

Enhanced Power Services Limited



Local Area Networks (LAN)



Servers



Data Centres



Cash Registers



Telecommunication Devices



e-Business (Server Farms, ISP/ASP/POP)



Industrial PLCs



Electro Medical Devices



Emergency Devices (Lights/Alarms)

Multi Sentry

single-phase 10-20kVA

three-phase 10-120kVA

Highlights

- complete power range from 10 up to 120 kVA
- Small footprint
- High efficiency up to 96.5%
- Zero impact source
- Advanced communication
- Flexibility of use



Eco Level 6



USB Plug



SmartGrid Ready



Supercaps UPS



Energy Share



Service 1st-Start



The Multi Sentry series is ideal for protecting data centres and telecommunications systems, IT networks and critical systems in general, where the risks connected with poor energy supply can compromise the continuity of activities and services.

The Multi Sentry series is available in 10-12-15-20 kVA models with three-phase/single-phase input and single-phase output, and 10-12-15-20-30-40-60-80-100-120 kVA models with three-phase input and output and on-line double conversion technology in accordance with VFI-SS-111 classification (as set out in standard IEC EN 62040-3).

Multi Sentry is designed and built using state-of-the-art technology and components.

It is controlled by a DSP (Digital Signal Processor) microprocessor, to provide maximum protection to the powered loads with no impact on downstream systems, and optimised energy savings.

Its highly flexible design allows full compatibility with both three-phase and single-phase power supplies, thus eliminating problems in connecting the UPS to the system.

Zero impact source

Multi Sentry solves installation problems in systems where the power supply has limited power available, where the UPS is supported by a generator or where there



are compatibility problems with loads that generate harmonic currents; Multi Sentry has a zero impact on its power source, whether this is the mains power supply or a generator:

- 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.

In addition, Multi Sentry plays a filtering and power factor correction role in the power network upstream of the UPS, as it eliminates harmonic components and reactive power generated by the power utilities.

High output

State-of-the-art three-level NPC inverters are used to achieve an operating efficiency of 96.5%. This technology halves (50%) the energy dissipated in a year by traditional UPS, with an efficiency level of 92%. Its exceptional performance makes it possible to recover the capital investment cost in less than three years of operation.

Battery care system

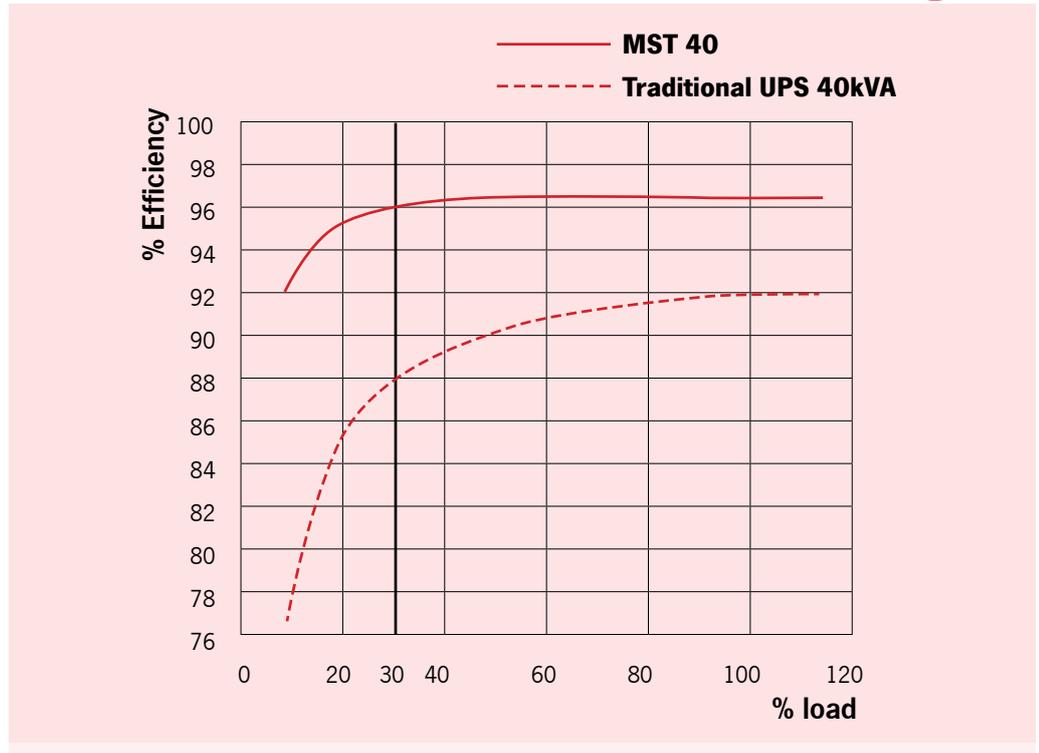
Proper battery care is critical to ensuring correct UPS operation in emergency conditions. The Riello UPS battery care system consists of a series of features and capabilities to optimise battery management and obtain the best performance and operating life possible. Battery recharging: Multi Sentry is suitable for use with hermetically sealed lead-acid (VRLA), AGM and GEL batteries and Open Vent and Nickel Cadmium batteries. Depending on the battery type, different charging methods are available:

- One-level voltage recharge, typically used for widely available VRLA AGM batteries
- Two-level voltage recharge according to IU specification
- Charge blocking system to reduce electrolyte consumption and lengthen the life of VRLA batteries.

Recharge voltage compensation based on temperature in order to prevent excessive battery charges or overheating.

Battery tests to diagnose in advance any reduction in performance or problems with the batteries.

Deep discharge protection: during extended low-load discharges, the end-of-discharge voltage is increased - as recommended by battery manufacturers - to prevent damage or reduced battery performance.



Ripple current: recharge ripple current (residual AC component) is one of the main causes of reduced reliability and battery life.

Using a high frequency battery charger, Multi Sentry reduces this value to negligible levels, prolonging battery life and maintaining high performance over a long period of time.

Wide voltage range: the rectifier is designed to operate within a wide input voltage range (up to - 40% at half load), reducing the need for battery discharge and thus helping to extend battery life.

Maximum reliability & availability

Distributed parallel configuration of up to 6 units per redundant (N+1) or power parallel system. The UPS continue to operate in parallel even if the connection cable is interrupted (Closed Loop).

Low running costs

Advanced technology and use of high performance components, allows Multi Sentry to provide exceptional performance and efficiency, with a compact size:

- the smallest overall footprint is only 0.26 sqm for Multi Sentry 20 kVA with batteries



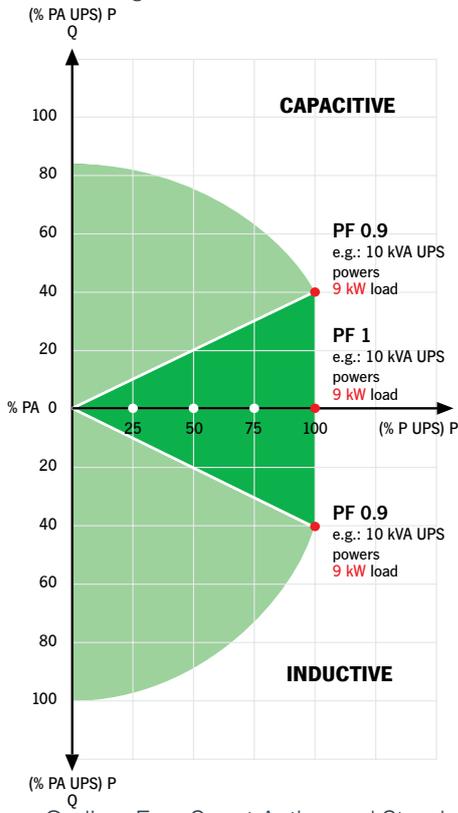


- the type of input stage (IGBT rectifier) ensures an input power factor close to 1 with low current distortion, avoiding the need for bulky and expensive filters
- output power factor of 0.9 providing up to 15% more active power than a traditional UPS, guaranteeing a greater margin when sizing UPS for potential future load increases.

Flexibility

With its flexible configuration, performance, accessories and options, Multi Sentry is suitable for use in a wide range of applications:

- suitable for powering capacitive loads, such as blade servers, without any reduction in active power from 0.9 lead to 0.9 lag



- On-line, Eco, Smart Active and Stand By Off operating modes - compatible with centralised power systems (CSS) applications.
- frequency converter mode
- configurable EnergyShare sockets to preserve runtime for the most critical loads or to be activated only when mains power fails
- Cold Start to switch on the UPS even when there is no mains power present
- MST/MSM version: cabinet (1320 x 440 x 850mm HxWxD) for optimised solutions when medium to long-term runtimes are required.
- optional temperature sensor for external battery cabinets, to assist recharge voltage compensation



- high power battery chargers to optimise charge time in the event of long runtimes
- optional dual input mains power supply
- isolation transformers for modifying the neutral earthing (separate power sources), or for galvanic isolation between the input and output
- 220 V three-phase IN/OUT version and 50/60 Hz frequency for 10-40 kVA power ratings
- different sized battery cabinets and capacities, for extended runtimes
- with the MST 60-100 the UPS can be raised up to 25 cm from the ground to allow the cables to pass more freely to/



from the UPS terminal board.

Advanced communications

Multi Sentry is equipped with a back-lit graphic display (240x128 pixels) providing UPS information, measurements, operating states and alarms in different languages. It can also display wave forms and voltage/current forms.

The default screen displays UPS status, graphically indicating the status of the various assemblies (rectifier, batteries, inverter, bypass).

- Advanced multi-platform communications for all operating systems and network environments: PowerShield3 monitoring and shutdown software included for Windows operating systems 8, 7, 2008, Vista, 2003, XP, Linux, Mac OS X, Sun Solaris, Linux,



VMWare ESX and other Unix operating systems

- Compatible with TeleNetGuard remote monitoring service
- RS232 serial and USB ports
- 3 slots for the installation of optional communications accessories such as network adapters, potential free contacts, etc.
- REPO Remote Emergency Power Off for switching off the UPS via a remote emergency button
- Input for the connection of the auxiliary contact of an external manual bypass
- Input for synchronisation from an external source
- Graphic display panel for remote connection.



BATTERY BOX

MODELS	BB 1320 480-T4 / BB 1320 480-T5 BB 1320 480-T2 / AB 1320 480-T5	BB 1600 480-S5 / AB 1600 480-S5	BB 1900 480-V6 / BB 1900 480-V7 BB 1900 480-V8 / BB 1900 480-V9 AB 1900 480-V9
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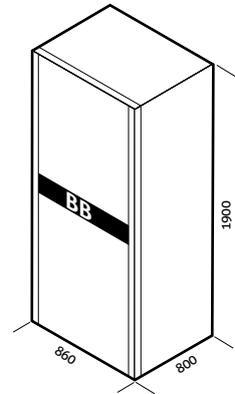
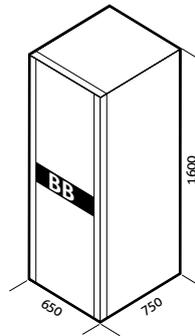
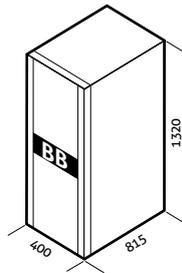
UPS Models

up to 60 kVA

up to 80 kVA

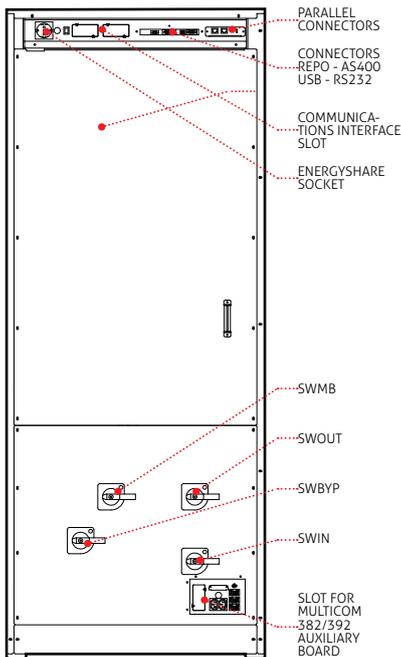
up to 120 kVA

Dimensions (mm)

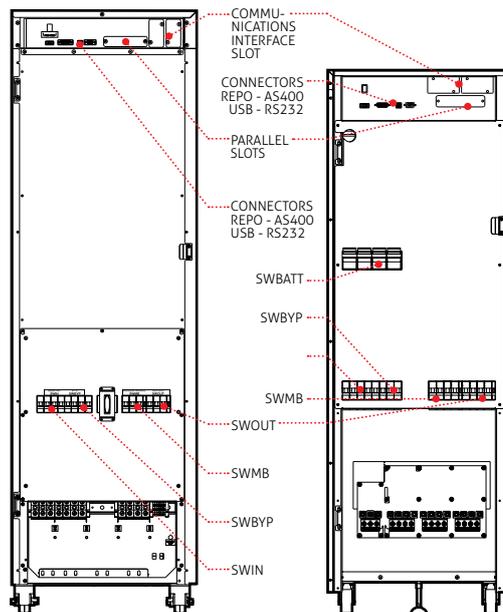


DETAILS

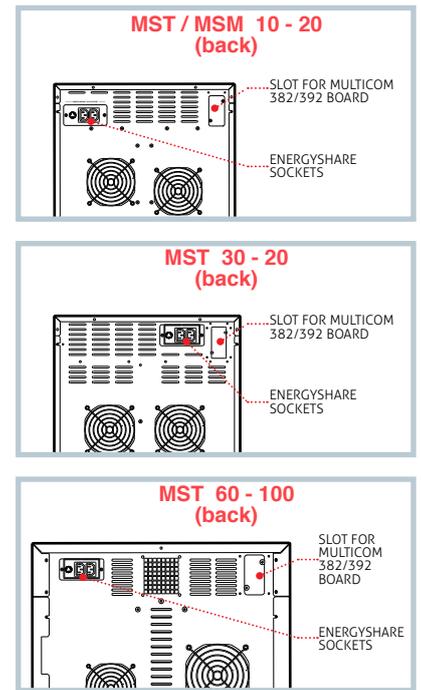
MST 120 (front)



MSt 60 - 80 - 100 (front)



MSM 10 - 20 MST 10 - 40 (front)



OPTIONS

SOFTWARE

- PowerShield
- PowerNetGuard

ACCESSORIES

- NETMAN 101 PLUS
- NETMAN 102 PLUS
- NETMAN 202 PLUS
- MULTICOM 301
- MULTICOM 302
- MULTICOM 351

MULTICOM 352

- MULTICOM 372
- MULTICOM 382
- MULTICOM 401
- MULTI I/O
- Interface Kit As400
- MULTIPANEL
- RTG 100
- 56K MODEM
- GSM MODEM
- MBB 100A

PRODUCT ACCESSORIES

- Battery temperature sensor
- Powerful battery charger
- Programmable relay board multicom 392
- Ups with internal isolation transformers (10-40 kVA)
- UPS 220 V in/out
- IP rating IP31/IP42
- Socle box for MST 60-100
- Energyshare sockets

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Features

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- Small footprint
- High efficiency up to 96.5%
- Zero impact source
- Advanced communication
- Flexibility of use



single phase / three phase 10 - 120 kVA

Multisentry UPS

UPS Model		MCM/MSM 10 ^{BAT}	MCM/MSM 12 ^{BAT}	MCM/MSM 15 ^{BAT}	MCM/MSM 20 ^{BAT}
Input	Nominal Voltage	380-400-415 Vac three-phase + N / 220-230-240 Vac single-phase + N			
	Nominal Frequency	50/60Hz			
	Frequency tolerance	40 - 72 Hz			
	Power factor at full load	0.99			
	Current distortion	THDI ≤ 3%			
Bypass	Nominal voltage	220-230-240 Vac-single-phase + N			
	Number of phases	1			
	Voltage tolerance	180 - 264 V (selectable)			
	Nominal frequency	50 or 60Hz (selectable)			
	Frequency tolerance	± 5 (selectable)			
Output	Nominal voltage (kVA)	10	12	15	20
	Active power (kW)	9	10.8	13.5	18
	Power factor	0.9			
	Number of phases	1			
	Nominal voltage (V)	220-230-240 Vac single-phase + N (selectable)			
	Static variation	± 1%			
	Dynamic variation	± 3%			
	Crest factor	3 : 1 I _{peak} /I _{rms}			
	Voltage distortion	≤ 1% with linear load / ≤ 3% with non-linear load			
	Frequency	50/60Hz			
	Frequency stability during battery operation	0.01%			
	Overload at Pf 0.8	115% unlimited, 125% for 10 minutes, 150% for 1 minute, 168% for 5 seconds			
	Batteries	Type	VRLA AGM/GEL/NiCd/Li-ion/Supercaps		
Recharge time		6 hours			
Info for Installation	Weight without batteries (kg) (MCM/MSM)	80 / 105	82 / 110	90 / 115	95 / 120
	Dimensions (WxDxH)(mm)	320 x 840 x 930 (MCM version) / 440 x 850 x 1320 (MSM version)			
	Communications	3 slots for communications interface / USB / RS232			
	Operating temperature	0°C / +40°C			
	Relative humidity	90% non-condensing			
	Colour	Dark grey RAL 7016			
	Noise level at 1m	< 52 dBA			
	IP rating	IP20			
	Smart Active efficiency	up to 98%			
	Standards	European Directives: L V 2006/95/CE low voltage Directive EMC 2004/108/CE electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2 C2 Classification in accordance with IEC 62040-3 (Voltage Frequency Independent) VFI - SS - 111			
	Moving the UPS	castors			

^{BAT} Also available with internal batteries

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single phase / three phase 10 - 120 kVA

Multisentry UPS

UPS Model		MCT/MST 10 ^{BAT}	MCT/MST 12 ^{BAT}	MCT/MST 15 ^{BAT}	MCT/MST 20 ^{BAT}	MST 30 ^{BAT}	MST 40 ^{BAT}	MST 60 ^{BAT}	MST 80 ^{BAT}	MST 100	MST 120	
Input	Nominal Voltage	380-400-415 Vac three-phase + N										
	Nominal Frequency	50/60Hz										
	Frequency tolerance	40 - 72 Hz										
	Power factor at full load	0.99										
	Current distortion	THDI ≤ 3%										
Bypass	Nominal voltage	380-400-415 Vac three-phase + N										
	Number of phases	3 + N										
	Voltage tolerance	180 - 264 V (selectable)										
	Nominal frequency	50 or 60Hz (selectable)										
	Frequency tolerance	± 5 (selectable)										
Output	Nominal voltage (kVA)	10	12	15	20	30	40	60	80	100	120	
	Active power (kW)	9	10.8	13.5	18	27	36	54	72	90	108	
	Power factor	0.9										
	Number of phases	3 + N										
	Nominal voltage (V)	380-400-415 Vac three-phase + N (selectable)										
	Static variation	± 1%										
	Dynamic variation	± 3%										
	Crest factor	3 : 1 I _{peak} /I _{rms}										
	Voltage distortion	≤ 1% with linear load / ≤ 3% with non-linear load										
	Frequency	50/60Hz										
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Overload at Pf 0.8	115% unlimited, 125% for 10 minutes, 150% for 1 minute, 168% for 5 seconds											
Batteries	Type	VRLA AGM/GEL/NiCd/Li-ion/Supercaps										
	Recharge time	6 hours										
Info for Installation	Weight without batteries (kg) (MCM/MSM)	80 / 105	82/110	90/115	95/120	135	145	190	200	220	380	
	Dimensions (WxDxH)(mm)	320 x 840 x 930 (MCT version) 440 x 850 x 1320 (MSM version)				440 x 850 x 1320		500 x 850 x 1600			750 x 855 x 1900	
	Communications	3 slots for communications interface / USB / RS232										
	Operating temperature	0°C / +40°C										
	Relative humidity	90% non-condensing										
	Colour	Dark grey RAL 7016										
	Noise level at 1m	< 52 dBA				< 48dBA		< 56dBA		< 58dBA		< 70dBA
	IP rating	IP20										
	Smart Active efficiency	up to 99%										
	Standards	European Directives: L V 2006/95/CE low voltage Directive EMC 2004/108/CE electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2 C2 Classification in accordance with IEC 62040-3 (Voltage Frequency Independent) VFI - SS - 111										
Moving the UPS	castors (10-100kVA) / transpallet (120kVA)											

^{BAT} Also available with internal batteries