

V81358A



USER MANUAL - EN -

www.metasystem.it

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Dichiarazione di Conformità

Council Directives applied: 73/23/EEC amended with directives 93/68/EEC
89/336/EEC amended with directives 92/31/EEC
93/68/EEC

Standards to which conformity is declared: EN 62040-1-1, EN 50091-2, EN 62040-3

Manufacturer: Meta System S.p.A.

Address: Via Majakovskij, 10/b Reggio Emilia, Italy

Type of equipment: UPS

Models: TRIMOD 8
TRIMOD 10
TRIMOD 16
TRIMOD 20
TRIMOD 30
TRIMOD BATTERY

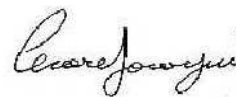
Year in which trademark was affixed: 2006

The device was tested in the typical installation configuration and with peripherals conforming to the aforementioned directives.

I, the undersigned, hereby declare that the device defined above meets the requirements of the specified directives.

Reggio Emilia, 08/02/06

Dr. Cesare Lasagni (engineer)



Technical Manager

1 Safety



Before the UPS is installed or started, the user must make sure that the competent technical personnel have carefully read and complied with the instructions in this manual. Keep the manual together with the UPS for future consultation when required.

Do not start or operate the system before it has been set at work by a trained and authorized technician.



Maintenance work must only be carried out by qualified personnel. Never attempt to service the UPS without this assistance.

There is a risk of exposure to dangerous voltage when the covers of the UPS are opened or closed.



If you have any doubts about this UPS, please contact:

Meta System S.p.A., Italy

Tel. 800 005 088

Email: assistenza.ups@metasystem.it

MetaSystem S.p.A. declines all liability for incorrect use or tampering with the UPS.



Make sure that the earthing circuit has been correctly made before connecting to the electricity main.



The UPS may cause radio disturbance in a domestic environment. In this sort of environment, it may be necessary for the user to take additional measures.



MetaSystem S.p.A. has taken all the possible precautions in order to compile an accurate, complete and easily understood manual and thus declines all liability for direct, indirect or accidental damages to persons or property deriving from any incorrect interpretation or undesired error in this manual. This manual cannot be copied or duplicated without the prior written consent of MetaSystem S.p.A..

CENTRO ASSISTENZA TECNICA



1.1 Safety notes

- Make sure that the panel to which the UPS is connected is safely connected to the earthing circuit and possess adequate protection, as required by the standards.
- The mains power supply panel or the disconnecting device must be installed near the UPS and must be easily accessible.
- **WARNING:** The UPSs of the **UPS TRIMOD** family DO NOT have a Back Feed Protection circuit, thus:
 1. **UPS TRIMOD** devices must only be installed in the fixed mode with an automatic magnetothermic breaker on the supply side (consult tab. 4-5 for further information). Connection of the device to the electricity main with a conventional plug is not allowed.
 2. A warning label must be affixed to all the mains power disconnectors installed far from the UPS area so as to inform the assistance personnel that the circuit is connected to an UPS. The label must bear the following text or an equivalent one:

INSULATE THE UPS (UPS) BEFORE WORKING ON THIS CIRCUIT

2 General info

Congratulations on having purchased one of Meta System's **UPS TRIMOD** products.

Thanks to an **UPS TRIMOD**, your critical equipment will be protected by an UPS that will remain reliable for years to come. Meta System S.p.A. is situated in Italy and is specialized in designing and manufacturing UPSs. The **UPS TRIMOD** UPS is unique, modular and belongs to the latest generation of threephase UPSs in the medium power range. Highly reliable, with a low running cost and excellent electrical performances: these are only some of the salient features of this innovative device. Moreover, the planning and manufacturing criteria and methods used by Meta System S.p.A. comply with the strictest quality standards.

2.1 Warranty

UPS TRIMOD is covered by a warranty that guarantees the materials of the UPS and its components are free from defects for a period of 12 months. Do not return anything without prior authorization from Meta System S.p.A. Meta System S.p.A. will provide further instructions as how to proceed. This warranty becomes void unless the UPS is set at work by a correctly trained technician. This warranty does not cover damage or loss due to: incorrect use, misuse, negligence, carelessness, unauthorized repairs or modifications, incorrect installation, inadequate environment, accident, Force Majeure or inappropriate applications, adverse weather conditions. etc. If, during the warranty period, the UPS fails to conform to the aforementioned matters, Meta System S.p.A. will repair or replace the device (or relative components) at its own discretion. All the repaired or replaced items will remain the property of Meta System S.p.A. Meta System is not responsible for costs such as: loss of profit or turnover, loss of equipment, loss of data or software, complaints from third parties or other. As a general policy, Meta System S.p.A. does not recommend its products for use in life-supporting equipment for which it is possible and reasonable to forecast that faults or bad operation of the product itself may cause the life-supporting device to operate in a faulty way or significantly impair its safety or efficacy. Meta System S.p.A. does not recommend the use of its products for direct care of the sick. Meta System S.p.A. does not intentionally sell its products for such uses unless it receives written confirmation that the risks of injuries or damage have been minimized, that the customer assumes full responsibility for such risks and that Meta System S.p.A.'s liability is adequately protected in such circumstances. The UPS can contain batteries that must be recharged for at least 24 hours every 6 months in order to prevent them from completely discharging. Batteries that have completely discharged for any reason are not covered by the warranty.

2.2 Warranty extension and maintenance contracts

The standard warranty can be reinforced with a warranty extension contract (maintenance contract) in order to protect the UPS. Please contact the Assistance Center of Meta System S.p.A, for further details. Upon payment of a fee, the customer can subscribe to a technical assistance service which provides optimum maintenance for the UPS once the warranty period has terminated.

3 Installation of UPS TRIMOD

3.1 Introduction

This chapter contains everything you need to know to unpack, handle, position, hook up and install the **UPS TRIMOD** UPS.



- The operations described in this section must all be carried out by authorized technicians or qualified personnel.
- Meta System S.p.A. declines all liability for damages to persons or property caused by wiring, operations or activities that are incorrect as they have not been carried out according to the instructions in this manual.

3.2 Delivery of the UPS

As soon as the UPS arrives, carefully examine the packing and the product to find out whether they have been damaged in any way. Take particular care to make sure that the “Shock Watch” indicator on the external label is undamaged.

If damage is discovered or suspected, immediately notify:

- the haulage contractor
- The Technical Assistance Center of Meta System S.p.A..

Make sure that the product received corresponds to the materials indicated in the delivery documents. **UPS TRIMOD** is packed to protect it from impact and damage from adverse storage and weather conditions. To protect it still further, it is wrapped in transparent film.

Check the contents of the pack.

- 1 (one) **UPS TRIMOD** UPS;
- 1 (one) packet of accessories containing accessories and screws to install the product in the correct way;
- 1 (one) panel to close the front part;
- 2 (two) plinths for closing the sides;
- user manual;
- international warranty.

Make sure that the technical specifications of the **UPS TRIMOD**, given on the label affixed to the internal panel of the door of the UPS correspond to the product you have purchased, which is described in the delivery documents.

3.3 Storage

3.3.1 UPS

If the UPS must be stored before it is installed, it must be kept, with or without its packing, in a clean, dry, cool place at an ambient temperature between -10°C and +50°C and less than 90% humidity (non-condensing).

3.3.2 Batteries

The standard batteries of the **UPS TRIMOD** are the sealed lead-acid type. They are maintenance-free and are installed internally.

It is important to store the batteries without recharging them for no longer than 6 months at 20°C, or 3 months at 30°C or 2 months at 35°C.

WARNING: the sealed batteries must never be stored if they are partially or completely discharged.

To charge the batteries before and after storage, just connect the incoming power supply to the UPS (see section 3.6 for the correct wiring), insert the mains fuses (F L1, F L2 and F L3), those of the battery (F B+ and F B-) and the connecting plate into the neutral isolator then close the isolators themselves. By detecting incoming voltage, the system automatically proposes a battery charging cycle. Recharging starts

automatically after 1 minute and the remaining cycle time appears on the display. Press “ESC” to interrupt the recharging cycle at any time.

If the UPS is consigned without batteries, Meta System S.p.A. declines all liability for any damage or faulty operation the product may sustain through incorrect wiring of the batteries.

3.4 Unpacking

Comply with the direction shown by the “ARROW” on the box when removing the packing materials.

Proceed as described below to remove the UPS from its packaging:

1. cut the wrapping and open the pack;
2. remove the upper protection;
3. remove the four corner guards;
4. remove the packing container by pulling it upwards;
5. remove the pallet from the UPS;
6. examine the UPS to make sure that it has not been damaged; Immediately inform the haulage contractor and the supplier if evident damage is discovered.

Keep the packing materials for use if the UPS needs to be shipped in the future.

3.5 Positioning

UPS TRIMOD is a compact UPS that can be easily transported to its final destination. All the **UPS TRIMOD** components can be accessed from the front or rear sides, making this UPS easy to service.

The UPS must be set in a position that complies with the following conditions:

- humidity and temperature within the prescribed limits;
- compliance with the fire protection standards;
- the wiring must be easy to make;
- accessibility from the front for assistance or periodical servicing;
- the required air flow must be guaranteed for cooling purposes;
- the capacity of the air conditioning system must be sufficient;
- there must be no corrosive/explosive gas or dust in the environment;
- the site must be free from vibrations;
- the space at the rear and side must be sized to allow adequate cooling (fig. 1 and 2);
- access from the front and rear for assistance and maintenance must be guaranteed.

Moreover, the average life of the batteries is strongly influenced by the operating ambient temperature. Installation of the UPS in a place where the temperature ranges between +18°C and +23°C will ensure a long battery life.

3.6 Electrical connections

After having removed the UPS from its wrapping and conveyed it to its definite site, the authorized technician may begin the wiring.



1. The operations described in this manual must all be carried out by authorized technicians or qualified personnel.
2. Do not operate in the presence of water or humidity.
3. There is a risk of exposure to dangerous voltage when the panels of the UPS are opened or removed!
4. To safeguard the personnel when the UPS is installed, make sure that the connections are made in the following conditions:
 - there must be no mains power present;
 - the loads must be off and disconnected;
 - the **UPS TRIMOD** UPS must be off and without electricity.

All the electrical connections are made by working on the panel and on the terminal board of the distribution box in the lower inside part of the front door. To access the distribution terminal board, unscrew the screws that hold the box in place and remove it.

3.6.1 Preparation for the electrical connections

Before beginning to connect the UPS, make sure that:

- the mains voltage (volts on the input) and frequency correspond to the values given in the data plate of the UPS;
- the earthing circuit has been made in compliance with the prescribed IEC standards (International Electronic Commission) or local regulations;
- the electrical system leading into the UPS is equipped with the necessary protections.

3.6.2 Protections of the electrical system

To ensure that the UPS and its accessories function correctly, the electrical system must be adequately protected. Typically, automatic differential and magnetothermic breakers (see tab. 4) are connected between the mains power source and the UPS so as to provide additional protection if overloads or short-circuits occur.

3.6.3 Earth connection

Connect the earth cable from the low voltage distribution panel to the "EARTH" terminal indicated in fig. 8-13.

3.6.4 Connection to the electricity main

Before connecting the incoming power cables, make sure that servicing bypass S1 is open in the OFF position and arrange the fuses and connection jumpers on the terminal board to suit the required input-output configuration, as shown in fig. 8-18 and tab. 1-5.



WARNING: The default configuration for the UPS TRIMOD UPSs distributed by Meta System S.p.A. has a THREEPHASE INPUT and THREEPHASE OUTPUT. If this type of distribution is used, the fuses and connection jumpers will be already sized and positioned in the correct way.

Connect the power cable from the low voltage distribution panel to the terminals of the UPS, as illustrated in fig. 8-18, keeping the phase rotation clockwise.



WARNING: The neutral wire on the input must **ALWAYS** be connected! The UPS could be seriously damaged once powered by the electricity main unless the neutral is connected.

Consult tab. 1-5 for the recommended sections of the input cables and the values of the fuses.

3.6.5 Load connection

Before beginning to connect the loads, make sure that the rated output of the UPS (OUTPUT POWER) indicated on the data plate is the same as the total sum of the powers of the loads or more.

Proceed as illustrated in fig. 8-18 in order to wire the UPS in the correct way.

The declared values of the output power cables must comply with the sections of the cables indicated in tab. 1-5.

Remember to supply a separate distribution panel for the load. It is advisable to use automatic breakers or isolators that conform to IEC standards to protect the electric panel's output lines.

The following values must be indicated in the output distribution panel:

- maximum rated power of the total load;
- maximum rated power of the load at the load sockets;
- if a common distribution panel is used (sockets for the mains voltage and UPS), make sure that each socket bears an indication as to the voltage applied ("Mains" or "UPS").



WARNING: If the UPS is used with a single-phase output (available in all units in the **UPS TRIMOD** family with the exception of the TRIMOD 30 model) a connector supplied in the accessory packet must be inserted in all the Back Panel boards. The Back Panel boards are situated inside the machine, behind the power modules. The TRIMOD 8 and 10 models only have one Back Panel board while there are two in the TRIMOD 16 and 20 models. To access the Back Panel boards and insert

the connector, just remove 3 power modules from the same level and refer to fig. 14. The connector must be inserted into the position marked EC 15 on the board print.



WARNING: If the single-phase input and three-phase output configuration is used for the TRIMOD 8, 10, 16 and 20 models, manual bypass S1 **MUST NOT** be activated for any reason whatsoever. In this case, it is advisable to block the relative breaker in the “OFF” position. For greater safety, the bypass can be completely deactivated by cutting the brown wire that connects bypass breaker S1 to the MAINS INPUT fuse holder isolator and to adequately insulate it. The wire that connects terminal N° 8 (fig. 8-12) to the phase fuse holder isolator **MUST** remain connected.

3.6.6 Emergency Power Off (Remote Emergency Block)

In compliance with the pertinent standards, the UPS is equipped with an emergency block that uses a normally closed contact which is opened in order to activate the block itself. The E.P.O. terminals are situated on the right-hand side of the terminal board in the distribution box (see fig. 8-18 for their locations).

Comply with the instructions below to connect the emergency block in the correct way:

- Use a cable with double insulation;
- Connect the cables as shown in fig. 15.

3.6.7 Installation of a TRIMOD BATTERY unit

An external battery unit can be installed to increase the autonomy of the UPS.

Two **TRIMOD BATTERY** external battery units are available:

- A modular model, comprising a cabinet with an internal structure that uses battery racks for up to 80 batteries (16 racks) of the 12V 7.2Ah or 12V 9Ah type (see fig. 6);
- An economic non-modular model with a shelf architecture where the batteries are placed. It is able to house 60 or 120 batteries of the 12V 7.2Ah or 12V 9Ah type.

A **TRIMOD BATTERY** unit can be connected to several **UPS TRIMOD** units.

- The operations described in this section must all be carried out by authorized technicians or qualified personnel.
- Meta System S.p.A. declines all liability for damages to persons or property caused by wiring, operations or activities that are incorrect as they have not been carried out according to the instructions in this manual.
- There is a risk of exposure to dangerous voltage when the panels of the **UPS TRIMOD** UPS or **TRIMOD BATTERY** unit are opened or removed!
- To safeguard the personnel when the **BATTERY TRIMOD** unit is installed, make sure that the connections are made in the following conditions:
 1. there must be no mains power present;
 2. the loads must be off and disconnected;
 3. the **UPS TRIMOD** UPS must be off and without electricity. All fuse holder isolators in the **UPS TRIMOD** and **TRIMOD BATTERY** must be open.
- Work through the steps illustrated in chapters 5-6 to make sure that the **UPS TRIMOD** fully stops if a **TRIMOD BATTERY** must be added in an already existing installation.



Fig. 7 shows how the **TRIMOD BATTERY** is connected to the **UPS TRIMOD** UPS, as described below:

1. connect the earth wire of the UPS and the external battery cabinet;
2. use the wiring supplied with the **TRIMOD BATTERY** to connect the positive and negative terminals of the **UPS TRIMOD** to those of the **TRIMOD BATTERY**.

3.7 Configuration of UPS TRIMOD

3.7.1 Input configuration

UPS TRIMOD automatically recognizes the voltage, frequency and the number of phases on the input. The input configuration is therefore fully automatic and no operations are required from the installer.

3.7.2 Output configuration

UPS TRIMOD can be configured on the output as a single-phase or three-phase system.

If it is configured as a three-phase output, the type of load powered can also be defined in the following way:

- **Single-phase load:** this setup is useful if three independent single-phase lines have been created at the output of the UPS in order to power different loads. In this case, the three outputs are controlled by the UPS in a completely independent way from each other. For example, if an excessive load is applied to one of the three output lines, the bypass only activates on the overloaded line, while the power remains stable on the other two.
- **Threephase load:** this is the default setting of the **UPS TRIMOD** and is normally used if the loads applied to the output of the UPS operate with threephase power (e.g. threephase electric motors) or if there are mixed threephase and single-phase loads. In this case, the three outputs are controlled by the UPS in an equivalent way. For example, if an excessive load is applied to one of the three lines, all three of the output lines breaker to the bypass status.

Comply with the instructions given in section 4.3 to correctly select the output configuration of the system via the display.

4 Setting the UPS TRIMOD at work

4.1 Introduction

This chapter contains everything you need to know to correctly set the **UPS TRIMOD** UPS at work.



- The operations described in this section must all be carried out by authorized technicians or qualified personnel.
- Meta System S.p.A. declines all liability for damages to persons or property caused by wiring, operations or activities that are incorrect as they have not been carried out according to the instructions in this manual.

4.2 How to prepare for powering

1. Make sure that the fuse holder isolators for powering the UPS in the distribution box (F L1, F L2 and F L3) are open.
2. Make sure that the fuse holder isolators of the batteries of the UPS (F B+ and F B-) and those in the **TRIMOD BATTERY** units (if installed) are open;
3. Make sure that the input and output wiring has been made correctly and check the phase rotation on the input;
4. Check to make sure that the phase and line voltage values are correct;
5. Make sure that maintenance bypass breaker S1 is in the OFF position;
6. Make sure that output breaker S2 is in the OFF position;

4.3 How to start the UPS TRIMOD

1. Fit the fuses for powering the UPS into the distribution panel (F L1, F L2 and F L3), then fit the connecting plate into the neutral isolator and shut the isolators;
2. Insert the fuses of the batteries (F B+ and F B-) and those in the cabinets of the **TRIMOD BATTERY** units (if installed) and close the corresponding isolators;
3. **WARNING:** the output configuration **MUST** be selected (Single-phase / Threephase 120° / Three independent phases) before the product is powered. Proceed as described below:
 - With the unit off, press the “ENTER” key to access the Service Mode (consult section 7.1 for further information);
 - Follow the pathway: Config. UPS → Output → Config. Inverter → Single-phase / Threephase 120° / Three independent phases



Incorrect connections or output configuration setups can cause damage to persons or property.

4. Power the UPS by means of the dedicated breaker;
 - **WARNING:** by detecting incoming voltage, the system automatically proposes a battery charging cycle. Press “ESC” to continue powering the **UPS TRIMOD**.
5. Press “ENTER” to power the UPS;
6. Wait until the status indicator on the display turns green;
7. Make sure that the output voltage and frequency values correspond to the requirements of the load applied. Enter the required values if this is not the case (consult sect. 7.2.2);
8. Shut output breaker S2 in the UPS.

THE LOAD IS NOW PROTECTED BY THE UPS TRIMOD UPS



WARNING: if the battery unit must be tested, disconnect the mains voltage by means of the breaker on the supply side of the UPS and **NOT** by means of the input fuse holder isolators in the distribution box.

5 Maintenance for UPS TRIMOD

5.1 Introduction

This chapter contains everything you need to know to correctly service the **UPS TRIMOD** UPS.



- The operations described in this section must all be carried out by authorized technicians or qualified personnel.
- Meta System S.p.A. declines all liability for damages to persons or property caused by operations or activities that are incorrect as they have not been carried out according to the instructions in this manual.

To ensure that the **UPS TRIMOD** operates in the best possible way and that it continues to efficaciously protect the connected load, remember to check the batteries every six months after the product's first year of life by means of the battery calibration function (see sect. 7.2.4).

5.2 User's responsibility

The UPS does not contain parts that require routine maintenance by the end user.

The only servicing operation the user must carry out is to periodically check to make sure that there are no alarm messages on the display and that both the fans in each power module function correctly. If they fail to operate correctly, immediately contact the assistance center of Meta System S.p.A. on the toll-free phone number.

5.3 Routine Maintenance

To ensure that the UPS functions correctly, it is essential to subject it to periodical maintenance inspections so as to ensure long-life and fade-free reliability from the unit.

These preventive maintenance inspections involve operations inside the unit where there are dangerous live parts. Only trained maintenance technicians authorized by Meta System S.p.A. and familiar with all the possible danger zones in the unit may carry out these operations.

The maintenance technician must check the following items during a preventive maintenance inspection:

- The absence of alarms;
- The list of memorized events;
- Operation of the static and maintenance bypasses;
- Soundness of the electrical installation;
- The cooling air flow;
- The condition of the batteries;
- The characteristics of the load applied;
- The conditions of the place/environment.

5.4 Preparation of the UPS for maintenance

1. Open the door of the **UPS TRIMOD**;
2. Enable UPS operation in the forced bypass mode via the display. To do this, proceed in the following way:
 - Follow the pathway: Config. UPS → Bypass → Forced Mode.
3. Shut maintenance bypass breaker S1 (the load is now powered directly by the main);
4. Turn off the unit by pressing the "ON/OFF" button on the control panel;
5. Open output breaker S2;
6. Open the mains isolators (F L1, F L2 and F L3);
7. Open the battery isolators (F B+ and F B-) of the unit and the **TRIMOD BATTERY** units (if installed);

5.5 Addition or replacement of a power module or battery rack

5.5.1 UPS TRIMOD power module

1. Remove the faulty power module, if present;
2. Fit the new power module into one of the available slots;
3. Fix the power module to the unit's frame using the 2 screws supplied;

4. Close the mains isolators (F L1, F L2 and F L3) and battery isolators (F B+ and F B-);
5. Close output breaker S2;
6. Power the unit by pressing the “ON/OFF” button on the control panel and wait until the status indicator turns green;
7. Open bypass breaker S1 (the On-line operating mode automatically activates);
8. Close the door of the UPS.

5.5.2 USP TRIMOD Battery Racks

1. Remove the 4 old racks, if present;
2. Fit the 4 battery racks into the 4 available slots beginning with the bottom one;
3. Fix the racks to the unit's frame one by one, using the 2 screws supplied;
4. Close the mains isolators (F L1, F L2 and F L3) and battery isolators (F B+ and F B-);
5. Close output breaker S2;
6. Power the unit by pressing the “ON/OFF” button on the control panel and wait until the status indicator turns green;
7. Open bypass breaker S1 (the On-line operating mode automatically activates);
8. Close the door of the UPS.

WARNING: the battery racks **MUST** always and only be added in multiples of **4 units!**

6 How to turn off UPS TRIMOD

6.1 Introduction



- The operations described in this section must all be carried out by authorized technicians or qualified personnel.
- Meta System S.p.A. declines all liability for damages to persons or property caused by operations or activities that are incorrect as they have not been carried out according to the instructions in this manual.

WARNING: the power-off procedure described in this section must only be applied if the load connected to the UPS is off or does not need to be powered by the UPS itself.

6.2 How to turn off UPS TRIMOD

1. Make sure that the loads do not need to be powered by the UPS;
2. Keep the “ON/OFF” button on the control panel of the UPS depressed;
3. Open output breaker S2;
4. Open the mains isolators (F L1, F L2 and F L3);
5. Open the battery isolators (F B+ and F B-) of the unit and the **TRIMOD BATTERY** units (if installed);



Carefully read the storage instructions described in section 3.3 if the UPS is to remain off for a long period of time.

THE UPS TRIMOD UPS IS NOW WITHOUT VOLTAGE.





7 Functions of the control panel

The control panel is situated in the front part of the unit and comprises an LCD display, a status indicator and a keyboard.

The machine can be continuously monitored and completely setup from the front panel, by means of the following menus:

- **UPS Status:** allows the functional status of the machine to be analyzed;
- **Config. UPS:** allows all the functions of the UPS to be configured;
- **Power Modules:** allow the statuses of the individual power modules to be analyzed;
- **Tools:** used to subject the UPS to a series of functional tests.

The menus of the UPS are accessed by means of the keys on the front panel.


KEY	DESCRIPTION
	Quits a function without modifying it switches from a lower menu level to a higher one Quits the main menu and goes back to displaying the status Silences the buzzer
	Selects the previous function Increases a value within a function Selects a new item within a function (e.g. from DISABLED to ENABLED) Scrolls menus that contain more than 4 lines
	Selects the next function Decreases a value within a function Selects a new item within a function (e.g. from ENABLED to DISABLED) Scrolls menus that contain more than 4 lines
	Confirms a value Accesses an item in the menu switches from a higher menu level to a lower one

7.1 “Service Mode” function

Even when it is off, the UPS TRIMOD allows all the settings and programming described below to be carried out: press “ENTER” and the UPS will access the “Service Mode”, allowing the user to access the menu on the display. Press “ON/OFF” to quit this mode, otherwise the UPS will automatically quit this function and switch off if it fails to receive manual or serial commands within 1 min.

7.2 Main menu and sub-menus

The main mask will appear on the display at the end of the powering procedure (example):

UPS a Rete
IN 212V
OUT 230V/812W (31%)
Batt  32.2'

Press “ENTER” to access the main menu, which contains the following items:

- **UPS Status:**
- **Config. UPS:**
- **Power Modules:**
- **Tools:**

Use “ENTER” to select one of the items listed above and access the relative sub-menu, shown in the table below. The items in this sub-menu are selected with the same key.

UPS Status:	Config. UPS:	Power Modules:	Tools:
--------------------	---------------------	-----------------------	---------------

UPS Info Output Input Batteries Misc.	Options Output Input Bypass Batteries Clock adjustment Operator Panel	PM Status PM SW upgrade (*) Single PM SW upgrade (*)	Signal Test LCD Display Test Battery Cycle Batt.Calibration
---------------------------------------------------	-----------------------------------------------------------------------------------------	---------------------------------------------------------------	----------------------------------------------------------------------

(*) Only available in the "Service Mode"

The machine therefore possesses a tree structure with menus and relative sub-menus, the functions of which are described in the following sections.

7.2.1 UPS Status:

UPS Info	TRIMOD mod	Model of the instrument
	POut max	Maximum active power that can be supplied [W]
	SW Vers.	Version of the firmware in the machine
	PM SW Vers.	Version of the firmware in the power modules
	S/N	Serial number of the machine

Output	X	Power	Active power supplied by the UPS on phase X [W]
		Appar. Power	Apparent power supplied on the output by the UPS on phase X [VA]
		V eff.	R.m.s. voltage supplied on the output by the UPS on phase X [V RMS]
		I eff.	R.m.s. current supplied on the output by the UPS on phase X [A RMS]
		Peak I Val.	Peak current supplied on the output by the UPS on phase X [A]
		Frequency	Frequency of the voltage sinusoid on the output on phase X [Hz]
		Peak fact. I	Peak factor on phase X
		Power Factor	Power factor of the load connected to the UPS on phase X
		Max Power	Maximum active power supplied by the UPS on phase X [W]
		Power	Maximum active power supplied by the UPS on phase X, expressed in percentage form [0-100%]
		Max. App.Power	Maximum apparent power supplied by the UPS on phase X [W]
		Appar. Power	Maximum apparent power supplied by the UPS on phase X, expressed in percentage form [0-100%]

Note: press "ENTER" to change the value of X and thus change the phase whose data are given below

Input	X	Power	Power absorbed by the UPS from the main on phase X [W]
		Appar. Power	Apparent power absorbed by the UPS from the main on phase X [VA]
		V eff.	R.m.s. voltage on the UPS input on phase X [V RMS]
		V eff. byp	R.m.s. voltage on the UPS input by the UPS on phase X, for the bypass line [V RMS]
		I eff.	R.m.s. current absorbed by the UPS from the main on phase X [A RMS]
		Peak I Val.	Peak current absorbed by the UPS from the main on phase X [A]
		Frequency	Frequency of the voltage sinusoid on the UPS input on phase X [Hz]
		Peak fact. I	Peak factor applied by the UPS from the main on phase X
		Power Factor	Power factor applied by the UPS from the main on phase X

Note: press "ENTER" to change the value of X and thus change the phase whose data are given below

Batteries	Voltage	Voltage measured at the ends of the batteries [V]
	Current	Current delivered by the batteries (negative if the batteries are charging) [A]
	Residual capacity	Battery charge status, expressed in percentage form [0-100%]
	Charge Status	Operating status of the battery charge
	Total autonomy	Total autonomy that the UPS would have with fully charged batteries
	Resid. autonomy	Residual autonomy of the UPS
	N° discharges	Total number of complete battery discharges
	Use	Total number of hours in which the UPS has operated by batteries
	Cal.	Date and time at which the last calibration was carried out

Misc.	Internal temp.	Temperature inside the UPS [°C]
--------------	----------------	---------------------------------

	Pos. HW Bus	Positive voltage on DC BUS [V]
	Neg. HW Bus	Negative voltage on DC BUS [V]

7.2.2 Config. UPS

Options	Battery powering	If enabled, allows the UPS to be powered in the absence of an electricity main
	Re-powering	If enabled, the UPS can be re-powered automatically

Output	Voltage	Enters the output voltage value [V]
	Frequency	Enters the output frequency value [Hz] <ul style="list-style-type: none"> Nominal value: allows the output frequency value to be entered (50 or 60 [Hz]) regardless of the frequency of the powering voltage Automatic select.: if enabled, the UPS measures the frequency of the input voltage and synchronizes the output to the same value. If disabled, the UPS uses the Nominal Value as a setting
	Config. Inverter (*)	Enters the output configuration and the applied load <ul style="list-style-type: none"> Single-phase: a single single-phase output Threephase 120°: threephase output suitable for powering threephase loads (e.g. a motor) Independent three phases: three independent single-phase output lines

(*) Only available in the "Service Mode"

CAUTION: Refer to the instructions in sect. 4.3 on page 11 in order to correctly setup the 'Config. Inverter' parameter. 11.

Input	PLL enabling	If enabled, the UPS synchronizes the output sinusoid with that of the input. If disabled, the output voltage is not synchronized with the input and this is signalled by a flash from the status indicator (green)
	Extended PLL range	If enabled, the UPS synchronizes the output sinusoid with the input for $\pm 14\%$ frequency variations in relation to the nominal value. If disabled, the UPS synchronizes for $\pm 2\%$ frequency variations.

Note: the PLL function ensures that the unit's output frequency synchronizes with that of the input, thus ensuring that the passage through zero occurs at the same instant. If activated, input-output synchronizing is guaranteed even if the bypass intervenes (e.g. owing to an overload).

WARNING: if the PLL function is disabled, the automatic bypass function will also be disabled in the forced mode. The UPS switches off in the case of a lengthy overload (consult 'Tolerated overload' in Chap. 10).

Bypass	Enab. Bypass	If enabled, the UPS controls bypass activation in the automatic mode. If disabled, the UPS will never commutate to the bypass mode and thus, the UPS will switch off in the event of a lengthy overload (consult 'Tolerated overload' in Chap. 10) or a fault.
	Static bypass	If enabled, the static bypass will also be activated when the bypass closes (in addition to the electromechanical one).
	Forced Mode	If enabled, the UPS activates the bypass in the permanent mode.
	DIP peed	Allows the automatic activation sensitivity of the bypass to be changed (forced mode disabled) <ul style="list-style-type: none"> SLOW: loads not sensitive to voltage drops or tiny interruptions, but which cause frequent surges. STANDARD: normal uses. FAST: loads sensitive to tiny interruptions
	Starting with Bypass	If enabled, when powered by the electricity main, the first power the UPS supplies to the load occurs via bypass. If disabled, the load surge will be provided by the Inverter, as in battery powering.

Batteries	Threshold values	End Aut warning	Setting for the time at which the end of battery autonomy warning starts [min]
	Battery charger	Charge in Standby	If enabled, the batteries will be charged when the UPS is off
	Total KB	Enters the total number of KB installed (1 KB = 4 battery racks) Necessary, to ensure that the UPS provides correct autonomy values depending on the load applied	
	Capacity (*)	Enters the capacity value of the batteries in the UPS [Ah]	

(*) Only available in the "Service Mode"

Clock adjustment	10/07/06-19:25:06 Monday	"ENTER": selects the value to edit "ARROWS": increase/decrease the selected value
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Operator Panel	Language	Selects the language on the display
	Keyboard Beep	Enables/disables the buzzer signal when the keys are pressed
	Display backlighting	Selects the backlighting option for the display <ul style="list-style-type: none"> • Fixed: always lighted • Timed: the lighting goes out after the keyboard has remained inactive for a few seconds • Disabled: lighting always off
	Display Contrast	Selects the display contrast
	Change password	Enters a password that blocks access to the UPS settings

7.2.3 Power Modules:

PM Status	PM Info	X	Mod	Model of power module X		
			SW Vers.	Version of the firmware in power module X		
			HW Vers.	Hardware version of power module X		
			S/N	Serial number of power module X		
			VA Max	Maximum apparent power that power module X can provide [VA]		
			W Max	Maximum active power that power module X can provide [W]		
			Icgh Max	Maximum current that the battery charger of power module X can provide [A]		
	Measurements		X	Input	Power	Power absorbed from the mains supply by power module X [W]
					Appar. Power	Apparent power absorbed from the mains supply by power module X [VA]
					V eff.	R.m.s. voltage on the input of power module X [V RMS]
					V eff.byp	R.m.s. voltage on the input to power module X for the bypass line [V RMS]
					I eff.	R.m.s. current absorbed by power module X from the main [A RMS]
					Peak I Val.	Peak current absorbed by power module X from the main [A]
					Frequency	Frequency of the voltage sinusoid on the input to power module X [Hz]
					Peak factor	Peak factor applied by power module X to the main
					Power factor	Power factor applied by power module X to the main
				Output	Power	Active power provided by power module X [W]
					Appar. Power	Apparent power supplied on the output by power module X [VA]
					V eff.	R.m.s. voltage supplied on the output by power module X [V RMS]

			I eff.	R.m.s. current supplied on the output by power module X [A RMS]
			Peak I Val.	Peak current supplied on the output by power module X [A]
			Frequency	Frequency of the voltage sinusoid on the output from power module X [Hz]
			Peak factor	Peak factor of the output current of power module X
			Power factor	Power factor on the output to power module X
			Max. Power	Maximum active power that power module X can provide [W]
			Power	Maximum active power that power module X can provide, expressed in percentage form [0-100%]
			Max. App.Power	Maximum apparent power that power module X can provide [W]
			Appar. Power	Maximum apparent power that power module X can provide, expressed in percentage form [0-100%]
		Battery X	Voltage	Voltage measured at the ends of the batteries by power module X [V]
			Current	Current that power module X requires from the batteries (negative if the batteries are charging) [A]
		Misc. X	INV diss.temp	Temperature of the INV dissipator of power module X [°C]
			BST diss.temp	Temperature of the BST dissipator of power module X [°C]
			Fan speed	Fan speed expressed in percentage of power module X [0-100%]
			Pos. HV Bus	Voltage on positive DC BUS of power module X [V]
			Neg. HV Bus	Voltage on negative DC BUS of power module X [V]

Note: press “ENTER” to change the value of X and thus change the power module whose data are read

PM SW Upgrade	Allows the software in all the power modules in the UPS to be automatically upgraded in the sequential ode. Press “ENTER” to begin the procedure. If upgrading is not necessary, the message “PM SW versions upgraded!” will appear on the display. Press “ESC” to quit the mask.
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Single PM SW upgrade	Allows the software in the individual power module to be upgraded. Use the “ARROW” keys to select the module that needs to be upgraded (‘PM00’ means the module at the top left, moving up until the last on the bottom right). Press “ENTER” to display a comparative mask between the software currently in the selected module and the software about to be entered. Press “ENTER” to begin the upgrading procedure. The message “PM SW version upgraded!” will appear on the display once the upgrading process has terminated. Press “ESC” to quit the mask.
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7.2.4 Tools

SIGNAL TEST	Tests the indicator lights. Press “ENTER” to test the signals given by the status indicator (green, orange and red) and the buzzer
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LCD DISPLAY TEST	Tests the alphanumerical display. Press “ENTER” to display all the characters available on the alphanumerical display.
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BATT.CALIBRATION	Calibrates the batteries, measuring the discharge curve. If the batteries are changed, it is advisable to carry out this cycle to allow the UPS to provide precise information about the charge status.
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8 Optical and acoustic signals

STATUS INDICATOR	POWER MODULE LED	ACOUSTIC SIGNAL	MESSAGE ON DISPLAY	DESCRIPTION OF UPS STATUS AND OPERATING ADVICE
GREEN fixed		-	UPS via Mains IN xxxV/yyyV/zzzV OUT xxxV/x.xkW	Normal operation with mains present and load within limits
GREEN Fast flashes	GREEN Fast flashes	-	UPS via Mains Mains not synch.xx.xHz	The UPS signals that the frequency of the output voltage is not synchronized with that of the input voltage. This can be caused by: <ul style="list-style-type: none"> • PLL disabled • Input voltage frequency beyond limits established by the UPS
GREEN Long flashes	GREEN Long flashes	-	-	The UPS signals that the bypass is unusable
ORANGE Fast flashes	ORANGE Fast flashes	-	UPS via Bypass	Operation in the bypass mode
ORANGE fixed	ORANGE fixed	Short flashes (every 20 sec.)	UPS via battery NO MAINS POWER	Battery operation
ORANGE fixed	ORANGE fixed	Short flashes and double flashes with pause	AUTONOMY RESERVE	Autonomy reserve. In battery operation mode Incorrect battery connection
RED Fast flashes	RED Short flashes and double flashes with pause	Fast flashes	OVERLOAD	The UPS signals an overload status. It is advisable to disconnect some of the users until the power input is brought within the established limits.
			OVERLOAD NO MAINS POWER	The UPS signals an overload status in the battery operation mode. Disconnect users until the load's power input returns within the established limits or the UPS switches off automatically (see 'Tolerated Overload' in chap. 10).
RED fixed		Continuous		UPS in error status or a fault has been detected WARNING: it is advisable to switch off the unit and contact the assistance center

WARNING: press “ESC” to silence the buzzer. This latter is silenced or enabled on each successive pressure on the “ESC” key.

9 Communication devices

The UPSs of the UPS TRIMOD family have two RS232 serial ports, 1 relay interface and 1 output through a 9-pin make connected, SELV insulated at logic levels.

9.1 RS232 serial ports

The first of the two RS232 serial ports that equip the UPS is called “maintenance interface” and is positioned at the top, behind the front door. It is exclusively dedicated to diagnostic functions and the machine’s firmware upgrades.

The second, called “user interface” is installed at the top rear of the UPS (see fig. 17). Thanks to it, a series of data concerning the way the UPS operates can be accessed via a computer or a dedicated network board, and unmanned power-off of the operating system can be controlled.

9.2 Relay interface

The contacts of the relay interface are programmed by default as Normally Open (NO), but can be configured as Normally Closed (NC) via the display of the UPS.

The technical features of the interface relay’s contacts are as follows:

- $I_{MAX} = 5A$
- $V_{MAX} = 250VAC - 30VDC$

The following signals are available by means of this interface (see fig. 17 for the numbers of the contacts).

Pin	Function
1 -2	Battery operation
3 - 4	Autonomy Reserve
5 - 6	Generic Alarm
7 - 8	Overload

9.3 Interface at logic levels

The interface at logic levels is available on male connector DB9. It allows the UPS to be connected to a remote system so as to monitor its operating status and provides the following signals:

- Mains/battery operation;
- UPS fault;
- Overload;
- Autonomy reserve.

The functions of the interface pins are (see fig. 18):

- Pin 1: ON/OFF input (Maximum voltage +15V, equivalent to the “ON/OFF” key on the panel);
- Pin 5: GND (common contact);
- Pin 6: UPS fault output (Open Collector - active low);
- Pin 7: UPS in autonomy reserve output (Open Collector - active low);
- Pin 8: GND (common contact);
- Pin 9: Battery operated UPS output (Open Collector - active low);

10 Technical specifications

	TRIMOD 8	TRIMOD 10	TRIMOD 16	TRIMOD 20	TRIMOD 30
Rated power	8 kVA	10 kVA	16 kVA	20 kVA	30 kVA
Active power	6.4 kW	8 kW	12.8 kW	16 kW	24 kW
Technology	On line double conversion VFI				
IN/OUT configuration	Mono / Mono - Mono / Tri - Tri / Tri - Tri / Mono (can be configured by user)				Tri / Tri
UPS architecture	Modular, Expendable, Redundant N+X with 2700 VA / 3400 VA power modules housed in a single cabinet				
INPUT	TRIMOD 8	TRIMOD 10	TRIMOD 16	TRIMOD 20	TRIMOD 30
Maximum current (Threephase-Threephase)	14.8 A	18.5 A	29.6 A	37 A	55.5 A
Maximum current (Threephase-Single-phase)	14.8 A	18.5 A	29.6 A	37 A	-
Maximum current (Single-phase-Threephase)	44.4 A	55.5 A	88.8 A	111 A	-
Maximum current (Single-phase-Single-phase)	44.4 A	55.5 A	88.8 A	111 A	-
Input voltage	230 V +15% -20% / 400 V +15% -20% (Neutral line is essential)				400 V +15%-20% (Neutral line is essential)
THD input current	3%				
Power factor on the input	> 0,99				
Input frequency	50 Hz / 60 Hz				
OUTPUT	TRIMOD 8	TRIMOD 10	TRIMOD 16	TRIMOD 20	TRIMOD 30
Maximum current (Threephase-Threephase)	11.59 A	14.49 A	23.19 A	28.99 A	43.48 A
Maximum current (Threephase-Single-phase)	34.78 A	43.48 A	69.57 A	86.96 A	-
Maximum current (Single-phase-Threephase)	11.59 A	14.49 A	23.19 A	28.99 A	-
Maximum current (Single-phase-Single-phase)	34.78 A	43.48 A	69.57 A	86.96 A	-
Output voltage	230 V ± 1% (Single-phase) 400 V ± 1% (Threephase)				400 V ± 1% (Threephase)
Static tolerance of output voltage:	± 1%				
Output frequency	50 Hz / 60 Hz synchronized				
Wave shape	Sinusoidal				
Mains efficiency (AC/AC on line)	94% to 100% of the load				

Mains efficiency (AC/AC eco mode)	98%				
Tolerated overload	150% for 30 s				
BATTERIES	TRIMOD 8	TRIMOD 10	TRIMOD 16	TRIMOD 20	TRIMOD 30
Type of batteries	12V 7.2Ah or 12V 9Ah maintenance-free sealed lead batteries				
Autonomy at 80% of the load	See tab. 5 (Long autonomies)				
Autonomy at 100% of the load	See tab. 5 (Long autonomies)				
ACCESSORIES	TRIMOD 8	TRIMOD 10	TRIMOD 16	TRIMOD 20	TRIMOD 30
Bypass	Automatic (static and electromechanical) Manual (for maintenance)				
Signals and alarms	Large alphanumeric display with 4 lines, multicolored status indicator, buzzer				
Communication ports	Two RS 232 ports, 1 relay interface, 1 contact port				
Software	Can be downloaded free of charge from the web site www.metasystem.it				
Protections	Electronic against overloads, short-circuits and excessive battery discharging. Functions blocks if autonomy ends. Powering surge limiter. E.P.O. contact (total shutdown in an emergency)				
IN/OUT mains connection	Terminal board				
MECHANICAL SPECIFICATIONS	TRIMOD 8	TRIMOD 10	TRIMOD 16	TRIMOD 20	TRIMOD 30
Net weight (without batteries)	110 kg		130 kg		(154 + 70) kg
Dimensions (L x H x D)	414 x 1345 x 628 mm				2 x (414 x 1345 x 628) mm
Power modules installed	3		6		9
ENVIRONMENTAL CONDITINS	TRIMOD 8	TRIMOD 10	TRIMOD 16	TRIMOD 20	TRIMOD 30
Operating temperature	0 °C to 40 °C				
Relative humidity	20% to 80% non-condensing				
Noise level at 1 m	42 to 46 dBA				
STANDARDS	TRIMOD 8	TRIMOD 10	TRIMOD 16	TRIMOD 20	TRIMOD 30
Norms	EN 62040-1-1, EN 50091-2, EN 62040-3				
Standard warranty	1 year with On Site batteries included formula. Interventions provided in the installation site.				

11 Figure - Illustrations:

	X	Y
Distanza minima [mm] Minimum distance [mm]	100	200
Distanza minima [mm] Minimum distance [mm]	100	200

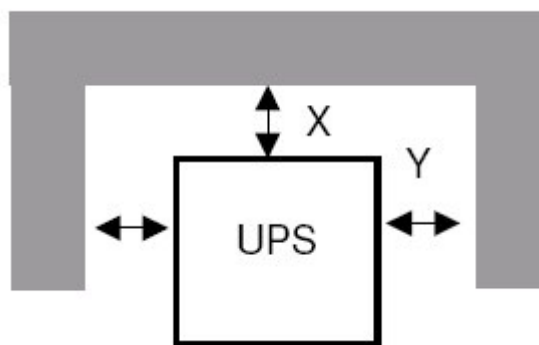


Fig. 1

Distanze raccomandate per l'UPS
UPS space recommendation

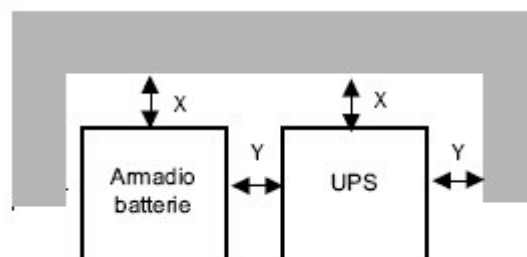


Fig. 2

Distanze raccomandate **UPS TRIMOD + TRIMOD BATTERY**
UPS TRIMOD + TRIMOD BATTERY space recommendation

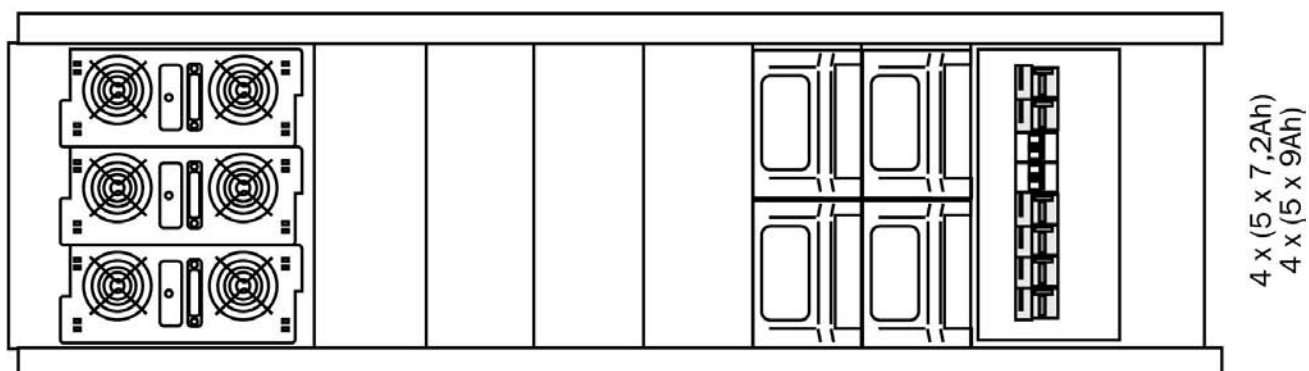
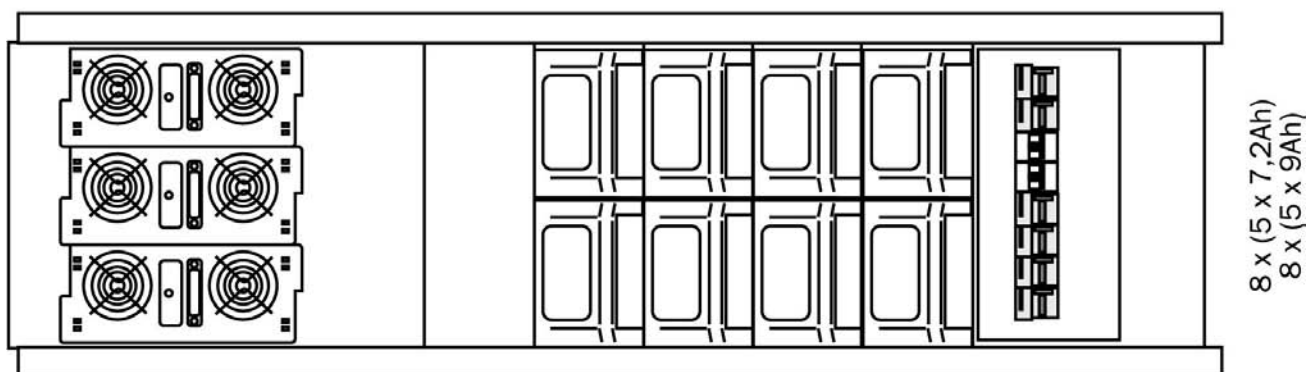
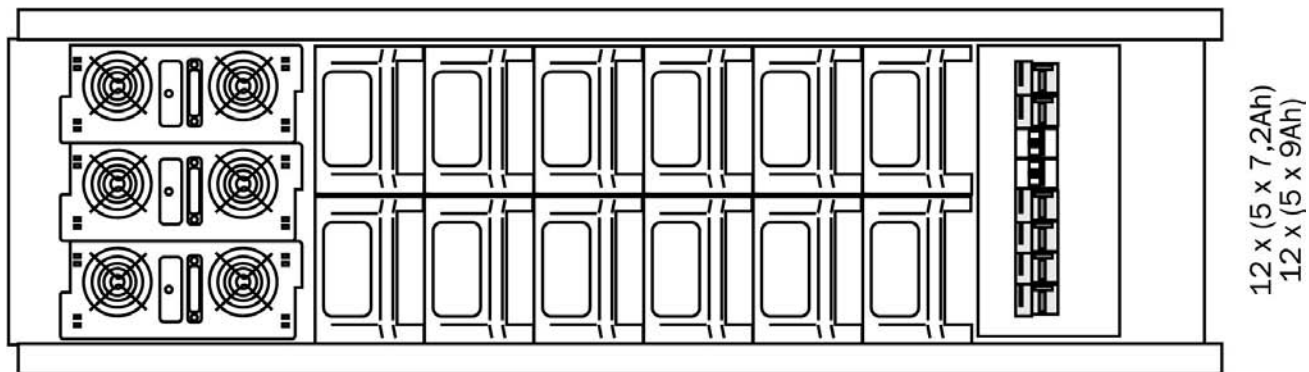
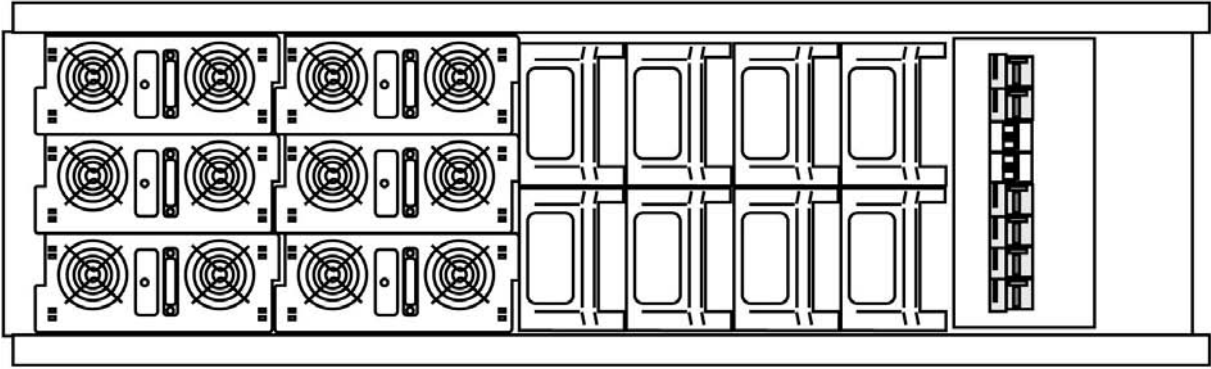
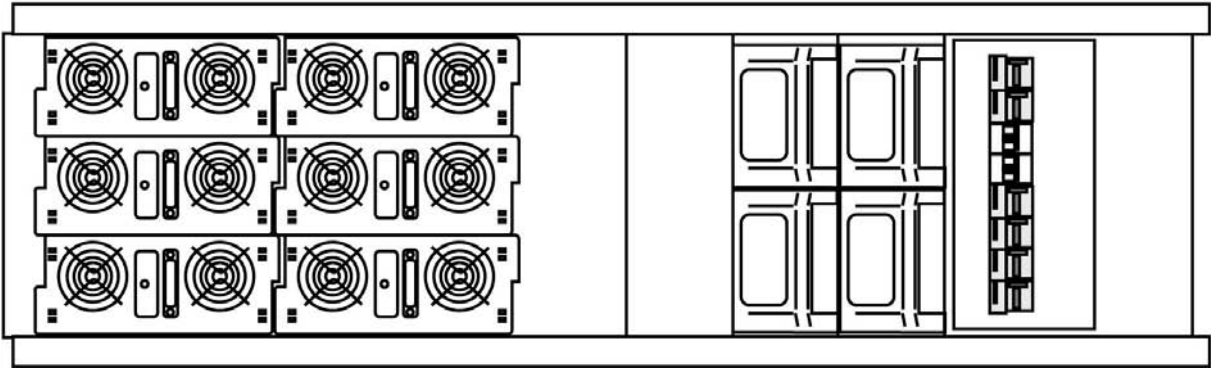


Fig. 3
UPS TRIMOD 8/10



8 x (5 x 7,2Ah)
8 x (5 x 9Ah)



4 x (5 x 7,2Ah)
4 x (5 x 9Ah)

Fig. 4
UPS TRIMOD 16/20

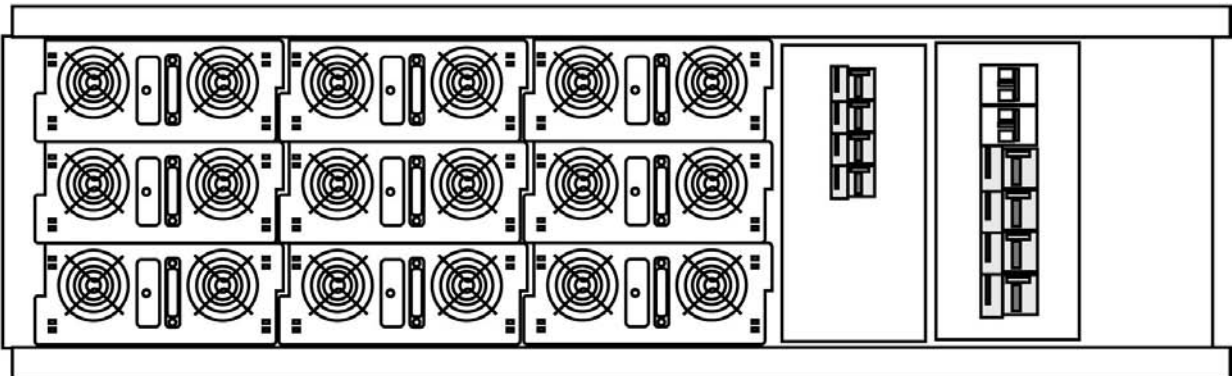
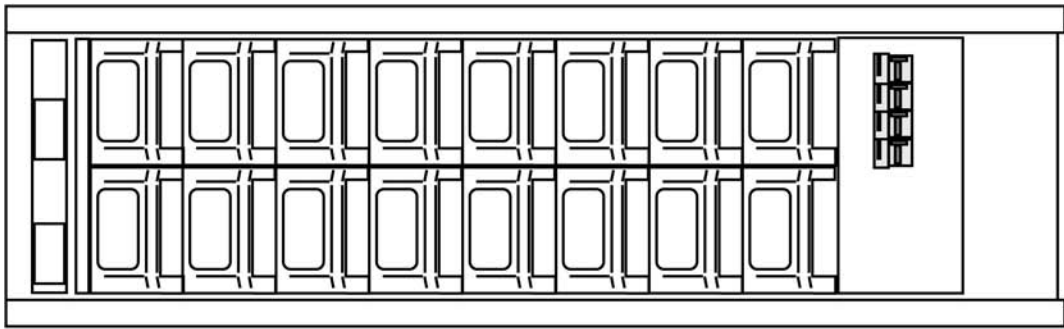
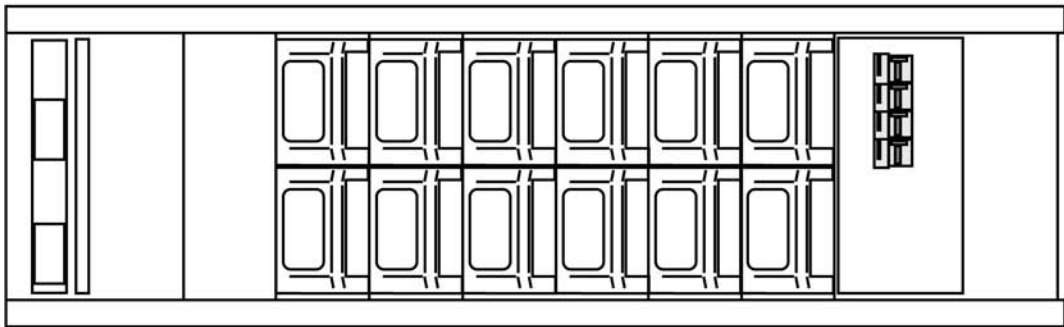


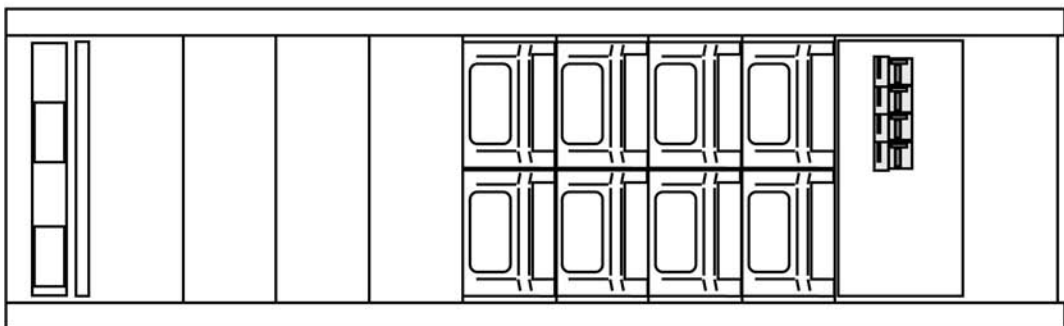
Fig. 5
UPS TRIMOD 30



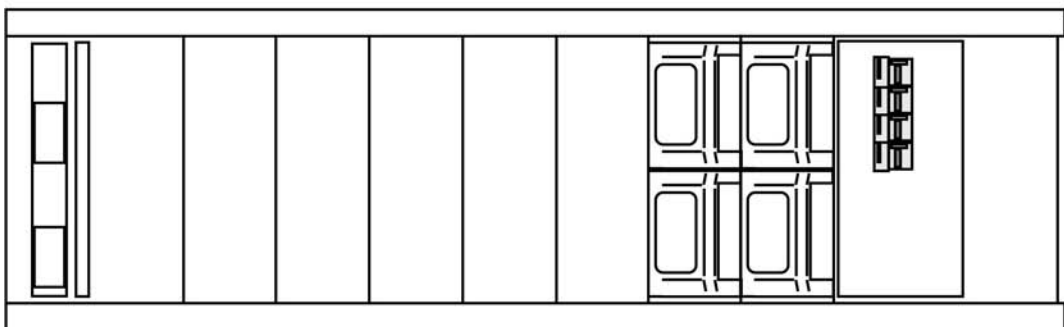
16 x (5 x 7,2Ah)
16 x (5 x 9Ah)



12 x (5 x 7,2Ah)
12 x (5 x 9Ah)



8 x (5 x 7,2Ah)
8 x (5 x 9Ah)



4 x (5 x 7,2Ah)
4 x (5 x 9Ah)

Fig. 6
UPS TRIMOD BATTERY

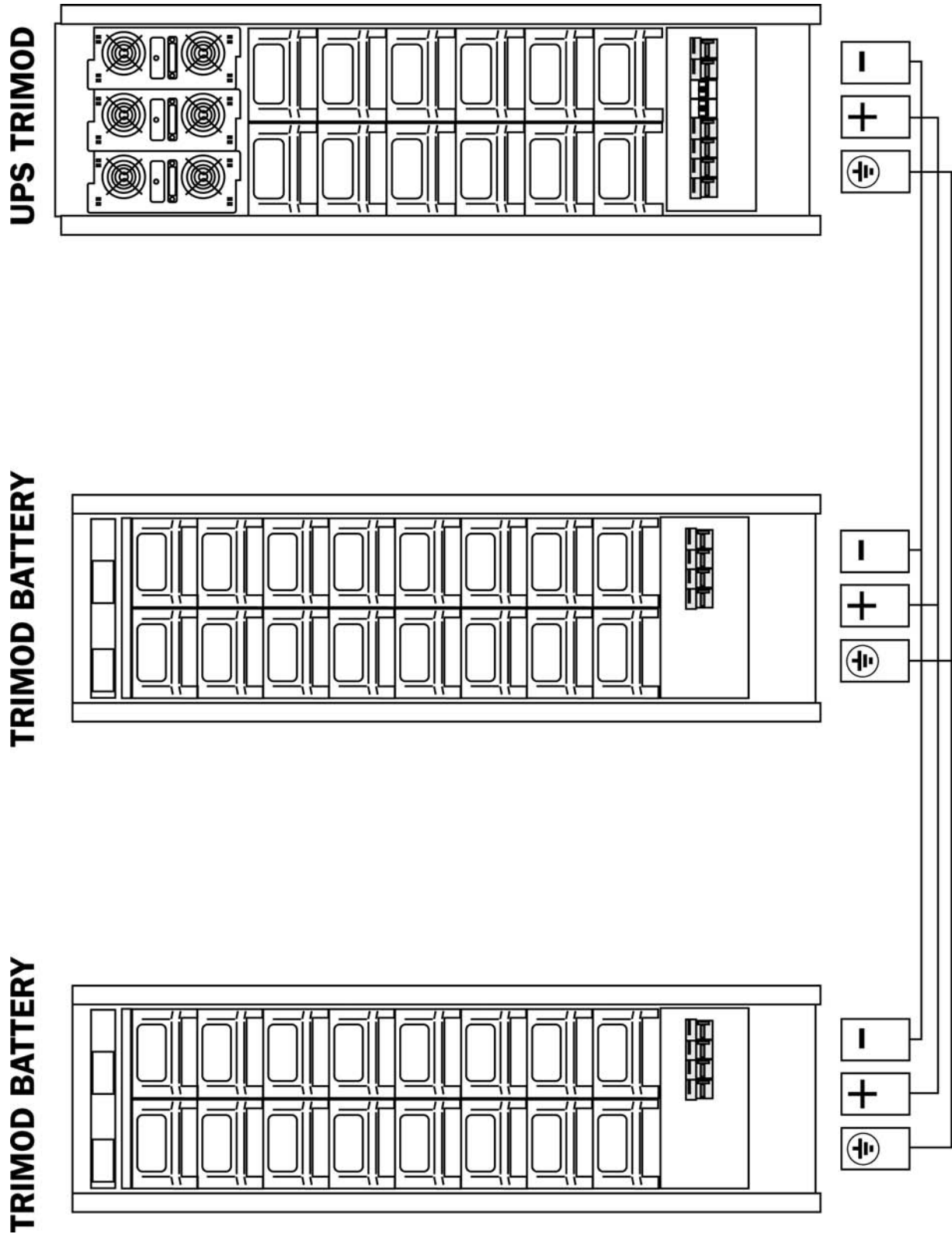


Fig. 7

CONNESSIONE UPS TRIMOD - TRIMOD BATTERY
 CONNECTION UPS TRIMOD - TRIMOD BATTERY

UPS TRIMOD 8 - 10 - 16 - 20

Connection of UPS with three phase input mains supply and three phase output load connection terminals (standard configuration)

Connessione dell'UPS con alimentazione di rete trifase e uscita trifase (standard configuration)

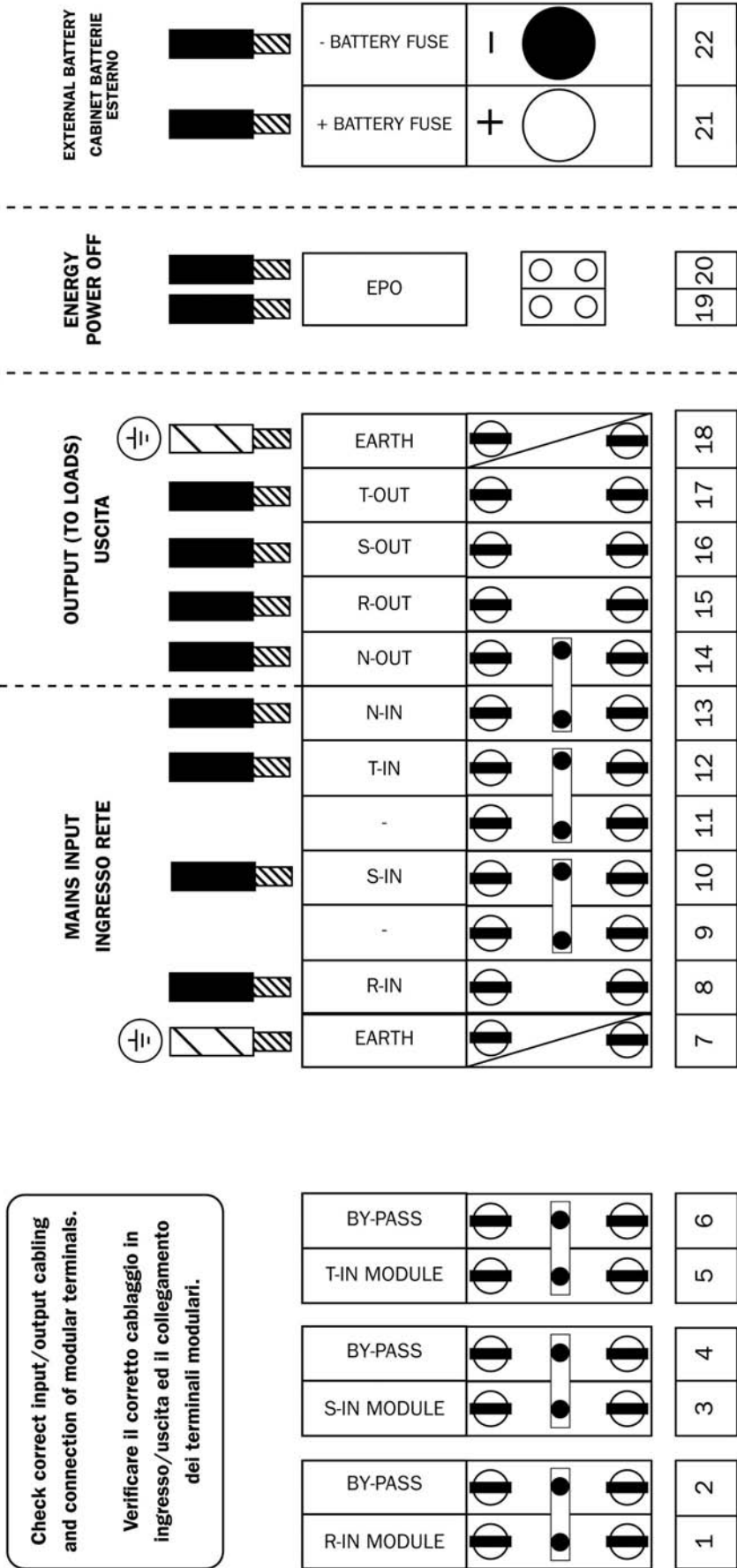


Fig. 8

UPS TRIMOD 8 - 10 - 16 - 20

Connection of UPS with three phase input mains supply and single phase output load connection terminals

Connessione dell'UPS con alimentazione di rete trifase e uscita monofase

Check correct input/output cabling and connection of modular terminals.

Verificare il corretto cablaggio in ingresso/uscita ed il collegamento dei terminali modulari.

To connect the UPS properly see Cap.5 and Fig.14

Per una corretta configurazione dell'UPS vedere Cap.5 e Fig.14


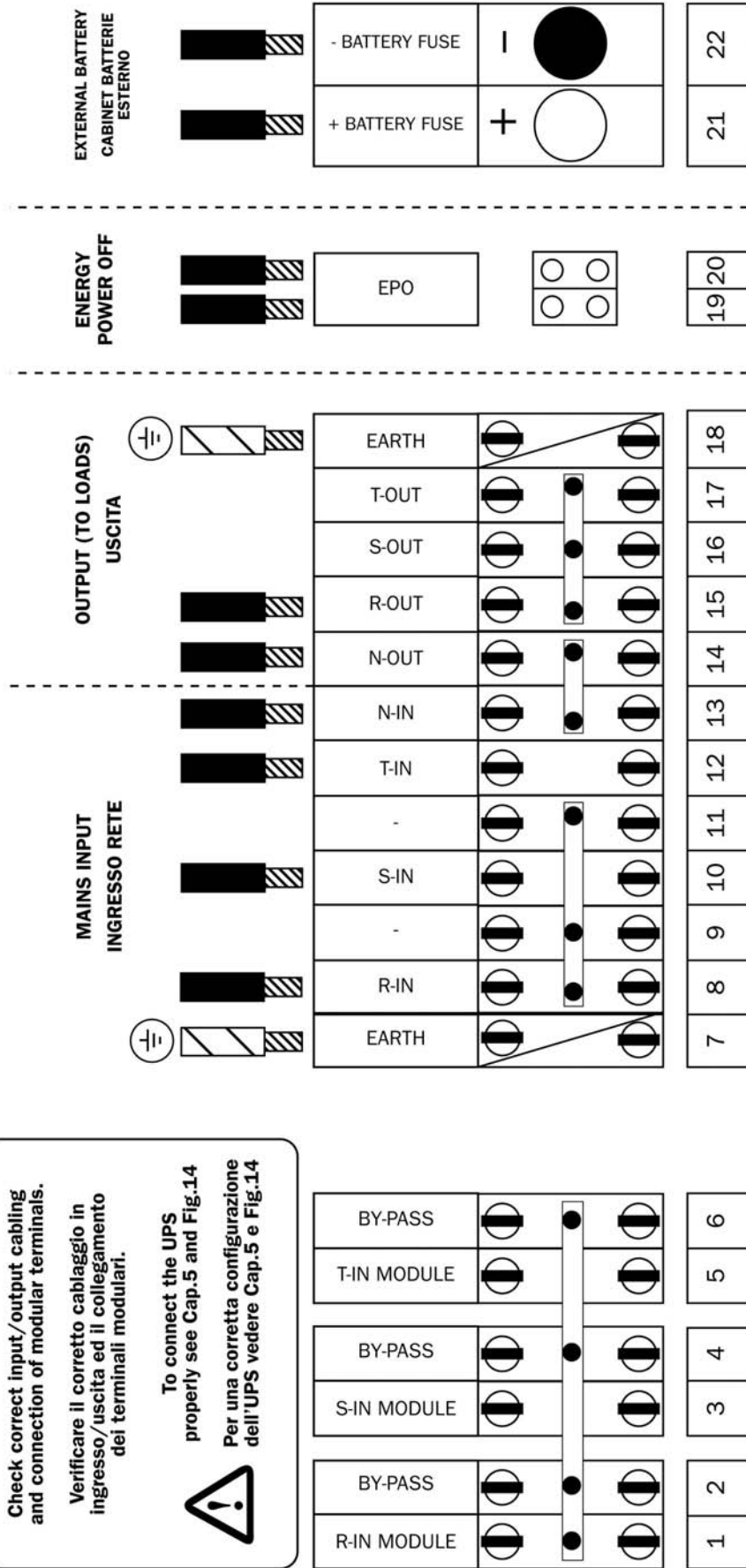



Fig. 9

UPS TRIMOD 8 - 10 - 16 - 20

Connection of UPS with single phase input mains supply and three phase output load connection terminals

Connessione dell'UPS con alimentazione di rete monofase e uscita trifase

Check correct input/output cabling and connection of modular terminals.

Verificare il corretto cablaggio in ingresso/uscita ed il collegamento dei terminali modulari.

To connect the UPS properly see Par. 3.6.5

Per una corretta configurazione dell'UPS vedere Par. 3.6.5


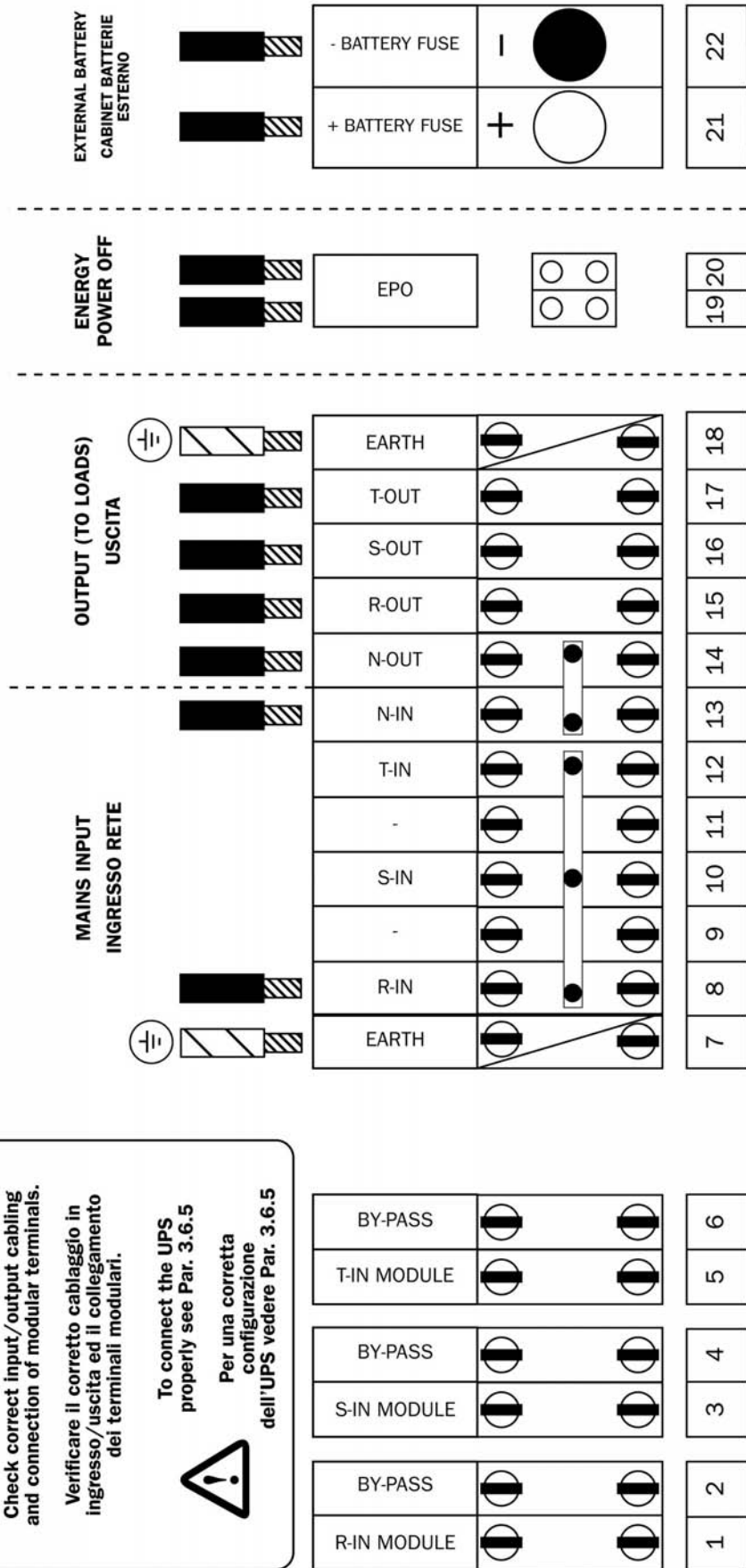



Fig. 10

UPS TRIMOD 8 - 10 - 16 - 20

Connection of UPS with single phase input mains supply and N°1 single phase output load connection terminals

Connessione dell'UPS con alimentazione di rete monofase e N°1 uscita monofase

Check correct input/output cabling and connection of modular terminals.
Verificare il corretto cablaggio in ingresso/uscita ed il collegamento dei terminali modulari.

To connect the UPS properly see Cap.5 and Fig.14
Per una corretta configurazione dell'UPS vedere Cap.5 e Fig.14


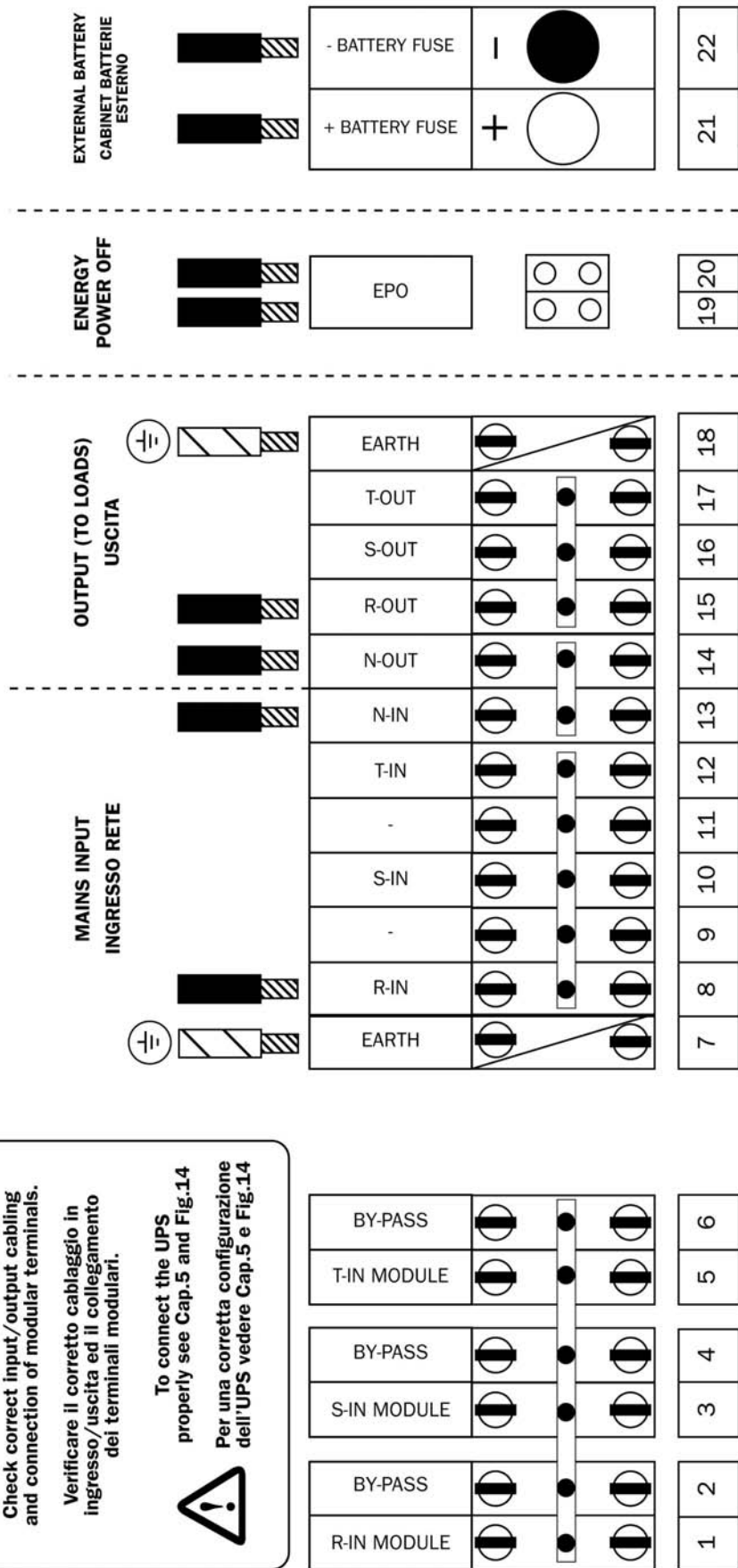



Fig. 11

UPS TRIMOD 30

Connection of UPS with three phase input mains supply and three phase output load connection terminals

Connessione dell'UPS con alimentazione di rete trifase e uscita trifase

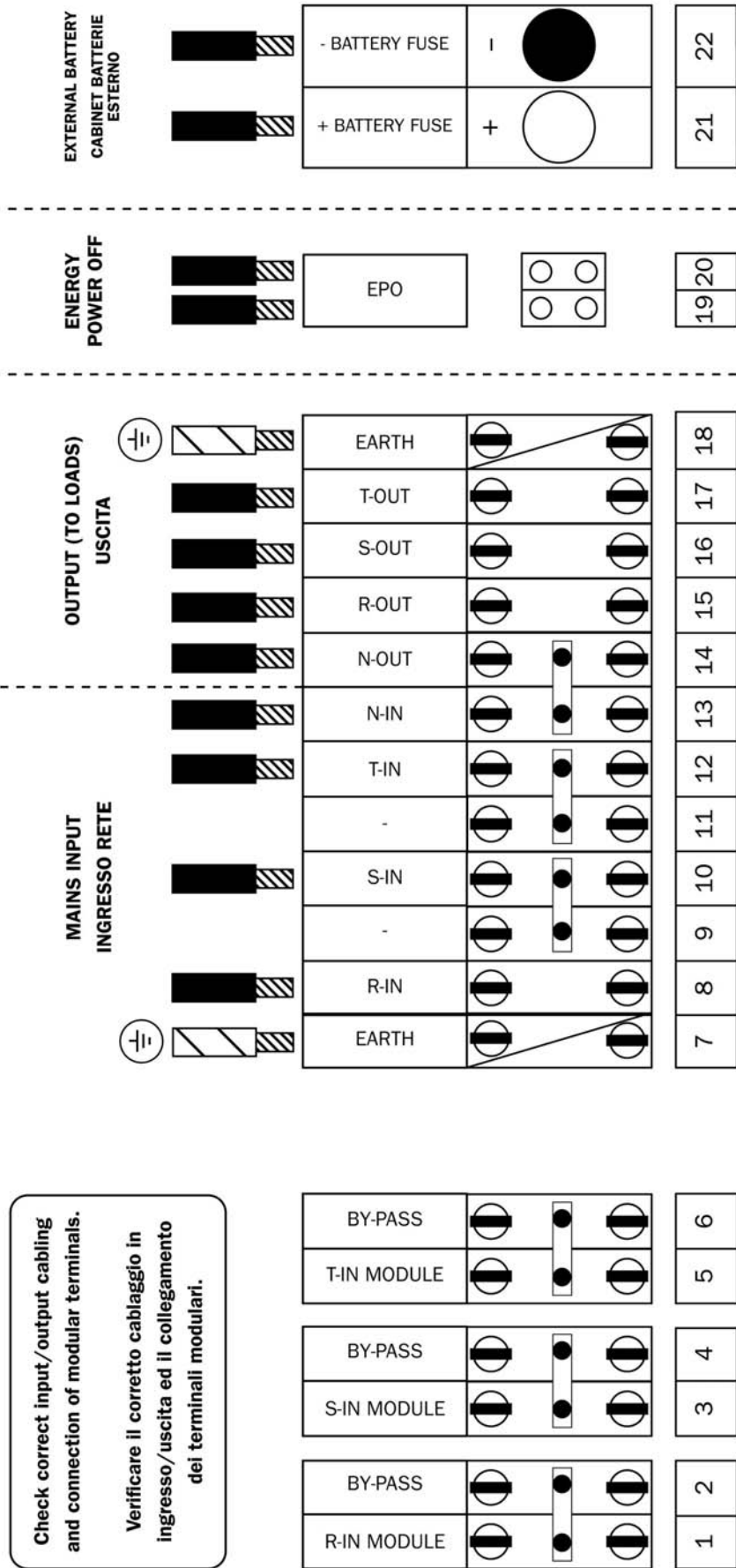


Fig. 13

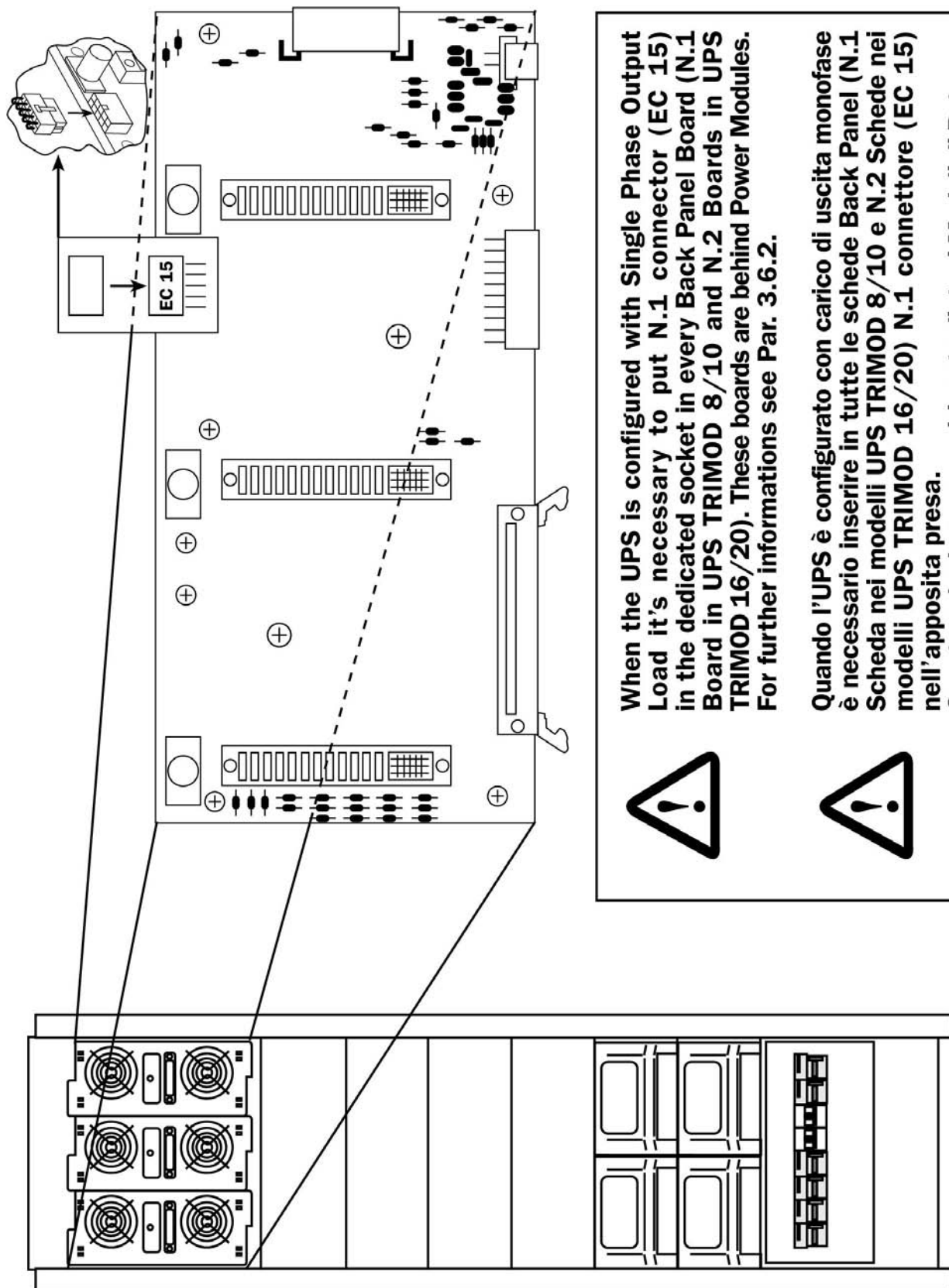


Fig. 14

Collegamento di UPS TRIMOD con carico in uscita MONOFASE
Connection of UPS TRIMOD with SINGLE PHASE output load

Interruttore Blocco di Emergenza (NC = Normalmente Chiuso)
 Emergency Power Off (NC = Normally Closed)

When the UPS is configured with Single Phase Output Load it's necessary to put N.1 connector (EC 15) in the dedicated socket in every Back Panel Board (N.1 Board in UPS TRIMOD 8/10 and N.2 Boards in UPS TRIMOD 16/20). These boards are behind Power Modules. For further informations see Par. 3.6.2.



Quando l'UPS è configurato con carico di uscita monofase è necessario inserire in tutte le schede Back Panel (N.1 Scheda nei modelli UPS TRIMOD 8/10 e N.2 Schede nei modelli UPS TRIMOD 16/20) N.1 connettore (EC 15) nell'apposita presa. Queste schede sono posizionate dietro i Moduli di Potenza. Per ulteriori informazioni vedere Par. 3.6.2.

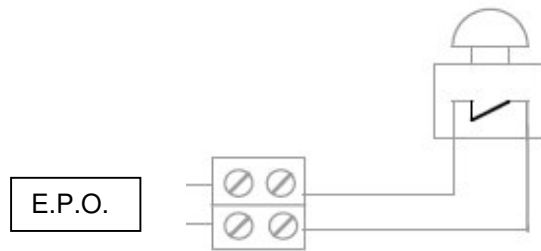


Fig. 15

Cablaggio per l'interruttore SPEGNIMENTO AUTOMATICO
Drawing of the wiring for the EMERGENCY POWER OFF



Fig. 16

Interfaccia seriale RS232 di manutenzione
Maintenance RS232 serial interface

Porta seriale RS 232	Interfaccia a livelli logici	Interfaccia a relè
RS 232 serial port	Logic level interface	Dry contact interface



Fig. 17

Interfacce di comunicazione (lato posteriore)
Communication interfaces (back side)

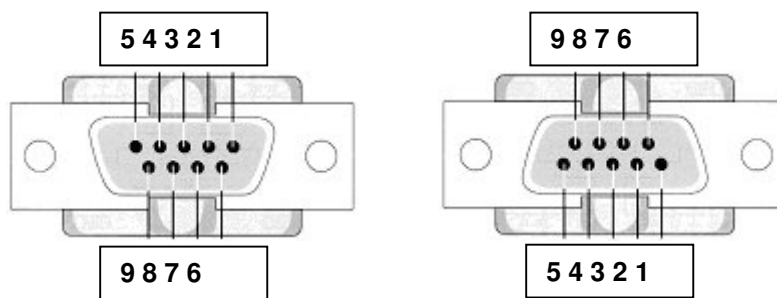


Fig. 18

Porta seriale RS 232
RS 232 serial port

Interfaccia a livelli logici
Logic level interface

12 Tabelle - Tables:

Potenza - Power	Cavo Ingresso - Input Cable		Cavo Uscita - Output Cable	
	Single Phase	Three Phase	Single Phase	Three Phase
8 / 10 kVA	3 x (10 mm ²)	5 x (4 mm ²)	3 x (10 mm ²)	5 x (4 mm ²)
16 / 20 kVA	3 x (25 mm ²)	5 x (10 mm ²)	3 x (25 mm ²)	5 x (10 mm ²)

30 kVA	-	5 x (16 mm ²)	-	5 x (16 mm ²)
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Tab. 1

**Sezioni cavi raccomandate per UPS TRIMOD
Recommended Cable Sections for UPS TRIMOD**

Potenza - Power	Fusibile - Fuse		
	F L1	F L2	F L3
8 / 10 kVA (*)	20A 500V gG (14 x 51)	20A 500V gG (14 x 51)	20A 500V gG (14 x 51)
8 / 10 kVA (**)	50A 500V gG (14 x 51)	20A 500V gG (14 x 51)	20A 500V gG (14 x 51)
16 / 20 kVA (*)	40A 500V gG (22 x 58)	40A 500V gG (22 x 58)	40A 500V gG (22 x 58)
16 / 20 kVA (**)	100A 500V gG (22 x 58)	40A 500V gG (22 x 58)	40A 500V gG (22 x 58)
30 kVA	50A 500V gG (22 x 58)	50A 500V gG (22 x 58)	50A 500V gG (22 x 58)

Tab. 2

**Valori fusibili fase raccomandati per UPS TRIMOD
Recommended Phase Fuse Ratings for UPS TRIMOD**

(*) Ingresso Trifase / Uscita Trifase (**) Ingresso Trifase / Uscita Monofase
Three phase Input / Three phase Output Three phase Input / Single phase Output

Potenza - Power	Fusibile di batteria - Battery fuse			
	UPS TRIMOD		TRIMOD BATTERY	
	F B+	F B-	F B+	F B-
8 / 10 kVA	50A 500V aR (14 x 51)	50A 500V aR (14 x 51)	25A 500V aR (22 x 58)	25A 500V aR (22 x 58)
16 / 20 kVA	100A 500V aR (22 x 58)	100A 500V aR (22 x 58)	50A 500V aR (22 x 58)	50A 500V aR (22 x 58)
30 kVA	80A 500V aR (22 x 58)	80A 500V aR (22 x 58)	80A 500V aR (22 x 58)	80A 500V aR (22 x 58)
TRIMOD BATTERY	-	-	80A 500V aR (22 x 58)	80A 500V aR (22 x 58)

Tab. 3

**Valori fusibili batteria raccomandati
Recommended Battery Fuse Ratings**

Potenza Power	Interruttore Automatico Ingresso Consigliato Recommended Input Automatic Breaker	Fasi Ingresso / Uscita Input / Output Phases
8 kVA	16A (3P+N) curva C	3φ / 3 φ
	50A (3P+N) curva C	3φ / 1 φ
	50A (1P+N) curva C	1φ / 1 - 3 φ
10 kVA	20A (3P+N) curva C	3φ / 3 φ
	63A (3P+N) curva C	3φ / 1 φ
	63A (1P+N) curva C	1φ / 1 - 3 φ
16 kVA	32A (3P+N) curva C	3φ / 3 φ
	100A (3P+N) curva C	3φ / 1 φ
	100A (1P+N) curva C	1φ / 1 - 3 φ
20 kVA	40A (3P+N) curva C	3φ / 3 φ
	100A (3P+N) curva C	3φ / 1 φ
	100A (1P+N) curva C	1φ / 1 - 3 φ
30 kVA	63A (3P+N) curva C	3φ / 3 φ

Tab. 4

**Interruttore Automatico Ingresso Consigliato
Recommended Input Automatic Breaker**

Potenza Power	Interruttore Differenziale - Corrente Differenziale Differential Breaker - Differential Current
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8 kVA	>= 300 mA
10 kVA	>= 300 mA
16 kVA	>= 300 mA
20 kVA	>= 300 mA
30 kVA	>= 300 mA

Tab. 5

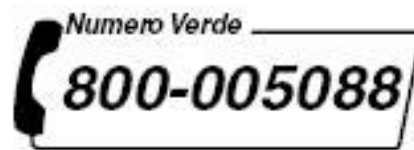
Interruttore Differenziale - Corrente Differenziale
Differential Breaker - Differential Current

Models Modelli	Nom. Power Potenza Nom. (kVA)	Aut. 80% min	Total Cabinet	Size (WxHxD) Misure (Lxhxp) (mm)	Part Number Codice
TRIMOD 8	8	10	1	(414X1345X618)	P45010A
		15	1	(414X1345X618)	P45010B
		20	1	(414X1345X618)	P45010C
		30	1	(414X1345X618)	P45010D
		45	1	(414X1345X618)	P45010E
		60	2	2X(14X1345X618)	P45010F
TRIMOD 10	10	8	1	(414X1345X618)	P45020A
		15	1	(414X1345X618)	P45020B
		25	1	(414X1345X618)	P45020C
		35	1	(414X1345X618)	P45020D
		45	2	2X(414X1345X618)	P45020E
		60	2	2X(414X1345X618)	P45020F
TRIMOD 16	16	10	1	(414X1345X618)	P45030A
		15	1	(414X1345X618)	P45030B
		20	2	2X(414X 1345X621)	P45030C
		33	2	2X(414X 1345X621)	P45030D
		40	2	2X(414X 1345X621)	P45030E
		53	3	3X(414X 1345X621)	P45030F
		75	3	3X(414X 1345X621)	P45030G
TRIMOD 20	20	6	1	(414X1345X618)	P45040A
		9	2	2X(414X1345X618)	P45040B
		15	2	2X(414X 1345X621)	P45040C
		25	2	2X(414X 1345X621)	P45040D
		35	2	2X(414X 1345X621)	P45040E
		45	3	3X(414X 1345X621)	P45040F
		60	3	3X(414X 1345X621)	P45040G
TRIMOD 30	30	9	2	2X(414X 1345X621)	P45050A
		15	2	2X(414X 1345X621)	P45050B
		25	3	3X(414X 1345X621)	P45050C
		35	3	3X(414X 1345X621)	P45050D
		45	4	4X(414X 1345X621)	P45050E
		60	4	4X(414X 1345X621)	P45050F
		80	4	4X(414X 1345X621)	P45050G

Tab. 6

Lunghe autonomie
Long Autonomies

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