Working in Power

MUST 400

3 Phase Modular Hot swappable, scalable UPS

- 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 400

The **MUST 400 series** is an uninteruptible power supply, three phase input/output, with its module capacity ranging from 10KVA, 15KVA & 20KVA (model: 10PM, 15PM, 20PM). It is designed to cover power rating from 10KVA to 400KVA. and is designed to deliver the best combination of reliability, functionality, hot swapping and flexiblity at a competitve price.

The MUST 400 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 400 series can be easily expanded by adding power modules to the system to reach 200KVA in a single frame. It is possible to connect two frames in parallel to reach maximum 400KVA power.

EACH 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 load factor with 0.9 & efficiency up to 96%.

STATIC BYPASS MODULE

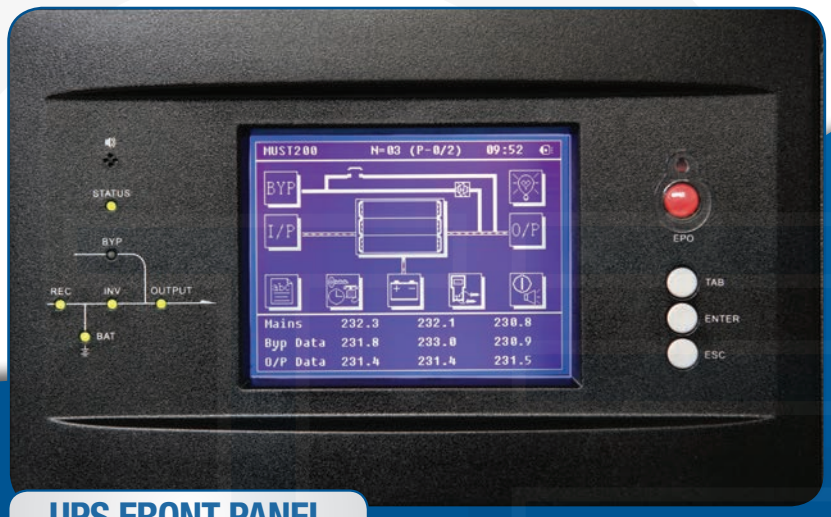
A fully rated modular static bypass for the UPS system. It is designed to be hot swappable, thus reducing MTTR. High quality SCR is designed for the bypass line with precision control.

LARGE LCD SCREEN

Large LCD screen with comprehensive user friendly touch screen. 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 module is designed with intelligent battery charger, charging power is selectable from 0 to 3.2kW per module, with 10 module installed total charging power can reach 32kW
7. Large touch screen LCD with comprehensive detail



UPS FRONT PANEL

- 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
- TAP - Switching Between Menu Buttton
- ENTER - Confirm Button
- ESC - Exit Button

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 120i

This cabinet is designed to house 6 units of power module 10PM/15PM/20PM. 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 360KVA by connecting three cabinets in parallel.

Width: 600mm Depth: 900mm Height: 1600mm

Width: 600mm Depth: 900mm Height: 2000mm

2. MUST 200i

This cabinet is designed to house 10 units of power module 10PM/15PM/20PM. It is an ideal solution for medium to large load. UPS capacity can be doubled to achieve 400KVA by connecting two cabinets together.

3. MUST 60i

With battery on board, this cabinet is a self contained UPS (N+1) configuration, complete with built in battery module. Three power modules (10PM or 20PM) and modular battery maximum of 4 battery banks (7Ah/9Ah) can be inserted. With 4 banks 9Ah can achieve close to 20mins battery automy at typical 40KVA load.

Width: 600mm Depth: 900mm Height: 2000mm

4. 10PM / 15PM/ 20PM

The 3 phase power module can be paralleled up to 20 modules to achieve maximum power availability, scalability and redundancy.

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)

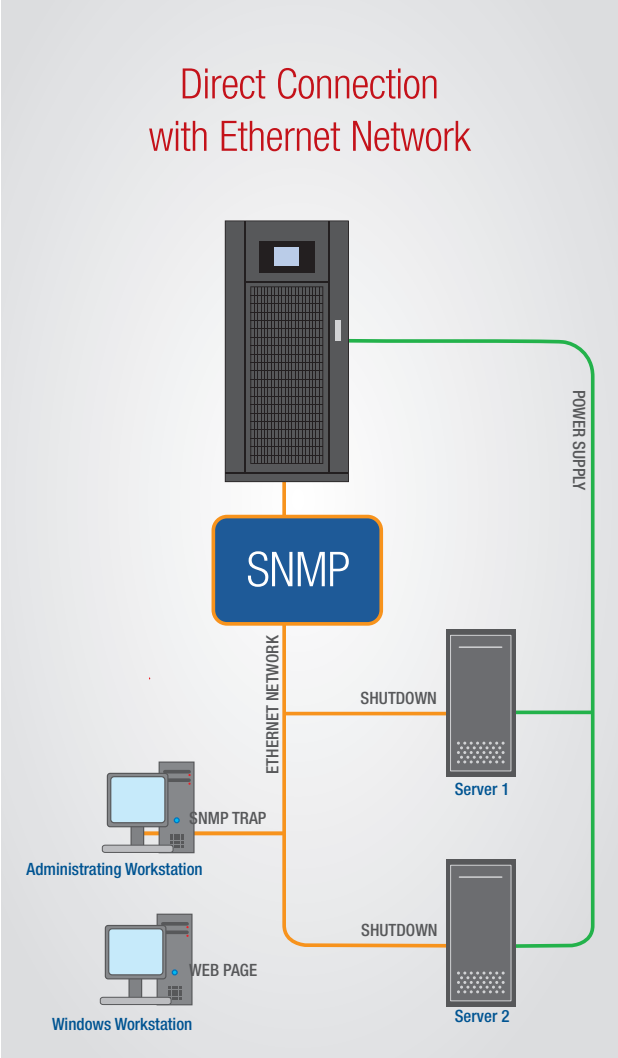
Advance Communication Solutions

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 three alarm contacts for alarm reporting. These are: Battery Low, General Alarm and Mains Failure

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

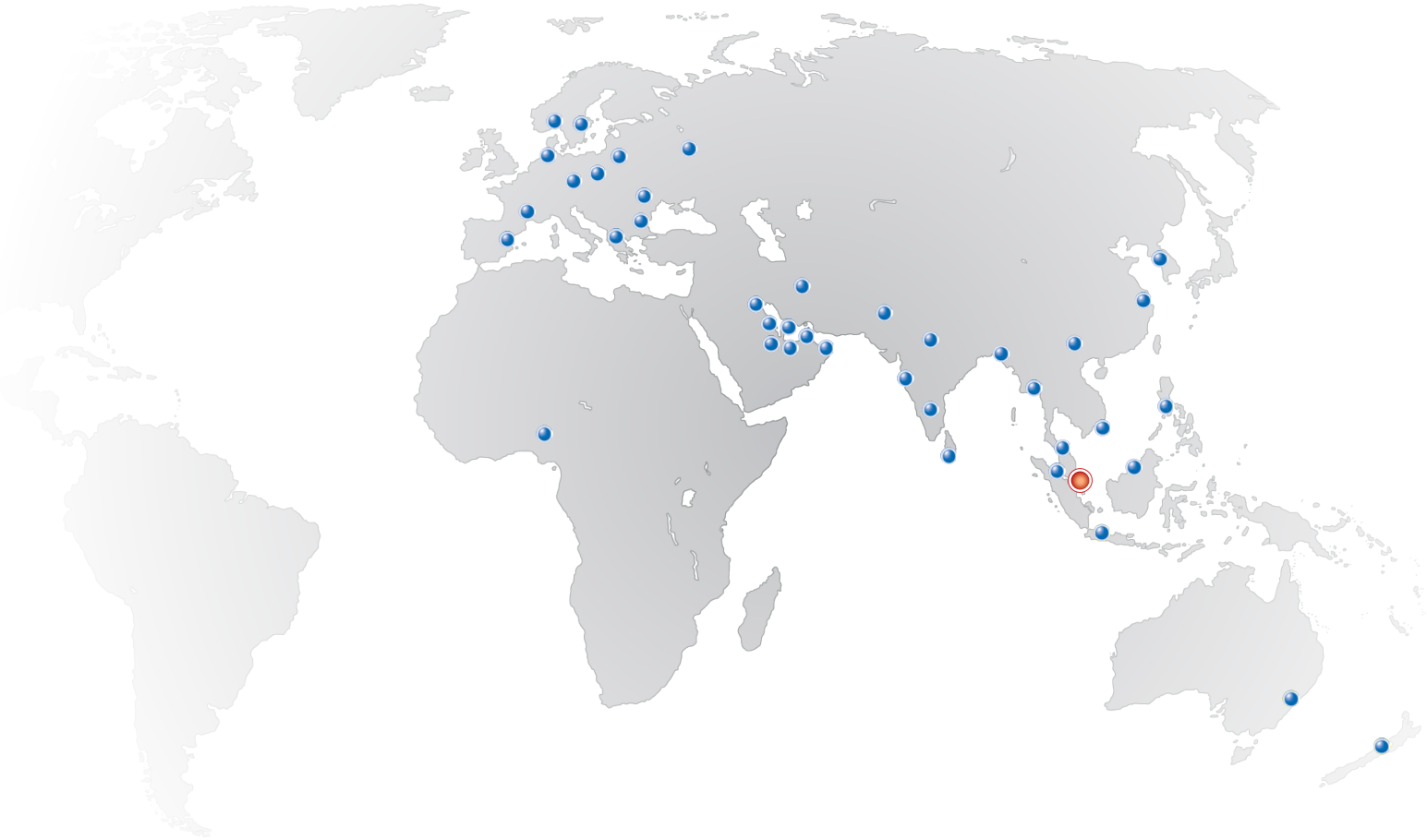


MUST400

TECHNICAL SPECIFICATIONS				
MODEL	MUST 400/10PM, 15PM, 20PM			
Capacity	20kVA - 200kVA			
MAIN INPUT				
Input Voltage	380V/400V/415V (line to line), 220V/230V/240V (line to neutral) *			
Input Frequency	50/60 Hz			
Power Factor	≥ 0.99			
Input Current THDi % (Total Harmonic Distortion)	<3%			
Input Voltage Window	-40% to +25%			
Frequency Window	40 - 70Hz			
BYPASS				
Bypass Voltage	380V/400V/415V (line to line), 220V/230V/240V (line to neutral) *			
Bypass Voltage Window	-20% +15% full load			
Bypass Overload Capability	125% continuously			
	125% < load <130% for ≤ 1 hour			
	130% < load <150% for ≤ 6 mins			
	>1000% for ≤ 100ms			
Efficency	> 99% at full load			
BATTERY				
Battery voltage	±240 Vdc			
Charger Power	Adjustable from 0% to 18% of module capacity, up to 6.6A per module			
Charger Voltage Precision	1%			
OUTPUT				
Output Voltage	380V/400V/415V (line to line), 220V/230V/240V (line to neutral) *			
Voltage Precision	±1% (balance load), ±1.5% (unbalance load)			
Voltage THD (Total Harmonic Distortion)	THD<1.5% (linear load), THD<3% (nonlinear load)			
Power Factor	0.9			
Phase Tolerance	120°±0.5% (balance and unbalance load)			
Crest Factor	3:1			
Overload Capability	105% load - continuous			
	110% load - 60 mins			
	125% load - 10 mins			
	150% load - 60 sec			
	>150% load - 200 ms			
SYSTEM				
System Efficiency	Normal Mode: 95%			
	ECO mode: 99%			
Display	LCD + LED, Touch Screen and Keyboard			
IP class	IP20			
Interface (Communication Ports)	RS232, RS485, Dry Contacts, SNMP Card, EPO, Generator Interface, LBS Port			
Installation / Connection	Top or Bottom Cable Connection			
Operation Temperature	0 - 40°C			
Storage Temperature	-25°C to 70°C			
Relative Humidity	0 - 95% (non-condensing)			
Noise (dB)	< 55dB			
Cabinet Model	MUST 60i Mini	MUST 60i	MUST 120i	MUST 200i
Dimensions (LxDxH) mm	600 x 900 x 1100	600 x 1000 x 2000	600 x 900 x 1600	600 x 900 x 2000
Weight (kg)	120	200 (w/o battery)	151	182
Module Model	10PM - 15PM - 20PM			
Dimensions (LxDxH) mm	440 x 600 x 134			
Weight (kg)	20kg (10PM)	21kg (15PM)		22kg (20PM)
Applicable Standards	EN50091-1/ IEC62040-1 / AS62040-1 General Safety requirements for UPS used in operator access areas			
	EN50091-2 / IEC62040-2 / AS62040-2(C3) Electromagetic compatibility (EMC) requirement or UPS			
	EN50091-3 / IEC62040-3 /AS62040-3(VFI SS111) Method of specifying the performance & test requirement of UPS			

Note: * 200V/208V (line to line) is available upon request. UPS capacity shall reduce by 50%.
UPS specification and data may subject to change for improvement without prior notice

G-Tec Asia Pacific Pte Ltd



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