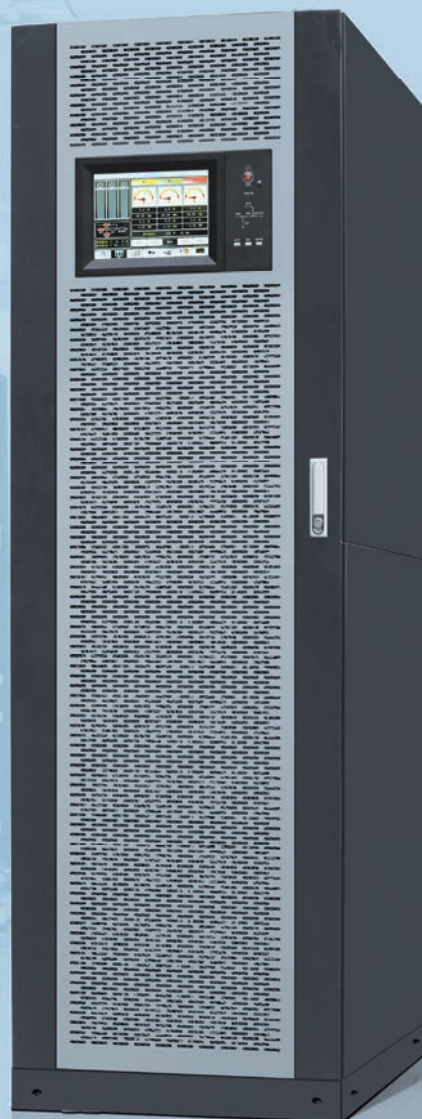




# MUST900 Modular UPS

30 - 300 kVA modular UPS - up to 900

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



Smart Energy  
Solutions

# Product Overview

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

**MUST 30-900** 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 MUST 30-900 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, permit the best electrical performances such as an efficiency of more than 95%, an input PF 0,99 with a current distortion lower than 3% (THD), an output PF of 0,9.

### + LOW MAINTENANCE COSTS AND EFFICIENT ENERGY SAVING

The high level of modularity means a fast replacement of a faulty unit and low cost for technical intervention and in general for maintenance. The possibility to control the UPS units, making them work in fewer number, means that UPS units work always almost 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

To ensure a safety maintenance management of the UPS, it is necessary to consult the operation time of the machine and balance out the consumptions of the different parts of the UPS. Battery maintenance is also very simple, thanks to the battery mode, that saved all the battery levels; it's very important check it periodically to prolong the battery life. Coated PCBs boards and an exclusive air ventilation system ensure a long duration also in critical environment.

# Product Range



### MUST 30/180

This cabinet is built to host 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. Perhaps, It's possible to connect up to 5 cabinets.  
Maximum power 180 kVA  $\cos\phi = 0.9$



### MUST 30/300

This cabinet is designed to host 10 units of power module 30kVA. It is an ideal solution for medium to large load.  
Maximum power 300 kVA  $\cos\phi = 0.9$



### MUST 30/600

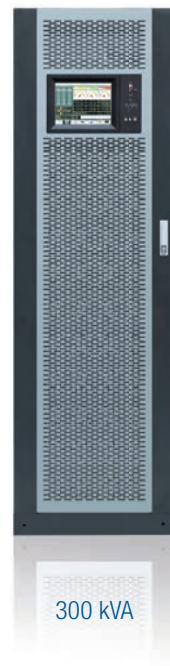
Built to host since 20 modules of 30 kVA in 2 different cabinet. The bypass module, one for both cabinet, is hosted in a third cabinet.  
Maximum power 600 kVA  $\cos\phi = 0.9$

### MUST 30/900

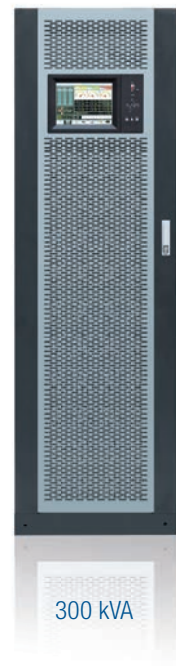
Built to host up to 30 modules in 3 cabinet. This solution is realized with a redundant parallel of 3 cabinet of 30/300. Maximum Power 900 kVA with a  $\cos\phi = 0.9$   
Additionally the smart parallel management system optimizes the efficiency and the safety of this innovative machine.



300 kVA



300 kVA



300 kVA

MUST 900

# Display & Communication

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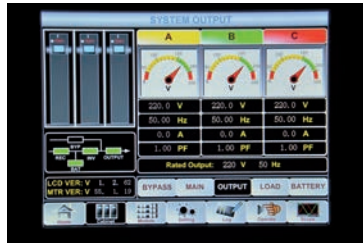
Must 900 has a very large touch screen display. It is complete and user friendly.

There are more than 900 logs recordable, that permit a very precise analysis. It allows to view all battery parameters and health of the batteries. All settings are available from the LCD under three-password level.

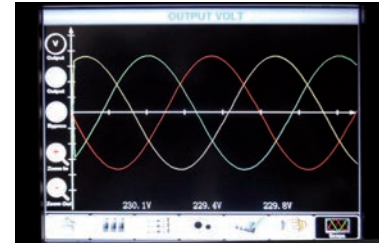


Colorfull 10.4"

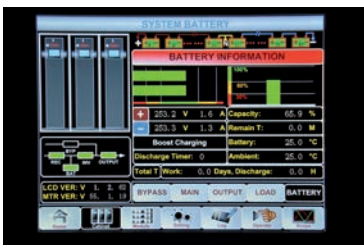
EPO: Emergency power off button  
Led indicator for the system status



Recordable working status: voltage, warning, alarms and power of bypass input and output.



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



The discharging timer and total battery working time permit to make a precise analysis of the health of the batteries and to organize preventive battery maintenance scheduling



Total control and access of all modules parameters. Total management of all internal temperature for high performance control of fan speed and for smart parallel function management.

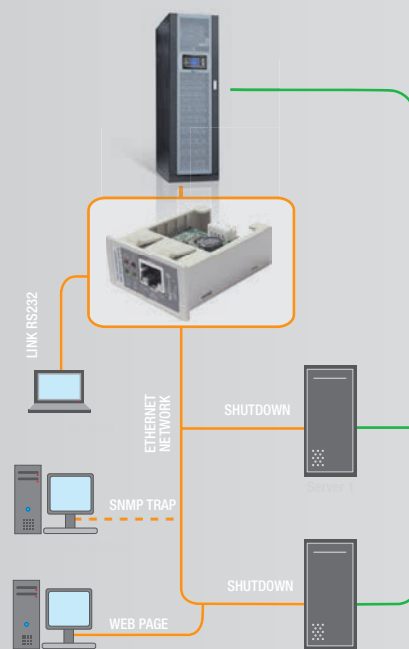


Permit the first commissioning without using of external tools. The password protects against accidental access and dangerous settings.

## Advanced communication

### Direct Connection with Ethernet Network

- Standard RS232 port and RS485 port with Modbus interface protocol
- Web/SNMP card 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 alert it can notify users and administrators via email; when prolonged power failure occurs the protected computer systems can be shutdown in a graceful manner.
- Standard dry contact for input/output interface. Useful for industrial and building management systems. The dry contacts can be programmable setting different meaning of the contacts.



# Best Technology



## 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: zero impact to the mains and optimized upstream protection design.



## INVERTER

- Three level inverter technology with IGBT with high frequency modulation in PWM driving. This guarantee less audible noise, and efficiency more than 95%.
- Output power factor 0,9.
- Advanced total digital control thanks to a powerful DSP guarantee very stable and perfect sinusoidal waveform also in case of unbalanced load.



## BATTERY CHARGER

- Independent powerful internal battery charger in each module. 20% of the rated power of the module available to recharge the batteries.
- It means a very wide range of battery capacity installable.
- Distributed battery charger permit to avoid the single point of failure.
- Two level of battery charge, temperature compensation and precise 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.
- Top control and very precise transfer energy
- Totally hot swappable design to reduce at minimum the maintenance activity



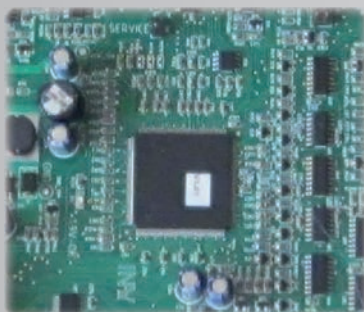
# Solution Design



- Total hot swappable design for easy and fast insertion in the system.
- Innovative layout design and maximum optimization of air flow.



- Each module with installed LCD for immediate analysis of the module's parameter and status.
- Not needed any setting in the module, this permit the upgrade of the power available in few minutes.



- Totally painted PCB guarantee longer lifetime of the module. Useful for dust environment and salt air application.
- All PCB with top access for easy maintenance.
- No air flow presence in the PCB. The air cools only the heat sink. This increase on the top the protection of the PCB for the highest lifetime and safety of the modules

# Smart Parallel Management

Smart Parallel Management represents an innovative kind of control of these UPS that allows to have the best performance ever. Just using the necessary modules the UPS maintains efficiency standards.



- High stability
- Lower maintenance costs
- Reduced power consumption
- Reduced CO<sub>2</sub> emission
- Longer equipment life
- Innovative technology

## Green Technology

- High efficiency provided by the most recent electronic technology.
- Flat curve of efficiency in a large power range that minimizes energy losses at lower load.
- Modular structure that allows to achieve the requested power using only the necessary number of modules.
- Excellent input and output electrical performances such as very low harmonic distortion to the mains, which means a clean electrical network without disturbances to other critical loads, as well as lower energy losses.



# Technical specifications

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MODEL	MUST900
Rated Power (kVA)	30 - 300
<b>MAIN INPUT</b>	
Grid System	3 Phases + Neutral + Ground
Rated Input Voltage	380/400/451VAC (Line-Line)
Rated Frequency	50/60Hz
Input Voltage Range	304~478 Vac (Line-Line),full load 228V~304Vac (Line-Line), load decrease linearly according to the min phase voltage
Input Frequency Range	40Hz~70Hz
Input Power Factor	>0.99
Input Current THDi	<3% (full Linear Load)
<b>BYPASS INPUT</b>	
Rated Bypass Voltage	380/400/415VAC (Line-Line)
Rated Frequency	50/60Hz
Bypass Voltage Range	Selectable, default -20%~+15% Up limited: +10%, +15%, +20%, +25% Down limited. -10%, -15%, -20%, -30%, -40%
Bypass Frequency Range	Selectable,±1Hz, ±3Hz, ±5Hz
Bypass Overload	110% Long term operation 110%~125% for 5 min 125%~150% for 1 min 150%~400% for 1 s >400% ,less than 200ms
<b>OUTPUT</b>	
Rated Inverter Voltage	380/400/415VAC (Line-Line)
Rated Frequency	50/60Hz
Output Power Factor	0,9
Voltage precision	±1.5%(0-100% linear load)
Transient Response	<5% for step load (20% - 80% -20%)
Transient Recovery	< 30ms for step load (0% - 100% -0%)
Output Voltage THDu	<1% from 0% to 100% linear load <6% full non-linear load according to IEC/EN62040-3
Inverter Overload	110%, 60 min; 125%, 10 min; 150%, 1 min; >150%,200ms
Frequency Regulation	50/60Hz±0.1%
Synchronized Range	Settable, ±0.5Hz ~ ±5Hz, default ±3Hz
Synchronized Slew Rate	Settable, 0.5Hz/S ~ 3Hz/S; default 0.5Hz/S
<b>BATTERY AND CHARGER</b>	
Battery Rate Voltage	±240VDC
Charger Voltage precision	1%
Charger Power	max=20%
<b>EFFICIENCY</b>	
Normal Operation	>95%
Battery Operation	>95%
ECO Operation	>99%
Dimension (mm) WxDxH	600x1100x2000
Weight (kg) w/o batteries	220
Relative Humidity	0 - 95% non condensing
Noise (dB at 1m)	65 dB at 100% load, 62 dB at 45% load

\*It is recommended to refer to the product manual and settings compliant with legal standards  
Note: product specifications are subject to change without further notice

**MUST 900**

# G-Tec Service

**G-TEC Service, our technical assistance facility, employs highly trained engineers able to provide a reliable sales assistance service.**

A dedicated **CALL CENTRE** for connection to the G-TEC Service organisation. G-TEC Service personnel are always on hand and happy to provide advice and assistance regarding the installation, maintenance, fault finding and repair of UPS equipment.

G-TEC Service can provide assistance during commissioning and start-up of the UPS equipment on-site with additional training of site personnel during handover.

**MAINTENANCE CONTRACTS** can be provided by G-TEC Service Partners to minimise response times and reduce the cost of

repairs. Contracts range from periodic inspections to comprehensive cover including labour and materials.

**FAST & READY:** fast repair on site is guaranteed thanks to the use of state-of-the-art UPS technology and the professionalism of the G-TEC Service personnel and Authorised Assistance Centres.

G-TEC Service guarantees that failed parts are replaced with original ones and are tested and updated in order to maintain the safety, reliability and operating characteristics of the UPS system.



[www.gtec-power.eu](http://www.gtec-power.eu)



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