



**AME UNINTERRUPTIBLE  
POWER SUPPLY**



AEL is excited to introduce top-quality Uninterruptible Power Supply (UPS) solutions into our OEM supply line, tailored for the critical needs of Hong Kong. In a city where reliable power is crucial, our UPS systems ensure continuous operation and protect important infrastructure from power outages.

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## 1.1 Tower Series

## Small Loading/Rack Mounted UPS

The Tower Series is an online double-conversion uninterruptible power supply that delivers stable sine-wave power to your essential equipment. It is designed to support personal computers, networks, servers, VoIP systems, and telecommunications.


**Easy to Use**

Rack/tower convertible design for easy installation



**Optimized Battery Performance**

Hot-Swappable battery design Maximum charging current can be expanded to 12A (Long run unit)



 **Wide input voltage range**

1. 110~300Vac
2. Input power factor 0.99 with PFC
3. Selectable output voltage: 208/220/230/240Vac

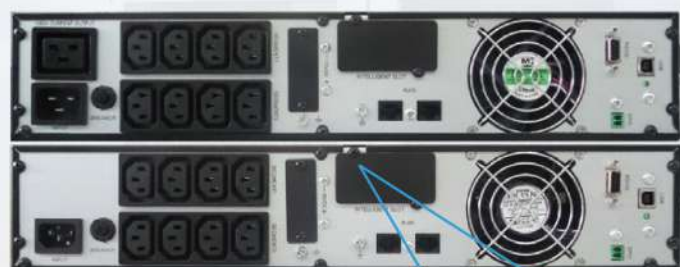
## 1.2 Key Features

- Rack/Tower convertible design
- Online double conversion with full digital control
- Wide input voltage range: 110~300Vac
- Input power factor 0.99 with PFC
- Selectable output voltage: 208/220/230/240Vac
- Smart charger design for optimized battery performance
- Maximum charging current can be expanded to 12A (Long run unit)
- Emergency power off function (EPO)
- ECO mode operation for


**Energy Saving**

### ECO mode operation for energy saving

- Generator compatible
- Hot-Swappable battery design
- Cold start
- Intelligent fan speed regulation
- Load segment settable (Optional)
- Versatile LCD human-computer interface
- Multiple communication interface: RS232 (USB/EPO/Dry contact card/SNMP card optional)



### Optional Socket



Dry contact Card



SNMP Card

## 1.3 Technical Specifications

| MODEL                         | Tower 1k H                                                                                                                                           |    |      |              | Tower 1.5k H                   |  |              |                                | Tower 2k H |              |              |                                | Tower 3k S |              |    |  |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----|------|--------------|--------------------------------|--|--------------|--------------------------------|------------|--------------|--------------|--------------------------------|------------|--------------|----|--|
| Capacity (VA/W)               | 1000/900                                                                                                                                             |    |      |              | 1500/1350                      |  |              |                                | 2000/1800  |              |              |                                | 3000/2700  |              |    |  |
| INPUT                         |                                                                                                                                                      |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Nominal Voltage (Vac)         | 208/220/230/240                                                                                                                                      |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Operating Voltage Range (Vac) | 110~300 (176~264 @ 100% load)                                                                                                                        |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Power Factor                  | ≥0.99                                                                                                                                                |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Bypass Frequency Range (Hz)   | 40~70 (50/60 Auto-Sensing)                                                                                                                           |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| OUTPUT                        |                                                                                                                                                      |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Nominal Voltage (Vac)         | 208/220/230/240                                                                                                                                      |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Voltage Regulation            | ±1%                                                                                                                                                  |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Power Factor                  | 0.9                                                                                                                                                  |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Output Frequency (Hz)         | Line mode: 46~54 or 56~64; Bat. mode: (50/60±0.1%)                                                                                                   |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Crest Factor                  | 3:1                                                                                                                                                  |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Harmonic Distortion (THDv)    | ≤3% Linear load; ≤5% Non linear load                                                                                                                 |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Transfer Time (ms)            | AC mode to Bat.mode: 0; Inverter to Bypass: 4 (Typical)                                                                                              |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Waveform                      | Pure Sinewave                                                                                                                                        |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| EFFICIENCY                    |                                                                                                                                                      |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| AC Mode                       | Up to 90%                                                                                                                                            |    |      |              | Up to 90.5%                    |  |              |                                | Up to 91%  |              |              |                                | Up to 92%  |              |    |  |
| ECO Mode                      | Up to 95%                                                                                                                                            |    |      |              | Up to 96%                      |  |              |                                | Up to 96%  |              |              |                                | Up to 97%  |              |    |  |
| BATTERY                       |                                                                                                                                                      |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Battery Type                  | VRLA (Lead acid maintenance free battery)                                                                                                            |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Battery Voltage (Vdc)         | 24                                                                                                                                                   | 36 | 24   | 36           | 36                             |  |              |                                | 48         | 72           | 48           | 72                             | 72         | 96           | 72 |  |
| Battery Capacity (Ah)         | S: 7/9; H: Depends on the capacity of external batteries                                                                                             |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Battery Quantity (pcs)        | 2                                                                                                                                                    | 3  | 2    | 3            | 3                              |  |              |                                | 4          | 6            | 4            | 6                              | 6          | 8            | 6  |  |
| Typical Recharge Time (hours) | S: 4 (To 90% of full capacity)                                                                                                                       |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Charging Current (Max.) (A)   | 6/12                                                                                                                                                 |    | 1    |              | 6/12                           |  | 1            |                                | 6/12       |              | 1            |                                | 6/12       |              | 1  |  |
| MANAGEMENT                    |                                                                                                                                                      |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| LED Display                   | Line mode, Bat.mode, ECO mode, Bypass mode, Battery low voltage, Overload & UPS fault                                                                |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| LCD Display                   | Input voltage, Input frequency, Output voltage, Output frequency, Load percentage, Battery voltage, Inner temperature& Remaining battery backup time |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| ENVIRONMENTAL                 |                                                                                                                                                      |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Operating Temperature (°C )   | 0~40                                                                                                                                                 |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Storage Temperature (°C )     | -25~55                                                                                                                                               |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Humidity Range                | 20~95%RH @ 0~40°C (Non condensing)                                                                                                                   |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Altitude (m)                  | <1000, derating required between 1000 to 3000                                                                                                        |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Noise Level (dB)              | <50                                                                                                                                                  |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| PHYSICAL                      |                                                                                                                                                      |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Dimension WxDxH (mm)          | 440×325×86.5                                                                                                                                         |    |      | 440×460×86.5 | 440×600×86.5<br>(440×460×86.5) |  | 440×460×86.5 | 440×600×86.5<br>(440×460×86.5) |            | 440×460×86.5 | 440×600×86.5 | 440×600×86.5<br>(440×460×86.5) |            | 440×600×86.5 |    |  |
| Weight (kg)                   | 5.6                                                                                                                                                  |    | 11.3 | 14           | 9.1<br>(8.1)                   |  | 16.5         | 10.5<br>(8.6)                  |            | 19.5         | 25           | 11<br>(8.8)                    |            | 26           |    |  |
| STANDARDS                     |                                                                                                                                                      |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| Safety                        | IEC/EN 62040-1, IEC/EN 62477-1                                                                                                                       |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |
| EMC                           | IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8                                                    |    |      |              |                                |  |              |                                |            |              |              |                                |            |              |    |  |

1. When output voltage is 208Vac, need to derate to 80% of the unit capacity

2. Specifications are subject to change without prior notice

3. Data above are typical values for reference only, not as a basis for engineering design

## 1.4 Principle of Operation

This 1KVA&2KVA&3KVA high input power factor UPS system contains two major PCB assemblies. They are including:

|                  |                                                                                                           |
|------------------|-----------------------------------------------------------------------------------------------------------|
| 1. Main board    | Contains major parts of (1) DC power supply (2) DC-DC converter (3)inverter (4)Input and output circuits. |
| 2. Control board | contains major parts of protecti on, signaling circuits, regulation and control circuits of inverter      |
| 3. LCD Panel     | LCD display board                                                                                         |
| 4. COMM          | Provide both RS232 and USB communication port                                                             |

The simplified schematics in figure 1 shows how the major circuits are connected and illustrates the overall system functions.

## 2.1 Elite Series - Industrial UPS

The Elite Series is a transformer-based UPS, both input and output are 3 phase. The output power factor is 0.9. This ups can work in parallel and expand its power capacity. This series UPS is high reliable and have good impact resistance, it can supply safe and reliable protection for load.



## 2.2 Features of the UPS

- Digital Technology: Dual-DSP control, advanced management, easy debugging, and diverse data for users.
- Reliable Structure: Uses thyristor phase-control for the rectifier and IGBT for the inverter, ensuring safety and zero transfer time between modes.

### Online Double Conversion

- Online Double Conversion design helps to output a pure sine wave, which is immune from the UPS input, so that the UPS transfers among different working mode without output interruption, thereby powering the load uninterruptedly

### Full DSP Control

- Double DSP control makes the whole system more stable and reliable

### High Power Factor

- The output power factor up to 0.9 better matches the load
- The input power factor 0.97 with filter helps to improve the efficiency, reduce the harmonic pollution to the Grid and lower the UPS running cost

- Input/Output Capabilities: Supports various voltage systems (380V/400V/415V, 50/60Hz) with a high output power factor and a generator mode to extend battery life.

### N+X Parallel Redundancy

- N+X parallel redundant design, up to 6 units available, makes the configuration more flexible
- Any unit in parallel system fails, the faulty one will automatically cut off the output, and the load will be powered by the remained units
- It is easy to configure the parallel system just by connecting the parallel cables and doing proper settings
- Non-fixed Master-Slave relationship: Among several UPS in parallel, the unit startup first is Master UPS, the others are Slave. The master and slave may be exchanged

### Optimized Battery Management

- Intelligent battery management system and advanced
- Battery auto float/boost charge technology, reduces the frequency of battery maintenance, greatly improves the battery efficiency and extends battery life
- Battery discharge time prediction: The system will display the backup time of battery calculated by discharge current and voltage
- Battery self-test: Battery is automatically tested at regular intervals
- Flexible battery voltage configuration

### Power Walk In

- Specially designed power walk in function, in which rectifier of each unit in parallel system will be turned on in sequence at intervals to avoid the sudden load on the generator, thereby reducing the cost of the generator required

### Generator Mode

- Set the maximum output power of the generator when a smaller one than needed is employed to extend the battery duration time. In this case, the load is supplied by both the generator and battery

### LBS Synchronization

- Synchronize the output of the two independent UPS systems (Single unit or parallel) even when the two systems are operating on different modes (Bypass/Inverter) or on battery

### Wide Input Adaptability

- The range of AC input voltage is (380/400/415Vac) (-25%/+20%), minimizing transfer to battery mode, thereby greatly prolonging the battery life
- Wide input frequency ranging from 45Hz to 65Hz, ensures stability of UPS while generator connected
- 10 efficiency, reduce the harmonic pollution to the Grid and lower the UPS running cost

### Multi-Protection

- Self-diagnosis function will take place before start-up for safety
- Multi-protection: AC input under/over voltage, overload, short-circuit, over-current, over bus voltage, overtemperature, fan failure, auxiliary power failure, battery under voltage, battery over-charge and so on

### EPO Function

- A concave red EPO button with transparent cover is embodied in the LCD control panel for emergency power off

### User-friendly Network Management

- Chinese/English LCD and LED mimic diagram: Real time operation parameters and status (7 inch touch screen optional)
- RS232 & RS485 communication ports: For local monitor with corresponding software, both can support MODBUS protocol
- SNMP adapter (Optional): For remote monitor through network
- Dry contacts (10-160kVA optional) for additional monitoring:
  - a) UPS on Inverter
  - b) Mains input failure
  - c) Remote EPO
  - d) Battery low voltage alarm
  - e) UPS fault
  - f) UPS alarm
  - g) UPS on battery
  - h) UPS on bypassNote: d)~h) optional

## 3.1 Class Series - General Purpose

Class Series is a three-phase in and three-phase out high frequency UPS. Equipped with three-level inverter topology, it results in high efficiency reaching 95.5%. With higher power density, smaller footprint, it takes the leading position in the UPS industry with same power capacity.

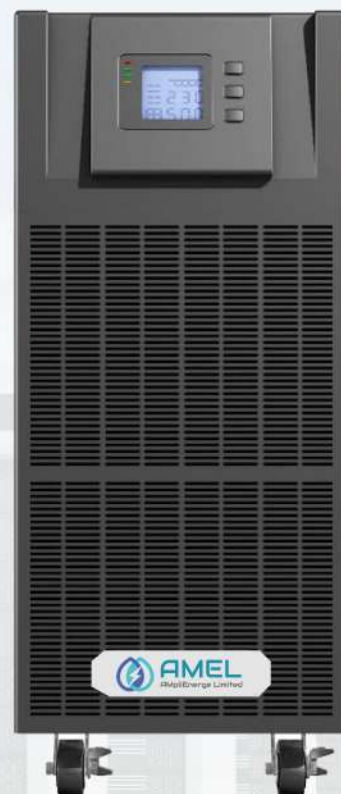
## 3.2 Product Appearance and Structure

- Efficiency up to 94.5%
- Maximum 4 units in parallel
- Dual mains (Optional)
- Generator compatible
- Cold start
- ECO mode
- Intelligent fan speed regulation
- 100% unbalanced load support
- Configure with input/output/bypass/maintenance bypass breakers
- RS232, RS485, Parallel port, Dry contact, Intelligent slot,
- Optional: SNMP card , Dry contact card, Battery temperature sensor



## 3.3 Core Advantages (UPS and Batteries)

| Reliability                                                                    | Safety                                                                                              | Supply Chain                                                                                        |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| More than <b>50,000 big unit</b> shipped<br>(>=300kVA)                         | Dual DSP digital control<br>Self-diagnosis on startup<br>Battery self-check                         | 3M+ units delivery/year<br>No.1 in China for 23 Years<br>No.1 exporter from China<br>Cost advantage |
| Core supplier for the world's leading UPS brands<br><b>50 M+ units shipped</b> | External maintenance switch<br>linkage control<br>Remote EPO function<br>Battery reverse protection | Full chain<br>UPS factory, Battery factory<br>Sheet metal factory<br>Cost advantage                 |
| Guaranteed supply by the world's leading power semiconductor branders          | Battery patented leakprooftray<br>One-Gen design for UPS & Batt. & BMS                              | Intelligence<br>Digital MES system<br>Quality&Traceability                                          |
| UPS/Battery/BMS one-stop provider                                              | Bus capacitors discharge rapidly after shutdown<br>Antiskid castors                                 | Productivity<br>UPS:3.5M units/year<br>Battery:3M kVAh/year                                         |



## 3.3 Technical Specifications

| MODEL                         |                                                                               | Classic 10KS                                                                                                                             | Classic 15K S     | Classic 20K S                            | Classic 30K S                            | Classic 40K S |
|-------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------|------------------------------------------|---------------|
| Capacity (VA/W)               |                                                                               | 10k/10k                                                                                                                                  | 15k/15k           | 20k/20k                                  | 30k/30k                                  | 40k/40k       |
| INPUT                         |                                                                               |                                                                                                                                          |                   |                                          |                                          |               |
| Nominal Voltage (Vac)         |                                                                               | 380/400/415 (3Ph+N+PE)                                                                                                                   |                   |                                          |                                          |               |
| Operating Voltage Range (Vac) |                                                                               | 305~478 (Full load); 208~478 (50% load)                                                                                                  |                   |                                          |                                          |               |
| Power Factor                  |                                                                               | ≥0.99                                                                                                                                    |                   |                                          |                                          |               |
| Harmonic Distortion (THDi)    |                                                                               | ≤3% Linear load                                                                                                                          |                   |                                          |                                          |               |
| Bypass Voltage Range (Vac)    |                                                                               | Max.voltage: 220: +25% (Optional +10%, +15%, +20%)                                                                                       |                   |                                          |                                          |               |
|                               |                                                                               | 230: +20% (Optional +10%, +15%)                                                                                                          |                   |                                          |                                          |               |
|                               |                                                                               | 240: +15% (Optional +10%)                                                                                                                |                   |                                          |                                          |               |
| Bypass Frequency Range (Hz)   |                                                                               | Min.voltage: -45% (Optional -20%, -30%)                                                                                                  |                   |                                          |                                          |               |
| OUTPUT                        |                                                                               | 50/60±10%                                                                                                                                |                   |                                          |                                          |               |
| Nominal Voltage (Vac)         |                                                                               | 380/400/415 (3Ph+N+PE)                                                                                                                   |                   |                                          |                                          |               |
| Voltage Regulation            |                                                                               | ±1%                                                                                                                                      |                   |                                          |                                          |               |
| Output Frequency (Hz)         |                                                                               | Line mode: ±1%/±2%/±4%/±5%/±10% of the rated frequency (Optional); Bat. mode: 50/60 (±0.1%)                                              |                   |                                          |                                          |               |
| Crest Factor                  |                                                                               | 3:1                                                                                                                                      |                   |                                          |                                          |               |
| Harmonic Distortion (THDv)    |                                                                               | ≤2% Linear load; ≤5% Non linear load                                                                                                     |                   |                                          |                                          |               |
| Overload                      | AC mode                                                                       | ≤110% 60min, ≤125% 10min, ≤150% 1min, >150% immediately turn to bypass                                                                   |                   |                                          |                                          |               |
|                               | Bat.mode                                                                      | ≤110% 10min, ≤125% 1min, ≤150% 5s, >150% immediately shut down                                                                           |                   |                                          |                                          |               |
| EFFICIENCY                    |                                                                               |                                                                                                                                          |                   |                                          |                                          |               |
| AC Mode                       |                                                                               | Up to 93.5%                                                                                                                              | Up to 94.5%       |                                          | Up to 95.2%                              |               |
| ECO Mode                      |                                                                               | Up to 98.0%                                                                                                                              | Up to 98.2%       |                                          | Up to 98.6%                              |               |
| BATTERY                       |                                                                               |                                                                                                                                          |                   |                                          |                                          |               |
| Battery Type                  |                                                                               | VRLA (Lead acid maintenance free battery)                                                                                                |                   |                                          |                                          |               |
| Battery Voltage (Vdc)         | Chassis 1: ±120 (20pcs 9Ah)(20pcs 7Ah, 2x20pcs 7/9Ah, 3x20pcs 7/9Ah optional) | ±120 (2x20pcs 9Ah) (2x20pcs 7Ah, 3x20pcs 7/9Ah optional)                                                                                 |                   | ±120 (3x20pcs 9Ah)(3x20pcs 7Ah optional) | ±180 (2x30pcs 9Ah)(2x30pcs 7Ah optional) |               |
|                               | Chassis 2: ±96Vdc (16pcs 9Ah)                                                 |                                                                                                                                          |                   |                                          |                                          |               |
| Charging Current(Max.)(A)     |                                                                               | 1.35 (2.7 Optional)                                                                                                                      | 2.7               |                                          | 4.05                                     |               |
| ENVIRONMENTAL                 |                                                                               |                                                                                                                                          |                   |                                          |                                          |               |
| Operating Temperature (°C)    |                                                                               | 0~40                                                                                                                                     |                   |                                          |                                          |               |
| Storage Temperature (°C)      |                                                                               | -25~55 (No battery)                                                                                                                      |                   |                                          |                                          |               |
| Humidity Range                |                                                                               | 0~95% (Non condensing)                                                                                                                   |                   |                                          |                                          |               |
| Altitude (m)                  |                                                                               | <1000, derating required when>1000                                                                                                       |                   |                                          |                                          |               |
| Noise Level (dB)              |                                                                               | <55                                                                                                                                      | <58               |                                          | <61                                      |               |
| PHYSICAL                      |                                                                               |                                                                                                                                          |                   |                                          |                                          |               |
| Dimension WxDxH (mm)          | Chassis 1: 250x900x868                                                        | 250x900x868                                                                                                                              |                   |                                          |                                          | <64           |
|                               | Chassis 2: 250x645x715                                                        |                                                                                                                                          |                   |                                          |                                          |               |
| Weight (kg)                   | Chassis 1: 129 (20pcs 9Ah)                                                    | 186 (2x20pcs 9Ah)                                                                                                                        | 187 (2x20pcs 9Ah) | 236 (3x20pcs 9Ah)                        | 239 (2x30pcs 9Ah)                        |               |
|                               | Chassis 2: 80 (16pcs 9Ah)                                                     |                                                                                                                                          |                   |                                          |                                          |               |
| STANDARDS                     |                                                                               |                                                                                                                                          |                   |                                          |                                          |               |
| Safety                        |                                                                               | IEC/EN 62040-1, IEC/EN 62477-1                                                                                                           |                   |                                          |                                          |               |
| EMC                           |                                                                               | IEC/EN 62040-2 (IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, IEC 61000-2-2) |                   |                                          |                                          |               |

1. Specifications are subject to change without prior notice
2. Data above are typical values for reference only, not as a basis for engineering design

## 2.3 Technical Specifications

This 1KVA&2KVA&3KVA high input power factor UPS system contains two major PCB assemblies. They are including:

| MODEL                          | Elite 10K                                                                                                                                | Elite 20K | Elite 30K | Elite 40K    | Elite 60K | Elite 80K    | Elite100K                                | Elite120K                                | Elite160K                                 |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|--------------|-----------|--------------|------------------------------------------|------------------------------------------|-------------------------------------------|
| Capacity (kVA/KW)              | 10/9                                                                                                                                     | 20/18     | 30/27     | 40/36        | 60/54     | 80/72        | 100/90                                   | 120/108                                  | 160/144                                   |
| INPUT                          |                                                                                                                                          |           |           |              |           |              |                                          |                                          |                                           |
| Operating Voltage Range (Vac)  | 380/400/415 (-25%/ +20% ), (3Ph + PE)                                                                                                    |           |           |              |           |              |                                          |                                          |                                           |
| Operating Frequency Range (Hz) | 50/60 (±5%)                                                                                                                              |           |           |              |           |              |                                          |                                          |                                           |
| Power Factor                   | ≥0.97 *                                                                                                                                  |           |           |              |           |              |                                          |                                          |                                           |
| OUTPUT                         |                                                                                                                                          |           |           |              |           |              |                                          |                                          |                                           |
| Output Voltage (Vac)           | 380/400/415 (±1%), (3Ph+N+PE)                                                                                                            |           |           |              |           |              |                                          |                                          |                                           |
| Output Frequency (Hz)          | 50/60 (±0.05%)                                                                                                                           |           |           |              |           |              |                                          |                                          |                                           |
| Harmonic Distortion (THDv)     | ≤2% (Linear load)                                                                                                                        |           |           |              |           |              | ≤1% (Linear load)                        |                                          |                                           |
| Crest Factor                   | 3:1 (Max)                                                                                                                                |           |           |              |           |              |                                          |                                          |                                           |
| Efficiency                     | Up to 88%                                                                                                                                | Up to 89% |           | Up to 90%    |           | Up to 90.5%  | Up to 92%                                |                                          | Up to 92.5%                               |
| BYPASS                         |                                                                                                                                          |           |           |              |           |              |                                          |                                          |                                           |
| Rated Voltage                  | 380/400/415, (3Ph + N + PE)                                                                                                              |           |           |              |           |              |                                          |                                          |                                           |
| Rated Frequency                | 50/60                                                                                                                                    |           |           |              |           |              |                                          |                                          |                                           |
| Voltage Protection Range       | Upper limit: +20% (+10%, +15%, +20% adjustable)<br>Lower limit: -40% (-10%, -20%, -30%, -40% adjustable)                                 |           |           |              |           |              |                                          |                                          |                                           |
| Frequency Protection Range     | ±10% (±2.5%, ±5%, ±10%, ±20% adjustable)                                                                                                 |           |           |              |           |              |                                          |                                          |                                           |
| BATTERY                        |                                                                                                                                          |           |           |              |           |              |                                          |                                          |                                           |
| Battery voltage (Vdc)          | 384 (360~384 )                                                                                                                           |           |           |              |           |              |                                          |                                          |                                           |
| SYSTEM FEATURES                |                                                                                                                                          |           |           |              |           |              |                                          |                                          |                                           |
| Transfer Time (ms)             | 0 (Line mode→ Battery mode)                                                                                                              |           |           |              |           |              |                                          |                                          |                                           |
| Overload                       | Load≤110%/60min; ≤125%/10mins; ≤150%/1 min, to Bypass                                                                                    |           |           |              |           |              |                                          |                                          |                                           |
| LED Display                    | Input, Inverter, Bypass, Battery, Output, Status                                                                                         |           |           |              |           |              |                                          |                                          |                                           |
| LCD Display                    | I/O voltage, frequency, power, power factor, battery voltage, current, battery status, load percentage, UPS status, history record       |           |           |              |           |              |                                          |                                          |                                           |
| Communication Interface        | RS232, RS485, EPO, Dry contact (Optional), SNMP card (Optional)                                                                          |           |           |              |           |              |                                          |                                          |                                           |
| Optional                       | Harmonic filter, SNMP adapter, LBS cables, battery temperature sensor, Bypass current-sharing inductor                                   |           |           |              |           |              |                                          |                                          |                                           |
| ENVIRONMENTAL                  |                                                                                                                                          |           |           |              |           |              |                                          |                                          |                                           |
| Operating Temperature(°C)      | 0~40                                                                                                                                     |           |           |              |           |              |                                          |                                          |                                           |
| Storage Temperature (°C)       | -25~55                                                                                                                                   |           |           |              |           |              |                                          |                                          |                                           |
| Humidity Range                 | 0~95% (Non-condensing)                                                                                                                   |           |           |              |           |              |                                          |                                          |                                           |
| Altitude (m)                   | <1500                                                                                                                                    |           |           |              |           |              |                                          |                                          |                                           |
| Noise Level (dB)               | <58                                                                                                                                      |           |           |              | <68       |              |                                          |                                          |                                           |
| PHYSICAL                       |                                                                                                                                          |           |           |              |           |              |                                          |                                          |                                           |
| Dimension WxDxH (mm)           | 350×650×1050                                                                                                                             |           |           | 430×830×1100 |           | 720×690×1400 | 720×690×1400 (6P)<br>1515×830×1600 (12P) | 720×690×1400 (6P)<br>1515×830×1600 (12P) | 890×790×1600 (6P)<br>1400×1000×1900 (12P) |
| Net Weight (kg)                | 145                                                                                                                                      | 165       | 204       | 255          | 320       | 450          | 556 (6P)/1300 (12P)                      | 693 (6P)/1450 (12P)                      | 780 (6P)/1645 (12P)                       |
| Shipping Weight (kg)           | 160                                                                                                                                      | 180       | 225       | 280          | 345       | 485          | 591 (6P)/1370 (12P)                      | 738 (6P)/1520 (12P)                      | 825 (6P)/1775 (12P)                       |
| STANDARDS                      |                                                                                                                                          |           |           |              |           |              |                                          |                                          |                                           |
| Safety                         | IEC/EN 62040-1; IEC 62477-1                                                                                                              |           |           |              |           |              |                                          |                                          |                                           |
| EMC                            | IEC/EN 62040-2 (IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, IEC 61000-2-2) |           |           |              |           |              |                                          |                                          |                                           |
| Performance                    | IEC/EN 62040-3                                                                                                                           |           |           |              |           |              |                                          |                                          |                                           |

- \* With optional filter
1. Specifications are subject to change without prior notice
  2. Data above are typical values for reference only, not as a basis for engineering design

| MODEL                          | Elite200K                                                                                                                                    | Elite300K                                   | Elite400K            | Elite500K-12P  | Elite600K-12P  | Elite800K-12P  |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------|----------------|----------------|----------------|
| Capacity (kVA/KW)              | 200/180                                                                                                                                      | 300/270                                     | 400/360              | 500/450        | 600/540        | 800/720        |
| INPUT                          |                                                                                                                                              |                                             |                      |                |                |                |
| Operating Voltage Range (Vac)  | 380/400/415 (-25%/+20%) , (3Ph+PE)                                                                                                           |                                             |                      |                |                |                |
| Operating Frequency Range (Hz) | 50/60 (±5%)                                                                                                                                  |                                             |                      |                |                |                |
| Power Factor                   | ≥0.97 *                                                                                                                                      |                                             |                      |                |                |                |
| OUTPUT                         |                                                                                                                                              |                                             |                      |                |                |                |
| Output Voltage (Vac)           | 380/400/415 (±1%), (3Ph+N+PE)                                                                                                                |                                             |                      |                |                |                |
| Output Frequency (Hz)          | 50/60 (±0.05%)                                                                                                                               |                                             |                      |                |                |                |
| Harmonic Distortion (THDv)     | ≤1% (Linear load)                                                                                                                            |                                             |                      |                |                |                |
| Crest Factor                   | 3:1 (Max)                                                                                                                                    |                                             |                      |                |                |                |
| Efficiency                     | Up to 92.5%                                                                                                                                  | Up to 93%                                   |                      | Up to 93.5%    |                | Up to 94%      |
| BYPASS                         |                                                                                                                                              |                                             |                      |                |                |                |
| Rated Voltage (Vac)            | 380/400/415, (3Ph+N+PE)                                                                                                                      |                                             |                      |                |                |                |
| Rated Frequency (Hz)           | 50/60                                                                                                                                        |                                             |                      |                |                |                |
| Voltage Protection Range       | Upper limit: +20% (+10%, +15%, +20% adjustable)<br>Lower limit: -40% (-10%, -20%, -30%, -40% adjustable)                                     |                                             |                      |                |                |                |
| Frequency Protection Range     | ±10% (±2.5%, ±5%, ±10%, ±20% adjustable)                                                                                                     |                                             |                      |                |                |                |
| BATTERY                        |                                                                                                                                              |                                             |                      |                |                |                |
| Battery Voltage (Vdc)          | 384 (360~408)                                                                                                                                |                                             |                      | 480            |                | 576            |
| SYSTEM FEATURES                |                                                                                                                                              |                                             |                      |                |                |                |
| Transfer Time (ms)             | 0 (Line mode → Battery mode)                                                                                                                 |                                             |                      |                |                |                |
| Overload                       | Load≤110%/60min; ≤125%/10mins; ≤150%/1 min, to Bypass                                                                                        |                                             |                      |                |                |                |
| LED Display                    | Input, Inverter, Bypass, Battery, Output, Status                                                                                             |                                             |                      |                |                |                |
| LCD Display                    | I/O voltage, frequency, power, power factor, battery voltage, current, battery status, load percentage, UPS status, history record, settings |                                             |                      |                |                |                |
| Communication Interface        | RS232, RS485, EPO, Dry contact, SNMP card (Optional)                                                                                         |                                             |                      |                |                |                |
| Optional                       | Harmonic filter, SNMP adapter, LBS cables, battery temperature sensor, Bypass current-sharing inductor                                       |                                             |                      |                |                |                |
| ENVIRONMENTAL                  |                                                                                                                                              |                                             |                      |                |                |                |
| Operating Temperature(℃)       | 0~40                                                                                                                                         |                                             |                      |                |                |                |
| Storage Temperature (℃)        | -25~55                                                                                                                                       |                                             |                      |                |                |                |
| Humidity Range                 | 0~95% (Non-condensing)                                                                                                                       |                                             |                      |                |                |                |
| Altitude (m)                   | <1500                                                                                                                                        |                                             |                      |                |                |                |
| Noise Level (dB)               | <72                                                                                                                                          |                                             |                      | <75            |                |                |
| PHYSICAL                       |                                                                                                                                              |                                             |                      |                |                |                |
| Dimension WxDxH (mm)           | 1200×800×1600 (6P)<br>1400×1000×1900 (12P)                                                                                                   | 1400×1000×1900 (6P)<br>1640×1000×1900 (12P) |                      | 2580×1000×1900 | 2800×1040×1900 | 3280×1040×1900 |
| Net Weight (kg)                | 1030 (6P)/1715 (12P)                                                                                                                         | 1560 (6P)/2395 (12P)                        | 1640 (6P)/2510 (12P) | 3510           | 3950           | 4950           |
| Shipping Weight (kg)           | 1130 (6P)/1845 (12P)                                                                                                                         | 1690 (6P)/2545 (12P)                        | 1770 (6P)/2665 (12P) | 3730           | 4250           | 5245           |
| STANDARDS                      |                                                                                                                                              |                                             |                      |                |                |                |
| Safety                         | IEC/EN 62040-1; IEC 62477-1                                                                                                                  |                                             |                      |                |                |                |
| EMC                            | IEC/EN 62040-2 (IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, IEC 61000-2-2)     |                                             |                      |                |                |                |
| Performance                    | IEC/EN 62040-3                                                                                                                               |                                             |                      |                |                |                |

## 4.1 Hyper Series - Heavy Loading Rack Mount



## 4.2 Features of the UPS

- High power density
- Online double conversion with full digital control
- Wide input voltage range: 110~300Vac
- Input power factor 0.99 with PFC
- Selectable output voltage: 208/220/230/240Vac
- Smart charger design for optimized battery performance
- Maximum charging current can be expanded to 12A (Long run unit)
- Emergency power off function (EPO)
- ECO mode operation for energy saving
- Generator compatible
- Cold start
- Intelligent fan speed regulation
- Load segment settable (Optional)
- Versatile LCD human-computer interface
- Multiple communication interface: RS232 (USB/EPO/ Dry contact card/SNMP card optional)
- Multiple protection function: short-circuit, overload, overheat, battery overcharge and overdischarge, output low voltage and fan fault alarm



Rear Panel



SNMP card



Dry contact card

Optional socket



## 4.3 Technical Specifications

| MODEL                         | Hyper 1k H                                                                                                                                           |    |     |    | Hyper 1k S  |    | Hyper 1.5K H |    | Hyper 1.5K S                 |    | Hyper 2K H  |    | Hyper 2K S     |    | Hyper 3K H |  | Hyper 3K S |  |      |  |      |  |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|----|-------------|----|--------------|----|------------------------------|----|-------------|----|----------------|----|------------|--|------------|--|------|--|------|--|
| Capacity (VA/W)               | 1000/900                                                                                                                                             |    |     |    | 1500/1350   |    |              |    | 2000/1800                    |    |             |    | 3000/2700      |    |            |  |            |  |      |  |      |  |
| INPUT                         |                                                                                                                                                      |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Nominal Voltage (Vac)         | 208/220/230/240                                                                                                                                      |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Operating Voltage Range (Vac) | 110~300 (176~264 @ 100% load)                                                                                                                        |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Power Factor                  | ≥0.99                                                                                                                                                |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Bypass Frequency Range (Hz)   | 40~70 (50/60 Auto-Sensing)                                                                                                                           |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| OUTPUT                        |                                                                                                                                                      |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Nominal Voltage (Vac)         | 208/220/230/240                                                                                                                                      |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Voltage Regulation            | ±1%                                                                                                                                                  |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Power Factor                  | 0.9                                                                                                                                                  |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Output Frequency (Hz)         | Line mode: 46~54 or 56~64; Bat. mode: (50/60±0.1%)                                                                                                   |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Crest Factor                  | 3:1                                                                                                                                                  |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Harmonic Distortion (THDv)    | ≤3% Linear load; ≤5% Non linear load                                                                                                                 |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Transfer Time (ms)            | AC mode to Bat.mode: 0; Inverter to Bypass: 4 (Typical)                                                                                              |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Waveform                      | Pure Sinewave                                                                                                                                        |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| EFFICIENCY                    |                                                                                                                                                      |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| AC Mode                       | Up to 90%                                                                                                                                            |    |     |    | Up to 90.5% |    |              |    | Up to 91%                    |    |             |    | Up to 92%      |    |            |  |            |  |      |  |      |  |
| ECO Mode                      | Up to 95%                                                                                                                                            |    |     |    | Up to 96%   |    |              |    | Up to 96%                    |    |             |    | Up to 97%      |    |            |  |            |  |      |  |      |  |
| BATTERY                       |                                                                                                                                                      |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Battery Type                  | VRLA (Lead acid maintenance free battery)                                                                                                            |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Battery Voltage (Vdc)         | 24                                                                                                                                                   | 36 | 24  | 36 | 36          | 36 | 48           | 72 | 48                           | 72 | 72          | 96 | 72             | 96 |            |  |            |  |      |  |      |  |
| Battery Capacity (Ah)         | S: 7/9; H: Depends on the capacity of external batteries                                                                                             |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Battery Quantity (pcs)        | 2                                                                                                                                                    | 3  | 2   | 3  | 3           | 3  | 4            | 6  | 4                            | 6  | 6           | 8  | 6              | 8  |            |  |            |  |      |  |      |  |
| Typical Recharge Time (hours) | S: 4 (To 90% of full capacity)                                                                                                                       |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Charging Current (Max.)(A)    | 6/12                                                                                                                                                 |    | 1   |    | 6/12        |    | 1            |    | 6/12                         |    | 1           |    | 6/12           |    | 1          |  |            |  |      |  |      |  |
| MANAGEMENT                    |                                                                                                                                                      |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| LED Display                   | Line mode, Bat.mode, ECO mode, Bypass mode, Battery low voltage, Overload & UPS fault                                                                |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| LCD Display                   | Input voltage, Input frequency, Output voltage, Output frequency, Load percentage, Battery voltage, Inner temperature& Remaining battery backup time |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| ENVIRONMENTAL                 |                                                                                                                                                      |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Operating Temperature (°C)    | 0~40                                                                                                                                                 |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Storage Temperature (°C)      | -25~55                                                                                                                                               |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Humidity Range                | 20~95%RH @ 0~40°C (Non condensing)                                                                                                                   |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Altitude (m)                  | <1000, derating required between 1000 to 3000                                                                                                        |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Noise Level (dB)              | <50                                                                                                                                                  |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| PHYSICAL                      |                                                                                                                                                      |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Dimension WxDxH (mm)          | 144×293×209                                                                                                                                          |    |     |    | 144×399×209 |    |              |    | 191×460×337<br>(144×399×209) |    |             |    | 191×460×337    |    |            |  |            |  |      |  |      |  |
| Weight (kg)                   | 4.1                                                                                                                                                  |    | 9.3 |    | 12.5        |    | 5.6          |    | 13.1                         |    | 10<br>(5.8) |    | 19.5<br>(15.4) |    | 24.5       |  | 10         |  | 24.5 |  | 29.5 |  |
| STANDARDS                     |                                                                                                                                                      |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| Safety                        | IEC/EN 62040-1, IEC/EN 62477-1                                                                                                                       |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |
| EMC                           | IEC/EN 62040-2 (IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, IEC 61000-2-2)             |    |     |    |             |    |              |    |                              |    |             |    |                |    |            |  |            |  |      |  |      |  |

1. When output voltage is 208Vac, need to derate to 80% of the unit capacity
2. Specifications are subject to change without prior notice
3. Data above are typical values for reference only, not as a basis for engineering design

## 5.1 Automatic Transfer Switch Introduction



## 5.2 Features of Automatic Transfer Switch

- Master–slave power with manual/auto switching
- No power interruption during switching
- Dual input power support (same/different phase; neutral/ground configurations supported)
- Over-current protection on output (up to 110% overload)
- Surge protection (Class C) on both inputs
- RS232 and dry-contact signals; dual-source tracking
- Real-time over-voltage / under-voltage / power-failure monitoring and protection
- IEC C13 and IEC C19 industrial output sockets
- LCD status display and LED indicators for faults/errors

## 5.3 Technical Specifications

| Model                    |                                     | MSTS-16A/2P                                                   | MSTS-25A/2P    | MSTS-32A/2P    |
|--------------------------|-------------------------------------|---------------------------------------------------------------|----------------|----------------|
| Standard capacity        |                                     | 3.5KW                                                         | 5.5KW          | 7KW            |
| Rated current            |                                     | 16A                                                           | 25A            | 32A            |
| Switching time           |                                     | 6-12ms                                                        |                |                |
| Input connector          |                                     | GB standard 16A plug                                          | Input wire end | Input wire end |
| Output interface         |                                     | C13*6+C19                                                     | C19*3          | C19*3          |
| Priority settings        |                                     | Configurable:                                                 |                |                |
| Input                    | M1 input voltage range              | 185VAC-260±5VAC                                               |                |                |
|                          | M2 input voltage range              | 185VAC-260±5VAC                                               |                |                |
|                          | Input frequency range               | 40HZ-60HZ                                                     |                |                |
|                          | Voltage environment                 | Phase support: same phase and different phase                 |                |                |
| Output                   | Output voltage range                | 185VAC-260±5VAC                                               |                |                |
|                          | Output over-current                 | 110%                                                          |                |                |
|                          | Output efficiency                   | ≥98%                                                          |                |                |
| Management               | Status display                      | Display: LCD for battery/power parameters; LED status display |                |                |
|                          | Interface Management                | Communication & signals: RS232 and dry contacts               |                |                |
|                          | Software                            | X                                                             |                |                |
| Protection               | Power Surge Protection              | Lightning surge protection on inputs M1/M2                    |                |                |
|                          | Communication Surge Protection      | RS232 port / dry-contact port                                 |                |                |
|                          | Overload & Short-Circuit Protection | Over-current & short-circuit protector                        |                |                |
| Standards certifications | Design & Manufacturing              | ISO9001:2015                                                  |                |                |
|                          | Product Certifications              | CE                                                            |                |                |
|                          |                                     |                                                               |                |                |
| Environment              | Ambient operating temperature       | -30°C-60°C                                                    |                |                |
|                          | Ambient humidity                    | 10%-9C%                                                       |                |                |
|                          | Operating altitude                  | 1000 m                                                        |                |                |
| Physical characteristics | Device dimensions (W×D×H), mm       | 482*250*44                                                    |                |                |
|                          | Package dimensions (W×D×H), mm      | 540*360*110                                                   |                |                |
|                          |                                     | 5.5Kg                                                         | 6Kg            | 6.5Kg          |