



Uninterruptible Power Supplies  
TRIMOD

UPS

# T H E M E T A S Y S T E M G R O U P

Established in 1973 in Reggio Emilia, MetaSystem has been designing and manufacturing electronics for professional and advanced applications for over 30 years.

Regular investments in Research and Development, logistic and productive structures plus a number of strategic acquisitions, have made MetaSystem an organization that's widespread in both Italy and abroad, with branches and dealers at work throughout the world.

The MetaSystem group is the acknowledged leader when it comes to electronics applied to the automotive industry, energy, telecommunications and broadcasting installations.

When it comes to the automotive industry, MetaSystem is one of the main European manufacturers of anti-theft systems and conventional and satellite alarms for cars and motorbikes in the AfterMarket sector, for Original Installations and the Accessory Lines of the main vehicle manufacturers. Moreover, MetaSystem has also developed a range of components for the automotive market that vary from parking sensors to Bluetooth systems, all designed and produced in accordance with the highest quality standards and the most pioneering technologies available in the world.

Always abreast of market developments, MetaSystem recently created a Division dedicated to Telematics for civil and industrial security systems, such as vehicle monitoring and remote management.



For the energy sector, MetaSystem has concentrated on developing powering systems with particular emphasis on UPS and voltage stabilizers, all of which are highly appreciated on the market for their total reliability, quality and innovation.

Drawing from the experience acquired during over 30 years of work in the energy sector, MetaSystem now offers a series of products for the renewable energy sources, such as photovoltaic systems in networks.



# T R I M O D

MetaSystem has developed a ground-breaking and unique project. It's TRIMOD®, the UPS with 8, 10, 16, 20, 30, 45 and 60 kVA power ratings that can adapt immediately to the changing needs of the loads it protects: more power, longer autonomy, redundancy. In actual fact, the concepts on which the TRIMOD® projects are based are modularity, expandability, redundancy: concepts which, besides assuring the utmost reliability, also guarantee considerable savings from the economic aspect.

TRIMOD® is a modular UPS whose basic module can be programmed individually so as to obtain the required input/output configuration.

This means that three-phase or single-phase voltage values can be handled on the input and output so as to obtain the classic three/three, three/single, single/three and single/single combinations as needed, but that's not all: the UPS can provide single-phase and three-phase lines at the same time, or two or more single-phase lines of even different power ratings (on request) on the output.

Moreover, each configuration can have both complete and partial redundancy; for instance, there can be both a normal (or redundant) three-phase line and a redundant (or normal) single-phase line on the output. Each basic module has a microcontroller that supervises the main functions of the individual power unit, monitors the module to ensure that it functions correctly and warns of any faults. The modularity concept has also been applied to the batteries, which are supplied in individual removable drawers. THDi = 3% - Power Factor > 0,99 - High Efficiency - Highly Reliable - Easy to install and service.

**MODULAR**  
**REDUNDANT**  
**SCALABLE**  
**ADAPTABLE**

**UPS**

**MetaSystem**



# T R I M O D



The 8 / 10 kVA TRIMOD is made up of three 2.7 / 3.4 kVA power modules and can accommodate up to 12 battery drawers. Extra battery cabinets can be connected up in case long backup times are required.



The 16 / 20 kVA TRIMOD is made up of six 2.7 / 3.4 kVA power modules and can accommodate up to 8 battery drawers. Extra battery cabinets can be connected up in case long backup times are required.



The 30 kVA TRIMOD is made up of one power cabinet, which houses nine 3.4 kVA power modules, and one battery cabinet. Additional battery cabinets can be connected up in case long backup times are required.

## REDUNDANT MODULAR ARCHITECTURE

Redundant-modular architecture is the best solution for protecting the vital node points of a company.

### ADVANTAGES

- The powered devices are monitored by a single system
- Modular expandability
- Redundant modules
- Easy maintenance
- Low running cost
- Small size

## EFFICIENCY

The UPS in the TRIMOD line pay particular attention to both the energy drawn from the network and the power supplied to the user. High Efficiency (>93%), PFC on the Input >0.99, THDi 3%.

### ADVANTAGES:

- Increasing the efficiency means reducing that part of the power absorbed by the UPS but not supplied to the load, and transmitted to the surrounding environment in the form of heat.
- Less heat dispersed in the environment means less need for ventilating or conditioning systems in the installation site.
- A high PFC on the input means doing away with the cost of power factor correction and, thus, increased tariffs
- There's no need to oversize a genset (if any) installed on the supply side of the UPS

## EXPANDABILITY

The majority of the UPS systems available on the market are not modular and cannot be expanded. This means that the system must be oversized at the start so as to allow for future expansions (which may not even be required).

### ADVANTAGES:

- The TRIMOD modular and expandable systems optimize investments in UPS by adapting to the real needs without precluding future expansions and preventing energy from being unnecessarily wasted.
- Increases the efficiency of the system thanks to the right sizing

## RELIABILITY

To obtain a level of redundancy with a conventional UPS at least 2 must be set in parallel, thus doubling the power purchased, the space occupied and the electricity consumptions. TRIMOD modular architecture provides redundant configurations in a single cabinet.

### ADVANTAGES:

- An UPS with modular redundant architecture can be configured as a power-redundant N+X system. The device will continue to function even if one of the modules is faulty, thus doing away with down times. Clear indications and a generously sized display make faults easy and quick to identify.
- The modular architecture speeds up repairs since the faulty module can just be replaced without having to interrupt the service.
- A high percentage of the faults are resolved during the first assistance intervention.

# T R I M O D



The 45 kVA **TRIMOD** is made up of one power cabinet, which houses nine 5 kVA power modules, and one battery cabinet. Additional battery cabinets can be connected up in case long backup times are required."



The 60 kVA **TRIMOD** is made up of one power cabinet, which houses twelve 5 kVA power modules, and one battery cabinet. Additional battery cabinets can be connected up in case long backup times are required."

## POWER MODULE

The basic module, available in three power sizes, i.e. 2.7 kVA, 3.4 kVA and 5.0 kVA, is made up of following main functional blocks:

- Control and monitoring logic (managed by a microprocessor)
- Rectifier/PFC
- Inverter
- Booster
- Battery Charger
- Automatic by-pass

The Plug & Play concept the power unit has been designed with, makes power expansions and maintenance operations extremely simple. Each module is connected in parallel with other identical modules, until the requested power for the UPS System has been reached.

Power modules are independent from each other, and can keep on working even if one of them should get faulty. In the front side of the module, a led with traffic light coding allows a quick identification of the electronic unit's working status.



## BATTERY "DRAWER"

Battery modules are designed for the easiest installation into dedicated cabinet. No additional operation is required to connect them, apart from inserting them into the cabinet itself.

Their limited weight makes their transportation very light, thus their maintenance or replacement as well. A drawer consists of 5 (five) 12V batteries - 7.2 Ah or 9 Ah – connected in series. Thanks to its Plug & Play connection, the drawer can be easily removed and inserted into the cabinet. To guarantee the highest safety degree, especially during maintenance, each drawer's voltage is properly divided into two sections (24V and 36V), and is fully available only when the drawer has been inserted into its housing completely.

This ensures compliance with CEI-EN 60950 norm, governing electrical safety and requiring adequate protections and special cares, when dangerous voltages exceeding 50 Vdc are present, with the possibility of a direct contact.

The complete series of batteries consists of at least 20 units, so as to obtain an overall 240 V rated voltage (direct-voltage). Runtime can be increased to a further extent by adding battery drawers in multiples of four, using the dedicated housings both in the UPS Inverter Cabinet (for 8 up to 20 kVA only), and in the Battery "modular cabinets".



## DIGITAL DISPLAY AND ALARM VISUALIZING

TRIMOD is controlled by a microprocessor, and is equipped with a backlit and alphanumeric liquid crystal display (LCD), with 20 characters arranged on 4 lines. The Display is built into the front panel of the UPS, where an operating status indicator is also located, showing TRIMOD's operating status and any alarm conditions by means of a highly enlighten traffic-light code. Four (4) simple buttons situated near the display allow the user to:

- display operating data;
- enter operating parameters;
- analyze the status of each power module;
- select the language in which messages are displayed;
- conduct a series of functional tests.



# TECHNICAL SPECIFICATIONS

MODEL	TRIMOD 8	TRIMOD 10	TRIMOD 16	TRIMOD 20
<b>General Specifications</b>				
Nominal Power	8 kVA	10 kVA	16 kVA	20 kVA
Active Power	6,4 KW	8 KW	12,8 KW	16 KW
Technology	On-Line, Double Conversion (VFI)			
Input/Output Configuration	<b>3/3, 3/1, 1/3, 1/1</b> (user selectable during installation)			
UPS Architecture	Modular, Scalable, Redundant N+X with 2700, 3400 e 5000 VA power modules, housed in only one cabinet			
<b>Input</b>				
Input Voltage	230 V (Single-phase) / 400 V (Three-phase+ N)			
Input Voltage Range	230 V +15%-20% / 400 V +15%-20%			
Input Current THD	3%			
Input Power Factor	>0,99			
Input Frequency	50 Hz/60 Hz (Autosensing)			
<b>Output</b>				
Output Voltage	230 V ± 1% / 400 V ± 1%			
Output Frequency				
Wave Form	Sinusoidal			
Crest Factor	3,5 : 1			
Efficiency				
	on mains (AC/AC on line)	93% max		
	on mains (AC/AC ECO Mode)	98%		
	on battery(DC/AC)	93% max		
Overload Capacity	125% for 2 min. - 150% for 30 secs.			
<b>Batteries</b>				
Runtime	Refer to extended runtime table			
Runtime Extendibility	Yes, internally or with external battery cabinet			
<b>Special Features</b>				
By-pass	Static and electromechanical on each module, independent of each other			
	General automatic			
	Manual (maintenance)			
Signals and Alarms	Wide backlit 4-line, 20 characters, alphanumeric display with real-time monitoring of UPS status. Multicolour status indicator. Acoustic warning.			
Communication Ports	N. 2 RS232 ports, N. 1 Logic level port, N. 4 Dry contacts ports (relay contacts, NC / NO selectable), N.1 Slot for SNMP adapter connection			
Software	UPS Communicator (free-of-charge download from our website <a href="http://www.metasystem.it">www.metasystem.it</a> )			
Protection	Electronic protection against overloads, short circuits and excessive battery discharge. Operation blocked at end of runtime. Inrush limitation when switching on. EPO contact (emergency power off)			
Input/Output Connectivity	Terminal board on Omega bar			
Isolation Transformer	<b>Optional</b>			
<b>Mechanical Specifications</b>				
Installed Power Modules	3x 2,7 kVA	3x 3,4 kVA	6x 2,7 kVA	6x 3,4 kVA
Installed Battery Drawers	Subject to selected runtime.			
Net Weight	110 Kg	110 Kg	130 Kg	130 Kg
Dimensions (W x H x D) [mm]	414 x 1345 x 628 mm			
<b>Environmental Specification</b>				
Working Temperature	0° - 40° C			
Relative Humidity	20% - 80% non condensing			
Acoustic Noise @ 1 m	42 - 46 dBA			
<b>Standards</b>				
Standards	EN 62040-1-1, EN 50091-2, EN 62040-3			

# TECHNICAL SPECIFICATIONS

MODEL	TRIMOD 30	TRIMOD 45	TRIMOD 60
<b>General Specifications</b>			
Nominal Power	30 kVA	45 kVA	60 kVA
Active Power	24 KW	36 KW	48 KW
Technology	On-Line, Double Conversion (VFI)		
Input/Output Configuration	<b>3/3</b>		
UPS Architecture	Modular, Scalable, Redundant N+X with 2700, 3400 e 5000 VA power modules, housed in only one cabinet		
<b>Input</b>			
Input Voltage	400 V (Three-phase+ N)		
Input Voltage Range	400 V +15%-20%		
Input Current THD	3%		
Input Power Factor	>0,99		
Input Frequency	50 Hz/60 Hz (Autosensing)		
<b>Output</b>			
Output Voltage	400 V ± 1%		
Output Frequency			
Wave Form	Sinusoidal		
Crest Factor	3,5 : 1		
Efficiency			
	on mains (AC/AC on line)	93% max	
	on mains (AC/AC ECO Mode)	98%	
	on battery(DC/AC)	93% max	
Overload Capacity	125% for 2 min. - 150% for 30 secs.		
<b>Batteries</b>			
Runtime	Refer to extended runtime table		
Runtime Extendibility	Yes, internally or with external battery cabinet		
<b>Special Features</b>			
By-pass	Static and electromechanical on each module, independent of each other		
	General automatic		
	Manual (maintenance)		
Signals and Alarms	Wide backlit 4-line, 20 characters, alphanumeric display with real-time monitoring of UPS status. Multicolour status indicator. Acoustic warning.		
Communication Ports	N. 2 RS232 ports, N. 1 Logic level port, N. 4 Dry contacts ports (relay contacts, NC / NO selectable), N.1 Slot for SNMP adapter connection		
Software	UPS Communicator (free-of-charge download from our website <a href="http://www.metasystem.it">www.metasystem.it</a> )		
Protection	Electronic protection against overloads, short circuits and excessive battery discharge. Operation blocked at end of runtime. Inrush limitation when switching on. EPO contact (emergency power off)		
Input/Output Connectivity	Terminal board on Omega bar		
Isolation Transformer			
<b>Mechanical Specifications</b>			
Installed Power Modules	9x 3,4 kVA	9x 5 kVA	12x 5 kVA
Installed Battery Drawers	Subject to selected runtime.		
Net Weight	154 - 70 Kg	165 - 75 Kg	194 - 75 Kg
Dimensions (W x H x D) [mm]	2x 414 x 1345 x 628 mm	2 x 414 x 1645 x 628 mm	
<b>Environmental Specification</b>			
Working Temperature	0° - 40° C		
Relative Humidity	20% - 80% non condensing		
Acoustic Noise @ 1 m	42 - 46 dBA		
<b>Standards</b>			
Standards	EN 62040-1-1, EN 50091-2, EN 62040-3		

**MetaSystem**  
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