87045 LIMOGES Cedex
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TRIMOD MCS 80 kW

3 10 999 UPS TRIMOD MCS 80kW
4 x 3 10 811 BATTERY CABINET TRIMOD 80kW

1. General specifications

The Legrand TRIMOD MCS 80 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 80 kVA – 30 kW, complying with EN50171.

1. Modularità

The TRIMOD MCS 80 UPS has an innovative modular architecture, it means that it's composed by identical modules (6,7 kW 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 80 modular UPS as a N+X power redundant system. It will be enough to define how many 6,7 kW 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 80 UPS has three 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 80 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 80 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

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Output
Current:
• RMS value
• Peak value
• Crest Factor
Voltage:
• Ph-N RMS value
• Ph-Ph RMS value
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”

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	3-3
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	380, 400, 415 3ph+N+PE
Voltage range	-20% +15%
Frequency	50 Hz o 60Hz (autosensing)
THDIin	< 3%
Power factor	> 0.99

3. Bypass

Nominal voltage	400V 3ph+N+PE
Voltage range	400V -20% +15%
Frequency	50/60Hz from +/- 0.5Hz to +/- 7Hz
Manual by-pass	Included
Transfer time	Zero

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4. Uscita (funzionamento a rete AC-AC)

Nominal voltage	380, 400, 415 3ph+N+PE
Nominal power	80 kVA
Active power	80 kW
Active power accordingly to EN50171	66,7 kW
Efficiency (AC/AC)	Fino 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 10 min 60 sec	 120% with no bypass intervention 135% with no bypass intervention 150% with no bypass intervention

5. Output in battery run (DC-AC)

Nominal voltage	380, 400, 415 3ph+N+PE
Nominal power	80 kVA
Active power	80 kW
Active power accordingly to EN50171	66,7 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 10 min 60 sec	 120% 135% 150%

6. Batteries

Type	Lead Acid, sealed, free maintenance VRLA (estimated life 10 years)
Single battery voltage	$12V_{DC}$
Nominal UPS battery voltage	$240V_{DC}$
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. 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

8. Mechanical and miscellaneous

Net weight: UPS Battery cabinet	222 kg 4 x 790 kg
Dimensions: UPS (L x H x P) Battery cabinet(L x H x P)	414 x1650 x 628 (mm) 600 x 1635 x 800 (mm)
Colour	RAL 7016 (grigio scuro)
Comunication 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	9
Installable battery drawers	-