must be revised before connecting them to UPS to confirm their DC voltage is compatible with this UPS.
- DC polarity of the Battery bank must be revised to confirm it is OK before connection. A reverse polarity can generate permanent damage in batteries and UPS.
- This UPS is rated as “Class I” so it is recommendable to connect GROUND terminal to the EARTH before making any other connections.
- Before making AC input connections, technicians must confirm all switches of input lines are in open state (OFF).
- All installation instructions of this manual must be complied.
- All local electrical regulations must be complied.
- Power lines must be protected by protection devices against over current (breakers) or leak currents with capacity and technology appropriate to effectively accomplish its function. Moreover, installation grounding must be correct.
- Install the UPS in well ventilated locations and leave room enough between UPS and close objects and structures
- Do not connect to UPS equipment or devices that exceed its capacity, this would overload the UPS.
- This product has been designed to be used indoors protected from water, direct sun light, dust and extreme temperature.
- Do not put any object on the UPS; do not apply any force over UPS. Do not cover UPS ventilation.
- This UPS must be connected to appropriate electrical service according to selected model. Technical specs sticker in the UPS shows the UPS power ratings. DO NOT connect this UPS to any of its own power outlets, this could damage the unit permanently.
- Do not connect AC motor based equipment without a careful sizing of the UPS based on inrush current instead of average current. Inrush current typical of motor based system could overload this UPS.
- We strongly recommend to place a warning sign on main electrical board to avoid external personnel manipulate AC lines during revision and start-up work is performed.

## **EN-IEC 62040-1: EXTERNAL BACKFEED PROTECTION**

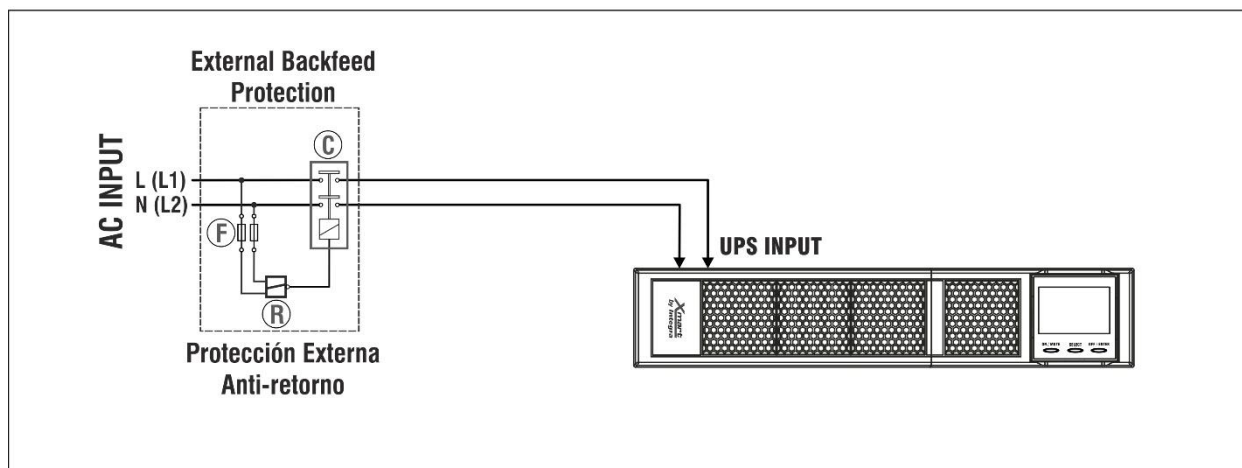
In case backfeed protection is required, an automatic external protection circuitry must be installed to provide this kind of protection to comply with EN-IEC 62040-1. This external protection device is not included with this product. External backfeed device must be rated to drive maximum UPS current.

Backfeed protection system must be automatic and must assure to avoid internal voltage of the UPS can feed input AC lines under battery mode. Under normal conditions, UPS internal design avoids this kind of situations happens. However, a failure in the UPS internal Bypass Switch could allow output voltage of the UPS inverter could be driven to the AC input lines through internal bypass lines. In battery mode, an operator working on input AC terminals does not expect to find voltage in input lines of the UPS so that a backfeed failure could represent an electrical shock risk for the operator.

An effective backfeed design must be able to open automatically all UPS AC input lines when AC main is power-off.

**\*\*\* External Backfeed protection device is not included with this product.**

In below figure a typical automatic backfeed protection design is described.



- C:** 2 Poles Contactor. Normally Open. Coil voltage same tan UPS input AC voltage. Max. current similar to max. UPS input current.
- R:** AC Relay. Normally Open.
- F:** General purpose AC fuses. Operating voltage similar to UPS input AC voltage.

## **WARNING LABEL:**

We strongly recommend to place warning labels in all electrical boards related to UPS circuit lines to indicate an UPS is connected to the board. This is because a dangerous voltage could be feed by the UPS on the electrical board even AC main service is out of order.

Label design should include following information:

**VOLTAGE BACKFEED RISK**

**UPS CONNECTED TO THIS CIRCUIT**

**Before working on this circuit:**

- \* Isolate UPS
- \* Check for dangerous voltage in all circuit terminals.



## **SITE INSPECTION AND INSTALLATION CONDITIONS**

### **REGULATIONS AND LEGAL DIRECTIVES**

It is necessary to check that installation site, wiring and power protection in the installation supplied by end user, fulfill technical parameters required by UPS.

A particular installation might accomplish with UPS requirements but not with local directives and regulations.

The end user and/or electrical contractor will be responsible of watching for complying with electrical regulations and normative during electrical installation managed by end user.

Inspection performed by installation technician is not intended to confirm regulations and directives accomplishing but only with technical needs for optimal UPS operation.

### **SITE INSPECTION**

- During transport of this UPS from a cold place to a warmer and more humid one, some condensation could be generated. Leave the UPS for at least 2 hours to climate to new installation site.
- Do not install the UPS outdoors or near water sources nor in wet environment
- Do not install the UPS in sites exposed to sun light or heat sources. Temperature at operation site should never rise over 35 °C. Batteries' life shortens over 25 °C.
- Installation site must be dry, fresh, free of dust, fibers and any other objects (conductors or not) suspended in the air that could get into the UPS thru the ventilation system (Fan).
- Do not block UPS ventilations

### **UPS INPUT AND OUTPUT POWER LINES PROTECTION**

#### **AC LINES PROTECTIONS DEVICES:**

All UPS Inputs and outputs must be protected by circuit breakers and current leak protections. Protection capacity and type must fulfill local regulations as well as directives from this manual. Grounding must be according to local directives as well.

#### **LEAK CURRENT PROTECTION:**

In many countries, now a day, it is legally required to install protections against current leakage to protect human beings in cases of leaks or discharges to ground. It is responsibility of the end user and/or electrical contractor selecting and including these protection devices in the electrical circuit of the UPS.

#### **DC PROTECTIONS DEVICES:**

For Ex models (with external batteries) there must be also DC Circuit Breakers between UPS and battery bank.

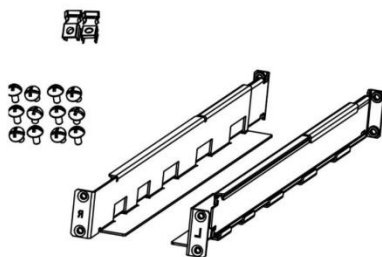
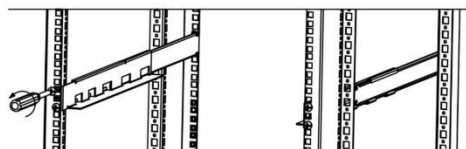
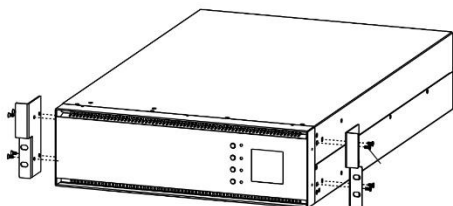
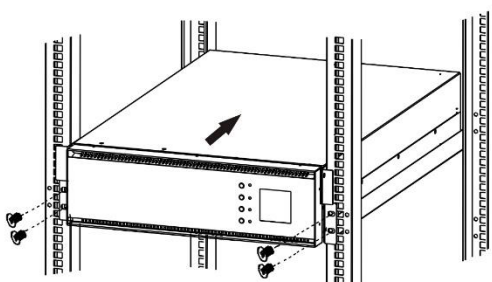
Some Models include a DC breaker on the rear panel for external battery pack protection; otherwise an external DC Circuit breaker must be installed.

## **SITE INSTALLATION**

This UPS can be installed in both vertical format or inside a 19" rack cabinet.

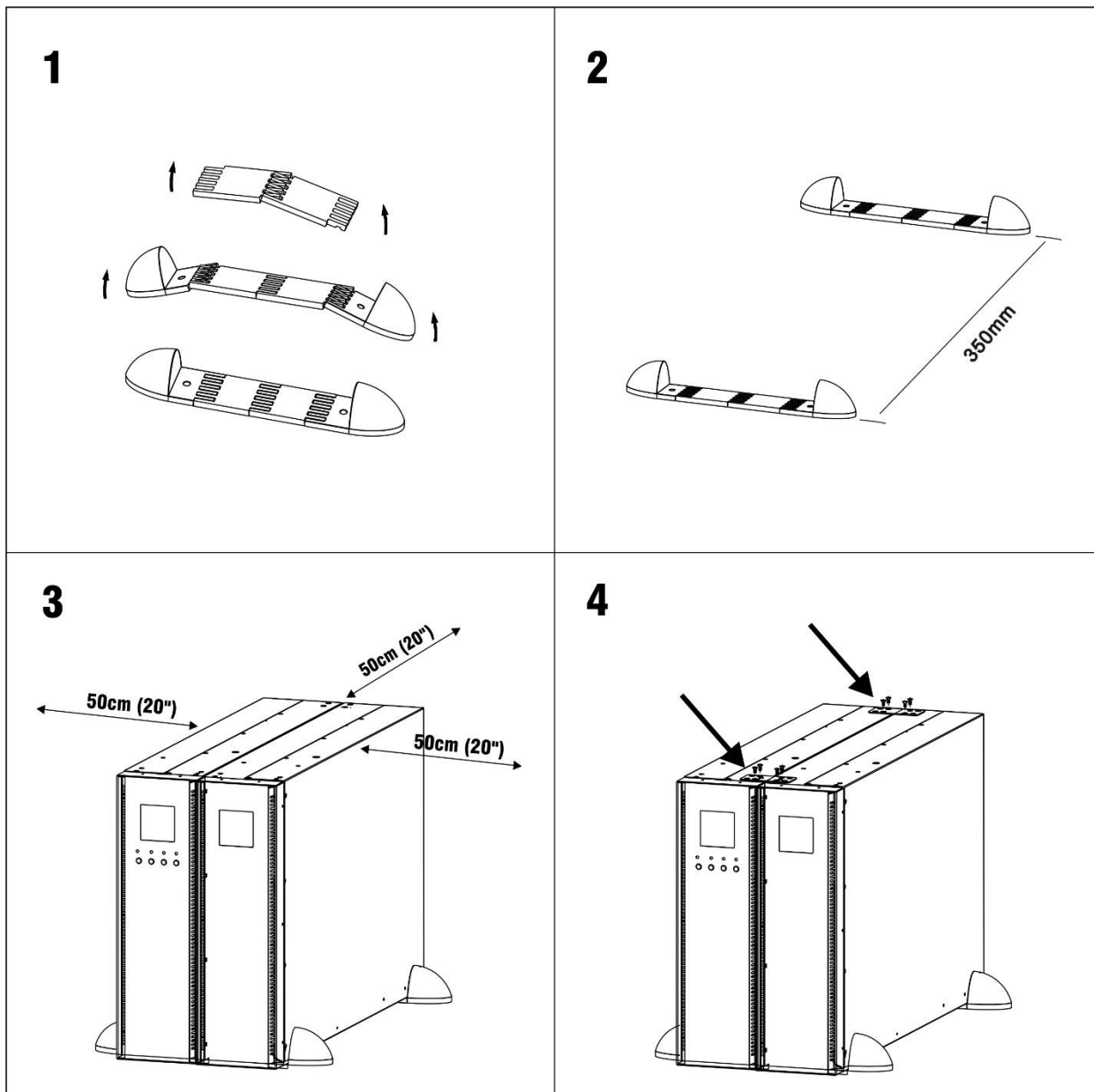
### **19" RACK MOUNTING**

Rack UPS must be installed using L-Shape type guides for supporting UPS weight. Usually this kind of supports is provided with rack cabinets. If not, UPS distributor can provide original XMART telescopic guides as optional accessory. Small black handles included with the UPS are only for locking purposes. UPS cannot be supported only by these handles.

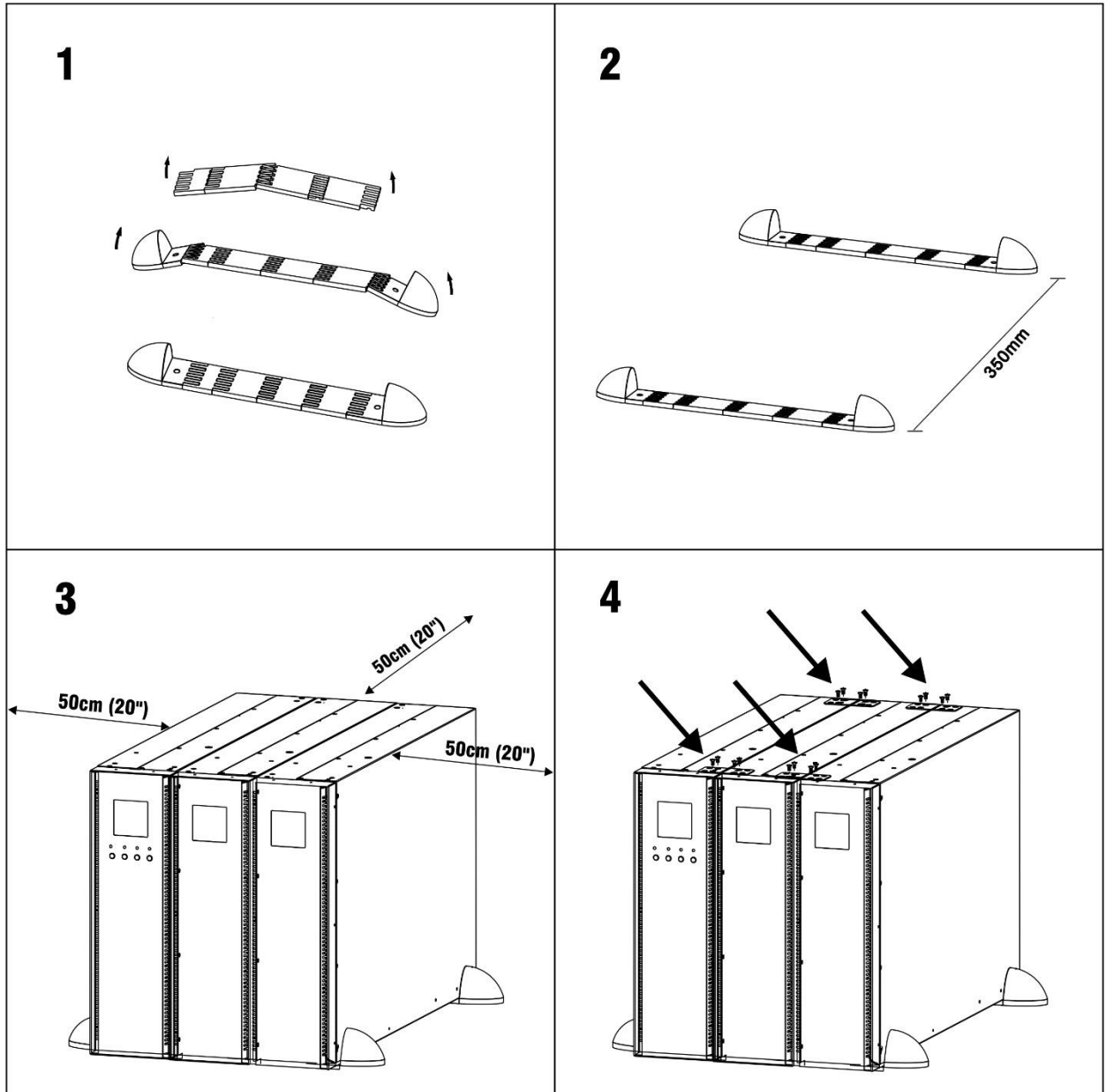
**1****2****3****4**

**VERTICAL MOUNTING**

UPS can be installed in vertical format by using plastic supports (Fig 1 & 2). These supports are included inside the box.

**2 MODULES: UPS+XBAT:**

**3 MODULES: UPS + XBART + OPTIONAL ISOTX**

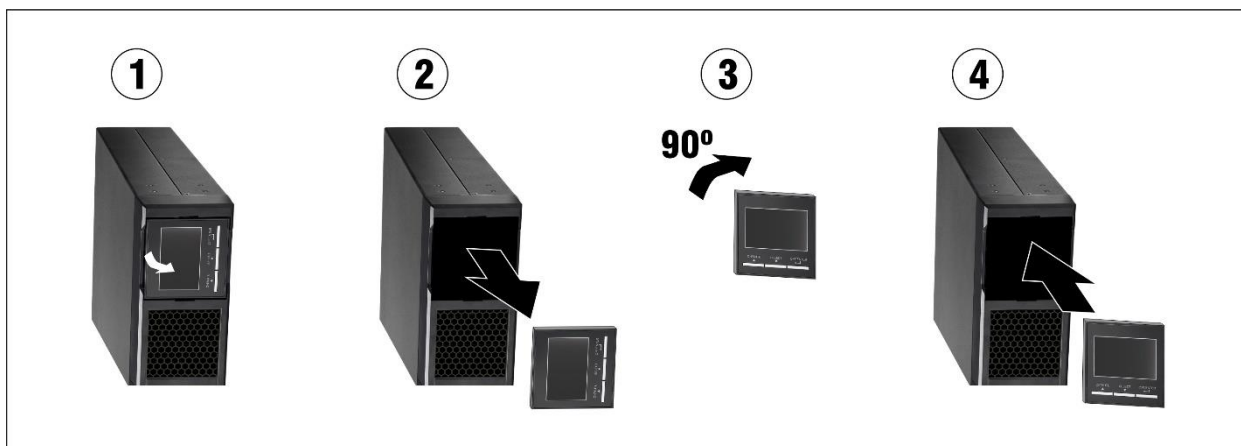


## **LCD ROTATION**

UPS display can be rotated 90° for easy reading in both vertical and horizontal installations.

To rotate LCD follow next steps:

- 1- Unlatch LCD according to step 1
- 2- Separate LCD from the UPS frame
- 3- Rotate LCD as needed
- 4- Re-install LCD in the UPS. Double check LCD is latched on the UPS frame.



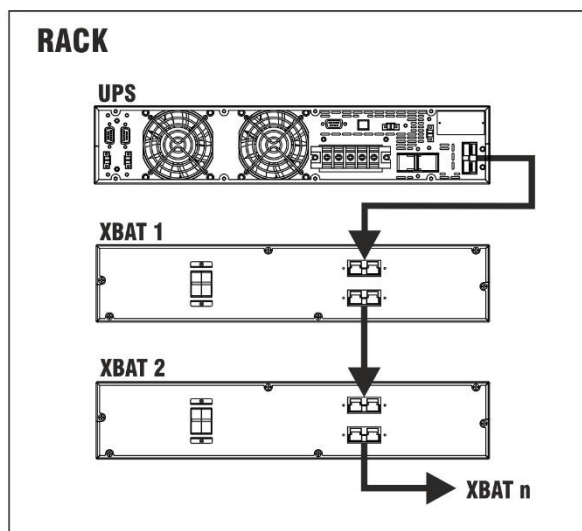
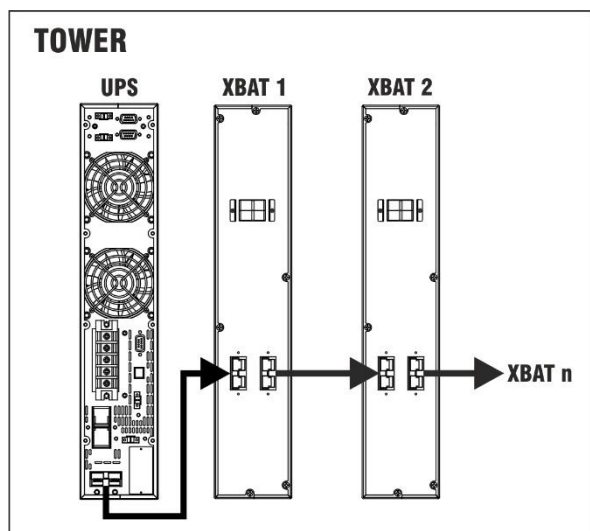
## **EXTERNAL BATTERY CABINETS (XBAT) – CONNECTION PROCEDURE**

External batteries must be connected to UPS by using original XSMART DC cable provided inside the box,



**IMPORTANT:** All OPTIMA RT 6K and 10K work with 240VDC battery voltage. This voltage is provided by battery packs by connecting 20 batteries 12VDC in series. There could be some UPS models working with a different DC voltage. User must check carefully XBAT voltage is compatible with the UPS DC voltage before making DC connections. In case electrical information given by this manual does match with information provided by product labels, user must consider information on labels or printed on the product.

- 1) Place UPS module close to original XSMART XBAT modules.
- 2) Check all DC switches on XBAT are in OFF state.
- 3) Connect UPS to first XBAT module by using original DC cable
- 4) In case system has more than 1 XBAT, connect XBAT#1 to XBAT#2. Then XBAT# 2 to XBAT#3 and so on.



## **CIRCUIT BREAKERS AND WIRING SELECTION**

Breakers and gauge of the wires used in input and output lines must be rated to drive current values in Amps as indicated in below tables. NOTE every country has its local electrical requirements and regulations. If local electrical regulations require higher rates than suggested values in this section, please follow local regulations. Below wire gauge values are based on 1999 NEC for individual copper cables at 30°C room temperature.

<b>RT UPS</b>	<b>INPUT 220Vac 1Ph</b>	<b>OUTPUT 220Vac 1Ph</b>	<b>EXT. BATT (240Vdc)</b>
<b>MODEL</b>	<b>BREAKER &amp; WIRING</b>	<b>BREAKER &amp; WIRING</b>	<b>BREAKER &amp; WIRING</b>
<b>6KVA Output 220Vac</b>	<b>AC Breaker:</b> 40A (Curve D) <b>Max. Nominal Current:</b> 36A <b>Wiring (min. size):</b> 10AWG (6 mm <sup>2</sup> )	<b>AC Breaker:</b> 40A (Curve D) <b>Max. Nominal Current:</b> 36A <b>Wiring (min. size):</b> 10AWG (6 mm <sup>2</sup> )	<b>DC Breaker:</b> 50A DC (Curve C) <b>Max. Nominal Current:</b> 30A DC <b>Wiring (min. size):</b> 10 AWG (6 mm <sup>2</sup> )
<b>10KVA Output 220Vac</b>	<b>AC Breaker:</b> 63A (Curve D) <b>Max. Nominal Current:</b> 60A <b>Wiring (min. size):</b> 8AWG (10 mm <sup>2</sup> )	<b>AC Breaker:</b> 63A (Curve D) <b>Max. Nominal Current:</b> 60A <b>Wiring (min. size):</b> 8AWG (10 mm <sup>2</sup> )	<b>Breaker:</b> 63A DC (Curve C) <b>Max. Nominal Current:</b> 50A DC <b>Wiring (min. size):</b> 8 AWG (10 mm <sup>2</sup> )

Original XMART Battery modules have their own DC breaker so no external DC breakers are required between UPS and XBAT.

<b>ISOTX</b>	<b>1 TOTAL OUTPUT: 1 x 120Vac (N1*) (100% Watts)</b>	<b>SEPARATE OUTPUTS: 2 x 120Vac (N2*) (50% Watts C/U)</b>
<b>6KVA with ISOTX Output 110/220V</b>	<b>Unique Output Capacity:</b> 6000VA / 5400W <b>Output Voltage:</b> 120Vac <b>AC Breaker:</b> 80A (Curve D) <b>Max. Nominal Current:</b> 70A <b>Wiring (min. size):</b> 6AWG (16 mm <sup>2</sup> )	<b>VA/W per Output:</b> 3000VA / 2700W <b>Output Voltage:</b> 120Vac <b>AC Breaker:</b> 40A (Curve D) <b>Max. Nominal Current:</b> 36A <b>Wiring (min. size):</b> 10AWG (6 mm <sup>2</sup> )
<b>10KVA with ISOTX Output 110/220V</b>	<b>Unique Output Capacity:</b> 10000VA / 9000W <b>Output Voltage:</b> 120Vac <b>AC Breaker:</b> 125A (Curve D) <b>Max. Nominal Current:</b> 120A <b>Wiring (min. size):</b> 3AWG (35 mm <sup>2</sup> )	<b>VA/W per Output:</b> 5000VA / 4500W <b>Output Voltage:</b> 120Vac <b>AC Breaker:</b> 63A (Curve D) <b>Max. Nominal Current:</b> 60A <b>Wiring (min. size):</b> 8AWG (10 mm <sup>2</sup> )

**IMPORTANT:** Above wire gauge values are only a recommendation.

The wire size is strongly affected by diverse factors such as: Operation temperature, wire length, type of wire and kind of installation. Electrical contractor must assure an appropriate selection for wire and protection devices sizing for complying with local regulations for electrical installations. Wiring colors must be selected according to local directives and regulations

**NOTE:** If ISOTX is configured with 1 output 220Vac, table 1 of this section can be consulted to find suggested values.

**N1\*:** If ISOTX configured with 2 outputs 120V connected in parallel allows 100% of power output

**N2\*:** If ISOTX is configured with 2 separate outputs 120V, each output can only supply 50% of max. output power.

We recommend to revise section 2 of this manual to find all ISOTX outputs configurations.

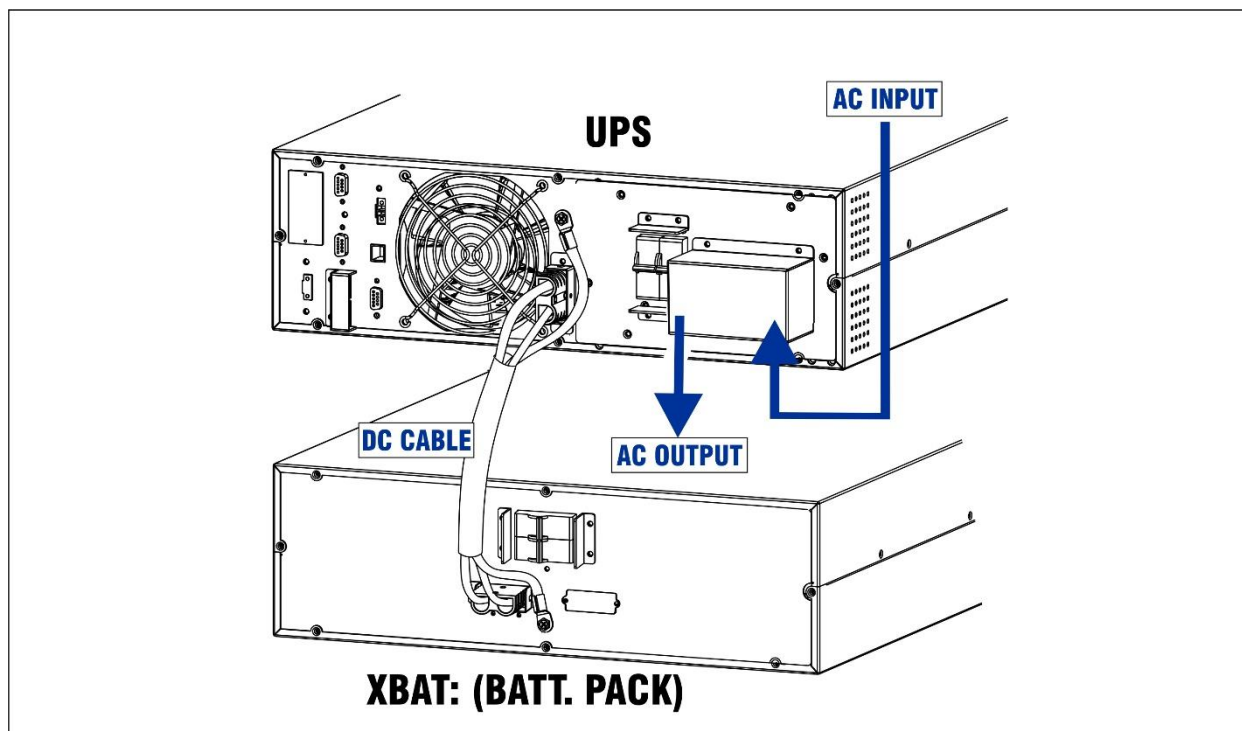
#### 4. INSTALLATION: TERMINAL BLOCK



- Make sure the UPS is Off before starting the installation.
- Remember to check all wires to be connected are not powered (including external batteries).

##### UPS + XBAT

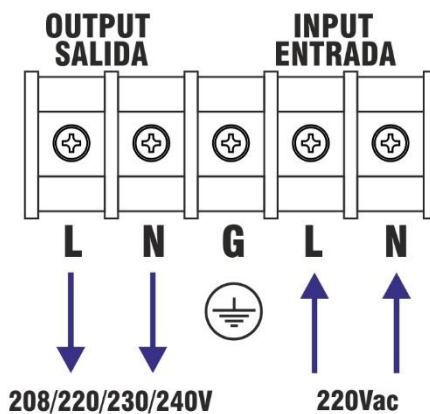
UPS with 220V output generated by UPS inverter. This product has 2 basic modules: UPS & Batteries. This UPS can be feed with 220V-240V line (L-N) to generate one output with a configurable value: 208, 220, 230 or 240Vac. UPS module is connected to XBAT module by using original XSMART DC cable.



##### AC TERMINAL BLOCK ON UPS

Remove TB cover plate located on rear panel to have access to Terminal Block.

#### RT 6K/10K UPS - TERMINAL BLOCK



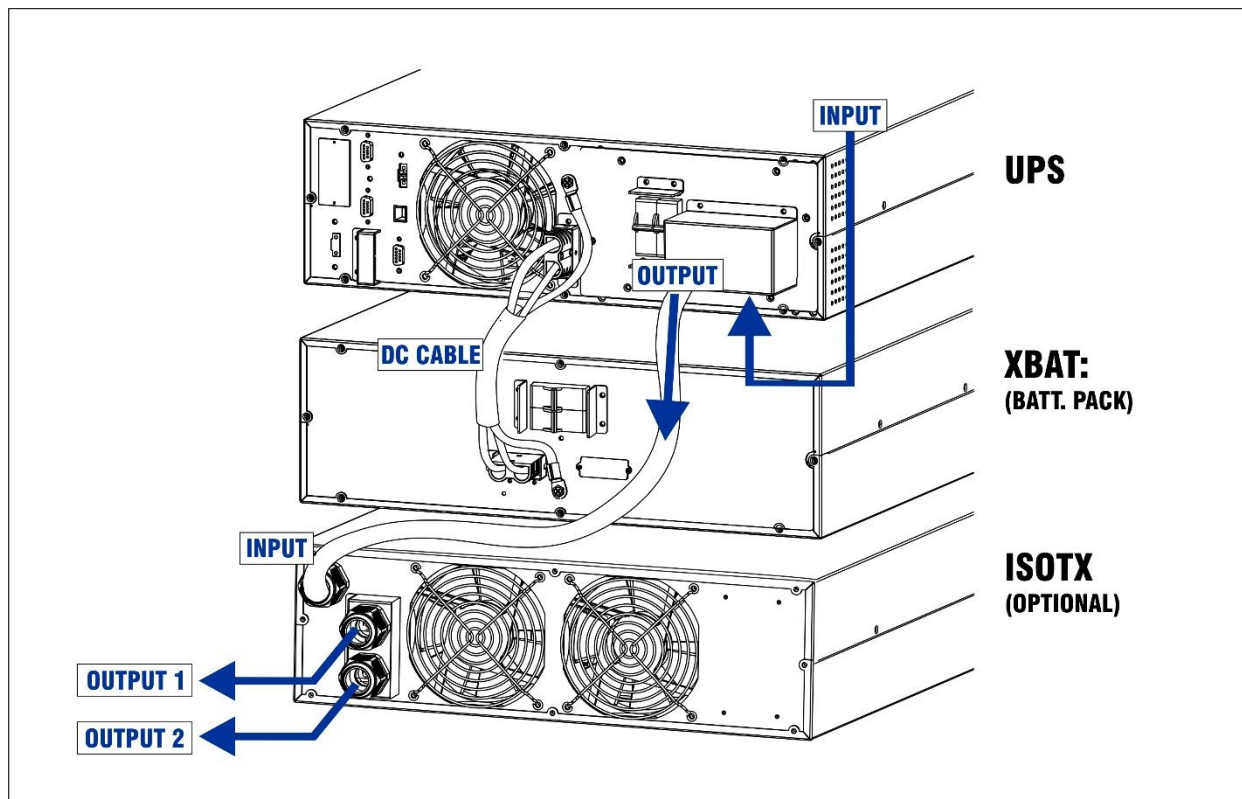
### UPS + XBAT + ISOTX (OPTIONAL)

ISOTX module is an optional accessory not included with the UPS. It provides 2 galvanic isolated outputs 120V each. UPS output is connected to ISOTX input.



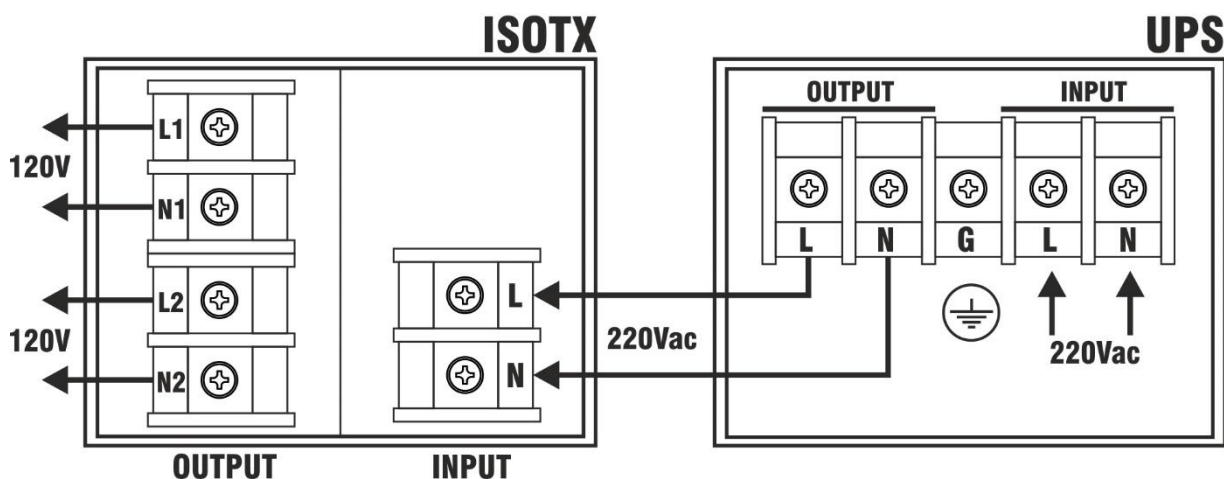
**IMPORTANT:**

When ISOTX is connected, total power output is decreased in 7% because internal losses in the ISOTX.



### AC TERMINAL BLOCK CONNECTION BETWEEN UPS AND ISOTX

#### RT9W UPS - ISOTX (TERMINAL BLOCK)



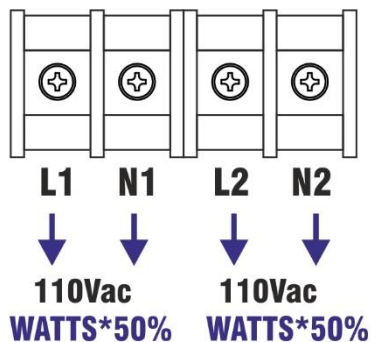


## ISOTX OUTPUTS CONFIGURATION

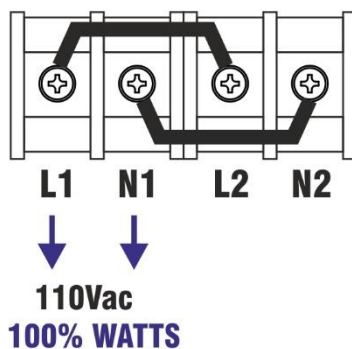
ISOTX outputs can be connected in 3 different configurations according to the needs of the application.

**IMPORTANT:** When 2 x 120V output configuration is selected, each output can only provide 50% of the total UPS output power.

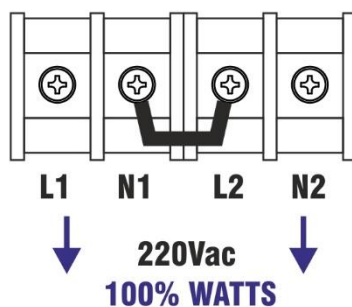
### **ISOTX OUTPUT : 2 x 120V OUTPUTS (50% Watts per Output)**



### **ISOTX OUTPUT : 1 x 120V OUTPUT (100% Watts output)**



### **ISOTX OUTPUT - 1 x 220V OUTPUT (100% Watts Output)**



## 5. OPERATION MODES

This is a True On Line Double Conversion UPS and it is designed to offer clean, bump-less and highest quality power to your computer related equipment protecting also your valuable data. Power delivered by UPS is 100% sine wave as main line.

According to AC main service, and how UPS has been configured, it may operate in following modes:

### **ONLINE NORMAL Mode**

When UPS is off by selecting ON push button in front panel UPS enters into ONLINE NORMAL mode if AC main service is inside acceptable input range. Under this mode UPS Inverter powers outputs and the energy is taken from DC voltage coming from AC/DC converter. Batteries are charged by AC Line if required.

### **BATTERY Mode (Also known Inverter Mode)**

If under ONLINE NORMAL mode UPS detects a problem in AC input Line it enters in battery mode. Under this mode UPS takes energy from batteries to feed inverter that generates power for the output. There are no transfers neither micro-cuts on UPS output as inverter was already working. The only difference is that energy is now coming from batteries instead of rectifier output. Transfer time is actually Zero (0ms). UPS also can enter in battery mode when it is turned on without an acceptable AC input.

### **STATIC BYPASS (INTERNAL BYPASS):**

This mode can be adopted if UPS configuration allows BYPASS mode. This configuration is done by using configuration menus in LCD. Factory preset for 6K and 10K models is BYPASS mode allowed.

Under bypass mode, UPS AC output is feed from UPS AC input. This mode can be adopted by operator by pressing OFF button in front panel (if BYAPSS mode is enable) or automatically in case a problem is detected by UPS. When UPS is in bypass mode, in case AC input is interrupted, output will be interrupted also and UPS will power off. No battery mode can be adopted from bypass mode.

Bypass mode can be caused by any of below conditions:

- 1- Bypass mode is adopted, in case ON button has not been activated as soon as UPS detects a valid AC input on its terminals. (If bypass mode is not enable, UPS will simply lights its LCD. Outputs will keep powered off)
- 2- Bypass mode is adopted as soon as a problem is detected in its internal circuitries.
- 3- Bypass mode is also activated in case an external overload is detected in UPS output. It happens when equipment connected to UPS output requires a power higher than max. power of the UPS:

### **MAINTENANCE BYPASS:**

This is the mode adopted when external bypass switch is activated. On this mode output is feed directly from AC input through external bypass lines. On Maintenance Bypass mode, UPS can be turned-off for maintenance.

In OPTIMA models tower type (T09W and T10) there is a maintenance bypass switch (named MBS) located on rear panel. This switch is covered by a safety plate. In OPTIMA RT (RT9W and RT10) the MBS must be external.

**Additionally, this UPS can adopt under operator demand other operation modes as described:**

### **FREQUENCY CONVERSION:**

This UPS offers a very sophisticated function named frequency conversion (CF) that allows UPS to generate power output at determined frequency value (50Hz or 60Hz) no matter input frequency value. UPS will be able to generate output at 50Hz even input source is at 60Hz or generate 60Hz even if connected to 50Hz source.

This function can be configured and activated by LCD. Revise configuration section of this manual.

### **IMPORTANT NOTES:**

- 1.- Under CF mode, UPS will disable BYPASS mode. Since UPS has been configured to generate output with frequency value different to input frequency, BYPASS mode is disable to avoid a not acceptable frequency value at output.
- 2.- When CF function is activated, maximum power output is de-rated to 60% of maximum nominal capacity. For example, for a 10KVA (8KW) model, when CF is activated maximum output is decreased to 6KVA (4.8KW).

## **MAINTENANCE BYPASS**

From time to time, all UPS require some kind of maintenance that can only be performed if UPS is powered-off. In that case, an external maintenance bypass switch is actuated to keep system running by feeding it from the AC input service even UPS is powered-off.

- OPTIMA tower 6K and 10K have their own MBS switch located on rear panel.
- OPTIMA RT 6K and 10K require an external MBS switch. XSMART can provide as an option MBS accessory named MBS-10K-TB



**BEFORE ACTIVATING ANY KIND OF EXTERNAL BYPASS SWITCH, UPS MUST BE SET IN INTERNAL STATIC BYPASS MODE. IF NOT INVERTER OUTPUT OF THE UPS WILL BE SHORTED WITH AC MAIN INPUT. THAT SITUATION COULD PRODUCE PERMANENT DAMAGE IN THE UPS.**

MBS located on rear panel of OPTIMA tower models has a safety plate. As soon as this plate is removed, UPS adopts static bypass mode to prepare UPS to the imminent external BYPASS activation.

For RT models, the XSMART MBS-10K-TB external accessory also has this safety plate and a related status signal cable to allow OPTIMA RT UPS to know when safety plate is removed.

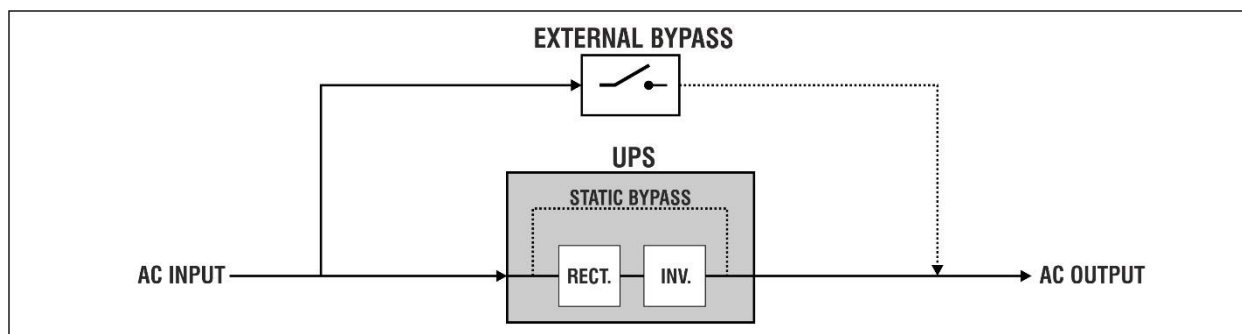
### **IMPORTANT:**

Standard RT9W model does not has status port for safety plate detection so operator MUST change UPS to static bypass mode before actuating external bypass switch.

Meanwhile UPS in under maintenance bypass mode, load is powered by AC input service so any problem in main service will affect directly to the load.

**GENERIC EXTERNAL BYPASS SWITCH:** In case user decides to install a generic external bypass switch without a safety plate status signal, the operator will be responsible of setting UPS in static bypass mode before actuating the external switch.

External bypass switch are usually installed according to below figure:



### **PROCEDURE FOR ACTIVATING EXTERNAL BYPASS**

- 1) Confirm bypass mode is allowed in UPS configuration. Check input voltage is in the acceptable input range for bypass mode.
- 2) Set UPS in static bypass mode by pressing OFF button in front panel. Ups will adopt bypass mode only in bypass is allowed by configuration and input is inside bypass range. Check bypass LED in front panel is ON and online LED is OFF.
- 3) Activate External BYPASS switch to bypass position to connect AC input directly to the load.
- 4) Once the load is powered by AC main input service, UPS can be powered off for maintenance. If there are external batteries, proceed to open DC switches on XBAT to disconnect batteries from the UPS.

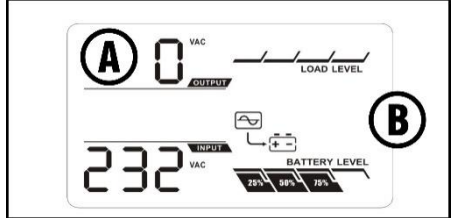
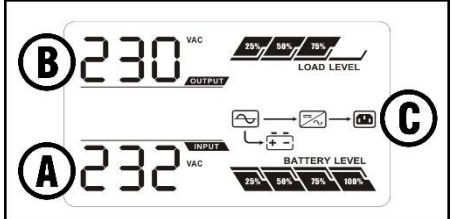
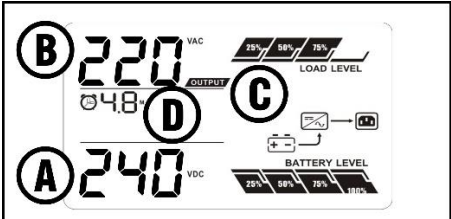
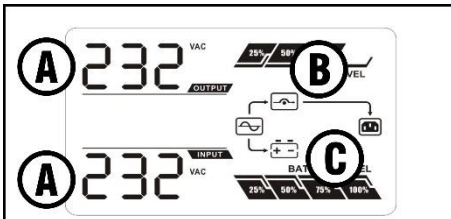
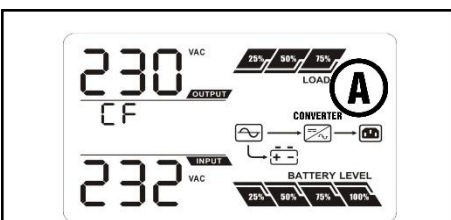
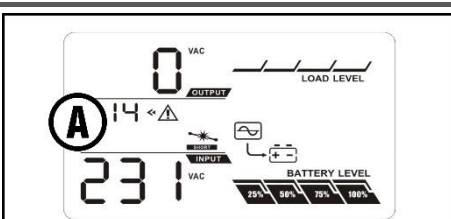
### **COMING BACK FROM MAINTENANCE BYPASS MODE TO NORMAL MODE**

With system in maintenance bypass mode (Input lines open and UPS powered-off):

- 1) Power AC input lines and switch-ON input breaker located on rear panel of UPS. If UPS has external batteries, connect them to the UPS switching-on DC switches on XBAT rear panels.
- 2) Verify UPS enters in static bypass mode. Bypass LED must be ON and online LED must be OFF
- 3) Actuate external bypass switch to OFF state (open). In case of using a XSMART MBS, set it to BYPASS position and re-install its safety plate.
- 4) At this moment load is feed by UPS output in static bypass mode.
- 5) Turn UPS on by pressing ON button on front panel. Keep ON button pressed during 2s or longer.

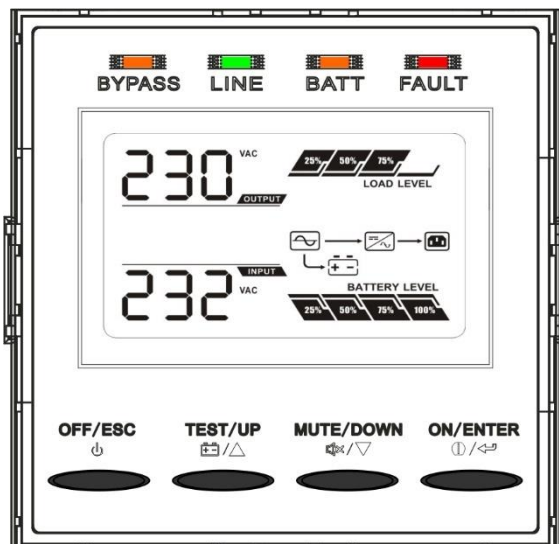
### OPERATION MODES LCD SCREENS (230VAC)

LCD screens for 120V UPS models are similar but showing values related to 120V instead of 230V

OPERATION MODE	DESCRIPTION	LCD
<b>STANDBY</b>	A- When bypass is not allowed UPS output is powered-off (0V). It happens when UPS detects a valid input voltage but ON button has not been pressed. B- Flow chart indicates AC input is used to recharge batteries only.	
<b>ONLINE</b>	A – In online mode, Input voltage indicates a valid AC input close to (232VAC). B – Output voltage is displayed in upper left corner (B) C – Flowchart indicates AC input is used to recharge batteries but also feeds rectifier input. UPS output is generated by inverter.	
<b>BATTERY MODE</b>	A- Input indicator at bottom left corner (A) shows Battery voltage since there is no valid AC input detected. B- Output indicator displays AC output generated by UPS inverter. C- AC input symbol must be turned off representing there is no valid AC input detected by UPS. D- Clock symbol lights and backup time is displayed on the screen.	
<b>BYPASS MODE</b>	A- Input and output indicators must show a similar value since output is been feed by input through static internal bypass line. B- Flowchart shows static bypass line is active. Converters icon is turned off representing inverter is OFF.	
<b>FREQUENCY CONVERTER MODE</b>	A- FC CONVERTER symbol is activated to indicate FC conversion mode is active.	
<b>ERROR/FAILURE MODE</b>	A- When a failure is detected, UPS display error code with alert symbol on screen.	

## 6. OPERATOR INTERFACE: KEYBOARD & LCD

UPS front panel is equipped with 4 buttons, 4 LEDs and a LCD display.



### LEDS DESCRIPTION:

UPS MODE	Bypass	Line	Battery	Fault
UPS turning on	●	●	●	●
BYPASS active	●	○	○	○
NORMAL Online active	○	●	○	○
BATTERY mode active	○	○	●	○
CF Mode active	○	●	○	○
Battery test in progress	●	●	●	○
ECO mode active	●	●	○	○
FAULT mode active	○	○	○	●

● LED ON / ○ LED OFF

### KEYBOARD:

#### <ON / ENTER>

UPS TURN-ON:	Keep it pushed during 2 seconds. Is button is release before required time UPS will not turn on.
ENTER:	When UPS is in configuration mode, this key operates as ENTER

#### <OFF / ESCAPE>

UPS TURN-OFF:	Press during 2 seconds to turn UPS off
SCAPE:	When UPS is in configuration mode, this key operates as SCAPE

#### <TEST / UP>

BATTERY TEST	Operator can manually initiate a Battery test when UPS is ONLINE if this key is selected
UP	When UPS is in configuration mode, this key operates as UP (↑)

#### < MUTE / DOWN>

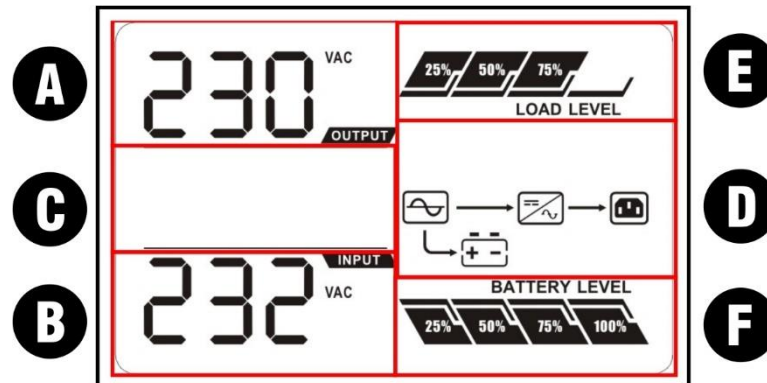
ALARM MUTE	Some no critical alarms can be muted when this key is selected
DOWN	When UPS is in configuration mode, this key operates as DOWN (↓)

#### < TEST> + < MUTE>

CONFIGURATION MODE	By pressing these 2 keys at same time, UPS enters in configuration mode.
--------------------	--

## LCD DESCRIPTION

LCD can be divided in 6 functional areas:



### OUTPUT INFORMATION:

It displays: AC Input voltage, DC Battery voltage, Input frequency (in Hz)



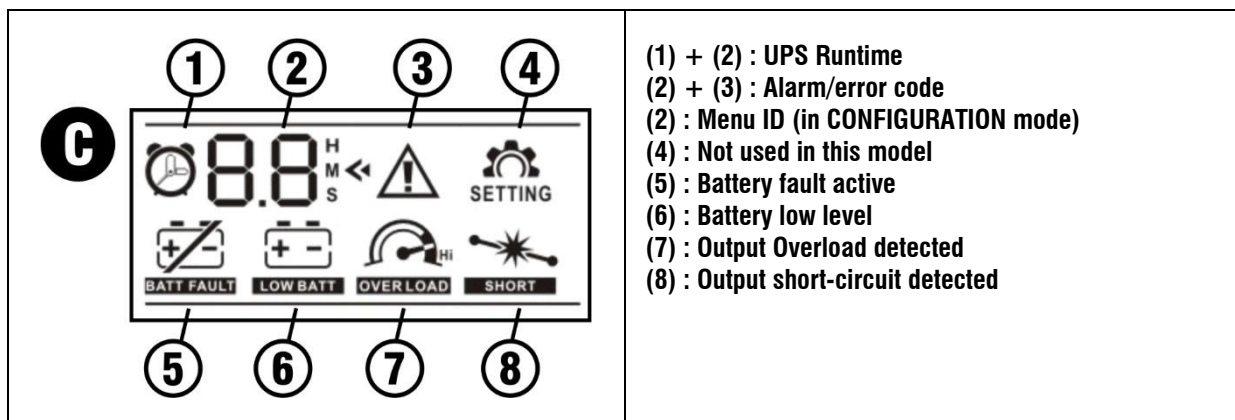
### INPUT INFORMATION:

It displays: AC output voltage, Output frequency (in Hz)



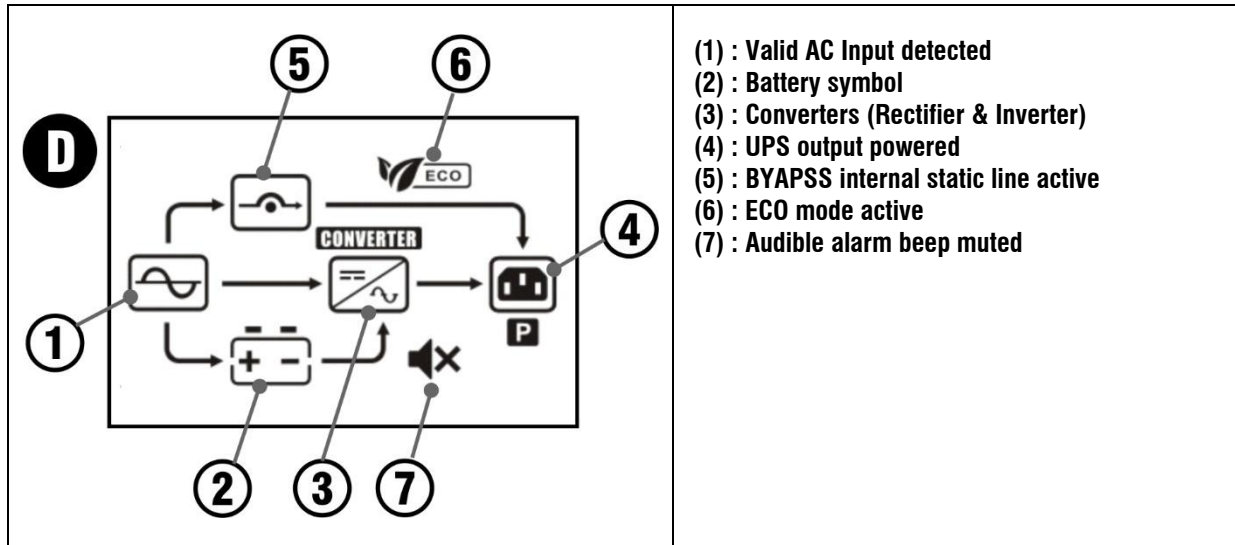
### ALARMS & ERRORS

This section of the LCD displays active alarms and errors providing codes and descriptive symbols. This section also shows remaining runtime in battery mode.



## FLOWCHART – UPS STATES & MODES

This section displays graphically operation mode and state of the UPS:



## OUTPUT POWER METER

This area displays graphically by a 4 segments bar the power supplied by the UPS:

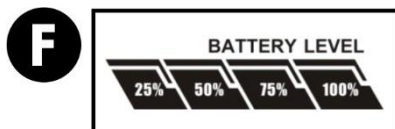
- 25%: Supplied Power is between 0 - 25%  
50%: Supplied Power is between 26 - 50%  
75%: Supplied Power is between 51 - 75%  
100%: Supplied Power is between 76 - 100%



## BATTERY LEVEL METER

It shows by a 4 segments bar the charge level of batteries:

- 25%: Between 0 - 25%  
50%: Between 26 - 50%  
75%: Between 51 - 75%  
100%: Between 76 - 100%

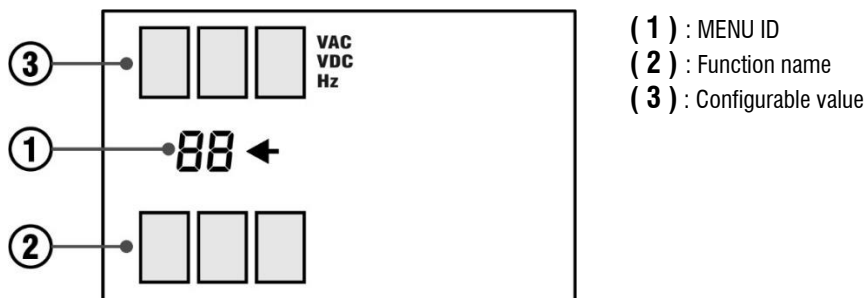


## 7. UPS CONFIGURATION

Configuration menu allows setting of functions and parameters of the UPS.

Menu is activated by pressing **< TEST >** + **< MUTE >** at same time during 1 second with UPS in STAND-BY or BYPASS mode (powered but without activation of ON button).

In configuration mode, LCD displays ID of the menu and values of 2 adjustable parameters:



### KEYBOARD IN CONFIGURATION MODE:

**<TEST / UP>**

Used as **↑** key to navigate or changing parameters value

**<ON / ENTER>**

Used as **<ENTER>** key to confirm modifications

**<MUTE / DOWN>**

Used as **↓** key to navigate or changing parameters value

### AVAILABLE FUNCTIONS UNDER EACH OPERATION MODE

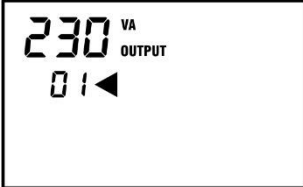

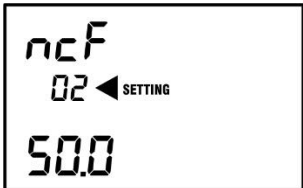

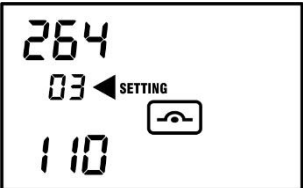

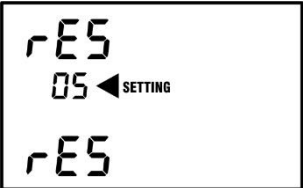
FUNTION	DESCRIPTION	Bypass	Normal	CVCF	Battery	Battery Test
1	Output Voltage	•				
2	CF function	•				
3	Input voltage range for BYPASS	•				
4	Input frequency range for BYPASS	•				
5	RES (not used)					
6	RES (not used)					
7	RES (not used)					
8	Bypass Enabling/Disabling	•	•			
9	Max runtime limit	•	•	•	•	•
10	RES (not used)					
11	RES (not used)					
12	RES (not used)					
13	Battery voltage	•	•	•	•	•
14	RES (not used)					
15	Inverter voltage		•	•	•	
16	Charger voltage (floating state)	•	•	•	•	•
17	Charger voltage (constant state)	•	•	•	•	•
18	Max current for charger	•	•	•	•	•
19	Battery configuration	•	•	•	•	•
20	Remaining runtime calibration	•	•	•	•	•

• Function available.

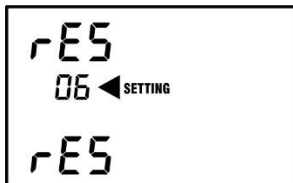


## CONFIGURATION MENU:

This model has configurable functions as listed in below table:

01		<b>OUTPUT VOLTAGE:</b> - For 220V/230V models: Operator can select between: 208Vac / 220Vac / 230Vac / 240Vac. Factory set to: 230V - For 120V models: Operator can select between: 110Vac / 115Vac / 120Vac / 127Vac. Factory set: 120V
02	  	<b>CF: ENABLE / DISABLE FREQUENCY CONVERTER FUNCTION:</b> CF can be enable/disable by setting PAR. 03: CF = Enable NCF = Disable If CF is enable PAR 02 must be set to preferred frequency value: 50Hz or 60Hz This function allows UPS to generate output at selected frequency no matter value of input frequency  If ATO is selected, output frequency will be set by input frequency read when UPS started by first time: from 46 to 54 Hz will set to 50Hz from 56 to 64 Hz will set to 60Hz  <b>** IMPORTANT:</b> 1) If CF is active, output power is decreased by 30%. It means max. UPS power will be 70% of max. rated power. Example: a 10KVA only will be able to supply 7KVA max. 2) BYPASS mode is automatically prohibited if CF is activated.
03		<b>BYPASS: INPUT VOLTAGE RANGE</b> - Valid input VOLTAGE range for bypass mode can be configured by setting high limit and low limit: PAR 03: sets high limit (in Vac) PAR 02: sets low limit (in Vac)
04		<b>BYPASS: INPUT FREQUENCY RANGE</b> - Valid input FREQUENCY range for bypass mode can be configured by setting high limit and low limit: PAR 03: sets high limit (in Hz) PAR 02: sets low limit (in Hz)
05		<b>NOT USED IN THIS MODEL</b>

06



NOT USED IN THIS MODEL

07



NOT USED IN THIS MODEL

08



BYPASS – ENABLE / DISABLE:

PAR 02: OPN: Allowed: according to PAR 03.

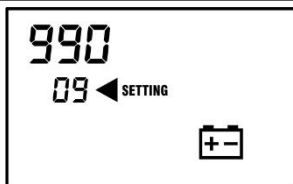
FBD: Prohibited: BYPASS not allowed under any condition

PAR 03: ENA: Enable: Bypass allowed in both manual and automatic.

DIS: Disable: Automatic Bypass allowed but manual is prohibited

Set values with keys: ↑ & ↓

09



MAXIMUM RUNTIME:

This function sets maximum time in Battery mode.

000 a 999: Max. Time in minutes.

DIS: Disable. Runtime will be limited by Battery charge level only.

Set values with keys: ↑ & ↓

10



NOT USED IN THIS MODEL

11



NOT USED IN THIS MODEL

12



NOT USED IN THIS MODEL

13



BATTERY VOLTAGE ADJUSTMENT:

**\*\* NO MODIFICATIONS RECOMMENDED – ONLY BY TECHNICIANS \*\***

Battery voltage can be adjusted

ADD: for increasing

SUB: for decreasing

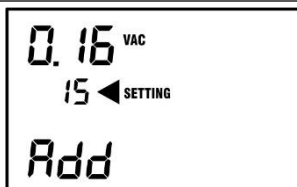
Set values with keys: ↑ & ↓

14



**NOT USED IN THIS MODEL**

15



**INVERTER VOLTAGE ADJUSTMENT:**

**\*\* NO MODIFICATIONS RECOMMENDED – ONLY BY TECHNICIANS \*\***

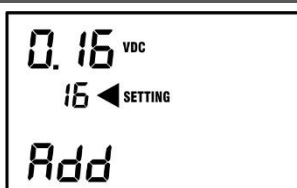
Inverter voltage can be adjusted

ADD: for increasing

SUB: for decreasing

Set values with keys: ↑ & ↓

16



**CHARGER VOLTAGE ADJUSTMENT (IN FLOATING STATE):**

**\*\* NO MODIFICATIONS RECOMMENDED – ONLY BY TECHNICIANS \*\***

Charger voltage can be adjusted

ADD: for increasing

SUB: for decreasing

Set values with keys: ↑ & ↓

17



**CHARGER VOLTAGE ADJUSTMENT (IN CONSTANT STATE):**

**\*\* NO MODIFICATIONS RECOMMENDED – ONLY BY TECHNICIANS \*\***

Charger voltage can be adjusted

ADD: for increasing

SUB: for decreasing

Set values with keys: ↑ & ↓

18



**MAXIMUM CHARGER CURRENT:**

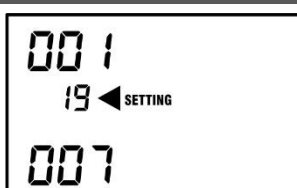
Max current in Amps can be set by this function.

Available Values: 1Amp, 2Amp, 4Amp & 8Amp.

Factory set: 2Amp.

**\*\* NO MODIFICATIONS RECOMMENDED – ONLY BY TECHNICIANS \*\***

19



**BATTERY PACK CONFIGURATION**

From this function UPS knows information of batteries connected to UPS:

Battery capacity in AH

Total quantity of Battery groups connected to UPS (Internal & External)

This information is used by UPS to calculate RUNTIME value displayed on LCD when Battery mode is active.

UPS 6K = 7Ah / UPS 10K = 9Ah

20



**RUNTIME CALIBRATION:**

Runtime value informed by LCD is a calculated value based on new batteries. Operator can calibrate that value to approximate it to current real value. Value can be adjusted by setting a multiplier from 0.5 to 2.0

If current real runtime is 90% of calculated runtime, operator should set multiplier as 0.9

**LCD CODES AND TEXTS:**

TEXT	DESCRIPTION
<b>BAT</b>	Battery (Batería)
<b>CF</b>	Frequency Converter Function Enable (Función de Convertidor de Frecuencia Activado)
<b>NCF</b>	Frequency Converter Function Disable (Función de Convertidor de Frecuencia Desactivado)
<b>ON</b>	ON (Encendido)
<b>OFF</b>	OFF (Apagado)
<b>ENA</b>	Enable (Habilitado)
<b>DIS</b>	Disable (Des-habilitado)
<b>ATO</b>	Auto mode (Modo Automático)
<b>SUB</b>	Subtract (Disminuir)
<b>ADD</b>	Add (Aumentar)
<b>RES</b>	Reserved / Not used (Reservado / Sin uso)
<b>FBD</b>	Not Allowed (No permitido)
<b>OPN</b>	Allowed (permitido)

**AUDIBLE ALARMS BEEPS**

<b>ERROR/FAILURE:</b>	Continuously
<b>BATTERY MODE:</b>	1 "Beep" / 4 seconds
<b>BYPASSMODE:</b>	1 "Beep" / 2 minutes
<b>LOW BATTERY:</b>	1 "Beep" / 1 second.

## 8. START-UP

### **INSPECTION BEFORE START UP**

1. Make sure all wires are tightly connected to terminal block. Any loose connection will produce overheating, failures and damage to UPS.
2. Make sure all instructions of installation sections have been performed correctly.
3. Put the terminal block cover back in its position to avoid access to wiring
4. Check EPO port:
  - EPO Port closed (Wired): EPO function disabled
  - EPO port connected to an emergency switch: EPO function available by activation of Emergency Switch; which must be "Normally Closed" type in order to guarantee that UPS will shut down when circuit opens.
5. Check Maintenance Bypass Switch (MBS) located in UPS rear panel is in UPS position and its safety cover plate is duly installed.
6. Make sure all external protection devices in input and output lines are in open (OFF) position.

### **SINGLE UPS - START UP PROCEDURE**

1. Make sure all equipment connected to UPS are off
2. Power input lines ON at electrical board by setting Circuit Breaker to ON
3. Put Battery Bank breaker to ON (in case UPS has XBAT connected)
4. Put AC INPUT Breaker to ON in UPS rear panel.
5. LCD of UPS must turn on. UPS should adopt bypass mode.
6. Start up the UPS by pressing <ON> push button during a couple of seconds. ON button must be pressed until LCD shows the text "ON". If ON button is released before that, UPS will not turn-on.
7. UPS will run an auto-test and few seconds later, UPS leaves By-Pass mode to enter in Normal Online Mode, also known as "AC Mode". ONLINE LED must light in green color.
8. Switch external output breakers to ON position.
9. Power on sequentially each protected equipment. The front panel LCD should show the load increase as equipment starts.
10. Once all equipment are on, the total power consumption (load) should not exceed UPS capacity.
11. At this moment UPS working under NORMAL AC-MODE and the system is supplied by UPS.

**NOTE 1:** If any error or warning message is indicated in LCD, please revise Troubleshooting section of this manual.








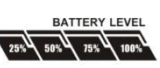

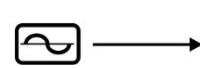







**NOTE 2:** UPS batteries maybe are not fully charged. UPS could require about 4 to 6 hours to recharge batteries up to 100% of their capacity.

## 9. ALARM & ERROR CODES / TROUBLESHOOTING

### IMPORTANT:

- All alarm and errors are informed don the LCD by dedicated codes and symbols.
- ALARMS:** Are usually represented by blinking codes or symbols. Audible alarm beeps are also intermittent for alarms. Alarm states do not avoid UPS working in ONLINE mode.
- ERRORS:** Are usually represented by steady codes or symbols. Audible alarm for errors always sounds continuously. Error states force UPS to go to Static Internal BYPASS mode.

### ALARM SYMBOLS AND CODES



ALARM	ALARM SYMBOLS	AUDIBLE BEEP
OVERLOAD detected at UPS output	 	2 beep / s
LOW BATTERY	 	1 beep / s
BATTERY DISCONNECTED OR FAULTY	 	1 beep / s
BATTERY OVER-VOLTAGE	 	1 beep / s
INPUT FUSES BROKEN	 	1 beep / s
EMERGENCY POWER-OFF ACTIVATED	 	1 beep / s
HIGH TEMPERATURE	 	1 beep / s
CHARGER FAILURE	 	1 beep / s
* UPS BLOCKED: as consequence of detecting 3 overloads in less than 30 minutes OR * MBS cover REMOVED		1 beep / s

ALARMS	ALARM CODES
Battery Disconnected	01
Battery overvoltage	07
Los Battery	08
Overload at UPS output	09
FAN failure	0A
EPO activated	0B
Over temperature	0D
Charger failure	0E
Internal input fuse broken	10
Configuration mismatch in ONLINE for parallel (available only for UPS with parallel functionality)	21
Configuration mismatch in BYPASS for parallel (available only for UPS with parallel functionality)	22
UPS blocked by 3 consecutives overloads (in less than 30 minutes)	33
MBS safety plate removed	3A
Input BYPASS unstable	3D
Boot Loader failure	3E



Some errors and alarms could block UPS until problem is solved and UPS unblocked by operator. Operator must be sure cause of problem has been solved before clear alarm and unblock UPS. Alarm can be deleted by pressing <UP> and <DOWN> keys at same time, when UPS is in BYPASS mode.

**ERROR CODES**

ERROR CONDITION	ERROR CODE	ERROR SYMBOL
DC BUS start failure	<b>01</b>	
DC BUS High	<b>02</b>	
DC BUS Low	<b>03</b>	
DC BUS unbalanced	<b>04</b>	
INVERTER start failure	<b>11</b>	
INVERTER High voltage	<b>12</b>	
INVERTER Low voltage	<b>13</b>	
SHORT CIRCUIT detected at INVERTER output	<b>14</b>	
SHORT CIRCUIT detected at Battery SCR	<b>21</b>	
OVER TEMPERATURE	<b>41</b>	
OVERLOAD	<b>43</b>	

## TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE & SOLUCION
<b>Short runtime in Battery mode</b>	Low Batteries Charge: Recharge Batteries during 4-6 h. Old Batteries: Batteries must be replaced by new ones
ALARMS	PROBABLE CAUSE & SOLUCION
<b>Output Overload</b>	High power consumption connected to UPS: Disconnect no critical equipment from UPS. If UPS is blocked by overload alarm, solve overload cause and unblock UPS as described in ALARMS section of this manual.
<b>Battery failure</b>	Batteries are disconnected or with a very low charging level: Revise batteries connection. Recharge batteries during 4-6 hours. If problem is not solved call technical service.
<b>Batteries disconnected</b>	Revise batteries connection.
<b>EPO active</b>	Revise EPO port on rear panel of UPS. If external switch is connected to EPO port, check external switch.
<b>Over Temperature</b>	Check if fans are working properly. Check if room temperature is in acceptable range. Disconnect non critical equipment from UPS to reduce internal temperature. If problem is not solved call technical support.
<b>FAN Failure</b>	Check if fans are working properly. If not call technical service.
<b>EEPROM Failure</b>	Turn-off and power-off UPS. Restart UPS. If not solved call technical service.
ERROR CODES	PROBABLE CAUSE & SOLUCION
<b>01 , 02 , 03, 04, 11, 12, 13</b>	- Turn-off and power-off UPS. Disconnect all equipment connected to UPS. - Restart UPS with no loads connected to its output. - If UPS starts-up without problems, find faulty equipment and remove it from UPS. If problem is not solved call technical support.
<b>14</b>	- Short circuit detected in UPS output. - Disconnect all equipment connected to UPS. - Power UPS off and restart it. Find faulty load to remove it from UPS.
<b>21</b>	- Power UPS off. Disconnect all loads from the UPS. - Check Battery voltage and verify a proper connection between UPS and external batteries. If problem is not solved call technical support.
<b>41</b>	Power UPS off. Check room temperature. If it is high, solve room temperature before restarting UPS.
<b>43</b>	UPS overload detected. Power off UPS to remove some non-critical loads. Then restart UPS.



**IMPORTANT:** In case of extreme failure or when burning smell is detected, UPS input lines must be powered off immediately and UPS must be turned-off by <OFF> button. Wait until LCD turns-off. Then call technical service.



## 10. SOFTWARE

Our monitoring software allows user to manage UPS and monitoring of all of its features.

Main software features are:

- Configuring UPS parameters
- Automatic shutdown for protected PCs (OS and files) when long blackouts force UPS to power-off
- Scheduled battery tests, shutdown and start-up.
- Easy interface for monitoring UPS and Main service.

CD software is usually included inside the box. For some models, software can be downloaded from our website. Software manual can be downloaded from our website also.

## 11. BATTERIES: CARE & MAINTENANCE

To have a longer Battery life, it is recommended to apply a deep discharge to batteries every 3 months. It is also recommendable to operate UPS with a room temperature below 25°C. Operating UPS with higher room temperatures will short dramatically battery life.

### IMPORTANT: RECHARGING PLAN FOR LONG STORAGE

If UPS will be stored for long time, it is mandatory to recharge UPS periodically. If UPS is not recharged according to this plan, batteries will get permanent damage. This kind of damage is not covered by warranty.

Recharging plan is conditioned to storage temperature:

**STORAGE TEMPERATURE: - 25°C a + 30°C : RECHARGE EVERY 4 MONTHS / RECHARGE DURING 6 HOURS**

**STORAGE TEMPERATURE: + 30°C a + 45°C : RECHARGE EVERY 2 MONTHS / RECHARGE DURING 6 HOURS**

## 12. BATTERIES & CHARGER: CONFIGURATION & SERVICE

### THIS INFORMATION IS ONLY FOR QUALIFIED TECHNICIANS.

Batteries replacement only must be performed by authorized technical service. Batteries are located inside of the UPS or inside external battery cabinets. Original batteries must be replaced by new batteries with same technology (VRLA) and specifications: 12VDC and similar capacity in AH.

### BATTERIES QUANTITY

This type of UPS is equipped at factory with 20 batteries 12VDC connected in serial for a total of 240VDC. This UPS can be configured to work with different quantity of batteries: 16, 17, 18, 19 or 20 batteries in serial connection. HOWEVER it is not recommendable to modify factory setting of 20 batteries.

In case battery quantity is required to be modified, a different quantity must be configured by configuring jumpers on control board as explained in this section.

**IMPORTANT:** Some important specifications are downgraded if batteries quantity is reduced below 20 pieces for example: output power factor: 20 pcs → PF=1.0 / 18-19 pcs → PF=0.9 / 16-17 pcs → PF=0.8.

Runtime in battery mode will be shorter in case battery quantity is reduced.

JUMPER CN1 CONTROL BOARD	16 Batteries 218VDC	17 Batteries 232VDC	18 Batteries 245VDC	19 Batteries 259VDC	20 Batteries 273VDC
Pin 15	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
Pin 16	CONNECTED	OPEN	OPEN	OPEN	OPEN
Pin 17	OPEN	CONNECTED	OPEN	OPEN	OPEN
Pin 18	OPEN	OPEN	CONNECTED	OPEN	OPEN
Pin 19	OPEN	OPEN	OPEN	CONNECTED	OPEN
Pin 20	OPEN	OPEN	OPEN	OPEN	CONNECTED

### 13. SUPPORT & WARRANTY

**Support:** If a failure or problem is detected please check troubleshooting section in user manual. If problem cannot be solved please contact authorized service center or authorized dealer.

**Batteries:** Rechargeable batteries can be charged and discharged hundreds of times. However they will eventually wear out. This is not a defect or failure so that batteries wear out is not covered by this warranty.

Battery lifetime will depend of operative conditions like working temperature, type and frequency of discharging cycles. Higher the temperature shorter will be the lifetime. Frequent and deep discharging cycles also will short lifetime. For critical applications batteries should be revised and replaced periodically. Long storage (longer than 6 months) without required recharging will wear out batteries. This situation is not covered by this limited warranty since this is not considered as a defect. Check recharging instructions on user manual.

#### Conditions - Limited Warranty

1.- Subject to the conditions of this limited warranty, this product is warranted to be free from defects in materials and workmanship at the time of XMART supplies the product.

- In Europe, warranty time is 2 years on electronic parts and 2 years on internal batteries from XMART invoice date.
- In America, standard warranty times could vary depending on country/region or can be extended by purchasing warranty options. Please check warranty plans and extensions with your local distributor.

2.- If during the warranty period, this product fails to operate under normal use and service, due to defects in materials or workmanship, authorized distributor or service center will, at their option, either repair or replace the product in accordance with terms and conditions stipulated herein. Transportation expenses are not covered by this limited warranty.

3.- Warranty is valid only if the original purchasing document, specifying date of purchase, serial number and name of the dealer, is presented with the product to be revised. XMART and authorized partners reserve the right to refuse warranty service if any of this information has been removed, changed or missing in original invoice document.

4.- If product is repaired or replaced, repaired or replaced product will be warranted for the remaining time of the original warranty or for 90 days on repaired part from date of repair, whichever is longer.

5.- XMART or their distribution/service partners reserve the right to charge handling fee if returned product is free of failure or it is out of warranty because any of the reasons described in this warranty.

6.- If product is out of warranty a reparation proposal will be sent to the user for his approval. If proposal is not accepted, service center will keep product available for the user during 60 continuous days. After this period product would be disposed and user will not be able to rise any claim.

7.- Rechargeable batteries, like included in this product, will definitively wear out even under normal operation. This is not a defect or failure so it is not covered by this warranty.

8.- This warranty does not cover batteries wear out caused by improper or long storage (over 6 months without required recharging as indicated in product manual). Even performing recharging procedure this product cannot be storage longer than 18 months. Problems on batteries caused by this kind of long storage are not covered by this warranty.

9.- This warranty does not cover product failures caused by installations, modifications or repair performed by non authorized person. If product is open by not authorized technician warranty will be considered void. This warranty does not cover failure caused by inadequate installation or maintenance, misuse, accidents, fire or floods.

10.- This product can include protection devices like input fuse or input breaker. Activation of this kind of devices is not a failure it is caused by an improper product installation. Input fuse or breaker reset or replacement is not covered by this warranty.

11.- This warranty does not cover damages produced during transportation from user to technical service caused by improper packing of the product by user.

12.- Warranty terms and conditions cannot be modified or extended by third parties without written approval of XMART.

#### Limited Warranty

- XMART does not warrant that the operation of this product will be uninterrupted or error-free during its lifetime. If product fails to work, the maximum liability of XMART under this limited warranty is expressly limited to the lesser of the price you have paid for the product or the cost of repairing or replacement of any hardware components that malfunction in conditions of normal use.

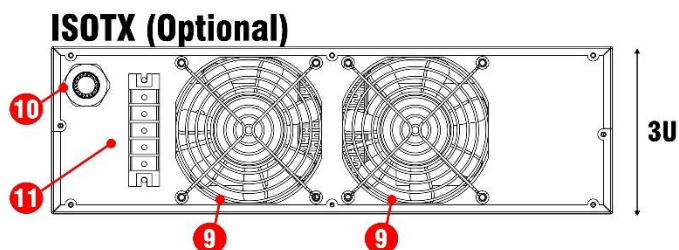
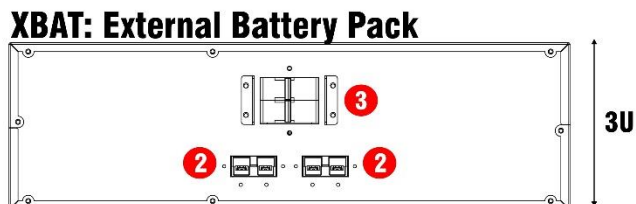
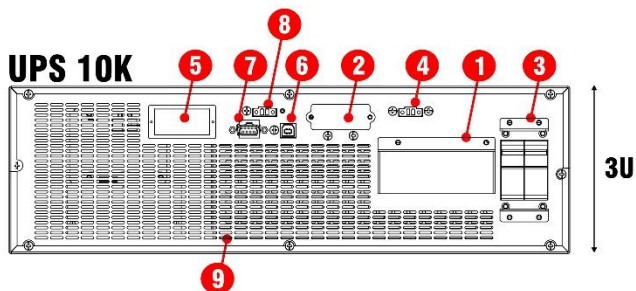
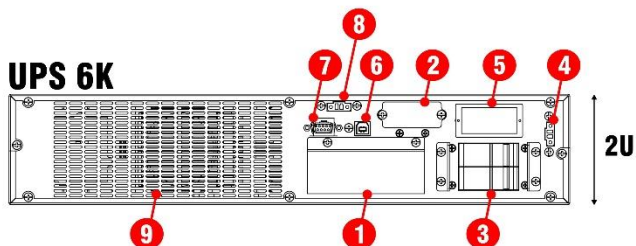
- In no event will XMART be liable for any damages caused by the product or the failure of the product to perform, including any lost profits or savings or special, incidental, or consequential damages. XMART is not liable for any claim made by a third party to XMART or to final user.

- XMART is not responsible for damage that occurs as a result of your failure to follow the instructions intended for this hardware product.

## 14. REAR PANEL

- |  |                     |
|--|---------------------|
| 1 Terminal Block (AC input & output)                 | 7 RS232 port        |
| 2 DC connector for external batteries                | 8 EPO port          |
| 3 AC Input Breaker                                   | 9 Ventilation grid  |
| 4 Connector for Ext. Bypass status signal (optional) | 10 ISOTX: AC Input  |
| 5 Intelligent port                                   | 11 ISOTX: AC output |
| 6 USB port   |                     |

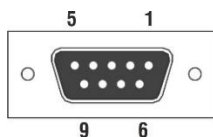
### OPTIMA RT9W 6K / 10K



**IMPORTANT:**

In case of using an optional ISOTX, maximum output of the system will be reduced in 7% because internal losses in the ISOTX. For example: In a 10KVA system with ISOTX, will be able to provide 9.3KVA.

### RS232 COMMUNICATION PORT



Serial communication port – Pinout:

Pin 2: RX  
Pin 3: TX  
Pin 5: GND

## 15. SPECIFICATIONS TABLE (1/2)

ONLINE - OPTIMA RT9W	(RT9W 6KVA-230)	(RT9W 10KVA-230)
Capacity / Capacidad	6.000VA / 5.400W	10.000VA / 9.000W
INPUT / ENTRADA		
Input Voltage / Voltaje de Entrada	Rated Input / Entrada Nominal: 208/220/230/240 Vac (single phase: L-N-G)	
Input Range / Rango de Entrada	(110Vac-300Vac) @ 50% load (176Vac-300Vac) @ 100% load	
Frequency Range / Rango Frecuencia	40 - 70 Hz	
Max. Current / Corriente Max.	30A (RMS)	50A (RMS)
Inrush Current / Corriente Pico max.	180A max. (Input rms x 8)	300A max. (Input rms x 8)
Phase / Fases	1 Phase + Neutral + Ground / 1 Fase + Neutro + Tierra	
Power Factor / Factor de Potencia	> 0.99 @ 100%load	
THDi	<4% @ 100%load / < 6% @ 50%load	
Slew Rate / Seguimiento Frecuencia	1 Hz / s	
OUTPUT / SALIDA		
UPS:	1 phase (L1-N1): 208/220/230/240Vac	
ISOTX:	Dual Isolated Outputs: 2 phases (L1-N1) + (L2-N2): 104/110/115/120Vac	
Voltage Regulation / Regulación Salida	+/- 1%	
Frequency / Frecuencia (Batt. Mode)	50 Hz +/- 0.1 Hz / 60 Hz +/- 0.1 Hz	
Current Crest Ratio / Factor de Cresta	3:1 @ 100% load.	
THDv	(< 1% @ Linear Load / Carga Lineal) (< 4 @ No Linear Load / Carga no Lineal)	
Dynamic Accuracy / Regulación Carga Variable	<5% (load variations 0%-100% & 100%-0% R Load)	
Transfer Times / Tiempos Transfer.	0 ms	
Waveform / Forma de Onda	Sine Wave / Sinusoidal Pura	
DC offset / Componente DC en la salida	50 mV	
Power Outlets / Salidas	Terminal Block / Regleta de Conexión	
OVERLOAD / SOBRECARGA		
AC Mode / Modo Normal	100%~110%: 30m / 110%~130%: 5m / >130%: 10s	
Battery Mode / Modo Batería	100%~110%: 3m / 110%~130%: 30s / >130%: 10s	
EFFICIENCY / EFICIENCIA @ (100% / 75% / 50% / 25%) R LOAD		
Eco Mode / Modo ECO	MODEL 230V: 99% / 99% / 98% / 97% - MODEL ISOTX: 95% / 95% / 94% / 93%	
AC Mode / Modo AC	MODEL 230V: 94% / 93% / 87% / 83% - MODEL ISOTX: 90% / 89% / 83% / 80%	
Battery Mode / Modo Batería	MODEL 230V: 92% / 91% / 85% / 81% - MODEL ISOTX: 88% / 87% / 82% / 81%	
Inverter Efficiency / Eficiencia Inversor	97% Inverter (@ 100 LOAD) ALL MODELS	
BTU @ 100% LOAD	1105	1841
PROTECTIONS / PROTECCIONES		
Surge / Contra Picos	All lines protection / Protección en todas las líneas (L-N, L-G, N-G): > 660J (10/1000us)	
Short Circuit / Contra Cortos en la salida	Outlets power-off / Apagado de las salidas (400% of nominal current / 5 cycles)	
Input Current / Corriente de Entrada	Circuit Breaker / Disyuntor	
Starting Time / Tiempo de Arranque	7s - 10s (@ 100% load)	
BATTERIES / BATERIAS		
Type and Qty / Tipo y Cantidad	Sealed maintenance free / Sellada libre de mantenimiento (VRLA)	
Each XBAT / Cada XBAT	12V/7AH x 20 pcs (20pcs x 1: 240VDC)	12V/9AH x 20 pcs (20pcs x 1: 240VDC)
Typical Recharge T. / T. de Recarga		
1 Battery Pack / 1 módulo de Baterías	3.5 H (90%)	4 H (90%)
Additional packs / Paquetes adicionales	Depending on external battery configuration (depende de cantidad de baterías adicionales)	
Charging Amps / Corriente de Carga	1A, 2A & 4A (configurable)	
Charging VDC / Voltaje Cargador (Floating)	273.0 VDC	
Temperature Compensation / Compensación Temp.	120mV/°C per battery (Input Air Temp/ Temp. Aire entrada: 25-50°C)	
Shutdown battery Voltage / Voltaje DC Apagado	214VDC (0-30% load) / 204VDC (30-70% load) / 192VDC (load >70%)	

## 15. SPECIFICATIONS TABLE (2/2)

ONLINE - OPTIMA RT9W		(RT9W 6KVA-230)	(RT9W 10KVA-230)
INDICATORS / INDICADORES			
LCD / Pantalla LCD		UPS status, Load level, Battery, Input/Output voltage, Discharge timer, and Fault conditions Estado del UPS, Consumo, Baterías, Voltaje Entrada-Salida, Tiempo Descarga, Diagnostico	
ALARM / ALARMAS			
Beep Alarm / Alarma sonora:		For Battery Mode, Low battery, Overload, UPS Failure / Modo Batería, Baja batería, Sobrecargas, Falla	
PRODUCT SIZE & WEIGHT / DIMENSIONES Y PESOS DEL EQUIPO			
D x W x H / Prof. x Ancho x Altura (mm)			
UPS		530x438x88	610x438x133
XBAT		610x438x133	610x438x133
ISOTX		580x438x133	580x438x133
Net Weight / Peso Neto (kgs)			
UPS		15	18
XBAT		57	67
ISOTX		67	90
PACKING / EMPAQUE			
D x W x H / Prof. x Ancho x Altura (mm)			
UPS		700x565x240	870x565x250
XBAT		870x580x250	870x580x250
ISOTX		870x580x250	870x580x250
Gross Weight / Peso Bruto (kgs)			
UPS		17	20
XBAT		62	72
ISOTX		72	95
OPERATING / AMBIENTALES			
Humidity / Humedad		< 95 % (non-condensing / no condensante)	
Temperature / Temperatura		0-40 °C	
Noise Level / Ruido Producido		< 55dB @ 1m	
Max. Altitude / Altura de Operación Max.		4.500 meters over sea level / sobre nivel del mar. * Power output de-rate of 1% every 100m (over 1.000m) * Disminución de potencia de 1% cada 100m (sobre los 1.000m)	
COMMUNICATION / COMUNICACION			
Smart RS-232 & USB ports		Windows family, Linux, and MAC	
Intelligent Port (SNMP)		Optional LAN card / Comunicación LAN Ethernet opcional AS400 optional interface board / Interfaz AS400 - opcional	

Specifications may be adapted to comply with special project requirements / Las especificaciones pueden modificarse para adaptarse a proyectos.

Specifications may change without further notice / Por motivos comerciales o técnicos las especificaciones pueden cambiar sin previo aviso.

Note 1: Max. output power is derated to 90% when output voltage is set to 208V. La potencia máx. de salida se reduce al 90% si se fija voltaje en 208V

Note 2: Max. output power is derated to 70% when CF function is activated. La potencia máxima de salida se reduce al 70% si se activa la función CF.

Note 3: If installed over 1.000m altitude, output power is derated 1%/100m over 1.000m. La salida se reduce en 1% cada 100m, sobre los 1.000msnm.

Note 4: Bypass mode is prohibited automatically when CF function is activated. El modo bypass se anula automáticamente cuando se activa la función CF.

Note 5: If external ISOTX module is used, total max. power is reduced in 7%. Si se usa el módulo ISOTX, la potencia final máxima será la del UPS menos 7%

Note 6: ECO, programmable outlet and parallel function not available. Función ECO, conexión paralela y salida programable No disponible para este modelo

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