RIELLO ELETTRONICA

riello ups

RELIABLE POWER FOR A SUSTAINABLE WORLD

GENERAL CATALOGUE

Reliable power for a sustainable world

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Key

1:1	Single-phase input and output
1:3	Single-phase input, three-phase output
3:1	Three-phase input, single-phase output
3:3	Three-phase input and output
1-3:1	Single-phase or three-phase input, single-phase output
1-3:3	Single-phase or three-phase input, three-phase output
VFD TYPE	UPS VFD (Voltage Frequency Dependent)
VI TYPE	UPS LINE INTERACTIVE (Voltage Independent)
VFI TYPE	UPS ON LINE (Voltage Frequency Independent)

	Tower
	Rack
	Rack / Tower
	Modular system
	UPS suitable for home small office applications
	UPS suitable for data centre applications
	UPS suitable for electro-medical applications
	UPS suitable for industrial applications
	UPS suitable for transport applications (railways, airports, naval)
	UPS suitable for emergency applications

UPS with “cULus listed” certificate for North America

UPS with “TUV Rheinland” certificate for North America

UPS with GS Nemko certificate

UPS ready for use in Smart Grids

Battery Swap. The batteries can be replaced during operation

Lithium battery compatible

UPS that can be combined with a flywheel

UPS also available with supercaps instead of batteries

EnergyShare sockets can be configured to disconnect load at user defined time (load shedding)

Plug and play. The UPS can be installed without the need for qualified personnel

Installation and initial start up should be carried out by qualified personnel

The device has a USB port

UPS classification Eco Level = 1

UPS classification Eco Level = 2

UPS classification Eco Level = 3

UPS classification Eco Level = 4

UPS classification Eco Level = 5

UPS classification Eco Level = 6

RIELLO ELETTRONICA

A world without energy is unthinkable. Everything moves and depends on energy. In our advanced societies, any interruption in the supply of power including a complete mains supply failure demonstrates how fundamental energy is to our daily lives. Riello Elettronica is the holding of a Group of companies whose core business is providing solutions that ensure quality power for business continuity, where the Group - with the brand Riello UPS - is permanently ranked among the top 5 players worldwide. However, power is not the only business; the Group have a strong presence in the home automation and security markets as well as in the real estate field.

riello ups

Leader in the power continuity thanks to a comprehensive range of professional UPS (Uninterruptible Power Supplies).

riello solar tech

Photovoltaic Inverter (PV) to cover every need, from small domestic systems to solar power plants.

AVS electronics

Systems for intrusion, fire alarm and domotics.

gamma system

Products for the safety of workers in dangerous areas.

cardin
riello elettronica group

A wide range of automation systems for access control.

CEIMU

Hydraulic plants, lubrication and automation installations for a wide variety of industrial applications.

Power
Automation & Security
Real Estate

Technology and innovation have always been the hallmarks of Riello Elettronica. Since its incorporation they are the drivers behind our success and the outward expression of the entrepreneurial legacy that has its roots in Verona and its surrounding areas. Continuing growth and successful figures; this is Riello Elettronica, expression of its entrepreneurial tradition towards innovation, global challenges and the development of technology 'made in Italy' in international markets.

300 MILLION € TURNOVER

1100 EMPLOYEES

85 BUSINESS COUNTRIES

30 COMPANIES

7 PRODUCTION SITES

RIELLO ELETTRONICA

riello ups

DUCATI CORSE

DUCATI CORSE | Official Sponsor

Riello UPS is the official sponsor of the Ducati Corse MotoGP Team.
Our partnership with Ducati provides Riello UPS with high levels of visibility and worldwide prestige. The two companies share values and principles that unite them in perfect synergy.

PERFECT SYNERGY

RIELLO UPS AND DUCATI TOGETHER SINCE 2007

High performance
Unlimited energy
Italian technology.
These are the values
we share with Ducati.

Main Sponsor

aruba.it RACING
Ducati Superbike Team

Riello UPS is the main sponsor of the Aruba.it Racing - Ducati Team.
The collaboration best represents the Riello UPS philosophy, which in partnership with Aruba.it and Ducati, produces a close-knit and productive team that achieves goals and results of absolute excellence.

Riello UPS races into the future with FORMULA E and Audi Motor Sport

Electricity, future-oriented technology,
innovation, **smart energy** management
and above all **“green”** are the key drivers behind
the ongoing commitment of Riello UPS and Audi to Formula E.

Audi Sport
Official Partner

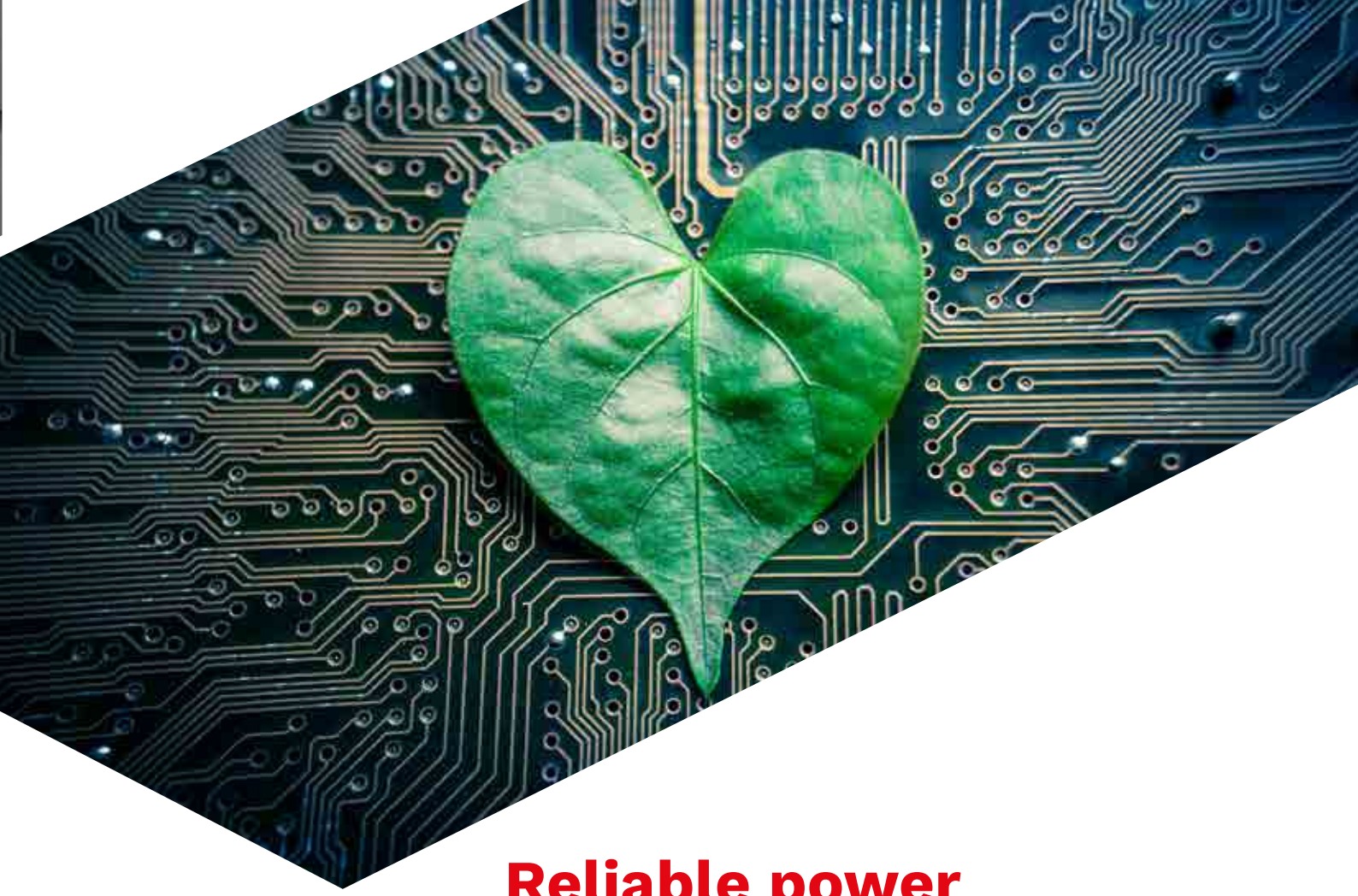
Riello UPS is an official partner of the Audi Sport Abt Schaeffler Formula E team in the FIA Formula E Championships. Formula E embodies the philosophy of Riello UPS: green technology that reduces pollution at the same time as enhancing performance, demonstrating how electric single-seaters can deliver true excellence. Electric cars are the future of mobility and Riello UPS, with its efficient products and Smart Grid Ready solutions, represents the future of hight quality, sustainable energy.

Riello UPS

Brand Values

INNOVATION
the secret of an all-Italian success story

Riello UPS offers a diverse choice of products organized into 23 ranges of uninterruptible power supplies (UPS) incorporating several different state-of-the-art technological architectures. Thanks to its two research centres in Legnago (Verona) and Cormano (Milan), world class centres of excellence for the design, development and testing of uninterruptible power supplies, Riello UPS constantly innovates its product portfolio, keeping it at the pinnacle of performance, reliability and competition. In addition, in the event of large tenders or commissions Riello UPS often provides bespoke solutions based on the specifications provided, demonstrating its attention to the customer's individual requirements. Riello UPS designs and manufactures its UPS in Italy in order to maintain direct control over quality and reliability standards, in addition to control over the entire manufacturing, sales and after-sales service processes.
This customer-centric strategy encourages continuous improvement by monitoring customer feedback and using it to make rapid adjustments to optimise features as required by the market. This process further consolidates Riello UPS's reputation as a reliable, dynamic and quality-oriented company.
It doesn't stop here however: the successful development of innovative and modern UPS solutions such as Modular UPS and Smart Grid Ready UPS (i.e. ready for intelligent power distribution grids which represent the future of energy supply), are clear proof that innovation and quality are the secrets of Riello UPS's success.



Reliable power for a sustainable world

Energy and sustainability in one hand

“Reliable power for a sustainable world” is the Riello UPS philosophy condensed into few simple words; a global brand constantly searching for the most innovative solutions that ensure a dual safety: a solid critical-load protection that also keeps the protection and sustainability of Planet Earth at the forefront of our minds.

Riello UPS manufactures efficient solutions that ensure power quality and business continuity. The company constantly implements new ideas and technologies to increase the efficiency of its products and reduce their power consumption and environmental impact.
To this end, the company also invests significantly in new technologies that harvest clean and renewable energy sources. Riello UPS’s social commitment aims to help the present as well as shape a bright, sustainable future, combining the inevitable need for energy with environmental protection:

- Riello UPS has always been a strong supporter of the Code of Conduct (CoC) on Energy Efficiency and Quality of AC Uninterruptible Power Systems, a document addressed to the European Commission by all the major European manufacturers of UPS.
- It sets out energy efficiency targets for power ranges from 300 VA to above 200 kVA, from 25% to 100% loads. Riello UPS was the first European Manufacturer to classify its products in terms of ECO energy efficiency ratings.
- Riello UPS pays close attention to the use of low environmental impact materials from the initial design and development stage through to the final release of its products into the market.
- Riello UPS employs an environmental management system that is ISO 14001 certified.
- Huge attention is given to the evolution of the electric grid, in particular to the use of renewable energy sources: the Riello UPS offer incorporates not only traditional and Smart Grid Ready UPS, but also photovoltaic inverters and energy storage systems.

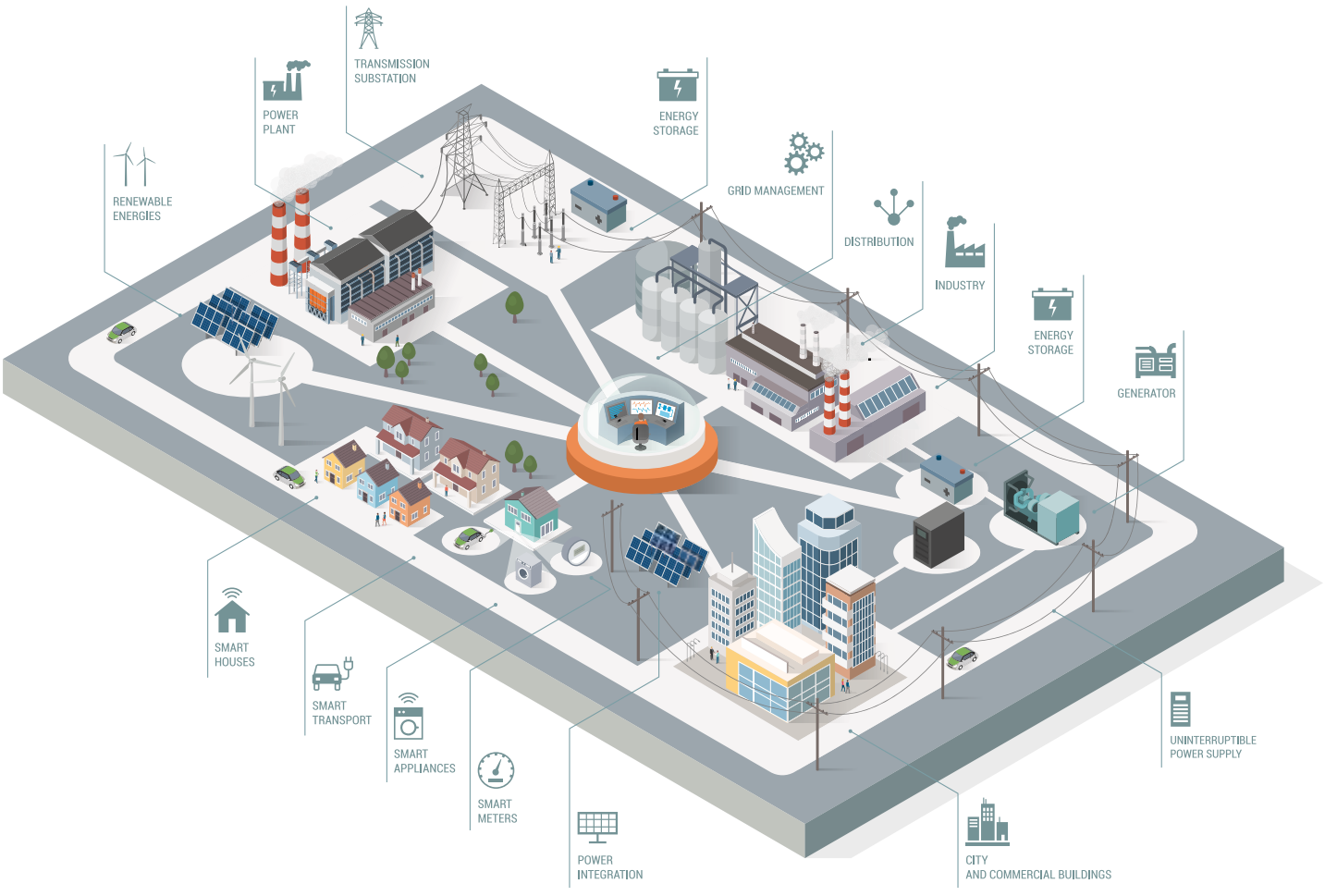
THE ROLE OF THE UPS IN MODERN ELECTRICAL POWER GRIDS: SMART GRID READY UPS

The ongoing evolution of electrical power grids is a key element for achieving greater sustainability. Smart Grids are fundamental to this: power management systems that balance supply with demand by using energy in the most efficient way.
In essence, Smart Grids are nothing more than power grids that integrate and manage the behaviour and actions of all connected consumers, generators, and output points with the aim of delivering an economically viable, safe, secure, and quality electrical system. Smart Grids enable the integration of different energy sources, encourage two-way flows electricity and information, and allow for centralised management.
Smart Grids also introduce new business opportunities for installations of UPS. Uninterruptible power supply batteries represent a significant financial investment, but they are only partially used.
In the new Smart Grid scenario, installations with UPS can take on new roles by becoming virtual power plants. Its batteries harness the power of renewable energy sources like solar or wind and store energy that can be fed back into the grid.
In order to be "Smart Grid Ready", a UPS must deliver extremely high levels of efficiency and be able to independently select the most efficient operating method depending on the real-time status of the grid.
It must also be able to electronically interface with the energy manager across the Smart Grid communication network. Always at the forefront of technological innovation, Riello UPS has invested significant R&D to develop several Smart Grid Ready products including the NextEnergy, Multi Power, Master HE, Sentryum, and Multi Sentry ranges.
With almost a decade of innovation and experience in the Smart Grid field, Riello UPS is also involved in high-profile projects such as:

- a trans-European project with RWE Supply & Trading: Master+ is a solution that enables mission-critical facilities like data centres or hospitals to profit from the batteries in their uninterruptible power systems by commercialising idle energy storage capacity through the energy market, minimising capital expenditure and operating costs while enhancing system reliability.
- **SPS**, the Riello UPS Flexible Hybrid Energy Storage Family: a revolutionary product combining a UPS, a hybrid energy source (i.e. Grid and Regenerative Power Systems), energy storage and energy trading functionality in one complete solution. The flexibility of application and the quality of the SPS family has persuaded many car manufacturers companies to use it for powering their electric vehicle charging network.

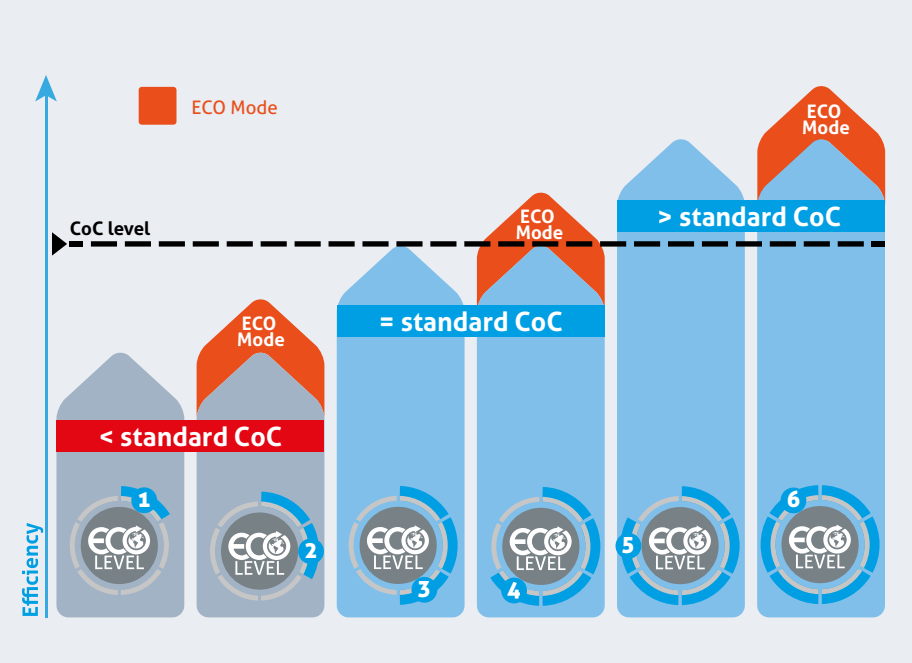
These are just two of the countless examples of how Riello UPS and its technological innovations is redefining the role of the UPS and opening up new business opportunities.

SmartGrid READY



ECO ENERGY LEVELS

Riello UPS uninterruptible power supplies power some of the most critical data centres and servers in use today. Within these environments, energy management is critical. Running costs must be minimized without compromising on resilience and availability.
Equipment must operate at the highest possible levels of efficiency to reduce the strain on critical power supplies and minimise the environmental effect on the installation area. Riello UPS models have always been compliant with the highest levels of efficiency and are classified according to a scale with 6 levels, corresponding with the efficiency value of the UPS with respect to the European Code of Conduct (CoC); this is known as the ECO Energy Level.
The ECO Energy Level is a method implemented by Riello UPS to help customers identify the products with the highest levels of efficiency. The 6 levels have recently been updated to comply with the stringent new efficiency levels required by the CoC.
Riello UPS's ECO Energy Level is more than just a concept; it is a system that demonstrates how the UPS that achieve the highest marks (Levels 4, 5 and 6) are more efficient and therefore more beneficial economically and environmentally. More efficient UPS deliver energy savings that enable customers to recover the initial purchase cost quicker than with a standard UPS, as well as reducing the harmful carbon emissions sent into the atmosphere.



THE HUMAN FACTOR, ADDED VALUE

The concepts of product quality and excellence are central to Riello UPS's corporate philosophy, but this is complemented with a further concept: the value of people, whether they are customers, users or colleagues.
At every staff level in Riello UPS, the sense of belonging to the company and respect for others creates an excellent working environment, which is instrumental in achieving consistently exceptional results.
The teamwork that leads everyone to give their best every day, collaborating with colleagues to achieve challenging objectives is the result of the careful selection, management and training of staff and above all due to a healthy attitude of sharing targets at all levels and an ethical belief in added value.
One of the secrets of Riello UPS's success is the reciprocal respect for each person's contributions and the collective effort to ensure the best levels of service and customer satisfaction. The countless awards we receive are proof of this, such as the accolade from Frost & Sullivan.

Options and accessories compatibility table

Easily identify the UPS that supports the software and accessories your installation requires.

UPS	Software		Specifications								
	POWERSHIELD³ Shutdown software	POWERNETGUARD Inventory manager software	1 - 1	1/3 - 1	1/3 - 3	3 - 3	Manual bypass	Internal batteries	Parallelable	Transformer-free	Transformer based
iPLUG	●		●					●		●	
iDIALOG	●		●					●		●	
iDIALOG RACK	●		●					●		●	
NET POWER	●	Ⓛ Ⓟ	●					●		●	
VISION	●	●	●					●		●	
VISION RACK	●	●	●					●		●	
VISION DUAL	●	●	●					●		●	
SENTINEL PRO	●	●	●					●		●	
SENTINEL RACK	●	●	●					●		●	
SENTINEL DUAL SDH	●	●	●					●		●	
SENTINEL DUAL SDU	●	●	●	Ⓕ				●	●	●	
SENTINEL TOWER	●	●	●	Ⓕ			●	●	●	●	
SENTRYUM	●	●		Ⓢ		●	●	●	●	●	
MULTI SENTRY	●	●				●	●	●	●	●	
NEXTENERGY	●	●				●	●		●	●	
MASTER MPS	●	●		Ⓖ		●	●		●		●
MASTER HP and MASTER HE	●	●				●	●		●		●
MASTER INDUSTRIAL	●	●		Ⓖ			●		●		●
MASTER FC400	●	●				●			Ⓗ		●
EMERGENCY solution CSS 1 h	●	●		●		●	●		●	●	
EMERGENCY solution CSS 3 h	●	●		Ⓖ		●	●		●		●
MULTI POWER	●	●				●	●	●	●	●	
MULTI GUARD INDUSTRIAL	●	●		●	●		●		●	●	
MULTI SOCKET PDU	●		●				●	-	-	-	-
MULTI SWITCH		●	●				-	-	-	-	-
MULTI SWITCH ATS	●		●				-	-	-	-	-
MASTER SWITCH STS 1ph	●		●				-	-	-	-	-
MASTER SWITCH STS 3ph	●					●	-	-	-	-	-

* Compatibility needs the MultiCom 372 card in addition.

Key

(F)	8 - 10 kVA
(G)	3ph input only
(H)	Except 30 kVA
(L)	1000 - 1500 - 2000 VA
(N)	up to 20 kVA 1:1
(O)	up to 60 kVA 3:3
(P)	In combination with communication card adapter
(Q)	1000 - 2000 VA
(S)	10-15-20
opt	optional
std	standard

Ports						Accessories												info
Embedded ethernet	USB	RS232	Dry contact	# Slot	EPO	NETMAN 204 Card - Ethernet - SNMP v1,v3	MULTICOM 302 Card - Modbus/Jbus interface	MULTICOM 352 Card - Interface duplexer	MULTICOM 372 Card - RS232 interface	MULTICOM 384 Card - Relay I/O interface	MULTICOM 411 Profibus Protocol converter	MULTI I/O Box - Relay I/O Card & Modbus/Jbus interface	MULTIPANEL Remote Display interface	MANUAL BYPASS 16A MBB 16A	MAN. BYPASS 16A RACK MBBR 16A	MANUAL BYPASS 100A 2P	MANUAL BYPASS 125A 4P	UPS page
	●		-															24
	●		-															28
	●	●	-		●	(P)	(P)	(P)			(P)							30
	●	(Q)	-			(L)(P)	(L)(P)	(L)(P)			(L)(P)	(L)						32
	●	●	opt	1		●	●	●	●	●	●	●	●					34
	●	●	opt	1	●	●	●	●	●	●	●	●	●					38
	●	●	opt	1	●	●	●	●	●	●	●	●	●	●	●			42
	●	●	opt	1	●	●	●	●	●	●	●	●	●	●				50
	●	●	opt	1	●	●	●	●	●	●	●	●	●	●				46
	●	●	opt	1	●	●	●	●	●	●	●	●	●	●	●			54
	●	●	opt	1	●	●	●	●	●	●	●	●	●					58
	●	●	opt	1	●	●	●	●	●	●	●	●	●			●		62
	●	●	std	2	●	●	●	●		●	●	●	●			(N)		66
	●	●	opt	2	●	●	●	●	●	●	●	●	●				(O)	74
●	●		std	2	●	●	●	●			●	●	●					80
		●	std	2	●	●	●	●			●	●	●			(N)	(O)	88
		●	std	2	●	●	●	●			●	●	●					96
		●	std	2	●	●	●	●			●	●	●					104
		●	std	2	●	●	●	●			●	●	●					106
	●	●	opt	2	●	●	●	●			●	●	●					148
		●	std	2	●	●	●	●			●	●	●					148
●		opt	opt	2	●	●	●	●	●	●	●	●	● *					108
	●	●	opt	2	●	●	●	●	●	●	●	●	●					118
	●	●	-	1		●												154
		●	-	1		●												156
	●	●	std	1		●	●	●			●							158
		●	std	1		●	●	●			●							161
		●	std			(P)	(P)	(P)			(P)							162

Application areas

one answer for each application

The critical systems that sustain your business operations can't go down. Riello UPS supports you in improving your uptime with a full range of innovative uninterruptible power supplies (UPS) and futureproofed, integrated UPS systems that cover the backup power needs of your installations whatever the application: from SoHo, Medical, and Transportation, through to Industrial environments and hyperscale Data Centres. Each application area has very specific requirements that need to be met with a UPS solution delivering the correct characteristics. With its large portfolio of products, Riello UPS always offers the best solution for every need. Here are some of the technical characteristics that can help you choose the right UPS:

SMALL FOOTPRINT
Riello UPS products offer a compact footprint that enables them to be easily installed anywhere in the office workspace, Data Centre, or industrial environment without creating any unnecessary interference with other workplace or customer areas.

SILENT OPERATION
Noise is an unwelcome distraction in any workplace. This is why our UPS are equipped with a sophisticated microprocessor control system able to reduce the speed (and noise) of the fans depending on the load and switch them off completely when not required.

ADVANCED COMMUNICATION
Riello UPS's UPS are equipped with USB, RS232 and other communication ports, allowing for full management and communication functionality that helps to preserve data and make your critical load secure.

AVAILABILITY
According to the TIER standard, system availability should fall between 99.9% and 99.999%: downtime simply isn't an option. Using high-quality Riello UPS uninterruptible power supplies in a well-designed system, this level of availability can be achieved. The UPS must be versatile, compact and parallelable in order to provide the required flexibility; it must also be able to adapt to all types of load, both inductive and capacitive.

ENERGY CONSUMPTION
For both economic and environmental reasons, reducing energy consumption is a necessity for all businesses. It makes sense to choose a UPS supplier that offers green products designed to combine outstanding performance with the best energy efficiency and lowest environmental impact possible.

SAFETY
Depending on the industry, there are many stringent safety standards equipment must adhere to. Based on the type of application, the UPS must ensure immunity from external influences and provide compatibility with: IP protection levels, input/output electrical isolation, the possibility of housing internal isolation transformers and auxiliary monitoring systems. Riello UPS's product range includes solutions that comply with all power and safety requirements.

GLOBAL STRENGTH
The need to ensure service continuity requires high levels of compatibility with stringent mechanical standards (IP protection, vibrations, structural rigidity). The use of air filters, isolated electrical connectors and special wiring is often required in order to fulfil these general requirements, as well as fastening components and systems that are highly resistant to mechanical stresses. Riello UPS is able to offer tailor-made solutions that meet the standards and regulatory requirements of even the most challenging operating conditions.

RELIABILITY
Operational continuity is of strategic importance in the transport sector. Downtime with regards to power supply or monitoring/control information cannot be tolerated. Continuity can be guaranteed by using high-quality UPS that are versatile, technologically-advanced and parallelable. Such UPS must be able to operate under the harshest environmental conditions (i.e. extreme temperatures, fluctuating power supplies, and different types of load). Riello UPS products satisfy the most diverse and complex requirements to ensure operating continuity and reliability for users.

SOHO AREA

SoHo (Small Office, Home Office) and small factories require UPS that take up a minimal amount of space, have low power consumption, and generate limited noise. Riello UPS devices are the perfect choice for protecting small offices and domestic entertainment systems from disturbances, blackouts, and damaging data loss.

FEATURES

- Low energy consumption
- Small footprint
- Silent operation
- Advanced communication

APPLICATIONS

- Entertainment systems
- Personal computers
- xDSL connections
- POS systems

DATA CENTRE AREA

A Data Centre is an incredibly valuable part of any business. Riello UPS solutions guarantee premium performance and energy savings in a compact footprint that enables operators to optimise their floor space.

FEATURES

- Extremely high availability
- Low energy consumption
- Small footprint
- Flexible configurations

APPLICATIONS

- Data centres / Hyperscale data centres
- Server farms
- Large databases
- Telecommunications and IT
- Banks and insurance companies

E-MEDICAL AREA

Advances in technology mean hospitals have increasingly complex technological needs, while security standards are extremely high too. Riello UPS solutions take into consideration all relevant legislation and respect the patients' right to protection. Advanced supervision and control systems guarantee total flexibility relative to all protocols present in the healthcare structure.

FEATURES

- Extreme protection for critical applications
- High resilience
- Compliant with specific standards

APPLICATIONS

- Back up of auxiliary power supply systems
- Operating theatres
- Hospital services

INDUSTRY AREA

A blackout can cause considerable economic and human damage. Riello UPS solutions have been used for years in the industrial field because of their reliability in every critical environmental situation (i.e. extreme temperatures, humidity and vibrations) and due to their adherence with strict mechanical and security standards (i.e. protection levels IP, structural rigidity).

FEATURES

- Extremely high reliability and strength
- Customisable
- Compatible with long autonomy times
- Modbus and Profibus support

APPLICATIONS

- Oil & Gas
- Power Generation, T&D
- Water treatment
- Instruments and process monitoring
- Emergency systems

TRANSPORT AREA

In the infrastructure and transport world, standards can change significantly from one application to another and an efficient UPS must be highly flexible in order to adapt to various power sources and communications and monitoring protocols. Riello UPS provides tailor-made solutions that are perfectly equipped to the ever-changing demands of the most critical environmental conditions while ensuring compliance with the most rigorous regulations and legislation.

FEATURES

- Protection for critical application
- Adaptability to different environments
- Flexibility of power supply
- Extremely resilient

APPLICATIONS

- Railway stations
- Airports
- Toll gates
- Marinas / Seaports

EMERGENCY AREA

Public buildings and structures have strict rules and regulations relating to the continuity of fire prevention systems, emergency lighting, alarm units, and all other security-focused equipment. Riello UPS products fully comply with EN50171 for Central Power Supply Systems (CPSS), guaranteeing the correct level of autonomy. They also incorporate an advanced diagnostics system developed following years of experience in this specific area.

FEATURES

- High reliability
- Compliant with standard EN 50171
- Batteries with 10 years life (at 20 °C)
- Casing compliant with EN 60598-1
- Advanced diagnostics

APPLICATIONS

- Hospitals
- Railway stations
- Stadiums and sports centres
- Shopping centres
- Schools
- Public buildings

UPS

SOHO

iPlug

UPS **VFD**

Tower

USB plug

GS Nemko certified

Plug & Play installation

1:1 600-800 VA

HIGHLIGHTS

- **Compact**
- **Versatile**
- **Robust**
- **Contemporary design**
- **Auto restart**
- **Battery swap**

The iPlug series is the ideal solution for protecting household and small office systems. Its compact size and versatility (push-button operation, LED status panel and user replaceable batteries), make iPlug easy to install within a domestic environment to protect systems from surges and blackouts. When the mains fails, the load is powered from a pseudo-sine wave inverter, to provide sufficient runtime for computer system shutdown using PowerShield³ software, which can be downloaded free from www.riello-ups.com

VERSATILE, ROBUST AND CONTEMPORARY DESIGN

The iPlug's compact and ergonomic design allow it to be easily installed in professional and domestic environments. iPlug is extremely versatile and its innovative cable management feature ensures a tidy, easy to manage installation.

ADVANCED COMMUNICATIONS

PowerShield³ software allows for the safe shutdown of connected IT systems on mains power supply failure. PowerShield³ provides efficient and intuitive UPS management using bar chart displays for important operating information.

AUTO RESTART

The UPS automatically restarts upon the restoration of mains power after having shut down once the batteries have run out following a black out (Auto restart).

ENVIRONMENTAL PROTECTION ECO LINE

With energy savings in mind, the iPlug range features a shut-off button to reduce energy consumption during periods of prolonged inactivity.

APPLICATIONS

LCD monitors, personal computers, video terminals, printers, scanners and fax machines.

FEATURES

- Compact and ergonomic;
- 5 sockets protected against blackouts;
- 3 sockets protected against overvoltage for the supply of loads with larger absorption loads e.g laser printers;
- Ability to switch on the UPS without a mains power supply (Cold Start);
- User replaceable batteries (Battery Swap):
- USB interface;
- Floor-standing or desktop installation;
- Power-supply cable included;
- Built-in short circuit protection;
- Auto restart (when mains power is restored, after discharge of the batteries);
- GS/Nemko safety seal;
- Available with French (2P+T), British, Schuko and Italian outlets;
- PowerShield[3] supervision and shutdown software for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux;
- Plug and play function.

2-YEAR WARRANTY

CONFIGURATOR FOR MODEL SELECTION

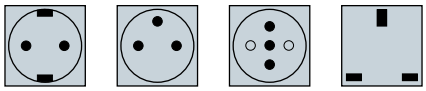
Load type	VA power rating[1]
Personal computers	250
LCD Monitors	70
Scanners, printers	200
Modems, TVs, DVD players, PlayStations, Hi-Fi systems, Telephones, Faxes	50
Laser printers[2]	200

[1] *Estimated average value.*
[2] *iPlug filtered output power supply is recommended.*

OPTIONS

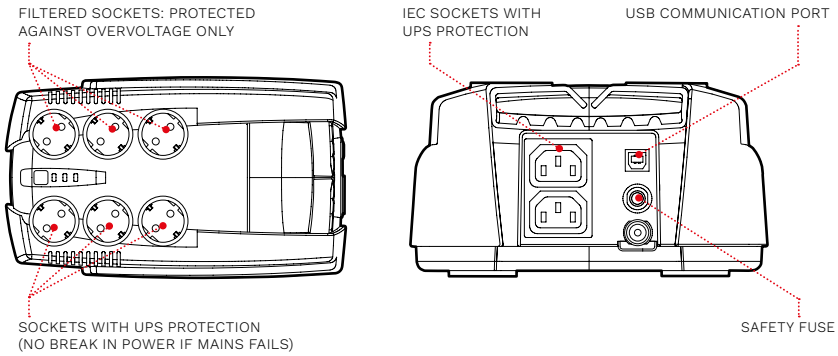
SOFTWARE
PowerShield[3]

AVAILABLE SOCKETS



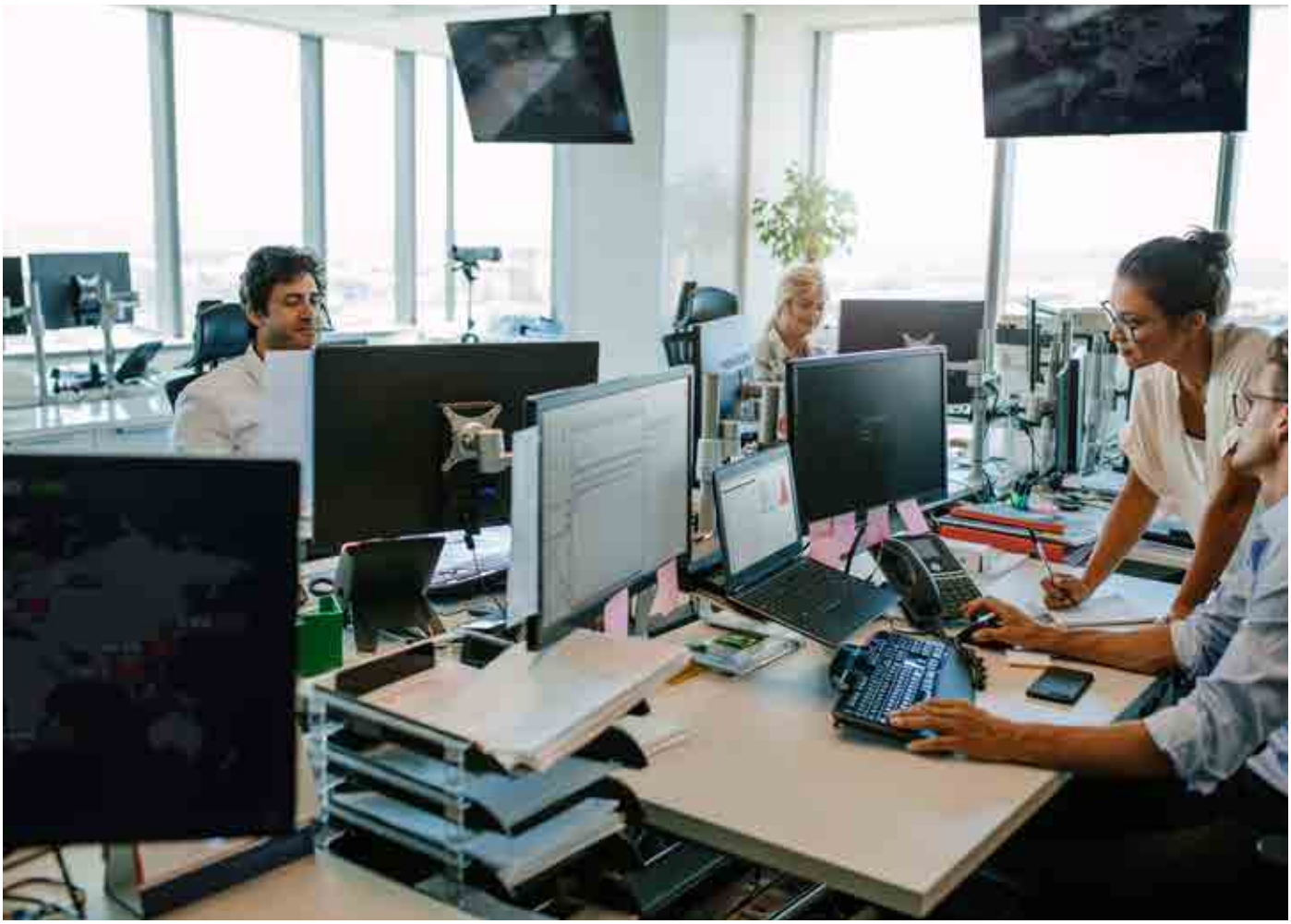
SCHUKO SOCKET CEE 7/7P | FRENCH SOCKET CEE 7/5 | ITALIAN SOCKET CEI 23/16 | BRITISH SOCKET BS1363A

DETAILS



MODELS	IPG 600	IPG 800
POWER	**600 VA/360 W**	**800 VA/480 W**
INPUT		
Rated voltage [V]	220 / 230 / 240	
Voltage tolerance [V]	230 (+20/-25%)	
Rated frequency [Hz]	50 / 60 with automatic selection	
OUTPUT		
Voltage during mains operation [V]	230 (+20/-25%)	
Voltage during battery operation [V]	230 (±10%)	
Frequency during battery operation [Hz]	50 or 60 (±1%)	
Waveform	Pseudo Sinusoidal	
BATTERIES		
Type	VRLA AGM maintenance-free lead based	
Recharge time	6-8 h	
OVERALL SPECIFICATIONS		
Net weight [kg]	3.7	4.1
Gross weight [kg]	4	4.4
Dimensions (WxDxH) [mm]	185x313x99	
Packaging dimensions (WxDxH) [mm]	260x380x140	
Protections	Excessive low battery - overvoltage - short circuit	
Communications	USB	
Output sockets	6 sockets (Schuko or Italian or French or British) + 2 IEC 320 C13	
Standards	European directives: L V 2014/35/EU low voltage Directive; EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant	
Certificates	CE; GS/NEMKO on Schuko version	
Colour	Black	
Ambient temperature for the UPS	0 °C - +40 °C	
Recommended temperature for battery life	+20 °C - +25 °C	
Range of relative humidity	5-95% non-condensing	
Altitude	6000 m max altitude	
Storage temperature	From -25 °C up to 60 °C (UPS) / From -15 °C up to +40 °C (for the batteries)	
Equipment provided	power cable, user guide	

32
1 Feb



SOHO

iDialog

UPS **VFD**

Tower

USB plug

Plug & Play installation

1:1 400-1600 VA

HIGHLIGHTS

- **Compact**
- **Silent operation**
- **Contemporary design**
- **Auto restart**
- **Low power consumption**

The iDialog range is the ideal solution for protecting PCs and peripherals in the home and office.
iDialog is easy to install and economic to run for protecting:

- IT equipment such as PCs, Media Centres and peripherals, TVs, Home Cinema systems, Satellite and Digital Terrestrial Receivers and DVD recorders and players;
- xDSL modems and routers;
- Small home appliances.

SILENT OPERATION

The UPS is silent in operation (0 dBA) thanks to its use of a fan-free design and high frequency components.

ADVANCED COMMUNICATIONS

PowerShield³ software allows for the safe shutdown of connected IT systems on mains power supply failure. PowerShield³ provides efficient and intuitive UPS management using bar chart displays for important operating information.

AUTO RESTART

The UPS automatically restarts when the mains power supply is restored.

ECO LINE ENVIRONMENTAL PROTECTION

With energy savings in mind, the iDialog range features a shut-off button to reduce energy consumption during periods of prolonged inactivity.

FEATURES

- Reduced energy consumption and 99% efficiency;
- Maximum reliability and protection of PCs thanks to PowerShield³ monitoring and shutdown software, which can be

MODELS	IDG 400	IDG 600	IDG 800	IDG 1200	IDG 1600
POWER	**400 VA/240 W**	**600 VA/360 W**	**800 VA/480 W**	**1200 VA/720 W**	**1600 VA/960 W**
INPUT					
Rated voltage [V]	220 / 230 / 240				
Voltage tolerance [V]	230 (+20/-25%)				
Rated frequency [Hz]	50 / 60 with automatic selection				
OUTPUT					
Voltage during mains operation [V]	230 (+20/-25%)				
Voltage during battery operation [V]	230 (±10%)				
Frequency during battery operation [Hz]	50 or 60 (±1%)				
Waveform	Pseudo Sinusoidal				
BATTERIES					
Type	VRLA AGM maintenance-free lead based				
Recharge time	6-8 h				
OVERALL SPECIFICATIONS					
Net weight [kg]	3.2		3.4	6.6	6.9
Gross weight [kg]	3.7		4.1	8.1	8.6
Dimensions (WxDxH) [mm]	90x232x192			93x310x270	
Packaging dimensions (WxDxH) [mm]	138x300x278			170x400x370	
Protections	Excessive low battery - overvoltage - short circuit				
Communications	USB			USB + RS232	
Output sockets	4 IEC 320 C13			6 IEC 320 C13	
Standards	European directives: L V 2014/35/EU low voltage Directive; EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant				
Certificates	CE				
Operating temperature	0 °C / +40 °C				
Colour	Black				
Ambient temperature for the UPS	0 °C - +40 °C				
Recommended temperature for battery life	+20 °C - +25 °C				
Range of relative humidity	5-95% non-condensing				
Altitude	6000 m max altitude				
Standard equipment	2 output power supply cables, user manual				

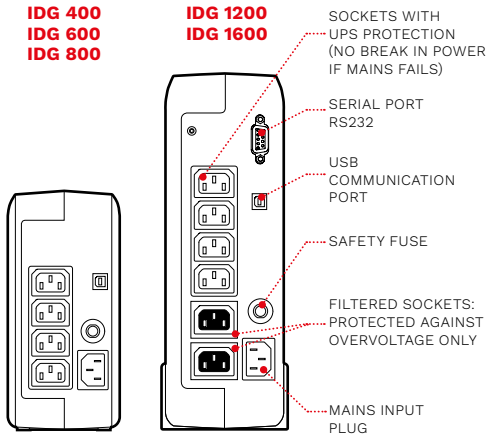
downloaded free at www.riello-ups.com;
- Can be installed on PCs with Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux;
- Small size: With its compact shape, iDialog can be placed anywhere on the desk or in the home;
- Silent: iDialog is also suitable for protecting your non-professional digital equipment such as home cinema systems, satellite and digital terrestrial receivers and DVD players/recorders.

2-YEAR WARRANTY

OPTIONS

SOFTWARE
PowerShield[3]

DETAILS



SOHO

iDialog Rack

UPS **VFD** | **Rack** | **USB** plug | **Plug & Play** installation

1:1 600-1200 VA

HIGHLIGHTS

- **Designed for telco racks**
- **Silent operation**
- **Auto restart**
- **Low power consumption**

MAXIMUM RELIABILITY IN THE PROTECTION OF VOIP SYSTEMS

The iDialog Rack range is the ideal solution for protecting PCs and peripherals in the home and office. iDialog Rack is easy to install and economic to run for protecting:

- IT equipment such as PCs, Media Centres and peripherals, TVs, Home Cinema systems, Satellite and Digital Terrestrial Receivers and DVD recorders and players;
- xDSL modems and routers;
- Voip and network application.

SILENT OPERATION

The UPS is silent in operation (0 dBA) thanks to its use of a fan-free design and high frequency components.

ADVANCED COMMUNICATIONS

PowerShield³ software allows for the safe shutdown of connected IT systems on mains power supply failure. PowerShield³ provides efficient and intuitive UPS management using bar chart displays for important operating information.

AUTO RESTART

The UPS automatically restarts when the mains power supply is restored.

ECO LINE ENVIRONMENTAL PROTECTION

With energy savings in mind, the iDialog Rack range features a shut-off button to reduce energy consumption during periods of prolonged inactivity.

FEATURES

- Reduced energy consumption and 99% efficiency;
- Maximum reliability and protection of PC s thanks to PowerShield³ monitoring

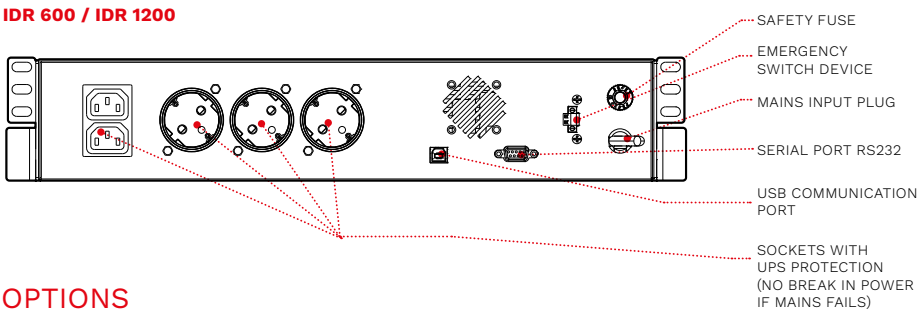
MODELS	IDR 600	IDR 1200
POWER	**600 VA/360 W**	**1200 VA/720 W**
INPUT		
Rated voltage [V]	220 / 230 / 240	
Voltage tolerance [V]	230 (+20/-25%)	
Rated frequency [Hz]	50 / 60 with automatic selection	
OUTPUT		
Voltage during mains operation [V]	230 (+20/-25%)	
Voltage during battery operation [V]	230 (±10%)	
Frequency during battery operation [Hz]	50 or 60 (±1%)	
Waveform	Pseudo Sinusoidal	
BATTERIES		
Type	VRLA AGM maintenance-free lead based	
Recharge time	6-8 h	
OVERALL SPECIFICATIONS		
Net weight [kg]	5.5	9
Gross weight [kg]	7	10.5
Dimensions (WxDxH) [mm]	438x230x87	438x300x87
Packaging dimensions (WxDxH) [mm]	503x330x211	503x400x211
Protections	Excessive low battery - overvoltage - short circuit	
Communications	USB + RS232	
Output sockets	2 IEC 320 C13 + 3 Shuko	
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant	
Certificates	CE	
Colour	Black	
Ambient temperature for the UPS	0 °C - +40 °C	
Recommended temperature for battery life	+20 °C - +25 °C	
Range of relative humidity	5-95% non-condensing	
Altitude	6000 m max altitude	
Standard equipment	Rack handles, user manual	

and shutdown software, which can be downloaded free at www.riello-ups.com;
- Can be installed on PCs with Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux;
- Small size: With its compact shape, iDialog Rack can be placed in any small rack;
- Noise-free running: iDialog Rack is also suitable for protecting your non-professional digital equipment such as home cinema systems, satellite and digital terrestrial receivers and DVD players/recorders.

2-YEAR WARRANTY

DETAILS

IDR 600 / IDR 1200



OPTIONS

SOFTWARE
PowerShield[3]

ACCESSORIES
NETMAN 204 + box
MULTICOM 302 + box

SOHO

Net Power

VI TYPE
LINE **INTERACTIVE**

Tower

5 ECO LEVEL

USB
USB plug

P&P
Plug & Play installation

1:1 600-2000 VA

HIGHLIGHTS

- **Automatic Voltage Regulation (AVR)**
- **Advanced communications**
- **Automatic battery test**

The Net Power series is available in 600-2000 VA models. When the load is supplied from the mains, the automatic voltage regulator (AVR) and EMI filters stabilise power and supress atmospheric disturbances. When the mains fails, the load is powered from a pseudo-sine wave inverter, to provide sufficient runtime for computer system shutdown using PowerShield³ software, which can be downloaded free from www.riello-ups.com

FEATURES

- Stabilisation and filtering of the mains power supply using AVR and EMI filters for the suppression of atmospheric disturbances;
- Ability to switch on the UPS in the absence of mains power (Cold Start);
- High reliability with built-in battery test
- Auto restart (when mains power is restored, after discharge of the batteries);
- Supplied with two IEC cables for powering the loads.

ADVANCED COMMUNICATIONS

- Advanced multi-platform communications for all operating systems and network environments: PowerShield³ supervision and shutdown software for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- Standard USB interface, RS232 on models 1000 - 1500 - 2000.

2-YEAR WARRANTY

MODELS	NPW 600	NPW 800	NPW 1000	NPW 1500	NPW 2000
POWER	**600 VA/360 W**	**800 VA/480 W**	**1000 VA/600 W**	**1500 VA/900 W**	**2000 VA/1200 W**
INPUT					
Rated voltage [V]	220 / 230 / 240				
Voltage tolerance [V]	230 (±25%)				
Rated frequency [Hz]	50 / 60 with automatic selection				
OUTPUT					
Voltage during mains operation [V]	230 (-8%, +10%)				
Voltage during battery operation [V]	230 (±5%)				
Frequency during battery operation [Hz]	50 or 60 (±0.5%)				
Battery waveform	Pseudo sinusoidal				
BATTERIES					
Type	VRLA AGM maintenance-free lead based				
Recharge time	6-8 h		2-4 h		
OVERALL SPECIFICATIONS					
Net weight [kg]	4.3	4.9	8	11.1	11.5
Gross weight [kg]	5.6	6.3	10	13.5	14
Dimensions (WxDxH) [mm]	100x287x142		146x350x160	146x397x205	
Packaging dimensions (WxDxH) [mm]	140x332x220		195x440x250	230x480x280	
Protections	Excessive low battery - overvoltage - short circuit				
Display	LED		LCD		
Communications	USB		USB + RS232		
Output sockets	4 IEC 320 C13 sockets			6 IEC 320 C13 sockets	
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant				
Certificates	CE				
Colour	Black				
Ambient temperature for the UPS	0 °C - +40 °C				
Recommended temperature for battery life	+20 °C - +25 °C				
Range of relative humidity	5-95% non-condensing				
Altitude	6000 m max altitude				
Standard equipment	2 cables for powering loads; user manual				

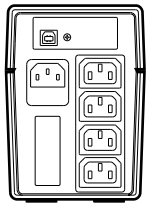
OPTIONS

SOFTWARE
PowerShield[3]

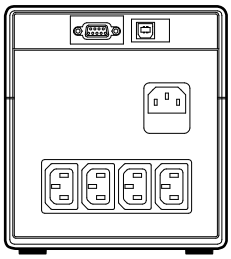
ACCESSORIES
NETMAN 204 + box (only NPW 1000-2000)
MULTICOM 302 + box (only NPW 1000-2000)

DETAILS

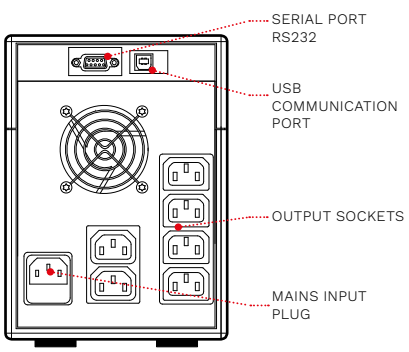
NPW 600
NPW 800



NPW 1000



NPW 1500
NPW 2000



SOHO

Vision

LINE **INTERACTIVE** | **Tower** | **USB** plug | **GS Nemko** certified | **Plug & Play** installation | **Hot swap** battery

1:1 800-2000 VA

HIGHLIGHTS

- **Superior protection**
- **Compact and contemporary design**
- **High availability**
- **Versatility**
- **LCD display**
- **Automatic Voltage Regulation (AVR)**

The Vision range is available in models from 800 VA to 2000 VA with sinusoidal digital technology.
The Vision range, with its advanced communications and connectivity options, is the ideal solution for installations requiring superior protection and versatility in the power supply system.Vision provides proven protection of peripheral network devices, servers, and network back-up systems.

SUPERIOR PROTECTION

The Vision range uses LINE INTERACTIVE technology and provides a sinusoidal output. This technology provides efficiency levels of 98% and therefore reduced energy consumption. It also ensures a high level of protection against mains power disturbances.
The automatic voltage regulator (AVR) provides protection from surges, overvoltages and undervoltages, without battery intervention. Reduced battery usage ensures that the battery set is 100% available for mains power supply failures and is able to provide greater autonomy.
EMI filters then provide further protection from voltage surges and transients.
When the mains power supply fails, the load is powered by the inverter and receives a perfectly sinusoidal supply for maximum power continuity and reliability.
With energy savings in mind, the Vision range features a shut-off button to reduce energy consumption to zero during periods of prolonged inactivity.

HIGH AVAILABILITY

An EnergyShare socket allows load-shedding and the shutdown of less sensitive peripheral devices to extend battery runtime for critical loads. “Hot Swap” batteries can be removed via the front panel for easy and safe UPS maintenance. Battery test facility to detect deteriorating battery performance. Deep discharge protection to reduce battery ageing.

VERSATILITY

Cold Start function to allow the UPS to power up with no mains power supply present.

LCD DISPLAY

Vision models have a backlit LCD display providing UPS status information, load and battery performance.

ADVANCED COMMUNICATIONS

- Advanced multi-platform communications for all operating systems and network environments: PowerShield³ monitoring and shutdown software for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- USB or RS232 serial port interface (selectable);
- Expansion slot for interface boards;
- Status, measurements, alarms and input, output and battery parameters available on LCD display.

FEATURES

- EnergyShare socket;
- Ability to switch on the UPS in the absence of mains power (Cold Start);
- Batteries are user replaceable without switching off equipment and without interruption to the load (Hot Swap);
- Maximum reliability and protection of PCs thanks to PowerShield³ monitoring and shutdown software, which can be downloaded free at www.riello-ups.com;
- Fully configurable using UPS Tools configuration software;
- Highly reliable batteries (automatic and manually-activated battery test);
- Built-in short circuit protection;
- Auto restart (when mains power is restored, after discharge of the batteries)
- GS/Nemko safety seal.

2-YEAR WARRANTY

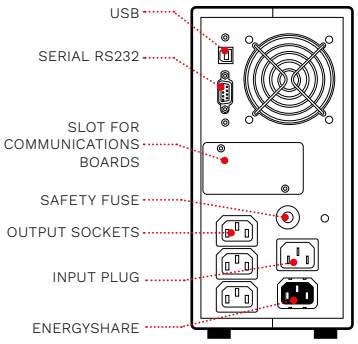
OPTIONS

SOFTWARE
PowerShield³
PowerNetGuard

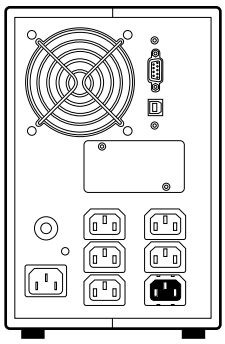
ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTI I/O
MULTIPANEL

DETAILS

VST 800
VST 1100



VST 1500
VST 2000



MODELS	VST 800	VST 1100	VST 1500	VST 2000
POWER	**800 VA/640 W**	**1100 VA/880 W**	**1500 VA/1200 W**	**2000 VA/1600 W**
INPUT				
Rated voltage [V]	220 / 230 / 240			
Voltage tolerance [V]	162 - 290			
Rated frequency [Hz]	50 / 60 with automatic selection			
Frequency tolerance	±5%			
OUTPUT				
Rated voltage [V]	220 / 230 / 240 selectable			
Frequency [Hz]	50 or 60 with automatic selection			
Waveform	Sinusoidal			
BATTERIES				
Type	VRLA AGM maintenance-free lead based			
Recharge time	4-6 h			
OVERALL SPECIFICATIONS				
Net weight [kg]	10.5	11.3	16.5	18.5
Gross weight [kg]	12.2	13	18.4	20.4
Dimensions (WxDxH) [mm]	120x443x247		160x443x247	
Packaging dimensions (WxDxH) [mm]	208x530x342		250x540x354	
Protections	Overload - short circuit - overvoltage - undervoltage - temperature - excessive low battery			
Communications	USB / RS232 / slot for communications interface			
Input plugs	1IEC 320 C14			
Output sockets	4 IEC 320 C13		6 IEC 320 C13	
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant			
Colour	Black			
Ambient temperature for the UPS	0 °C - +40 °C			
Recommended temperature for battery life	+20 °C - +25 °C			
Range of relative humidity	5-95% non-condensing			
Noise [dBA]	<40			

SOHO DATACENTRE

Vision Rack

VI TYPE LINE **INTERACTIVE** | **Rack** | 5 ECO LEVEL | **USB** plug | **Plug & Play** installation | **Hot swap** battery | **Energy** Share

1:1 800-1100 VA

HIGHLIGHTS

- **Superior protection**
- **High availability**
- **Versatility**
- **LCD display**
- **Automatic voltage regulation (AVR)**

The Vision Rack range is available in models from 800 VA to 1100 VA with sinusoidal digital technology.
The Vision Rack range, with its advanced communications and connectivity options, is the ideal solution for installations requiring superior protection and versatility in the power supply system. Vision Rack provides proven protection of peripheral network devices, servers, and network back-up systems.

SUPERIOR PROTECTION

The Vision Rack range uses LINE INTERACTIVE technology and provides a sinusoidal output voltage. This technology provides efficiency levels of 98% and therefore reduced energy consumption.
It also ensures a high level of protection against mains power disturbances.
The automatic voltage regulator (AVR) provides protection from surges, overvoltages and undervoltages, without battery intervention.
Reduced battery usage ensures that the battery set is 100% available for mains power supply failures and is able to provide greater autonomy.
EMI filters then provide further protection from voltage surges and transients.
When the mains power supply fails, the load is powered by the inverter and receives a perfectly sinusoidal supply for maximum power continuity and reliability.

HIGH AVAILABILITY

An EnergyShare socket allows load-shedding and the shutdown of less sensitive peripheral devices to extend battery runtime for critical loads. “Hot Swap” batteries can be removed via the front panel for easy and safe UPS maintenance. Battery test facility to detect deteriorating battery performance. Deep discharge protection to reduce battery ageing.

VERSATILITY

Cold Start function to allow the UPS to power up with no mains power supply present.

DISPLAY

Vision models have a backlit LCD display providing UPS status information, load and battery performance.

ADVANCED COMMUNICATIONS

- Advanced multi-platform communications for all operating systems and network environments: PowerShield³ monitoring and shutdown software for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- USB or RS232 serial port interface (selectable);
- Expansion slot for interface boards;
- Status, measurements, alarms and input, output and battery parameters available on LCD display.

FEATURES

- EnergyShare socket;
- Ability to switch on the UPS in the absence of mains power (Cold Start);
- Batteries are user replaceable without switching off equipment and without interruption to the load (Hot Swap);
- USB and RS232 interface;
- Slot for communications boards;
- Maximum reliability and protection of PCs thanks to PowerShield³ monitoring and shutdown software, which can be downloaded free at www.riello-ups.com;
- Highly reliable batteries (automatic and manually-activated battery test);
- Built-in short circuit protection;
- Auto restart (when mains power is restored, after discharge of the batteries);
- Emergency power off contact (EPO).

2-YEAR WARRANTY

OPTIONS

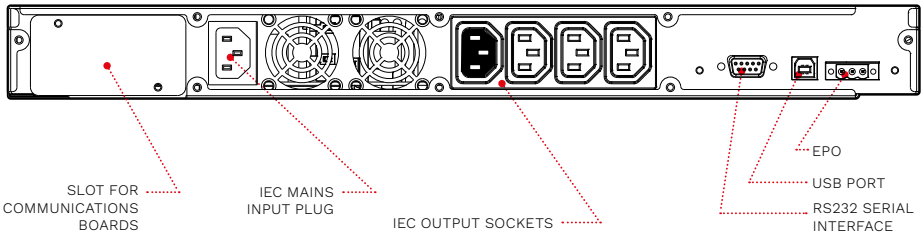
SOFTWARE
PowerShield³
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTI I/O
MULTIPANEL

PRODUCT ACCESSORIES
Universal rails for installation in rack cabinets

DETAILS

VSR 800/1100



MODELS	VSR 800	VSR 1100
POWER	**800 VA/640 W**	**1100 VA/880 W**
INPUT		
Rated voltage [V]	220 / 230 / 240	
Voltage tolerance [V]	162 - 290	
Rated frequency [Hz]	50 / 60 with automatic selection	
Frequency tolerance	±5% (3% to 10% configurable)	
OUTPUT		
Rated voltage [V]	230 (220, 240 selectable)	
Frequency [Hz]	50 or 60 with automatic selection	
Waveform	Sinusoidal	
BATTERIES		
Type	VRLA AGM maintenance-free lead based	
Recharge time	4-6 h	
OVERALL SPECIFICATIONS		
Net weight [kg]	12	13
Gross weight [kg]	14.5	15.5
Dimensions (WxDxH) [mm]	19”x420x1U	
Packaging dimensions (WxDxH) [mm]	595x540x140	
Protections	Overload - short circuit - overvoltage - undervoltage - temperature - excessive low battery	
Communications	USB / RS232 / slot for communications interface	
Input plugs	1 IEC 320 C14	
Output sockets	4 IEC 320 C13	
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant	
Ambient temperature for the UPS	0 °C - +40 °C	
Recommended temperature for battery life	+20 °C - +25 °C	
Colour	Black	
Range of relative humidity	5-95% non-condensing	
Noise [dBA]	<50	

SOHO DATACENTRE

Vision Dual

VI TYPE LINE **INTERACTIVE**

ToweRack

6 ECO LEVEL

USB **USB** plug

P&P **Plug & Play** installation

Hot swap battery

Energy Share

1:1 1100-3000 VA

HIGHLIGHTS

- **Automatic Voltage Regulation (AVR)**
- **Superior protection**
- **High efficiency**
- **High availability**
- **Versatility**
- **Advanced communications**

The Vision Dual range (tower and rack), includes models from 1100 VA to 3000 VA with sinusoidal digital technology.
The Vision Dual range, with its advanced communications and connectivity options, is the ideal solution for installations requiring superior protection and versatility in the power supply system.
Vision Dual is the ideal solution for the protection of peripheral network devices, conventional or rack servers, and network back-up systems. Vision Dual has a practical, modern design and includes several performance advantages over traditional ON LINE UPS. All developed by the Riello UPS research and development team.
The UPS provides efficiency levels of 98% and therefore reduced energy consumption. It has an output power factor of 0.9.

SUPERIOR PROTECTION

The automatic voltage regulator (AVR) provides protection from surges, overvoltages and undervoltages, without battery intervention. Reduced battery usage ensures that the battery set is 100% available for mains power supply failures and is able to provide greater autonomy.
EMI filters then provide further protection from voltage surges and transients.
When the mains power supply fails, the load is powered by the inverter and receives a perfectly sinusoidal supply for maximum power continuity and reliability.

HIGH AVAILABILITY

An EnergyShare socket allows load-shedding and the shutdown of less sensitive peripheral devices to extend battery runtime for critical loads.
“Hot Swap” batteries can be removed via the front panel for easy and safe UPS maintenance. For business continuity applications requiring long battery runtimes, battery autonomy can be extended up to several hours using ER models (versions 2200 and 3000) fitted with more powerful battery chargers.
Battery test facility to detect deteriorating battery performance.
Deep discharge protection to reduce battery ageing.

VERSATILITY

Vision Dual can be installed as a tower or in 19” rack cabinets. The display panel can be easily removed and rotated to suit the type of installation required.
Vision Dual is equipped with an emergency power off (EPO) contact that allows for remote shutdown in emergency situations.
Cold Start function to allow the UPS to power up with no mains power supply present.
Vision Dual models have a backlit LCD display providing UPS status information, load and battery performance.

ADVANCED COMMUNICATIONS

- Advanced multi-platform communications for all operating systems and network environments: PowerShield[3] monitoring and shutdown software included, with SNMP agent, for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- USB or RS232 serial port interface (selectable);
- Expansion slot for SNMP agent interface boards;
- Status, measurements, alarms and input, output and battery parameters available on LCD display.

2-YEAR WARRANTY

1. PULL OUT THE DISPLAY PANEL	2. ROTATE THE DISPLAY PANEL AND INSERT IT INTO POSITION	3. ROTATE THE UPS BY 90º	4. INSTALL THE RACK SUPPORTS

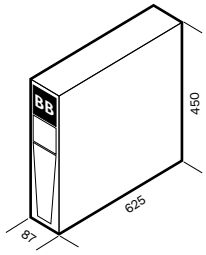
OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

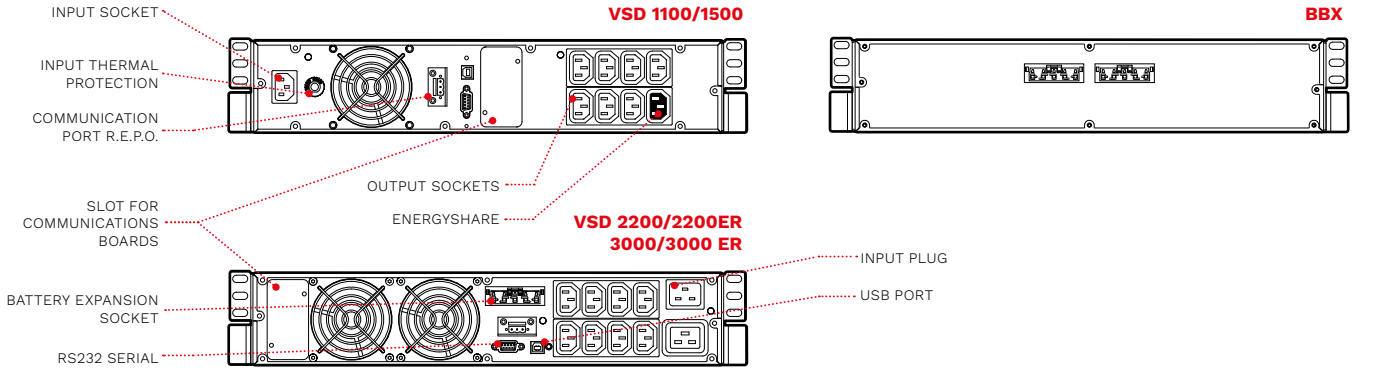
ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTI I/O
MULTIPANEL
Manual Bypass 16 A
Manual Bypass 16 A Rack

PRODUCT ACCESSORIES
Universal rails for installation in rack cabinets

BATTERY CABINET

MODELS	BB SDH 72-A3 BB SDH 72-M1
Dimensions [mm]	

DETAILS



MODELS	VSD 1100	VSD 1500	VSD 2200	VSD 2200 ER	VSD 3000	VSD 3000 ER
POWER	**1100 VA/990 W**	**1500 VA/1350 W**	**2200 VA/1980 W**	**2200 VA/1760 W**	**3000 VA/2700 W**	**3000 VA/2400 W**
INPUT						
Rated voltage [V]	220 / 230 / 240					
Voltage range without battery intervention [V]	162 <Vin <290					
Voltage tolerance [V]	162 - 290					
Maximum permitted voltage [V]	300					
Rated frequency [Hz]	50 or 60 ±5					
Frequency tollerance [Hz]	50 ±5% / 60 ±5%					
Power factor	>0.98					
Current distortion	≤7%					
OUTPUT						
Voltage distortion with linear load / with non-linear load	<3% / <8%					
Frequency [Hz]	Selectable: 50 or 60 or self-learning					
Waveform	Sinusoidal					
Current crest factor	2.5 : 1					
Efficiency ECO and SMART ACTIVE Modes	98.5%					
Overload Times	125% for 10 sec., 150% for 1 sec.					
BATTERIES						
Type	VRLA AGM maintenance-free lead based					
Recharge time	2-4 h					
OVERALL SPECIFICATIONS						
Net weight [kg]	16.5	17.5	28	15.5	31.5	16.5
Gross weight [kg]	20	21	33	20.5	36.5	21.5
Dimensions (WxDxH) [mm]	87x450x425 (19”x425x2U)		87x450x625 (19”x625x2U)			
Packaging dimensions (WxDxH) [mm]	240x500x600		240x600x760			
Protection against overvoltages [J]	300					
Protections	Overcurrent - short circuit - overvoltage - undervoltage - temperature - excessive low battery					
Communications	USB / DB9 with RS232 and contacts / Slot for communications interface					
Input plugs	1 IEC 320 C14		1 IEC 320 C20			
Output sockets	8 IEC 320 C13		8 IEC 320 C13 + 1 IEC 320 C19			
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant					
Ambient temperature for the UPS	0 °C - +40 °C					
Recommended temperature for battery life	+20 °C - +25 °C					
Range of relative humidity	5-95% non-condensing					
Colour	Black					
Noise level at 1 m (ECO Mode) [dBA]	<40					
Standard equipment provided	Power cable, serial cable, USB cable, safety manual, quick start guide, user manual on CD-ROM					

SOHO EMERGENCY E-MEDICAL INDUSTRY

Sentinel Rack

ONLINE **Rack** **USB** plug **Plug & Play** installation

1:1 1500-3000 VA

HIGHLIGHTS

- **Power factor 0.9**
- **Operating flexibility**
- **Emergency function**
- **Battery optimisation**
- **Runtime expandability**
- **Compact design**
- **Rack depth of 380 mm**

Sentinel Rack has compact design and improved performance developed by the Riello UPS research and development team. Sentinel Rack uses ON LINE double conversion technology, resulting in the highest levels of reliability and maximum protection for critical loads such as servers, and IT and voice/data applications. For business continuity applications requiring long battery runtimes, battery autonomy can be extended up to several hours using the 3000 VA model fitted with more powerful battery charger. The front display panel has been entirely redesigned, adding an LCD display that shows the input and output voltages, battery readings and UPS operating status information. The inverter and the microprocessor control stage provide increased efficiency and greater configuration options.
Maximum expandability: the Sentinel Rack is supplied as standard with a USB port and an expansion slot for protocol conversion or relay contacts boards.
With energy savings in mind, Sentinel Rack is also fitted with a shut-off switch to reduce energy consumption to zero during prolonged periods of inactivity (ECO LINE). Sentinel Rack is available in 1500 VA and 3000 VA models.

OPERATING FLEXIBILITY

Different operating modes are available to reduce energy consumption based on specific load and user requirements.

- ON LINE: maximum load protection and output voltage waveform quality;

- ECO Mode: the UPS uses LINE INTERACTIVE technology, with the load powered by the mains, reducing consumption and thus improving efficiency (up to 98%);
- SMART ACTIVE Mode: the UPS automatically selects ON LINE or LINE INTERACTIVE operation, depending on the quality of the mains supply, checking the number, frequency and type of disturbances present;
- STANDBY OFF: the UPS supplies the load only when the mains fails. The inverter begins working with a progressive start up sequence to prevent inrush currents;
- Frequency Converter operation (50 or 60 Hz).

EMERGENCY FUNCTION

This configuration ensures the operation of emergency systems that must be supplied in the event of a mains power failure, such as emergency lighting, fire detection/extinguishing systems and alarms. When the mains power supply fails, the inverter begins powering the loads with a progressive start up (Soft Start) in order to prevent overload.
Sentinel Rack is compliant for installation in medium-voltage transformer rooms in accordance with applicable legislation, for the power supply with reserve charge of medium-voltage coils.

BATTERY OPTIMISATION

The Sentinel Rack range has a deep discharge protection device to optimise battery life.
Periodically the UPS carries out a battery efficiency test (which can also be manually activated); its wide input voltage tolerance range helps to reduce battery usage and maintain performance over time.

RUNTIME EXPANDABILITY (SER 3000)

Optional battery extension packs can be connected to increase UPS runtime.
SER 3000 ER version is designed without internal batteries and a more powerful battery chargers to achieve longer runtimes.

LOW NOISE LEVEL

Thanks to the use of high frequency components and load-based fan speed control, the noise produced by the UPS is less than 40 dBA.

FEATURES

- Filtered, stabilised and reliable voltage: double conversion ON LINE technology (VFI compliant with IEC 62040-3) with filters for the suppression of atmospheric disturbances;
- High overload capability (up to 150%);
- Programmable Auto-restart when mains is restored;
- Battery start up (Cold Start);
- Power factor correction (UPS input power factor, close to 1);
- Wide input voltage tolerance range (from 140 V to 276 V) without battery intervention.
- Runtime extendable up to several hours;
- Fully configurable using UPS Tools configuration software;
- Highly reliable batteries (automatic and manually-activated battery test);
- High level of UPS reliability (total microprocessor control);
- Low impact on the mains (sinusoidal take up).

ADVANCED COMMUNICATIONS

- Multi-platform communication for all operating systems and network environments: PowerShield[3] supervision and shutdown software for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- UPS Tools configuration and customisation software supplied as standard;
- RS232 serial port and opto-isolated contacts;
- USB port;
- Slot for communications boards.

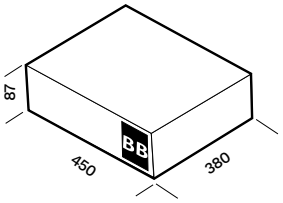
2-YEAR WARRANTY

OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

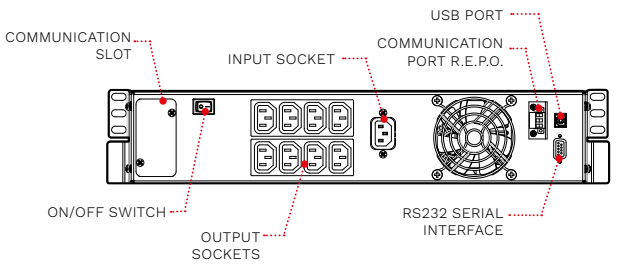
ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTI I/O
MULTIPANEL
Manual Bypass 16 A Rack

BATTERY CABINET

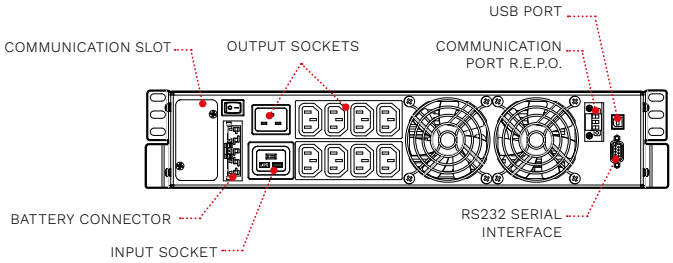
MODELS	BB SER 72-A3
Dimensions [mm]	

DETAILS

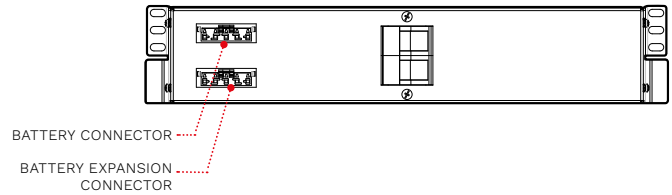
SER 1500



SER 3000



BBX



MODELS	SER 1500	SER 3000 ER
POWER	**1500 VA/1350 W**	**3000 VA/2700 W**
INPUT		
Rated voltage [V]	220 / 230 / 240	
Voltage range without battery intervention [V]	140 <Vin <276 @ 50% load / 184 <Vin <276 @ 100% load	
Voltage tolerance [V]	230 ±20%	
Maximum permitted voltage [V]	300	
Rated frequency [Hz]	50 / 60	
Frequency tollerance [Hz]	50 ±5% / 60 ±5%	
Power factor	>0.99	
Current distortion	≤7%	
BYPASS		
Voltage tolerance [V]	180 / 264	
Frequency tolerance [Hz]	Frequency selected (from ±1.5 to ±5 configurable)	
Overload times	125% for 5 sec., 150% for 1 sec.	
OUTPUT		
Voltage distortion with linear load / with non-linear load	<2% / <4%	
Frequency [Hz]	Selectable: 50 or 60 or self-learning	
Static variation	±1%	
Dynamic variation	≤5% in 20 msec.	
Waveform	Sinusoidal	
Current crest factor	3:1	
Efficiency ECO and SMART ACTIVE Modes	98%	
BATTERIES		
Type	VRLA AGM maintenance-free lead based	
Recharge time	2-4 h	
OVERALL SPECIFICATIONS		
Net weight [kg]	22	14 (without batteries)
Gross weight [kg]	24	18
Dimensions (WxDxH) [mm]	450x380x87 (19"x380x2U)	
Packaging dimensions (WxDxH) [mm]	540x490x190	
Protection against overvoltage [J]	300	
Protections	Overcurrent - short circuit - overvoltage - undervoltage - temperature - excessive low battery	
Communications	USB / DB9 with RS232 and contacts / Slot for communications interface	
Input plugs	1 IEC 320 C14	1 IEC 320 C20
Output sockets	8 IEC 320 C13	8 IEC 320 C13 + 1 IEC 320 C19
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111	
Ambient temperature for the UPS	0 °C - +40 °C	
Recommended temperature for battery life	+20 °C - +25 °C	
Range of relative humidity	5-95% non-condensing	
Colour	Black	
Noise level at 1 m (ECO Mode) [dBA]	<40	
Standard equipment provided	Power cable, IEC-IEC cable, USB cable, safety manual, quick start guide	

SOHO EMERGENCY E-MEDICAL INDUSTRY

Sentinel Pro

VFI TYPE **ON**LINE

Tower

ECO LEVEL 6

USB **USB** plug

P&P **Plug & Play** installation

GS **GS Nemko** certified

Supercaps UPS

1:1 700-3000 VA

HIGHLIGHTS

- **Power factor 0.9**
- **Operating flexibility**
- **Emergency function**
- **Battery optimisation**
- **Runtime expandability**
- **Low noise level**

Sentinel Pro has a unique, modern design and improved performance created by the Riello UPS research and development team. Sentinel Pro uses ON LINE double conversion technology, resulting in the highest levels of reliability and maximum protection for critical loads such as servers, and IT and voice/data applications.
For business continuity applications requiring long battery runtimes, battery autonomy can be extended up to several hours using ER models fitted with more powerful battery chargers.
The front display panel has been entirely redesigned, adding an LCD display that shows the input and output voltages, battery readings and UPS operating status information. The inverter and the microprocessor control stage has been completely redesigned to provide increased efficiency and greater configuration options.
Maximum expandability: the Sentinel Pro is supplied as standard with a USB port and an expansion slot for protocol conversion or relay contacts boards.
With energy savings in mind, Sentinel Pro is also fitted with a shut-off button to reduce energy consumption to zero during prolonged periods of inactivity (ECO LINE). Sentinel Pro is available in 700 VA, 1000 VA, 1500 VA, 2200 VA and 3000 VA models.

OPERATING FLEXIBILITY

Different operating modes are available to reduce energy consumption based on

specific load and user requirements.

- ON LINE: maximum load protection and output voltage waveform quality;
- ECO Mode: the UPS uses LINE INTERACTIVE technology, with the load powered by the mains, reducing consumption and thus improving efficiency (up to 98%);
- SMART ACTIVE Mode: the UPS automatically selects ON LINE or LINE INTERACTIVE operation, depending on the quality of the mains supply, checking the number, frequency and type of disturbances present;
- STANDBY OFF: the UPS supplies the load only when the mains fails. The inverter begins working with a progressive start up sequence to prevent inrush currents.
- Frequency converter operation (50 or 60 Hz).

EMERGENCY FUNCTION

This configuration ensures the operation of emergency systems that must be supplied in the event of a mains power failure, such as emergency lighting, fire detection/extinguishing systems and alarms. When the mains power supply fails, the inverter begins powering the loads with a progressive start up (Soft Start) in order to prevent overload. Sentinel Pro is compliant for installation in medium-voltage transformer rooms in accordance with applicable legislation, for the power supply with reserve charge of medium-voltage coils.

BATTERY OPTIMISATION

The Sentinel Pro range has a deep discharge protection device to optimise battery life.
Periodically the UPS carries out a battery efficiency test (which can also be manually activated); its wide input voltage tolerance range helps to reduce battery usage and maintain performance over time.

RUNTIME EXPANDABILITY

Optional battery extension packs can be connected to increase UPS runtime. In addition the Sentinel Pro range includes ER versions with no internal batteries and more powerful battery chargers for longer runtimes.

LOW NOISE LEVEL

Thanks to the use of high frequency components and load-based fan speed control, the noise produced by the UPS is less than 40 dBA.

FEATURES

- Filtered, stabilised and reliable voltage: double conversion ON LINE technology (VFI compliant with IEC 62040-3) with filters for the suppression of atmospheric disturbances;
- High overload capability (up to 150%)
- Programmable Auto-restart when mains is restored;
- Battery start up (Cold Start);
- Power factor correction (UPS input power factor, close to 1);
- Wide input voltage tolerance range (from 140 V to 276 V) without battery intervention;
- Runtime extendable up to several hours;
- Fully configurable using UPS Tools configuration software;
- Highly reliable batteries (automatic and manually-activated battery test);
- High level of UPS reliability (total microprocessor control);
- Low impact on the mains (sinusoidal take up).

ADVANCED COMMUNICATIONS

- Multi-platform communication for all operating systems and network environments: PowerShield³ supervision and shutdown software for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- UPS Tools configuration and customisation software supplied as standard;
- RS232 serial port and opto-isolated contacts;
- USB port;
- Slot for communications boards.

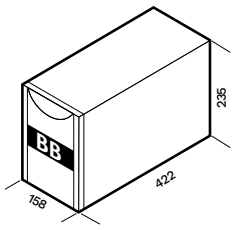
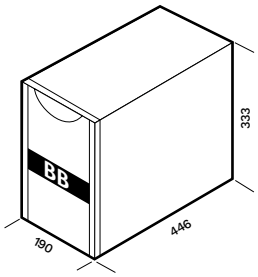
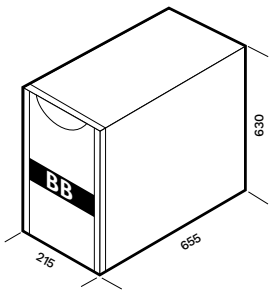
2-YEAR WARRANTY

OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

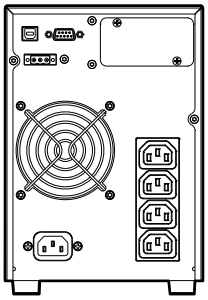
ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTICOM 411
MULTI I/O
MULTIPANEL
Manual Bypass 16 A

BATTERY CABINET

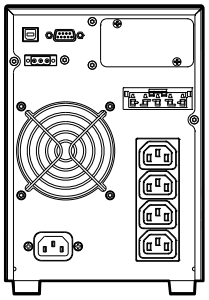
MODELS	BB SEP 36-A3 / BB SEP 36-M1	BB SEP 72-A3 / BB SEP 72-M1	BB SEP 36-B1 / BB SEP 72-B1
Dimensions [mm]			

DETAILS

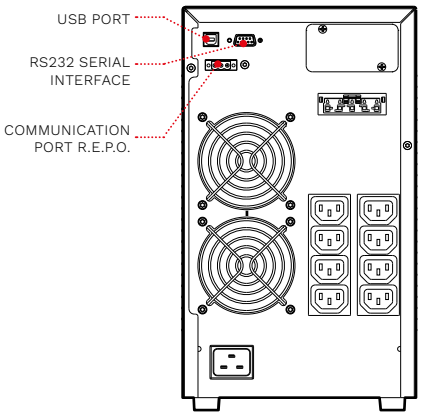
SEP 700
SEP 1500



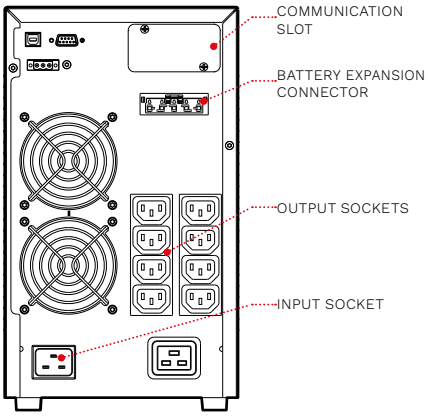
SEP 1000
SEP 1000 ER



SEP 2200
SEP 2200 ER



SEP 3000
SEP 3000 ER



MODELS	SEP 700	SEP 1000	SEP 1000 ER	SEP 1500	SEP 2200	SEP 2200 ER	SEP 3000	SEP 3000 ER
POWER	**700 VA/630 W**	**1000 VA/900 W**		**1500 VA/1350 W**	**2200 VA/1980 W**		**3000 VA/2700 W**	
INPUT								
Rated voltage [V]	220 / 230 / 240							
Voltage range without battery intervention [V]	140 <Vin <276 @ 50% load / 184 <Vin <276 @ 100% load							
Voltage tolerance [V]	230 ±20%							
Maximum permitted voltage [V]	300							
Rated frequency [Hz]	50 / 60							
Frequency tollerance [Hz]	50 ±5% / 60 ±5%							
Power factor	>0.99							
Current distortion	≤7%							
BYPASS								
Voltage tolerance [V]	180 / 264							
Frequency tolerance [Hz]	Frequency selected (from ±1.5 to ±5 configurable)							
Overload times	125% for 5 sec., 150% for 1 sec.							
OUTPUT								
Voltage distortion with linear load / with non-linear load	<2% / <4%							
Frequency [Hz]	Selectable: 50 or 60 or self-learning							
Static variation	±1%							
Dynamic variation	≤5% in 20 msec.							
Waveform	Sinusoidal							
Current crest factor	3:1							
Efficiency ECO and SMART ACTIVE Modes	98%							
BATTERIES								
Type	VRLA AGM maintenance-free lead based; Supercaps							
Recharge time	2-4 h		N.A.	2-4 h		N.A.	2-4 h	N.A.
OVERALL SPECIFICATIONS								
Net weight [kg]	10.9	13.3	7	14.8	25.6	14	28	15
Gross weight [kg]	12.5	14.9	8.6	15.5	28.8	17	31.2	18
Dimensions (WxDxH) [mm]	158x422x235				190x446x333			
Packaging dimensions (WxDxH) [mm]	245x500x340				325x585x470			
Protection against overvoltage [J]	300							
Protections	Overcurrent - short circuit - overvoltage - undervoltage - temperature - excessive low battery							
Communications	USB / DB9 with RS232 and contacts / Slot for communications interface							
Input plugs	1 IEC 320 C14				1 IEC 320 C20			
Output sockets	4 IEC 320 C13				8 IEC 320 C13		8 IEC 320 C13 + 1 IEC 320 C19	
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111							
Ambient temperature for the UPS	0 °C - +40 °C							
Recommended temperature for battery life	+20 °C - +25 °C							
Range of relative humidity	5-95% non-condensing							
Colour	Black							
Noise level at 1 m (ECO Mode) [dBA]	<40							
Standard equipment provided	Power cable, IEC-IEC cable, USB cable, safety manual, quick start guide							

SOHO EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

Sentinel Dual SDH

VFI TYPE **ON**LINE

ToweRack

ECO 6 LEVEL

USB **USB** plug

P&P **Plug & Play** installation

Hot swap battery

Energy Share

1:1 1-3 kVA

HIGHLIGHTS

- **Power factor 0.9**
- **Simplified installation**
- **Installation versatility**
- **Reduced running costs**
- **Runtime expandability**
- **Low noise level**

Sentinel Dual is the new range of high density double conversion ON LINE UPS suitable for powering a wide range of devices such as servers, storage systems, VoIP telephony equipment, network and medical systems as well as industrial applications.
It is also ideal for powering and protecting Blade Server systems with high input power factor. At only 2U, Sentinel Dual is ideal for 19" rack cabinet installations. Sentinel Dual has a practical, modern design and includes several performance advantages over traditional ON LINE UPS. All developed by the Riello UPS research and development team. The newly-designed inverter is one of the best energy conversion systems on the market, with a 0.9 output power factor and 92% operating efficiency in ON LINE Mode. For business continuity applications requiring long battery runtimes, battery autonomy can be extended up to several hours using ER models fitted with more powerful battery chargers. With energy savings in mind, Sentinel Dual is also fitted with a shut-off button to reduce energy consumption to zero during prolonged periods of inactivity.

SIMPLIFIED INSTALLATION

- Sentinel Dual can be installed as a tower or in 19" rack cabinets, by simply pulling out and rotating the display panel;
- Low noise (<40 dBA): can be installed in any environment thanks to its high

1. PULL OUT THE DISPLAY PANEL	2. ROTATE THE DISPLAY PANEL AND INSERT IT INTO POSITION	3. ROTATE THE UPS BY 90º	4. INSTALL THE RACK SUPPORTS

frequency switching inverter and PWM load-dependent digitally controlled fan;
- Operation guaranteed up to 40 °C (the components are designed for high temperatures and are thus subject to less stress at normal temperatures);
- On Sentinel Dual models, the output sockets can be programmed to disconnect less critical loads during blackouts (EnergyShare function).

INSTALLATION VERSATILITY

Sentinel Dual can be used in a tower or rack format, by simply turning the display and adding the supplied handles or optional runners.

REDUCED RUNNING COSTS

The UPS is highly flexible and easy to configure. Programmable functions can be set via software or manually via the front display panel. Sentinel Dual can be configured in the following operating modes:
- ON LINE: maximum load protection and output voltage waveform quality;
- ECO Mode: to increase efficiency (up to to 98%); allows you to select LINE INTERACTIVE technology;
- SMART ACTIVE: the UPS automatically decides the operating mode based on the mains power quality;
- STANDBY OFF: the UPS can be selected to function only when the mains power supply fails (emergency only mode);
- Frequency Converter: operation (50 or 60 Hz).

ADVANCED COMMUNICATIONS

Sentinel Dual offers maximum flexibility for integration with all types of communication systems.
- Multi-platform communication for all operating systems and network environments: PowerShield[3] supervision and shutdown software for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- UPS Tools configuration and customisation software supplied as standard;
- RS232 serial port and opto-isolated contacts;
- USB port;
- Slot for communications boards such as Modbus/Jbus, TCP/IP-SNMP and relay contacts.

EMERGENCY FUNCTION

This configuration ensures the operation of emergency systems that must be supplied in the event of a mains power failure, such as emergency lighting, fire detection/extinguishing systems and alarms.
When the mains power supply fails, the inverter begins powering the loads with a progressive start up (Soft Start) in order to prevent overload.
Sentinel Dual is compliant for installation in medium-voltage transformer rooms in accordance with applicable legislation, for the power supply with reserve charge of medium-voltage coils.

HIGH QUALITY OUTPUT VOLTAGE

- Even with non-linear loads (IT loads with a crest factor of up to 3:1);
- High short circuit current on bypass;
- High overload capacity: 150% by inverter (even with mains failure);
- Filtered, stabilised and reliable voltage (ON LINE double conversion technology (VFI compliant with EN62040-3) with filters for the suppression of atmospheric disturbances;
- Power factor correction: UPS input power factor close to 1 and sinusoidal current uptake.

HIGH BATTERY RELIABILITY

- Automatic and manual battery test;
- Batteries are user replaceable without switching off equipment and without interruption to the load (Hot Swap);
- Unlimited extendible runtime using matching battery cabinets.

LOW NOISE LEVEL

Thanks to the use of high frequency components and load-based fan speed control, the noise produced by the UPS is less than 40 dB.

OTHER FEATURES

- Output voltage can be selected via software (220/230/240 V);
- Auto-restart when mains power is restored (programmable via software);
- STANDBY ON bypass: when the machine is switched off, it automatically goes into bypass and battery charge mode;
- Minimum load switch-off;
- Battery discharge warning;
- Start up delay;
- Total microprocessor control;
- Automatic bypass without interruption;
- Status, measurements and alarms available on standard backlit display;
- UPS firmware updating via PC;
- Input protection via resettable thermal switch (versions up to 1500 VA);
- Back-feed protection standard: to prevent energy from being fed back to the network;
- Manual switching to bypass.

2-YEAR WARRANTY

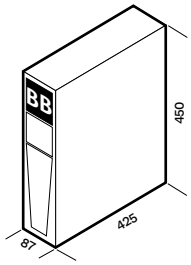
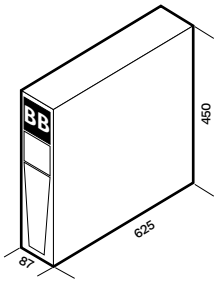
OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTICOM 411
MULTI I/O
MULTIPANEL
Manual Bypass 16 A
Manual Bypass 16 A Rack

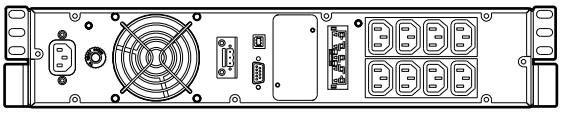
PRODUCT ACCESSORIES
Universal rails for installation in rack cabinets

BATTERY CABINET

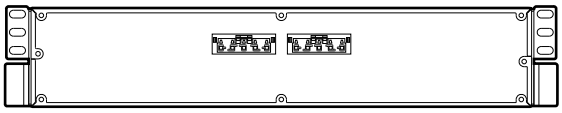
MODELS	BB SDH 36-A3 BB SDH 36-M1	BB SDH 72-A3 BB SDH 72-M1
Dimensions [mm]		

DETAILS

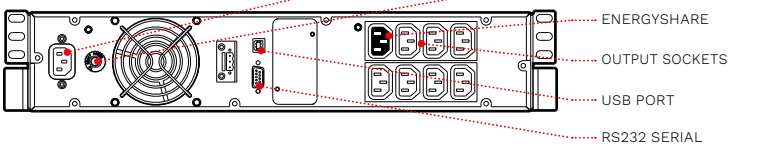
SDH 1000



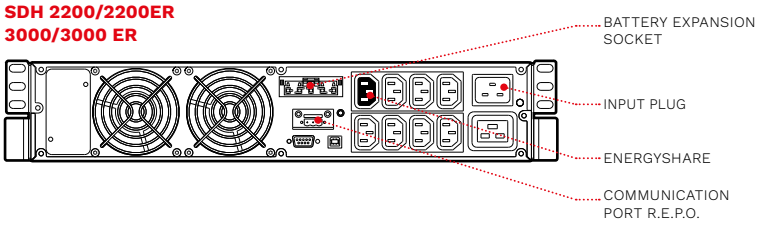
BBX



SDH 1500



SDH 2200/2200ER
3000/3000 ER



MODELS	SDH 1000	SDH 1500	SDH 2200	SDH 2200 ER	SDH 3000	SDH 3000 ER
POWER	**1000 VA/900 W**	**1500 VA/1350 W**	**2200VA/1980 W**	**2200VA/1760 W**	**3000 VA/2700 W**	**3000 VA/2400 W**
INPUT						
Rated voltage [V]	220 / 230 / 240					
Voltage range without battery intervention [V]	140 <Vin <276 @ 50% load / 184 <Vin <276 @ 100% load					
Voltage tolerance [V]	230 ±20%					
Maximum permitted voltage [V]	300					
Rated frequency [Hz]	50 / 60 ±5					
Frequency tolerance [Hz]	50 ±5% / 60 ±5%					
Power factor	>0.98					
Current distortion	≤7%					
BYPASS						
Voltage tolerance [V]	200 / 253					
Frequency tolerance [Hz]	Frequency selected (from ±0.5 to ±5 configurable)					
Overload Times	125% for 4 sec., 150% for 0.5 sec.					
OUTPUT						
Voltage distortion with linear load / with non-linear load	<2% / ≤3.5%					
Frequency [Hz]	Selectable: 50 or 60 or self-learning					
Static variation	±1%					
Dynamic variation	≤5% in 20 msec.					
Waveform	Sinusoidal					
Current crest factor	3:1					
Efficiency ECO and SMART ACTIVE Modes	98%					
BATTERIES						
Type	VRLA AGM maintenance-free lead based					
Recharge time	2-4 h					
OVERALL SPECIFICATIONS						
Net weight [kg]	17.5	18	30.5	15	31	15
Gross weight [kg]	21	21.5	35	19.5	35.5	19.5
Dimensions (WxDxH) [mm]	(T- 87x425x450) (R- 19”x425x2U)		(T- 87x625x450) (R- 19”x625x2U)			
Packaging dimensions (WxDxH) [mm]	550x600x245		600x760x245			
Protection against overvoltage [J]	300					
Protections	Overcurrent - short circuit - overvoltage - undervoltage - temperature - excessive low battery					
Communications	USB / DB9 with RS232 and contacts / Slot for communications interface					
Input plugs	1 IEC 320 C14		1 IEC 320 C20			
Output sockets	8 IEC 320 C13		8 IEC 320 C13 + 1 IEC 320 C19			
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111					
Ambient temperature for the UPS	0 °C - +40 °C					
Recommended temperature for battery life	+20 °C - +25 °C					
Relative humidity	5-95% non-condensing					
Colour	Black					
Noise level at 1 m (ECO Mode) [dBA]	<40					
Standard equipment provided	Power cable, serial cable, USB cable, safety manual, quick start guide					

SOHO EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

Sentinel Dual SDU

VFI TYPE **ON**LINE

ToweRack

6 ECO LEVEL

USB **USB** plug

Hot swap battery

Energy Share

1:1 4 kVA
5-10 kVA/kW

3:1 8-10 kVA/kW

HIGHLIGHTS

- **Power factor 1 kW = kVA***
- **Parallelable up to 3 units**
- **Simplified Installation**
- **Operating mode selection**
- **High quality output voltage**
- **High battery reliability**

** SDU 4000 has 3600 W*

Sentinel Dual is the best solution for powering mission critical applications and electro-medical devices requiring maximum power reliability.
Flexibility of installation and use (digital display, user-replaceable battery set), as well as the many communication options available, makes the Sentinel Dual suitable for many different applications from IT to security. Up to 3 Sentinel Dual can be operated in parallel in either capacity or N+1 redundant configuration offering increased reliability for critical system. The Sentinel Dual can be installed as tower (floor standing) or rack, ideal for network and server rack applications.
The Sentinel Dual range is available in 4 kVA and 5-6-8-10 kVA/kW models with ON LINE double conversion technology (VFI): the load is powered continuously by the inverter which supplies a sinusoidal voltage, filtered and stabilised in terms of voltage, form and frequency. In addition, the input and output filters significantly increase the load's immunity to mains disturbances and lightning strikes.
Technology and performance: selectable ECO Mode and SMART ACTIVE Mode functions. Diagnostics: Standard digital display, RS232 and USB interfaces with PowerShield[3] software downloadable, communications slot for connectivity accessories.

SIMPLIFIED INSTALLATION

- Can be installed on the floor (tower version) or in rack mount cabinets (rack version). The display panel can be

1. PULL OUT THE DISPLAY PANEL	2. ROTATE THE DISPLAY PANEL AND INSERT IT INTO POSITION	3. ROTATE THE UPS BY 90º	4. INSTALL THE RACK SUPPORTS

rotated (using the key supplied);
- Low noise (<45 dBA): can be installed in any environment thanks to its high frequency switching inverter and PWM load-dependent digitally controlled fan;
- External bypass option for maintenance with interruption-free switching;
- Operation guaranteed up to 40 °C (the components are designed for high temperatures and are thus subject to less stress at normal temperatures);
- Built-in IEC output sockets with thermal protection.

OPERATING MODE SELECTION

Functions can be programmed via software or manually via the front display panel.
- ON LINE: efficiency up to 95%;
- ECO Mode: to increase efficiency (up to to 98%), allows for the selection of LINE INTERACTIVE technology (VI) to power low priority loads from the mains supply;
- SMART ACTIVE: the UPS automatically decides upon the operating mode (VI or VFI) based on the quality of the mains power supply;
- STANDBY OFF: the UPS can be selected to function only when the mains power supply fails (emergency only mode);
- Frequency Converter operation (50 or 60 Hz).

HIGH QUALITY OUTPUT VOLTAGE

- Even with non-linear loads (IT loads with a crest factor of up to 3:1);
- High short circuit current on bypass;
- High overload capacity: 150% by inverter (even with mains failure);
- Filtered, stabilised and reliable voltage (double conversion ON LINE technology (VFI compliant with EN62040-3), with filters for the suppression of atmospheric disturbances;
- Power factor correction: UPS input power factor close to 1 and sinusoidal current uptake.

HIGH BATTERY RELIABILITY

- Automatic and manual battery test;
- Reduced ripple component (detrimental to the batteries) using a low ripple current discharge (LCRD) system;
- Batteries are user replaceable without switching off equipment and without interruption to the load (Hot Swap);
- Unlimited extendible runtime using matching Battery cabinets;
- The batteries do not cut in during mains failures of <20 msec. (high hold up time) or when the input supply is between 184 V to 276 V.

EMERGENCY FUNCTION

This configuration ensures the operation of those emergency systems that require continuous, reliable and long-lasting power supply in the event of a mains power failure, such as emergency lighting, fire detection/extinguishing systems and alarms. When the mains power supply fails, the inverter begins powering the loads with a progressive start up (Soft Start) in order to prevent overload.

BATTERY OPTIMISATION

The wide input voltage range and a high hold-up time minimise battery usage and increase efficiency and battery life; for smaller power breaks, energy is drawn from a group of appropriately-sized capacitors.

RUNTIME EXPANDABILITY

Optional battery extension packs can be connected to increase UPS runtime. In addition the Sentinel Dual range includes ER versions with no internal batteries and more powerful battery chargers for longer runtimes.

ENERGYSHARE

10 A configurable IEC output sockets allow for runtime optimisation by programming the switching off of low priority loads on mains failure; alternatively, emergency loads that are normally not powered when mains is present can be activated.

OTHER FEATURES

- Selectable output voltage (220/230/240 V);
- Dual input supplies configuration (SDU 10000 DI and SDU 10000 DI ER);
- Auto-restart when mains power is restored (programmable via software);
- Bypass on: when the machine is switched off, it automatically goes into bypass and battery charge mode;
- Minimum load switch-off;
- Low battery warning;
- Start up delay;
- Total microprocessor and DSP control;
- Automatic bypass without interruption;
- Use of custom power modules;
- Status, measurements and alarms available on standard backlit display;
- UPS digital updating (flash memory upgradeable);
- Output sockets protected with resettable thermal switch;
- Back-feed protection standard: to prevent energy from being fed back to the network;
- Manual switching to bypass.

ADVANCED COMMUNICATIONS

- Advanced multi-platform communications for all operating systems and network environments: PowerShield[3] monitoring and shutdown software for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- Plug and play function;
- USB port;
- RS232 serial port;
- Slot for installation of communications boards.

UNITY POWER FACTOR*

- More power delivered;
- More real output power (W).

2-YEAR WARRANTY

OPTIONS

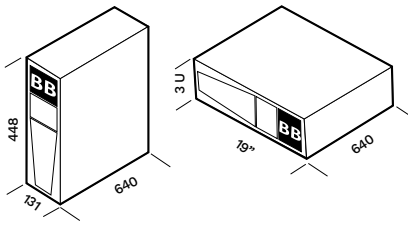
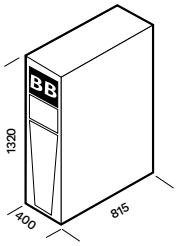
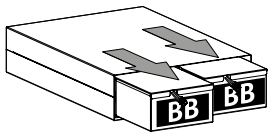
SOFTWARE
PowerShield[3]
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTICOM 411
MULTI I/O
MULTIPANEL

PRODUCT ACCESSORIES
Universal rails for installation in rack cabinets
Parallel card*
Manual bypass single-phase
Manual bypass three-phase
Modular Manual bypass single-phase*
Modular Manual bypass three-phase *

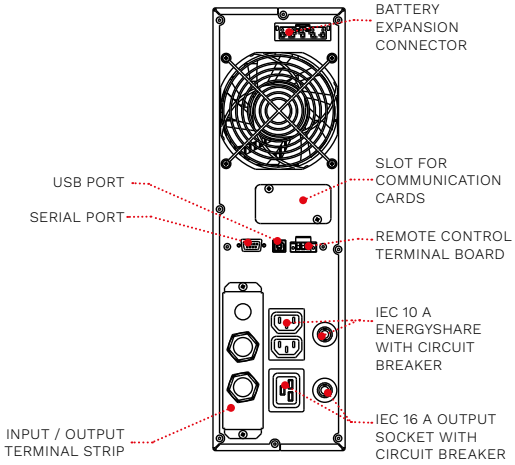
**not suitable for SDU 4000*

BATTERY CABINET

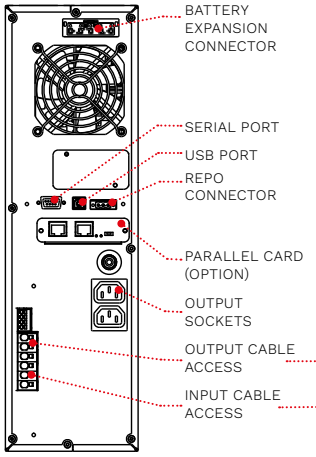
MODELS	BB SDU 096V A5 / SDU 096V M4 BB SDU 180V A3 / BB SDU 240V A3	BB SDU 180V B1 BB SDU 240V B1	BB SDU 240V HS A3 BB SDU 240V HS A5
Dimensions [mm]			

DETAILS

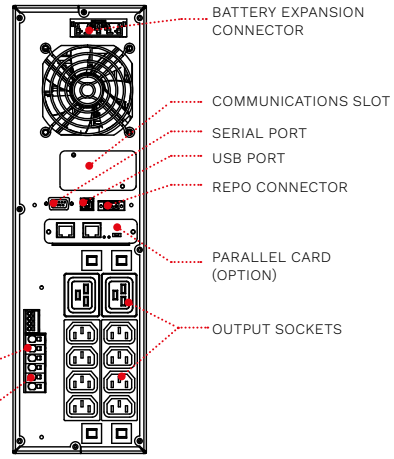
SDU 4000



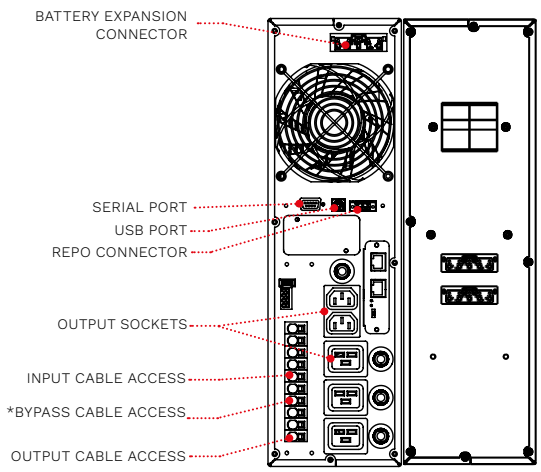
SDU 5000
SDU 6000



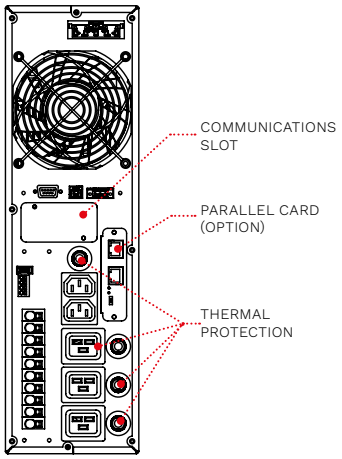
SDU 5000 PDIST
SDU 6000 PDIST
SDU 6000 ER*



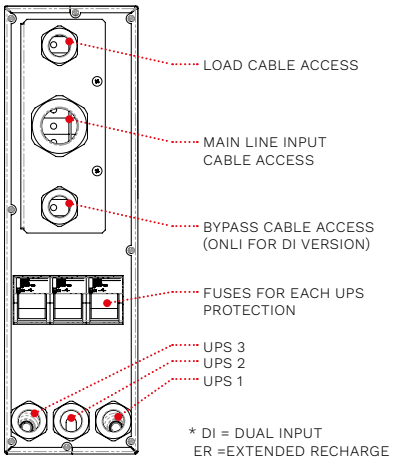
SDU 8000 / SDU 8000 TM
SDU 10000 / SDU 10000 TM
SDU 10000 DI*



SDU 10000 DI ER*



MODULAR MANUAL BYPASS



MODELS	SDU 4000	SDU 5000 SDU 5000 PDIST	SDU 6000 SDU 6000 PDIST	SDU 6000 ER	SDU 8000	SDU 10000	SDU 10000 DI	SDU 10000 DI ER	SDU 8000 TM	SDU 10000 TM
INPUT										
Dual Input	no						yes		no	
Rated voltage [V]	220 / 230 / 240								380 / 400 / 415 (3W+N+PE) 220 / 230 / 240 (1W+N+PE)	
Voltage tolerance [V]	230 ±20%								400 ±20% 230 ±20%	
Minimum voltage [V]	184								318 / 184	
Rated frequency [Hz]	50 / 60 ±5									
Power factor	>0.98									
Current distortion	≤5%									
BYPASS										
Voltage tolerance [V]	180 / 264 (selectable in ECO Mode or SMART ACTIVE Mode)									
Frequency tolerance	Selected frequency ±5% (selectable by user)									
Overload Times	<110% continuous, 130% for 1 h, 150% for 10 min., over 150% for 3 sec.									
OUTPUT										
Nominal power [VA]	4000	5000	6000	6000	8000	10000	10000	10000	8000	10000
Active power [W]	3600	5000	6000	6000	8000	10000	10000	10000	8000	10000
Rated voltage [V]	220 / 230 / 240 selectable									
Voltage distortion	<1% with linear load / <3% with non-linear load									
Frequency [Hz]	50 / 60 selectable									
Static variation	1.5%									
Dynamic variation	≤5% in 20 msec.									
Waveform	Sinusoidal									
Crest factor [lpeak/irms]	3:1									
BATTERIES										
Type	VRLA AGM maintenance-free lead based									
Recharge time	4-6 h									
OVERALL SPECIFICATIONS										
Net weight [kg]	38	45	46	20	19+53	20+62		21	19+53	20+62
Gross weight [kg]	43	53	54	28	83	93		25	83	93
Dimensions (WxDxH) [mm]	131x640x448 tower 19”x640x3U rack				2x (131x640x448) tower - 2x (19”x640x3U) rack ER version (131x640x448) tower - (19”x640x3U) rack					
Packaging dimensions (WxDxH) [mm]	780x555x(270+15)				2x (780x555x270) + H 15 ER version (780x555x(270+15)					
Efficiency	up to 95% ON LINE Mode, 98% ECO Mode									
Protections	Overcurrent - short circuit - overvoltage - undervoltage - temperature - excessive low battery									
Parallel Operation	no	Optional Parallel Card								
Communications	USB / RS232 / slot for communications interface / REPO + Input contact									
Input Connection	Terminal block									
Output sockets	Terminal block + 2 IEC 320 C13 + 1 IEC 320 C19	Terminal block + 2 IEC 320 C19 PDIST: Terminal block + 8 IEC 320 C13 + 2 IEC 320 C19			Terminal block + 2 IEC 320 C13 + 3 IEC 320 C19					
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111									
Ambient temperature for the UPS	0 °C - +40 °C									
Recommended temperature for battery life	+20 °C - +25 °C									
Range of relative humidity	5-95% non-condensing									
Colour	Black RAL 9005									
Noise level at 1 m (ECO Mode) [dBA]	<48									
Standard equipment provided	USB cable; handles kit									

SOHO EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

Sentinel Tower

VFI TYPE **ON**LINE

Tower

6 ECO LEVEL

USB **USB** plug

Energy Share

service **Service** 1st start

Supercaps UPS

1:1 5-6 kVA/kW

1:1 **3:1** 8-10 kVA/kW

HIGHLIGHTS

- **Small footprint**
- **Power factor 1**
- **High efficiency 95%**
- **Parallelable up to 3 units**
- **3 level inverter**
- **Maintenance bypass**
- **High quality output voltage**

Sentinel Tower is the ideal solution for protecting mission critical systems such as safety devices, telecommunications equipment and IT systems to ensure maximum power reliability.
Sentinel Tower is designed and built using state-of-the-art technology and components to provide maximum protection to the powered loads with no impact on downstream systems and optimised energy savings.
The series includes 5-6 kVA/kW single/single-phase and 8-10 kVA/kW single/three-phase input single-phase output models with ON LINE double conversion technology (VFI): the load is powered continuously by the inverter which supplies a sinusoidal voltage, filtered and stabilised in terms of form and frequency. Input and output filters provide significant further immunity from mains disturbances and lightning strikes.
In terms of technology and performance, Sentinel Tower is one of the best UPS available on the market today: three-level inverter to achieve 95% efficiency, output power factor 1 to Increase in efficiency of system and devices and reduce power system losses. Selectable ECO Mode and SMART ACTIVE Mode functions; new custom diagnostics LCD display, RS232 and USB interfaces with PowerShield[3] software, ESD input, interface slot with optional boards.

RELIABILITY

- Total microprocessor and DSP control.
- Interruption-free static and manual bypass;
- Specifications guaranteed up to 40 °C (the components are designed to work at high temperatures and thus are subject to less stress at normal temperatures).

PARALLELABLE

Parallel configuration of 3 units for (2+1) redundant or power parallel system. The UPS continue to operate in parallel even if the connection cable is interrupted (Closed Loop).

UNITY POWER FACTOR

- More power delivered;
- More real output power (W).

OPERATING MODE SELECTION

The operating mode can be programmed via software or manually via the front display panel.

- ON LINE: efficiency up to 95%;
- ECO Mode: to increase efficiency (up to to 98%), allows for the selection of LINE INTERACTIVE technology (VI) to power low priority loads from the mains supply;
- SMART ACTIVE: the UPS automatically decides upon the operating mode (VI or VFI) based on the quality of the mains power supply;
- STANDBY OFF: the UPS can be selected to function only when the mains power supply fails (emergency only mode);
- Frequency Converter operation (50 or 60 Hz).

HIGH QUALITY OUTPUT VOLTAGE

- Even with non-linear loads (IT loads with a crest factor of up to 3:1);
- High short circuit current on bypass;
- High overload capacity: 150% by inverter (even with mains failure);
- Filtered, stabilised and reliable voltage (double conversion ON LINE technology - VFI compliant with EN62040-3), with filters for the suppression of atmospheric disturbances;
- Power factor correction: UPS input power factor close to 1 and sinusoidal current uptake.

SIMPLIFIED INSTALLATION

- UPS can be installed on a single-phase or three-phase distribution network STW 8000 and STW 10000;
- Output terminal board + 2 IEC sockets for powering local consumers (computers, devices, etc.);
- Simplified positioning (built-in castors).

HIGH BATTERY RELIABILITY

- Automatic and manual battery test.
- 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;
- Unlimited extendible runtime using matching Battery cabinets;
- The batteries do not cut in during mains failures of <20 msec. (high hold up time) or when the input supply is between 184 V to 276 V.

LOW IMPACT ON THE MAINS

Sinusoidal uptake of input current on single-phase/single-phase series.

RUNTIME EXPANDABILITY

Optional battery extension packs can be connected to increase UPS runtime. In addition the Sentinel Tower range includes ER versions with no internal batteries and more powerful controlled battery chargers 6 A for longer runtimes.

OTHER FEATURES

- Advanced diagnostics: status, measurements and alarms available on new custom LCD display;
- Low noise (<45 dBA): can be installed in any environment thanks to its high

frequency switching inverter and PWM load-dependent digitally controlled fan (>20 kHz, value above audible range);
- Auto restart (automatic when mains supply is restored, programmable via software;
- Back-feed protection standard: to prevent energy from being fed back to the network;
- UPS digital updating (flash upgradeable).

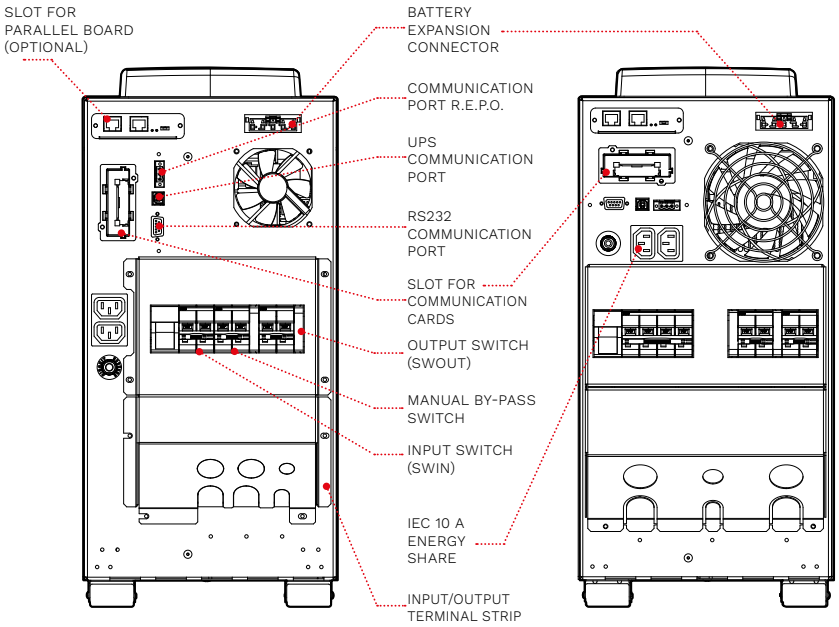
ADVANCED COMMUNICATIONS

- Compatible with Riello Connect remote monitoring;
- Advanced multi-platform communications for all operating systems and network environments: PowerShield[3] monitoring and shutdown software for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012 and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- RS232 serial and USB ports;
- Plug and play function;
- Slot for installation of communications boards.

DETAILS

STW 5000
STW 6000 - STW 6000 ER

STW 8000
STW 10000 - STW 10000 ER



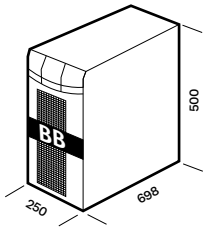
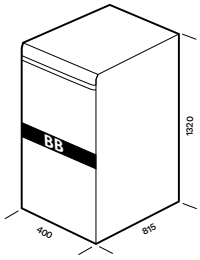
OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTICOM 411
MULTI I/O
MULTIPANEL
Manual Bypass MBB 100 A

PRODUCT ACCESSORIES
Isolation transformer module (hlp) mm/kg: 500x400x265/80 (only for STW 5000-6000 VA models)
Parallel board

BATTERY CABINET

MODELS	BB STW 180V A3, BB STW 180V M1 BB STW 240V A3, BB STW 240V M1	BB 1320 180V B1 BB 1320 240V B1
Dimensions [mm]		

MODELS	STW 5000	STW 6000	STW 6000 ER	STW 8000	STW 10000	STW 10000 ER
INPUT						
Rated voltage [V]	220 / 230 / 240			380 / 400 / 415 (3W+N+PE) 220 / 230 / 240 (1W+N+PE)		
Voltage tolerance [V]	230 ±20%			400 ±20% / 230 ±20%		
Minimum voltage [V]	184			318 / 184		
Maximum operating voltage [V]	276			478 / 276		
Rated frequency [Hz]	50 / 60 ±5					
Power factor	>0.98					
Current distortion	≤5%[1]					
BYPASS						
Voltage tolerance [V]	180 / 264 (selectable in ECO Mode or SMART ACTIVE Mode)					
Frequency tolerance	Selected frequency ±5% (selectable by user)					
Overload times	<110% continuous, 130% for 1 h, 150% for 10 min., over 150% for 3 sec.					
OUTPUT						
Nominal power [VA]	5000	6000	6000	8000	10000	10000
Active power [W]	5000	6000	6000	8000	10000	10000
Rated voltage [V]	220 / 230 / 240 selectable					
Voltage distortion	<1% with linear load / <3% with non-linear load					
Frequency [Hz]	50 / 60 selectable					
Static variation	1.5%					
Dynamic variation	≤5% in 20 msec.					
Waveform	Sinusoidal					
Crest factor [lpeack/lrms]	3:1					
BATTERIES						
Type	VRLA AGM maintenance-free lead based					
Recharge time	4-6 h					
OVERALL SPECIFICATIONS						
Net weight [kg]	62	63	25	78	84	28
Gross weight [kg]	68	69	31	84	90	34
Dimensions (WxDxH) [mm]	250x698x500					
Packaging dimensions (WxDxH) [mm]	300x800x702					
Efficiency	up to 95% ON LINE Mode, 98% ECO Mode					
Protections	Overcurrent - short circuit - overvoltage - undervoltage - temperature - excessive low battery					
Parallel operation	Optional Parallel Card					
Communications	USB / RS232 / slot for communications interface / REPO + Input contact					
Input connection	Terminal block					
Output sockets	Terminal block + 2 IEC 320 C13					
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111					
Ambient temperature for the UPS	0 °C - +40 °C					
Recommended temperature for battery life	0 °C - +40 °C					
Range of relative humidity	5-95% non-condensing					
Colour	Black RAL 9005					
Noise level at 1 m (ECO Mode) [dBA]	<48					
Standard equipment provided	USB cable					
Moving the UPS	castors					

[1] *for single-phase input.*

EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

Sentryum

VFI TYPE **ON**LINE

Tower

6 ECO LEVEL

USB **USB** plug

Energy Share

service **Service** 1st start

Supercaps UPS

SmartGrid ready

1:1 **3:1** 10-20 kVA/kW

3:3 10-20 kVA/kW

sentryum

HIGHLIGHTS

- **Extensive range of solutions**
- **Compactness**
- **Efficiency up to 96.5%**
- **High power availability**
- **Smart battery management**
- **Maximum reliability**
- **Flexibility of use**
- **Graphic touch screen display**

The rapid evolution of IT technologies, augmented focus on environmental matters and complexity of critical applications are demanding more flexible, efficient, secure and interconnected power protection solutions.
The Sentryum 10-20 kVA/kW offers the best combination of power availability, energy efficiency and global performance ensuring installation and running cost savings.
It is the very latest Riello UPS development resulting in a third-generation transformer-free UPS, originally introduced into the market over twenty years ago.
This ultimate solution is rated at output power factor 1 and defined as ON LINE double conversion technology in accordance with VFI-SS-111 classification (as set out in standard IEC EN 62040-3).
The Sentryum series is a transformer-free UPS available in 10-15-20 kVA/kW models with three-phase/single-phase input and single-phase output, and 10-15-20 kVA/kW models with three-phase input and output.
Sentryum is designed and built using state-of-the-art technology and components. It applies the advanced technologies such as DSP (Digital Signal Processor), dual core microprocessor, three-level inverter circuits and resonant control to provide maximum protection to the critical loads with no impact on downstream systems, whilst maintaining optimised energy savings. With a unique control system, it makes it possible to

reduce the inverter output harmonic voltage distortion (<1% at resistive load and <1.5% at non linear load) and provide rapid response to all load variations, ensuring an outstanding sinewave form during all conditions.
Furthermore, Riello UPS' technological advances in digital control and power components contribute to minimise the impact on the grid.
Sentryum provides the solution to installation problems in systems where the power supply has limited power available, when the UPS is supported by a generator or where there are compatibility problems with loads that generate harmonic currents.

EXTENSIVE RANGE OF SOLUTIONS

Sentryum has been conceived to optimise the specific requirements by enhancing the installation flexibility.
Riello UPS offers Sentryum in three different frame solutions to satisfy any critical power demand and application:
The three different frame types available are: **Compact, Active and Xtend**.
Compact (CPT): this cabinet frame is specifically devised to offer a compact but efficient solution for tailored applications; thanks to the ultimate technologies applied, this solution offers unmatched power (up to 20 kVA @ pf 1) and autonomy (12 minutes of backup time at typical load) in an extremely reduced space.
Active (ACT): this solution offers an optimised degree of flexibility to meet different power requirements and battery autonomy. The solution offered is extremely compact but exceptionally powerful, with the possibility to deliver up to 20 kVA (@ pf 1) and build one or two levels of internal battery backup time.
Xtend (XTD): this version is the most flexible solution available to meet installation requirements and power demand. In an extremely small footprint, it is possible to build up to three-levels of battery backup time. In addition, the mechanical design makes it possible to install an isolation transformer or easily change the degree of protection from IP20 to IP21 or even IP31.

COMPACTNESS

Modern guidelines and sustainable best practices direct us to conceive and design UPS with particular focus on the entire product life cycle, therefore applying ultimate but resilient technologies, recyclable materials and miniaturisation

Rear view Sentryum Compact.

of assemblies whilst ensuring the systems global reliability, which is pivotal for any UPS. The internal card layout has been optimised to reduce the number of components, to reduce the number of interconnections and to reduce the space required, whilst at the same time increase global reliability and Mean Time Between Failures (MTBF) and to minimise operational expenditure such as service operations and maintenance costs.
The result is an outstanding range of three different solutions providing powerful but compact designs as follows:
Compact: less than 0.25 square meters and only 0.17 cubic meters of volume.
Active: less than 0.35 square meters and only 0.33 cubic meters of volume.
Xtend: less than 0.4 square meters and less than 0.5 cubic meters of volume.

HIGH EFFICIENCY

Sentryum is a true ON LINE double-conversion UPS system providing the very highest levels of power availability, flexibility and unrivalled energy efficiency with superior performance for any small data centre and mission critical applications.
With a full power rating (kVA=kW unity pf), the Sentryum provides the maximum available power without any de-rating.
Thanks to the three-level IGBT inverter topology (constructed using modules rather than discrete components) and innovative digital control, the Sentryum provides up to 96.5% overall efficiency, whilst maintaining a reduced number of components, connections and ribbon cables, which increases the overall system reliability, thanks to a higher MTBF.
Riello UPS' advanced average current mode digital PFC control and State-of-the-art three-level NPC inverters working at high frequency (18 kHz), contributes to minimise the UPS's impact on the grid and hence reducing the overall operational costs and energy bills.

Graphic touch screen display.

MECHANICAL CHARACTERISTICS	SENTRYUM COMPACT-CPT	SENTRYUM ACTIVE-ACT	SENTRYUM XTEND-XTD
Cabinet layout description	Free standing type with wheels and terminals/switches on rear	Free standing type with wheels and terminals/switches on front	Free standing type with wheels and terminals/switches on front
Range [kVA/kW]	10-15-20 (1 Ph) 10-15-20 (3 Ph)	10-15-20 (1 Ph) 10-15-20 (3 Ph)	10-15-20 (1 Ph) 10-15-20 (3 Ph)
Battery	Space for: 40 blocks	Space for: 2x40 blocks	Space for: 3x40 blocks
Ventilation	Forced, front to rear	Forced, front to rear	Forced, front to rear (Air filter door as option)
Cabinet IP rating	IP20 finger proof (either with cabinet doors open or closed)	IP20 finger proof (either with cabinet doors open or closed)	IP20 finger proof (either with cabinet doors open or closed) IP21/31 as option
Cable input	Bottom (rear)	Bottom (front)	Bottom (front)

Sentryum applies a zero impact onto its power source, whether this is from the mains power supply or a generator, this results in:

- Very low input current distortion <3%;
- Near unity input power factor 0.99;
- Power walk-in function that ensures progressive rectifier start up;
- Start up delay function, to sequentially restart the rectifiers once the mains power supply is restored if there are several UPS within the overall system;
- In addition, Sentryum provides a filtering and power factor correction function within the power network upstream of the UPS, thus eliminating harmonic components and reactive power generated by the power utilities.

HIGH POWER AVAILABILITY

Sentryum's fully rated design delivers full power (kVA=kW) regardless of the load power factor or operating temperature (full rated power is available up to 40 °C). Furthermore, Sentryum's advanced digital control makes it possible to deliver up to 270% inverter current for 200 msec. and 150% for 300 msec. The high overcurrent availability enables the system to deal with sudden peak loads (without static bypass intervention) and provide the short circuit current if required during operation on battery.

The innovative input stage design provides extremely high battery recharging current, whilst at the same time an energy efficient conversion process during battery operation to reduce the power wasted and to increase the autonomy time compared to legacy DC/AC converters.

SMART BATTERY MANAGEMENT

Proper battery care is critical to ensure the correct operation of the UPS during emergency conditions. The Riello UPS Smart Battery Management system consists of a series of features and capabilities to optimise battery management and obtain the best performance and operating life possible.

Battery recharging: Sentryum is suitable for use with conventional hermetically sealed lead-acid (VRLA), AGM and GEL batteries, Open Vent and Nickel Cadmium batteries.

Sentryum is also compatible with ultimate alternative backup power sources such as Li-Ion batteries and Supercapacitors.

Superior battery charging current availability, ie up to 20 Amperes for the 20 kVA/kW power range, meaning that the Sentryum can be utilised within any extended battery autonomy application.

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
- Cyclical recharge system to reduce electrolyte consumption and lengthen the life of VRLA batteries.

Recharge voltage compensation based on ambient temperature to prevent excessive battery charging 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 at low frequency) is one of the main causes of reduced reliability and battery life. Using a high frequency battery charger, Sentryum 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 AND AVAILABILITY

Distributed parallel configuration of up to 8 units per redundant (N+1) or power parallel system grants exceptional expandability. The UPS continue to operate in parallel even if the connection cable is interrupted (Closed Loop).

Advanced technology and use of high performance components, allows Sentryum to provide exceptional performances and utmost reliability:

- The smallest overall footprint is only 0.35 sqm for Sentryum 20 kVA/kW with two strings of 40 battery blocks;
- The input power stage (IGBT rectifier) ensures an input power factor close to 1 with extremely low current distortion, avoiding the need for bulky and expensive filters;
- Unity output power factor Sentryum makes it suitable to any data centre application ensuring full power availability without downgrading no matter what the load power factor range (typically from 0.9 lagging to 0.9 leading);
- Extremely low output THDV under any circumstances provides a perfect sinewave and therefore a reliable power supply for the load preventing and disturbances from affecting the network users;
- More active power than a traditional

UPS, guaranteeing a greater margin when sizing UPS for potential future load increases;
- More energy to face sudden load increase or clear output short circuits due to appliance failures downstream;
- Smart ventilation principle, Sentryum manages the fan speed and airflow in accordance with the room temperature and load level. This preserves the lifespan of the fans, whilst at the same time reduces noise levels and the overall power consumption due to unnecessary UPS ventilation. Furthermore, the overall UPS high efficiency reduces the losses and therefore the need for high levels of ventilation compared to older legacy UPS. In addition, this results in a decrease in the overall noise level at the nominal load and a reduction in the number of fans required, which significantly benefits the operating and maintenance costs.

FLEXIBILITY

With its flexible range of three solutions, configuration , performance, accessories and options, Sentryum 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 STANDBY OFF operating Modes - compatible with centralised power systems (CSS) applications;
- Frequency Converter Mode;
- Cold Start to switch on the UPS even when there is no mains power present;
- S3T 20 XTEND version: cabinet (440x850x1320 mm WxDxH) for optimised solutions when medium to long-term runtimes are required (up to one hour back up time for a 20 kVA/kW at typical load rate);
- Parallel configuration up to 8 units for three-phase version;
- 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;
- Dual input mains power supply (not applicable on Compact, optional for Active, standard on Xtend version);
- Isolation transformers for modifying the neutral earthing (separate power sources), or for galvanic isolation between the input and output (optional inside Xtend, external for Compact or Active versions);

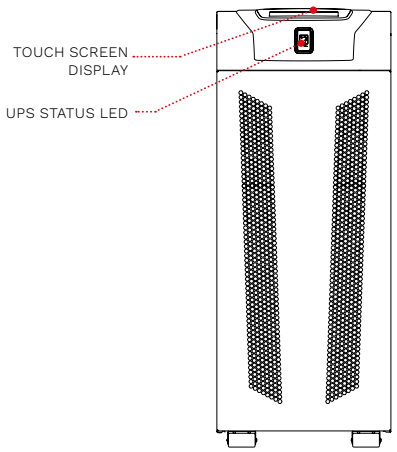
Sentryum Xtend with open door.

- Mechanical fitting for a higher rating of IP protection either IP21 or IP31 on Xtend version;
- Air filter door on Xtend version to protect UPS placed in dusty environment;
- Compatibility with alternative backup energy sources rather than lead batteries (NiCd or Li-ion batteries or supercapacitors);
- Different sized battery cabinets and capacities, for extended runtimes.

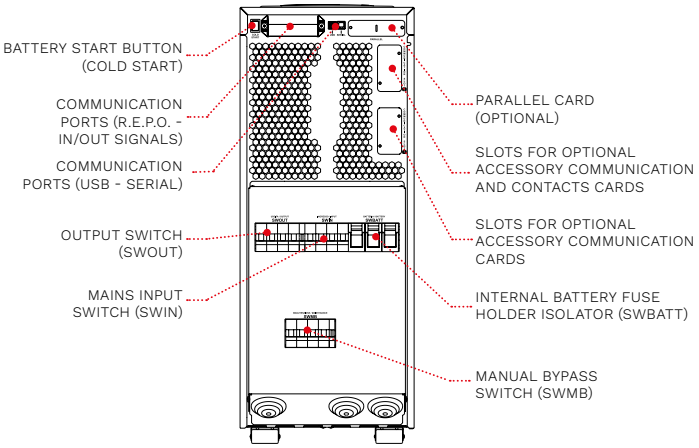
ADVANCED COMMUNICATIONS

Sentryum is equipped with a coloured graphic touch screen display providing UPS information, measurements, operating states and alarms in different languages.
The default screen displays the UPS status, graphical indication of the energy path through the UPS and the operational condition of the various assemblies (rectifier, batteries, inverter, bypass) within the UPS.
Furthermore, the user interface includes a UPS status led bar which delivers immediate and clear information regarding the overall status of the UPS by changing the colour (light blue, dark blue, orange and red) according with the operating mode and condition.
- Advanced multi-platform communications for all operating systems and network environments: PowerShield[3] monitoring and shutdown software included for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- Compatible with RIELLO CONNECT (remote monitoring service);
- RS232 serial on RJ10 connector and USB ports;
- 2 slots for the installation of optional communications accessories such as network adaptors and volt free contacts etc;
- Embedded contact interface which includes 5 programmable inputs and 4 programmable outputs;
- REPO Remote Emergency Power Off for switching off the UPS via a remote emergency button;
- Graphic display panel for remote connection.

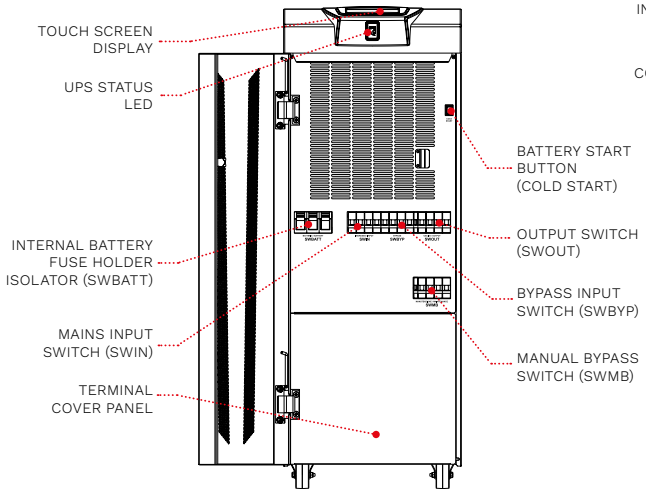
COMPACT (front)



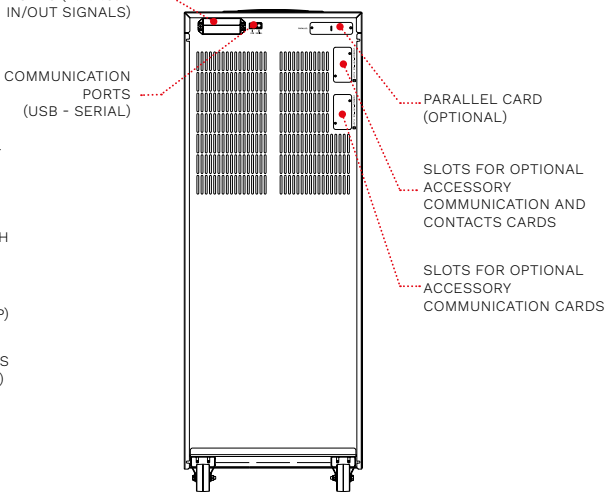
COMPACT (rear)



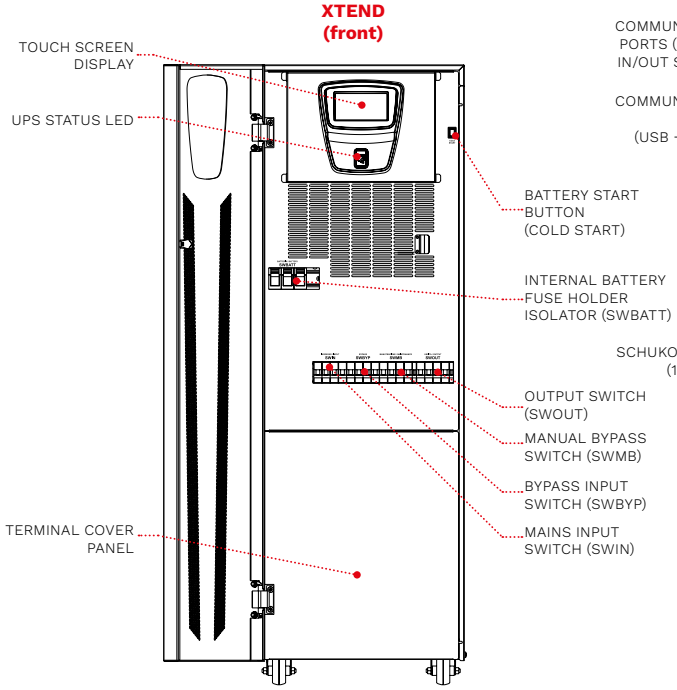
ACTIVE (front)



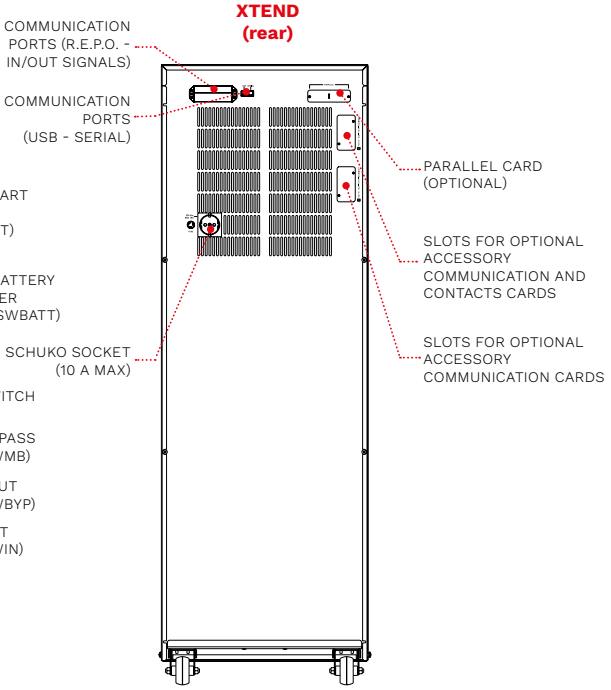
ACTIVE (rear)



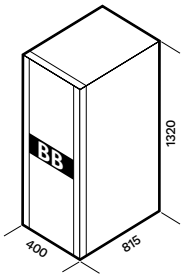
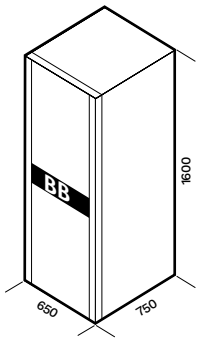
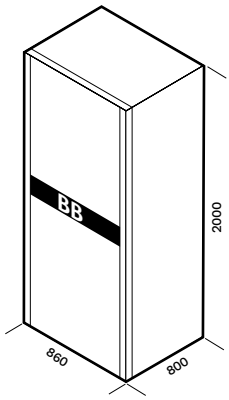
XTEND (front)



XTEND (rear)



BATTERY CABINET

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
UPS MODELS	S3M/S3T 10-20 kVA/kW (According with battery cabinet fuse associated)		
Dimensions [mm]			 *Not compatible with S3M/S3T 10 kVA*

OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 384
MULTICOM 411
MULTI I/O
MULTIPANEL
MBB 100 A (2 pole)
MBB 125 A (4 pole)

PRODUCT ACCESSORIES
Battery temperature sensor
ER battery charger
MULTICOM 392
UPS with internal isolation transformers (XTEND version)
IP rating IP21/IP31/IP42 (XTEND version)
Dual Input Kit (ACT version)
Front door air filter (XTD version)

MODELS	S3M CPT-ACT-XTD 10 BAT	S3M CPT-ACT-XTD 15 BAT	S3M CPT-ACT-XTD 20 BAT	S3T CPT-ACT-XTD 10 BAT	S3T CPT-ACT-XTD 15 BAT	S3T CPT-ACT-XTD 20 BAT
INPUT						
Rated voltage [V]	380 / 400 / 415 three-phase + N 220 / 230 / 240 single-phase + N			380 / 400 / 415 three-phase + N		
Rated frequency [Hz]	50 / 60					
Voltage tolerance [V]	230 / 400 ±20% @ full load[1]			400 ±20% @ full load[1]		
Frequency tolerance [Hz]	40 - 72					
Power factor @ full load	0.99					
Current distortion	THDI ≤3%					
BYPASS						
Rated voltage [V]	220 / 230 / 240 single-phase + N			380 / 400 / 415 three-phase + N		
Number of phases	1 + N			3 + N		
Voltage tolerance (Ph-N) [V]	from 180 (adjustable 180-200) to 264 (adjustable 250-264) referring to neutral					
Rated frequency [Hz]	50 or 60 (selectable)					
Frequency tolerance	±5% (selectable)					
Bypass overload	110% infinite, 125% for 60 min., 150% for 10 min.					
OUTPUT						
Nominal power [kVA]	10	15	20	10	15	20
Active power [kW]	10	15	20	10	15	20
Power factor	1 up to 40 °C					
Number of phases	1 + N			3 + N		
Rated voltage [V]	220[1] / 230 / 240 single-phase + N (selectable)			380[1] / 400 / 415 three-phase + N (selectable)		
Rated frequency [Hz]	50 or 60					
Frequency stability on battery operation	0.01%					
Voltage stability	±1%					
Dynamic stability	EN 62040-3 class performance 1 non-linear load					
Voltage distortion	<1% with linear load / ≤1.5% with non-linear load					
BATTERIES						
Type	VRLA AGM/GEL/NiCd/Li-ion/Supercaps					
Recharging method	One level, Two level, Cyclic recharge (selectable)					
OVERALL SPECIFICATIONS						
Weight without batteries [kg] CPT - ACT - XTD	48-72-103	50-74-105	52-76-107	48-72-103	50-74-105	52-76-107
Dimensions CTP (WxDxH) [mm]	Compact: 280x840x700					
Dimensions ACT (WxDxH) [mm]	Active: 380x850x1025					
Dimensions XTD (WxDxH) [mm]	Xtend: 440x840x1320					
Communications	UPS status led bar - Graphic touch screen diplay - 2 slots for communications interface USB - RS232 - Contact interface with 5x opto insulated Input and 4x Output relays					
Ambient temperature for the UPS	0 °C - +40 °C					
Recommended temperature for battery life	+20 °C - +25 °C					
Range of relative humidity	5-95% non-condensing					
Colour	RAL 7016 Anthracite grey					
Noise level at 1 m [dBA ±2] SMART ACTIVE	<40					
IP rating	IP20					
SMART ACTIVE efficiency	up to 99%					
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111					
Moving the UPS	Castors / pallet jack					

[1] *For wider tolerance conditions apply.*
BAT *Also available with internal batteries*

EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

Multi Sentry

VFI TYPE **ON**LINE

Tower

6 ECO LEVEL

USB **USB** plug

Energy Share

service **Service** 1st start

Supercaps UPS

SmartGrid ready

3:3 30-200 kVA/kW

HIGHLIGHTS

- **Complete range 30-200 kVA**
- **Small footprint**
- **High efficiency up to 96.5%**
- **Zero impact**
- **Flexibility of use**
- **Advanced communications**

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 30-40-60-80-100-125-160-200 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 has a fully controlled IGBT rectifier to minimize the impact on the grid. 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.

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 <2.5%;
- 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 EFFICIENCY

State-of-the-art three-level NPC inverters are used across the power range (30-200 kVA) 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.

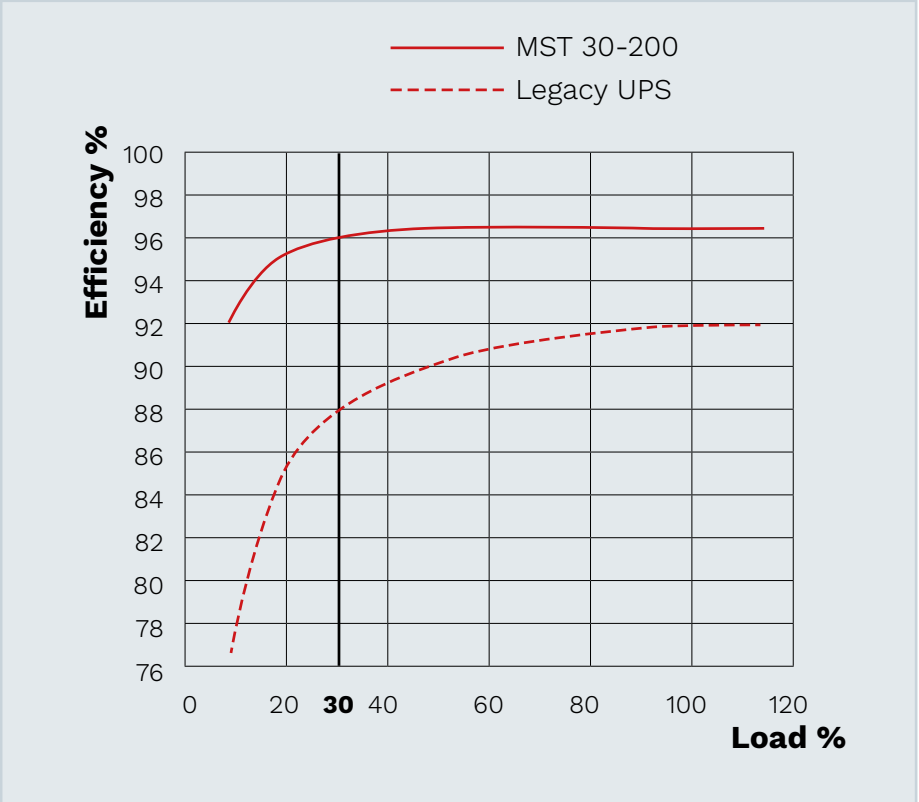
Recharge voltage compensation based on temperature in order to prevent excessive battery charges or overheating.

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 AND AVAILABILITY

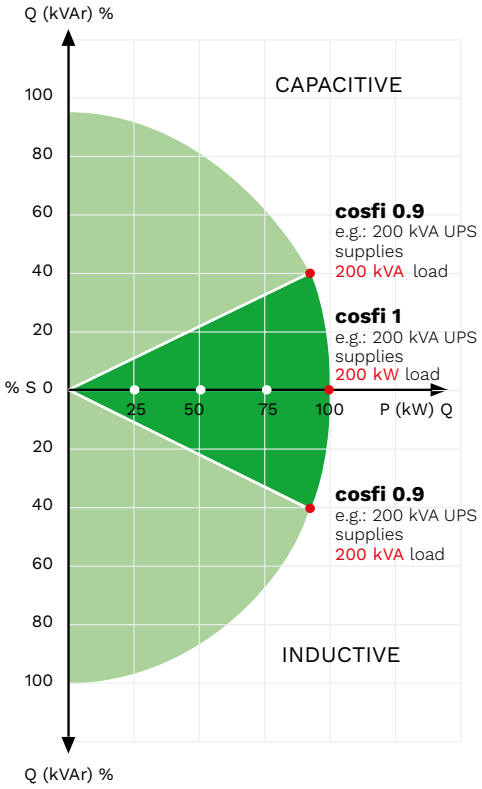
Distributed parallel configuration of up to 8 units per redundant (N+1) or power parallel system. The UPS continue to operate in parallel even if the connection cable is interrupted (Closed Loop).

LOW RUNNING COSTS

A combination of advanced technology high performance components allows Multi Sentry to provide exceptional performance and efficiency in a compact footprint:

- The smallest overall footprint is only 0.37 sqm for Multi Sentry 40 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;
- Unity output power factor for MST 160-200 make it suitable to any data centre application ensuring full power availability no matter what the utilities

power factor range (typically from 0.9 lagging to 0.9 leading);
- More active power than a traditional UPS, guaranteeing a greater margin when sizing UPS for potential future load increases;
- Smart ventilation principle on MST 160-200 manages the number of operating fans and their speed according to room temperature and load level. This preserves the life span of the fans and at the same time we reduce noise level and overall power consumption for unnecessary UPS ventilation.



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 STANDBY 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 30-40 version: cabinet (1320x440x850 mm 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;
- MST 160-200 could be equipped with a side mounted top entry cabinet to arrange UPS cabling from the top.

ADVANCED COMMUNICATIONS

Multi Sentry is equipped with a backlit graphic display (240x128 pixels) providing UPS information, measurements, operating states and alarms in different languages. It can also display waveforms 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: PowerShield[3] monitoring and shutdown software included for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- Compatible with Riello Connect (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.

Multi Sentry MST 160-200.

Multi Sentry MST 160-200 with top cable entry.

OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTICOM 411
MULTI I/O
MULTIPANEL
MBB 100 A

PRODUCT ACCESSORIES
Battery temperature sensor
Powerful battery charger
Programmable relay board MULTICOM 392
UPS with internal isolation transformers (30-40 kVA)
UPS 220 V IN/OUT
IP rating IP31/IP42
Socle Box for MST 60-100
EnergyShare sockets
Top cable entry for MST 160-200
Eyebolts kit for MST 160-200

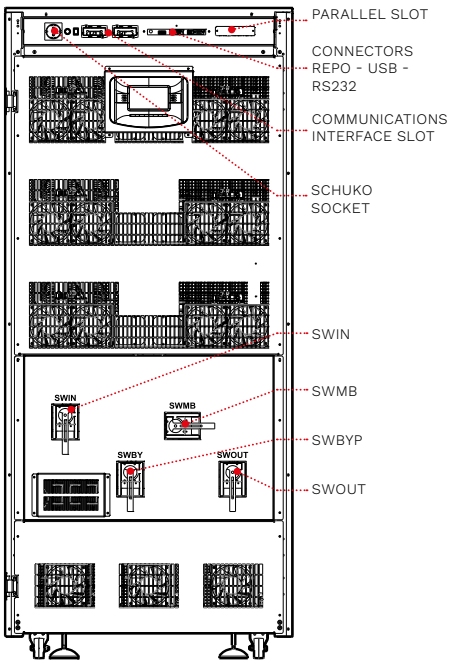
BATTERY CABINET

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
UPS MODELS	up to 60 kVA[1]	up to 80 kVA[1]	up to 200 kVA[1]
Dimensions WxDxH [mm]	400x815x1320 *BB 1320 480-T4 Not available for MST 40-60* *BB 1320 480-T2 Not available for MST 60*	605x750x1600	860x800x1900 *BB 1900 480-V6 / BB 1900 480-V7 Not available for MST 160-200*

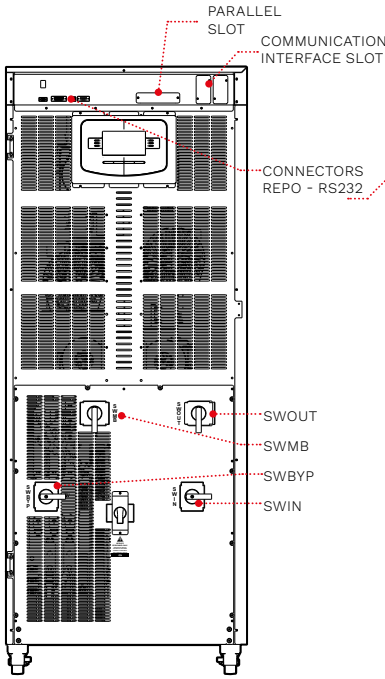
[1] *According with battery cabinet fuse associated*

DETAILS

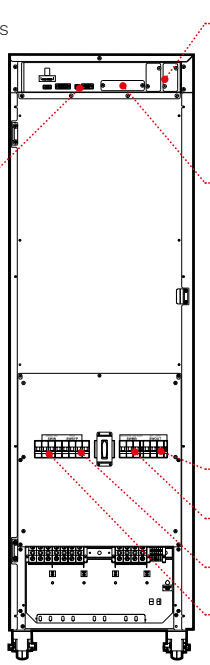
MST 160 - 200 (front)



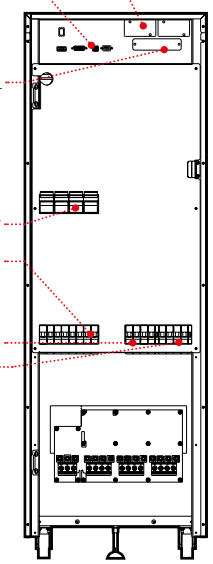
MST 125 (front)



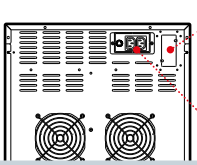
MST 60 - 80 - 100 (front)



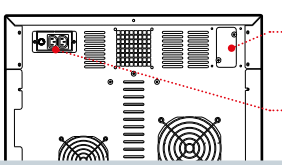
MST 30 - 40 (front)



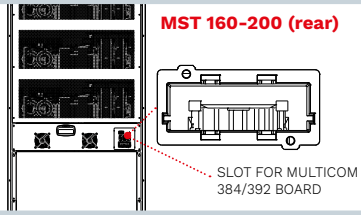
MST 30 - 40 (rear)



MST 60 - 125 (rear)



MST 160-200 (rear)



MODELS	MST 30 BAT	MST 40 BAT	MST 60	MST 80	MST 100	MST 125	MST 160	MST 200
INPUT								
Rated voltage [V]	380 / 400 / 415 three-phase + N							
Rated frequency [Hz]	50 / 60							
Voltage tolerance [V]	400 ±20% @ full load[1]							
Frequency tolerance [Hz]	40 - 72							
Power factor @ full load	0.99							
Current distortion	THDI ≤3%						THDI ≤2.5%	
BYPASS								
Rated voltage [V]	380 / 400 / 415 three-phase + N							
Number of phases	3 + N							
Voltage tolerance (Ph-N) [V]	180 / 264 (selectable)							
Rated frequency [Hz]	50 or 60 (selectable)							
Frequency tolerance	±5% (selectable)							
Bypass overload	125% for 60 min., 150% for 10 min.							
OUTPUT								
Nominal power [kVA]	30	40	60	80	100	125	160	200
Active power [kW]	27	36	54	72	90	112.5	160	200
Power factor	0.9						1	
Number of phases	3 + N							
Rated voltage [V]	380 / 400 / 415 three-phase + N (selectable)							
Static variation	±1%							
Dynamic variation	±3%							
Crest factor [lpeack/lrms]	3:1							
Voltage distortion	≤1% with linear load / ≤3% with non-linear load							
Frequency [Hz]	50 / 60							
Frequency stability during battery operation	0.01%							
BATTERIES								
Type	VRLA AGM/GEL/NiCd/Li-ion/Supercaps							
Recharge time	6 h							
OVERALL SPECIFICATIONS								
Weight without batteries [kg]	135	145	190	200	220	250	450	460
Dimensions (WxDxH) [mm]	440x823x1320		500x830x1600			650x830 x1600	840x1035x1900	
Communications	3 slots for communications interface / USB / RS232							
Ambient temperature for the UPS	0 °C - +40 °C							
Recommended temperature for battery life	+20 °C - +25 °C							
Range of relative humidity	5-95% non-condensing							
Colour	Dark grey RAL 7016							
Noise level at 1 m [dBA±2] (SMART ACTIVE)	<40		<63				<50	
IP rating	IP20							
SMART ACTIVE efficiency	up to 99%							
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111							
Moving the UPS	castors (30 - 200 kVA)							

[1] *For wider tolerance conditions apply.*
BAT *Also available with internal batteries.*

EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

NextEnergy

VFI TYPE **ON**LINE

Tower

ECO LEVEL 6

USB **USB** plug

service **Service** 1st start

Flywheel compatible

Supercaps UPS

Li+ **Lithium** compatible

SmartGrid ready

3:3 250-500 kVA/kW

NextEnergy

HIGHLIGHTS

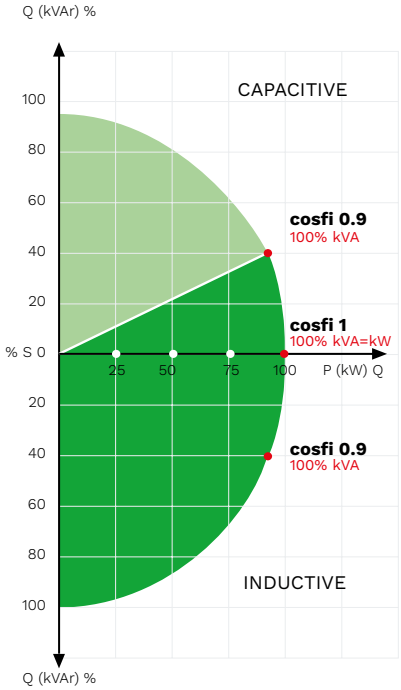
- **Efficiency up to 97% in double conversion**
- **kW = kVA (pf 1) up to 40 °C**
- **Transformer-free UPS**
- **Full front access, back-to-back install**
- **Active Filter Mode (ACTIVE ECO)**
- **Colour LCD Touch Screen**
- **Peak shaving**

The Riello UPS NextEnergy is the latest UPS series designed for mission critical applications as data centres, communication networks, commercial and industrial installations.
The three-phase UPS offers transformer-free double conversion technology VFI SS 111, with integrated IGBT three-level design. NextEnergy is designed to offer unsurpassed performance and meets the power requirements of tomorrow. NextEnergy is fully scalable to evolve with growing business demands. It offers the highest level of power availability as well as reduced TCO, minimum energy consumption and CO^2 emissions. Its unity power factor and easy system upgrading make it the ideal solution for the business continuity of any IT application. Thanks to its fault tolerant architecture, concurrent maintainability and hot scalability, NextEnergy guarantees continuous operation and premium protection for your customers' business.

ZERO IMPACT SOURCE AND PEAK DEMAND MANAGEMENT

NextEnergy is designed with the latest technology to prevent disturbances on the mains and is able to "clean" the power from e.g. harmonics generated by non-linear loads. The input AC/DC converter is based on the IGBT rectifier design using the latest 3-level technology.
The key features are:

- 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.



PEAK SHAVING FUNCTION

Thanks to the possibility to set the maximum input power (kW or kVA), NextEnergy can be installed into AC supply systems with limited power availability such as a diesel generator or contractually reduced power sources and then supply the additional power required using the batteries (Peak Shaving function).

NextEnergy offers 3 peak shaving operation modes:

- **Static:** the NXE input power is programmed at commissioning time;
- **User Remote control:** the user decides when reduce the input power of the UPS via commands;
- **Dynamic**: the peak shaving works automatically as per the site conditions.

OUTSTANDING PERFORMANCE

- The latest technology of NextEnergy and the careful selection of high-quality components help to achieve first-class performance such as unity power factor (kVA = kW) and the capability to supply capacitive loads, which are very common in most Data Centres, without any power derating up to 40 °C;
- Outstanding system efficiency up to 97% in ON LINE double conversion mode, increasing to 98.5% in ACTIVE ECO and 99% in STANDBY Mode;
- Specific attention has been given to the ventilation system to ensure the best operational level and long lifetime. This is possible thanks to the automatic fan speed control which constantly adjusts to the specific load level, the fan failure alarm and the fan redundancy architecture;
- NextEnergy is capable to work at very high ambient temperature, over to 40 °C. The UPS is designed with consistent safety margins granting operation up to 55 °C (condition apply).

SMART BATTERY MANAGEMENT (SBM)

The battery system is the energy reserve in every UPS installation and consequently a fundamental asset in every power continuity plan to ensures the correct operation in case of mains failure. This asset must be carefully managed.

NextEnergy includes all the latest features supervise, to prolong the battery life and keep the battery working efficiently, as well as advising users about any potential problem.

In addition, NextEnergy allows flexibility on the number of battery cells to choose the most cost-effective solution for the required backup time. The battery charging and discharging is assured by the STEP-UP/STEP-DOWN converter which means that when the batteries are charged and the mains is available, the battery is no longer connected to the supply. This means the ripple current is practically zero which leads to a significant improvement in battery life.

FLEXIBLE BATTERY STORAGE

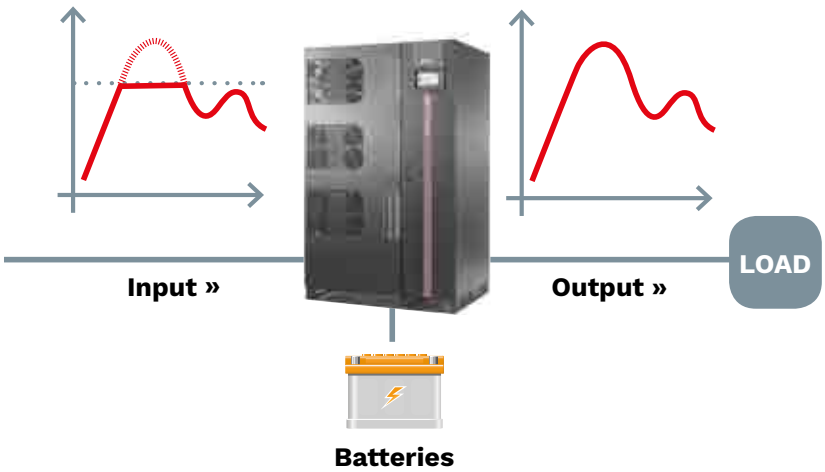
NextEnegry offers complete freedom to choose the best energy storage device for each type of installation or application. The variety of the charging methods in conjunction with the flexibility offered by the power electronics and the decades of field experience allow to use NextEnergy in conjunction with all the most common type of battery technologies available in the market like VRLA, AGM, GEL, NiCd but also with other type of energy accumulators as Li-ion Battery solutions. For short back-up time from some seconds up to a couple of minutes NextEnergy is released to work also with SuperCapacitors or FlyWheels, a very reliable technology for such applications.

CAPACITY AND INSTALLATION FLEXIBILITY

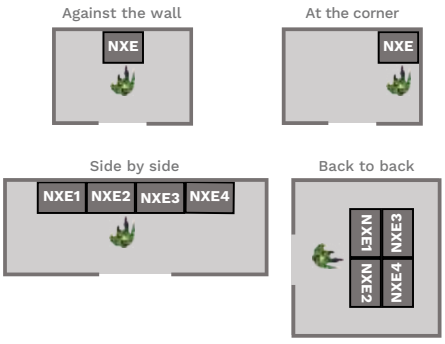
NextEnergy is designed to guarantee maximum cost savings (TCO) and flexibility of installation to adapt to every need and situation.

- The UPS ventilation is from the front of the cabinet to the top so no additional rear clearance is required, allowing vast range of layouts configurations, whether it be a straight row, back to wall or back-to-back, the system easily adapts to available floor space;
- The small footprint of the cabinet and

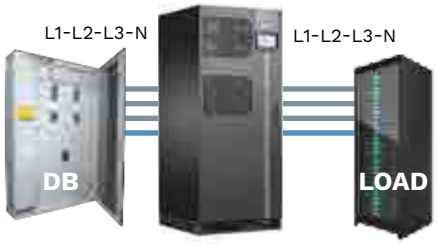
PEAK SHAVING FUNCTION



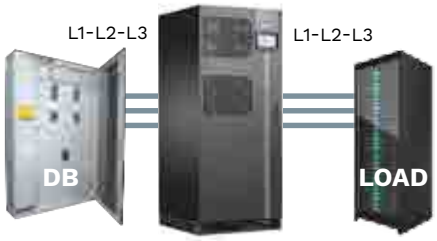
FLEXIBILITY OF POSITIONING



complete front access for all maintenance activities, ensures maximum space for installation and service;
- NextEnergy includes top and bottom cable entry (on NXE 250 and NXE 500 top on option);
- Operation without Neutral: NextEnergy can work with (4 wire) or without (3 wire) the neutral line connection (see below picture).



4-wire (L1-L2-L3-N) installation



3-wire (L1-L2-L3) installation

This is an important feature to reduce the TCO of the distribution system, where the neutral line cable is not distributed - savings investment - and the neutral is created by an isolation transformer close to the load.
This is a typical infrastructure solution adopted by modern Data Centre or for installations where the neutral is not used at all, allowing not only reduced cost for the distribution arrangements but also effortless replacement of legacy equipments.

MAXIMUM RELIABILITY AND AVAILABILITY

The NextEnergy architecture and features deliver significant cost savings thanks to an easy adapting to new or existing installations without impacting power infrastructure. This is possible through scalability, granting minimized initial investment (CAPEX), adding power cores as business demands grow:

- **Parallel configuration up to 8 units** NextEnergy UPS can be connected in parallel with up to 8 units to increase the capacity or add redundancy (N+1). Parallel configuration with common or separated battery is possible.
- **Efficiency Control Mode (ECM)** Considering that a typical UPS load can vary from 20% to 80%, the ECM function optimises the operating efficiency of a parallel UPS configuration according to the power absorbed by the load: in case of low load, it sets some UPS in “freeze” mode, ensuring redundancy and a working point of the “live” UPS in the higher efficiency working point, during all load conditions (see below picture).
- **Hot System Expansion (HSE)** allows the addition of further UPS into an existing system, without the need to switch off the operational units or transfer them to bypass mode.

OPERATION MODES

The UPS can operate in many Operation Modes, in order to grant always the maximum level of protection and maximum level of efficiency, based on mains quality and load type.

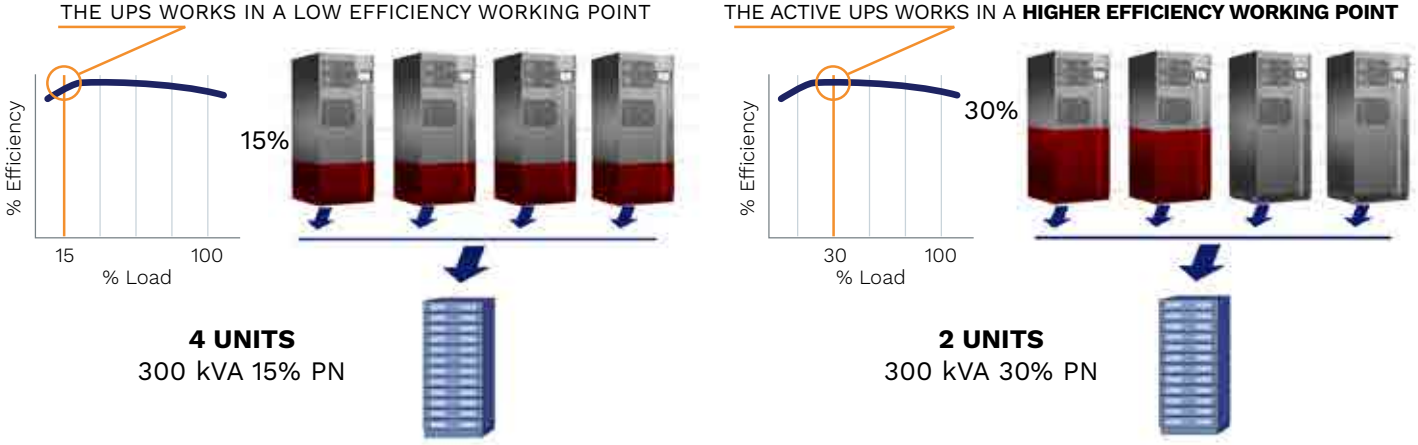
ON LINE

ON LINE Mode (Double Conversion) provides the highest level of power conditioning and protects the load from all electrical network disturbance in terms of voltage and frequency. The overall AC/AC efficiency is up to 97%.

ECO Mode

The load is normally powered from the bypass line while the rectifier keeps the battery charged. When the mains exceeds the limits the load is automatically transferred in ON LINE Mode in approx. 2 msec. The efficiency is more than 99%.

EFFICIENCY CONTROL MODE (ECM)



ACTIVE ECO

In this mode the NXE works as Active Filter: the bypass line is the priory source and supplies the active power while the inverter only provides the reactive part of the load. This ensures that the UPS input power factor remains close to unity, regardless of the load power factor. In addition, the inverter operation reduces significantly the harmonic content (THDi) applied to the mains supply. In case of mains failure the transfer time on Inverter is approximately 0 (classified VFD SS 111). Power factor correction plays an active role in reducing the installation's TCO: it means reduction of Joule losses and voltage drop, for an optimum sizing of electrical equipment such as power transformers, cables, busbars, switch and protection devices. The electric distribution is more efficient and stable. Also the current distortion (harmonics) generated by non-linear loads such as inverters, computers, drives and so on causes several problems in an electric system. It is important to reduce it. ACTIVE ECO Mode combines high level of availability with important CAPEX and OPEX reduction. The efficiency is more than 98.5%

Combine high levels of **AVAILABILITY** with reduced **CAPEX** and **OPEX**

Higher availability vs ECO mode

Highest level of efficiency for an excellent cost savings

No need for expensive PFC

(POWER FACTOR CORRECTION SYSTEMS)

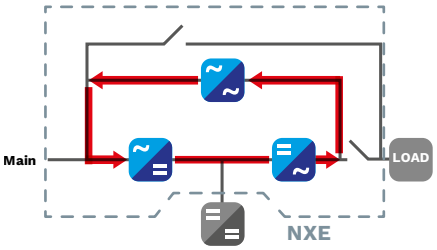
Avoid upstream problems related to high THDi

SMART ACTIVE

NextEnergy automatically defines whether to operate in ON LINE and/or ECO Mode, this is selected by monitoring the performances of the bypass supply, if this remains stable for a defined period the system stays in ECO Mode otherwise in ON LINE Mode. In SMART ACTIVE operating mode, the NextEnergy is able to combine the superior availability of a double conversion (ON LINE) operating mode with the excellent energy cost savings of a high efficiency mode (ECO Mode) for a reduced total cost of ownership.

SMART CAPACITY TEST (SCT)

Thanks to the Smart Capacity Test (SCT) functionality (Load Test mode) the system can be tested onsite during the commissioning, before it is connected to the real load, without using costly temporary loads, cabling and breakers and without wasting energy from the power network. In this condition the UPS output supplies energy to the input in re-circulating mode. In this mode NextEnergy is low consuming, just the energy due the internal losses.

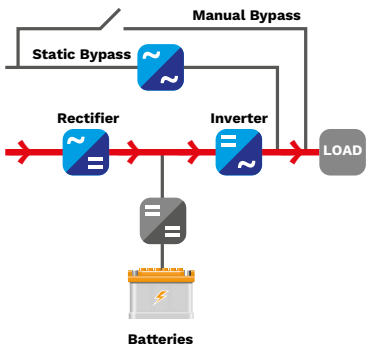


No need to use costly temporally loads, cabling and breakers. No waste of energy.

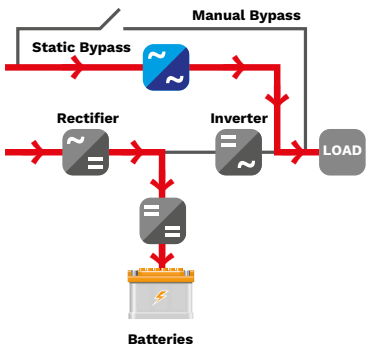
COLOUR LCD TOUCH SCREEN

Users can benefit from an advanced operation and supervision systems developed specifically for IT personnel, facilities managers and service engineers to ensure that the UPS setup, control and monitoring is easy. NextEnergy is equipped with an LCD touch screen 7" graphic display (800x480 pixels) providing in a user-friendly graphical interface the UPS information: line mimic diagram showing system status, dashboard style indicators for all the system values and conditions, voltage and current waveforms, operating states and alarms. The panel is used for configuration and setting the parameters of the UPS with high security access thanks to 3 separate password levels for users and service engineers.

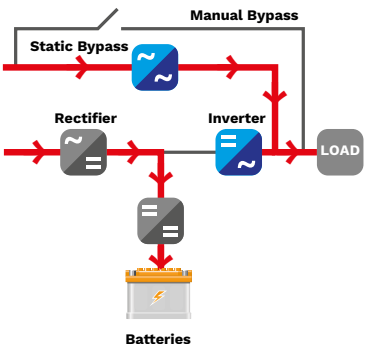
OPERATION MODES



ON LINE



ECO Mode



ACTIVE ECO (Active Filter)

The main features are:

- High security access with separate password levels for users, technician and service engineers;
- User-friendly graphical interface;
- Single-line mimic diagram showing system status;
- Contemporary dashboard-style indicators for major system values and conditions;
- Automatic charting display for logged power and environmental data.

ADVANCED COMMUNICATION AND SUPERVISION

NextEnergy offers wide communication and supervision tools and interface granting an easy integration into any building management system (BMS) and data centre infrastructure (DCIM).

- PowerShield[3] monitoring and shutdown software for Windows operating systems 7, 8, 10; Hyper-V 2019, 2016, 2012 and previous versions; Mac OS X; Linux; VMWare ESXi; Citrix XenServer and many other Unix operating systems;
- PowerNetGuard and Riello Connect for remote monitoring service;
- 2 slots suitable for the installation of the communication accessories such as network adapters and BMS interface;
- Ethernet and USB ports;
- Relay cards with customized alarms and commands.

More and more applications require the use of lithium batteries that are always paired with Battery Monitoring Systems: for this reason, NextEnergy series offers an advanced interfacing system to easily dialogue with this kind of systems.

PRODUCT EVOLUTION OVERVIEW

The Riello NextEnergy series is the result of decades of technology and field experience at Riello UPS, it summarizes our of attitude to innovation.
Obviously the innovation of Riello UPS never stops, the next Energy family will soon be expanded to other power ratings such as 600 kVA, 800 kVA and higher.

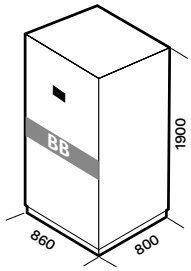
OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

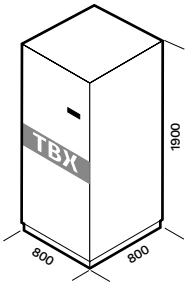
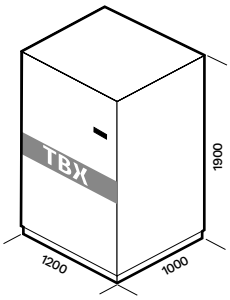
ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 411
MULTI I/O

PRODUCT ACCESSORIES
Battery temperature sensor
Isolation transformer
Parallel configuration kit
Synchronisation device (UGS)
Hot connection device (PSJ)
Battery cabinets empty or for extended runtimes
IP21/IP31 versions, other on request
Cold start: to start the UPS from battery without mains

BATTERY CABINET

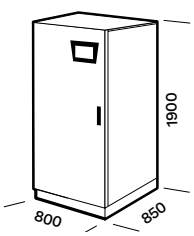
MODELS	BB 1900 480-V6 / BB 1900 480-V7 BB 1900 480-V8 / BB 1900 480-V9
UPS MODELS	NXE 250-300-400-500
Dimensions [mm]	

THREE-PHASE ISOLATION TRANSFORMERS

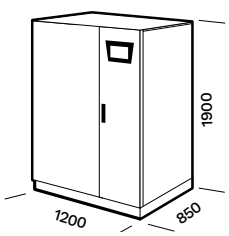
MODELS	TBX 200 T - TBX 250 T	TBX 300 T - TBX 400 T TBX 500 T
UPS MODELS	NXE 250	NXE 300-400-500
Dimensions [mm]		

DIMENSIONS

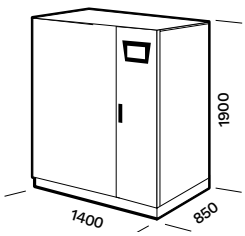
NXE 250



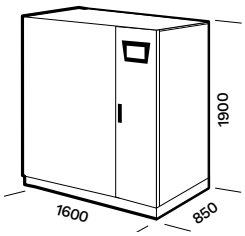
NXE 300



NXE 400



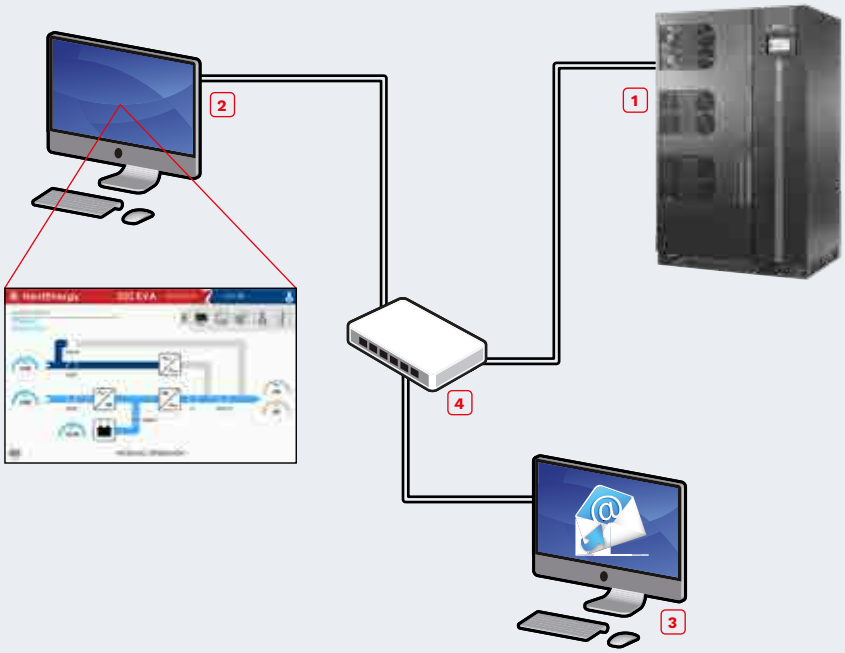
NXE 500



MODELS	NXE 250	NXE 300	NXE 400	NXE 500
INPUT				
Rated voltage [V]	380 / 400 / 415 three-phase			
Voltage tolerance [V]	400 ±20% @ full load[1]			
Frequency tolerance [Hz]	45 - 65			
Power factor	0.99			
THDI	<3%			
Soft Start	0 - 100% in 120 sec. (selectable)			
Standard equipment provided	Back feed protection, separate bypass line			
BATTERIES				
Type	VRLA AGM / GEL, NiCd, Supercaps, Li-ion, Flywheels			
Ripple current	Zero			
Recharge voltage compensation	-0.11% x V x °C			
OUTPUT				
Nominal Power [kVA]	250	300	400	500
Active Power [kW]	250	300	400	500
Number of phases	3 + N			
Rated voltage [V]	380 / 400 / 415 three-phase + N (selectable)			
Static Stability	±1%			
Dynamic Stability	±5% in 10 msec.			
Voltage distortion	<1% with linear load/<3% with non-linear load			
Frequency stability on battery	± 0.05%			
Frequency [Hz]	50 or 60 (selectable)			
Overload	110% for 60 min.; 125% for 2 min.; 150% for 20 sec.	110% for 60 min.; 125% for 10 min.; 150% for 1 min.		110% for 60 min.; 125% for 2 min.; 150% for 20 sec.
BYPASS				
Rated voltage [V]	380 / 400 / 415 three-phase + N			
Rated Frequency [Hz]	50 or 60 (selectable)			
Frequency tolerance	±2% (selectable from ±1% to ±5%)			
OVERALL SPECIFICATIONS				
Weight [kg]	634	880	1100	1300
Dimension (WxDxH) [mm]	800x850x1900	1200x850x1900	1400x850x1900	1600x850x1900
Input cable	Bottom	Top and bottom	Top and bottom	Bottom
Remote signals	Volt-free contact (configurable)			
Remote controls	EPO, bypass battery charge block (configurable)			
Communications	USB + Dry contacts + 2 slots for communications interface			
Ambient temperature for the UPS	0 °C - +40 °C			
Recommended temperature for battery life	+20 °C - +25 °C			
Range of relative humidity	5-95% non-condensing			
Colour	Dark grey RAL 7016			
IP rating	IP20 (other on request)			
Efficiency (AC-AC) – ON LINE Mode	up to 97%			
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111			
Classification in accordance with IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111			
Moving the UPS	Pallet jack			

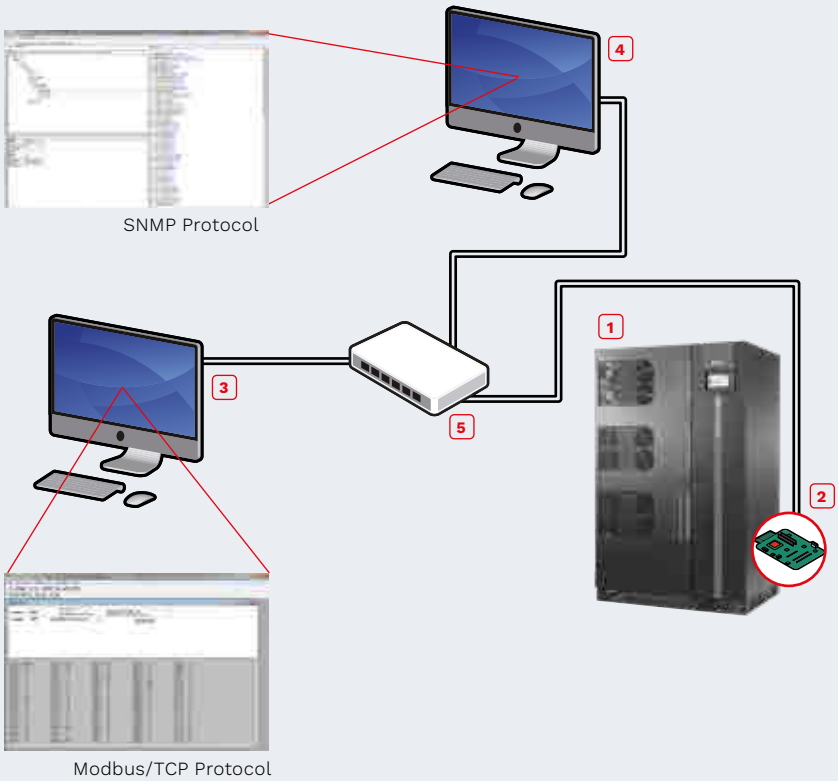
[1] *For wider tolerance conditions apply.*

NXE EMBEDDED PROTOCOLS



1	NextEnergy UPS
2	PowerShield[3]
3	Mail Server
4	Ethernet Switch
═	Ethernet

NXE PROTOCOLS ADDING NETMAN 204 CARD



1	NextEnergy UPS
2	NetMan 204 board
3	Modbus/TCP Manager
4	SNMP Manager
5	Ethernet Switch
═	Ethernet

EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

Master MPS

VFI TYPE **ON**LINE

Tower

ECO LEVEL 4

service **Service** 1st start

Flywheel compatible

Supercaps UPS

Li+ **Lithium** compatible

SmartGrid ready

3:1 10-100 kVA

3:3 10-200 kVA

HIGHLIGHTS

- **Efficiency Control System (ECS)**
- **Robust and reliable**
- **Galvanic isolation**
- **High overload capacity**
- **Extensive parallel configurations**

TOTAL PROTECTION

Master MPS series UPS provide maximum protection and power quality for mission critical loads, including data centres, industrial processes, telecommunications, security and electro-medical systems.
Master MPS is an ON LINE double conversion UPS (VFI SS 111 - IEC EN 62040-3) with a transformer isolated inverter.
The Master MPS range includes three-phase input and single-phase output versions from 10 to 100 kVA, and three-phase input and output versions from 10 to 200 kVA.
All versions are provided with a 6-pulse thyristor-based rectifier, with or without optional harmonic filters. A 12-pulse thyristor-based rectifier is available on request for the 60 and 80 kVA versions with or without optional harmonic filters.

EASY SOURCE

Master MPS makes supplying the UPS from generator sets and MT/BT transformers simpler and more efficient, reducing power loss in the system and coils, correcting the power factor and eliminating current harmonics created by the loads supplied by the UPS.
In addition to this, the progressive rectifier start up (power walk-in) and the option to reduce battery charging currents, allow for a reduction in the input current uptake.
This means less demand on the source, which is particularly useful when the source is a generator set.

FLEXIBILITY

Master MPS is suitable for a wide range of applications including IT and the most demanding industrial environments.
The UPS is suitable for power capacitive loads such as blade servers, from 0.9 leading to 0.8 lagging. With 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 existing installation.

BATTERY CARE SYSTEM: MAXIMUM BATTERY CARE

Normally the batteries are kept charged by the rectifier; when mains power fails, the UPS uses this energy source to power the consumers. Proper battery care is therefore critical to ensuring correct UPS operation under emergency conditions. The Riello UPS battery care system consists of a series of functions designed to optimise battery management and achieve the best performance and operating life possible.
Master MPS is also compatible with different battery technologies: vented open lead acid, VRLA AGM, Gel, NiCd, Flywheels, Supercaps and Lithium.

SPECIFIC SOLUTIONS

The UPS can be adapted to meet the most specific requirements. Contact our TEC team to discuss specific solutions and options not listed in this catalogue.

ADVANCED COMMUNICATIONS

- Compatible with Riello Connect for remote monitoring;
- Advanced multi-platform communications for all operating systems and network environments: PowerShield[3] monitoring and shutdown software included for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems;
- Double RS232 serial;
- 2 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.

Detail of connection area

MAXIMUM RELIABILITY AND AVAILABILITY

- Distributed or centralised parallel configuration of up to 8 units redundant (N+1) or power parallel system. Parallel configurations using models with different power ratings are also possible;
- Hot System Expansion (HSE): allows the addition of a further UPS into an existing system, without the need to switch off the existing UPS or transfer them to bypass mode. This guarantees maximum load protection, even during maintenance and system expansion;
- Maximum levels of availability, even in the event of an interruption to the parallel bus cable: the system is “FAULT TOLERANT”.
  It is not affected by connection cable faults and continues powering the load without disruption, signalling an alarm condition;
- Efficiency Control System (ECS): a system to optimise the operating efficiency of parallel systems, according to the power required by the load. N+1 redundancy is guaranteed, with every UPS working in parallel at the best load level possible to achieve higher overall efficiency.

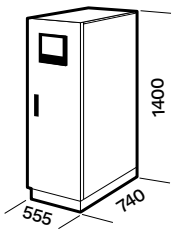
OPTIONS

- **UPS Group Synchroniser (UGS)**
  Allows two or more non-parallel UPS devices to remain synchronised even during mains power failure.
  The UGS also enables a Riello UPS to be synchronised with another power source that is independent and of a different power rating.

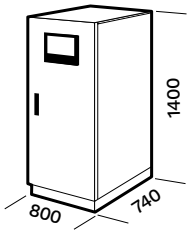
- **Parallel Systems Joiner (PSJ)**
  Allows two groups of UPS to be connected in parallel whilst operating, in the event of maintenance (with no interruption to the output), using a power coupling switch.
  Should one of the UPS in one of the parallel groups fail, it is automatically excluded.
  The PSJ connects the remaining UPS, to the other parallel group via an external bypass, in order to continue to guarantee load redundancy.

DIMENSIONS

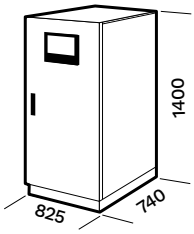
MPM/MPT 10-40



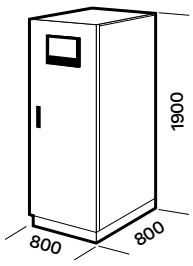
MPM/MPT 60-80



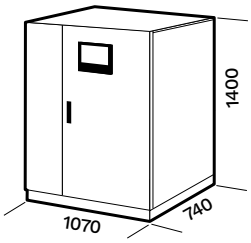
MPM/MPT 10HC-40HC



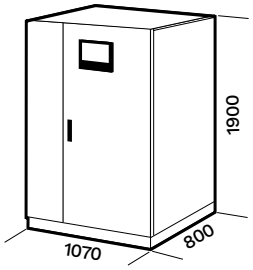
MPM 100 MPT 100-200



MPM/MPT 60HC-80HC MPT 60D-80D MPT 60DHC-80DHC



MPM 100HC MPT 100HC-200HC

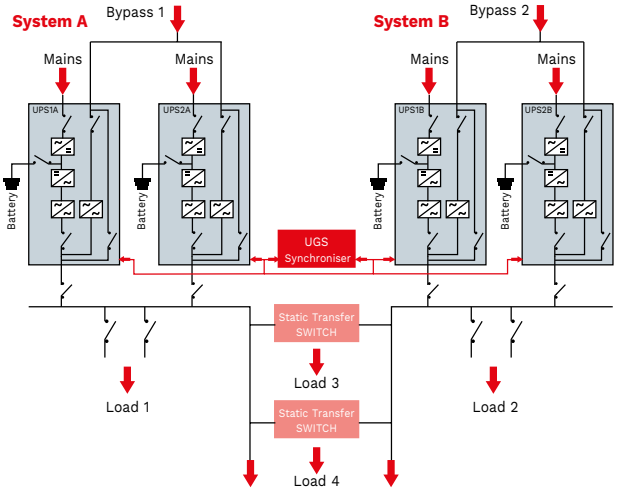


HC= Version with filtering of 5th or 11th harmonics D= Twelve-phase version

DUAL BUS CONFIGURATION

Solution to ensure redundancy up to the distribution of the power supply to the loads and improved STS operation.

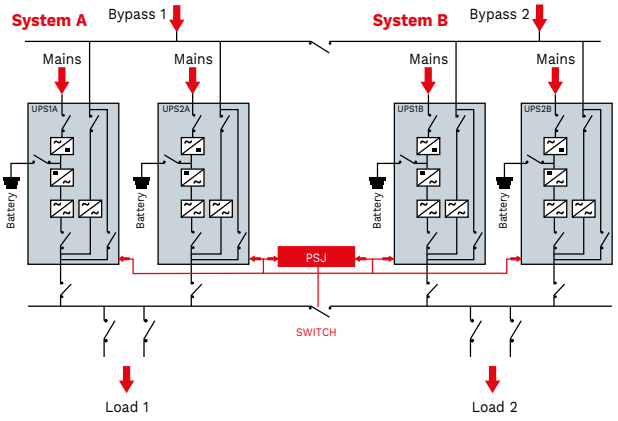
+ Downstream fault discrimination



DYNAMIC BUS CONFIGURATION

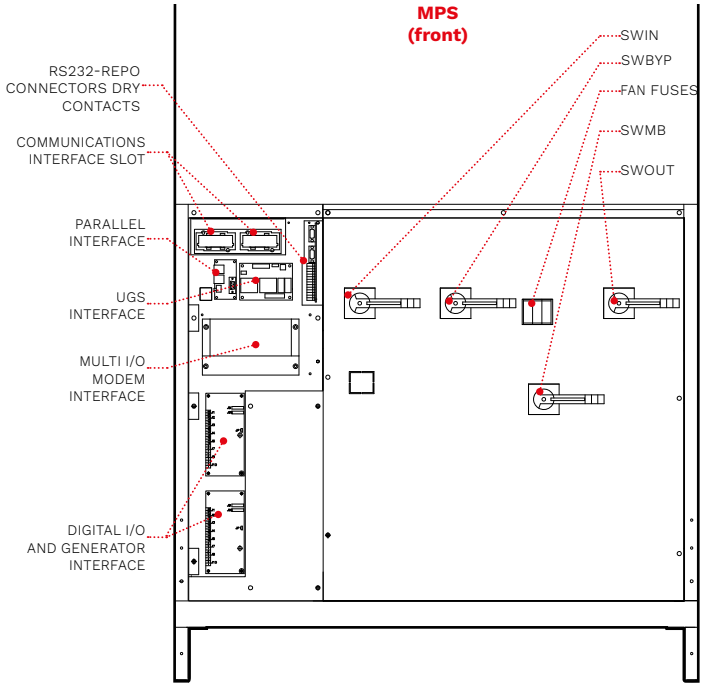
Solution to ensure redundancy of the power supply even during maintenance.

+ High availability and redundancy



DETAILS

MPT 200 open



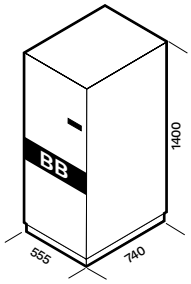
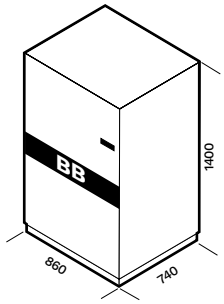
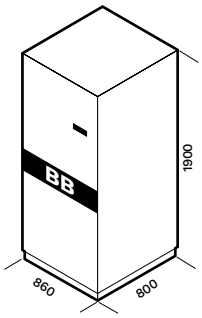
OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

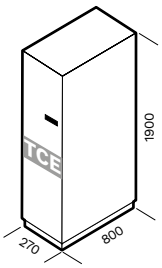
ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 411
MULTI I/O
MULTIPANEL
MBB 100 A

PRODUCT ACCESSORIES
Battery temperature sensor
Filtering of 5th and 11th harmonics (HC)
Isolation transformer
Synchronisation device (UGS)
Hot connection device (PSJ)
Cold Start: to start the UPS from battery without mains
Parallel configuration kit (Closed Loop)
Battery cabinets empty or for extended runtimes
Battery temperature sensor
Top Cable Entry cabinets
IP rating IP31/IP42

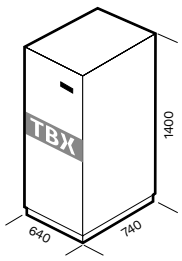
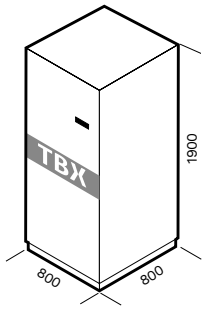
BATTERY CABINET

MODELS	BB 1400 384-B1	BB 1400 384-B2 / BB 1400 384-B3 BB 1400 384-B4	BB 1900 396-L6 / BB 1900 396-L7 BB 1900 396-L8 / BB 1900 396-L9
UPS MODELS	MPT 10-60 / MPM 10-60	MPT 10-80 / MPM 10-80	MPT 100-200 / MPM 100
Dimensions [mm]			

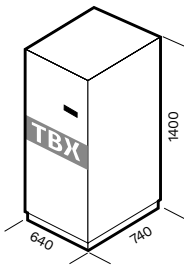
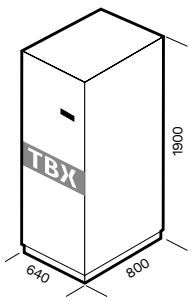
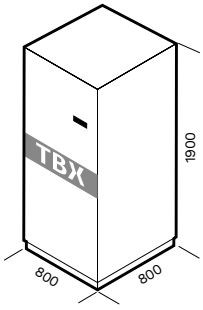
CABINETS WITH TOP ACCESS FOR CABLES

MODELS	TCE MPT 100-200
UPS MODELS	MPT 100-200 / MPM 100
Dimensions [mm]	

SINGLE-PHASE ISOLATION TRANSFORMERS

MODELS	TBX 10 M - TBX 80 M	TBX 100 M
UPS MODELS	MPM 10-80	MPM 100
Dimensions [mm]		

THREE-PHASE ISOLATION TRANSFORMERS

MODELS	TBX 10 T - TBX 80 T	TBX 100 T - TBX 160 T	TBX 200 T
UPS MODELS	MPT 10-80 / MPM 10-80	MPT 100-160 / MPM 100	MPT 200
Dimensions [mm]			

MODELS	MPM 10 BAT	MPM 15 BAT	MPM 20 BAT	MPM 30	MPM 40	MPM 60	MPM 80	MPM 100
INPUT								
Rated voltage [V]	380 / 400 / 415 three-phase							
Voltage tolerance [V]	400 +20% -25% @ full load[1]							
Frequency [Hz]	45 - 65							
Soft start	0 - 100% in 120 sec. (selectable)							
Permitted frequency tolerance	±2% (selectable from ±1% to ±5% from front panel)							
Standard equipment provided	Back Feed protection; separable bypass line							
BYPASS								
Rated voltage [V]	220 / 230 / 240 single-phase + N							
Rated frequency [Hz]	50 or 60 (selectable)							
OUTPUT								
Nominal power [kVA]	10	15	20	30	40	60	80	100
Active power [kW]	9	13.5	18	27	36	54	72	90
Number of phases	1							
Rated voltage [V]	220 / 230 / 240 single-phase + N (selectable)							
Static stability	±1%							
Dynamic stability	±5% in 10 msec.							
Voltage distortion	<1% with linear load / <3% with non-linear load							
Crest factor [lpeack/lrms]	3:1							
Frequency stability on battery	0.05%							
Frequency [Hz]	50 or 60 (selectable)							
Overload	110% for 60 min.; 125% for 10 min.; 150% for 1 min.							
BATTERIES								
Type	VRLA AGM / GEL; NiCd; Supercaps; Li-ion; Flywheels							
Residual ripple voltage	<1%							
Recharge voltage compensation	-0.11% x V x °C							
Typical charge current	0.2 x C10							
OVERALL SPECIFICATIONS								
Weight without batteries [kg]	200	220	230	255	302	416	616	665
Dimensions (WxDxH) [mm]	555x740x1400					800x740x1400		800x800 x1900
Remote signals	dry contacts							
Remote controls	ESD and bypass							
Communications	Double RS232 + dry contacts + 2 slots for communications interface							
Ambient temperature for the UPS	0 °C - +40 °C							
Recommended temperature for battery life	+20 °C - +25 °C							
Range of relative humidity	5-95% non-condensing							
Colour	Dark grey RAL 7016							
Noise level at 1 m (ECO Mode) [dBA]	60			62				
IP rating	IP20							
ECO Mode efficiency	up to 98%							
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111							
Classification in accordance with IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111							
Moving the UPS	Pallet jack							

[1] *For wider tolerance conditions apply.*
BAT *Also available with internal batteries.*

MODELS	MPT 10 [BAT]	MPT 15 [BAT]	MPT 20 [BAT]	MPT 30	MPT 40	MPT 60	MPT 80
INPUT							
Rated voltage [V]	380 / 400 / 415 three-phase						
Voltage tolerance [V]	400 +20% -25% @ full load[1]						
Frequency [Hz]	45 - 65						
Soft start	0 - 100% in 120 sec. (selectable)						
Permitted frequency tolerance	±2% (selectable from ±1% to ±5% from front panel)						
Standard equipment provided	Back Feed protection; separable bypass line						
BYPASS							
Rated voltage [V]	380 / 400 / 415 three-phase + N						
Rated frequency [Hz]	50 or 60 (selectable)						
OUTPUT							
Nominal power [kVA]	10	15	20	30	40	60	80
Active power [kW]	9	13.5	18	27	36	54	72
Number of phases	3 + N						
Rated voltage [V]	380 / 400 / 415 three-phase + N (selectable)						
Static stability	±1%						
Dynamic stability	±5% in 10 msec.						
Voltage distortion	<1% with linear load / <3% with non-linear load						
Crest factor [lpeack/lrms]	3:1						
Frequency stability on battery	0.05%						
Frequency [Hz]	50 or 60 (selectable)						
Overload	110% for 60 min.; 125% for 10 min.; 150% for 1 min.						
BATTERIES							
Type	VRLA AGM / GEL; NiCd; Supercaps; Li-ion; Flywheels						
Residual ripple voltage	<1%						
Recharge voltage compensation	-0.11% x V x °C						
Typical charge current	0.2 x C10						
OVERALL SPECIFICATIONS							
Weight without batteries [kg]	228	241	256	315	335	460	520
Dimensions (WxDxH) [mm]	555x740x1400					800x740x1400	
Remote signals	dry contacts						
Remote controls	ESD and bypass						
Communications	Double RS232 + dry contacts + 2 slots for communications interface						
Ambient temperature for the UPS	0 °C - +40 °C						
Recommended temperature for battery life	+20 °C - +25 °C						
Range of relative humidity	5-95% non-condensing						
Colour	Dark grey RAL 7016						
Noise level at 1 m (ECO Mode) [dBA]	60				62		
IP rating	IP20						
ECO Mode efficiency	up to 98%						
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111						
Classification in accordance with EN 62040-3	(Voltage Frequency Independent) VFI - SS - 111						
Moving the UPS	Pallet jack						

[1] *For wider tolerance conditions apply.*
[BAT] *Also available with internal batteries.*

MODELS	MPT 100	MPT 120	MPT 160	MPT 200
INPUT				
Rated voltage [V]	380 / 400 / 415 three-phase			
Voltage tolerance [V]	400 +20% -25% @ full load[1]			
Frequency [Hz]	45 - 65			
Soft start	0 - 100% in 120 sec. (selectable)			
Permitted frequency tolerance	±2% (selectable from ±1% to ±5% from front panel)			
Standard equipment provided	Back Feed protection; separable bypass line			
BYPASS				
Rated voltage [V]	380 / 400 / 415 three-phase + N			
Rated frequency [Hz]	50 or 60 (selectable)			
OUTPUT				
Nominal power [kVA]	100	120	160	200
Active power [kW]	90	108	144	180
Number of phases	3 + N			
Rated voltage [V]	380 / 400 / 415 three-phase + N (selectable)			
Static stability	±1%			
Dynamic stability	±5% in 10 msec.			
Voltage distortion	<1% with linear load / <3% with non-linear load			
Crest factor [lpeack/lrms]	3:1			
Frequency stability on battery	0.05%			
Frequency [Hz]	50 or 60 (selectable)			
Overload	110% for 60 min.; 125% for 10 min.; 150% for 1 min.			
BATTERIES				
Type	VRLA AGM / GEL; NiCd; Supercaps; Li-ion; Flywheels			
Residual ripple voltage	<1%			
Recharge voltage compensation	-0.11% x V x °C			
Typical charge current	0.2 x C10			
OVERALL SPECIFICATIONS				
Weight [kg]	620	640	700	800
Dimensions (WxDxH) [mm]	800x800x1900			
Remote signals	dry contacts			
Remote controls	ESD and bypass			
Communications	Double RS232 + dry contacts + 2 slots for communications interface			
Ambient temperature for the UPS	0 °C - +40 °C			
Recommended temperature for battery life	+20 °C - +25 °C			
Range of relative humidity	5-95% non-condensing			
Colour	Dark grey RAL 7016			
Noise level at 1 m (ECO Mode) [dBA]	65	68		
IP rating	IP20			
ECO Mode efficiency	up to 98%			
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111			
Classification in accordance with EN 62040-3	(Voltage Frequency Independent) VFI - SS - 111			
Moving the UPS	Pallet jack			

[1] *For wider tolerance conditions apply.*

EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

Master HP & Master HE

VFI TYPE **ON**LINE

Tower

6 ECO LEVEL

Service 1st start

Flywheel compatible

Supercaps UPS

Li+ **Lithium** compatible

SmartGrid ready

3:3 Master HP 100-600 kVA

Master HE 100-800 kVA

HIGHLIGHTS

- **High efficiency (up to 95.5% in ON LINE mode)**
- **kW=KVA (HE Models)**
- **Rectifier IGBT based technology**
- **Galvanic isolation**
- **High overload capacity**
- **LCD display**

The Master HP series from 100 to 600 kVA and Master HE series from 100 to 800 kVA are the Riello UPS solution for installations requiring high energy efficiency and maximum power availability. Master HP/ HE Series provides maximum protection and power quality for data centres and industrial loads. The UPS has an IGBT-based rectifier, DSP (Digital Signal Processor) technology and provides true-line, double conversion power protection, (VFI SS 11 - Voltage and Frequency Independent in accordance with IEC EN 62040-3).

MASTER HE - HIGH EFFICIENCY

Master HE series is available from 100 to 800 kVA. The UPS features a new ON LINE double-conversion technology utilising IGBT and DSP (Digital Signal Processor) control to provide maximum protection, power quality and green energy for any type of application including data centres, disaster recover sites, telecoms rooms, industrial processes and security applications.
High efficiency stands for higher active power available if compared with legacy UPS thanks to output unitary power factor (up to +25% if compared unity with same UPS at p.f. 0.8). Nominal power is granted with no downgrading independently from operating temperature in the range 10-40 °C. Furthermore, control circuits and specifically designed firmware grant outstanding ON LINE double conversion efficiency up to 95.5%, comparable with the best transformer-free UPS available on the market.

MAXIMISED COST SAVINGS

The Master HP/HE has the ability to monitor the mains input quality and to select the best operating mode based on the interference present (Smart Active mode) or circular redundancy (Parallel Energy Saving mode), which allows the UPS to regulate available capacity based on the immediate demands of the load, automatically switching to standby in the event of excess capacity. The Master HP/HE also offers high levels of efficiency for partial loads, resulting in reduced operating costs.

POWER CONTINUITY

For years, Riello UPS has developed and supplied solutions for dealing with the different requirements and problems that inevitably arise in critical applications. Riello UPS offers flexible, high-availability solutions that are able to adapt to different system structures and critical levels. Riello UPS creates UPS systems that can tolerate a number of components or subsystem failures, while continuing to operate normally, providing power without interruption. This is achieved by careful design, installing redundant elements, eliminating common failure points, scheduling maintenance activities and controlling and supervising the system operating parameters and environment. The TEC service team is ready to provide guidance and advice on projects.

ZERO IMPACT SOURCE

The Master HP/HE 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 generate current harmonics. Master HP/HE series UPS 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 UPS in the system.

BATTERY CARE SYSTEM

Master HP/HE series UPS include a range of features designed to prolong battery life and reduce their usage such as different recharging methods, deep discharge protection, current limitation and voltage compensation according with battery room temperature.
Thanks to the STEP-UP/STEP-DOWN converter, that provides to recharge and discharge the battery, the current ripple in the battery is extremely reduced; this arrangement enhance the battery reliability since it is no longer connected to UPS DC bus. in the battery is extremely reduced; this arrangement enhance the battery reliability since it is no longer connected to UPS DC bus.

COMPLETE GALVANIC SEPARATION

Master HP/HE UPS feature an output isolation transformer (delta zig/zag type) 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 (main and bypass), which can be taken from two different power sources (with different neutrals); this is particularly well suited to parallel systems in order to ensure selectivity between the two sources, thus improving the reliability of the entire installation;
- No neutral input connection is required at the UPS rectifier input stage; this method is particularly favourable 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 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 the cabinet which allows for a significant reduction in the footprint and provides space saving.

MAIN FEATURES

- High efficiency up to 99.4% (STANDBY ON Mode);
- Compact size: e.g.: only 0.85 m^2 for the Master HP/HE 250 kVA;
- Reduced weight for tranformer based UPS;
- Double load protection, both electronic and galvanic, towards the battery.

The entire Master HP/HE 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 then motor drivers or any other critical vertical application.

SMART GRID READY

Being Smart Grid Ready, Master HP/HE allows for the implementation of power accumulation solutions, and at

the same time ensures extremely high levels of efficiency. It is also able to independently select the most efficient operating method based on the status of the grid. Master HP/HE UPS are also able to electronically interface with the energy manager using the smart grid communication network

MAXIMUM RELIABILITY AND AVAILABILITY

- Distributed parallel configuration of up to 8 units per redundant (N+1) or power parallel system;
- Centralized parallel system up to 7 units with centralized bypass system (MSB);
- Dual bus configuration: allows two or more non-parallel UPS devices to remain synchronised even during mains power failure by adding the UGS device. The UGS also enables a Riello UPS to be synchronised with another power source that is independent and of a different power rating;
- Dynamic Dual bus configuration: allows two groups of UPS with the PSJ device to be connected in parallel whilst operating, in the event of maintenance (with no interruption to the output), using a power coupling switch. Should one of the UPS in one of the parallel groups fail, it is automatically excluded. The PSJ connects the remaining UPS, to the other parallel group via an external bypass, in order to continue to guarantee load redundancy. Allows two groups of UPS to be connected in parallel whilst operating, in the event of maintenance (with no interruption to the output), using a power coupling switch. Should one of the UPS in one of the parallel groups fail, it is automatically excluded. The PSJ connects the remaining UPS, to the other parallel group via an external bypass, in order to continue to guarantee load redundancy;
- Hot System Expansion (HSE): allows the addition of a further UPS into an existing system, without the need to switch off the existing UPS or transfer them to bypass mode. This guarantees maximum load protection, even during maintenance and system expansion;
- Maximum levels of availability, even in the event of an interruption to the parallel bus cable: the system is "FAULT TOLERANT". It is not affected by connection cable faults and continues powering the load without disruption, signalling an alarm condition;
- Efficiency Control System (ECS): a system to optimise the operating efficiency of parallel systems, according to the power required by the load. N+1 redundancy is guaranteed, with every UPS working in parallel at the best load level possible to achieve higher overall efficiency.

Master Static Bypass

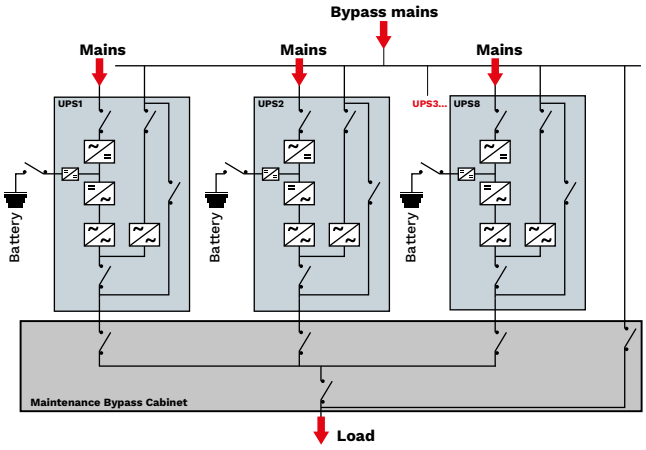
CENTRALIZED BYPASS CABINET

The Riello UPS centralised bypass (named MSB) is available in four power ratings: 800, 1200, 2000 and 3000 kVA.
Intermediate solutions within this range can be made, as well as solutions greater than 3000 kVA based on the requirements of the customer or application. The MSB centralised bypass can be integrated with the Master HP/HE range; in fact it can be associated with up to 7 UPS modules in the range, obviously without static bypass and associated bypass line (named MHT/MHE NBP). Based on requirements thus ensuring complete flexibility aimed at satisfying all power and power supply requirements.
Riello UPS provides the same flexibility as the Master HP for the battery bus, so that the UPS units can operate with both shared or separate batteries.
The 800 kVA MSB is supplied with a comprehensive cabinet including bypass line input switch (SWBY), system output switch (SWOUT) and manual bypass (SWMB). The 1200 kVA model is supplied as standard without any switches but can be equipped with the same, suitably proportioned, switches provided for the 800 kVA model (SWBY, SWOUT, SWMB). The more powerful models are supplied with no switches; the bulky sizes of disconnection devices at these power levels are such as to favour tailor-made engineering solutions as an additional part of the system attestation and distribution cabinets where the centralised bypass and MHT/MHE NBP modules are fitted.

PARALLEL CONFIGURATION OF UP TO 8 UPS UNITS WITH DISTRIBUTED BYPASS

Parallel architecture to ensure redundancy of the power source.

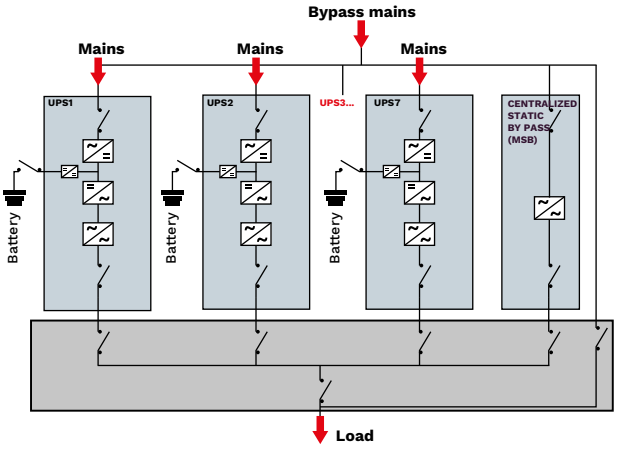
+ Flexibility and modularity and no single point of failure.



PARALLEL CONFIGURATION OF UP TO 7 UNITS WITH CENTRALISED BYPASS

Parallel architecture to ensure redundancy of the power source, with autonomous bypass management.

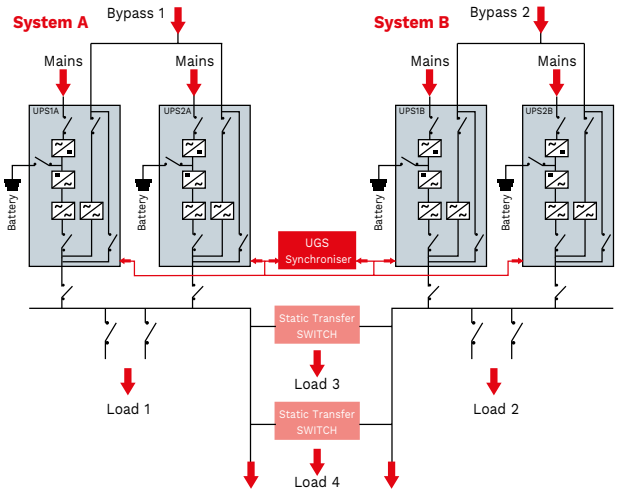
+ Selectivity of downstream faults in bypass mode



DUAL BUS CONFIGURATION

Solution to ensure redundancy up to the distribution of the power supply to the loads and improved STS operation.

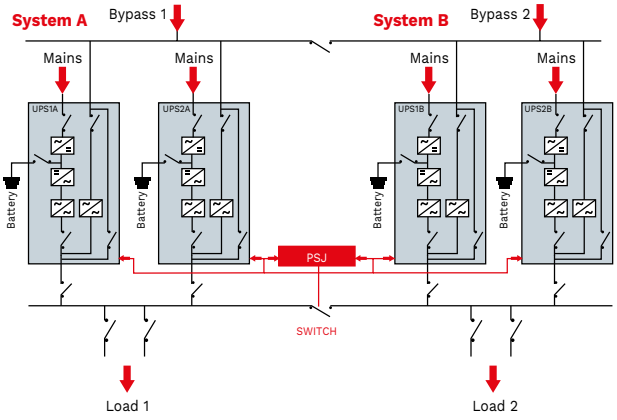
+ Downstream fault discrimination



DYNAMIC DUAL BUS CONFIGURATION

Solution to ensure redundancy of the power supply even during maintenance.

+ High availability and redundancy



OPTIONS

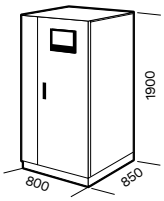
SOFTWARE
PowerShield[3]
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTI I/O
MULTIPANEL

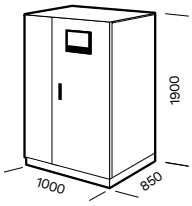
PRODUCT ACCESSORIES
Isolation transformer
Parallel kit
Synchronisation device (UGS): *see Master MPS on page 88*
Hot connection device (PSJ): *see Master MPS on page 88*
Battery cabinets empty or for extended runtimes
Top Cable Entry cabinets
IP rating IP31/IP41/IP42
Battery temperature sensor
Cold start Kit

DIMENSIONS

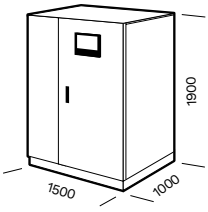
MHT / MHE 100
MHT / MHE 120



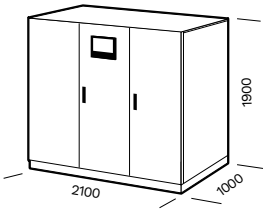
MHT / MHE 160
MHT / MHE 200
MHT / MHE 250



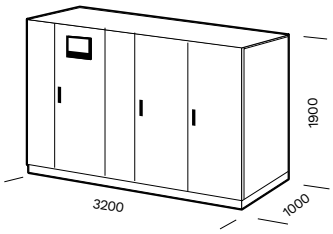
MHT / MHE 300
MHT / MHE 400



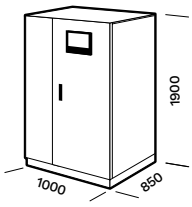
MHT / MHE 500
MHT / MHE 600



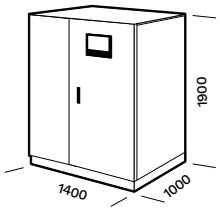
MHE 800



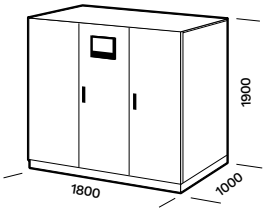
MSB 800



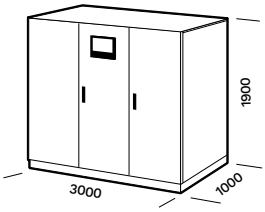
MSB 1200



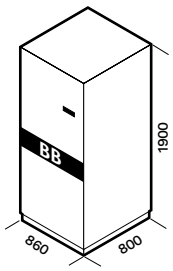
MSB 1600 / MSB 2000



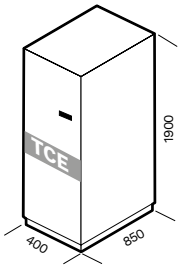
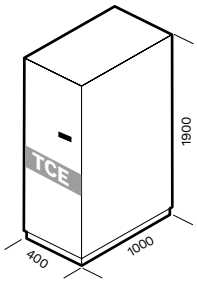
MSB 3000



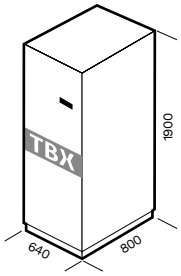
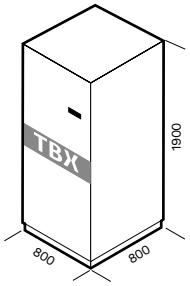
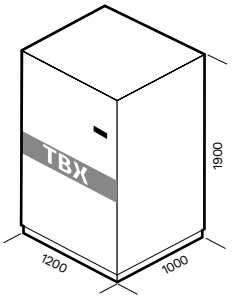
BATTERY CABINET

MODELS	BB 1900 480-V6 / BB 1900 480-V7 BB 1900 480-V8 / BB 1900 480-V9
UPS MODELS	MHT 100-600 / MHE 100-800
Dimensions [mm]	

CABINETS WITH TOP ACCESS FOR CABLES

MODELS	TCE MHT 100-250	TCE MHT 300-600
UPS MODELS	MHT 100-250/ MHE 100-250	MHT 300-600 / MHE 300-600
Dimensions [mm]		

THREE-PHASE ISOLATION TRANSFORMERS

MODELS	TBX 100 T - TBX 160 T	TBX 200 T - TBX 250 T	TBX 300 T - TBX 600 T
UPS MODELS	MHT 100-160 / MHE 100-160	MHT 200-250 / MHE 200-250	MHT 300-600 / MHE 300-600
Dimensions [mm]			

MODELS	MHT 100	MHT 120	MHT 160	MHT 200	MHT 250	MHT 300	MHT 400	MHT 500	MHT 600
INPUT									
Rated voltage [V]	380 / 400 / 415 three-phase								
Voltage tolerance [V]	400 ±20% @ full load[1]								
Frequency [Hz]	45 - 65								
Power factor	>0.99								
Harmonic current distortion [THDi]	<3%								
Soft start	0 - 100% in 120 sec. (selectable)								
Frequency tolerance	±2% (selectable from ±1% to ±5% from front panel)								
Standard equipment provided	Back Feed protection; separable bypass line								
BYPASS									
Rated voltage [V]	380 / 400 / 415 three-phase + N								
Rated Frequency [Hz]	50 or 60 (selectable)								
OUTPUT									
Nominal power [kVA]	100	120	160	200	250	300	400	500	600
Active power [kW]	90	108	144	180	225	270	360	450	540
Number of phases	3 + N								
Rated voltage [V]	380 / 400 / 415 three-phase + N (selectable)								
Static stability	±1%								
Dynamic stability	±5% in 10 msec.								
Voltage distortion	<1% with linear load / <3% with non-linear load								
Crest factor [lpeack/lrms]	3:1								
Frequency stability on battery	0.05%								
Frequency [Hz]	50 or 60 (selectable)								
Overload	110% for 60 min.; 125% for 10 min.; 150% for 1 min.								
BATTERIES									
Type	VRLA AGM / GEL; NiCd; Supercaps; Li-ion; Flywheels								
Ripple current	Zero								
Recharge voltage compensation	-0.11% x V x °C								
OVERALL SPECIFICATIONS									
Weight [kg]	700	750	835	970	1060	1500	1720	2440	2831
Dimensions (WxDxH) [mm]	800x850x1900		1000x850x1900			1500x1000x1900		2100x1000x1900	
Remote signals	dry contacts (configurable)								
Remote controls	ESD and bypass (configurable)								
Communications	Double RS232 + dry contacts + 2 slots for communications interface								
Ambient temperature for the UPS	0 °C - +40 °C								
Recommended temperature for battery life	+20 °C - +25 °C								
Range of relative humidity	5-95% non-condensing								
Colour	Dark grey RAL 7016								
Noise level at 1 m [dBA]	63 - 68					70 - 72			
IP rating	IP20 (others on request)								
Double conversion efficiency	up to 94.5%								
Standards	Safety: EN 62040-1-1 (Directive 2006/95/EC); EMC: EN 62040-2 (Directive 2004/108/EC)								
Classification in accordance with IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111								
Altitude	6000 max altitude								
Moving the UPS	Pallet jack								

[1] *For wider tolerance conditions apply.*

MODELS	MHE 100	MHE 120	MHE 160	MHE 200	MHE 250	MHE 300	MHE 400	MHE 500	MHE 600	MHE 800
INPUT										
Rated voltage [V]	380 / 400 / 415 3-phase									
Voltage tolerance [V]	400 ±20% @ full load[1]									
Frequency [Hz]	45 - 65									
Power factor	>0.99									
Harmonic current distortion [THDi]	<3%									
Soft start	0 - 100% in 120 sec. (selectable)									
Frequency tolerance	±2% (selectable from ±1% to ±5% from front panel)									
Standard equipment	Back Feed protection; separable bypass line									
BYPASS										
Rated voltage [V]	380 / 400 / 415 3-phase + N									
Frequency [Hz]	50 or 60 selectable									
OUTPUT										
Nominal power [kVA]	100	120	160	200	250	300	400	500	600	800
Active power [kW]	100	120	160	200	250	300	400	500	600	800
Number of phases	3 + N									
Rated voltage [V]	380 / 400 / 415 3-phase + N (selectable)									
Static stability	±1%									
Dynamic stability	±5% in 10 msec.									
Voltage distortion	<1% with linear load / <3% with non-linear load									
Crest factor [lpeak/lrms]	3:1									
Frequency stability on battery	0.05%									
Frequency [Hz]	50 or 60 (selectable)									
Overload	110% for 60 min.; 125% for 10 min.; 150% for 1 min.									
BATTERIES										
Type	VRLA AGM / GEL; NiCd; Supercaps; Li-ion; Flywheels									
Ripple current	Zero									
Recharge voltage compensation	-0.11% x V x °C									
OVERALL SPECIFICATIONS										
Weight [kg]	850	850	1015	1070	1300	1680	2050	3026	3080	4004
Dimensions (WxDxH) [mm]	800x850x1900		1000x850x1900			1500x1000x1900		2100x1000x1900		3200x 1000x 1900
Remote signals	volt-free contacts (configurable)									
Remote controls	ESD and bypass (configurable)									
Communication	Double RS232 + remote contacts + 2 slots for communications interface									
Ambient temperature for the UPS	0 °C - +40 °C									
Recommended temperature for battery life	+20 °C - +25 °C									
Range of relative humidity	5-95% non-condensing									
Colour	Dark grey RAL 7016									
Noise level (@ 1 m) [dBA]	63 - 68					70 - 72				
Protection level	IP20 (others upon request)									
SMART ACTIVE Efficiency	>99%									
Double Conversion Efficiency	up to 95.5%									
Regulations	Safety: EN 62040-1 (directive 2006/95/EC); EMC: EN 62040-2 (directive 2004/108/EC)									
Classification according to IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111									

[1] *For wider tolerance conditions apply.*

MODELS	MSB 800	MSB 1200	MSB 1600	MSB 2000	MSB 2400	MSB 3000
OPERATING SPECIFICATIONS						
Nominal power [kVA]	800	1200	1600	2000	2400	3000
Rated voltage [V]	380 / 400 / 415 three-phase + N					
Voltage tolerance	±15% (selectable from ± 10% to ±25% from front panel)					
Frequency [Hz]	50 / 60					
Frequency tolerance	±2% (selectable from ±1% to ±6% from front panel)					
Standard equipment provided	Back Feed protection					
Permitted overload*	110% for 60 min.; 125% for 10 min.; 150% for 1 min.					
ENVIRONMENTAL SPECIFICATIONS						
Noise at 1 m from front (from 0 to full load) [dBA]	<65					
Storage temperature	-10 °C up to +50 °C					
Ambient temperature for the UPS	0 °C - +40 °C					
Recommended temperature for battery life	+20 °C - +25 °C					
Range of relative humidity	5-95% non-condensing					
Reference standard	EN 62040-1 general safety requirements; IEC 62040-2 electromagnetic compatibility					
OVERALL SPECIFICATIONS						
Weight [kg]	570	800	1000	1200	2000	2400
Dimensions (WxDxH) [mm]	1000x850 x1900	** 1400x1000 x1900	*** 1800x1000 x1900	1800x1000 x1900	3000x1000 x1900	3000x1000 x1900
Communications	Double RS232 + dry contacts + 2 slots for communications interface					
Colour	Dark grey RAL 7016					
IP rating	IP20 (others on request)					
Moving the UPS	Pallet jack					

** under certain conditions ** 1800 mm version with switches *** with switches*

TRANSPORT INDUSTRY

Master Industrial

VFI TYPE ONLINE

Tower

ECO LEVEL 4

service Service 1st start

3:1 30-80 kVA
DC BUS 220 Vdc

HIGHLIGHTS

- **Battery voltage: 220 Vdc**
- **Galvanic isolation of input and output**
- **High short circuit current**
- **Redundant ventilation**

INDUSTRIAL APPLICATION PROTECTION

Master Industrial series UPS provide maximum protection and power quality for any type of load, especially industrial applications, such as manufacturing and petrochemical processes, electrical distribution and power plants.
Master Industrial is an ON LINE double conversion UPS (class VFI SS 111 in accordance with IEC EN 62040-3) with input and output isolation transformers.

INDUSTRIAL ENVIRONMENT

Master Industrial is suited to the most demanding installation environments where there are vibrations, mechanical stresses, dust and in general where operating conditions are unfavourable to products created for the standard UPS market.

HIGH ICC

The high short circuit current (ICC = 3xIn) makes it suitable for loads that require high current peaks during switch-on or during normal operation.

DC VOLTAGE 220 V

The input and inverter transformers guarantee the isolation of the batteries, which are sized for a voltage of 220 Vdc (from 108 to 114 elements), the standard industrial value.

REDUNDANT VENTILATION

Redundant ventilation at 100% load is standard, ensuring operation with a normal load with half of the fans operating; in addition, each fan is monitored and an alarm signal is provided in the event of failure. The Easy Source input features, the Battery Care System, and the flexibility and communications capabilities are the same as those of the conventional Master MPS range (page 88).

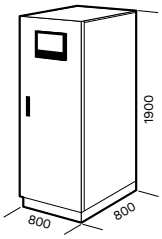
OPTIONS

SOFTWARE
See Master MPS (page 88)

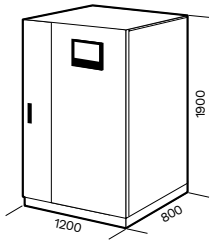
PRODUCT ACCESSORIES
Battery temperature sensor
Isolation transformer
Synchronisation device (UGS)
Hot connection device (PSJ)
Parallel configuration kit (Closed Loop)
Battery cabinets empty or for extended runtimes
Top Cable Entry cabinets
IP rating IP31/IP42

DIMENSIONS

MIM 30
MIM 40



MIM 60
MIM 80



MODELS	MIM 30	MIM 40	MIM 60	MIM 80
INPUT				
Rated voltage [V]	380 / 400 / 415 three-phase			
Voltage tolerance [V]	400 ±20% @ full load[1]			
Frequency [Hz]	45 - 65			
Power factor	>0.93			
Current distortion	<6%			
Soft start	0 - 100% in 120 sec. configurable			
Permitted frequency tolerance	±2% (selectable from ±1% to ±5% from front panel)			
Standard equip. provided	Back Feed protection; separable bypass line; battery isolation			
BATTERIES				
Type	VRLA AGM / GEL; NiCd			
Number of cells	108/114			
Maximum charging voltage [V]	274			
Recharge voltage compensation	-0.11% x V x °C			
OUTPUT				
Nominal power [kVA]	30	40	60	80
Active power [kW]	24	32	48	64
Rated voltage [V]	230 single-phase			
Static stability	±1%			
Dynamic stability	±5%			
Voltage distortion	<1% with linear load / <3% with non-linear load			
Frequency [Hz]	50 or 60 (selectable)			
Crest factor [lpeack/lrms]	3:1			
Overload	110% for 60 min.; 125% for 10 min.; 150% for 1 min.			
Short circuit current	3 x I nom.			
OVERALL SPECIFICATIONS				
Weight [kg]	640	650	910	940
Dimensions (WxDxH) [mm]	800x800x1900		1200x800x1900	
Remote signals	dry contacts			
Remote controls	ESD and bypass			
Communications	Double RS232 + dry contacts + 2 slots for communications interface			
Ambient temp. for the UPS	0 °C - +40 °C			
Recommended temperature for battery life	+20 °C - +25 °C			
Range of relative humidity	5-95% non-condensing			
Colour	Light grey RAL 7035			
Noise level at 1 m (ECO Mode) [dBA]	68 - 70			
Ventilation	Redundant fans (front-top)			
IP rating	IP20			
Double conversion efficiency	up to 94%			
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111			
Classification in accordance with IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111			
Moving the UPS	Pallet jack			

[1] *For wider tolerance conditions apply*

TRANSPORT

Master FC400

VFI TYPE **ON**LINE

Tower

ECO LEVEL 4

service **Service**
1st start

3:3 30-125 kVA

HIGHLIGHTS

- **Frequency Converter 50/400 Hz**
- **Output voltage: 208 V - 3F**
- **Galvanic isolation**
- **Applications: airport, military and naval**
- **Battery backup**

Master FC400 series static Frequency Converters are available from 30 to 125 kVA, with 50 or 60 Hz input and 400 Hz output. The result of extensive experience acquired in the UPS industry, the Master FC400 series is distinguished by the use of technologically advanced components and for excellent reliability, ease of maintenance and ease of operation. The Master FC400 series uses double conversion technology (VFI SS 111 voltage and frequency independent compliant with IEC EN 62040-3), with an integrated output transformer to ensure the galvanic isolation of the load from mains disturbances under all conditions. The output voltage is 208 V three-phase (adjustable 200-215 V). Thanks to high frequency IGBT technology and digital control, Master FC400 Frequency Converters are ideal for airport, military and naval applications.

MINIMUM IMPACT ON MAINS - EASY SOURCE

The Master FC400 was designed to reduce to a minimum the impact on the mains or generator located upstream, thanks to the low harmonic content input and the progressive start of the rectifier.
These features make the Master FC400 Frequency Converters especially compatible with generators.

EASY INSTALLATION AND MAINTENANCE

The Master FC400 requires a small space for installation (only 0.86 m^2 for a 125 kVA

model). The main assemblies of the UPS can be easily accessed for maintenance, via the removable front panel. Fans located in the top of the UPS cabinet, eliminate the need for side or rear access, and allow the UPS to be placed against a wall.

APPLICATIONS

Master FC400 provides additional protection for a wide range of applications, including:

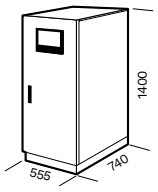
- Powering airplanes in airports
- Radar and flight-control systems
- Naval applications
- Military applications
- Power for test benches.

BATTERY BACK-UP

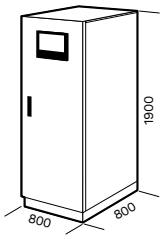
MFC is also available as UPS with battery back-up.

DIMENSIONS

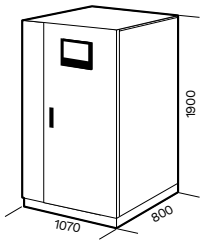
MFC 30



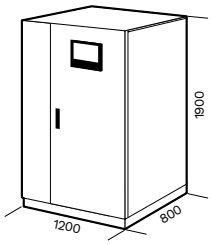
MFC 60 - MFC 80
MFC 100 - MFC 125



MFC 60 D - MFC 80 D
MFC 100 D



MFC 125 D



OPTIONS

SOFTWARE & ACCESSORIES
See Master MPS (page 88)

PRODUCT ACCESSORIES
Input isolation transformer
IP rating IP31/IP42

Parallel configuration kit (Closed Loop)
12 pulse version (D)
Filtering of 5th and 11th harmonics (HC)
Top Cable Entry cabinets

MODELS	MFC 30	MFC 60	MFC 80	MFC 100	MFC 125
INPUT					
Rated voltage [V]	380 / 400 / 415 three-phase				
Voltage tolerance [V]	400 ±20% @ full load[1]				
Frequency [Hz]	45 - 65				
Current distortion	<5% C (HC Version)				
Soft start	0 - 100% in 120 sec. configurable				
OUTPUT					
Nominal power [kVA]	30	60	80	100	125
Active power [kW]	24	48	64	80	100
Rated voltage [V]	208 three-phase + N				
Static stability	±1%				
Dynamic stability	±5%				
Voltage distortion	<3% with linear load / <4% with non-linear load				
Frequency [Hz]	400				
Crest factor [lpeack/lrms]	3:1				
Overload	110% for 60 min.; 125% for 10 min.; 150% for 1 min.				
OVERALL SPECIFICATIONS					
Weight [kg]	330	480	500	530	590
Dimensions (WxDxH) [mm]	555x740x1400	800x800x1900			
Remote signals	dry contacts				
Remote controls	ESD and ON/OFF				
Communications	Double RS232 + dry contacts + 2 slots for communications interface				
Ambient temperature for the UPS	0 °C - +40 °C (50 °C @ 75% load)				
Recommended temperature for battery life	+20 °C - +25 °C				
Range of relative humidity	5-95% non-condensing				
Colour	Light grey RAL 7035				
Noise level at 1 m (ECO Mode) [dBA]	62	65	68	70	72
IP rating	IP20 (others on request)				
Efficiency	up to 92%				
Altitude [m]	6000 max altitude				
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111				
Classification in accordance with IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111				
Moving the UPS	Pallet jack				

[1] *For wider tolerance conditions apply.*

DATACENTRE TRANSPORT

Multi Power

VFI TYPE **ON**LINE

Modular

6 ECO LEVEL

USB **USB** plug

SmartGrid ready

Li+ **Lithium** compatible

Hot swap battery

3:3 15-240 kW
+ redundancy

25-400 kW
+ redundancy

42-1008 kW
+ redundancy

multipower

HIGHLIGHTS

- **Utmost availability**
- **Ultimate scalability**
- **Unmatched power density**
- **Efficiency >96.5%**
- **Multiple controls**
- **Highly flexible**
- **Advanced comms**

The Riello UPS MULTI POWER (MPW and MPX) is the ultimate modular UPS for DATA CENTRES and other CRITICAL LOADs.
The MULTI POWER is designed to protect any critical high-density computer and IT environment, whilst achieving maximum availability. The Multi Power grows along with the demands of the business without over-sizing the UPS - optimizing both the initial investment and the Total Cost of Ownership. As soon as demand increases, the Riello UPS Multi Power modular solution can expand its power capability, maintaining the highest levels of power protection, availability, redundancy and investment savings.
Digital technology has an increasingly strong influence on day-to-day activities in almost all sectors and applications such as healthcare, power generation, social networking, telecommunications, commerce and education.
Subsequently, any activities and equipment related to data storage, processing and transfer should be supplied from the most reliable power source. Multi Power ensures that a scalable, secure, high quality power supply is available for a variety of critical load applications. The new MPW and MPX Power Modules feature the very latest in UPS technology. With its three-level Neutral Point Clamped (NPC) inverter and Power Factor Corrected (PFC) input control, the Multi Power ensures the highest level of performance in terms of overall efficiency, input power factor and harmonic impact on the supply source.

ADVANCED TECHNOLOGY

To ensure the highest levels of power availability, only the most reliable, cutting edge power components and innovative control technologies have been used in the development of the MPW and MPX power modules and other major aspects of the system. The major power components and assemblies within the Multi Power have been specifically designed and tailor made in conjunction with the respective component manufacturers. This design work ensures that the Multi Power achieves the highest levels of power and performance. In order to optimize the overall performance of the finished product, Riello UPS' R&D team made the decision to specifically design certain power components, including the IGBT modules and associated packages. Rather than using standard components that are readily available in the marketplace, the Multi Power hosts one single optimised and reliable power assembly which guarantees the best availability and overall efficiency.

The Power Module itself utilizes a "wireless power principle" meaning that the power interconnection distances between the cards, power components and connectors are shorter. In this way we reduce any risk related to connection problems between the assemblies and also minimize the overall power losses.

SCALABILITY

Multi Power provides a comprehensive, easy to integrate power protection solution for data centres and any critical IT application matching the evolving demands of a networked environment. The end user can easily increase power, redundancy level and battery autonomy by simply adding additional UPS **Power Modules (PM)** and **Battery Units (BU)**. Three different cabinets are available to build the system: the **Power Cabinets (PWC and PWC X)** and the **Battery Cabinet (BTC)**. The Power Cabinets can accommodate either 15 kW (PM15X), 25 kW (PM25X) or 42 kW Power Modules (PM42). The available UPS power and redundancy level can expand vertically from:

- 15 to 75 kW in one single Power Cabinet (PWC 130X with PM15X)
- 25 to 125 kW in one single Power Cabinet (PWC 130X with PM25X)
- 42 to 294 kW in one single Power Cabinet (PWC 300 with PM42).

Up to four complete Power Cabinets can be connected in parallel, increasing the capacity including redundancy respectively from:

- 75 up to 300 kW (with PM15X)
- 125 up to 500 kW (with PM25X)
- 294 up to 1176 kW (with PM42)

The Battery Cabinet accommodates multiples of 4 Battery Units, with up to 36 units within a single frame with a maximum of 10 Battery Cabinets connected in parallel.

In addition, the Multi Power is available as optimized solution providing a Multi Power/Battery combination with the **Combo Cabinet (CBC and CBC X)**. This solution can be utilized within extremely compact areas requiring a small footprint with maximum power density. This modular and reliable solution is perfect for any small to medium business applications.

The user might decide to build the solution using the combination of three PM42 and five battery shelves (CBC 130) or four PM15X / PM25X and six battery shelves (CBC 100X) not mingling the two power rates in the same cabinet.

OUTSTANDING PERFORMANCES

- The advanced technologies deployed within the Multi Power guarantees full rated power even with unity power factor loads (kVA=kW) without any power downgrading even when operating at temperatures up to 40 °C.
- High system efficiency whilst operating in ON LINE double-conversion mode greater than 96.5%. Even when loaded at only 20%, the Multi Power still achieves an outstanding performance greater than 95%. This superior performance ensures extremely low losses at any

Power Cabinet PWC 300 (1-7 x PM42) x 4

Power Module 15 kW - PM15X
Power Module 25 kW - PM25X

Power Module 42 kW - PM42

Battery Unit Array - 4 x BU

load level whilst maintaining a true modular solution for any changing UPS environment in terms power demands.

- Low input harmonic pollution, with near unity input power factor and an extremely wide input voltage operating range (+20/-40%), requiring only a minimum upstream power source rating and subsequent reduced investment costs.

MULTIPLE CONTROLS

The entire Multi Power solution was developed with particular care to ensure operational reliability and prevent any possible failures due to miscommunication between the component parts of the system.
The Power Modules are not controlled by one unique microprocessor, but by three - each having different and specific duties. Likewise, the Power Cabinet features two separate microprocessors; one to regulate the overall UPS operations and a separate one to manage communication with the user. In addition, three dedicated communications bus manage and transmit the data. In terms of the monitoring and control of the overall system, all major components are continually temperature monitored within each of the Power Modules. In addition, up to four-temperature sensors are embedded within the Power Cabinet to ensure constant and efficient operation.
The Power Module is equipped with three speed controlled fans to ensure there is no energy wasted as the load level applied to the system increases or decreases.
At the same time each fan features a so-called third wire (the controller) which immediately warns the microprocessor in the event of a fault; in which case the microprocessor will increase the speed of the remaining operational fans in order to compensate for the cooling deficiency.
The Battery Unit also contains dedicated internal protection and a sophisticated control system to monitor the status of each module. This makes it possible to check the voltage/current supplied by each single battery module and therefore identify and warn the user if one of them is defective or beginning to fail. This significantly reduces the risk of a battery pack failure causing a problem to the system by immediately warning the user of the impending issue in order for the appropriate preventive actions to be taken before it is too late.

FLEXIBLE MODULARITY

Multi Power grows both vertically and horizontally from 1 to 20 Power Modules (PM15X/PM25X) or 1 to 28 Power Modules (PM42) up to 1176 kW (including redundancy) as well as battery units (from 1 cabinet, up to 10), therefore the system is completely scalable in accordance with any business requirements. The Plug & Play modular concept simplifies any power or battery autonomy expansion process, rather than a complete Power Module or Battery unit replacement.
The modular hot-swappable principle is further extended to all major elements of the system, resulting in convenient replacement of parts such as fans from within individual Power Modules rather than accessing major components within the cabinet. Furthermore, all Power Modules and critical components are easily accessible from the front of the unit as standard. The system is equipped with a Manual Bypass change over switch and Backfeed control with a mechanical interlock contactor inbuilt, eliminating any maintenance-related downtime (inbuilt contactor is optional for PWC 130X and CBC 100X). Combination systems (Combo Cabinet) and Battery Cabinet are supplied with a battery switch and shunt trip to enable remote battery switch operation.
All these features ensure easy UPS expansion, operation and maintenance; minimizing downtime, decreasing the Mean Time to Repair (MTTR) and removing any possible risk to power continuity, when carried out by authorized service personnel. Flexibility is measured by the ease of both on site installation and the operations undertaken by the user. Input/Output/battery terminal bars are deployed enabling authorized installers to easily terminate the cables either from the top

Combo Cabinet CBC 100X (1-4 PM15X or PM25X) + 1-6 Battery shelves.

Combo Cabinet CBC 130 (1-3 x PM42) + 1-5 Battery Shelves with front door air filter (optional available on all cabinet types).

Battery Cabinet with open and closed door.

or the bottom of the system (for PWC 130X bottom entry only).
Mechanical supports and cable glands as well as the terminal bar positioning (in the centre of the cabinet) are purposely positioned to reduce the installation time and costs. In addition, in terms of flexibility of the battery installation, whether a conventional or modular type system is implemented these can be arranged in two different configurations: centralised (common battery) or distributed (separate battery for each Power/Combo Cabinet). This will ensure the highest level of adaptability for any critical installation and/or economical driving factors.

TURNKEY SOLUTIONS

User may deploy Multi Power cabinets lining up four Cabinets one to each other and arranging locally for input and output cabling.
Riello UPS offers as alternative a 500 kVA turn-key solution which consist in two Power Cabinets (PWC 300) and a Switching Cabinet to tie up the two. It includes AC input/output terminals for site power distribution connection, related joining flexible bars and communication links between Power Cabinets and Switching Cabinet. Switching Cabinet is also supplied with AC input/output/bypass lines breakers as well as with an integral wrap around maintenance bypass. Bypass line is protected with fuses to grant fault discrimination and load protection in case of short circuit downstream.
The breaker set enable to galvanically insulate the single Power Cabinets and to carry out specific maintenance.
Switching Cabinet cable entry is arranged so that user may decide either to access from the bottom front, rear side or top.
This on hand solution simplify the installation activity and contribute to the overall TCO reduction minimizing, upfront, installation and operating costs.

ADVANCED COMMUNICATIONS

Users can benefit from the different communication systems developed specifically for IT personnel, facilities managers and service engineers.
The 7” LCD touch screen, communication slots, relay cards along with the dedicated service ports, all ensure that the UPS setup, control and monitoring is easy.
The Multi Power LCD touch screen has embedded the follow protocols:

- UDP to communicate with our shutdown software PowerShield[3]
- HTTP and HTTPS to monitor the UPS status using a standard web browser without any additional software.
- SMTP to send emails related to the UPS status, alarms and a power quality daily and weekly report.

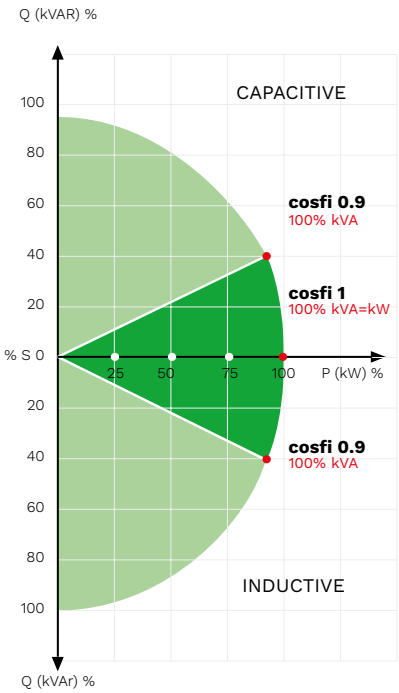
In addition, with the network card NetMan 204, Multi Power can be integrated into any building management system and data centre infrastructure (CDIM) with the protocols:

- SNMP v1, v2 and v3.
- Modbus/TCP.

Multi Power is compatible with the very latest operating systems including

- Windows 7, 8, 10
- Hyper-V
- Windows Server 2019, 2016, 2012, and previous versions
- Mac OS X
- Linux
- VMWare ESXi
- Citrix XenServer

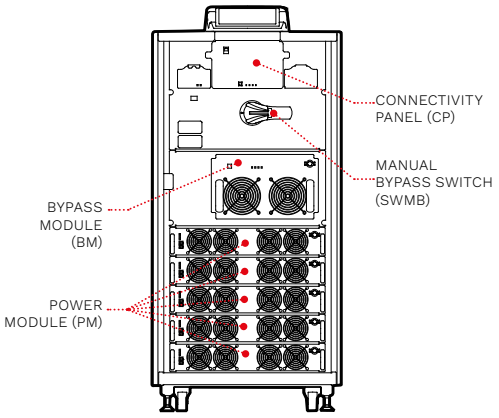
and many other Unix operating systems.



Power Cabinet PWC 130X (1-5 x PM15X or PM25X).

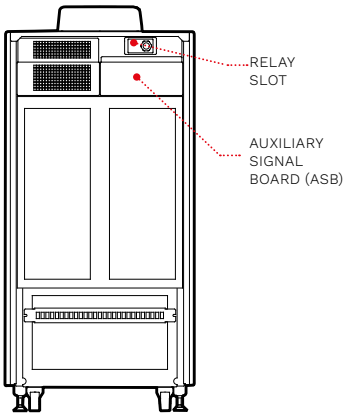
PWC 130X

MPX Power Cabinet 130X
15-75 kW or 25-125 kW
(front)



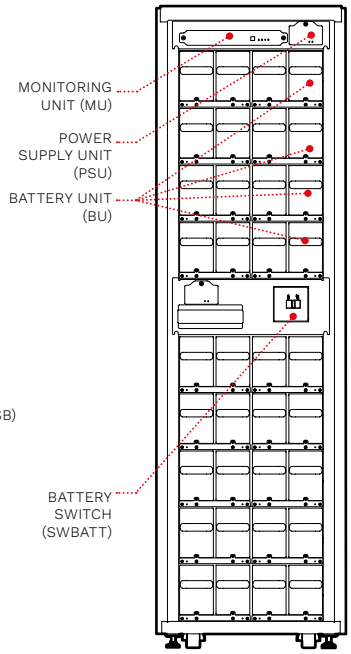
PWC 130X

MPX Power Cabinet 130X
15-75 kW or 25-125 kW
(rear)



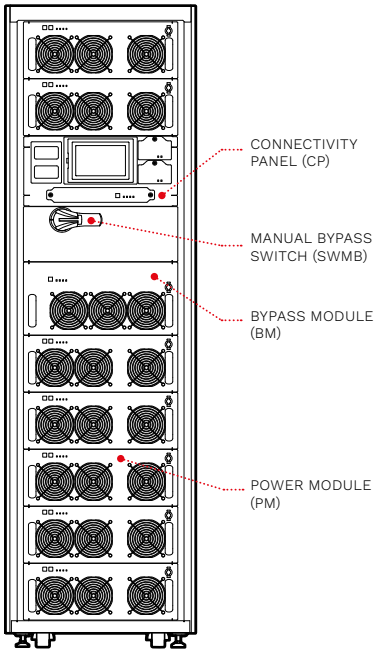
BTC 170

MPW Battery Cabinet
(front)



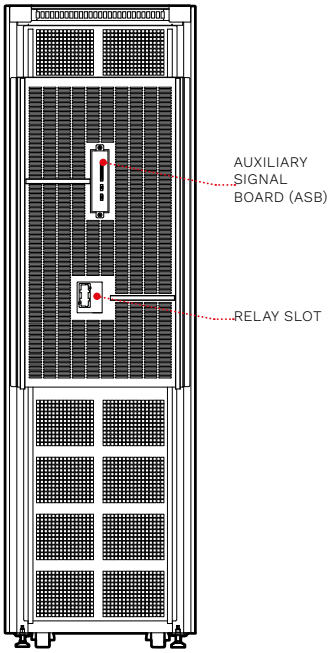
PWC 300

MPW Power Cabinet 300
42-294 kW
(front)



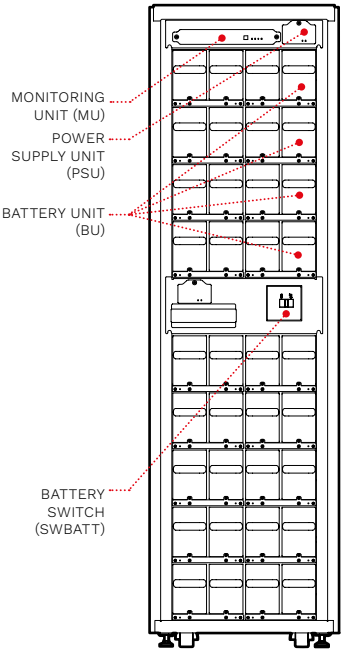
PWC 300

MPW Power Cabinet 300
42-294 kW
(rear)



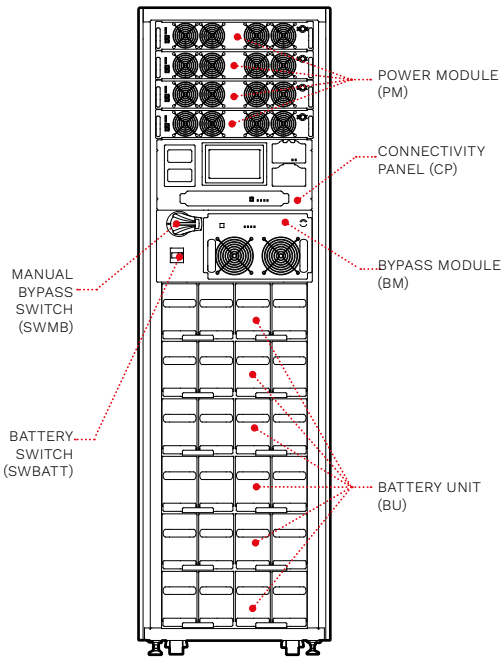
BTC 170

MPW Battery Cabinet
(front)



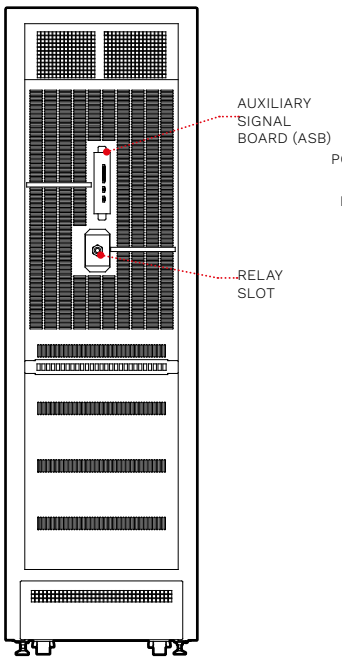
CBC 100X

MPX Combo Cabinet 100X
15-60 kW or 25-100 kW
(front)



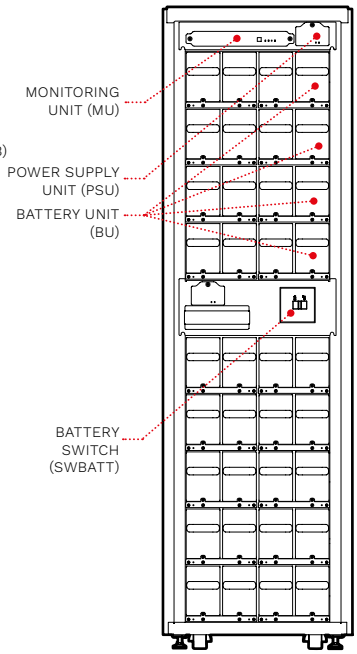
CBC 100X

MPX Combo Cabinet 100X
15-60 kW or 25-100 kW
(rear)



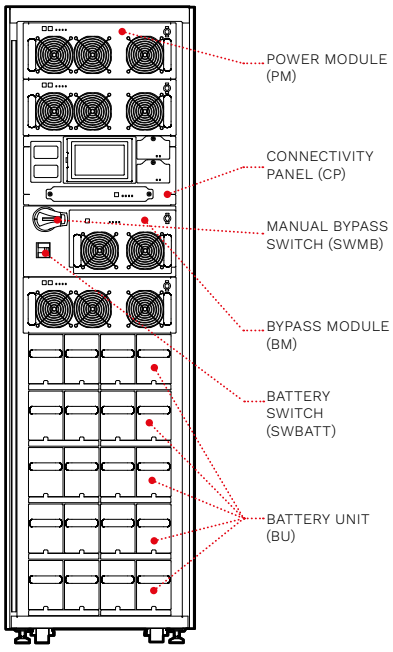
BTC 170

MPW Battery Cabinet
(front)



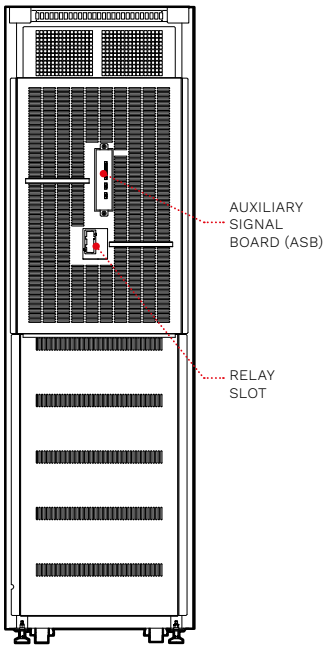
CBC 130

MPW Combo Cabinet 130
42-126 kW
(front)



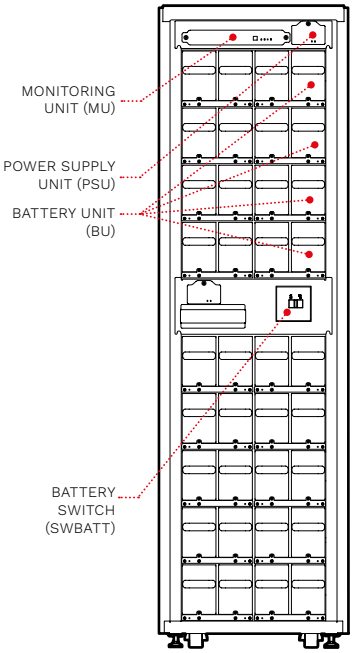
CBC 130

MPW Combo Cabinet 130
42-126 kW
(rear)

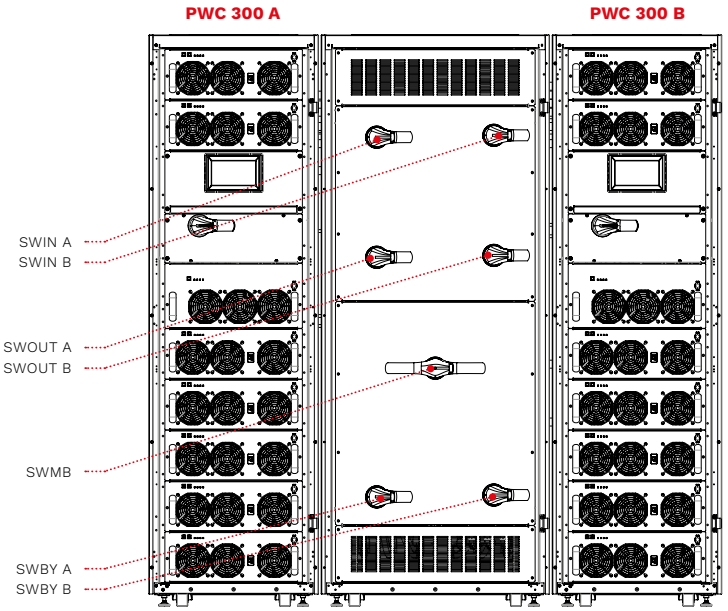


BTC 170

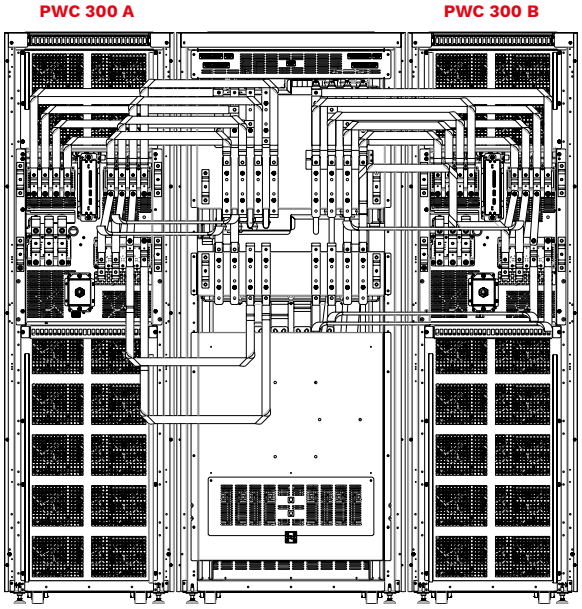
MPW Battery Cabinet
(front)



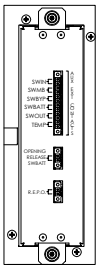
MPW Switching Cabinet
500 + 2 x Power Cabinet
300 (front without doors)



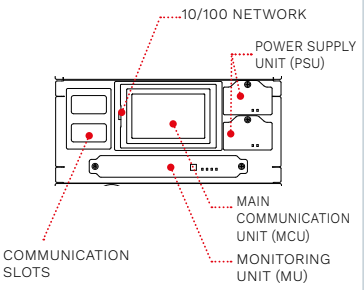
MPW Switching Cabinet
500 + 2 x Power Cabinet
300
(rear without panels)



AUXILIARY SIGNAL BOARD (ASB)

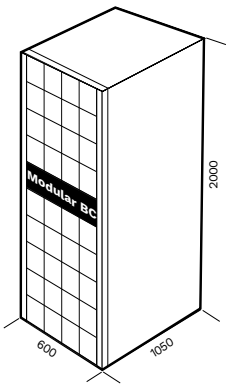
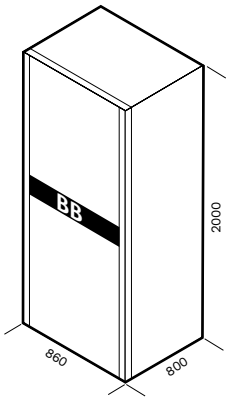


CONNECTIVITY PANEL (CP)



Note:
1) On PWC 130X connectivity panel layout is different.
2) Second PSU on PWC 130X is optional.

BATTERY CABINETS

MODELS	CABINET MPW BATTERY (MODULAR BATTERY CABINET)	BB 2000 480-V6 / BB 2000 480-V7 BB 2000 480-V8 / BB 2000 480-V9 AB 2000 480-V9 (CONVENTIONAL BATTERY CABINET)
UPS MODELS	Select the Battery configuration according Multi Power range	
Dimensions [mm]		

OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTICOM 411
MULTI I/O
MULTIPANEL

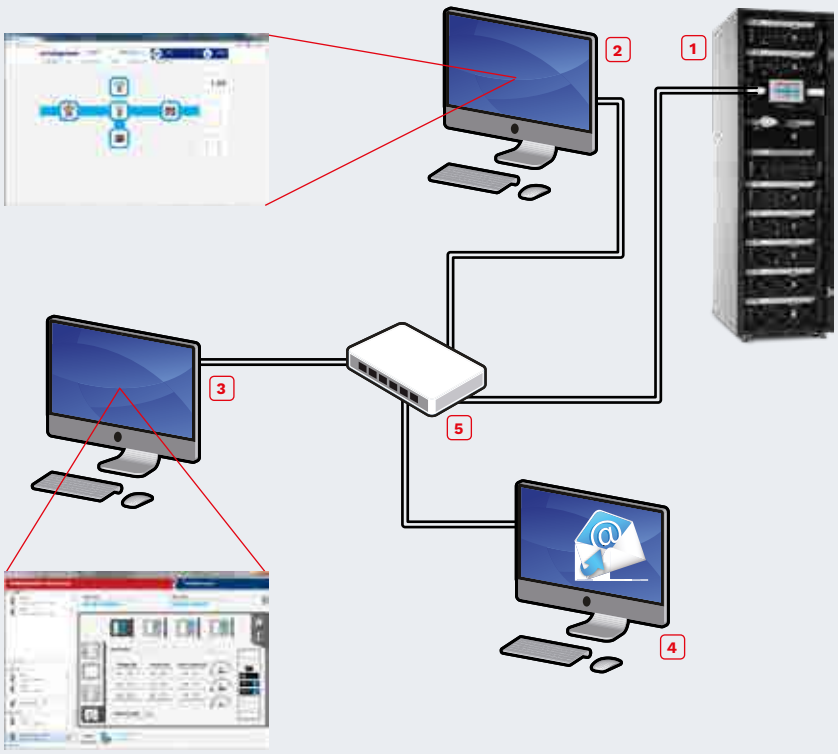
PRODUCT ACCESSORIES
Battery temperature sensor
On front door air filter
IP21 Protection Kit
Programmable relay board MULTICOM 392
Switching Cabinet
Cold Start

MODEL	Multi Power - from 15 to 294 kW[1]			
INPUT				
Rated voltage [V]	380 / 400 / 415 three-phase plus neutral			
Rated frequency [Hz]	50 / 60			
Voltage tolerance [V]	400 ±20% @ full load[2]			
Frequency tolerance [Hz]	40 - 72			
Power factor	1			
THDI	<3%			
BYPASS				
Nominal power [kW]	252 / 126 (According to system power configuration)			
Rated voltage [V]	380 / 400 / 415 three-phase plus neutral			
Voltage tolerance [V]	from 180 (adjustable 180-200) to 264 (adjustable 250-264) referring to Neutral			
Rated frequency [Hz]	50 or 60			
Frequency tolerance [Hz]	±5% (selectable)			
Overload	125% for 10 min.; 150% for 1 min.			
BATTERIES	**Modular Type (BTC 170)**		**Conventional Type**	
Layout	Modular type made up by Battery Unit (named BU)		Free Standing Battery cabinet / Shelf	
Battery features	VRLA batteries lined up inside BU; Constant voltage and current measuring at BU level; Battery status monitoring via Multi Power LCD display		Conventional battery Blocks VRLA Type	
Cabinet lay out description	9 x Battery shelves		1 x (20 + 20) Blocks	
Dimensions (WxDxH) [mm]	600x1050x2000		860x800x2000	
Weight [kg] (without PM[3]/BU[4])	280		250	
OUTPUT				
Rated voltage [V]	380[2] / 400 / 415 three-phase plus neutral			
Rated frequency [Hz]	50 or 60			
Voltage stability	±0.5%			
Dynamic stability	EN62040-3 class performance 1 non linear load			
OVERALL SPECIFICATIONS				
Cabinet type	**PWC 130X Power Cabinet 130X**	**PWC 300 Power Cabinet 300**	**CBC 100X Combo Cabinet 100X**	**CBC 130 Combo Cabinet 130**
Power Module nominal power [kW] (Named PM)	PM15X / PM25X	PM42	PM15X / PM25X	PM42
Solution nominal Power [kW]	75 / 125	294	60 / 100	126
Output power factor [pf]	1	1	1	1
Parallelable (up to)	4	4	4	4
Cabinet layout description	5 x PM15X / 5 x PM25X	7 x PM42	4 x PM15X / 4 x PM25X + 6 x Battery shelves	3 x PM42 5 x Battery shelves
Dimensions [WxDxH]	600x1050x1200	600x1050x2000	600x1050x2000	600x1050x2000
Weight [kg] (without PM[3]/BU[4])	145	300	350	340
System Noise Level at 1 m [dBA±2]	<65	<68	<64	<64
ECO Mode Efficiency	Up to 99%			
Cabinet IP rating	IP20 finger proof (either with cabinet doors open or close)			
Cable input	Rear side either top or bottom			
Colour	RAL 9005			
Ambient temperature for the UPS	0 °C - +40 °C			
Recommended temperature for battery life	+20 °C - +25 °C			
Range of relative humidity	5-95% non-condensing			
Altitude [m]	6000 max altitude			
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2 - category C2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111			
Moving UPS cabinet types	Castors (any cabinet type is shipped without PM and BU)			

[1] *Including Redundancy*
[2] *For wider tolerance conditions apply.*
[3] *PM = Power Module (either referring to PM15X, PM25X or PM42 kW)*
[4] *BU = Battery Unit*

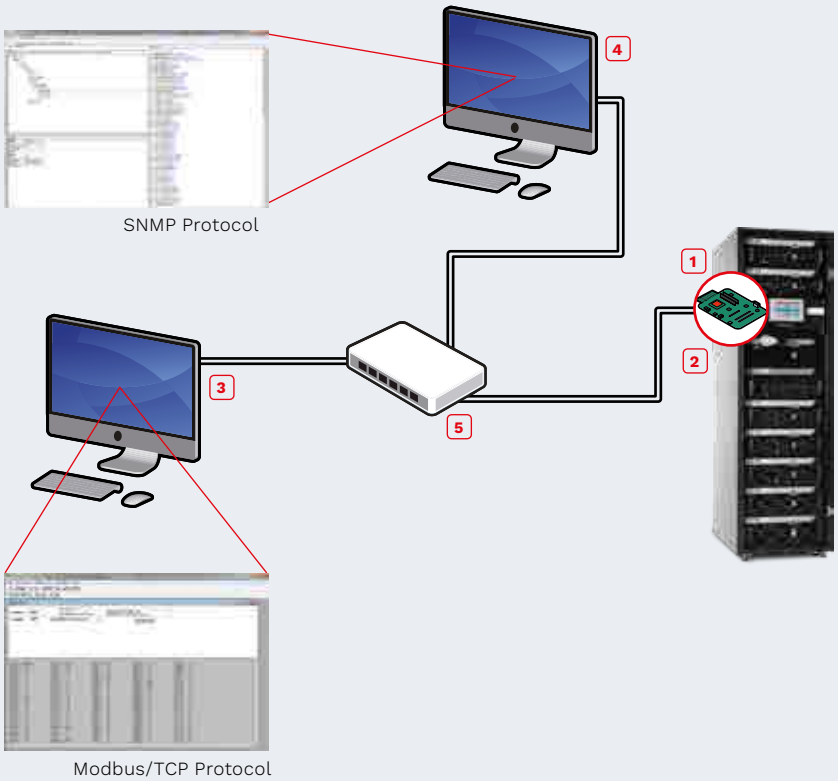
NOTE: All performances quoted in a single row refer to any UPS system configuration from one to seven modules running in parallel unless specified differently.

MULTI POWER EMBEDDED PROTOCOLS



1	MPW / MPX
2	Web Browser
3	PowerShield³
4	Mail Server
5	Ethernet Switch
═	Ethernet

MULTI POWER PROTOCOLS ADDING NETMAN 204 CARD



SNMP Protocol

Modbus/TCP Protocol

1	MPW / MPX
2	NetMan 204 board
3	Modbus/TCP Manager
4	SNMP Manager
5	Ethernet Switch
═	Ethernet

DATACENTRE TRANSPORT E-MEDICAL INDUSTRY

Multi Guard Industrial

VFI TYPE **ON**LINE

Modular

6 ECO LEVEL

Service 1st start

USB plug

SmartGrid ready

1-3:1 20 x 160 kVA

1-3:3 20 x 160 kVA

HIGHLIGHTS

- **High adaptability to input voltage**
- **Zero impact source**
- **Compatible with industrial environments**
- **Modular Plug & Play solution**
- **Complete flexibility**

The Multi Guard Industrial range was specially developed to ensure power continuity in all sectors deemed critical due to the specific environmental conditions or industrial processes requiring protection.
Multi Guard Industrial is available in a 20 kVA standalone version and in modular versions from 20 to 160 kVA. The two versions are available in both single-phase and three-phase output configurations. This high level of flexibility allows Multi Guard Industrial to accept both single-phase and three-phase inputs with no need for special set ups or operator intervention, ensuring full compatibility with any power supply network.

HIGH ADAPTABILITY TO INPUT VOLTAGE

Multi Guard Industrial is available in two versions: single-phase and three-phase output, whilst the input stage accepts both a triplet of three-phase supplies out-of-phase by 120° (three-phase 400 V+N) or a triplet of power supplies in phase (single-phase 230 V+N). Thanks to its power supply recognition function the UPS is able to adapt to the input power supply with no need for additional configuration, ensuring the same performance under both applied voltage conditions.

ZERO IMPACT SOURCE

Thanks to the technology it employs, Multi Guard Industrial solves all problems

Parallel configuration and programmable relay contacts board.

Harting connectors.

connected with insertion into power supply grids with limited power, where the UPS is supplied by a generator and where the same network includes single-phase (e.g. railway voltage) and three-phase (e.g. emergency power supply from a generator) supplies.
Multi Guard Industrial has zero impact on the power supply source, whether it is a mains grid or generator set, single-phase or three-phase:

- Power supply voltage recognition (single/three-phase), with no need for setting up or reconfiguring parameters;
- 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;
- 'Cold start' function for starting the UPS from the battery.

In addition, Multi Guard Industrial 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 utility suppliers.

COMPATIBLE WITH INDUSTRIAL ENVIRONMENTS

The mechanical structure of Multi Guard Industrial makes it particularly versatile for use in many different sectors.
The basic building blocks are 20 kVA UPS. The cabinet is able to house up to four 20 kVA modules and up to two cabinets can be connected in parallel for a total of eight UPS modules and 160 kVA of power.
The module connection clamps are laid out so that the communication signal connections are segregated and separated from the power connections (input, output, bypass line, battery), thus ensuring complete immunity from interference generated by the power supply grid, which is typically disturbed in industrial environments.
Both versions (single-phase and three-phase output) are provided with a bypass line separated from the power supply line. This ensures greater availability in that the customer may have a preferential line for the bypass that is not restricted by the potential interference or interruptions that the UPS power supply line may be subject to. The UPS module has a front to back air flow, allowing the UPS to be installed in any environment and preventing the types of ingress problems associated with top-vented circulations cabinets.
Every UPS module in the Multi Guard Industrial range can be equipped with a parallel board, a relay board with eight programmable outputs and three inputs (one of which is programmable), and two slots for housing communications interface boards from the MultiCom range, making the UPS compatible with the various types of protocols and supervision systems typical of the industrial environment.
The cabinet is designed to house up to four UPS modules. It has an area that contains all the protection devices and disconnectors for the individual modules (4 input disconnectors, 4 battery disconnectors, 4 bypass line disconnectors and 4 output disconnectors), as well as a manual bypass for isolating the four modules and guaranteeing power continuity in the event of the complete failure of all the UPS units or in the event of scheduled system overhaul.
The cabinet is also equipped with an area that can be used for the insertion of a whole range of accessories for monitoring power that the user can request (surge arresters, energy meters, earth discharge detectors, output distribution, release coils, etc), making the solution compact and optimised for any field of use.

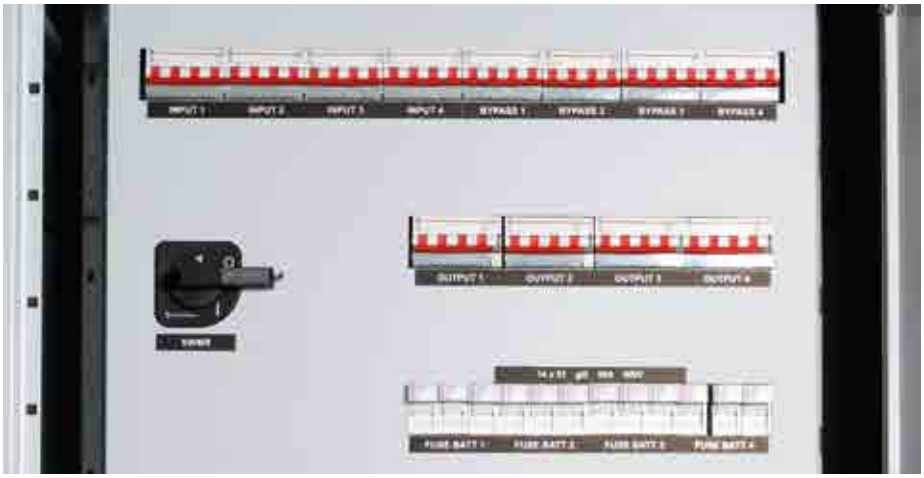
MODULAR PLUG & PLAY SOLUTION

Multi Guard Industrial can be purchased as a single 20 kVA UPS module and installed in any cabinet or mechanical support provided by the user. The power terminals (input, output, battery) are connected by harting connectors, ensuring simplicity and operating safety during insertion/removal, protection against electrical contacts and immunity from environmental conditions typical of industrial environments (dust, humidity, suspended chemical particles).
The removal and replacement of a faulty module or the addition into the system of a further UPS module to increase available power or redundancy can be carried out easily by the operator responsible for the system.

COMPLETE FLEXIBILITY

Multi Guard Industrial is the ideal solution for industrial environments in which the UPS must adapt to the various

requirements typical of this application. Aside from the distinction between single-phase and three-phase output voltages, the UPS module can be used as a standalone unit or in a parallel configuration; by simply adding the parallel configuration board in the slot on the front of the module, the UPS can grow as requirements demand (from 20 to 160 kVA). Multi Guard Industrial ensures horizontal scalability that minimises the system footprint, the user can thus have power capabilities from 20 to 80 kVA without increasing the footprint. This is particularly advantageous when the system is installed in environments with space limitations (e.g. containers, historic buildings, sites spread out over a territory). Each UPS is equipped with a graphic display, a programmable relay board slot and two slots for communications interfaces, all situated at the front for quick and organised installation.
Every UPS module in the Multi Guard Industrial range is completely independent with regards to the control and management of the operator interfaces; this facilitates all monitoring, control and fault-detection operations, ensuring increased reliability in that any malfunctions in parts or accessory will not propagate through the entire system. Multi Guard Industrial is a UPS that uses many components also used in the Multi Sentry range; in particular the display and navigation menus are the same: this allows for rapid and intuitive access to information as well as simplified management of the spare parts in storage.



Detail of protective devices and disconnectors.

STANDALONE VERSION:

Different from the cabinet version, the standalone system is supplied with input, bypass line, output and battery connectors with loose cables three metres in length and filter boards that the installation technician must position inside the destination cabinet or near the module.

OPTIONS

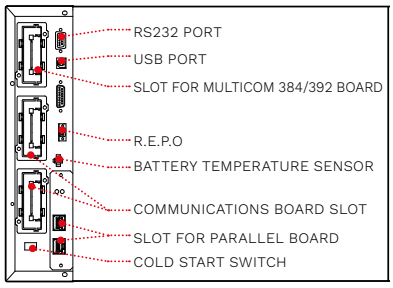
SOFTWARE
PowerShield[3]
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 384
MULTICOM 411
MULTI I/O
MULTIPANEL

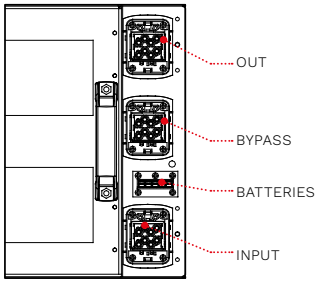
PRODUCT ACCESSORIES
Battery temperature sensor
Powerful battery charger
Programmable relay board Multicom 392
IP rating IP31/IP42
Internal batteries
MST range battery cabinets

DETAILS

Right front panel (UPS MODULE)



Left front panel (UPS MODULE)



MODEL	GMI single-phase output (GMI M) from 20 kVA to 160 kVA	GMI three-phase output (GMI T) from 20 kVA to 160 kVA
INPUT		
Rated voltage [V]	380 / 400 / 415, three-phase + N and 220 / 230 / 240 single-phase + N (input voltage recognition function)	
Voltage tolerance [V]	230 / 400 ±20% @ full load[1]	
Frequency tolerance [Hz]	40-72	
Power factor	>0.99	
THDI	<3%	
BYPASS		
Rated voltage [V]	220 / 230 / 240, single-phase + N	380 / 400 / 415, three-phase + N
Voltage tolerance [V]	180 / 264 (selectable) referring to neutral phase	
Rated frequency [Hz]	50 or 60	
Frequency tolerance [Hz]	±5% (selectable)	
Overload	125% for 60 min.; 150% for 18 min.	
OUTPUT		
Voltage [V]	220 / 230 / 240, single-phase + N (selectable)	380 / 400 / 415, three-phase + N (selectable)
Voltage stability	≤1%	
Frequency [Hz]	50 / 60	
UPS MODULE		
Power [kVA/kW]	20 / 18	
Output power [kVA]	20 x number of modules, up to a maximum of 8 (max. 160)	
BATTERIES		
Layout	independent batteries for each UPS module or shared by the UPS system	
Type	VRLA AGM/GEL	
Recharge time	6 h	
OVERALL SPECIFICATIONS		
Noise level at 1 m (ECO Mode) [dBA]	from ≤52 to ≤70	
Ambient temperature for the UPS	0 °C - +40 °C	
Range of relative humidity	20% - 90% non-condensing	
Storage temperature	-15 °C +55 °C	
UPS module weight [kg]	64	
UPS module dimensions (WxDxH) [mm]	620x745x320	
GMI cabinet weight [kg]	200 (UPS modules excluded)	
GMI cabinet dimensions (WxDxH) [mm]	850x850x2060	
Modular battery cabinet dimensions (WxDxH) [mm]	9 battery shelves, 36 battery modules 597x1003x2000	
ECO Mode efficiency	up to 99%	
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111	
Moving the UPS	Pallet jack (UPS cabinet) - 2 operators (UPS module)	

[1] *For wider tolerance conditions apply.*
NOTE: The GMI UPS is also compatible with the battery cabinets in the Multi Sentry range (MST)

UPS for North America (UL standards)

Options and accessories compatibility table

Easily identify the UPS that supports the software and accessories your installation requires.

UPS	Software		Specifications									
	POWERSHIELD³ Shutdown software	POWERNETGUARD Inventory manager software	120 V 1/1	208 V 2/2	208 V 3/3	480 V 3/3	Manual bypass	Internal battery	Parallelable	Transformer-free	Tr ansformer based	
SENTINEL RT 1-3 kVA	●	●	●					●		●		
SENTINEL RT 6-10 kVA	●	●		●				●		●		
SENTRYUM S3U	●	●			●		Ⓐ	●	●	●		
MASTER HP UL	●	●				●	Ⓒ		●		●	
MASTER HP FC UL	●	●				Ⓑ			●		●	

Key

Ⓐ	S3U SW
Ⓑ	480 V - 60 Hz/400 V - 50 Hz
Ⓒ	depending on the version
std	standard

Ports					Accessories				info
USB	RS232	Dry contact	Slot	EPO	NETMAN 104 UL Card - Ethernet -SNMP v1,v3	NETMAN 204 UL Card - Ethernet -SNMP v1,v3	MULTICOM 384 UL Card - Relay I/O Interface	MULTICOM 392 UL Card - relay 3 In/8 Out	UPS page
●	●	-	1	●	●				126
●	●	-	1	●	●				130
●	●	std	2	●		●	●	●	134
	●	std	2	●		●			138
	●	std	2	●		●			142

SOHO

INDUSTRY

EMERGENCY

E-MEDICAL

Sentinel RT

USB
plug

Plug & Play
installation

True-ON LINE UPS System
1-3 kVA/kW

HIGHLIGHTS

- **Power factor 1 kW = kVA**
- **Simplified installation**
- **High quality output voltage**
- **High battery reliability**

SENTINEL RT is designed to power critical loads such as servers, storage systems, telephone equipment, medical systems and industrial applications.
The UPS is ideal for Blade servers with an input power factor close to Unity (1).
The UPS has can be used as tower UPS or within a rackmount cabinet, and takes up only 2U in height.
SENTINEL RT has a modern design, choice of functional formats, and represents the state-of-the-art technology from the Riello UPS research & development team.
The UPS can achieve an ON LINE operating efficiency of 92%.
For critical business continuity applications requiring long runtimes, SENTINEL RT can be installed with battery extension packs (ER models) with their own internal battery chargers to maintain sensible recharge times. The UPS also incorporates the Riello UPS 'power-off' function found in other ECO Line UPS. SENTINEL RT is designed to save energy when no loads are connected.

SIMPLIFIED INSTALLATION

Tower or Rackmount UPS: SENTINEL RT can be installed as tower or 19" rack mount UPS, with a front mimic panel that can be turned through 90º to suit the installation.

- Noise Free Operation (<40dBA): the UPS can be installed in any environment thanks to its PWM digitally-controlled high frequency inverter;
- High Temperature Operation: UPS components are sized for high

temperature operation up to 104 °F (40 °C) and are not therefore stressed during normal operational environments.

REDUCED MANAGEMENT COSTS

SENTINEL RT can be programmed remotely via software or set manually from the front mimic panel to operate in a range of energy saving operating modes:

- ON LINE: maximum power protection and output voltage waveform quality (efficiency up to 92%);
- ECO Mode: to increase efficiency (up to to 98%), allows for the selection of LINE INTERACTIVE technology (VI) to power low priority loads from the mains supply;
- SMART ACTIVE: the UPS automatically decides upon the operating mode (VI or VFI) based on the quality of the mains power supply;
- STANDBY OFF: the operating mode in which the UPS functions as an emergency device. While power is present the UPS does not intervene. In the event of a blackout, the necessary power is provided by the UPS.

HIGH QUALITY OUTPUT VOLTAGE

- Tower or Rackmount UPS: SENTINEL RT can be installed as tower or 19" rackmount UPS, with a front mimic panel that can be turned through 90º to suit the installation;
- Noise Free Operation (<40dBA): the UPS can be installed in any environment thanks to its PWM digitally-controlled high frequency inverter;
- High Temperature Operation: UPS components are sized for high temperature operation up to 104 °F (40 °C) and are not therefore stressed during normal operational environments;
- EnergyShare: Premium Dual output sockets can be programmed to disconnect less critical loads when the mains power fails.

HIGH LEVELS OF BATTERY RELIABILITY

- Automatic and manual battery tests;
- Batteries are 'hot-swappable' and user replaceable.

EMERGENCY FUNCTION

This configuration ensures the operation of those emergency systems that require continuous, reliable and long-lasting power supply in the event of a mains power failure, such as emergency lighting, fire detection/extinguishing systems and alarms. When the mains power supply fails, the inverter begins powering the loads with a progressive start up (Soft Start) in order to prevent overload.

OTHER FEATURES

- Output voltage can be selected using display;
- Auto-restart when mains power returns (programmed via software);
- Standby on Bypass: when the machine is switched off, it automatically goes into bypass operation with batteries charging;
- Power-Off with zero load connected to save energy;
- Low battery warning;
- Power-on delay;
- Full microprocessor control;
- Automatic bypass without interruption;
- Status, measurements and alarms available on the front panel mimic panel and LCD;
- UPS fi rmware upgrade via PC platform;
- Input protection including a user reset thermal switch (up to 1500VA);
- Back-feed protection;
- Manual option to switch to bypass.

ADVANCED COMMUNICATIONS

SENTINEL RT offers maximum flexibility for integrations with any communication system.

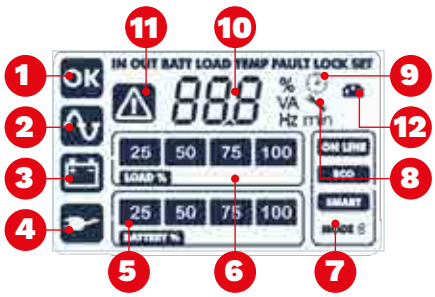
- Multiplatform communication for all operating systems and network environments, Powershield[3] supervision and shut-down software for Windows, Mac OS X operating systems and other Unix operating systems;
- UPS Tools configuration and personalisation software supplied as standard;
- RS232 serial port and opto-isolated contacts;
- USB port;
- Slot for TCP/IP, SNMP communication card.

UNITY POWER FACTOR

- More power delivered;
- More real output power (W).

2-YEAR WARRANTY

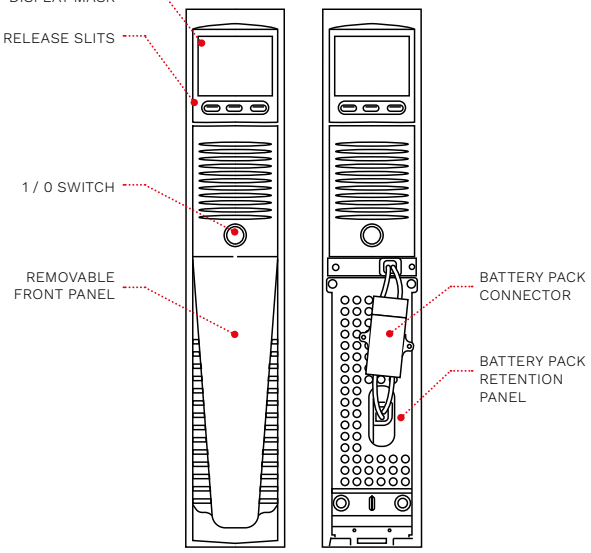
A. "SEL" Button
B. "ON" Button
C. "STANDBY" Button



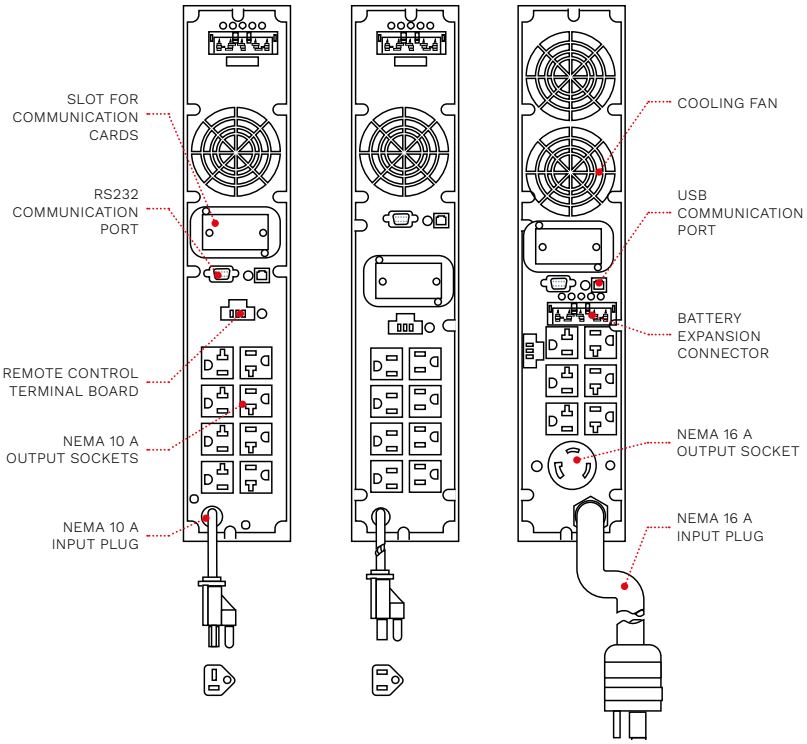
1. Regular operating mode
2. Network operating mode
3. Battery operating mode
4. Load powered by bypass
5. Battery charge level indicator
6. Load level indicator
7. Configuration area
8. Maintenance required indicator
9. Timer indicator
10. Measurement display area
11. Standby / alarm indicator
12. EnergyShare indicator

DETAILS

Front view



Rear view



MODELS	SDH 1000 RT	SDH 1500 RT	SDH 2000 RT	SDH 3000 RT
INPUT				
Rated power [VA]	1000	1500	2000	3000
Rated voltage [V]	100 / 110 / 115 / 120 / 127			
Voltage tolerance [V]	80 <Vin <150 @ 100% Load			
Frequency [Hz]	60			
Frequency tolerance [Hz]	60 ±5%			
Power Factor	>0.98			
Current distortion	≤6%			
BYPASS				
Voltage tolerance [V]	85 / 140			
Frequency tolerance [Hz]	Frequency selected (from ±0 to ±5 configurable)			
Number phases	1			
OUTPUT				
Rated power [kVA]	1	1.5	2	3
Active power [kW]	1	1.5	2	3
Number phases	1			
Crest factor [Ipeak/Irms]	3:1			
Waveform	Sinewave			
Frequency [Hz]	Can be selected: 60 or self-learning			
Voltage distortion with non linear load	≤4%			
Voltage distortion with linear load	≤2%			
OVERLOAD TIMES				
100% <Load <110%	1 min			
125% = Load <150%	4 sec.			
Load >150%	0.5 sec.			
BATTERIES				
Type	VRLA AGM lead, maintenance-free			
Typical recharge time	2-4 h			
DC Voltage	36VDC		72VDC	
ENVIRONMENTAL				
Maximum altitute [ft/m]	20000 / 6000			
Color	Black			
Communications	USB / DB9 with RS232 and contacts / Slot for communication interface			
Safety compliance	UL1778:2014 and CSA C22.2 No. 107.3-14			
EMC conformance	CFR 47 FCC Part 15, Subpart B, Class A 2016			
Accessories provided	Power cable, serial cable, USB cable, safety manual, quick start, software downloadable			
Protection rating	IP20			
Surge capability [joule]	300			
Certification	Certified by TUV per UL 1778			
LINE-INTERACTIVE/SMART ACTIVE efficiency	98%			
Noise Level	<40 dB(A) at 3.3 ft / 1 m			
Operating temperature	32 – 104 °F / 0 – 40 °C			
Relative humidity	<95% without condensation			
OTHER				
Net Weight [lbs/kg]	37.48 / 17	39.68 / 18	58.42 / 26.5	69.44 / 31.5
Gross weight [lbs/kg]	45.19 / 20.5	47.40 / 21.5	67.24 / 30.5	79.36 / 36
Dimensions (WxDxH) [inches/mm]	3.42x16.73x17.71 / 87x425x450		3.42x24.60x17.71 / 87x625x450	

SOHO

INDUSTRY

EMERGENCY

E-MEDICAL

Sentinel RT

USB plug

Plug & Play installation

True-ON LINE Rack/Tower UPS System
6-10 kVA/kW

HIGHLIGHTS

- **Power factor 1 kW = kVA**
- **Simplified installation**
- **High quality output voltage**
- **High battery reliability**

SENTINEL RT is designed to power critical loads such as servers, storage systems, telephone equipment, medical systems and industrial applications.
The UPS is ideal for Blade servers with an input power factor close to Unity (1).
The UPS has can be used as tower UPS or within a rackmount cabinet, and takes up only 2U in height.
SENTINEL RT has a modern design, choice of functional formats, and represents the state-of-the-art technology from the Riello UPS research & development team.
The UPS can achieve an ON LINE operating efficiency of 92%.
For critical business continuity applications requiring long runtimes, SENTINEL RT can be installed with battery extension packs (ER models) with their own internal battery chargers to maintain sensible recharge times.
The UPS also incorporates the Riello UPS 'power-off' function found in other ECO Line UPS. SENTINEL RT is designed to save energy when no loads are connected.

SIMPLIFIED INSTALLATION

Tower or Rackmount UPS: SENTINEL RT can be installed as tower or 19" rack mount UPS, with a front mimic panel that can be turned through 90º to suit the installation.

- Noise Free Operation (<40 dBA): the UPS can be installed in any environment thanks to its PWM digitally-controlled high frequency inverter.
- High Temperature Operation: UPS components are sized for high

temperature operation up to 104 °F (40 °C) and are not therefore stressed during normal operational environments.

REDUCED MANAGEMENT COSTS

SENTINEL RT can be programmed remotely via software or set manually from the front mimic panel to operate in a range of energy saving operating modes:

- ON LINE: maximum power protection and output voltage waveform quality (efficiency up to 92%);
- ECO Mode: to increase efficiency (up to to 98%), allows for the selection of Line Interactive technology (VI) to power low priority loads from the mains supply;
- SMART ACTIVE: the UPS automatically decides upon the operating mode (VI or VFI) based on the quality of the mains power supply;
- STANDBY OFF: the operating mode in which the UPS functions as an emergency device. While power is present the UPS does not intervene. In the event of a blackout, the necessary power is provided by the UPS.

HIGH QUALITY OUTPUT VOLTAGE

- Tower or Rackmount UPS: SENTINEL RT can be installed as tower or 19" rackmount UPS, with a front mimic panel that can be turned through 90º to suit the installation;
- Noise Free Operation (<40dBA): the UPS can be installed in any environment thanks to its PWM digitally-controlled high frequency inverter;
- High Temperature Operation: UPS components are sized for high temperature operation up to 104 °F (40 °C) and are not therefore stressed during normal operational environments;
- EnergyShare: Premium Dual output sockets can be programmed to disconnect less critical loads when the mains power fails.

HIGH LEVELS OF BATTERY RELIABILITY

Automatic and manual battery tests. Batteries are 'hot-swappable' and user replaceable.

EMERGENCY FUNCTION

This configuration ensures the operation of those emergency systems that require continuous, reliable and long-lasting power supply in the event of a mains power failure, such as emergency lighting, fire detection/extinguishing systems and alarms. When the mains power supply fails, the inverter begins powering the loads with a progressive start up (Soft Start) in order to prevent overload.

OTHER FEATURES

- Output voltage can be selected using display;
- Auto-restart when mains power returns (programmed via software);
- Standby on Bypass: when the machine is switched off, it automatically goes into bypass operation with batteries charging;
- Power-Off with zero load connected to save energy;
- Low battery warning;
- Power-on delay;
- Full microprocessor control;
- Automatic bypass without interruption;
- Status, measurements and alarms available on the front panel mimic panel and LCD;
- UPS firmware upgrade via;
- PC platform;
- Input protection including a user reset thermal switch (up to 1500VA);
- Back-feed protection;
- Manual option to switch to bypass.

ADVANCED COMMUNICATIONS

SENTINEL RT offers maximum flexibility for integrations with any communication system.

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- UPS Tools configuration and personalisation software supplied as standard;
- RS232 serial port and opto-isolated contacts;
- USB port;
- Slot for TCP/IP, SNMP communication card.

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- More real output power (W).

2-YEAR WARRANTY

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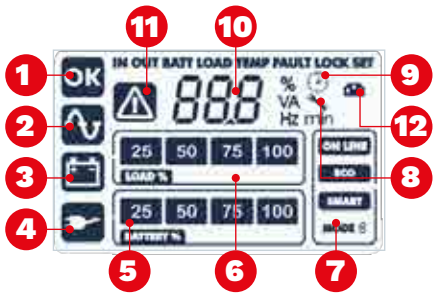

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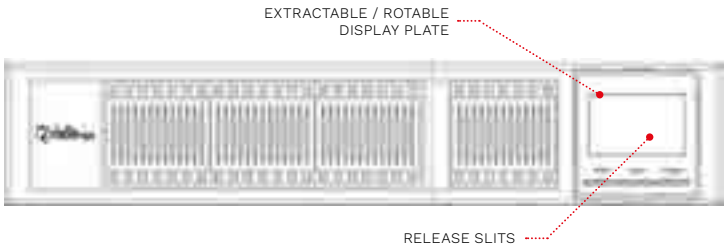
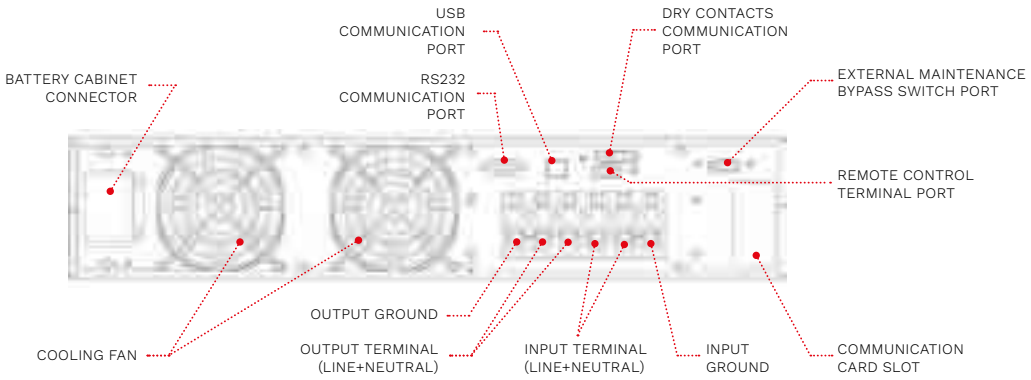
DETAILS

Front view



Rear view



MODEL	UPS Cabinet	Battery Cabinet QTY	Transformer cabinet for 120V/127V output	Dimensions (in tower configuration) W x D x H (in/mm)	Weight (lb/kg)
SDH-6000-RT-ER-C0	Yes	0	Yes	9(5U)x25x19 / 218(5U)x438x645	181 / 82
SDH-10000-RT-ER-C0	Yes	0	Yes	9(5U)x25x19 / 218(5U)x438x725	249 / 113
SDH-6000-RT-ER-C1	Yes	1	Yes	14(8U)x26x19 / 349(8U)x438x645	302 / 137
SDH-10000-RT-ER-C1	Yes	1	Yes	14(8U)x29x19 / 349(8U)x438x725	370 / 167
SDH-6000-RT-ER-C2	Yes	2	Yes	19(11U)x26x19 / 480(11U)x438x645	423/ 191
SDH-10000-RT-ER-C2	Yes	2	Yes	19(11U)x29x19 / 480(11U)x438x725	492 / 223
SDH-6000-RT-ER-C3	Yes	3	Yes	25(14U)x26x19 / 611(14U)x438x645	545 / 247
SDH-10000-RT-ER-C3	Yes	3	Yes	25(14U)x29x19 / 611(14)x438x725	613 / 278
SDH-6000-RT-ER-C4	Yes	4	Yes	30(17U)x26x19 742(17U)x438x645	666 / 302
SDH-10000-RT-ER-C4	Yes	4	Yes	30(17U)x29x19 747(17U)x438x725	734 / 333

MODELS	SDH 6000 RT	SDH 10000 RT
INPUT		
Rated Power [VA]	6000	10000
Rated voltage [V]	208 / 220 / 230 / 240	
Voltage tolerance [V]	110 <Vin <300 @ 60% LOAD / 176 <Vin <300 @ 100% Load	
Frequency [Hz]	50 / 60	
Frequency tolerance [Hz]	60 ±5%	
Power Factor	>0.98	
Current distortion	≤6%	
BYPASS		
Voltage tolerance [V]	176 / 276	
Frequency tolerance [Hz]	Frequency selected (from ±0 to ±5 configurable)	
Number phases	1	
OUTPUT		
Rated power [kVA]	6	10
Active Power [kW]	6	10
Voltage [V] option UPS	208 / 220 / 230 / 240	
Voltage [V] option with ISO	240 plus neutral for a split of 120 / 120 or 230 plus neutral for a split 115 / 115	
Number phases	1	
Crest factor [Ipeak/Irms]	3:1	
Waveform	Sinewave	
Frequency [Hz]	Can be selected: 60 or self-learning	
Voltage distortion with non linear load	≤4%	
Voltage distortion with linear load	≤2%	
OVERLOAD TIMES		
100% <Load <110%	10 min.	
125% = Load <150%/130%	1 min.	
Load >150%/130%	1 min.	
BATTERIES		
Type	VRLA AGM lead, maintenance-free	
Typical recharge time	6 h	
DC Voltage	240 VDC	
ENVIRONMENTAL		
Maximum altitute [ft/m]	20000 / 6000	
Color	Black	
Communications	USB / DB9 with RS232 and contacts / Slot for communication interface	
Safety compliance	UL1778:2014 and CSA C22.2 No. 107.3-14	
EMC conformance	CFR 47 FCC Part 15, Subpart B, Class A 2016	
Accessories provided	Power cable, serial cable, USB cable, safety manual, quick start, software downloadable	
Protection rating	IP20	
Surge capability [joule]	660	
Certification	Certified by TUV per UL 1778	
LINE-INTERACTIVE/SMART ACTIVE efficiency	98%	
Noise Level	<40 dB(A) at 3.3 ft / 1 m	
Operating temperature	32 – 104 °F / 0 – 40 °C	
Relative humidity	<95% without condensation	
OTHER		
Weight [lbs/kg]	37.47 / 17	44 / 20
Dimensions (WxDxH) [inches/mm]	3.4x17.24x24 / 87x438x610	

EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

Sentryum

VFI TYPE ONLINE

Tower

ECO LEVEL 6

USB plug

Service 1st start

c UL us LISTED

3:3 10-30 kVA
208 V, 60 Hz

sentryum

HIGHLIGHTS

- **Efficiency up to 95.5%**
- **High power availability**
- **Outstanding battery care**
- **Compactness**
- **Maximum reliability**
- **Flexibility of use**
- **Graphic touch screen display**

The rapid evolution of IT technologies, augmented focus on environmental matters and complexity of critical applications are demanding more flexible, efficient, secure and interconnected power protection solutions.
The Sentryum 10-30 kVA @ 208 V offers the best combination of power availability, energy efficiency and global performance ensuring installation and running cost savings. It is the very latest Riello UPS development resulting in a third-generation transformer-free UPS, originally introduced into the market over twenty years ago. The Sentryum series is a transformer-free UPS available in 10-20-30 KVA with three-phase input and output. Sentryum is designed and built using state-of-the-art technology and components. It applies the advanced technologies such as DSP (Digital Signal Processor), dual core microprocessor, three-level inverter circuits and resonant control to provide maximum protection to the critical loads with no impact on downstream systems, whilst maintaining optimised energy savings. With a unique control system, it makes it possible to reduce the inverter output harmonic voltage distortion and provide rapid response to all load variations, ensuring an outstanding sinewave form during all conditions. Furthermore, Riello UPS' technological advances in digital control and power components contribute to minimise the impact on the grid. Sentryum provides the solution to installation problems in systems where the power

supply has limited power available, when the UPS is supported by a generator or where there are compatibility problems with loads that generate harmonic currents.

EXTENSIVE RANGE OF SOLUTIONS

Sentryum has been conceived to optimise the specific requirements by enhancing the installation flexibility. Riello UPS offers Sentryum in two different frame solutions the S3U model with only one switch and the S3U SW with four switches.

COMPACTNESS

Modern guidelines and sustainable best practices direct us to conceive and design UPS with particular focus on the entire product life cycle, therefore applying ultimate but resilient technologies, recyclable materials and miniaturisation of assemblies whilst ensuring the systems global reliability, which is pivotal for any UPS.

HIGH EFFICIENCY

Sentryum is a true ON LINE double-conversion UPS system providing the very highest levels of power availability, flexibility and unrivalled energy efficiency with superior performance for any small Data Centre and mission critical applications. Thanks to the three-level IGBT inverter topology (constructed using modules rather than discrete components) and innovative digital control, the Sentryum provides up to 95.5% overall efficiency, whilst maintaining a reduced number of components, connections and ribbon cables, which increases the overall system reliability, thanks to a higher MTBF. Riello UPS' advanced average current mode digital PFC control and State-of-the-art three-level NPC inverters working at high frequency (18 kHz), contributes to minimise the UPS's impact on the grid and hence reducing the overall operational costs and energy bills. Sentryum applies a zero impact onto its power source, whether this is from the mains power supply or a generator, this results in:

- very low input current distortion <3%;
- near unity input power factor 0.99;
- power walk-in function that ensures progressive rectifier start up;
- start up delay function, to sequentially restart the rectifiers once the mains power supply is restored if there are several UPS within the overall system;
- Sentryum provides a filtering and power factor correction function within the power network upstream of the UPS.

HIGH POWER AVAILABILITY

Sentryum's design delivers full power up to 40 °C ambient temperature. Furthermore, Sentryum's advanced digital control makes it possible to deliver up 270% inverter current for 200 msec. and 150% for 300 msec. The high overcurrent availability enables the system to deal with sudden peak loads (without static bypass intervention) and provide the short circuit current if required during operation on battery. The innovative input stage design provides extremely high battery recharging current whilst at the same time an energy efficient conversion process during battery operation to reduce the power wasted and to increase the autonomy time compared to legacy DC/AC converters.

SMART BATTERY MANAGEMENT

Proper battery care is critical to ensure the correct operation of the UPS during emergency conditions. The Riello UPS Smart Battery Management (SBM) consists of a series of features and capabilities to optimise battery management and obtain the best performance and operating life possible. Battery recharging: Sentryum is suitable for use with conventional hermetically sealed lead-acid (VRLA), AGM and GEL batteries, Open Vent and Nickel Cadmium batteries. Superior battery charging availability up to 25 A for all models, meaning that the Sentryum can be utilized within any extended battery autonomy application.

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;
- Cyclical recharge system to reduce electrolyte consumption and lengthen the life of VRLA batteries.

Recharge voltage compensation based on ambient temperature to prevent excessive battery charging 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 o reduced battery performance.
Ripple current: recharge ripple current (residual AC component at low frequency) is one of the main causes of reduced reliability and battery life. Using a high frequency battery charger, Sentryum 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.

Graphic touch screen display

MAXIMUM RELIABILITY AND AVAILABILITY

Distributed parallel configuration of up to 8 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).
Advanced technology and use of high performance components, allows Sentryum to provide exceptional performance and efficiency from a very compact size:

- The smallest overall footprint is only 0.45 sqm for Sentryum 30 kVA/kW with 8 minutes back-up time;
- The input power stage (IGBT rectifier) ensures an input power factor close to 1 with extremely low current distortion, avoiding the need for bulky and expensive filters;
- Extremely low output THDV under any circumstances provides a perfect sinewave and therefore a reliable power supply for the load preventing and disturbances from affecting the network users;
- More energy to face sudden load increase like for example 110% for 60 minutes or 125% for 10 minutes or clear output short circuits due to appliance failures downstream;
- Smart ventilation principle, Sentryum manages the fan speed and airflow in accordance with the room temperature and load level. This preserves the lifespan of the fans, whilst at the same time reduces noise levels and the overall power consumption due to unnecessary UPS ventilation. Furthermore, the overall UPS high efficiency reduces the losses and therefore the need for high levels of ventilation compared to older legacy UPS. In addition, this results in a decrease in the overall noise level at the nominal load and a reduction in the number of fans required, which significantly benefits the operating and maintenance costs.

FLEXIBILITY

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

- Two modules with or without switches for better matching the customer requirements;
- ON LINE, ECO, SMART ACTIVE and STANDBY OFF operating modes.
- Frequency converter mode;
- Cold Start to switch on the UPS even when there is no mains power present;
- Parallel configuration up to 8 units;
- 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;
- Dual input mains power supply;
- Different sized battery cabinets and capacities, for extended runtimes.

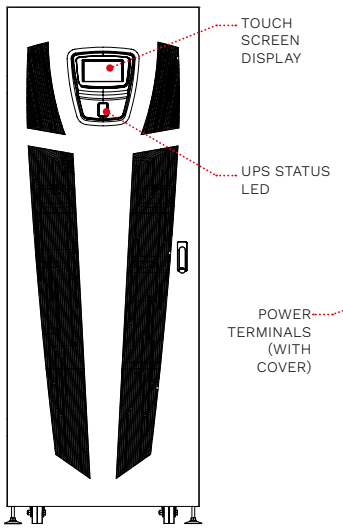
ADVANCED COMMUNICATIONS

Sentryum is equipped with a coloured graphic touch screen display providing UPS information, measurements, operating states and alarms in different languages. The default screen displays the UPS status, graphical indication of the energy path through the UPS and the operational condition of the various assemblies (rectifier, batteries, inverter, bypass) within the UPS.
Furthermore, the user interface includes a UPS status led bar which delivers immediate and clear information regarding the overall status of the UPS by changing the colour (blue, yellow and red) according with the operating mode and condition.

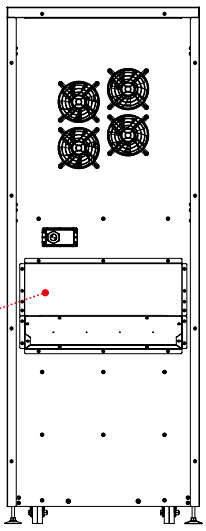
- Advanced multi-platform communications for all operating systems and network environments: PowerShield[3] monitoring and shutdown software included for Windows operating systems 10, 8, 7;
- RS232 serial on RJ10 connector and USB ports;
- 2 slots for the installation of optional communications accessories such as network adaptors and volt free contacts etc.;
- Embedded contact interface which includes 5 programmable inputs and 4 programmable outputs;
- REPO Remote Emergency Power Off for switching off the UPS via a remote emergency button;
- Graphic display panel for remote connection.

DETAILS

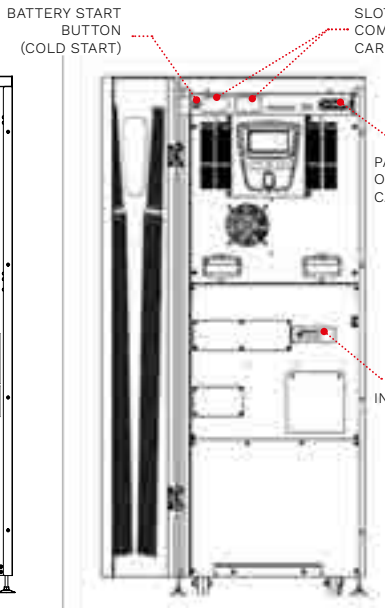
S3U and S3U SW (front)



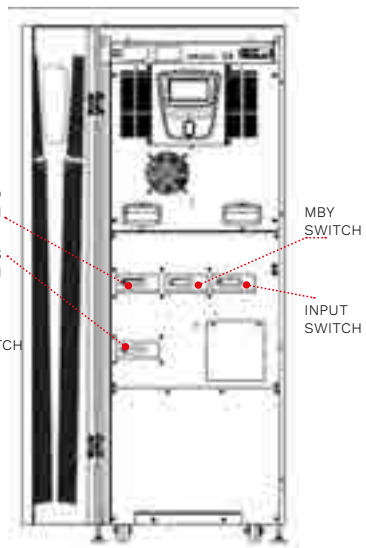
S3U and S3U SW (rear)



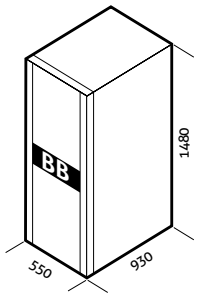
Model S3U (front)



Model S3U SW (front)



BATTERY CABINET

MODELS	BB 1500 240 – B1 / BB 1500 240 – N1
UPS MODELS	S3U 10-20-30/ S3 10-20-30 SW
Dimensions (mm)	

OPTIONS

SOFTWARE
PowerShield[3]
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 384

PRODUCT ACCESSORIES
Battery temperature sensor
MULTICOM 392
Versions with other operating voltages 208 V/480 V, 480 V/208 V, 480 V/480 V

MODELS	S3U 10	S3U 20	S3U 30
INPUT			
Rated voltage [V]	208 / 220 three-phase + N		
Voltage tolerance [V]	+15% -20% [1]		
Frequency tolerance [Hz]	45 to 65		
Power factor @ full load	0.99		
Current distortion [THDI]	≤3%		
BYPASS			
Rated voltage [V]	208 - 220 three-phase + N		
Voltage tolerance (Ph-N) [V]	5 to +15% (adjustable)		
Rated frequency [Hz]	60		
Frequency tolerance	±6% (selectable)		
Bypass overload	110% infinite, 125% for 60 min., 150% for 10 min., 200% for 1 min.		
OUTPUT			
Nominal power [kVA]	10	20	30
Active power [kW]	9	18	27
Power factor	0.9 up to up to 104 °F / 40 °C		
Rated voltage [V]	208 / 220 three-phase + N		
Nominal frequency [Hz]	60		
Frequency stability on battery operation	0.01%		
Voltage stability	±1%		
Dynamic stability	±3%		
Voltage distortion	≤1% wih ≤1.5% with non-linear load		
Overload	110% for 60 min., 125% for 10 min., 150% for 1 min.		
BATTERIES			
Type	VRLA AGM/GEL/NiCd		
Recharging method	One level, Two level, Cyclic recharge (selectable)		
OVERALL SPECIFICATIONS			
Weight without batteries [lb/kg]	324 / 147	324 / 147	340 / 154
Dimensions (WxDxH) [inches/mm]	21.7x32.7x59.0 / 550x830x1500		
Communications	UPS status led bar - Graphic touch screen diplay - 2 slots for communications interface USB - RS232 Contact interface with 5x opto insulated Input and 4x Output relay		
Operating temperature	32 – 104 °F / 0 – 40 °C		
Range of relative humidity	5-95% without condensing		
Colour	Pantone Black C		
Standards	UL 1778 5th Edition CSA C22.2 107.3 -05 and Annex NNN, UL 60950-11, FCC Part 15 Subpart J class A – IEC 62040-3		
Moving the UPS	Castors/pallet jack		

[1] *Wider voltage tolerance acceptable with conditions applied.*

EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

Master HP UL

VFI TYPE ONLINE

Tower

ECO LEVEL 6

Service 1st start

SmartGrid ready

c UL us LISTED

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 square inches 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 Centre PUE (Power Usage Effectiveness) ratio.

OPTIONS

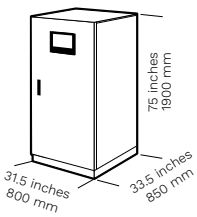
SOFTWARE
PowerShield[3]
PowerNetGuard

ACCESSORIES
NETMAN 204 UL
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
Battery temperature sensor

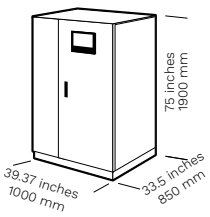
DIMENSIONS

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



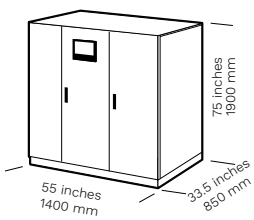
including manual bypass

MHT 160 UL
MHT 200 UL
MHT 250 UL



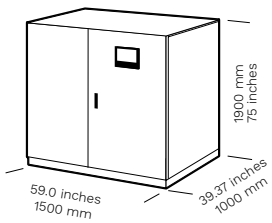
excluding manual bypass

MHT 160 UL
MHT 200 UL
MHT 250 UL

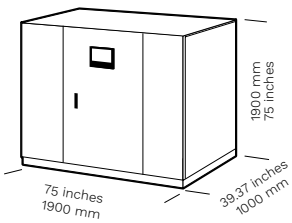


including manual bypass
Top Cable Entry cabinets

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 / 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 [lpeack/lrms]	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, Modbus, and Bacnet Protocols				
Operating temperature	32 – 104 °F / 0 – 40 °C				
Relative humidity	<95% non-condensing				
Color	Black				
Noise level at 3.3 ft / 1 m (ECO Mode) [dBA]	65			68	
IP rating	IP20				
ECO Mode efficiency	up to 98.5%				
Standards	UL Standard 1778: 2nd edition from 65 to 125 kVA, 5th 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 - 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 [lpeack/lrms]	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[1]	4961/2250[1]	4961/2250[1]
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[1]		
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				
Noise level at 3.3 ft / 1 m (ECO Mode) [dBA]	68		72		
IP rating	IP20				
ECO Mode efficiency	up to 98.5%				
Standards	UL Standard 1778: 5th 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: 5th 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				

[1] *Maintenance Bypass Switch – on option.*

EMERGENCY E-MEDICAL INDUSTRY

DATACENTRE TRANSPORT

Master HP FC UL

VFI TYPE **ON**LINE

Tower

ECO LEVEL 6

service **Service** 1st start

SmartGrid ready

c UL us LISTED

3:3 80-200 kVA

Voltage and Frequency Converter

HIGHLIGHTS

- **High efficiency**
- **IGBT-based rectifier technology**
- **Output voltage: 400 V - 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 in2 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

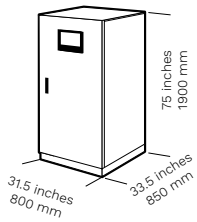
SOFTWARE
PowerShield[3]
PowerNetGuard

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

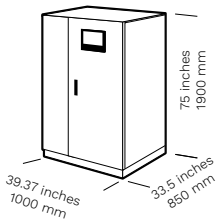
PRODUCT ACCESSORIES
Parallel configuration kit (Closed Loop)
Fully configured battery systems with appropriate autonomy

DIMENSIONS

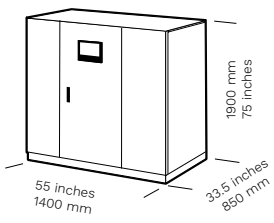
MHT FC 80 UL
MHT FC 100 UL



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
INPUT					
Rated voltage [V]	480 three-phase + N				
Frequency [Hz]	45 / 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)				
BATTERIES					
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				
OUTPUT					
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 [lpeack/lrms]	3:1				
Frequency stability on battery	0.05%				
Frequency [Hz]	50				
Overload	110% for 60 min.; 125% for 10 min.; 150% for 1 min.				
INFO FOR INSTALLATION					
Weight [lbs/kg]	1610/730	1742/790	1851/840	2138/970	2447/1110
Weight with TCE [lbs/kg]	-	-	2204/1000	2524/1145	2799/1270
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 (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				
Noise level at 3.3 ft / 1 m (ECO Mode) [dBA]	65			68	
IP rating	IP20				
Standards	UL Standard 1778: 2nd edition 80 and 100 kVA, 5th 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				

ABC
DE

CPSS
Central Power Supply Systems

EMERGENCY

Central Supply Systems

CSS

Tower

EN50171 CERTIFIED

PRODUCTS VERIFIED BY IMQ

1:1 2-10 kVA

3:1 10-20 kVA

3:3 10-600 kVA

HIGHLIGHTS

CERTIFIED COMPLIANCE WITH STANDARD EN 50171
Ideal for emergency lighting and alarm systems.

DUAL INPUT
Simplicity and safety for the periodical system operation check.

PROTECTION AGAINST BATTERY INVERSION
Protection for emergency services and safety for operators.

HIGH RECHARGE CURRENT
Reduced recharge times.

CONTINUOUS OVERLOAD OF 120%
Large power reserve.

CASING COMPLIANT WITH STANDARD EN 60598-1
High mechanical protection.

BATTERIES WITH 10 YEAR LIFE
Long battery life.

The CSS (Central Supply Systems) range by Riello UPS is certified and designed in compliance with standard EN 50171 and is therefore the ideal solution for installation in buildings subject to fire safety regulations and in particular for the power supply of emergency lighting systems. In addition the CSS range by Riello UPS is also suitable for supplying power to other emergency systems such as automatic fire extinguishing systems, alarm systems and emergency detection systems, smoke extraction equipment and carbon monoxide detection devices as well as dedicated security systems in sensitive areas.
The use of centralised supply systems (CSS) ensures a significant reduction in system set-up and maintenance costs as well as making periodical checks simpler and faster to perform.

DUAL INPUT

The Riello UPS CSS range is equipped with DUAL INPUT as standard on all models. This important feature allows the mandatory scheduled checks on system operation and autonomy to be carried out with extreme ease and in complete safety by simply operating an input switch. This switch interrupts the power supply to the machine without interrupting the bypass line, which is able to support the load in the event of test failure.

HIGH RECHARGE CURRENT AND BATTERY CARE SYSTEM

Proper battery care is critical to ensuring correct CSS operation in emergency conditions.
The Riello UPS battery care system consists of a series of features and capabilities designed to obtain the best performance, extend operating life and satisfy the recharge times imposed by

the standard. The Riello UPS CSS range is designed in compliance with standard EN 50171 and ensures high current levels are available for the batteries, allowing recharge of up to 80% of full autonomy within 12 hours.
Riello UPS CSS are suitable for use with hermetically sealed lead-acid (VRLA), AGM and GEL batteries and Open Vent and Nickel Cadmium batteries. Different charging methods are available depending on the battery type.
The recharge voltage compensation function based on temperature prevents excessive battery charges and overheating. The deep discharge protection prevents reduced battery performance and battery damage.

HIGH OVERLOAD CAPACITY

As required by standard EN 50171, the Riello UPS CSS range is designed and sized to support continuous overloads (with no time limits) up to 120% of the machine's nominal power rating.

PROTECTION AGAINST BATTERY INVERSION

Mandatory in line with standard EN 50171, protection against battery inversion ensures the safety of those carrying out maintenance operations on the devices and at the same time prevents damage to the system in the event that the batteries are inadvertently connected with the wrong polarity.

GENERAL FEATURES

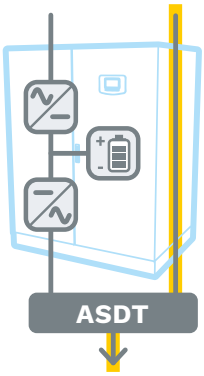
In addition to the features mentioned here, the Riello UPS CSS range has all the features of reliability and flexibility common to the UPS range it derives from, as well as offering compatibility with the main options and accessories.

OPERATING MODE

Every Riello CSS model supports all the operating modes set out and described in standard EN50171, as below:

A Changeover mode

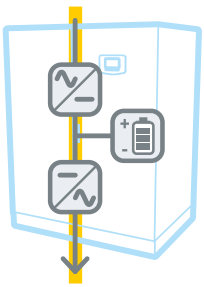
The load is supplied via the CSS bypass line (always supplied output "AS").



In the event of power supply failure the internal automatic device (ATSD) transfers the load to the inverter. The battery provides power to the inverter, ensuring the required runtime.

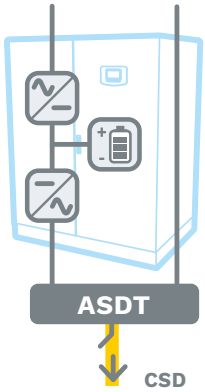
B Mode without interruption

The load is supplied constantly by the CSS inverter (always supplied output "AS"). In the event of power supply failure the battery provides power to the inverter, ensuring the required runtime with no interruptions at all.



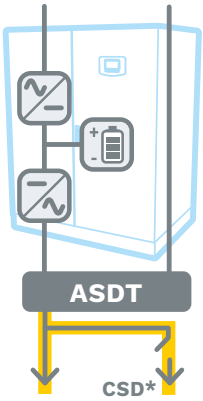
C Changeover mode with additional control switching device for control switching of the load

In addition to that described in points A and B, the equipment includes one or more switching devices (CSD), which rely on the availability of the normal power supply. On power supply failure the CSD device connects the load that up until that moment was not supplied (emergency only output "EO").



D Changeover mode with additional control switching device for partial switching of the load

Differently to that described in point C, part of the load is supplied without interruption whilst the remaining part is only supplied upon power supply failure thanks to the CSD device (always supplied + emergency only output "AS+EO").



**Requires EOS optional accessory*

Transfer Systems

MANUAL

AUTOMATIC

STATIC

DATACENTRE

Manual Transfer Switch

Multi Pass 10, 16, and 16-R

MAINTENANCE BYPASS

The Multi Pass manual bypass cuts out UPS in the event of a malfunction or fault. Multi Pass ensures that the connected equipment is automatically switched to mains power if a UPS is switched off or goes into blocked status. Multi Pass is available for rack or wall installations (box).

FEATURES

- 16 A rack version;
- 10 A and 16 A wall version;
- Standard back-feed protection;
- Automatic switching during mains failure;
- Mains power present LED indicator;
- Available with different socket standards;

(IEC, British socket, terminal boards).

MBB125A 4P, MBB100A 2P

MAINTENANCE BYPASS

Available in a single configuration that allows for manual bypass operations on any single-phase UPS from 10-20 kVA and three-phase UPS from 10-60 kVA. The device is equipped with three disconnect switches for the complete isolation of the UPS in the event of maintenance or removal, whilst guaranteeing power supply continuity to the consumers. The device is equipped with a manual bypass closure warning micro-switch to be connected to the dedicated input on the UPS in order to prevent simultaneous supply from the manual bypass and inverter.

RIELLO UPS offers a wide range of external bypasses and static switches for UPS up to 800 kVA, and for parallel systems up to 6.4 MVA.

MBB125A 4P

DATACENTRE

Multi Socket PDU

Plug & Play
installation

1:1 16 A
Automatic Transfer Switch

HIGHLIGHTS

- **8 programmable output**
- **LCD display**
- **Versatile to use**

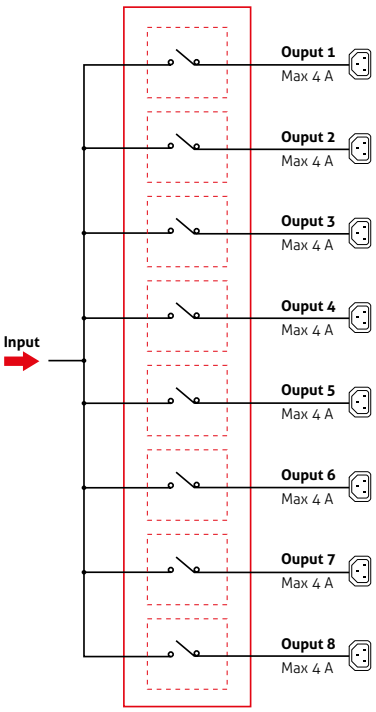
The Riello UPS Multi Socket PDU (MDU) is designed to distribute AC power from a single source to 8 outputs with advanced load monitoring and local or remote ON/OFF switching control of individual outlets. The Riello UPS Multi Socket PDU provides best-in-class power distribution, enabling data centre and information technology (IT) managers to effectively monitor and manage their rack environments.
The LCD display allows you to view the status of each output (ON / OFF), the input voltage and current, the current on each output and any alarm codes present.
At the top of the display, there are eight icons representing the status of the eight outputs: if the icon is on, the relative output is powered; if icon is off, the relative output is not powered; if the icon is blinking, the relative output is overloaded.

EXPANDABILITY

The Multi Socket PDU is equipped with an expansion slot for accessory communication boards like, for example, network board NetMan 204. For further information on the accessories available, visit the web site www.riello-ups.com.

CHARACTERISTICS

- Input current up to 16 A;
- Maximum output current for a single socket: 4 A;
- LCD display;
- Current threshold for outputs settable by user;
- Voltage and current threshold for input settable by user;
- USB and RS232 communication ports.



OPTIONS

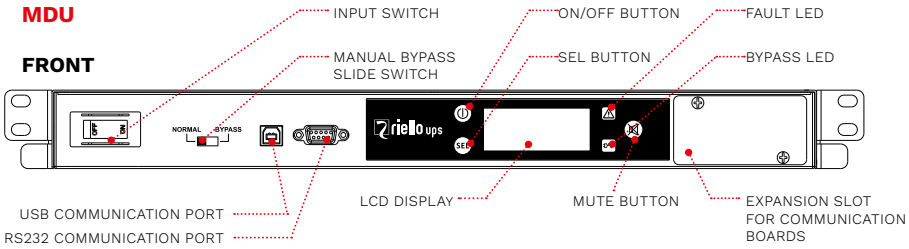
SOFTWARE
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352

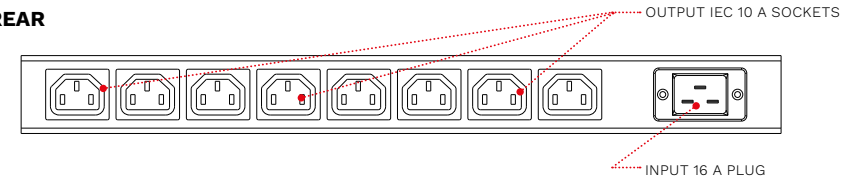
DETAILS

MDU

FRONT



REAR



MODELS	MDU
NOMINAL CURRENT (A)	**16**
INPUT	
Rated voltage [V]	230 single-phase + N
Voltage tolerance [V]	184-276 (selectable)
Switched input phases	ph+N (two poles)
Rated frequency [Hz]	50 / 60
Input sockets	1 IEC 320 (16 A)
OPERATING SPECIFICATIONS	
Switch time	<8 msec.
OUTPUT	
Rated voltage	choice of one of the two input power sources
Max. load for each output [A]	4 A on IEC-320 C13
Output sockets	8 IEC-320 C13
ENVIRONMENTAL SPECIFICATIONS	
Noise at 1 m from front (from 0 to full load) [dBA]	<25
Storage temperature	-10 °C up to +50 °C
Ambient temperature for the UPS	0 °C - 40 °C
Range of relative humidity	5-95% non-condensing
Max. installation height	1000 m at nominal power (-1% power for every 100 m above 1000 m) - Max 4000 m
Reference standard	EN 62310-1 (safety) EN 62310-2 (electro-magnetic compatibility)
OVERALL SPECIFICATIONS	
Weight [kg]	5
Dimensions (WxDxH) [mm]	19” x 250 x 1U
Colour	RAL 5004
IP rating	IP20
Communications	RS232 / USB / Slot for communication interface

DATACENTRE

Multi Switch

Plug & Play
installation

1:1 16 A
Automatic Transfer Switch

HIGHLIGHTS

- **Redundant power supply**
- **Load protection**
- **Versatile to use**

The Riello UPS Multi Switch is a high availability and versatile intelligent switch that provides redundant power to connected equipment with two AC input sources. The Riello UPS Multi Switch supplies power to the connected loads from a primary mains source. If that primary source becomes unavailable, the Riello UPS Multi Switch automatically transfers loads to the secondary source. According to the ITI (CBEMA) chart, the transfer time from one source does not impact the operation of the connected equipment as the switching occurs safely between the two input sources regardless of any phase differences. The Riello UPS Multi Switch monitors the current and provides warnings when power consumption draws near the maximum rating which helps prevent downtime to the equipment. Riello UPS Multi Switch has 8 independent IEC 10 A outlets allowing several devices can be plugged directly into the Rack without the need for an additional Rack PDU. The units have a connectivity slot which allows for LAN connection and remote management through PowerShield³ software, Web interface, SNMP, or SSH which makes the Riello UPS Multi Switch an ideal device for the IT manager who needs flexibility and protection for their IT equipment. Multi Switch provides installations with power supply continuity. Its operating principle ensures higher reliability than a single UPS, (with or without its own internal bypass).

OPERATING PRINCIPLE

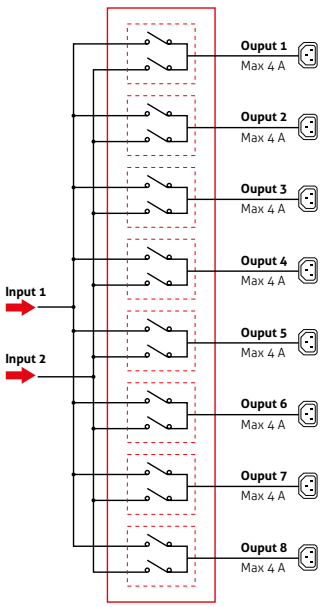
Multi Switch provides direct distribution of eight 10 A IEC outlets in a system with two input power lines (two mains inputs, or two UPS). Multi Switch is able to connect to either of the two input power lines, whilst simultaneously monitoring the power uptake.

PROTECTION AGAINST LOAD FAULTS

If one of the loads fails (e.g. short circuit), Multi Switch disconnects the group of sockets where the load is connected, thus preventing other loads from being switched off (i.e. in the event of poor discrimination of the protection devices).

PROTECTION AGAINST POWER SUPPLY FAULTS

If one of the two power sources falls outside tolerance levels, Multi Switch will transfer the load to the second power source (switching is instantaneous if the two sources are in phase). Multi Switch units switch power with no impact to IT equipment. Depending on the ITI Curve, typical power supplies will operate 20 msec. after AC voltage drops to zero. The IEEE 1100-1999 standard also references the ITI curve. The SSI (Server System Infrastructure) standard recommends a hold-up time for power supplies to be a minimum of 21 msec. for a voltage range of 100-240 V. Multi Switch units switch sources under these industry standard times. The switching time includes the time for the built-in intelligence to determine whether the voltage and frequency are in range. Any point of failure in the electronics does not cause a drop out of the output voltage because the unit incorporates redundancy of its electronic circuitry to avoid fault tolerance.



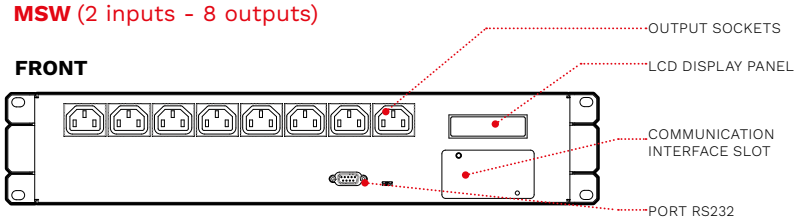
FEATURES

- Full protection for loads against mains and load failures
- Redundant power supply
- Versatile to use: Multi Switch can be powered with 2 different power supplies (including 2 UPS of different sizes/types)
- 19” cabinet installation
- LCD Display panel
- Can be connected to PowerNetGuard supervision software
- No signal connection between the Multi Switch and the power sources or loads is necessary
- Slot for communications boards: the optional network card allows for remote in network connectivity, and management through HTTP, SNMP, and SSH protocol.

DETAILS

MSW (2 inputs - 8 outputs)

FRONT



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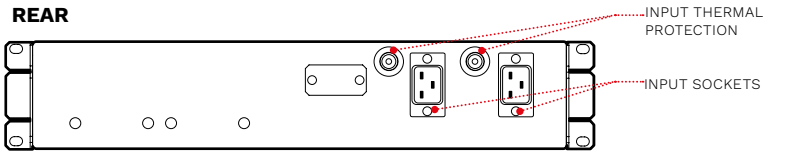


OPTIONS

SOFTWARE
PowerNetGuard

ACCESSORIES
NETMAN 204

MODELS	MSW
NOMINAL CURRENT (A)	**16**
INPUT	
Rated voltage - sources S1/S2 [V]	230 single-phase + N
Voltage tolerance [V]	180-276 (selectable)
Switched input phases	ph+N (two poles)
Rated Frequency [Hz]	50 / 60
Input sockets	2 IEC 320 (16 A)
OPERATING SPECIFICATIONS	
Transfer type	“Break Before Make” (no overlapping sources)
Transfer time following source failure	<8 msec. (S1/S2 synchronised) - 20 msec. (S1/S2 non synchronised)
OUTPUT	
Rated voltage	choice of one of the two input power sources
Max. load for each output [A]	4
Output sockets	8 IEC 320 10 A
ENVIRONMENTAL SPECIFICATIONS	
Efficiency @ full load	>99%
Noise at 1 m from front (from 0 to full load) [dBA]	<35
Storage temperature	-10 °C up to +50 °C
Ambient temperature for the UPS	0 °C - +40 °C
Range of relative humidity	5-95% non-condensing
Max. installation height	1000 m at nominal power (-1% power for every 100 m above 1000 m) - Max 4000 m
Reference standard	EN 62310-1 (safety) EN 62310-2 (electro-magnetic compatibility)
OVERALL SPECIFICATIONS	
Weight [kg]	10
Dimensions (WxDxH) [mm]	19” x 360 x 2U
Colour	RAL 5004
IP rating	IP20
Communications	RS232 / Slot for communication interface

DATACENTRE

Multi Switch ATS

Plug & Play
installation

1:1 16-30 A
Automatic Transfer Switch

HIGHLIGHTS

- **Redundant power supply**
- **Load protection**
- **Versatile to use**

Riello UPS Multi Switch ATS is a high availability intelligent switch that provides redundant power to connected equipment with two AC input sources. Multi Switch ATS supplies power to the connected loads from a primary mains source. If that primary source becomes unavailable, Multi Switch ATS automatically transfers loads to the secondary source. The transfer time from one source according the ITI (CBEMA) chart does not impact the operation of the connected equipment as the switching occurs safely between the two input sources regardless of any phase differences. Multi Switch ATS monitors the current and provides warnings when power consumption draws near the maximum rating which helps prevent downtime to the equipment.
Multi Switch ATS 16 A has 8 IEC 10 A and 1 IEC 16 A outputs, whilst Multi Switch ATS 30 A has 4 IEC 10 A, 1 IEC 16 A outputs and a terminal board allowing several devices to be plugged directly into the ATS without the need for an additional PDU.
The units have a connectivity slot which allows for LAN connection and remote management through PowerShield3 software, Web interface, SNMP, or SSH which makes the Multi Switch ATS an ideal device for the IT manager who needs flexibility and protection or their IT equipment. Multi Switch ATS provides installations with power supply continuity. Its operating principle ensures higher reliability than a single UPS, (with or without its own internal bypass).

OPERATING PRINCIPLE

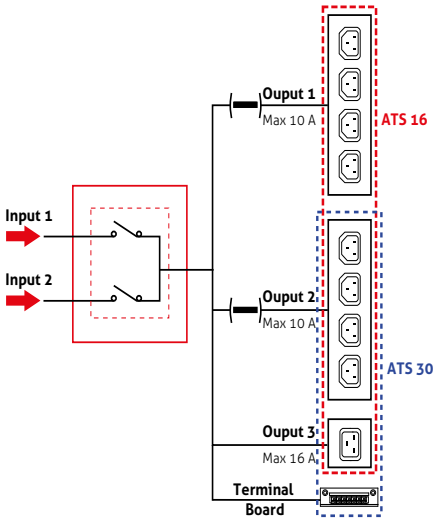
Multi Switch ATS provides direct distribution of eight 10 A IEC outputs or one 16 A IEC output in the 16 A model, four 10 A IEC outputs one 16 A IEC output or a terminal board in the 30 A model in a system with two input power lines (two mains inputs, or two UPS). Multi Switch ATS is able to connect to either of the two input power lines, whilst simultaneously monitoring the power uptake.

PROTECTION AGAINST LOAD FAULTS

If one of the loads fails (e.g. short circuit), the Multi Switch ATS disconnects the group of sockets where the load is connected, thus preventing other loads from being switched off (i.e. in the event of poor discrimination of the protection devices).

PROTECTION AGAINST POWER SUPPLY FAULTS

If one of the two power sources falls outside tolerance levels, Multi Switch ATS will transfer the load to the second power source (switching is instantaneous if the two sources are in phase).
Multi Switch ATS units switch power with no impact to IT equipment. Depending on the ITI Curve, typical power supplies will operate 20 ms after AC voltage drops to zero. The IEEE 1100-1999 standard also references the ITI curve. The SSI (Server System Infrastructure) standard recommends a hold-up time for power supplies to be a minimum of 21 ms for a voltage range of 100-240 V.
Multi Switch ATS units switch sources under these industry standard times. The switching time includes the time for the built-in intelligence to determine whether the voltage and frequency are in range. Any point of failure in the electronics does not cause a drop out of the output voltage because the unit



incorporates redundancy of its electronic circuitry to avoid fault tolerance.

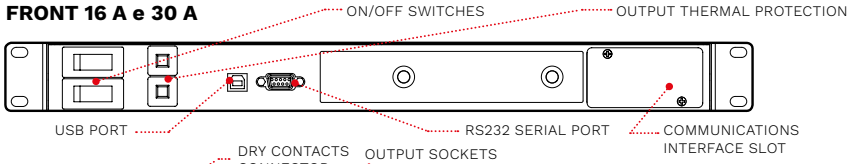
FEATURES

- Full protection for loads against mains and load failures;
- Redundant power supply;
- Versatile to use: Multi Switch ATS can be powered with 2 different power supplies (including 2 UPS of different sizes/types);
- 19” cabinet installation;
- Display panel;
- Can be connected to PowerNetGuard supervision software;
- No signal connection between the Multi Switch ATS and the power sources or loads is necessary;
- Compatible with PowerShield³ software Slot for communications boards: the optional network card allows for remote in network connectivity, and management through HTTP, SNMP, and SSH protocol.

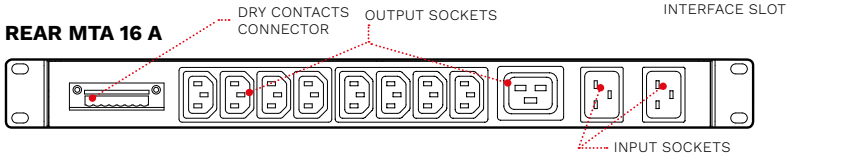
DETAILS

MTA

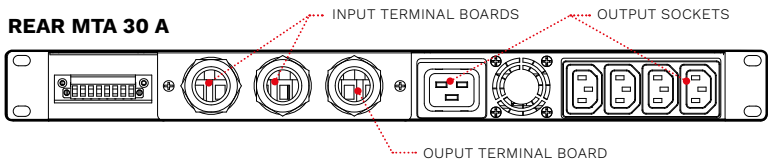
FRONT 16 A e 30 A



REAR MTA 16 A



REAR MTA 30 A



OPTIONS

SOFTWARE
PowerShield³

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352

MODELS	MTA 16	MTA 30
NOMINAL CURRENT (A)	**16**	**30**
INPUT		
Rated voltage - sources S1/S2 [V]	230 single-phase + N	
Voltage tolerance [V]	180-276 (selectable)	180-264 (selectable)
Switched input phases	ph+N (two poles)	
Rated Frequency [Hz]	50 / 60	
Input sockets	2 IEC 320 (16 A)	Terminal boards
OPERATING SPECIFICATIONS		
Transfer type	“Break Before Make” (no overlapping sources)	
Transfer time following source failure	<8 msec. (S1/S2 synchronised) 20 msec. (S1/S2 non synchronised)	
OUTPUT		
Rated voltage	choice of one of the two input power sources	
Max. load for each output [A]	10 on IEC-320 C13 - 16 on IEC-320 C19	
Output sockets	4+4 IEC-320 C13 (10 A) + 1 IEC-320 C19 (16 A)	30 A on Terminal board and 4 IEC-320 C13 (10 A) + 1 IEC-320 C19 (16 A)
ENVIRONMENTAL SPECIFICATIONS		
Efficiency @ full load	>99%	
Noise at 1 m from front (from 0 to full load) [dBA]	<35	
Storage temperature	-10 °C up to +50 °C	
Ambient temperature for the UPS	0 °C - +40 °C	
Range of relative humidity	5-95% non-condensing	
Max. installation height	1000 m at nominal power (-1% power for every 100 m above 1000 m) - Max 4000 m	
Reference standard	EN 62310-1 (safety) EN 62310-2 (electro-magnetic compatibility)	
OVERALL SPECIFICATIONS		
Weight [kg]	5	
Dimensions (WxDxH) [mm]	19”x330x1U	
Colour	RAL 5004	
IP rating	IP20	
Communications	RS232 / USB / Slot for communication interface / Relay contacts port	

DATACENTRE TRANSPORT E-MEDICAL INDUSTRY

Master Switch
STS Single-phase

Plug & Play
installation

1:1 32-63-120 A
Static Transfer Switch

HIGHLIGHTS

- **Operating flexibility**
- **Load protection**
- **Complete diagnostics**
- **Hot Swap function**

Master Switch Single-phase (MMS) is part of the Master Switch range and offers solutions suitable for protecting single-phase loads with different power ratings. MMS is available in three sizes - 32, 63 and 120 A - and is therefore able to satisfy various requirements for the protection of single-phase loads.

FLEXIBILITY OF USE
All MMS versions are designed with criteria that facilitate on-site installation as well as diagnostics, control and maintenance operations. All models are equipped with a manual bypass and the hot swap function allows for rapid corrective interventions by non-specialised personnel in the event of faults.

LOAD PROTECTION
With MMS transfer switch loads are protected against critical environmental situations and mains power interference. Microprocessor control and the use of thyristor static switches ensure continuous monitoring of the power supply sources and reduced switching times between the two sources in the event of a fault.

The constant monitoring of the output current allows for the rapid identification of any short circuit currents in the consumers, preventing short circuits from propagating to other loads.
MMS is equipped with thermal-magnetic protection for the two sources, ensuring rapid intervention in the event of faults and integrated back feed protection.
MMS ensures switching times between the two power sources of less that a quarter of a cycle, both in the event of manual switching and in the event automatic switching triggered by a fault in the power source.

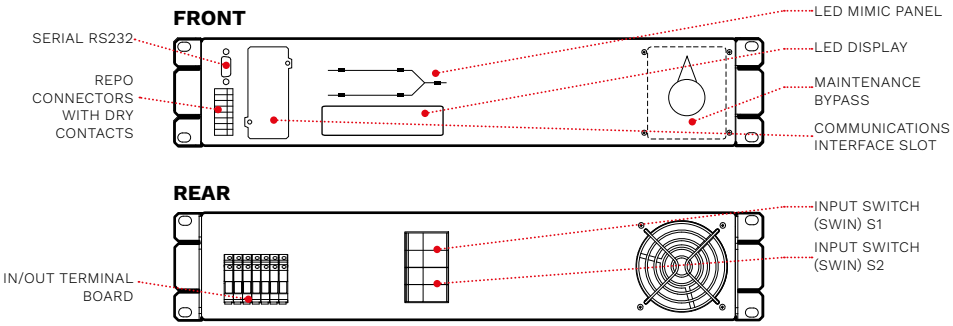
COMPLETE DIAGNOSTICS
All MMS versions are equipped with 32-character LCD displays and control panels with multi-function keys.
This allows for rapid and intuitive monitoring of supply readings, switch status and environmental conditions.
MMS is equipped with three standard programmable dry contacts, an input for emergency shutdown, a RS232 serial connection and a slot for housing the expansion board, thus ensuring complete availability of interface solutions for remote control and monitoring.

OPTIONS

SOFTWARE
PowerShield³
PowerNetGuard

ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352

DETAILS



Hot swap replacement:

Carry out manual bypass operation on faulty unit selecting S1 or S2

Remove the screws placed on left/right side and extract the unit

Replace the faulty unit with a new one

Fix the parts, follows start up procedure and return back from manual bypass

All operations are carefully described on operating manual.

MODELS	MMS 32	MMS 63	MMS 120
NOMINAL CURRENT (A)	**32**	**63**	**120**
INPUT			
Rated voltage - sources S1/S2 [V]	220 / 230 / 240 single-phase + N		
Voltage tolerance [V]	180-264 (selectable)		
Switched input phases	ph+N (two poles)		
Rated frequency [Hz]	50 / 60		
Input frequency tolerance range	±10% (selectable)		
Distribution compatibility	IT, TT, TNS, TNC		
OPERATING SPECIFICATIONS			
Transfer type	“Break Before Make” (no overlapping sources)		
Intervention method in the event of failure	hot swap function		
Available transfer methods	Automatic / Manual / Remote		
Transfer time following source failure	<4 msec. (S1/S2 synchronised) 10 msec. (S1/S2 non synchronised)		
ENVIRONMENTAL SPECIFICATIONS			
Efficiency @ full load	>99%		
Noise at 1 m from front (from 0 to full load) [dBA]	<40		
Storage temperature	-10 °C up to +50 °C		
Ambient temperature for the UPS	0 °C - +40 °C		
Range of relative humidity	5-95% non-condensing		
Max. installation height	1000 m at nominal power (-1% power for every 100 m above 1000 m) - Max 4000 m		
Reference standard	EN 62310-1 (safety) EN 62310-2 (electro-magnetic compatibility)		
OVERALL SPECIFICATIONS			
Weight [kg]	10	12	20
Dimensions (WxDxH) [mm]	19”x520x2U		19”x520x3U
Colour	RAL 7016		
IP rating	IP20		

DATACENTRE TRANSPORT E-MEDICAL INDUSTRY

Master Switch STS Three-phase

Service
1st start

3:3 100-800 A
Static Transfer Switch

HIGHLIGHTS

- **High reliability**
- **Hot Replacement function**
- **3- or 4-pole version**
- **Advanced communications**

Installing a Master Switch static transfer switch provides additional resilience and protection from the disruption that can be caused by the failure of a single power source. The result is the absolute protection of industrial utilities and critical information technology against power supply and load faults.

OPERATING PRINCIPLE

Master Switch guarantees a source of redundant power, allowing the load to be switched between to alternative and independent power sources.
Switching can be automatic (when a supply source falls outside of acceptable tolerances) or manually done by an operator from the front panel or remotely.

PROTECTION AGAINST POWER SUPPLY FAULTS

If one of the two power sources falls outside tolerance levels, Master Switch will transfer the consumers to the second power source (switching is instantaneous if the two sources are in phase).

PROTECTION AGAINST ENVIRONMENTAL DISTURBANCES

Overloads and load faults

In the event of an overload, the user can decide the level of intervention of the internal protection devices in order to block the power supply. In the extreme case of a downstream short circuit, Master Switch disconnects the load in order to avoid jeopardising the operation of the other loads (i.e. in the event of poor selectivity of the protection devices).

TOTAL MICROPROCESSOR CONTROL

Microprocessor control logic ensures:

- Fast and safe switching between power sources;
- Monitoring of all parameters via LCD display;
- Constant monitoring of SCR operation
- Advanced remote diagnostics (RS232 and TCP/IP).

REDUNDANT DESIGN

Power is supplied to the internal logic by two physically separate supply circuits that are fully independent and that can be replaced in “hot replacement” mode without causing power supply interruptions to the load. In the event that the power supplied by both sources fails, full system operation is guaranteed by the “Power Supply back up” function, which provides auxiliary power supply to the circuits from an external, independent power source. Master Switch is equipped with a dual redundant ventilation system known as: “fan redundance plus”. Thanks to this feature, and in the unlikely event that two fans fail at the same time, those remaining would still be able to dissipate the heat generated at nominal load and with an ambient temperature of up to 40° C. Also the fans can be replaced in “hot replacement” mode, ensuring continuity during the replacement operation.

SUPERIOR PROTECTION

In the event of an output short circuit, Master Switch blocks the transfer between the two power sources, eliminating the risk of propagating the short circuit and its effects to the other loads.

A back feed control circuit ensures the automatic intervention of the protection devices when a return of power to one of the two Master Switch inputs is detected.

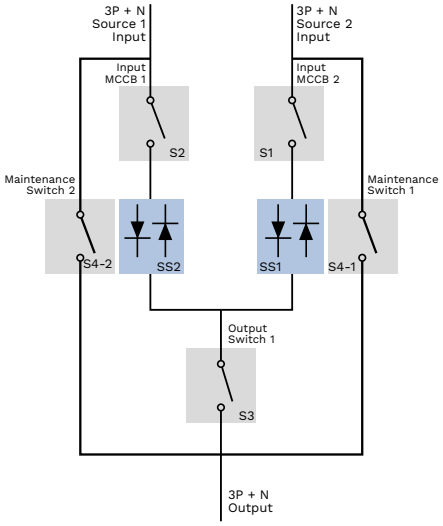
ACCESSIBILITY

The layout of the moving components and parts is designed to ensure easy frontal access:

- power cable connections that are easily accessed with entry from below;
- boards housed in a dedicated area for rapid diagnosis / replacement;
- all parts subject to monitoring, maintenance and/or replacement.

ADVANCED COMMUNICATIONS

Master Switch provides information, measurements, statuses, and alarms via the LCD display. The STS is compatible with PowerShield³ supervision and shutdown software for Windows operating systems 10, 8, 7, Hyper-V, 2019, 2016, 2012, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems.



OPTIONS

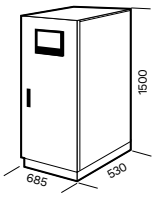
SOFTWARE
PowerShield³
PowerNetGuard

ACCESSORIES
NETMAN 204 + Communication card adapter
MULTICOM 302 + Communication card adapter
MULTICOM 352 + Communication card adapter

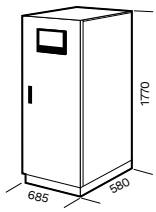
PRODUCT ACCESSORIES (ALL EX-WORK)
“No neutral on input” kit
IP rating IP31
Power Supply Back-up

DIMENSIONS

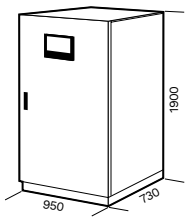
MTS 100
MTS 150



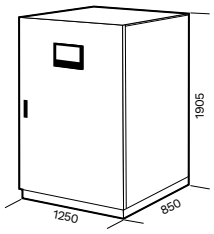
MTS 200 - MTS 250
MTS 300 - MTS 400



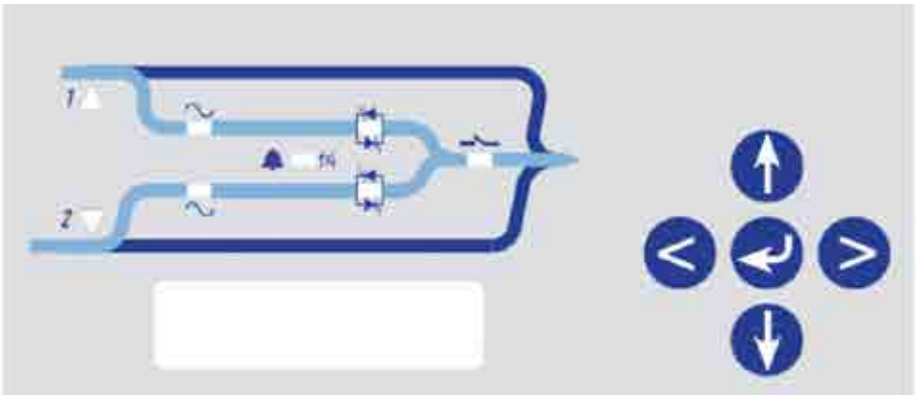
MTS 600



MTS 800

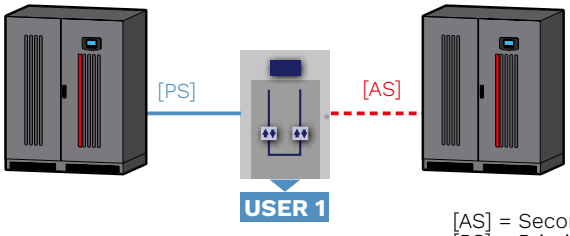


LEDs	FUNCTION
L1	S1 Priority Source
L2	S2 Priority Source
L3	S1 Present
L4	S2 Present
L5	Static transfer switch SS1 closed
L6	Static transfer switch SS2 closed
L7	Alarm indicator
L8	Output selector ON/OFF
5 function keys and LCD operation	



MASTER SWITCH IN **REDUNDANT MODE**

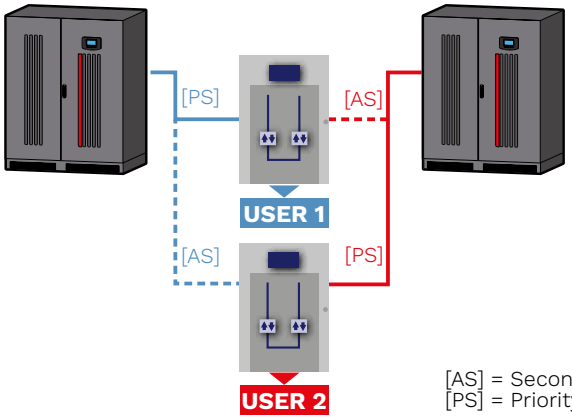
The secondary power source [AS], although highly reliable, only powers the load in the event of a failure with the priority power source [PS], ensuring maximum redundancy and power quality to the loads.



[AS] = Secondary
[PS] = Priority

MASTER SWITCH IN **CROSS FEEDING MODE**

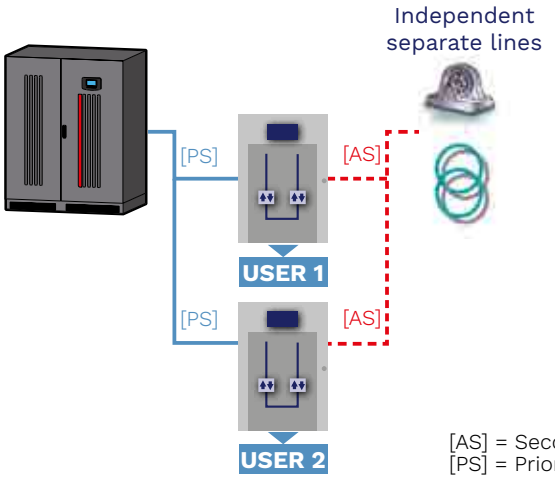
The two sources power critical loads using Master Switches configured to selected one of the two power sources as the priority source [PS]. In case of a failure in one of two sources, the other will be able to supply power to all the loads connected to the system.



[AS] = Secondary
[PS] = Priority

MASTER SWITCH IN **BACK-UP MODE**

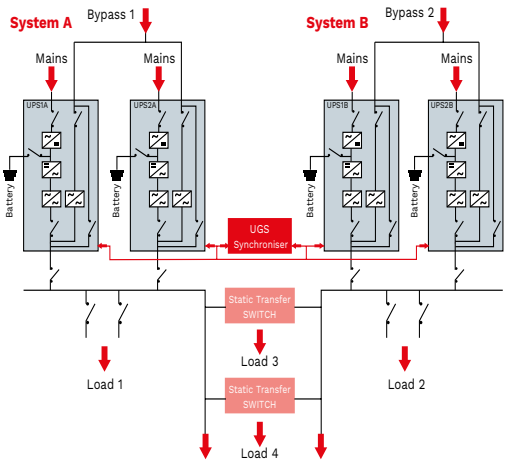
Master Switches power utilities via the priority energy source [PS]; the secondary energy source [AS] is made up of independent, separate power sources and to make up for any faults in the priority power source [PS].



[AS] = Secondary
[PS] = Priority

DYNAMIC DUAL BUS **CONFIGURATION**

The Riello UPS solution guarantees maximum reliability and ensures continuity of power supply under all operating conditions thanks to the UGS option that keeps the two systems, A and B, perfectly synchronised.
The flexibility of the UGS system ensures synchronism between the sources even when one of the two systems is not a Riello UPS model, but made by another manufacturer, or when the input sources are not from uninterruptible power supplies.



MODELS	MTS 100	MTS 150	MTS 200	MTS 250	MTS 300	MTS 400	MTS 600	MTS 800
NOMINAL CURRENT	**100 A**	**150 A**	**200 A**	**250 A**	**300 A**	**400 A**	**600 A**	**800 A**
INPUT								
Rated voltage - sources S1/S2 [V]	380 / 400 / 415 three-phase + N							
Voltage tolerance [V]	180 / 264 (selectable)							
Switched input phases	3+N (4-pole) - 3 (3-pole)							
Rated frequency [Hz]	50 / 60							
Input frequency tolerance range	±10% (selectable)							
Distribution compatibility	IT, TT, TNS, TNC							
OPERATING SPECIFICATIONS								
Transfer type	“Break Before Make” (no overlapping sources)							
Available transfer methods	Automatic / Manual / Remote							
Transfer time following source failure	<4 msec. (S1/S2 synchronised) 10 msec. (S1/S2 non synchronised)							
ENVIRONMENTAL SPECIFICATIONS								
Efficiency @ full load	>99%							
Noise at 1 m from front (from 0 to full load) [dBA]	55	55	55	55	55	55	<60	<62 dBA
Storage temperature	-10 °C up to +50 °C							
Ambient temperature for the UPS	0 °C - +40 °C							
Range of relative humidity	5-95% non-condensing							
Max. installation height	1000 m at nominal power (-1% power for every 100 m above 1000 m) - Max 4000 m							
Reference standard	EN 62310-1 (safety) EN 62310-2 (electro-magnetic compatibility)							
OVERALL SPECIFICATIONS								
Weight [kg] 3 pole Type	150	155	195	200	225	230	340	515
Weight [kg] 4 pole Type	155	160	205	210	235	240	375	560
Dimensions (WxDxH) [mm]	685x530x1500		685x580x1770				950x730 x1900	1250x850 x1905
Colour	RAL 7024							
IP rating	IP20							
Moving the STS	Pallet jack							

Ride-Through Solutions

SuperCaps UPS

DATACENTRE E-MEDICAL INDUSTRY

SOLUTIONS WITH SUPERCAPS

VFI TYPE ONLINE

ECO LEVEL 6

1:1 1-10 kVA

3:3 10-400 kVA

HIGHLIGHTS

CLEAN ENERGY
An eco-friendly, battery-free uninterruptible power system.

HIGH EFFICIENCY INNOVATIVE TECHNOLOGY
Modular expansion options for more power and runtime.

LONG OPERATING LIFE
5 to 10 times standard lead batteries.

HIGH NUMBER OF CYCLES
Million vs. ca 300 of lead batteries.

LOW MAINTENANCE COSTS
Easy to install and maintain.

HIGH WORKING TEMPERATURE
No need of cooling or heating systems.

LOW FOOTPRINT & WEIGHT

SuperCaps module

SuperCaps UPS are a type of uninterruptible power supply developed by Riello UPS which use super capacitors to accumulate energy instead of conventional batteries. It delivers autonomy in the range of seconds (1 to 60 sec). The innovative Riello SuperCaps UPS is designed to provide complete power supply protection for sensitive and mission critical loads, protecting them from mains disturbances and providing sufficient power to compensate for interruptions in mains supply.
Traditionally UPS rely on batteries for accumulating energy, but at least 87% of power supply interruptions last for less than a second[1]. SuperCaps UPS provide greater energy efficiency, lower costs and reduced footprints – ideal for installations where floor space is at a premium.
At the heart of the Riello SuperCaps UPS is a sophisticated control system that manages the charge-discharge cycle of the super-capacitors and optimises their lifecycle, which may exceed a million cycles. Their back-up time is dependent on the load but is sufficient to supply it until the mains power is restored or until reserve power from a generator starts automatically.
Most UPS are installed as standard with batteries lasting 5-10 minutes to protect the load against generator start up failure. For modern data centres, electro-medical and industrial applications, an efficient generator set supported by a UPS with a relatively brief autonomy offers the most efficient and effective power continuity solution, with conventional batteries providing sufficient runtime to cover most power interruptions. However, SuperCaps UPS do not have batteries and therefore provide long term savings in terms of battery installation, monitoring, maintenance, replacement and recycling costs. In addition, when compared to the 5-7 year lifecycle of standard batteries, SuperCaps UPS have a theoretically infinite lifecycle. These cost savings, along with the reduced footprint make SuperCaps UPS the ideal solution for critical installations that are particularly sensitive to short power supply interruptions.

[1] *Electric Power Research Institute study.*

SENTINEL**PRO**SC

MODELS		SEP 1000 SC	SEP 3000 SC
INPUT	Rated voltage [V]	220 / 230 /240 1ph	
	Rated frequency [Hz]	50 / 60	
	Power factor	>0.99	
	Current distortion	≤7%	
OUTPUT	Nominal power [VA]	1000	3000
	Power [W]	900	2700
	Rated voltage [V]	220 / 230 /240 1ph	
BACKUP	**Autonomy [sec.]**	**11**	**11**
	Recharge time [min.]	**15-30**	
DATA	Net weight [kg]	8.1	17.6
	Dimensions (WxDxH) [mm]	158x422x235	190x446x333

SENTINEL**TOWER**SC

MODELS		STW 6000 SC	STW 10000 SC
INPUT	Rated voltage [V]	220 / 230 /240 1ph	2220 / 230 /240 1ph or 380 / 400 / 415 3ph
	Rated frequency [Hz]	50/60	
	Power factor	>0.99	
	Current distortion	≤5%	
OUTPUT	Nominal power [VA]	6000	10000
	Power [W]	6000	10000
	Rated voltage [V]	220 / 230 / 240 1ph	
BACKUP	**Autonomy [sec.]**	**10**	**7**
	Recharge time [min.]	**15-30**	
DATA	Net weight [kg]	40	46
	Dimensions (WxDxH) [mm]	250x500x698	

MULTI**SENTRY**SC

MODELS		MST 10 SC	MST 12 SC	MST 15 SC	MST 20 SC	MST 30 SC	MST 40 SC	MST 60 SC	MST 80 SC	MST 100 SC	MST 125 SC
INPUT	Rated voltage [V]	220 / 230 /240 1ph - 380 / 400 / 415 3ph + N									
	Rated frequency [Hz]	50 / 60									
	Power factor	0.99									
	Current distortion	≤3%									
OUTPUT	Nominal power [VA]	10	12	15	20	30	40	60	80	100	120
	Power [W]	9	10.8	13.5	18	27	36	54	72	90	108
	Rated voltage [V]	220 / 230 /240 1ph - 380 / 400 / 415 3ph + N									
BACKUP	**Autonomy [sec.]**	**21**	**17**	**14**	**10**	**14**	**9**	**7**	**15**	**11**	**20**
	Recharge time [min.]	**6-8**									
DATA	Net weight [kg]	123	128	133	138	163	171	190[1]	200[1]	220[1]	380[1]
	Dimensions (WxDxH) [mm]	850x1320x440						850x1600x500 + 960x1900x800			855x1900 x750 + 960x1900 x800

[1] *SuperCaps are not included in the UPS cabinet.*

MASTER**HP**SC 160 200 250 300 400
NXE**SC** 250 300 400

Contact our TEC service for high power or different configurations.

Software and Connectivity

Software

PowerShield³

SHUTDOWN SOFTWARE

HIGHLIGHTS

GRAPHIC MONITORING OF UPS AND ENVIRONMENTAL SENSOR STATUS

PowerShield³ is a simple but powerful UPS management tool. A graphic version is available for all operating systems.

DETAILED DISPLAY OF ALL UPS AND ENVIRONMENTAL SENSOR PARAMETERS

PowerShield³ provides all the information required for first level diagnostics.

EVENTS LOG AND GRAPHIC DISPLAY OF MAIN PARAMETERS

All changes in UPS operating states are logged, as well as the main physical values and parameters. These constantly recorded values are displayed in graphic format.

UPS CONTROL PROGRAMMING

This allows you to automate all the actions normally carried out by the user: turning the server on and off, UPS battery test, etc.

BLOCK DIAGRAM OF OPERATION

A display of UPS operation in the form of a block diagram makes the analysis of UPS operating states more intuitive.

PowerShield³ provides efficient, user-friendly UPS management, displaying all major operational information such as input voltage, applied load and battery charge. The software also provides detailed information on fault conditions and UPS operating states. Developed with a client/server architecture, it is the ideal tool for managing multi-platform network systems.

FEATURES

- PowerShield³ free version: supports a single UPS for the operating systems highlighted in green;
- PowerShield³ full version: supports up to maximum of 32 UPS for all operating systems;
- With sequential and priority-based shutdown, PowerShield³ provides unattended shut-down of all networked PCs, saving any active work on the most widely used applications. Users can define the shutdown priorities for the various computers in the network and can also customise the procedure;
- With multi-platform compatibility, PowerShield³ uses the TCP/IP communications protocol to achieve standardised management and monitoring across the widest possible range of platforms. This makes it possible to monitor computers with different operating systems from a single console, for example monitoring a UNIX server from a PC running Windows and also connecting to UPS located in different geographical areas using dedicated networks (intranets) or the Internet;
- With event scheduling, PowerShield³ users can program their own shutdown procedures, detailing power-off and power-up scenarios to increase system security and save energy;
- With messages management, PowerShield³ keeps users constantly informed about the status of UPS and environmental sensors, either locally or via network messages. A list can also be defined of users who should receive e-mails, faxes, voice messages and SMS messages when faults or sudden mains power supply failures occur;
- Integrated SNMP agent: PowerShield³ features an integrated SNMP agent for UPS management which can send all the information required and generate traps using the RFC1628 standard, and environmental sensors;
- Secure, easy to use and connect, communication is now password protected to ensure UPS system security. Using the new discovery/ browsing function, all UPS connected to a protected computer and/or LAN can be displayed in a list format for monitoring. In the absence of a LAN connection, support is provided for modem-based communication.

DEVELOPED FOR VIRTUALIZED SYSTEMS

PowerShield³ permits to initiate live migration of virtual machines (VM) to automatically and transparently migrate VMs during power disturbance to protected devices by UPS with migration systems such as VMware vMotion™ and Microsoft Live Migration. PowerShield³ can monitor and manage UPS either inside or outside the data centre. Can also measure power consumption to help calculate power usage effectiveness (PUE), the standard metric utilized for gauging data centre power efficiency.

SUPPORTED OPERATING SYSTEMS

- Windows 2008, 2012, 2016, 2019 Server, XP, Vista, 7, 8, 10 on X86, X86_64 and IA 64 processors;
- Microsoft Hyper-V;
- Microsoft SCVMM™;
- Linux on X86, X86_64 and IA64 processors;
- Novell Netware 3.x, 4.x, 5.x, 6;
- Mac OS X;
- VMWare ESX, ESXi;
- Citrix® XenServer;
- Xen® open source platforms;
- The most common UNIX operating systems such as: IBM AIX, HP, SUN Solaris INTEL and SPARC, SCO Unixware and Open Server, Silicon Graphics IRIX, Compaq Tru64 UNIX and DEC UNIX, Open BSD UNIX and FreeBSD UNIX, NCR UNIX;
- HP OPEN VMS.

PowerShield³ is available for download at www.riello-ups.com

PowerNetGuard

INVENTORY MANAGER SOFTWARE

HIGHLIGHTS

GRAPHIC MONITORING OF UPS AND ENVIRONMENTAL SENSOR STATUS

PowerNetGuard is a simple but powerful UPS management and display tool. A graphic version is available for all operating systems.

DETAILED DISPLAY OF ALL UPS AND ENVIRONMENTAL SENSOR PARAMETERS

PowerNetGuard provides all the information required for first level diagnostics.

EVENTS LOG AND GRAPHIC DISPLAY OF MAIN PARAMETERS

All changes in UPS operating states are logged, as well as the main physical values and parameters. These constantly recorded values are displayed in graphic format.

CENTRALISED MANAGEMENT

PowerNetGuard is the ideal solution for managing all UPS in an infrastructure using a single application. With this one application you can monitor and manage all your UPS, ensuring prompt warnings in the event of faults or malfunctions.

SUPPORT FOR THIRD PARTY UPS

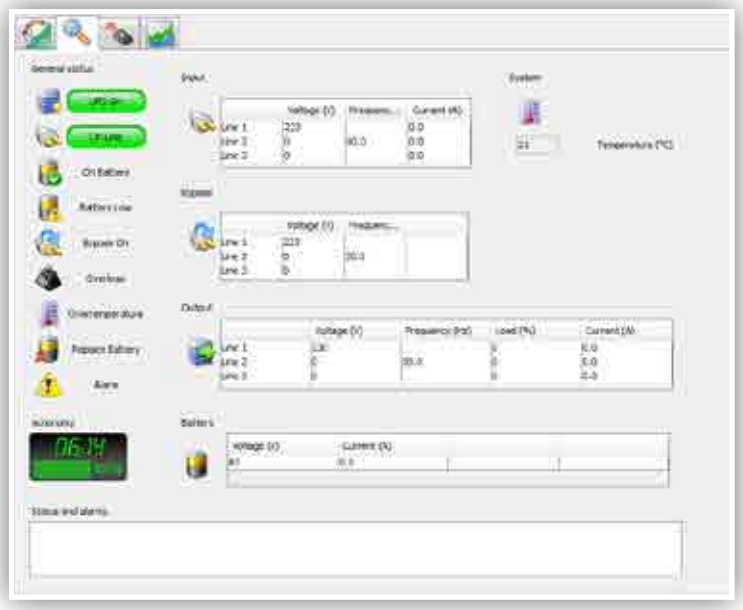
PowerNetGuard also allows you to manage UPS made by other manufacturers via SNMP using their own network boards. This allows you to centralise the management of the UPS fleet into a single system without the need for many different applications, simplifying management and use.

PowerNetGuard software centralises UPS management using network interface (SNMP) communications. It is ideal for Data Centre EDP managers and medium to large-sized networks. Using the RFC1628 Management Information Base (MIB), it ensures standardised management for all UPS compliant with this worldwide standard.

FEATURES

- Centralised control of remote UPS via Ethernet with SNMP protocol;
- Multi-level display of geographical areas, building plans, maps, etc.;
- Multi-user access with various security levels;
- Compatible with NetMan and RFC1628 standard SNMP agents;
- Creation of graphs of input and output values and data back-up to file;
- Alarm notifications via e-mail and SMS
- Windows operating systems 10, 8, 7, 2019, 2016, 2012 and previous versions, Mac OS X, Linux.

PowerNetGuard is available for download at www.riello-ups.com



Accessories

NetMan 204

CARD - ETHERNET - SNMP

The NetMan 204 network agent allows UPS directly connected over LAN 10/100 Mb connections to be managed using the main network communication protocols (TCP/IP, HTTP and SNMP). It is the ideal solution for the integration of UPS over Ethernet networks with Modbus/TCP or BACNET/IP protocols. It was developed to integrate UPS into medium-sized and large networks, to provide a high level of reliability in communication between the UPS and associated management systems.

FEATURES

- 32 bit RISC processor;
- Compatible with 10/100 Mbps Ethernet and IPv4/6 networks;
- Wifi ready;
- Compatible with PowerShield³ and PowerNetGuard;
- SNMP v1 and v3 with RFC1628 for PowerNetGuard and NMS connection;
- SNMP v1, v2 and v3 with RFC3433 for the management of environmental sensors;
- HTTPS for UPS control via web browser;
- SMTP for alarm notifications and UPS status updates via email;
- Ldap and Active Directory integration for centralised authentication mechanism support;
- Seamlessly integrates with VMware. Esxi hosts and vCenter servers, enabling you to manage your virtual network to perform shutdown or live migrations of active virtual machines as well as shutdown of physical hosts with delay and priority.
- Modbus/TCP;
- BACNET/IP;
- Maximum expandability;
- USB host for Pendrive USB connection;
- Events log and data management;
- Wake-on-LAN management for starting computers via TCP/IP network;
- Other standards: DHCP, DNS, RARP, FTP, NTP, ICMP, IGMP;
- Management of environmental sensors;
- Configurable via Telnet or SSH sessions, and web;
- Firmware upgradeable via microSD and web browser.

Environmental sensors

FOR NETMAN 204

The NetMan 204 environmental sensors are able to monitor and record environmental conditions, as well as activities in protected areas and the area where the UPS is installed. The environmental sensors allow management and control to be extended to cover the area around the UPS, monitoring the temperature and humidity and driving cooling fans or locks. Values are provided via Internet, SNMP and via PowerShield³ software. PowerShield³ can be used to manage sensor operating states in order to send messages. Refer to PowerShield³ software documentation for further information. NetMan 204 can manage up to 6 separate sensors. Environmental sensors are quick to install thanks to their small footprint, and they do not require a separate external power supply. Thanks to the self-learning sensors, configuration is also rapid and intuitive.

The following sensors are available:

- -55 +125 °C Temperature Sensor;
- -55 +125 °C Temperature and 0-100% humidity Sensor;
- -55 +125 °C Temperature and I/O digital 0-12 Vdc In, 1 A max Out at 48 Vdc Sensor.

MultiCom 302

CARD - MODBUS/JBUS INTERFACE

The MultiCom 302 protocol converter allows UPS monitoring using the MODBUS/JBUS protocol over RS232 or RS485 serial lines. In addition, it also manages a second independent RS232 serial line that can be used to connect to other devices such as the PLC or a PC running PowerShield[3] software.

FEATURES

- Port configuration for MODBUS/JBUS as RS232 or RS485;
- Management of two independent serial lines;
- Suitable for integration with the main BMS management programs.

For compatibility, refer to the table on page 17.

MultiCom 352

CARD - INTERFACE DUPLEXER

The MultiCom 352 serial duplicator is an accessory that allows two devices to be connected to a single communication serial port on the UPS. It can be used anywhere where several serial connections are required for multiple polling of the UPS. It is ideal for LAN networks with firewalls, where a high level of security is required, or for the management of separate LAN networks supplied by a single UPS.

FEATURES

- Cascading configuration giving a maximum of 4 serial communication ports;
- LED communication flow indicator;
- Firmware upgradeable via serial port.

For compatibility, refer to the table on page 17.

MultiCom 372

CARD - RS232 INTERFACE

The MultiCom 372 allows an additional communication port to be added to the UPS to control and monitor the UPS via the RS232 serial line.
The board is supplied with an ESD (UPS Emergency Shutdown) input and an RSD (Remote Shutdown) input, both available on a removable terminal board and directly connectible to emergency buttons or other buttons.

FEATURES

- Management of ESD input and UPS Shut-down;
- Ability to supply devices at 12 V 80 mA max.

For compatibility, refer to the table on page 17.

MultiCom 384

CARD - RELAY I/O INTERFACE

The MultiCom 384 provides a set of relay contacts for managing UPS alarm notifications and operating states. The board has two removable terminal boards. One of these terminal boards includes the ESD (UPS Emergency Shut Down) and RSD (Remote Shut Down) signals. The board also provides the possibility of associating Battery Working, Bypass, Alarm and Battery Low warnings with potential free contacts on normally close or normally open contacts.

FEATURES

- Max. current 3 A at 250 V
- Signal-contact customisation
- Normally Open or Normally Close configuration for each contact

For compatibility, refer to the table on page 17.

MultiCom 411

PROFIBUS PROTOCOL CONVERTER

The MultiCom 411 connects a Riello UPS to a Profibus DP Network. In industrial environments, the Gateway integrates UPS management and monitoring into a control system.

The Gateway uses the field bus design – one of the most popular used for communicating between devices such as automation control systems and distributed I/O hardware.

For compatibility, refer to the table on page 17.

Multi I/O

BOX - RELAY I/O CARD & MODBUS/JBUS INTERFACE

The Multi I/O is a device that integrates UPS into a control system using fully configurable input and output relay signals. It can be used to connect two devices to a single UPS serial communication port.
It can be used anywhere where several serial connections are required for multiple polling of the UPS.
It can also communicate on RS485 lines using the MODBUS/JBUS protocol.

FEATURES

- 8 analogue/digital inputs;
- 8 relay outputs (3 A at 250 V) that can be configured using UPS and input operating states;
- Can communicate with UPS via RS232;
- It can control two independent RS232/ RS485 serial lines to monitor the UPS and its operating states using the MODBUS/ JBUS protocol;
- Firmware upgradeable via serial port.

For compatibility, refer to the table on page 17.

Multi Panel

REMOTE DISPLAY INTERFACE

The Multi Panel is a remote monitoring device that can provide a detailed UPS status overview in real time. This device is able to display mains power, output and battery readings as well as UPS operating states. The high visibility graphic display supports English, Italian, German, French, Spanish, Russian, Chinese and many other languages. It has 3 independent serial ports, one of which allows for UPS monitoring via the MODBUS/JBUS protocol (on either an RS485 or RS232 serial line). The other independent serial lines can be used to connect devices such as the NetMan 204 or a PC running PowerShield[3] software.

FEATURES

- High visibility LCD with graphic functions
- Management of three independent serial lines;
- Port configuration for MODBUS/JBUS as RS232 or RS485;
- Suitable for integration with the main BMS management programs;
- Firmware upgradeable via serial port.

For compatibility, refer to the table on page 17.

Connectivity

Index of configurations

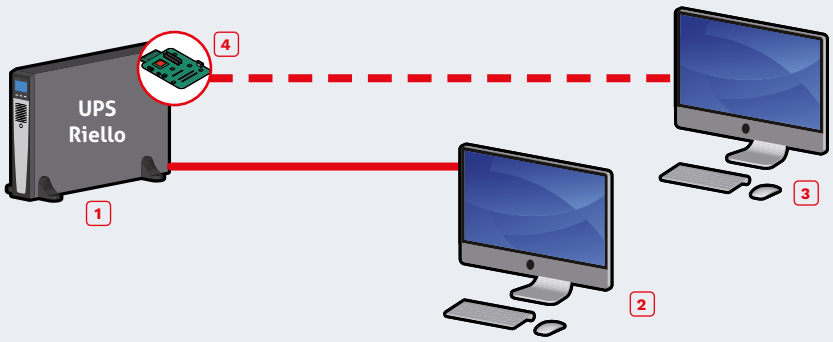
Connecting a UPS to other devices, sensors, computers and other specific devices, means on the one hand allowing the user to monitor UPS operating parameters and prevent critical situations, and on the other hand provides the UPS with input parameters from the working environment. By processing these parameters the UPS is able to activate/deactivate itself, communicate its status and much more.
This brief overview summarises some of the basic connectivity configurations, grouped according to the end purpose and situation surrounding each case.

- **Point to point connections;**
- **Multipoint connection;**
- **Connection for UPS in parallel setup;**
- **Connection with several systems in parallel setup and STS;**
- **Field bus connections;**
- **Bus connections over Ethernet;**
- **Field bus connections;**
- **Serial bus connections.**

POINT TO POINT CONNECTIONS

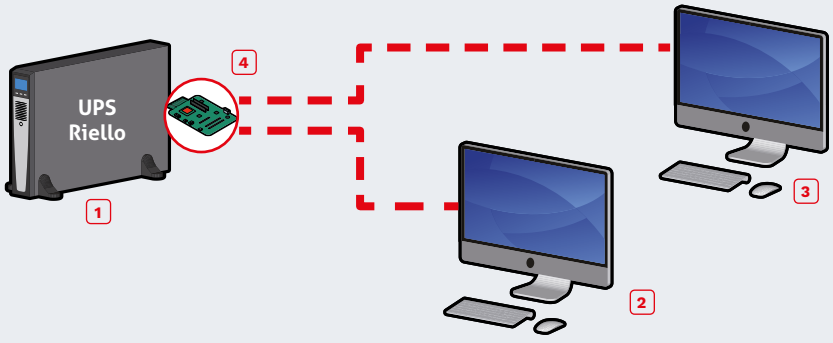
Controlling the UPS from 1 workstation

1	UPS connected to load
2	Local computer with PowerShield³ version FREE
	USB or RS232



Controlling the UPS from different workstations

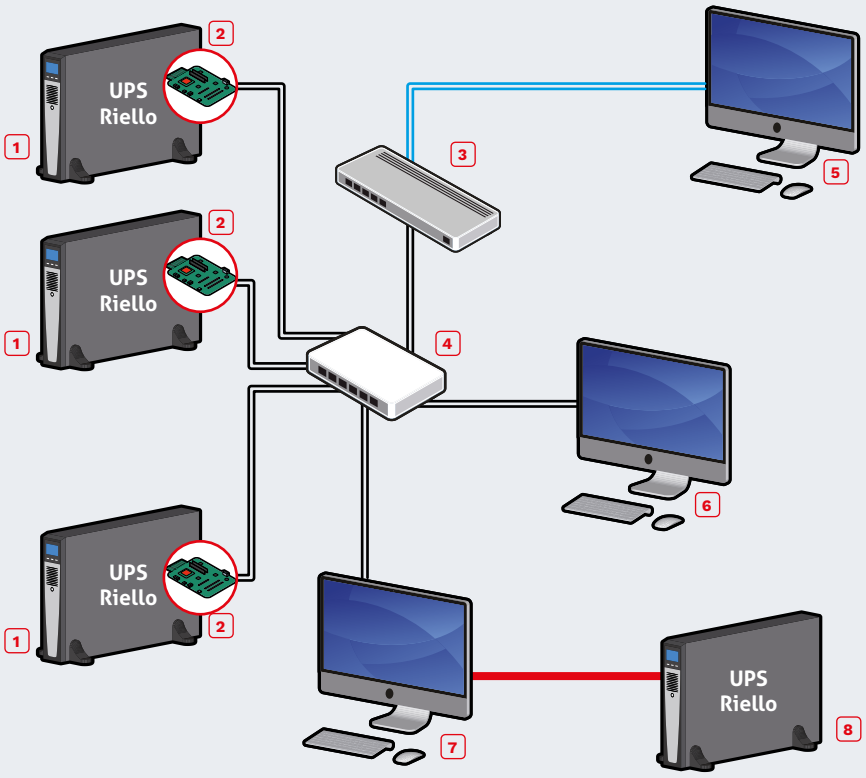
1	UPS connected to load
2	Local computer with PowerShield³ version FREE
3	Local computer with PowerShield³ software version FULL
4	MultiCom 372 board
	RS232
	USB or RS232



UPS control from several workstations, using 2 serial ports

1	UPS connected to load
2	Local computer with PowerShield³ version FREE
3	Local computer with PowerShield³ version FREE
4	MultiCom 352 board
	RS232

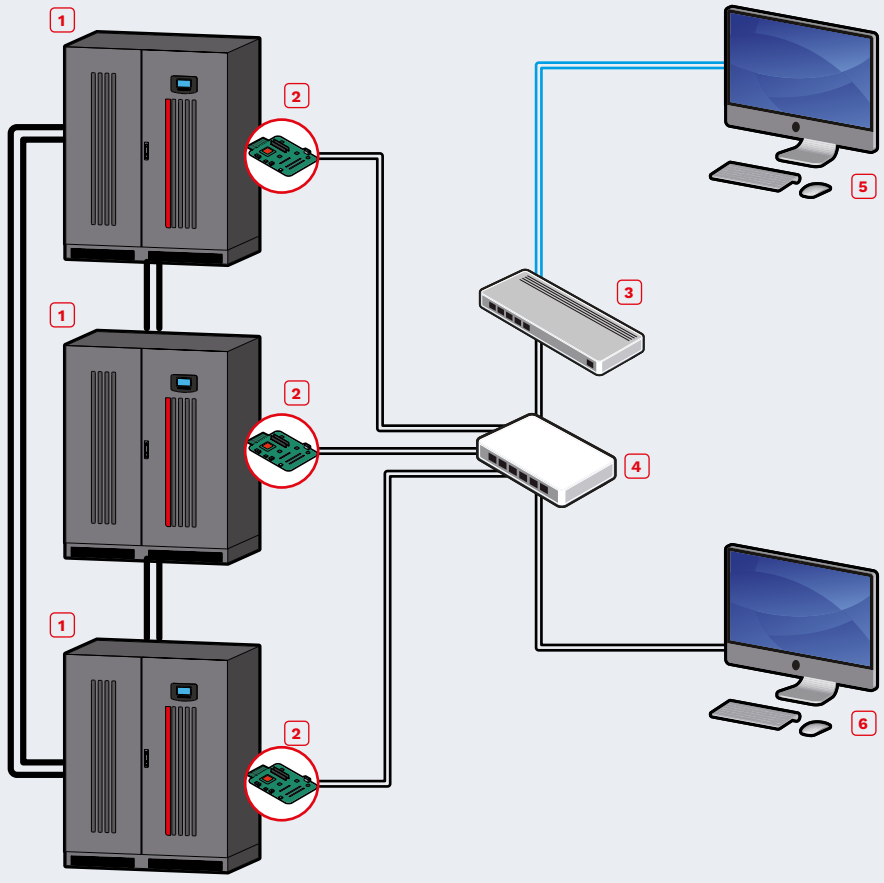
DISTRIBUTED CONNECTION (MULTIPOINT)



Connection with more than 1 UPS.
The FULL version of PowerShield[3] software is required as well as a NetMan 204 communication board on each UPS.

1	UPS connected to load
2	NetMan 204 board
3	Firewall
4	Switch
5	Remote computer connected via web
6	Local computer
7	Local computer that controls the UPS (8) via USB or RS232, and UPS (1) via LAN and Ethernet
8	UPS connected to load
	USB or RS232
	Ethernet
	World Wide Web

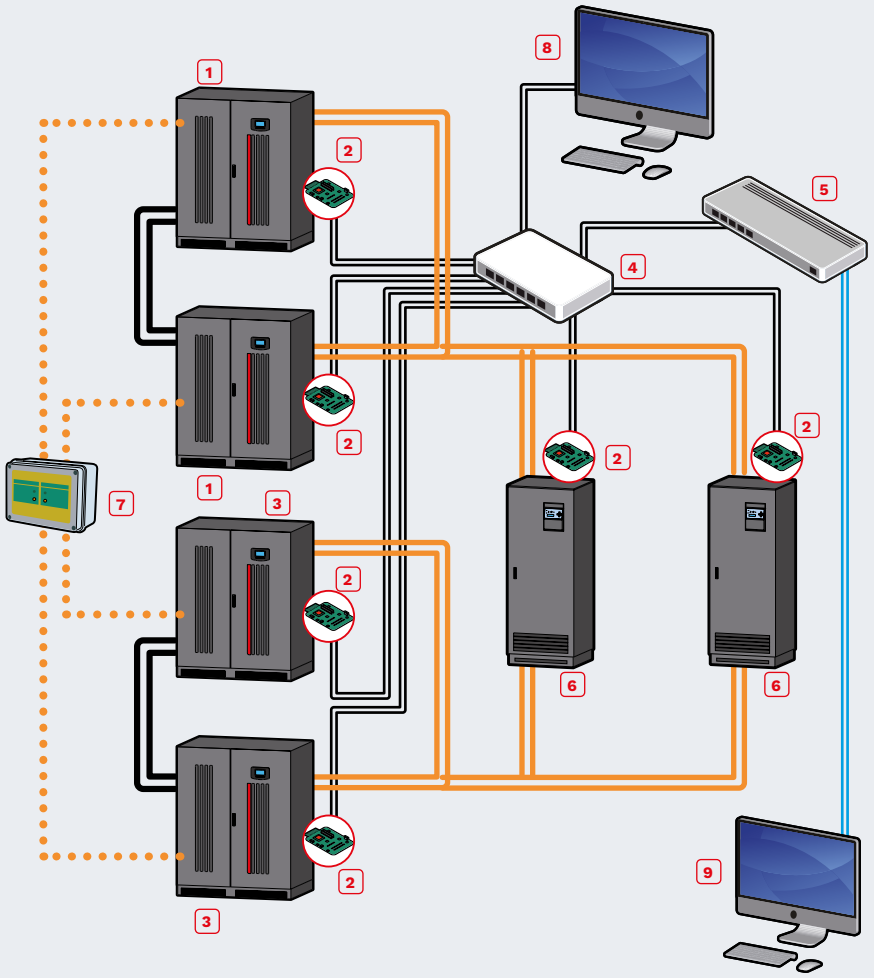
CONNECTION FOR UPS IN PARALLEL SETUP



The FULL version of PowerShield[3] software should be used for managing setups with several UPS installed in parallel, and each UPS must have a NetMan 204 board installed.

1	UPS in parallel setup connected to the load
2	NetMan 204 board
3	Firewall
4	Switch
5	Remote computer connected via web
6	Local computer
	Ethernet
	World Wide Web
	Parallel setup bus

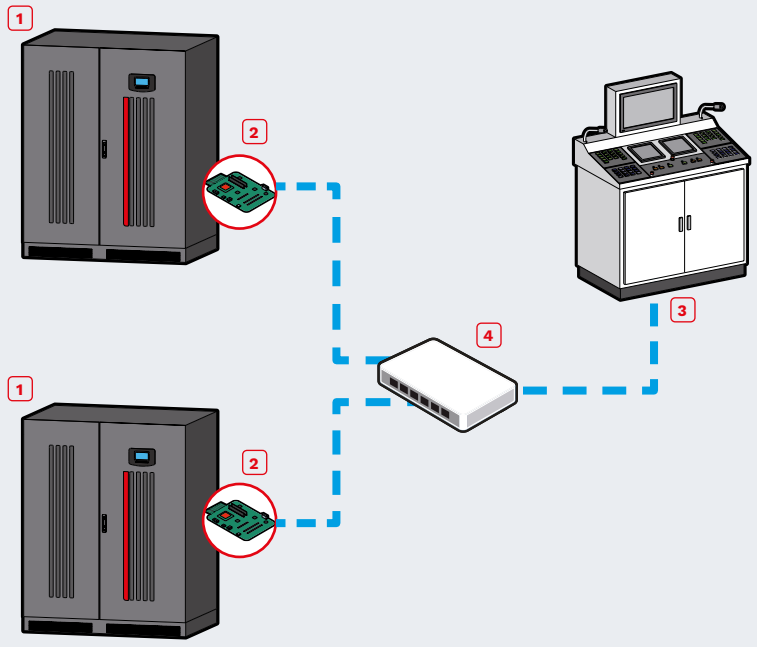
CONNECTION WITH SEVERAL SYSTEMS IN PARALLEL AND STS



The FULL version of PowerShield³ software should be used for managing setups with several UPS installed in parallel, and each UPS must have a NetMan 204 board installed.

1	UPS arranged in parallel connected to an STS channel
2	NetMan 204 board
3	UPS arranged in parallel connected to an STS channel
4	Switch
5	Firewall
6	STS connected to load
7	UGS
8	Local computer with PowerShield³ software version FULL
9	Remote computer connected via web, running PowerShield³ software version FULL
	UGS management of parallel setup
	Ethernet
	World Wide Web
	Parallel setup bus
	Power connection

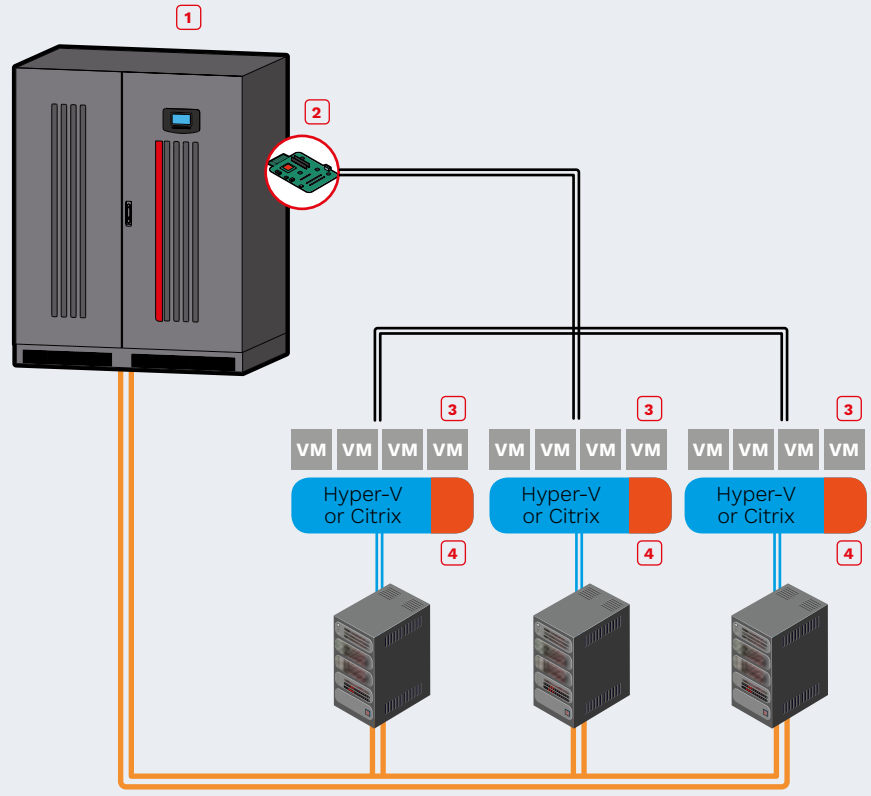
FIELD BUS CONNECTION OVER ETHERNET



For UPS management in industrial or civil environments requiring Modbus protocol communication over Ethernet.

1	UPS connected to load
2	NetMan 204 board
3	SCADA management system
4	Switch
	Modbus / TCP over Ethernet

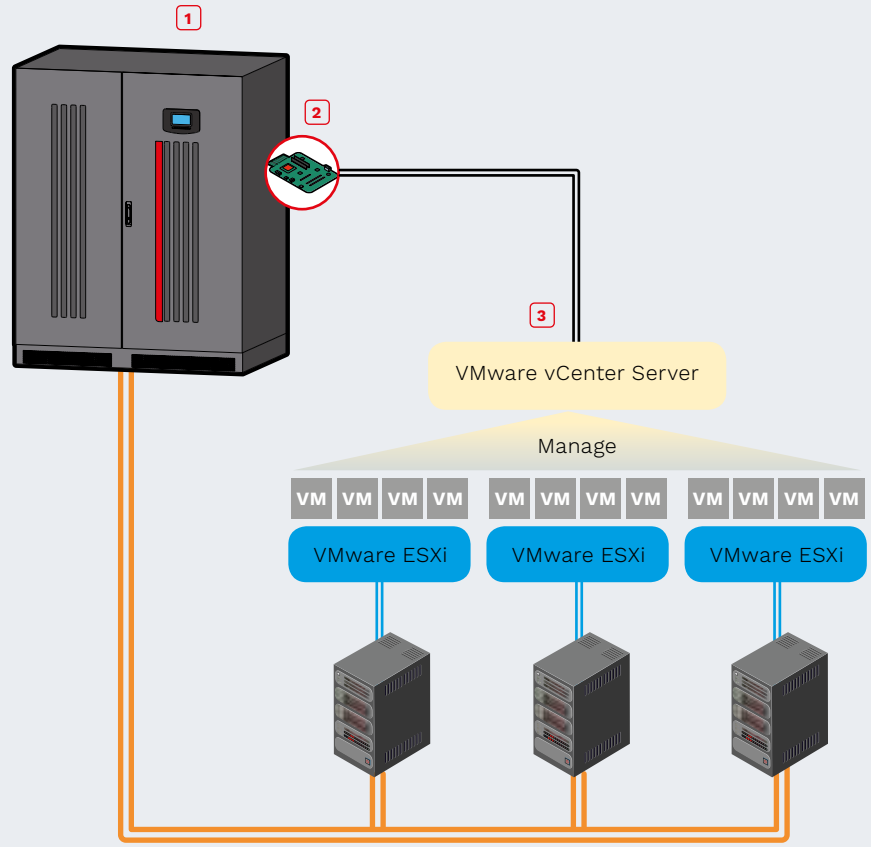
POWERSHIELD³ ON VIRTUALIZED SYSTEMS: MICROSOFT HYPER-V; CITRIX



PowerShield³ software should be used for managing setup with UPS, a specific script to shut down the virtualized system must be used, UPS must have a NetMan 204 board installed.

1	UPS
2	NetMan 204
3	Virtualized system
4	PowerShield³
	Ethernet
	Power connection

NETMAN 204 ON VIRTUALIZED SYSTEMS: WMWARE ESXi



NetMan 204 should be used for managing Esxi hosts and vCenter servers, enabling you to manage your virtual network to perform shutdown or live migrations of active virtual machines as well as shutdown of physical hosts with delay and priority.

1	UPS
2	NetMan 204
3	Virtualized system
	Ethernet
	Power connection

Services and contacts

Pre-sales consultancy

tec@riello-ups.com

The TEC Team

Our TEC (Technical Energy Consultant) experts have been working in the power sector for years. They come from a range of backgrounds and enjoy a wealth of technical experience in sectors such as Data Centres, Industry and Power Plants. By adopting a consultative, honest approach, our engineers and technicians support customers to achieve the perfect outcomes in power quality and power protection for their business.

The TEC Team keeps up-to-date regarding the latest trends in energy management and energy infrastructures. This means they have a deep understanding of the latest energy efficiency technologies including Smart Grids, Cloud and IoT energy requirements, Energy Storage aimed for Demand Response (Frequency Response or Peak Shaving), Supercapacitors, and Lithium solutions.

Consultancy on standards

Our TEC Team provides professional support to help customers comply with all necessary regulations (UNI, ISO or UL CSA standards), and related requirements, including the issues of energy management and safety protection. Furthermore, the TEC Team's energy management expertise is aided by ongoing discussions with Riello UPS's Research and Development department, which is always aware of the latest regulatory standards.

Whatever your need, our TEC Team will help you to find the most effective solution.

The TEC Team can provide exhaustive information concerning:

- Special appliances with particular IP ratings (e.g. IP30, IP31, IP41, IP42);
- Special treatments that enable UPS to perform in tropical conditions or to withstand the effects of earthquakes;
- Tailored systems providing optimal CapEx and OpEx;
- Customised solutions with a "pay as you grow" approach.

In addition, the TEC Team provides regulatory standard consultancy concerning:

- Products and portfolio solutions;
- Batteries, flywheels, supercapacitors, lithium solutions;
- Installation and configuration;
- Applications (data centres, emergency lighting, electro-medical, railways etc.).

Work tools
Training and information
The TEC Team can provide extensive documentation and work tools including:
- UPS sizing;
- Official technical guides;
- Installation requirements;
- TEC newsletters and training webinars;
- Technical specifications;
- Technical presentation;
- On line tools (TEC area, UPS configurator, Riello Toll Box (runtime calculation), etc.

Technical seminars
The TEC Team stages regular technical seminars and training sessions.
Customers, engineering firms, and sector associations can also request for specific seminars to be staged on-site or at suitable locations.

Design support
The TEC Team can provide technical assistance concerning the recommended choice, sizing and installation of our complete range products and solutions.

Help Desk
TEC Team support is available by phone or email. We guarantee a response to any query as soon as possible.

FAT- Factory Acceptance Tests (Witness Test)
The Factory Acceptance Test (FAT) is a process that evaluates the equipment after the assembly process by verifying that it is built and operating in accordance with design specifications. It consists of a variety of inspection points and tests per the request of the customer, based on their requirements or unique equipment specifications.

In general, an FAT covers:
- **Comprehensive inspection** – based on the equipment and the requests of the customer. This can also include a range of conformity checks and verifications;
- **Contract audit** –a review of the original agreement to make sure all contractual obligations are met;
- **Operational test** – this procedure simulates the system in operation to provide proof of functionality. During these tests the system is analyzed both in static and dynamic conditions, so to validate the declared performances and the customer's expectations.

These tests also include verification of all relevant supporting documents, including user manuals, P&IDs and any type of instructions that come with the equipment to make sure they are accurate.
All inspection and testing is done at the state-of-the-art Riello UPS facilities in Legnago and Cormano. Riello UPS technicians and members of the TEC Team accompany customers and oversee all the tests.

Technical assistance

service@riello-ups.com

The Service Team: guaranteeing the performance and quality of our products over time

The proven quality and reliability of Riello UPS products is complemented by unmatched after-sale service.

By adopting a highly professional approach, our engineers and technicians provide reliable and qualified technical support that enables our customers to promptly solve any problem that may occur to their power protection systems.

In addition, the Service Team's ability to analyze data from the UPS encourages preventive, predictive or corrective maintenance. In this way, any necessary interventions can be scheduled cyclically, minimising the likelihood of a fault and enabling prompt intervention in the event of sudden problems or unexpected anomalies.

Service
1st start

From electrical installation and commissioning to ongoing maintenance and product training, our Service Team is constantly committed to achieving the target of zero downtime of the installed Riello UPS power continuity solutions and lead the customers into the future of the real-time energy management.

The services

Our Service Team provides customers with:

- A call center to have direct and immediate contact with the Service department. These technical staff are available to provide expert advice on the installation and maintenance of the equipment;
- The swap service for small UPS;
- The on-site technical assistance service for larger non-transportable UPSs, whether they are under warranty or post warranty. Rapid interventions are made possible by the design concept of our products, by the professionalism of the Service Team personnel and by the well-established distribution networks in each territory;
- The on-site service for replacing exhausted batteries and the procedures for transferring them for safe and proper disposal;
- Preliminary site inspections to ensure the installation rooms are suitable, followed by commissioning of the UPS, including the initial start up, to ensure it is fully functional;
- Bespoke preventive maintenance contracts tailored to the customer's specific requirements;
- Riello Connect remote monitoring which analyzes the operating status. The technical team is always on-call to provide an immediate response to any alarm notifications.

These are the main services that Riello UPS provides to ensure **maximum protection of the power systems** and **after-sales peace of mind**.

Relying on the Riello UPS Service means:

1. **EXPERIENCE**
extensive knowledge of the product and its use in every application, made possible by an ongoing process of training our technicians and keeping them constantly up-to-date with the latest trends.

2. **EXPERTISE**
constant communication between the Service and Research and Development teams enables a continuous exchange of information and technical knowhow.

3. **PRESENCE**
Riello UPS ensures a widespread coverage of its Service structure throughout each national territory. It deploys a network of professional and expert Help-Desk operators to provide immediate responses to customers. This is complemented by a group of highly-trained and competent technicians and service engineers that can quickly be deployed for on-site interventions.

4. **SPEED**
faults and failures can be quickly repaired thanks to a broad network of service engineers in each territory, plus the immediate availability of spare parts stored across various strategically-placed locations.

5. **CONTROL**
performance and efficiency can be precisely optimised thanks to ongoing on-site maintenance or through the RIELLO CONNECT remote monitoring platform.

6. **COVERAGE**
Riello UPS enjoys a growing presence throughout the world thanks to its local branches and distributors who work together in mutual cooperation to meet the customers' needs.

DIRECT TECHNICAL PHONE CONSULTATIONS

COMMISSIONING INTERVENTIONS

SITE ACCEPTANCE TEST

MAINTENANCE INTERVENTIONS

TECHNICAL AUDITS

EMERGENCY SERVICE CALL

Riello Connect

Riello Connect is a cloud-based remote control solution that allows Service and customer users to supervise Riello UPS systems. All it takes is a computer, a tablet, or a smartphone to easily access the Riello Connect system and check all the operating parameters of your UPS system.
Thanks to the Riello Connect system, the performance of the UPS is constantly monitored by specialized technicians, who are able to identify problems before they become load losses.

Monitoring takes place 24 hours a day, 7 days a week, 365 days a year and if any problems are detected, the Riello Connect system automatically informs (via SMS or email) the first-time contact chosen by the customer. At the same time, Riello UPS technical staff can remotely verify the problem and make suitable recommendations in accordance with the specific assistance profile of customer.
Thanks to a secure communication gateway, Riello Connect links to the UPS via a serial, Ethernet or contact connection. The gateway sends information through the Internet or the cellular network (GSM / GPRS / 3G) to the Riello Connect data center. Thanks to the “Remote access” function of Riello Connect, it is also possible to set up a security vpn tunnel for debugging or remote programming with the normal user configuration software.
All data transmissions from / to Riello Connect are guaranteed by high security encryption layers.

Riello Connect allows USERS to:
- Receive real-time alarms via email and SMS;
- Recieve operational reports at any time;
- View trends of the various electrical data in numerical and graphic form (requires internet connection);
- View the operating status in real time.

The RIELLO UPS SERVICE CENTER can:
- Receive real-time alarms via email and SMS for activation of the on-call service;
- Query and view the operating status;
- Remotely download the stored historical data file for detailed analysis of the operation / failure / abnormality.

How Riello Connect works

A Riello Connect communication gateway links to the equipment present in the field by means of a serial, Ethernet or I/O connection. The gateway sends the information via the Internet or cellular network (GSM / GPRS / 3G) to the Riello Connect cloud-based data center.
By accessing the Riello Connect website on www.riello-ups.com, users can view all the parameters of their UPS system via computer, tablet or smartphone.
Thanks to Riello Connect it is also possible to set up a security tunnel for debugging or remote programming with the normal user configuration software (i.e. Remote Access).

How the Riello Connect server manages to keep your data safe

Data security on Riello Connect is guaranteed by state-of-the-art server infrastructures with backup power, fire protection and operating personnel 24 hours a day, 7 days a week. Riello Connect is a redundant system distributed in different servers and in different locations: this increases the availability in the field both for users and for the Riello Connect RCT gateways, minimizing the risk of data loss.

Security in data transmission from / to Riello Connect

Security means much more than simply protecting data on the Riello Connect server. To keep the data transmitted to and from Riello Connect secure, the solution uses four different methods:

- Encryption between the user's web browser and the Riello Connect cloud server;
- Encryption between the RCT Riello Connect gateway and the Riello Connect cloud server;
- User authentication to access Riello Connect (including two-step verification);
- Custom user permissions.

Operating Offices

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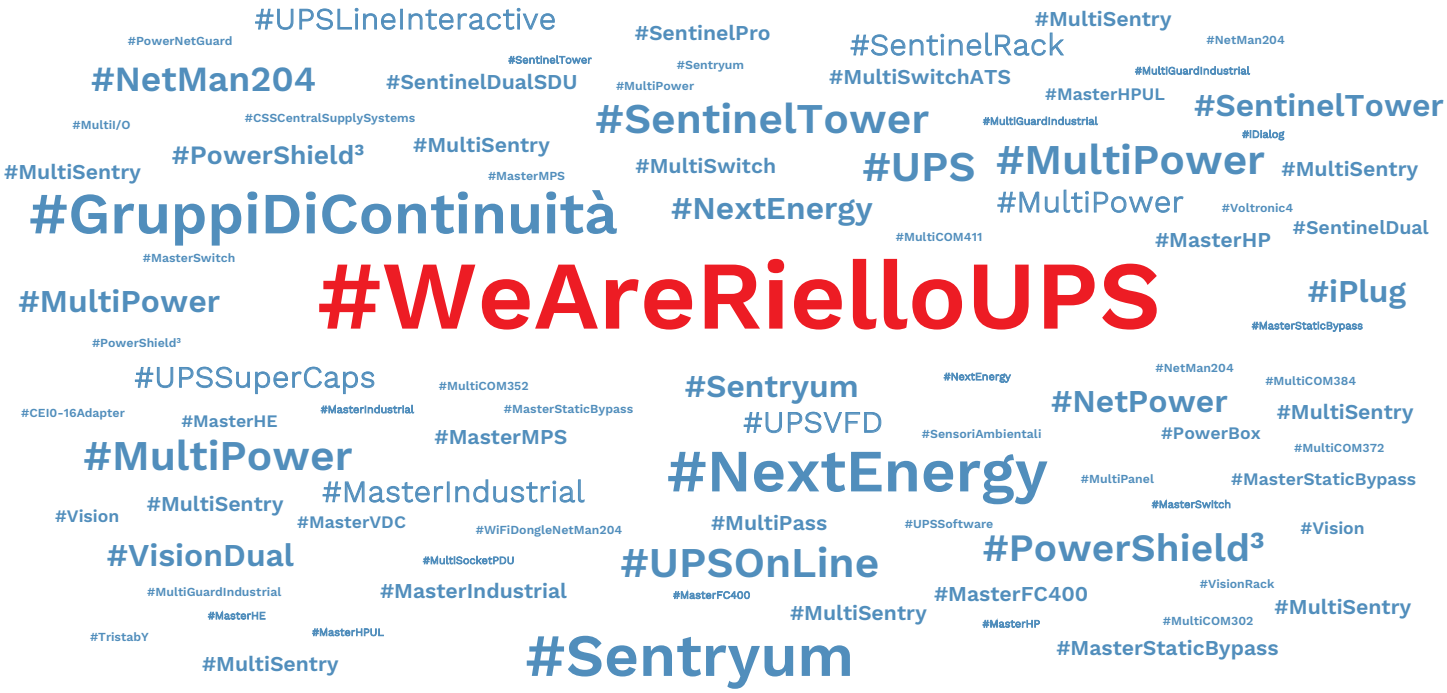

RIELLO ELETTRONICA

riello ups

Reliable power for a sustainable world

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Product photos are purely indicative. Due to technical improvements and/or changes in regulatory standards, product specifications are subject to change without notice.

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