Working in Power

MUST 900

3 Phase Modular
Hot swappable, scalable UPS

30kVA to 900kVA

- LOCAL AREA NETWORKS (LAN)
- SERVERS
- DATA CENTERS
- INTERNET CENTERS (ISP/ASP/POP)
- INDUSTRIAL PLCS
- EMERGENCY DEVICES (LIGHT, ALARM)
- ELECTROMEDICAL DEVICES
- TELECOMMUNICATION DEVICES
- INDUSTRIAL APPLICATION

MUST 900

The **MUST 900 series** is an uninteruptible power supply, three phase input/output, with its single module capacity 30KVA (model: 30PM). The modular UPS systems are designed to cover a wide range of power ratings from 30KVA to 900KVA and is designed to deliver the best combination of reliability, functionality, hot swapping and flexiblity at a competitve price with unity output power factor (PFI).

The MUST 900 series modular UPS combines the lastest three-level IGBT technology with DSP control arithmetic. Along with high input power factor, low THDi and high efficiency, this product achieves very high load adaptability.

The modular UPS ensures reliable and trouble free operation for the critical load. The MUST 900 series can be easily expanded by adding power modules to the system to reach 300KVA/300KW in a single frame. It is possible to connect three frames in parallel to increase the capacity to a maximum of 900KVA/900KW power.

EACH 30PM MODULE CONSISTS:

- **IGBT Rectifier**
  Advance technology achieving input THDi is <3% and input p.f is 0.99, thanks to the IGBT Rectifier with PFC control.
- **Battery Charger**
  Distributed battery charger in each module, it is capable of delivering up to 20% of the rated power per UPS module for battery charging. Thus a wide range of battery capacity can be connected to UPS for longer battery autonomy. An intelligent battery temperature compensation kit option is available. Adjustable battery end voltage control as standard to prolong battery life.
- **IGBT Inverter**
  Last generation using 3 level IGBT power bridge with high frequency PWM modulation switching. High performance DSP control achieves system stability, reliability and efficiency. High efficiency up to 96% and unity power factor (PFI).
- **Local LCD Panel**
  Each power module is designed with a local LCD panel which allows a quick glance of moudule status and measuremments

Input 3 phase voltage and current

Output 3 phase voltage, current and load percentage

DC bus and battery voltages (positive and negative) & current

Moduel Status and alarm

STATIC BYPASS MODULE

A fully rated modular static bypass for the UPS system. It is designed to be hot swappable, thus reducing MTTR. High quality SCR is designed for the bypass line with precision control. A 600KVA single bypass in one single cabinet incorporates input, output, bypass & maintenance bypass circuit breakers for full protection.

LARGE LCD SCREEN

Large 10.4 inch color touch screen with comprehensive user friendly interface. Easy to operate and with wide range of information. Password control at different levels to allow configuration of UPS directly from the touch screen.

SYSTEM ADVANTAGES

1. Highest reliability (MTBF of the power availability is much more than the stand alone UPS) & much lower Mean Time To Repair (MTTR). Average time to replace the module is less than 3 mins
2. With its swappable design, there is no supply interruption when replacing the faulty module
3. Precision control with double DSP controller per power module for Recitifier, Inverter, Charger & Super Charger
4. Power expansion simply by adding similar capacity module without any downtime and extra footprint
5. Very low maintenance costs
6. Each power module is designed with intelligent battery charger, charging power is selectable from 0 to 5.4kW per module, with 10 modules installed total charging power can reach 54kW
7. Large touch screen LCD with comprehensive detail

UPS FRONT PANEL

LED

- REC - Rectifier ON/OFF Status
- BAT - Battery Charge/Discharge/ Failure/Abnormal Status
- INV - Inverter ON/OFF Status
- BYP - Bypass On Load Status
- OUT - Load On-Line/Abnormal Status
- STATUS - UPS General Status
- 🔊 - Buzz
- EPO - Emergency Power OFF Button

Push Butttons

- BYP - Command transfer to bypass source
- INV - Command transfer to bypass inverter
- MUTE - Buzzer mute on or off

The MUST system

THE HIGHEST CLASS PERFORMANCES TO SUPPLY THE MOST CRITICAL LOADS

- LOCAL AREA NETWORKS (LAN)
- SERVERS
- INTERNET CENTERS (ISP/ASP/POP)
- DATA CENTERS
- HOSPITAL
- BANKS
- EMERGENCY DEVICES
- TELECOMMUNICATIONS DEVICES
- INDUSTRIAL PLC
- ALARM SYSTEM
- TRANSPORTATION

1. MUST 900/180i

This cabinet is designed to house 6 units of power module 30PM. It is an ideal solution for a medium load that requires redundancy or the possibility to expand the power in the future. It's winning advantage against any conventional paralleled UPS lies in the parallel configuration for N+1, hot swappable and scalability, as well as easy service & maintenance. It is possible to expand the power to 720KVA/720KW by connecting four cabinets in parallel.

Width: 600mm Depth: 1100 Height: 1600mm

Width: 600mm Depth: 1100mm Height: 2000mm

2. MUST 900/300i

This cabinet is designed to house 10 units of power module 30PM. It is an ideal solution for medium to large load. UPS capacity can be doubled to achieve 900KVA/900KW by connecting three cabinets together.

4. 30PM

The 3 phase power module can be paralleled up to 30 modules to achieve maximum power availability, scalability and redundancy. It is designed with local LCD, redundancy fans, high power density & channelled air-flow design seperating power and control compartment for excellent reliability. Hence, excellent maintainability and reliability is achieved.

5. Optional Items

Various optional hardware are available for different applications, these are:

- SNMP
- Battery compensation kit
- Dust proof kit
- Parallel kit
- LBS (Load Bus Synchronization)

BENEFITS TO USERS: ENERGY EFFICIENT UPS

Energy saving function, some modules will be in idling mode when at low load consumption, so as to maximize overall system efficiency and pro-long life span of modules.

Three level IGBT module are introduced into the UPS, energy saving in losses is more as compared to conventional UPS.

Real time monitoring from LCD of major components in UPS for optimium perfomance of tjhe UPS system.

These include:

- ventilation fan operating hours
- capacitor operating hours
- Inlet air temperature
- Outlet air temperature
- 3 bridges rectifier IGBT
- 3 bridges inverter IGBT

Advance Communication Solutions

Standard in-built feature for remote communication

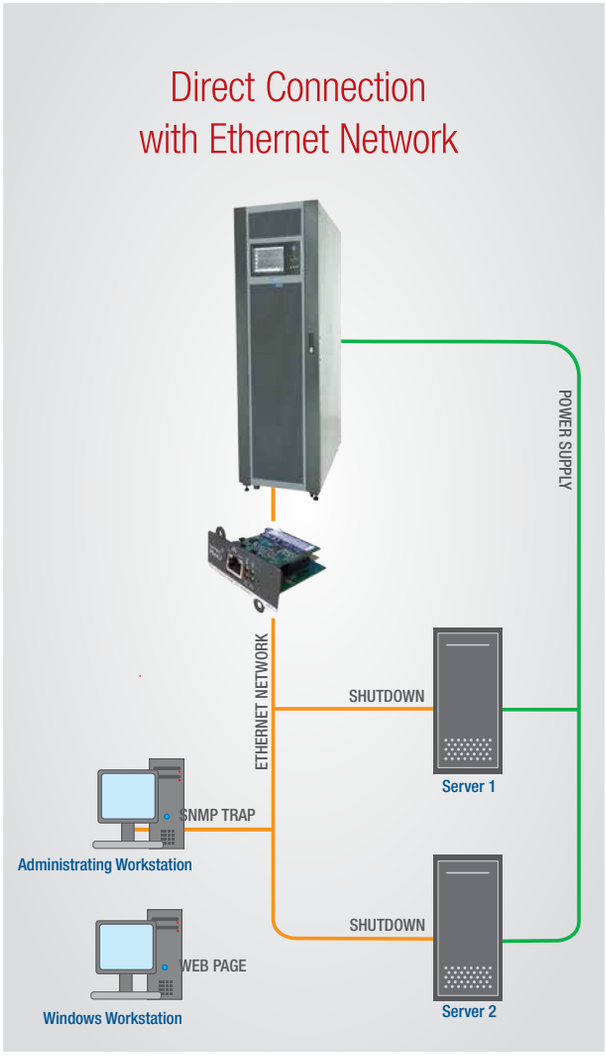
- Standard RS232 & RS485 port with ModBus Interface Protocol
- External input signal to interface with UPS for battery & environment temperature
- REPO (Remote Emergency Power Off) for power down UPS from external signal
- Interface with generator for operating status, as well as driving signal for holding coil for battery circuit breaker
- Interface with Battery Circuit Breaker (BCB) for ON/OFF status
- Standard four alarm contacts for remote alarm reporting. These are: Battery Low, General Alarm, Mains Failure and Mains Normal

Other optional remotre monitoring and control feature:

- SNMP card allows UPS management across a LAN using any network communication protocol such as TCP/IP, HTTP, SMTP, DHCP, Telnet , BOOTP, DNS, DDNS, PPPoE, Wap, PDA Browser, SNMP RFC 1628 MIB, PPC MIB and Ethernet Up
- External Load Bus Synchronizer (LBS) port to interact with external Static Transfer Switch (STS) for highest system reliability

UPS Power Monitoring Software

Propriety UPS Power Monitoring Software provide comprehensive information of the UPS. Real time trackng can assist fast system recovery in the event of an emergency

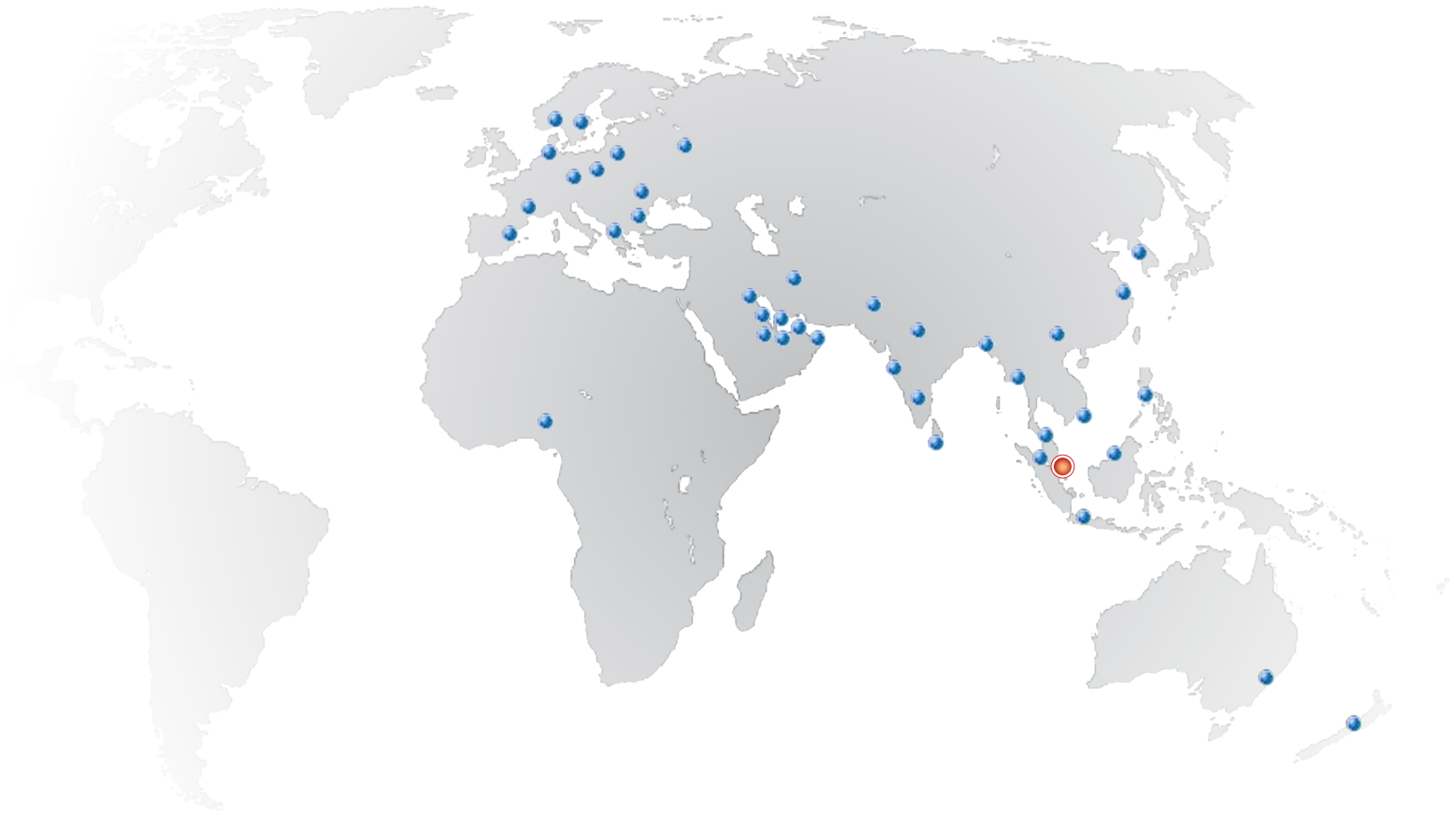


MUST 900

	Technical Specification			
Models	MUST 180i / 30 - 180	MUST 300i / 30 - 300	MUST 600i / 330 - 600	MUST 900i / 630 - 900
Capacity	30kVA – 180kVA/KW	30kVA – 300kVA /KW	330kVA – 600kVA /KW	630kVA – 900kVA /KW (**)
INPUT				
Voltage	380V – 400V – 415V, 3 phase + N + G (*)			
Voltage window	304V ~ 478V line to line at full load / 228V ~ 304V line to line decrease linearly according to min phase voltage			
Frequency	50Hz – 60Hz			
Frequency window	40Hz ~ 70Hz			
Power factor	> 0.99			
THDi	<3%			
BY PASS				
Voltage	380V – 400V – 415V, 3 phase + N + G (*)			
Voltage window	Default -20% to +15% / Adjustable from -40% to +25% to load requirement			
Overload capability	110% - infinite / 110% to 125% - 5mins / 125% to 150% - 1min / 150% to 400% - 1s / >400% - ≤200ms			
Efficiency (ECO mode)	>99%			
OUTPUT				
Voltage	380V – 400V – 415V, 3 phase + N + G (*)			
Frequency	50Hz – 60Hz			
Voltage distortion	<1% for linear load / <6% for non linear load to IEC62040-3			
Power factor	1			
Crest factor	3 : 1			
Overload	110% - 60mins / 125% - 10mins / 150% - 1mins / >150% - 200ms			
BATTERY				
DC voltage	Default ± 240Vdc (Adjustable from 32 to 44 of 12V block)			
Charger power capacity	10% of UPS capacity (adjustable 0% ~ 20%)			
Voltage stability	≤1%			
SYSTEM				
Overall efficiency	>95%			
Display	LED + 10.4” Large Colour touch screen LCD			
Protection class	IP20			
Interface	Standard: RS232; RS485; USB; Dry contacts / Option: SNMP			
Installation / termination	Top cable entry		Top or bottom cable entry	
Operating temperature	0°C to 40°C			
Storage termperature	-20°C to 70°C			
Module weight (kg)	34kg			
Cabinet weight (kg)	178kg	242kg	660kg	3 x 242kg
Moduel size (mm)	460(L) x 790(D) x 134(H)			
Cabinet size (mm)	600(L) x 1100(D) x 1600(H)	600(L) x 1100(D) x 2000(H)	2000(L) x 1050(D) x 2000(H)	1800(L) x 1100(D) x 2000(H)
Standards	EN50091-1 / IEC62040-1-1 / AS62040-1-1 (General safety requirements for UPS used in operator access area) EN50091-2 / IEC62040-2 / AS62040-2 (C3) (EMC requirements for UPS) EN50091-3 / IEC62040-3 / AS62040-3 (VFI SS 111) (Method of specifying the performance & test requirements of UPS)			

Note: ***** 200V/208V (line to line) is available upon request. UPS capacity shall reduce by 50%.
****** 3 sets MUST 300i in parallel configuration to reach 900kVA
UPS specification and data may subject to change for improvement without prior notice

G-Tec Asia Pacific Pte Ltd



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