



EMERGENCY



E-MEDICAL



INDUSTRY



DATACENTER



TRANSPORT

# Master HP FC UL



ONLINE



Tower



Service  
1st start



SmartGrid  
ready



**3:3** 80-200 kVA

Voltage and Frequency Converter

## HIGHLIGHTS

- **High efficiency**
- **IGBT-based rectifier technology**
- **Output voltage: 400V - 50 Hz**
- **Galvanic isolation**
- **High overload capacity**

The high levels of quality, reliability and energy savings offered by the Master HP range of UPS have been extended to include frequency converter 480 V - 60 Hz input / 400 V - 50 Hz output certified as UL, with power ratings from 80 to 200 kVA.

The typical application of such Frequency Converters is the power supply of the loads at 400 V, 50 Hz as for example imported from other countries. The FC units can work with or without battery.

With its double conversion ON LINE technology based entirely on IGBT and digital signal processors (DSP), the Master HP FC 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

Master HP FC UL feature an output isolation transformer (delta zig/zag type) on the inverter as part of the inverter circuit inside the FC cabinet, providing galvanic isolation between the load and the battery with improved versatility in system configuration, allowing:

- Complete FC output galvanic isolation for critical infrastructures from the battery DC power source;

- No neutral input connection is required at the rectifier input stage;
- No effects to the FC output performance or reduced impact of the inverter power components whilst 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 FC UL 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 FC is supplied by a generator set or anywhere there are compatibility problems with loads that generate current harmonics. Master HP UL series FC have zero impact on the power supply source, whether it is a mains 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 FC in the system.

This provides savings in installation costs via:

- a smaller electrical infrastructure.
- smaller circuit protection devices
- less wiring.

## BATTERY CARE SYSTEM: MAXIMUM BATTERY CARE

Master HP FC UL uses the Battery Care System, which optimises battery performance in order to extend the battery life for as long as possible.

## MAIN FEATURES

- Compact size: e.g.: only 1318 in<sup>2</sup> for Master MHT FC 200 UL
- Reduced weight for transformer based FC
- Double load protection, both electronic and galvanic, towards the battery.

The entire Master HP FC UL range is suitable for use in a wide range of applications.

Thanks to the flexibility of configuration, available options and accessories, it is suitable for supplying any type of load, e.g. capacitive loads such as blade servers, rather than motor drivers or any other critical vertical application. 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

Master HP series FC have a front panel mounted graphic display providing FC information, measurements, status updates and alarms in different languages, with wave form 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

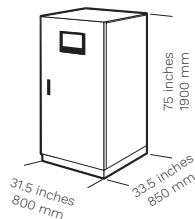
NETMAN 204  
Multi I/O (Relay Alarm card and generator Interface)

### PRODUCT ACCESSORIES

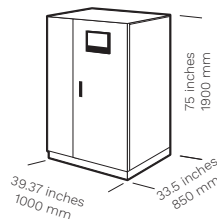
Parallel configuration kit (Closed Loop)  
Fully configured battery systems with appropriate autonomy

## DIMENSIONS

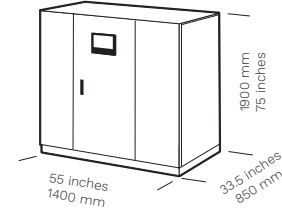
**MHT FC 80 UL  
MHT FC 100 UL**



**MHT FC 125 UL - MHT FC 160 UL  
MHT FC 200 UL**



**MHT FC 125 UL TCE  
MHT FC 160 UL TCE  
MHT FC 200 TCE**



MODELS	MHT FC 80 UL	MHT FC 100 UL	MHT FC 125 UL	MHT FC 160 UL	MHT FC 200 UL
<b>INPUT</b>					
Rated voltage [V]	480 three-phase (+N if needed)				
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)				
<b>BATTERIES</b>					
Type	VRLA AGM / GEL; NiCd; Li-ion; Supercaps and Flywheel				
Ripple current	Zero				
Recharge voltage compensation	-0.061% x V x °F / -0.11% x V x °C				
<b>OUTPUT</b>					
Nominal power [kVA]	80	100	125	160	200
Active power [kW]	72	90	112.5	144	180
Number of phases	3 + N				
Rated voltage [V]	400 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 [I <sub>peak</sub> /I <sub>rms</sub> ]	3:1				
Frequency stability on battery	0.05%				
Frequency [Hz]	50				
Overload	110% for 60 min.; 125% for 10 min.; 150% for 1 min.				
<b>INFO FOR INSTALLATION</b>					
Weight [lbs/kg]	1610/730	1742/790	1852/840	2139/970	2448/1110
Weight with TCE [lbs/kg]	-	-	2205/1000	2525/1145	2800/1270
Dimensions (WxDxH) [inches/mm]	31.5x33.5x75 / 800x850x1900		39x33.5x75 / 1000x850x1900		
Dimensions with TCE (WxDxH) [inches/mm]	-	-	55x33.5x75 / 1400x850x1900		
Remote signals	dry contacts (configurable)				
Remote controls	ESD (configurable)				
Communications	Double RS232 + dry contacts + 2 slots for communications interface with SNMP, Modbus, and Bacnet Protocols				
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 80 and 100 kVA, 5 <sup>th</sup> edition from 125 to 200 kVA and CAN/CSA C22.2; From 125 to 200 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				
Classification in accordance with IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111				
Transport	Pallet jack or fork lift				

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