


MUST900

30-900 kVA Threephase

- DATACENTER & SERVERS
- INTERNET CENTERS
- LOCAL AREA NETWORKS (LAN)
- TELECOMMUNICATION DEVICES
- EMERGENCY APPLICATION

GTEC
Quality Energy Provider

Smart Energy
Solutions

Overview

- MODULAR UPS SYSTEM WITH HOT SWAPPABLE UNITS
- ENERGY SAVING
- SMART MAINTENANCE MANAGEMENT
- TOP LEVEL ELECTRICA L PERFORMANCES
- USER FRIENDLY LARGE DISPLAY

MUST900 represents the last generation of modular UPS which combines high flexibility, the most advanced electronic design and a strong structure with an intelligent management control.

Advantages

FLEXIBILITY

Modular UPS usually guarantees a higher availability in comparison with the stand alone UPS. In MUST900 these characteristics are particularly evident, due to its hot swappable components, such as the UPS units and the centralized bypass. Moreover, with additional cabinets, working in parallel bypass, it can reach the large power of 900kVA.

BEST ELECTRONIC DESIGN

The three level inverter technology, with digital control, and the high quality components used, allow the best electrical performances such as an efficiency of more than 95% and an input PF 0.99, with a current distortion lower than 3% (THD).

EFFICIENT ENERGY SAVING

The possibility to control the UPS units, making them work in fewer number (Sleep Mode), means that UPS units work always at maximum efficiency point and so, the system relative consumption is the lowest possible. As a consequence, the electrical energy consumption and its costs are reduced.

MAINTENANCE MANAGEMENT

Total control of all main important parameters in order to perform a preventive maintenance scheduling. Battery test available in automatic or manual mode ensures to prolong the battery lifetime. A pre–alarm signal indicates the battery change moment, before their end of life. Coated PCB boards and an exclusive air ventilation system ensure a longer duration also in critical environment.

Product range

180 kVA

300 kVA

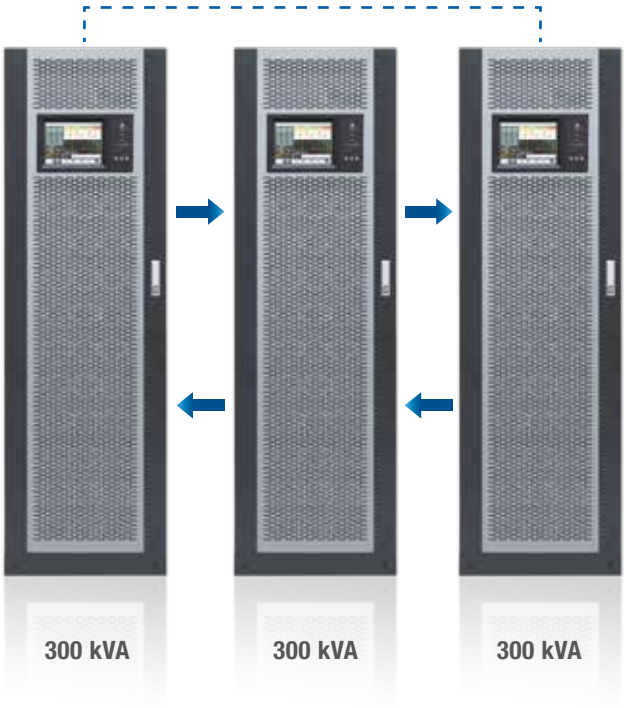
600 kVA

MUST900 - 180kVA
This cabinet is built to host up to 6 units of power module 30 kVA. It is an ideal solution for a medium load that requires redundancy or the possibility to expand the power in the future.
It's possible to connect up to 5 cabinets.
Maximum power 180 kVA, cosφ = 0.9

MUST900 - 300kVA
This cabinet is designed to host up to 10 units of power module 30kVA. It is an ideal solution for medium to large load.
Maximum power 300 kVA, cosφ = 0.9

MUST900 - 600kVA
Built to host up to 20 modules of 30 kVA in 2 different cabinets. The bypass module, one for both cabinet, is hosted in a third cabinet.
Maximum power 600 kVA, cosφ = 0.9

MUST900 - 900kVA
Built to host up to 30 modules in 3 cabinets. This solution is realized with a redundant parallel of 3 cabinet of 30/300.
Additionally the Smart Parallel Management system optimizes the efficiency and the safety of this innovative machine.
The battery system is realized with 2 or more battery strings (it depends about the autonomy request), in order to avoid a single failure point.
Maximum Power 900 kVA, cosφ = 0.9

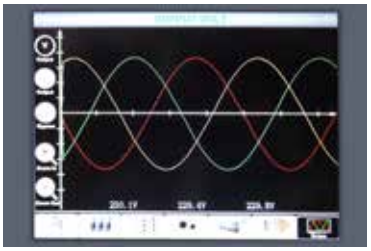


Display & communication

MUST900 has a very large touch screen display, complete and user friendly, that allows to record more than 1000 logs and to perform very accurate analysis. It is possible to monitor all main system parameters, including batteries health and their operating status. All settings are available from the LCD under a three-level password.

Colorfull 10.4"
EPO: Emergency Power Off button.
Led indicator for the system status.

Wide range of functional parameters can be shown through digital or analog-digital indicators.



Integrated oscilloscope for easy and fast analysis of Bypass voltage, output voltage and current waveform.

Discharging timer and total battery working timer permit a prompt analysis of battery health and allow to organize preventive battery maintenance scheduling.

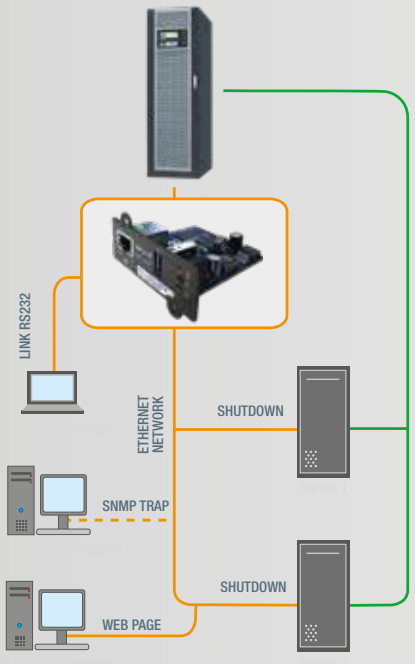
Total control and access of all power modules parameters allows to monitor modules temperature, fans speed and Smart Parallel Management mode.

First commissioning can be executed without using any external tools. The three level password protects against accidental accesses and dangerous settings.

Advanced communication

- Standard RS232 port and RS485 port, with Modbus interface protocol.
- Web/SNMP card: it allows UPS management across a LAN using any of the main network communication protocol – TCP/IP, HTTP and network interface via SNMP. In case of need it can notify users and administrators via email; if prolonged power failure occurs the protected computer systems can launch a safe shut down.
- Standard dry contact for input/output interface: the dry contacts can be programmed setting different meaning of the contacts.
- EPO (Emergency Power Off) equipped as standard.

Direct Connection with Ethernet Network



Best Technology

From the IGBT rectifier, to the three-level inverter, up to the innovative battery charging system: every single component of MUST900 is designed and manufactured taking care of every detail, leading the system to achieve the highest levels of efficiency in the UPS sector.

RECTIFIER

- High performance IGBT rectifier technology, with PFC (power factor control). Input PF>0,99
- Totally digital controlled.
- Very low input harmonic distortion, less than 3%
- Benefit: minimum impact on the mains and optimized upstream protection design.

INVERTER

- Three level inverter technology with IGBT, with high frequency modulation in PWM driving, that guarantees more than 95% efficiency.
- Output power factor 0,9.
- Totally digital control: thanks to the DSP a perfect sine wave is guaranteed even in case of unbalanced load.

BATTERY CHARGER

- Independent powerful internal battery charger in each module.
- Up to 20% of the module's rated power is available to recharge batteries.
- Very wide range of battery capacity installable.
- Redundant battery charge distribution.
- Two level of battery charge, temperature control, end of discharge voltage control.
- Two type of battery test to prevent battery fault. Automatic self test.
- Optimized for the most common battery type.

STATIC BYPASS MODULE

- Centralized static bypass sized for the rated power.
- Totally hot swappable design to reduce at minimum the maintenance activity.

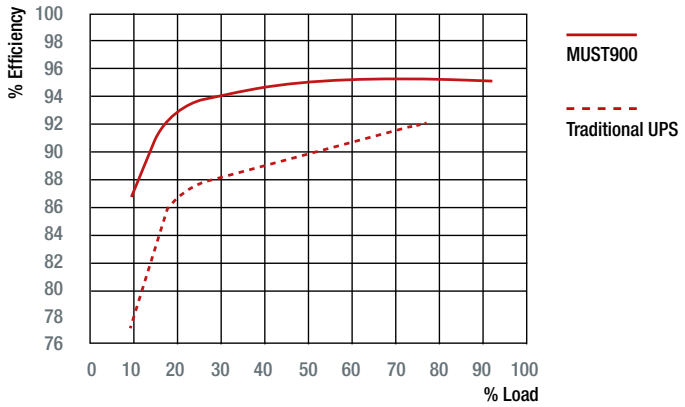
Total hot swappable design for easy and fast insertion in the system.

Solution design

- Every power module is equipped with LCD, allowing immediate analysis on its status and operation.
- Advanced cooling system that avoids direct airflows on the boards. This feature increases protection of the PCBs, allowing the highest lifetime and safety of the modules.
- Power modules with automatic configuration.
- Totally painted PCBs guarantee longer lifetime of the module, especially for dust environments and salt air applications.

Green technology

- Modular structure allows to achieve the requested power using only the necessary number of modules.
- The yield curve reaches 95% efficiency at 50% of load.
- Excellent input and output electrical performances, such as very low harmonic distortion to the mains, mean a clean electrical network without disturbances to other critical loads, as well as lower energy losses.



Smart Parallel Management

Smart Parallel Management is the innovative power modules control system that maximizes UPS yield and life.
Depending on the requirements, the system is able to automatically manage modules operation, switching them on and off according to load level and operating hours.
This special feauture allows many advantages, especially in applications with high load variability:

- Best efficiency
- Longer equipment life
- Lower maintenance costs
- Reduced CO_2 emissions

Working modules	10
Module's power	27kVA
System efficiency	**95%**

Working modules	10
Module's power	3kVA
System efficiency	**85%**

Working modules	2
Module's power	15kVA
System efficiency	**94,6%**

Technical specifications

Model	MUST900-180	MUST900-300	MUST900-600
Maximum system power	180kVA/162kW	300kVA/270kW	600kVA/540kW
Module power	30kVA/27kW		
MAIN INPUT			
Grid system	3 Phases + Neutral + Ground		
Rated voltage / Frequency	380/400/415VAC (Phase-Phase), 50/60Hz		
Voltage range	304~478 VAC (Phase-Phase), full load 228V~304Vac (Phase-Phase), load decreases linearly according to the min phase voltage		
Frequency range	40~70Hz		
Power factor	>0.99		
Current THDi	<3%		
BYPASS INPUT			
Grid system	3 Phases + Neutral + Ground		
Rated voltage / Frequency	380/400/415VAC (Phase-Phase), 50/60Hz		
Voltage range	Default: -20% ~ +15% Selectable: -40% ~ +25%		
Frequency range	Selectable, ±1Hz, ±3Hz, ±5Hz		
Bypass overload	110%, long term operation 110%<load<125%, 5 minutes 125%<load<150%, 1 minute 150%<load<400%, 1 second load>400%, 200 milliseconds		
OUTPUT			
Rated voltage / Frequency	380/400/415VAC (Phase-Phase), 50/60Hz		
Power factor	0.9		
Voltage THDv	<1% (from 0% to 100% linear load); <5% (full non-linear load according to IEC/EN62040-3)		
Voltage precision	±1.5% (0-100% linear load)		
Transient response	<5% for step load (20-80%; 100-20%)		
Transient recovery	<30ms for step load (0-100%; 100-0%)		
Inverter overload	110%, 60 minutes 125%, 10 minutes 150%, 1 minute >150%, 200 milliseconds		
Frequency regulation	50/60Hz±0.1%		
Synchronized range	Selectable, ±0.5Hz ~ ±5Hz, default ±3Hz		
Synchronized slew rate	Selectable, 0.5Hz/S ~ 3Hz/S, default 0.5Hz/S		
Crest factor	3:1		
BATTERIES			
Battery rate voltage	±240VDC		
Charger voltage precision	1%		
Batteries arrangement	External		
Battery type	Pb / Ni-Cd		
SYSTEM			
Efficiency	Normal operation: >95% Eco Mode operation: 99% Battery operation: 95%		
Display	LED + LCD + Touch screen		
Protection degree	IP20		
Interface	Standard equipment: RS232, RS485, USB, dry contacts, Cold Start Optional: SNMP, parallel kit, dust filter		
ENVIRONMENT			
Operating temperature	0 ~ 40°C		
Storage temperature	-40 ~ 70°C		
Relative humidity	0 ~ 95% (no condensing)		
Noise (dBA)	65dB maximum		
Altitude	<1000m; load derated 1% per 100m, from 1000 ~ 2000m		
MECHANICAL DATA			
Power module dimensions W*D*H (mm)	460*790*134		
Power module weight (Kg)	34		
Cabinet dimensions W*D*H (mm)	600*1100*1600	600*1100*2000	2000*1100*2000
Cabinet weight (Kg)	170	280	620
Color	Cabinet: RAL 7021 Door: RAL 7012		

Note: technical specifications and data could be changed without notification

G-Tec Service

G-Tec supports its customers throughout the whole product life cycle, providing technical assistance and after-sales service at the highest professional standards.

MAINTENANCE is an essential activity in order to guarantee a safe and stable load protection. G-Tec shows maximum care about this topic, providing the best service in terms of experience, instrumentation and safety level.

Through the dedicated **CALL CENTER**, customers receive prompt answers to any request, and the specialized technicians directly schedule maintenance interventions.

The partnership between G-Tec and its customers gets consolidated through the **TRAINING SESSIONS** proposal for technical staff, so that each user can operate on the UPSs with maximum consciousness and safety.

A **PROJECT CONSULTING** team is also available in G-Tec Service offer, in order to provide to designers the best solution according to their specific needs.

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