

## TRIMOD MCS 5 kW

3 109 91 UPS TRIMOD MCS 5kW 1h



1. GENERAL SPECIFICATIONS .....	1
2. TECHNICAL SPECIFICATIONS.....	2

### 1. General specifications

The Legrand TRIMOD MCS 5 UPS is a high efficiency UPS on line double conversion with PWM Hi-Frequency technology. It has passing through neutral and Modular Architecture with the possibility to have N+X redundancy. The nominal power is 5 kVA – 5 kW, complying with EN50171.

#### 1. Modularity

The TRIMOD MCS 5 UPS has an innovative modular architecture, it means that it's composed by identical modules (5kW single phase power module) that, working in parallel, form the power section of the UPS. Each power module can be considered a complete single phase UPS who works in parallel with the others in order to supply the required power.

The power module can be divided in the following functional blocs:

- Rectifier/PFC
- Inverter
- Battery Charger
- Command Logic circuit
- Automatic By-pass

It's possible to reach different power and redundancy levels according to the number of installed power module.

#### 2. Scalability

The cabinet is designed to accept different number of power modules, this allows to create a huge range of configurations. It's possible to increase power directly on site easily, without changing settings nor adjustments. This operation can be led without using any kind special equipment.

#### 3. Redundancy

You can easily set up the TRIMOD MCS 5 UPS as a N+X power redundant system. It will be enough to define how many 5kW power modules have to be installed inside the cabinet. We can reach redundancy thanks to the load sharing; the overall load is equally shared between the power modules and in case of failure the still working modules will back up the faulty one.

#### 4. Architecture

The TRIMOD MCS 5 UPS has single phase input and output; however, it's possible to set up the input/output as single or three-phase, where applicable. The system uses distributed parallel architecture. The nominal power available is determined by the sum of the power module per phase. For this reason the UPS is able, if properly sized, to supply the load in case of failure or replacement of one or more power modules (redundancy). It's possible to configure non permanent output without additional devices.

#### 5. By-Pass

Each power module has an independent automatic bypass system that switch the load on the input line in case overload, over temperature, inverter failures, and any kind of anomalies. The UPS is equipped as standard with the manual by-pass, controllable through a dedicated switch.

#### 6. Dual Input

On the front side of TRIMOD MCS 5 UPS there are 2 input lines, one for the main and one for the auxiliary line. These two input lines are bridged by default, but the connection can be easily removed obtaining two independent input lines during installation or commissioning.

#### 7. Batteries

Batteries are lead-acid, sealed, free maintenance, valve regulated and arranged, with an estimated life of 10 years (Long Life) and are arranged inside the UPS or in the external battery cabinet; the battery strings are composed by 20 battery blocks.

#### 8. Communication and user interface

The TRIMOD MCS 5 UPS is equipped with a very simple and intuitive display; the UPS sets up a real time monitoring of all the data concerning operating conditions, efficiency, consumption, load and load variations, such as in/output parameters (power, voltage, frequency, load, etc..).

Here below the measurements and working parameters available on the display:

Input

Current:

- RMS value
- Peak value
- Crest Factor

Voltage:

- Ph-N RMS value
- Ph-Ph RMS value
- Bypass Line Voltage

Power:

- Nominal (VA)
- Active (W)
- Power Factor
- Frequency

Output

Current:

- RMS value
- Peak value
- Crest Factor

Voltage:

- Ph-N RMS value
- Ph-Ph RMS value

## TRIMOD MCS 5 kW

3 109 91 UPS TRIMOD MCS 5kW 1h

### Power:

- Nominal (VA)
- Active (W)
- Power Factor
- Frequency

### Batteries:

- Voltage
- Capacity
- Current
- History data
- Residual capacity
- Charging status

### Misc.:

- Internal temperature
- Fan speed
- HV DC BUS voltage

### Data Log:

- By-pass intervention
- Overheats
- Number of battery switching
- Number of discharges

### Time:

- Battery operation
- Mains operation

The UPS also allows the following settings by display:

#### Output:

- Voltage
- Frequency
- Phases configuration

#### Input:

- Enable freq, synchronizing (PLL)
- Extended synchronizing range (Extended PLL)

#### By-pass:

- Enabling
- Forced
- DIP speed
- Eco Mode
- Start up on battery
- Threshold value
- Auto restart
- Max time on battery

The TRIMOD MCS UPS has the CE Mark accordingly with the EU Directives 2006/95, 2004/108 and it complies with the following standards:

- EN 62040-1 "General rules for electric safety"
- EN 62040-2 "Electromagnetic compatibility and immunity (EMC)"
- EN 62040-3 "Performance and testing rules"
- EN 50171 "Central power supply systems"

Neutral	Neutral passing through
Inverter technology	2 IGBT levels
By-pass type	Static, electro-mechanic and maintenance bypass
Output wave form on mains run	Sinusoidal
Output wave form on battery run	Sinusoidal
Transfer time	Zero

### 2. Input

Nominal voltage	230V 1ph+N+PE
Voltage range	-20% +15%
Frequency	50 Hz or 60Hz (autosensing)
THDlin	< 3%
Power factor	> 0.99

### 3. By-pass

Nominal voltage	230V 1ph+N+PE
Voltage range	230V -20% +15%
Frequency	50/60Hz from +/- 0.5Hz to +/- 7Hz
Manual by-pass	Included
Transfer time	Zero

### 4. Output with mains (AC-AC)

Nominal voltage	230V 1ph+N+PE
Nominal power	5 kVA
Active power	5 kW
Active power accordingly to EN50171	4,16 kW
Efficiency (AC/AC)	Up to a 96%
Output voltage tolerance (static)	± 1%
THDv on nominal power (linear load)	< 0,5%
THDv on nominal power (not linear load P.F.=1)	< 1%
Frequency	50 Hz or 60 Hz (selectable)
Frequency tolerance	± 0,1% Synchronized with input frequency / from +/- 1% to +/- 14% selectable
Current crest factor	3:1 accordingly with IEC 62040-3
Overload capability:	
Ongoing	120%, with no bypass intervention
10 min	135%, with no bypass intervention
60 sec	150%, load rate with no bypass intervention

## 2. Technical specifications

### 1. General specifications

UPS topology	Online double conversion VFI SS 111
Architecture of the UPS	Modular, scalable, redundant based on power modules all settled in one cabinet
In/Out phase configuration	1-1

## TRIMOD MCS 5 kW

3 109 91 UPS TRIMOD MCS 5kW 1h

### 5. Output in battery run (DC-AC)

Nominal voltage	230V 1ph+N+PE
Nominal power	5 kVA
Active power	5 kW
Active power accordingly to EN50171	4,16 kW
Output voltage tolerance (static)	± 1%
THDv on nominal power (0% -100% / 100% - 0% load)	± 1%
THDv on nominal power (linear load)	< 0,5%
THDv on nominal power (non linear load P.F.=1)	< 1%
Frequency	50 Hz or 60 Hz (autosensing)
Frequency tolerance	± 0,1%
Current crest factor	3 :1 accordingly with IEC 62 040-3
Overload capability:	
Ongoing	120%
10 min	135%
60 sec	150%

### 6. Batteries

Type	Lead Acid, sealed, free maintenance VRLA (estimated life 10 years)
Single battery voltage	12V <sub>DC</sub>
Nominal UPS battery voltage	240V <sub>DC</sub>
Battery charger type	PWM hi efficiency, one in each power module
Charging cycle	Smart Charge technology 3-step advanced cycle
Max charging current	2,5 A each power module
Recharge time	<12 h up to 80% of whole autonomy
Autonomy	1h

### 7. Mechanical and miscellaneous

Net weight: UPS	256,5 kg
Dimensions (WxHxD)	414 x 628 x 1370 (mm)
Colour	RAL 7016 (dark grey)
Communication interface	2 x RS232 ports for service, 1 x logic level port, 5 relay contacts, 1 slot for optional interfaces
Input/Output connections	Through terminals on DIN bar
Installed power modules	1 (up to 3 modules)
Installable battery drawers	3 Battery Kit

### 8. Environmental specs

Noise level @ 1m	< 46dBA
Working temperature range	From 0°C to +40°C
Stock temperature range	From -20°C to +50°C (excluded batteries)
Humidity range	0-95% not condensing
Protection degree	IP20