



EMERGENCY



E-MEDICAL



INDUSTRY



DATACENTER



TRANSPORT

# Master HP UL



ONLINE



Tower



Service  
1st start



SmartGrid  
ready



**3:3** 65-500 kVA

## HIGHLIGHTS

- **High efficiency**
- **IGBT-based rectifier technology**
- **Compact, reliable and robust**
- **Galvanic isolation**
- **High overload capacity**

The high levels of quality, reliability and energy savings offered by the Master HP range of UPS, has been extended to include a UL/CSA Listed, 480 V 60 Hz version with ratings from 65 kVA to 500 kVA. IT managers, facility managers, and CTOs are under increasing pressure to reduce downtime and assure that their critical loads are supplied with uninterrupted and high quality power. With this increasingly stringent requirement, Riello UPS has invested in power solutions that meet strict demands; a commitment resulting in the launch of the Master HP UL range. More than just an innovative and technologically-advanced UPS, it is a leap into the future of three-phase technology. With its double conversion ON LINE technology based entirely

on IGBT and digital signal processors (DSP), the Master HP UL range ensures maximum critical load protection, with VFI SS 111 classification (Voltage and Frequency Independent) in accordance with IEC EN 62040-3.

This range is designed using a new configuration that includes an IGBT sinusoidal input rectifier. Unique in its design, double conversion technology with galvanic isolated output guarantees a quality power supply that is completely protected from all electrical anomalies at the input.

## COMPLETE GALVANIC SEPARATION

The Master HP UL UPS features an output isolation transformer on the inverter as part

of the inverter circuit inside the UPS cabinet, providing galvanic isolation between the load and the battery with improved versatility in system configuration, allowing:

- Complete UPS output galvanic isolation for critical infrastructures from the battery DC power source;
- Two truly separated supply inputs (utility and bypass), which can be taken from two different power sources (with different neutrals); this is particularly well suited for parallel systems in order to ensure selectivity between the two sources, improving the reliability of the entire installation;
- No neutral input connection is required at the UPS rectifier input stage; this method is particularly favorable in order to prevent the transmission of common neutral disturbances via the neutral conductor;
- No effects to the UPS output performance or reduced impact of the inverter power components while supplying specific loads; in addition the inverter transformer minimizes the impact of third harmonic disturbances, prevents the effects of energy back-feed into the inverter when supplying industrial load applications and can supply unbalanced loads;
- High inverter short circuit current to clear faults which occur between phase and neutral on load side (up to three times nominal current).

Output transformer housed within a cabinet which allows for a significant reduction in the footprint and provides space savings.

## ZERO IMPACT SOURCE

The Master HP UL series features the added advantages of the Zero Impact Source formula offered by an IGBT-based rectifier assembly. This eliminates problems connected with installation in networks with limited

power capacity, where the UPS is supplied by a generator set or anywhere there are compatibility problems with loads that generate current harmonics. Master MHT UL series UPS have zero impact on the power supply source, whether it is a utility grid or generator set:

- Input current distortion <3%;
- Input power factor 0.99;
- Power walk-in function that ensures progressive rectifier start up;
- Start up delay function, to restart the rectifiers when mains power is restored if there are several UPS in the system.

This provides savings in installation costs via:

- A smaller electrical infrastructure;
- Smaller circuit protection devices;
- Less wiring.

## FLEXIBILITY

Master HP UL is suitable for a wide range of applications including IT and the most demanding industrial environments and processes. With several operational configurations including ON LINE, ECO, SMART ACTIVE, STANDBY, Frequency Converter and Voltage Regulation. A broad range of accessories and options, complex configurations and system architectures can be achieved to guarantee maximum power availability and the option to add new UPS without interruption to site operations.

## BATTERY CARE SYSTEM: MAXIMUM BATTERY CARE

Master HP UL series UPS include a range of features designed to prolong battery life and reduce usage by using different recharging methods; deep discharge protection, current limitation, and voltage compensation based on ambient temperature.

## MAIN FEATURES

- Compact size: e.g.: only 2.330 in<sup>2</sup> for the Master HP UL 500 kVA;
- Reduced weight for transformer based UPS;
- Double load protection, both electronic and galvanic, towards the battery.

The entire Master HP UL range is suitable for use in a wide range of applications. The Master HP can supply any type of load, e.g. servers, controls, lighting, capacitive, switch mode. Power supply reliability and availability are ensured for critical applications by distributed parallel configurations of up to 8 units, for redundant (N+1) or power parallel configurations.

## ADVANCED SUPERVISION

The Master HP UPS has a front panel mounted graphic display providing UPS information, measurements, status updates and alarms in multiple languages, with waveform displays including voltage/current and providing a kWh reading that can be used to measure IT loads and calculate a Data Center PUE (Power Usage Effectiveness) ratio.

## OPTIONS

### SOFTWARE

PowerShield<sup>3</sup>

PowerNetGuard

### ACCESSORIES

NETMAN 204

Multi I/O (Relay Alarm card and generator Interface)

### PRODUCT ACCESSORIES

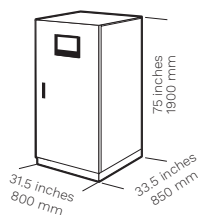
Parallel configuration kit (Closed Loop)

Fully configured battery systems with appropriate autonomy

Maintenance Bypass Switchgear for all models

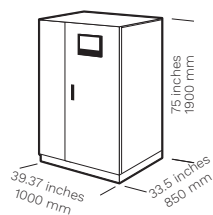
## DIMENSIONS

**MHT 65 UL**  
**MHT 80 UL**  
**MHT 100 UL**  
**MHT 125 UL**



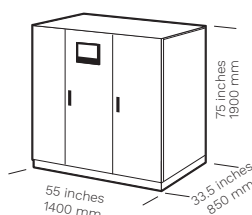
including manual bypass

**MHT 160 UL**  
**MHT 200 UL**  
**MHT 250 UL**



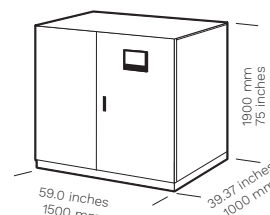
excluding manual bypass

**MHT 160 UL**  
**MHT 200 UL**  
**MHT 250 UL**

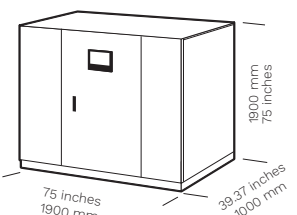


including manual bypass  
Top Cable Entry cabinets

**MHT 300 UL**  
**MHT 400 UL**  
**MHT 500 UL**



**MHT 300 UL TCE**  
**MHT 400 UL TCE**  
**MHT 500 UL TCE**



| MODELS                                                         | MHT 65 UL                                                                                                                                                                                                                                                                                                                                                                                   | MHT 80 UL | MHT 100 UL | MHT 125 UL | MHT 160 UL                 |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|------------|----------------------------|
| INPUT                                                          |                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |                            |
| Rated voltage [V]                                              | 480 three-phase + N                                                                                                                                                                                                                                                                                                                                                                         |           |            |            |                            |
| Frequency [Hz]                                                 | 45 to 65                                                                                                                                                                                                                                                                                                                                                                                    |           |            |            |                            |
| Power factor                                                   | >0.99                                                                                                                                                                                                                                                                                                                                                                                       |           |            |            |                            |
| Harmonic current distortion                                    | <3% THDi                                                                                                                                                                                                                                                                                                                                                                                    |           |            |            |                            |
| Soft start                                                     | 0 - 100% in 125" (selectable)                                                                                                                                                                                                                                                                                                                                                               |           |            |            |                            |
| Frequency tolerance                                            | ±2% (selectable from ±1% to ±5% from front panel)                                                                                                                                                                                                                                                                                                                                           |           |            |            |                            |
| Standard equipment provided                                    | Back Feed protection; separable bypass line                                                                                                                                                                                                                                                                                                                                                 |           |            |            |                            |
| BATTERIES                                                      |                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |                            |
| Type                                                           | VRLA, Wet Cell, NiCd                                                                                                                                                                                                                                                                                                                                                                        |           |            |            |                            |
| Ripple current                                                 | Zero                                                                                                                                                                                                                                                                                                                                                                                        |           |            |            |                            |
| Recharge voltage compensation                                  | -0.061% x V x °F / -0.11% x V x °C                                                                                                                                                                                                                                                                                                                                                          |           |            |            |                            |
| OUTPUT                                                         |                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |                            |
| Nominal power [kVA]                                            | 65                                                                                                                                                                                                                                                                                                                                                                                          | 80        | 100        | 125        | 160                        |
| Active power [kW]                                              | 58.5                                                                                                                                                                                                                                                                                                                                                                                        | 72        | 90         | 112.5      | 144                        |
| Number of phases                                               | 3 + N                                                                                                                                                                                                                                                                                                                                                                                       |           |            |            |                            |
| Rated voltage [V]                                              | 480 three-phase + N                                                                                                                                                                                                                                                                                                                                                                         |           |            |            |                            |
| Static stability                                               | ±1%                                                                                                                                                                                                                                                                                                                                                                                         |           |            |            |                            |
| Dynamic stability                                              | from ±5% to ±1% in 20 msec.                                                                                                                                                                                                                                                                                                                                                                 |           |            |            |                            |
| Voltage distortion                                             | <1% with linear load / <3% with non-linear load                                                                                                                                                                                                                                                                                                                                             |           |            |            |                            |
| Crest factor [Ipeak/Irms]                                      | 3:1                                                                                                                                                                                                                                                                                                                                                                                         |           |            |            |                            |
| Frequency stability on battery                                 | 0.05%                                                                                                                                                                                                                                                                                                                                                                                       |           |            |            |                            |
| Frequency [Hz]                                                 | 60                                                                                                                                                                                                                                                                                                                                                                                          |           |            |            |                            |
| Overload                                                       | 110% for 60 min.; 125% for 10 min.; 150% for 1 min.                                                                                                                                                                                                                                                                                                                                         |           |            |            |                            |
| INFO FOR INSTALLATION                                          |                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |                            |
| Weight [lbs/kg]                                                | 1500/680                                                                                                                                                                                                                                                                                                                                                                                    |           | 1610/730   | 1742/790   | 1851/840                   |
| Weight with TCE and maintenance bypass [lbs/kg]                | -                                                                                                                                                                                                                                                                                                                                                                                           | -         | -          | -          | 2204/1000                  |
| Dimensions (WxDxH) [inches/mm]                                 | 31.5x33.5x75 / 800x850x1900                                                                                                                                                                                                                                                                                                                                                                 |           |            |            | 39x33.5x75 / 1000x850x1900 |
| Dimensions with TCE and Maintenance bypass (WxDxH) [inches/mm] | -                                                                                                                                                                                                                                                                                                                                                                                           | -         | -          | -          | 55x33.5x75 / 1400x850x1900 |
| Remote signals                                                 | dry contacts (configurable)                                                                                                                                                                                                                                                                                                                                                                 |           |            |            |                            |
| Remote controls                                                | ESD and bypass (configurable)                                                                                                                                                                                                                                                                                                                                                               |           |            |            |                            |
| Communications                                                 | Double RS232 + dry contacts + 2 slots for communications interface with SNMP                                                                                                                                                                                                                                                                                                                |           |            |            |                            |
| Operating temperature                                          | 32 – 104 °F / 0 – 40 °C                                                                                                                                                                                                                                                                                                                                                                     |           |            |            |                            |
| Relative humidity                                              | <95% non-condensing                                                                                                                                                                                                                                                                                                                                                                         |           |            |            |                            |
| Color                                                          | Black (RAL 9005)                                                                                                                                                                                                                                                                                                                                                                            |           |            |            |                            |
| Noise level at 3.3 ft / 1 m (ECO Mode) [dBA]                   | 65                                                                                                                                                                                                                                                                                                                                                                                          |           |            | 68         |                            |
| IP rating                                                      | IP20                                                                                                                                                                                                                                                                                                                                                                                        |           |            |            |                            |
| Standards                                                      | UL Standard 1778: 2 <sup>nd</sup> edition from 65 to 125 kVA, 5 <sup>th</sup> edition from 160 to 250 kVA; From 160 to 250 kVA: UL 60950-1 1: Information Technology Equipment - Safety - Part 1: General Requirements; National Electrical Code (NFPA-70); FCC Part 15 Subpart J class A - Radio Frequency; IEC 62040-3; UL 924 and OUST category - Emergency Lighting and power equipment |           |            |            |                            |
| Classification in accordance with IEC 62040-3                  | (Voltage Frequency Independent) VFI - SS - 111                                                                                                                                                                                                                                                                                                                                              |           |            |            |                            |
| Transport                                                      | Pallet jack                                                                                                                                                                                                                                                                                                                                                                                 |           |            |            |                            |

| MODELS                                                    | MHT 200 UL                                                                                                                                                                                                                                                                                             | MHT 250 UL | MHT 300 UL                                                                                                                                              | MHT 400 UL             | MHT 500 UL             |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|
| INPUT                                                     |                                                                                                                                                                                                                                                                                                        |            |                                                                                                                                                         |                        |                        |
| Rated voltage [V]                                         | 480 three-phase + N                                                                                                                                                                                                                                                                                    |            |                                                                                                                                                         |                        |                        |
| Frequency [Hz]                                            | 45 to 65                                                                                                                                                                                                                                                                                               |            |                                                                                                                                                         |                        |                        |
| Power factor                                              | > 0.99                                                                                                                                                                                                                                                                                                 |            |                                                                                                                                                         |                        |                        |
| Harmonic current distortion                               | <3% THDi                                                                                                                                                                                                                                                                                               |            |                                                                                                                                                         |                        |                        |
| Soft start                                                | 0 - 100% in 125” (selectable)                                                                                                                                                                                                                                                                          |            |                                                                                                                                                         |                        |                        |
| Frequency tolerance                                       | ±2% (selectable from ±1% to ±5% from front panel)                                                                                                                                                                                                                                                      |            |                                                                                                                                                         |                        |                        |
| Standard equipment provided                               | Back Feed protection; separable bypass line                                                                                                                                                                                                                                                            |            |                                                                                                                                                         |                        |                        |
| BATTERIES                                                 |                                                                                                                                                                                                                                                                                                        |            |                                                                                                                                                         |                        |                        |
| Type                                                      | VRLA, Wet Cell, NiCd on Racks or Cabinet                                                                                                                                                                                                                                                               |            |                                                                                                                                                         |                        |                        |
| Ripple current                                            | Zero                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                         |                        |                        |
| Recharge voltage compensation                             | -0.061% x V x °F / -0.11% x V x °C                                                                                                                                                                                                                                                                     |            |                                                                                                                                                         |                        |                        |
| OUTPUT                                                    |                                                                                                                                                                                                                                                                                                        |            |                                                                                                                                                         |                        |                        |
| Nominal power [kVA]                                       | 200                                                                                                                                                                                                                                                                                                    | 250        | 300                                                                                                                                                     | 400                    | 500                    |
| Active power [kW]                                         | 180                                                                                                                                                                                                                                                                                                    | 225        | 300                                                                                                                                                     | 400                    | 450                    |
| Number of phases                                          | 3 + N                                                                                                                                                                                                                                                                                                  |            |                                                                                                                                                         |                        |                        |
| Rated voltage [V]                                         | 480 three-phase + N                                                                                                                                                                                                                                                                                    |            |                                                                                                                                                         |                        |                        |
| Static stability                                          | ±1%                                                                                                                                                                                                                                                                                                    |            |                                                                                                                                                         |                        |                        |
| Dynamic stability                                         | from ±5% to ±1% in 20 msec.                                                                                                                                                                                                                                                                            |            |                                                                                                                                                         |                        |                        |
| Voltage distortion                                        | <1% with linear load / <3% with non-linear load                                                                                                                                                                                                                                                        |            |                                                                                                                                                         |                        |                        |
| Crest factor [Ipeak/Irms]                                 | 3:1                                                                                                                                                                                                                                                                                                    |            |                                                                                                                                                         |                        |                        |
| Frequency stability on battery                            | 0.05%                                                                                                                                                                                                                                                                                                  |            |                                                                                                                                                         |                        |                        |
| Frequency [Hz]                                            | 60                                                                                                                                                                                                                                                                                                     |            |                                                                                                                                                         |                        |                        |
| Overload                                                  | 110% for 60 min.; 125% for 10 min.; 150% for 1 min.                                                                                                                                                                                                                                                    |            |                                                                                                                                                         |                        |                        |
| INFO FOR INSTALLATION                                     |                                                                                                                                                                                                                                                                                                        |            |                                                                                                                                                         |                        |                        |
| Weight [lbs/kg]                                           | 2138/970                                                                                                                                                                                                                                                                                               | 2247/1110  | 4190/1900                                                                                                                                               | 4741/2150              | 4741/2150              |
| Weight with TCE and maintenance bypass [lbs/kg]           | 2524/1145                                                                                                                                                                                                                                                                                              | 2799/1270  | 4410/2000 <sup>1</sup>                                                                                                                                  | 4961/2250 <sup>1</sup> | 4961/2250 <sup>1</sup> |
| Dimensions (WxDxH) [inches/mm]                            | 39x33.5x75 / 1000x850x1900                                                                                                                                                                                                                                                                             |            | 59x39.5x75 / 1500x1000x1900                                                                                                                             |                        |                        |
| Dimensions with TCE and manual bypass (WxDxH) [inches/mm] | 55x33.5x75 / 1400x850x1900                                                                                                                                                                                                                                                                             |            | 75x39.5x75 / 1900x1000x1900 <sup>1</sup>                                                                                                                |                        |                        |
| Remote signals                                            | dry contacts (configurable)                                                                                                                                                                                                                                                                            |            |                                                                                                                                                         |                        |                        |
| Remote controls                                           | ESD and bypass (configurable)                                                                                                                                                                                                                                                                          |            |                                                                                                                                                         |                        |                        |
| Communications                                            | Double RS232 + dry contacts + 2 slots for communications interface                                                                                                                                                                                                                                     |            |                                                                                                                                                         |                        |                        |
| Operating temperature                                     | 32 – 104 °F / 0 – 40 °C                                                                                                                                                                                                                                                                                |            |                                                                                                                                                         |                        |                        |
| Relative humidity                                         | <95% non-condensing                                                                                                                                                                                                                                                                                    |            |                                                                                                                                                         |                        |                        |
| Color                                                     | Black (RAL 9005)                                                                                                                                                                                                                                                                                       |            |                                                                                                                                                         |                        |                        |
| Noise level at 3.3 ft / 1 m (ECO Mode) [dBA]              | 68                                                                                                                                                                                                                                                                                                     |            | 72                                                                                                                                                      |                        |                        |
| IP rating                                                 | IP20                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                         |                        |                        |
| Standards                                                 | UL Standard 1778: 5 <sup>th</sup> edition; UL 60950-1 1: Information Technology Equipment - Safety - Part 1: General Requirements; National Electrical Code (NFPA-70); FCC Part 15 Subpart J class A – Radio Frequency; IEC 62040-3; UL 924 and OUST category – Emergency Lighting and power equipment |            | UL Standard 1778: 5 <sup>th</sup> edition; National Electrical Code (NFPA-70); NEMA; CSA C22.2; ASME; FCC section 15 subsection J class A; IEC 62040-3; |                        |                        |
| Classification in accordance with IEC 62040-3             | (Voltage Frequency Independent) VFI - SS - 111                                                                                                                                                                                                                                                         |            |                                                                                                                                                         |                        |                        |
| Transport                                                 | Pallet jack                                                                                                                                                                                                                                                                                            |            |                                                                                                                                                         |                        |                        |

<sup>1</sup> Maintenance Bypass Switch – on option.