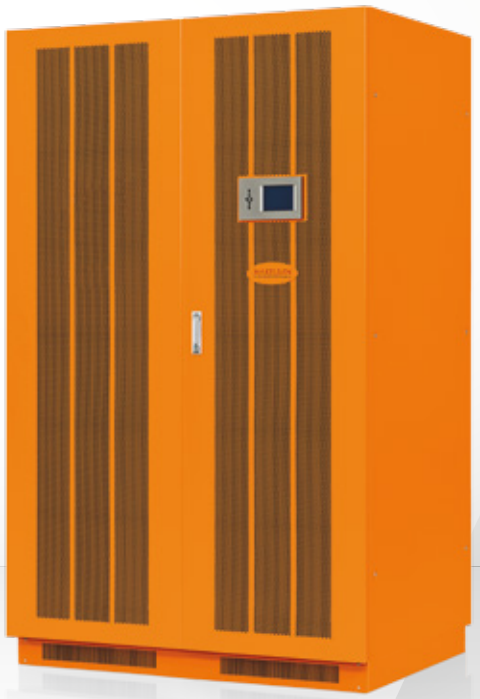
# PM
SERIES

## 10-2080 kVA 3:3 PHASE
**MODULAR** ONLINE UPS

DATA CENTER · MEDICAL · TRANSPORT · INDUSTRY · EMERGENCY

kW=kVA

96% Efficiency



VFI TYPE — UPS ONLINE
MODULAR SYSTEM
PF= 1.0 — POWER FACTOR
Service — SERVICE

## HIGHLIGHTS

- High Performance, Modular 3-Phase Power Protection
- Scalable up to 2080kVA, with 96% High Efficiency

## Modular UPS Design for High Density Data Centers

- PM Series is a scalable, redundant Modular UPS system designed to cost effectively provide high level availability for high density data centers and critical applications.
- True Online Double Conversion and advanced DSP control technology.
- Modular Architecture can scale power and runtime as demand grows or as higher levels of availability required.
- Combines the modular design with the N+X parallel redundancy technology.
- The maximum capacity of a single cabinet is 520kVA. Cabinets can operate in parallel configuration to build a system of up to 2080kVA.

## CERTIFICATES

CE · TSE · TSE-HYB · Higher Level of Efficiency than the EU CoC for AC Ups

POWER FORLIFE

MAKELSAN®
Uninterruptible Power Supplies

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## Scalable Modular Architecture

Scalable up to the highest active power rating available through two dimensional modularity: Vertical and Horizontal.

- Capacity of single power module is 10-15-20-25-30-40-50kVA
- The height of single hot swappable power module is 3U
- Standard 1.4m cabinet can hold up to 5 of power modules
- Standard 2m cabinet can hold up to 13 of power modules
- The single UPS cabinet capacity can reach 520KVA and UPS cabinets can operate in parallel configuration to build a system of up to 2080kVA

| Modules | Output Power | Dimensions (WxHxD) | Weight |
|---|---|---|---|
| PM 3310-RM | 10kVA 3/3 Module | 443x131x580mm 3U | 26kg |
| PM 3315-RM | 15kVA 3/3 Module | 443x131x580mm 3U | 30kg |
| PM 3320-RM | 20kVA 3/3 Module | 443x131x580mm 3U | 31kg |
| PM 3325-RM | 25kVA 3/3 Module | 443x131x580mm 3U | 31kg |
| PM 3330-RM | 30kVA 3/3 Module | 443x131x580mm 3U | 32kg |
| PM 3340-RM | 40kVA 3/3 Module | 443x131x580mm 3U | 33kg |
| PM 3350-RM | 50kVA 3/3 Module | 443x131x625mm 3U | 34kg |


*"Size What You Need Now and Pay as You Grow"*

## Standart Electrical Features

- Output Power Factor: 0.9 (Optional 1.0)
- Hot Swappable Maintenance (UPS & Battery)
- Separated Bypass
- Maintenance Bypass
- Parallelable up to 4 Cabinets
- Common Battery
- Control of On/Off State of each Module
- Freely Set the Charge Current
- Intelligent Charging
- Mid or Small Power Distributing System
- Selectable Battery Voltage 3 Input 3 Output ±216VDC/±228VDC/±240VDC (32/34/36/38/40pcs)

## Advanced Communication Features

- RS232 (USB)
- RS485 Communication Interface
- SNMP Card (Optional)
- Relay Card (Optional)
- Centralized Monitor Module that is Hot Swappable
- Single Module LCD Display
- Control Monitoring with 5" Color LCD Graphic Display

UPS Cabinet Control Panel


Module Control Panel

## Hot Swappable Battery Modules

Plug and play battery modules ensures uninterrupted power to protected equipment while batteries are being replaced. Allows quick and easy battery replacement.

- Each Battery Module Consists of 18 pcs 7Ah/9Ah
- Only 3U Height
- Simply Plug into UPS System

3 U Battery Box Optional

19"Matching Battery Cabinets (Optional)

## N+X Parallel Redundancy

PM series UPS adopts N+X parallel redundancy design, users can set different redundancy according to the importance of the load. While the number of redundancy modules are more than two, the availability of UPS system will achieve 99.999% and the MTBF will be more than 15,000,000 hours which can satisfying the reliability requirement of critical load. The UPS redundancy degree can be set through the LCD, when the load exceeds the set value, the UPS will alarm in time.

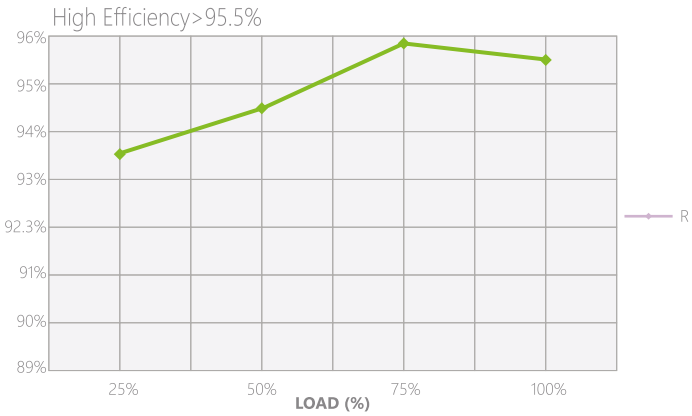
## Independent Control System

Every power module is equipped independent control system, and control itself independently according to the sharing message, and the fault module separates from the system automatically.

## High Efficiency and Low Total Cost of Ownership

PM Designed for highly economical energy consumption and is a perfect fit in your data center and server room. Offering efficiency of up to 96%, THDi of 2% and unity Input Power Factor without harmonic filters PM delivers:

- Significant energy savings
- Lower cooling costs
- Smaller generator sizing




- High input power factor (>0.99) and low input Total Harmonic Distortion (THDi<2%) minimizes installation costs by enabling the use of smaller generators and cabling.
- Fully-rated power kVA equals kW feature option reduces cost by eliminating the need for an oversized UPS for Power Factor Corrected (PFC) loads.

10kVA/15kVA/20kVA/25kVA/ 30kVA 3:3 phase

40kVA 3:3 phase

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| MODEL | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CAPACITY** | | | | | | | | | | | | | |
| UPS Cabinet | | 10~100 kVA | 20~100 kVA | 20~200 kVA | 25~250 kVA | 30~150 kVA | 30~300 kVA | 40~200 kVA | 40~320 kVA | 40~520 kVA | 40~800 kVA | 40~1040 kVA | 40~1560 kVA |
| Paralleling | | Up to 6 Frame | Up to 6 Frame | Up to 6 Frame | Up to 6 Frame | Up to 6 Frame | Up to 6 Frame | Up to 6 Frame | Up to 6 Frame | Up to 4 Frame | Up to 2 Frame | Up to 2 Frame | Up to 1 Frame |
| PM Module | | 10kVA/10kW, 15kVA/15kW, 20kVA/20kW, 25kVA/25kW, 30kVA/30kW, 40kVA/40kW, 50kVA/50kW | | | | | | | | | | | |
| **INPUT** | | | | | | | | | | | | | |
| Phase | | 3 Phase 4 Wires and Ground | | | | | | | | | | | |
| Rated Voltage | | 380/400/415 VAC | | | | | | | | | | | |
| Voltage Range | | 208~478 VAC or 120 VAC~276 VAC | | | | | | | | | | | |
| Frequency Range (Hz) | | 40~70 Hz | | | | | | | | | | | |
| Power Factor | | >0.99 | | | | | | | | | | | |
| Bypass Voltage Range | | Max. Voltage: +15% (Optional +5%, +10%, +25%) Min. Voltage: -45% (Optional -20%, -30%) | | | | | | | | | | | |
| | | Frequency Protection Range: ±10% | | | | | | | | | | | |
| Current Harmonic | | <2% (100% Non-Linear Load) | | | | | | | | | | | |
| Generator Input | | Support | | | | | | | | | | | |
| **OUTPUT** | | | | | | | | | | | | | |
| Phase | | 3 Phase 4 Wires and Ground | | | | | | | | | | | |
| Rated Voltage | | 220/240 VAC 380/400/415 VAC | | | | | | | | | | | |
| Power Factor | | 1 | | | | | | | | | | | |
| Voltage Precision | | ±1% | | | | | | | | | | | |
| Output Frequceny | | (50/60±0.1%) Hz | | | | | | | | | | | |
| Crest Factor | | 3:1 | | | | | | | | | | | |
| THD | | ≤1% With Linear Load ≤4% With Non-Linear Load | | | | | | | | | | | |
| Efficiency | | 96% | | | | | | | | | | | |
| **COMMUNICATION** | | | | | | | | | | | | | |
| UPS Cabinet | | RS232, RS485, Intelligent Slot x 2 (SNMP Card, Relay Card, Dry Contact Optional) | | | | | | | | | | | |
| **INTERFACE** | | | | | | | | | | | | | |
| PM Series UPS Module | | RS232 | | | | | | | | | | | |
| **BATTERY** | | | | | | | | | | | | | |
| Voltage | | ±192V / ±204V / ±216V / ±228V / ±240V DC; Battery Quantity (Optional) | | | | | | | | | | | |
| Charge Current (A) | UPS Cabinet | 60A Max | 30A Max | 60A Max | 60A Max | 50A Max | 100A Max | 50A Max | 80A Max | 130A Max | 200A Max | 260A Max | 390A Max |
| | Module | 6A/10A/(20A Optional) Max (Charge Current can be Set According to Battery Capacity Installed) | | | | | | | | | | | |
| Crest Factor Backup Time | | Depends on the Capacity of External Batteries | | | | | | | | | | | |
| THD Transfer Time | | Utilty to Battery : 0ms; Utily to Bypass: 0ms | | | | | | | | | | | |
| **PROTECTION** | | | | | | | | | | | | | |
| Overload | Normal Mode | Load ≤110%: Last 60min, ≤125%: Last 10min, ≤150%: Last 1min, ≥150% Shut Down UPS Immediately | | | | | | | | | | | |
| | Battery Mode | Load ≤110%: Last 10min, ≤125%: Last 1min, ≤150%: Last 1s ≥150% Shut Down UPS Immediately | | | | | | | | | | | |
| **ENVIRONMENTAL** | | | | | | | | | | | | | |
| Operating Temperature | | 0°C ~ 40°C | | | | | | | | | | | |
| Storage Temperature | | -25°C ~ 55°C | | | | | | | | | | | |
| Humidity | | 0 ~ 95% Non-Condensing | | | | | | | | | | | |
| Noise | Number of Modules ≤5 | <55 dBA (1m) | | | | | | | | | | | |
| | Number of Modules >5 | <65 dBA (1m) | | | | | | | | | | | |
| Altitude | | <1500m | | | | | | | | | | | |
| **DIMENSIONS & WEIGHT** | | | | | | | | | | | | | |
| Unit Dimensions WxDxH (mm) | UPS Cabinet | 600x840 x1400 | 600x840 x1400 | 600x1100 x2000 | 600x1100 x2000 | 600x840 x1400 | 600x1100 x2000 | 860x600 x2000 | 860x600 x2000 | 860x1200 x2000 | 860x1800 x2000 | 860x3000 x2000 | 1100x4800 x2000 |
| | Module | 443 x 580 x 131 (3U) | | | | | | | | | | | |
| Weight (kg) | UPS Cabinet | 170 | 170 | 270 | 275 | 152 | 280 | 205 | 310 | 514 | 1600 | 1810 | 2800 |
| | Module | 10kVA: 26kg; 15kVA: 30kg; 20kVA: 31kg; 25kVA: 31kg; 30kVA: 32kg; 40kVA: 33kg | | | | | | | | | | | |
| **INDUSTRY STANDARD** | | CE, IEC 62040-2, IEC 62040-1, IEC 62040-3, IEC61000-4, IEC60950-1 | | | | | | | | | | | |