The complete range of power solutions

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Riello Elettronica and Riello UPS

Our roots and our history

AS PART OF THE RIELLO INDUSTRIES GROUP, RIELLO ELETTRONICA IS AN ITALIAN MODEL OF A GLOBAL COMPANY. TODAY, THE RIELLO UPS BRAND IS A WORLD LEADER IN THE SUPPLY OF UNINTERRUPTIBLE POWER SUPPLIES (UPS)

RIELLO ELETTRONICA AND RIELLO INDUSTRIES

Riello Elettronica is part of the Riello Industries Group, the operational structure of the Riello Family Company.
Since 1922, the Riello family has been an innovative, entrepreneurial force in Italy.
The group employs a diverse range of modern business strategies, often exceeding the limitations of a traditional parent company model. This flexible approach, combined with the traditional values of an Italian business, provides the whole group with the strength to succeed in continuously expanding markets
A Family Company Agreement, defines and structures decisions related to both stock options and operational management.

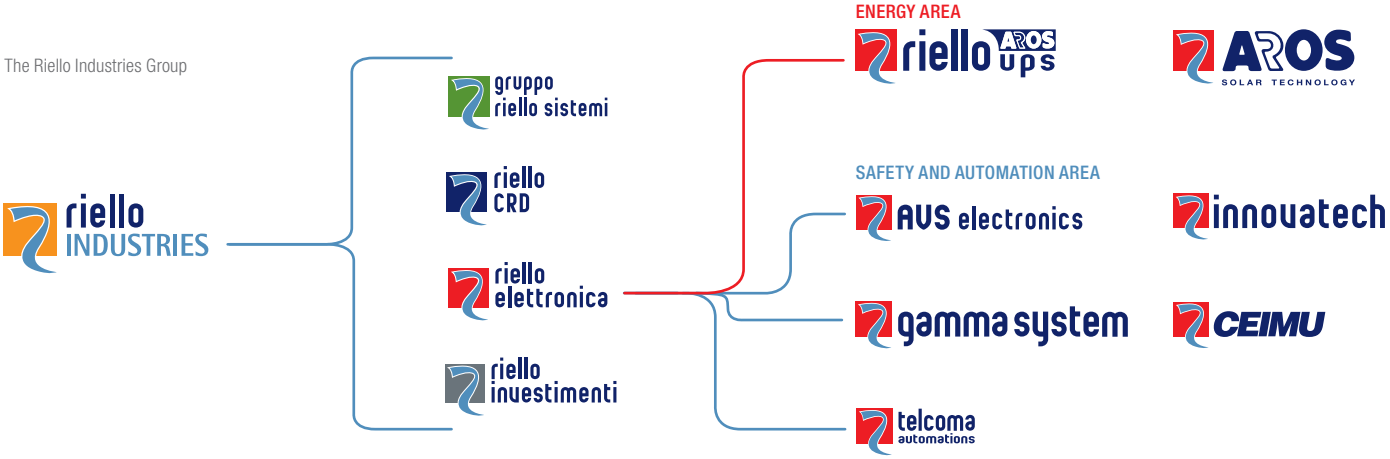
Riello Elettronica:
the headquarter.

Riello Industries, is the operational arm of the Family Company, whose entrepreneurial structure is lead by Pilade Riello, together with sons Pierantonio, Andrea, Giuseppe and Nicola.
Riello Industries consists of a group of autonomous manufacturing activities, revolving around a central catalytic core, and joined together by the common goals and objectives of the family.
Established in 1986, Riello Elettronica is the parent company of a group of businesses operating within the Energy, and Automation and Security sectors.
The company started manufacturing switching power supplies for information technology applications, before moving into the manufacture of Uninterruptible Power Supplies (UPS). In 1995 Riello Elettronica became a holding company with operations within civil and industrial electronics, plant engineering and information technology sectors, security and intelligent home systems, and its established UPS manufacturing business.
Also part of this strategic development was the restructuring of its energy-related activities under a new organisation - Riello UPS. This structure has been consolidated over time thanks to the acquisition of other companies operating within the sector (e.g. Aros); creating an International company with branches across the globe.

RIELLO UPS

The main activities of Riello UPS are the research & development, design, manufacture, sale and service of Uninterruptible Power Supplies. These are used throughout the world to provide a guaranteed continuous supply of electrical energy to information technology systems, used within data centres and IT network operations within finance, transportation, industrial manufacturing, health and other critical sectors.
The Riello UPS product range includes over 60 single-phase and three-phase systems from 400VA up to 6.4MVA; providing solutions for powering the smallest desktop PCs to the latest super-computers used within the most advanced data centre operations.
Riello UPS also provides a wide range of stabilisers, emergency devices for security and emergency applications, rack cabinets and connectivity accessories.

The Riello Industries Group



Riello UPS and Aros

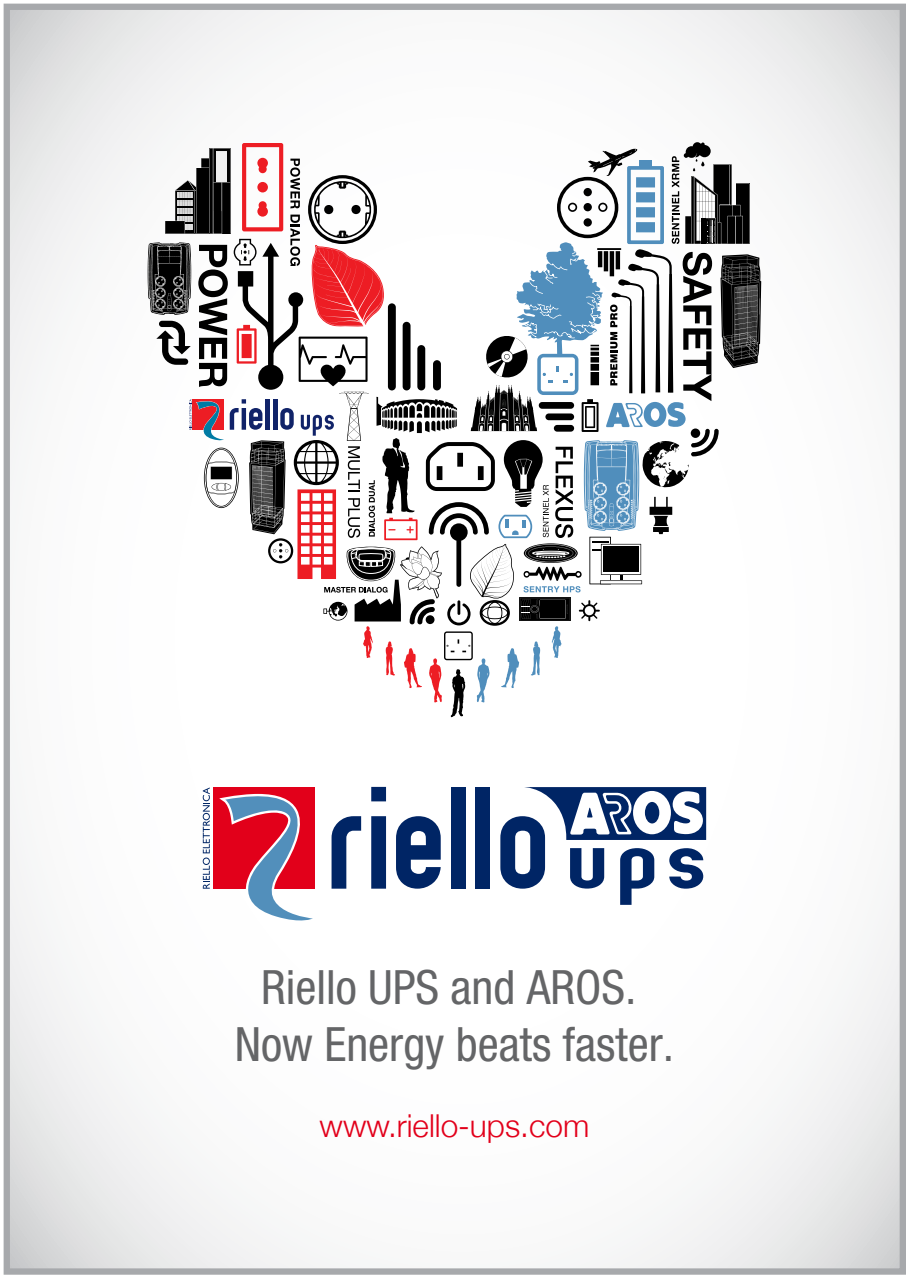
The Union

A GLOBAL BRANDING INITIATIVE THAT JOINS TOGETHER ALL RIELLO UPS AND AROS PRODUCTS

RIELLO ELETTRONICA'S ENTIRE UPS PORTFOLIO CONSOLIDATED UNDER RIELLO UPS

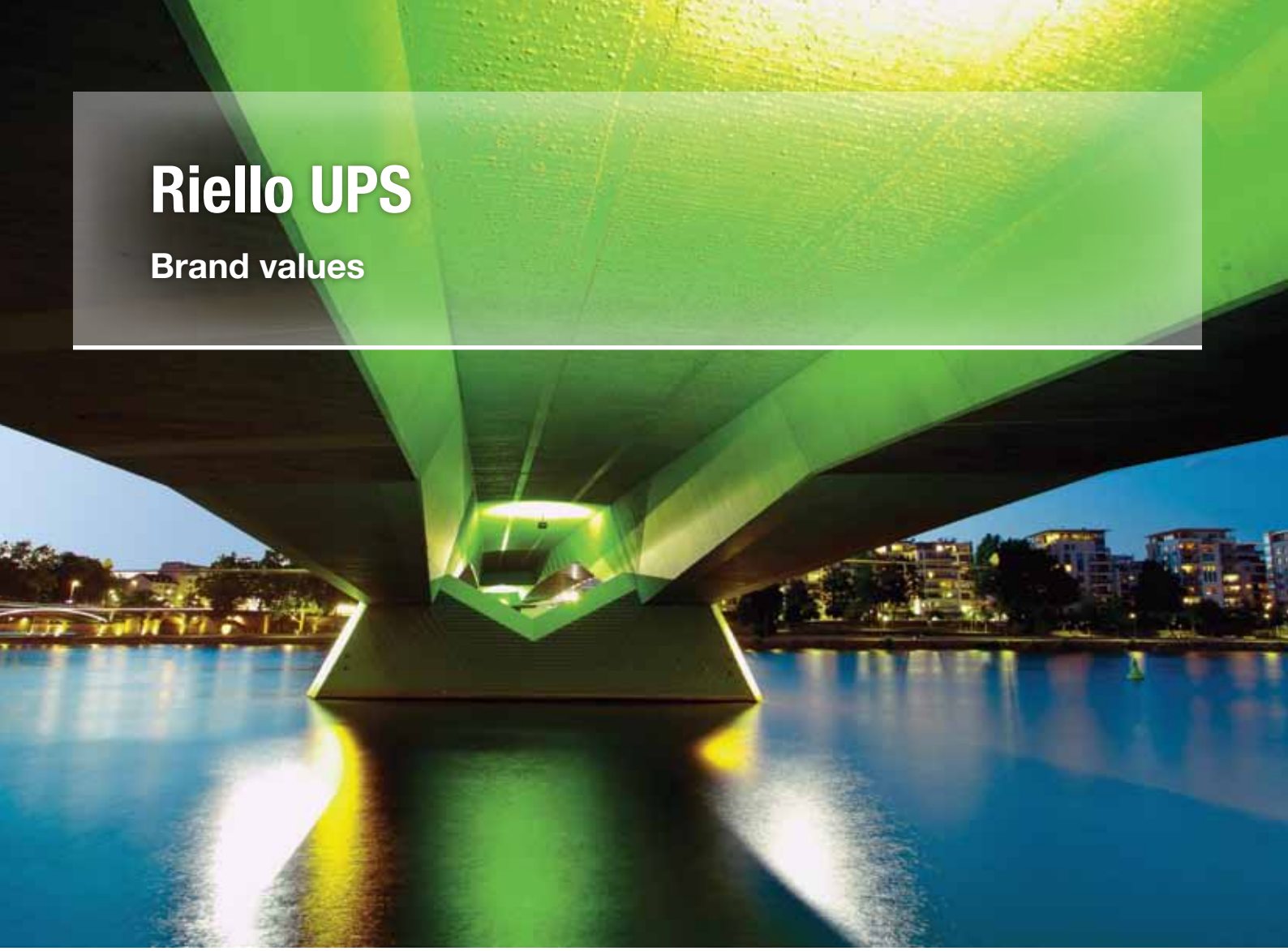
Riello Elettronica, the world's largest producer of energy transformation and power continuity systems is entirely Italian-owned. The group is a world leader in this sector and at the start of 2011 implemented a branding initiative aimed at strengthening and focusing global marketing and sales in support of its UPS and Solar Inverter portfolios. From January 1, 2011 all UPS products within the group will be branded 'Riello UPS', including those previously sold under the AROS brand. Solar Inverters are now marketed under the AROS Solar Technology brand. Both the UPS and solar inverter sectors have achieved considerable growth in their markets, and by unifying each sector under one dedicated brand, Riello Elettronica is creating a solid marketing platform to support its growth on a global level.

2011 Press Campaign
Presentation of the fusion
of the two brands



Unification under the Riello UPS brand successfully concludes 14 years of integration of the design, production and marketing resources of Riello UPS and AROS into a single UPS supplier; producing a global leader.
The unification benefits clients and partners for both sectors in terms of stronger product portfolios, engineering, manufacturing, sales, marketing and service teams.

Clients and partners will benefit from the increased focused and investment in UPS related activities, with a dedicated team, a stronger product portfolio, better assistance and support combined with greater brand visibility and communication. There are also advantages for clients and partners of the solar inverter sector, as the AROS Solar Technology team will concentrate its attention and resources exclusively on this rapidly growing sector.



Riello UPS

Brand values

RIELLO UPS: AS A GLOBAL PLAYER IN THE UPS SECTOR, CONTINUED INNOVATION AND ECO-COMPATIBILITY ARE THE FOUNDATION OF ITS BUSINESS STRATEGY.

POWER QUALITY

Riello UPS is committed to the supply of power solutions providing the very highest levels of efficiency, resilience and power quality on a global basis and for any application requiring continuous energy.
Power Quality can be defined using two parameters:

- Continuity - the availability of the power supply and its resilience
- Waveform - the purity of the waveform in terms of its voltage and current characteristics

The Riello UPS product range is extensive, ensuring the availability of a power solution for any critical application requiring a single UPS or turn-key solution combining UPS, Static Transfer Switches, and other power products.

AN INTERNATIONAL VISION, AN ALL-ITALIAN PRODUCT

In a world where many companies choose to locate manufacturing based on labour costs, often sacrificing product and service quality, Riello UPS continues to invest in a European production system. This creates two positive effects: the Riello UPS product range is highly reliable, benefiting from an integrated approach to research & development, manufacturing, distribution and service. Secondly, the process strengthens a culture of 'continuous improvement', with the flexibility to adapt and enhance the product even during manufacture and assembly. The end result is a superior product range that further enhances the reputation that Riello UPS enjoys for efficiency, resilience and quality.

BUSINESS CONTINUITY AND CONNECTIVITY

Riello UPS products represent 'state-of-the-art' developments within the energy management sector. There are currently 16 UPS product ranges offering various operating topologies and configurations, with principle applications within 'Business Continuity'. Here Riello UPS guarantee the power quality supplied to critical applications, to allow them to function during partial or complete mains power supply failures. This quality concept is central to the Riello UPS corporate culture and every aspect (including products, personnel and services) revolves around this. Whilst product quality is a prerequisite, it is the human element that can also differentiate a company and deliver true added value. All Riello UPS personnel are actively encouraged, wherever they are within the organisation, to contribute towards improvements, whether this relates to products, systems or services. Teamwork is an essential aspect of this approach to quality, and the certifications received from numerous external bodies and our many customer endorsements are proof that Riello UPS is achieving its quality objectives.

CONTINUOUS INNOVATION

Riello UPS operates two research centres in Italy: one in Legnago (near Verona) for transformerless UPS up to 120kVA; and the other in Cormano (Milan) for transformer-based systems up to 800KVA and custom-design products.The research centres are separated into three distinct areas of activity within the new product development process:

- Projects: concerned with concept design
- Experimental: for concept testing, analysis and evaluation within laboratory conditions
- Testing: prototype validation

Each phase is part of a continuous innovation and development process that is designed to deliver world-class power solutions to solve today's energy issues.

Brand values

ECO-FRIENDLY SOLUTIONS

With a concern for the environment, Riello UPS has taken an active role in creating a culture of sustainable development and reduced energy consumption. It has established a number of environmentally friendly projects and made substantial R&D investments into new technologies; specifically focused on a generation of 'clean energy' products and the development of even more efficient UPS. The Riello UPS Environmental Management System is also accredited to ISO14001; as a demonstration of a social commitment, which will benefit the present and have a positive impact on the future.
In addition to achieving the highest possible operating efficiencies, Riello UPS has also focused its research and development efforts on other aspects that impact the environment.

- Adaptive battery management to prolong battery life, and reduce wear on other consumables such as fans and capacitors.
- Low Total Harmonic Distortion on the input side (THDi) of (3%) to reduce the impact on upstream equipment and a high input power factor (0.99).
- Adaptive "Smart Mode" operation in which the UPS selects the best mode of operation to match the electrical characteristics of the mains power supply with the power protection performance required by the load.

As a company, Riello UPS is a major contributor to the European Commission – Code of Conduct on Energy Efficiency and Quality of AC Uninterruptible Power Supplies - and the first European manufacturer to rate its products for ECO Energy Level effciency. The European Commission Code of Conduct is a document signed by the major UPS manufacturers in Europe which defines the efficiency goals for specific size bands from 10-800kVA, from 25% to 100% loading.

Efficiency and Eco-compatibility:
the Challenge of Modern Data Centres

ECO LINE

Riello UPS exceeds the specifications of the European Code of Conduct (on Energy Efficiency and Quality of Uninterruptible Power Supplies) and has now introduced energy savings products below 3kVA – known as the 'ECO LINE'. Again the focus is on energy efficiency and savings – for instance by ensuring that power is not consumed by the UPS when it is connected to the mains power supply, with no load or output voltage.

ECO ENERGY LEVELS

Riello UPS powers some of the most critical data centres in use today. Within these environments, energy management is critical. Running costs must be minimised without compromising resilience or the ability to withstand a mains power supply disruption. Equipment must operate at the highest possible levels to reduce the stress on critical power supplies and minimise the effect on local ambients.

To further demonstrate commitment to the environment and promote a clear method for users to identify potential cost-savings (from reduced operational energy usage, lower heat outputs and carbon-footprints). Riello UPS developed the unique ECO Energy Levels rating system - a clear method of identifying how Riello UPS products comply with the European Commission Code of Conduct. There are six levels, with level 6 being the highest that can be achieved by a UPS in full on-line mode as defined by VFI-SS-111. 'Smart Mode' is an intelligent economy mode at which even higher levels of efficiency can be achieved.

Riello UPS is the first UPS manufacturer to differentiate its products using the ECO Energy Levels guide. The rating system has been applied from 3kVA (below the 10kVA threshold limit applied by the European Commission) because Riello UPS is committed to the environmental impact of its entire product range.

Importantly, Riello UPS ECO Energy Levels is more than a concept. As well as playing a part in the wider corporate initiative, the system demonstrates how Riello UPS can achieve capital payment periods that are up to half the industry standard, and with a reduced 'carbon-footprint' - both important benefits in an environmentally and energy challenged world.

On the Riello UPS website (**www.riello-ups.com**) is an Energy Savings Calculator that can be used to show the energy and money saved using Riello ECO Energy level 6 products. The calculator also shows the reductions in CO_2 available per model.

1 2 3 4 5 6

Energy Level	Efficiency comparison of UPS with CoC	"Smart Mode" Availability
ECO 6	Greater	YES
ECO 5	Greater	-
ECO 4	Equal	YES
ECO 3	Equal	-
ECO 2	Lower	YES
ECO 1	Lower	-

Riello UPS

The product range

A RANGE OF POWER SOLUTIONS FOR EVERY CLIENT FROM DOMESTIC USERS TO LARGE COMPANIES, FROM DATA CENTRES TO INDUSTRIAL SYSTEMS

THE PRODUCT RANGE

For years, Riello UPS has dedicated its best resources to the continuous development of its core business: uninterruptible power supplies (UPS).

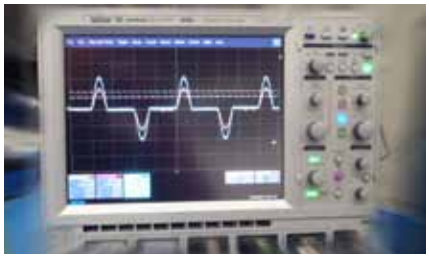
The result is the growth of a formidable market presence with a comprehensive product portfolio able to satisfy any requirement from small home/office solutions to large industrial systems and data centres.

Riello UPS offices throughout the world

	Phase	Power (KVA)
		0.5 | 0.75 | 1 | 2 | 4 | 5 | 10 | 20 | 40 | 80 | 100 | 200 | 400 | 800
iPlug	1/1	0.6-0.8
iDialog	1/1	0.4-1.6
Win Dialog Plus	1/1	0.4-0.8
Net Dialog	1/1	0.8-2
Dialog Vision	1/1	0.5-3
Vision	1/1	0.5-2
Sentinel Pro	1/1	0.7-3
Sentinel Dual	1/1	1-3
	3/1	3.3-10 / 6.5-10
Sentinel Power	1/1	5-10
	3/1	6.5-10
Multi Sentry	1/1	10-20
	3/1	10-20
	3/3	10-120
Multi Guard	3/3	15-120
Master MPS	3/3	10-800
	3/1	10-100
Master HP	3/3	100-140
Master Industrial	3/1	30-80
Master 400 Hz	3/3	30-120

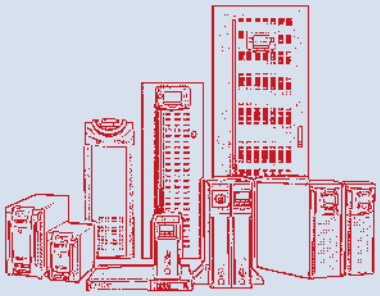
The Riello UPS portfolio includes:

- 16 UPS ranges, from 400VA to 6400KVA
- Rack and tower configurations
- Modular, centralised and distributed
- Centralised and distributed bypasses
- Static Transfer Switches (STS)
- Power Distribution Units (PDU)
- Extended runtime battery packs
- Flywheels for dc energy storage
- Monitoring software
- Communications options
- Environmental sensors
- Customised solutions
- Pre-sales technical consultancy (TEC)
- Post-sales technical service
- Hire and rental



The UPS Systems

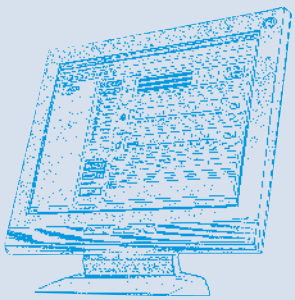
UPS rack line
portfolio

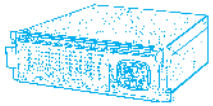


MODELS	DIALOG VISION	SENTINEL DUAL *Low Power*	SENTINEL DUAL *High Power*
POWER	500 - 800 - 1100 1500 - 2200 - 3000 VA	1100 - 1500 - 2000 - 3000 VA	3300 - 4000 - 5000 - 6000 8000 - 10000 VA
Type	Line Interactive	On-line double conversion	On-line double conversion
Output waveform	Sinusoidal	Sinusoidal	Sinusoidal
Input voltage	Single-phase 230V	Single-phase 230V	Three-phase 400V (1) and Single-phase 230V
Output voltage	Single-phase 230V	Single-phase 230V	Single-phase 230V
Automatic bypass	–	●	●
Manual bypass	–	–	–
Inverter output transformer	–	–	–
Automatic battery test	●	●	●
RS232 serial port	●	●	●
Dry contacts	○	○	○
USB port	●	●	●
Eco-mode function	–	●	●
Smart-active function	–	●	●
Emergency function	–	●	●
Frequency converter function	–	●	●
Display	●	●	●
Basic software version	●	●	●
Runtime expandability	● (2200 - 3000)	●	●

● Standard / compatible ○ Optional (1) Only on 6.5-8-10kVA

Software and accessories compatibility





MODELS	DIALOG VISION	SENTINEL DUAL *Low Power*	SENTINEL DUAL *High Power*
POWER	500 - 800 - 1100 1500 - 2200 - 3000 VA	1100 - 1500 - 2000 - 3000 VA	3300 - 4000 - 5000 - 6000 8000 - 10000 VA
SOFTWARE			
SOFTWARE POWERSHIELD[3]	■	■	■
SOFTWARE POWERNETGUARD	■	■	■
ACCESSORIES			
NETMAN 101 PLUS	■	■	■
NETMAN 102 PLUS	■	■	■
MULTICOM 301	■	■	■
MULTICOM 302	■	■	■
MULTICOM 351	■	■	■
MULTICOM 352	■	■	■
MULTICOM 362	■	■	■
MULTICOM 372	■	■	■
MULTICOM 382	■	■	■
MULTICOM 401	■	■	■
MULTI I/O	■	■	■
MULTISWITCH IRMS (with NetMan plus)	■	■	■
MULTISWITCH IRMS (with serial)	■	■	■
AS400 INTERFACE KIT	■	■	■
External MANUAL BYPASS 16A	■	■	up to 4kVA
External RACK MANUAL BYPASS 16A	■	■	up to 4kVA
56k EXTERNAL MODEM		■	■
GSM MODEM		■	■
REMOTE SIGNAL PANEL	■	■	■

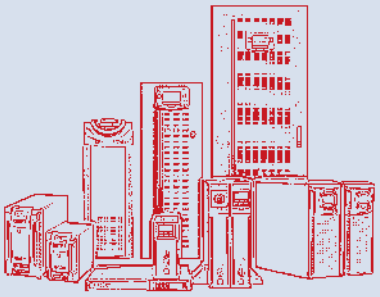
■ Compatible

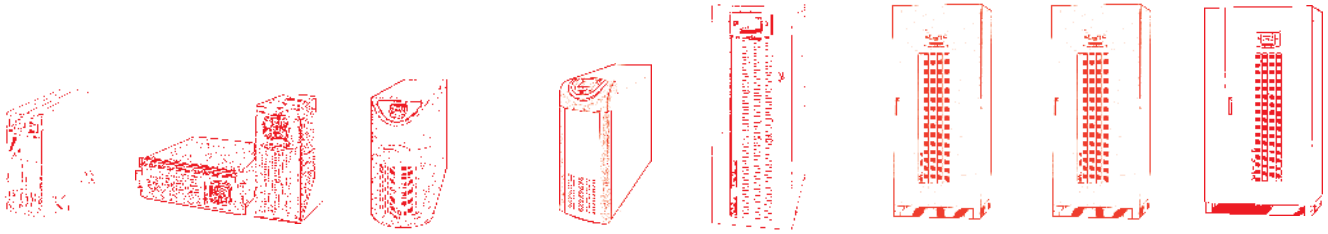
UPS tower line
portfolio

MODELS	IPLUG	IDIALOG	WIN DIALOG PLUS	NET DIALOG	DIALOG VISION	VISION	SENTINEL PRO
POWER	**600-800VA**	**400-600-800 1200-1600VA**	**400-600 800VA**	**800-1000 1500-2000VA**	**500-800-1100 1500-2200-3000VA**	**800-1100 1500-2200VA**	**700-1000 1500-2200 3000VA**
Type	Line Interactive	Line Interactive	Line Interactive	Line Interactive	Line Interactive	Line Interactive	On-line double conversion
Output waveform	Step-wave	Step-wave	Step-wave	Step-wave	Sinusoidal	Sinusoidal	Sinusoidal
Input voltage	Single-phase 230V	Single-phase 230V	Single-phase 230V	Single-phase 230V	Single-phase 230V	Single-phase 230V	Single-phase 230V
Output voltage	Single-phase 230V	Single-phase 230V	Single-phase 230V	Single-phase 230V	Single-phase 230V	Single-phase 230V	Single-phase 230V
Automatic bypass	–	–	–	–	–	–	●
Manual bypass	–	–	–	–	–	–	–
Inverter output transformer	–	–	–	–	–	–	–
Automatic battery test	–	–	–	–	●	●	●
RS232 serial port	–	●(2)	–	●	●	●	●
Dry contacts	–	–	–	–	○	○	○
USB port	●	●	●	–	●	●	●
Eco-mode function	–	–	–	–	–	–	●
Smart-active function	–	–	–	–	–	–	●
Emergency function	–	–	–	–	–	–	●
Frequency converter function	–	–	–	–	–	–	●
Display	–	–	–	–	●	●	●
Basic software version	downloadable via internet	downloadable via internet	downloadable via internet	●	●	downloadable via internet	●
Runtime expandability	–	–	–	–	●(6)	–	●

● Standard
○ Optional

(1) Only on 6.5-8-10kVA
(2) Only on 1200-1600VA
(3) From 10 to 40kVA / from 100 to 120kVA
(4) From 10 to 20kVA
(5) From 8 to 20kVA
(6) 2200-3000VA





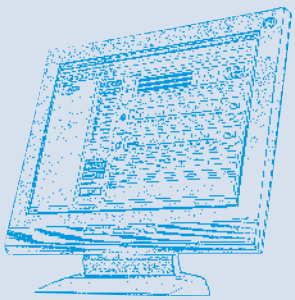
SENTINEL DUAL (Low Power)	SENTINEL DUAL (High Power)	SENTINEL POWER	MULTI SENTRY	MULTI SENTRY	MASTER MPS 3/1	MASTER MPS 3/3	MASTER HP
1000-1500 2200-3000VA	3300-4000 5000-6000-6500 8000-10000VA	5000-6000-6500 8000-10000VA	10-12-15-20kVA (1ph) 10-15-20kVA (3ph)	10-12-15-20kVA (1ph) 10-12-15-20-40-60 80-100-120kVA (3ph)	10-15-20 30-40-60 80-100kVA	10-15-20-30-40-60 80-100-120-160 200-600-800kVA	100-120-160-200 250-300-400 500kVA
On-line double conversion	On-line double conversion	On-line double conversion	On-line double conversion	On-line double conversion	On-line double conversion	On-line double conversion	On-line double conversion
Sinusoidal	Sinusoidal	Sinusoidal	Sinusoidal	Sinusoidal	Sinusoidal	Sinusoidal	Sinusoidal
Single-phase 230V	Three-phase 400V (1) Single-phase 230V	Three-phase 400V (1) Single-phase 230V	Three-phase 400V (3) Single-phase 230V	Three-phase 400V	Three-phase 400V	Three-phase 400V	Three-phase 400V
Single-phase 230V	Single-phase 230V	Single-phase 230V	Three-phase 400V (3) Single-phase 230V	Three-phase 400V (4) Single-phase 230V (5)	Single-phase 230V	Three-phase 400V	Three-phase 400V
●	●	●	●	●	●	●	●
–	–	●	●	●	●	●	●
–	–	–	–	–	●	●	●
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
○	○	○	●	●	●	●	●
●	●	●	●	●	–	–	–
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	●	●	●	●	–	–	–
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●

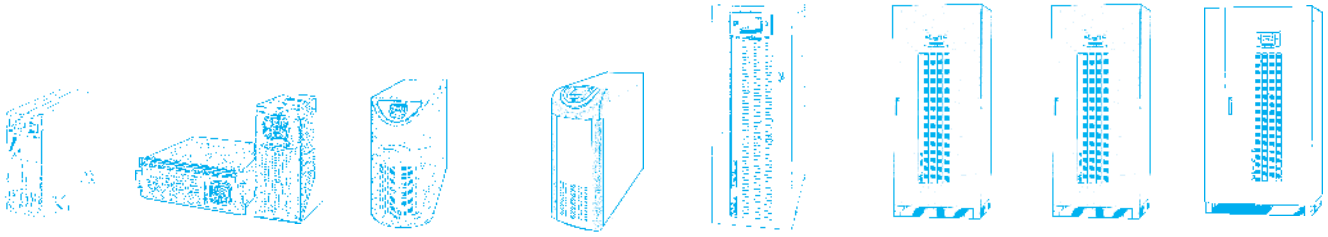
UPS tower line

Software and accessories compatibility

MODELS	IPLUG	IDIALOG	WIN DIALOG PLUS	NET DIALOG	DIALOG VISION	VISION	SENTINEL PRO
POWER	600-800VA	400-600-800 1200-1600VA	400-600 800VA	800-1000 1500-2000VA	500-800-1100 1500-2200 3000VA	800-1100 1500-2200VA	700-1000 1500-2200 3000VA
SOFTWARE COMPATIBILITY							
SOFTWARE POWERSHIELD[3]			■	■	■	■	■
SOFTWARE POWERNETGUARD			■	■	■	■	■
ACCESSORIES							
NETMAN 101 PLUS			■	■	■	■	■
NETMAN 102 PLUS					■	■	■
NETMAN 202 PLUS					■	■	■
MULTICOM 301			■	■	■	■	■
MULTICOM 302					■	■	■
MULTICOM 351			■	■	■	■	■
MULTICOM 352					■	■	■
MULTICOM 362					■	■	■
MULTICOM 372					■	■	■
MULTICOM 382					■	■	■
MULTICOM 401	■	■	■	■	■	■	■
MULTI I/O			■	■	■	■	■
I/O expansion board							
MULTISWITCH IRMS (with NetMan plus)			■	■	■	■	■
MULTISWITCH IRMS (with serial)			■	■	■	■	■
AS400 INTERFACE KIT			■	■	■	■	■
INTERFACE BOX 3 DRY CONTACTS 250V / 5A							
External MANUAL BYPASS 16A			■	■	■	■	■
External RACK MANUAL BYPASS 16A			■	■	■	■	■
56k EXTERNAL MODEM						■	
GSM MODEM						■	
REMOTE SIGNAL PANEL			■	■	■	■	■

■ Compatible





SENTINEL DUAL	SENTINEL DUAL	SENTINEL POWER	MULTI SENTRY	MULTI SENTRY	MASTER MPS 3/1	MASTER MPS 3/3	MASTER HP
1000-1500 2200-3000VA	3300-4000 5000-6000-6500 8000-10000VA	5000-6000-6500 8000-10000VA	10-12-15-20kVA (1ph) 10-15-20kVA (3ph)	10-12-15-20kVA (1ph) 10-12-15-20-40-60 80-100-120kVA (3ph)	10-15-20 30-40-60 80-100kVA	10-15-20-30-40-60 80-100-120-160 200-600-800kVA	100-120-160-200 250-300-400 500kVA
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
■	■	■	■		■	■	■
■	■	■	■		■	■	■
■	■	■	■	■	■	■	■
■	■	■	■		■	■	■
■	■	■	■	■	■	■	■
■	■	■	■		■	■	■
■	■	■	■				
■	■	■	■				
■	■	■	■				
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
					■	■	■
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
				■	■	■	■
■	3300 - 4000 VA						
■	3300 - 4000 VA						
	■	■	■	■	■	■	■
	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■

iPlug

600-800 VA
Single-phase

Highlights

- Compact
- Versatile
- Robust
- Contemporary design
- Advanced communication
- Auto restart
- Battery swap
- ECO line environmental protection

The iPLUG series is the ideal solution for 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 mains power fails, the load is powered by the pseudo-sinewave inverter and built-in battery.
PowerShield³ UPS monitoring and control software can be used for an orderly unattended shutdown of IT systems. PowerShield³ can be downloaded free of charge from **www.riello-ups.com**

Versatile, robust and contemporary design
iPLUG's compact and ergonomic design allow the UPS to be easily used within professional and domestic environments. iPLUG is extremely versatile and its innovative cable management feature ensures a clean, easy to manage installation.

Advanced communication
PowerShield³ software for the safe and unattended 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.

Automatic restart
The UPS automatically restarts when the mains power supply is restored, after auto power.

ECO Line environmental protection
iPLUG features a unique shut-off button to reduce energy consumption during periods of prolonged inactivity.

Applications
LCD monitors, personal computers, VDUs, printers, scanners and faxes.

Features
- ECO LINE product
- Compact and ergonomic
- 5 Battery runtime protected sockets
- 3 Surge protected sockets for powering larger absorption loads such as laser printers
- Ability to switch on the UPS without a mains power supply (Cold Start)
- User replaceable batteries (Battery Swap)
- USB Interface
- Can be placed on a desktop or the floor
- Power cable included
- Short-circuit protection
- Auto restart (when mains power is restored, after a battery discharge)
- GS/Nemko Safety mark
- Available with French (2P+T), English, Shuko and Italian outlets.
- PowerShield³ supervision and shutdownsoftware for Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OS X and Sun Solaris
- Plug and Play function

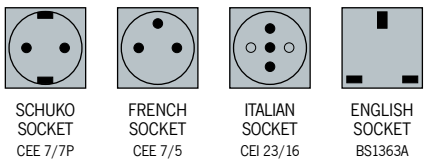
2-YEAR WARRANTY

Configurator for model selection

Load type	Power
	VA *
Personal computer	250
LCD Monitor	70
15” Monitor	150
Scanner, printer	200
Modem, TV, DVD players, PlayStation, Hi-Fi, telephone, Fax	50
Laser printer **	200

* Average estimated value
** Use of the iPLUG filtered power output is recommended.

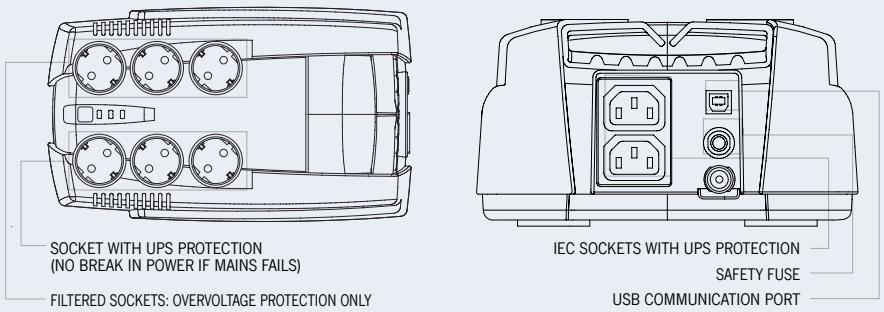
Available sockets



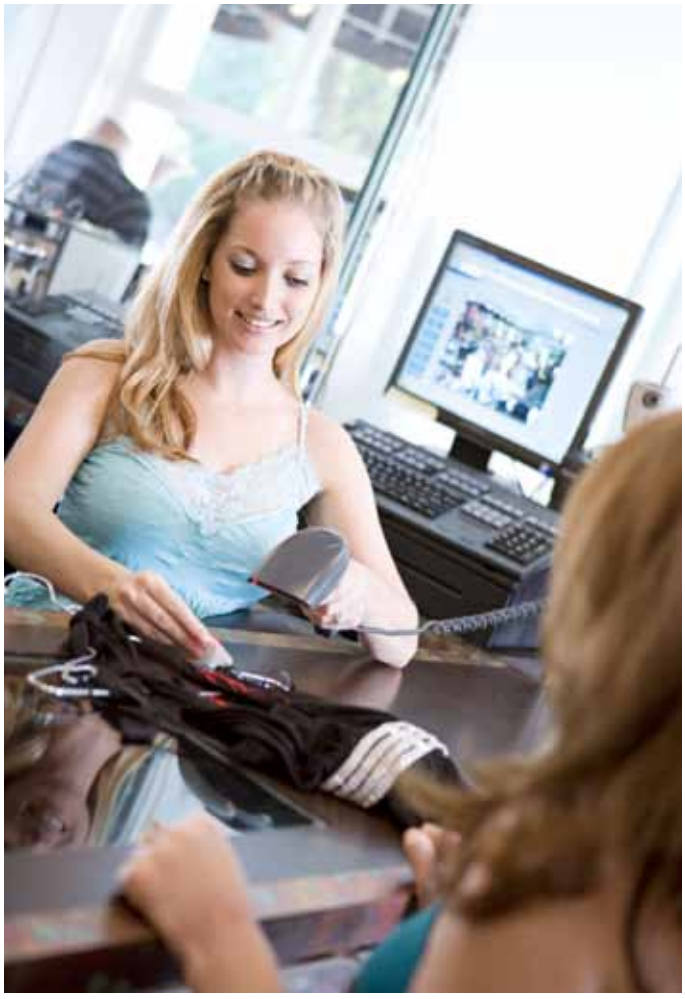
SCHUKO SOCKET CEE 7/7P | FRENCH SOCKET CEE 7/5 | ITALIAN SOCKET CEI 23/16 | ENGLISH SOCKET BS1363A

Details

IPG 600 - IPG 800



MODELS	IPG 600	IPG 800
POWER	600VA/360W	800VA/480W
INPUT		
Nominal voltage	220-240 Vac	
Input voltage tolerance	230 Vac (+20/-25%)	
Frequency	50/60 Hz with automatic selection	
OUTPUT		
Voltage during mains operation	230 Vac (+20/-25%)	
Voltage during battery operation	230 Vac (+/- 10%)	
Frequency during battery operation	50 or 60 Hz (+/- 1%)	
Waveform	Pseudo-sine	
BATTERIES		
Type	VRLA AGM lead acid maintenance free batteries	
Charging time	6-8 hours	
OTHER FEATURES		
Net weight (kg)	3.7	4.1
Gross weight (kg)	4	4.4
Dimensions (hwd) (mm)	99 x 175 x 313	
Packaging dimensions (hwd) (mm)	260 x 380 x 140	
Communication	USB	
Output socket	6 sockets (Shuko or Italian or French or English) + 2 IEC 320 C13	
Regulations	EN 62040-1-1 and Directive EN 62040-3 EN 62040-2 and Directive 2004/108 EC	
Trademarks	CE; GS/NEMKO on Shuko version	
Ambient temperature	0°C / +40°C	
Colour	Black	
Altitude and relative humidity	6000 m max altitude, < 95% non-condensing	
Standard equipment provided	power cable, user guide	



PERSONAL COMPUTERS

SMALL INFORMATION NETWORKS

iDialog

400-1600 VA
Single-phase

ECO LINE

Highlights

- Compact
- Silent
- Contemporary design
- Advanced communication
- Auto restart
- ECO Line environmental protection
- Very low energy consumption

The iDIALOG range is the ideal solution for the protection of PCs and peripheral devices in domestic and office environments.
iDIALOG is an easy-to-install and economical solution for protecting equipment such as:

- PCs, Media Centres and peripheral devices, TVs, Home Cinemas, Satellite and Digital Terrestrial Receivers, DVD players and writers;
- Modems and xDSL routers;
- Small household appliances.

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

Advanced communication
PowerShield^3 software for the safe and unattended shutdown of connected IT systems on mains power supply failure. PowerShield^3 provides efficient and intuitive UPS management using bar chart displays for important operating information.

Automatic restart
The UPS automatically restarts when the mains power supply is restored, after auto power.

MODELS	IDG 400	IDG 600	IDG 800	IDG 1200	IDG 1600
POWER	400VA/240W	600VA/360W	800VA/480W	1200VA/720W	1600VA/960W
INPUT					
Nominal voltage	220-240 Vac				
Input voltage tolerance	230 Vac (+20/-25%)				
Frequency	50 or 60 Hz with automatic selection				
OUTPUT					
Voltage during mains operation	230 Vac (+20/-25%)				
Voltage during battery operation	230 Vac (+/- 10%)				
Frequency during battery operation	50 or 60 Hz (+/- 1%)				
Waveform	Pseudo-sine				
BATTERIES					
Type	VRLA AGM lead acid maintenance free batteries				
Charging time	6-8 h				
OTHER FEATURES					
Net weight (kg)	3.2		3.4	6.6	7
Gross weight (kg)	3.7		4.1	8.1	8.6
Dimensions (hwd) (mm)	192 x 90 x 232			275 x 97 x 315	
Packaging dimensions (hwd) (mm)	278 x 300 x 138			370 x 400 x 170	
Communication	USB			USB + RS232	
Output socket	4 IEC 320 C13			6 IEC 320 C13	
Regulations	EN 62040-1-1 and Directive EN 62040-3 EN 62040-2 and Directive 2004/108 EC				
Trademarks	CE; GS/Nemko				
Ambient temperature	0°C / +40°C				
Colour	Black				
Altitude and relative humidity	6000 m max altitude, <95% non-condensing				
Standard equipment provided	2 output supply cables, 1 USB cable, user manual				

ECO Line environmental protection

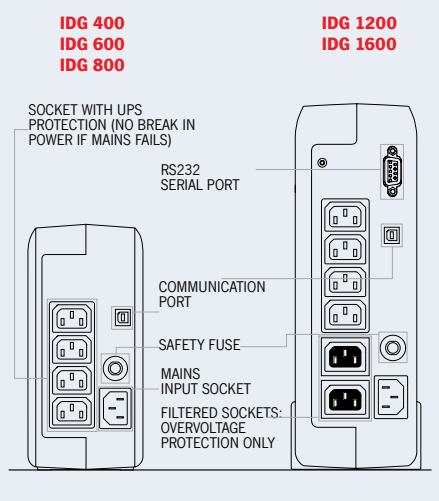
iDIALOG features a unique shut-off button to reduce energy consumption during periods of prolonged inactivity.

Features

- ECO LINE product
- Reduced energy consumption, operating at 99% efficiency
- Maximum reliability and protection thanks to PowerShield[3] supervision and shutdownsoftware, downloadable free of charge from **www.riello-ups.com**
- Can be installed on PCs Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OSX and Sun Solaris
- With its compact shape iDIALOG can be placed on a desk or floor within a home or office environment.
- Silent operation, iDIALOG is also suitable for protecting domestic digital equipment such as Home Cinemas, DVD writers, Satellite and Digital Terrestrial Receivers.

2-YEAR WARRANTY

Details



PERSONAL COMPUTERS

SMALL INFORMATION NETWORKS

Win Dialog Plus

400-800 VA
Single-phase

Highlights

- Automatic Voltage Regulator (AVR)
- Advanced communication
- Automatic battery test

The WIN DIALOG PLUS series includes the 400-600-800VA models and uses digital technology. The load is powered from the mains through an AVR to stabilise brownouts, sags, and surge voltages, and EMI filters to suppress spikes and transients.
When the mains fails, the load is powered from a pseudo-sinewave inverter, to provide sufficient runtime for computer system shutdown using PowerShield[3] software, which is downloadable free of charge from **www.riello-ups.com**.

Features

- Stabilisation and filtering of the mains power supply using a built-in AVR and EMI filters for the elimination of atmospheric disturbances
- Cold Start capability: the UPS can power up without a mains supply present
- 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

MODELS	WPG 400	WPG 600	WPG 800
POWER	400VA/240W	600VA/360W	800VA/480W
INPUT			
Nominal voltage	220-230-240 Vac		
Input voltage tolerance	230 Vac (±25%)		
Frequency	50 or 60 Hz with automatic selection		
OUTPUT			
Voltage during mains operation	230 Vac (-8%, +10%)		
Voltage during battery operation	230 Vac (+/- 5%)		
Frequency during battery operation	50 or 60 Hz (+/- 0.5%)		
Battery waveform	Pseudo sine wave		
BATTERIES			
Type	VRLA AGM lead acid maintenance-free		
Charging time	6-8 h		
OTHER FEATURES			
Net weight (kg)	5.8		6.2
Gross weight (kg)	6.9		7.3
Dimensions (hwd) (mm)	152 x 110 x 325		
Packaging dimensions (hwd) (mm)	140 x 380 x 230		
Communication	USB		
Output socket	3 IEC SOCKET 320 C13		
Regulations	EN 62040-1-1 and Directive EN 62040-3 EN 62040-2 and Directive 2004/108 EC		
Trademarks	CE		
Ambient temperature	0°C / +40°C		
Colour	Dark grey RAL 7016		
Altitude and relative humidity	6000 m max altitude, <95% non-condensing		
Standard equipment provided	2 output supply cables, communications software; user manual		

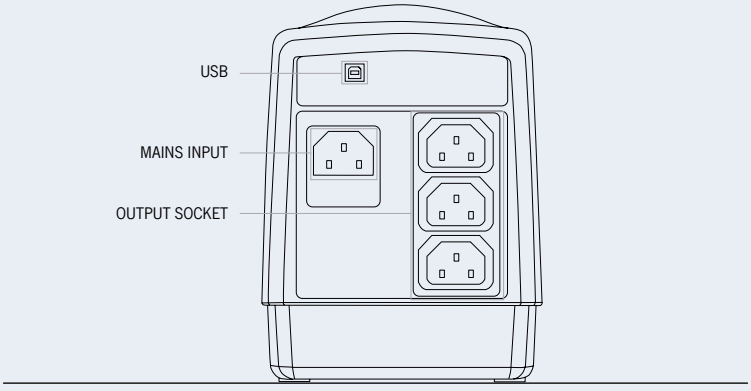
Details

Advanced communication

- Advanced communication, multi-platform, for all operating systems and network environments: PowerShield[3] supervision and shutdown software for Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OS X and Sun Solaris
- Standard USB interface

2-YEAR WARRANTY

WPG 400 - WPG 600
WPG 800



PERSONAL COMPUTERS

SMALL INFORMATION NETWORKS

Net Dialog

800-2000 VA
Single-phase

Highlights

- Automatic Voltage Regulator (AVR)
- Advanced communication
- Automatic battery test

The NET DIALOG series includes the 800-1000 1500-2000VA models and uses digital technology: the load is powered from the mains through an AVR to stabilise brownouts, sags, and surge voltages, and EMI filters to suppress spikes and transients.
When the mains fails, the load is powered from a pseudo-sinewave inverter, to provide sufficient runtime for computer system shutdown using PowerShield[3] software. Downloadable free of charge from **www.riello-ups.com**.

The UPS also includes telephone line protection, with filtering.

For advanced communication and high performance, NET DIALOG, is the ideal solution for users who require total control over the power supply systems.

Features

- Stabilisation and filtering of the mains power supply using a built-in AVR
- Cold Start capability: the UPS can power up without a mains supply present
- Auto restart when mains power is restored
- Integrated protection for telephone line/ RJ11/45 modem connection.
- High reliability with automatic battery testing

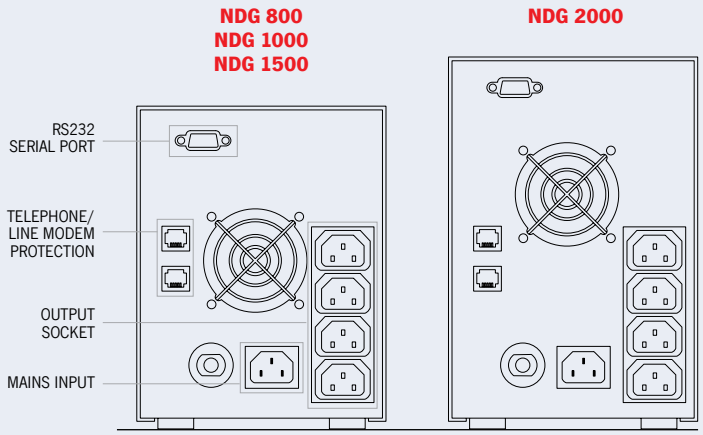
MODELS	NDG 800	NDG 1000	NDG 1500	NDG 2000
POWER	800VA/480W	1000VA/600W	1500VA/900W	2000VA/1200W
INPUT				
Nominal voltage	220-230-240 Vac			
Input voltage tolerance	230 Vac (±25%)			
Frequency	50 or 60 Hz with automatic selection			
OUTPUT				
Voltage during mains operation	230 Vac (-8%, +10%)			
Voltage during battery operation	230 Vac (+/- 5%)			
Frequency during battery operation	50 or 60 Hz (+/- 0.5%)			
Intervention time	usually 2 ms			
Battery waveform	Pseudo-sine			
BATTERIES				
Type	VRLA AGM lead acid maintenance free batteries			
Charging time	4-6 h			
OTHER FEATURES				
Net weight (kg)	14	14.5	15	20
Gross weight (kg)	15.3	15.8	16.3	21.4
Dimensions (hwd) (mm)	180 x 140 x 375			214 x 140 x 410
Packaging dimensions (hwd) (mm)	260 x 480 x 300			270 x 520 x 320
Circuit protection devices	Excessive low battery - overvoltage - short-circuit			
NET/Tel/Modem PC Protection	RJ11/45 connectors			
Communication	RS232 serial port			
Output socket	4 IEC SOCKET 320 C13			
Regulations	EN 62040-1-1 and Directive EN 62040-3 EN 62040-2 and Directive 2004/108 EC			
Immunity to lightning	IEC 801-5			
Ambient temperature	0°C / +40°C			
Storage temperature	-15°C / 45°C			
Relative humidity	< 95% non-condensing			
Noise level	< 40 dBA a 1 m			
Colour	Dark grey RAL 7016			

Details

Advanced communication

- Advanced communication, multi-platform, for all operating systems and network environments: Supervision and shutdown PowerShield[3] software for Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OS X, Sun Solaris, Linux, Novell and other Unix operating systems
- UPS is supplied with a cable for direct connection to the PC

2-YEAR WARRANTY



SMALL INFORMATION NETWORKS | LOCAL AREA NETWORKS (LAN) | WORK STATIONS | SERVERS | POINT oF SALES SYSTEMS (PoS)

Vision

800-2000 VA
Single-phase

Highlights

- Superior protection
- Compact and contemporary design
- High availability
- Versatility
- LCD display
- Advanced communication
- Automatic Voltage Regulator (AVR)

The VISION VST series uses a Tower format from 800VA to 2000VA and digital sinewave technology.
The VISION UPS, offers superior protection, versatility, connectivity and advanced communications.
VISION UPS is the ideal solution for the protection of peripheral network devices, servers, and network back-up systems.

High protection
The Vision series uses Line Interactive technology and provides a sinewave output.
The UPS is 98% efficient, with a low energy consumption.
The UPS also provides a high level of protection against mains power disturbances.
An AVR (Automatic Voltage Regulator provides protection from brownouts, surges, overvoltages and undervoltages, without battery intervention.

Reduced battery usage ensures that the battery set is 100% available for mains power supply failures.
EMI filters provide further protection from surges and transients. When the mains power supply fails, the load is powered by the inverter, providing a perfect sinewave for maximum power continuity and reliability.

High availability

A Power Share socket allows load-shedding and the shutdown of less critical peripheral devices to extend the battery runtime.
"Hot Swap" batteries can be removed via the front panel for easy and safe UPS maintenance.
Battery test facility to detect deteriorating battery performance and failure.
Deep discharge protection to reduce general battery ageing.

Versatility

"Cold start" function allowing the UPS to be powered up without a mains power supply present.

LCD Display

Vision UPS have a backlit LCD display providing UPS status information including the load and battery charge percentages.

Advanced communication

- Advanced communication, multi-platform, for all operating systems and network environments: PowerShield[3] supervision and shutdown software for Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OS X, Sun Solaris, Linux, Novell and other Unix operating systems.
- USB or RS232 (selectable)
- Expansion slot for SNMP network adapter card
- Status, measurements, alarms, and input, output and battery parameters available on the LCD display.

Features

- ECO LINE product
- Power Share socket
- Surge protected sockets for powering larger absorption loads such as laser printers
- Ability to switch on the UPS without a mains power supply (Cold Start)

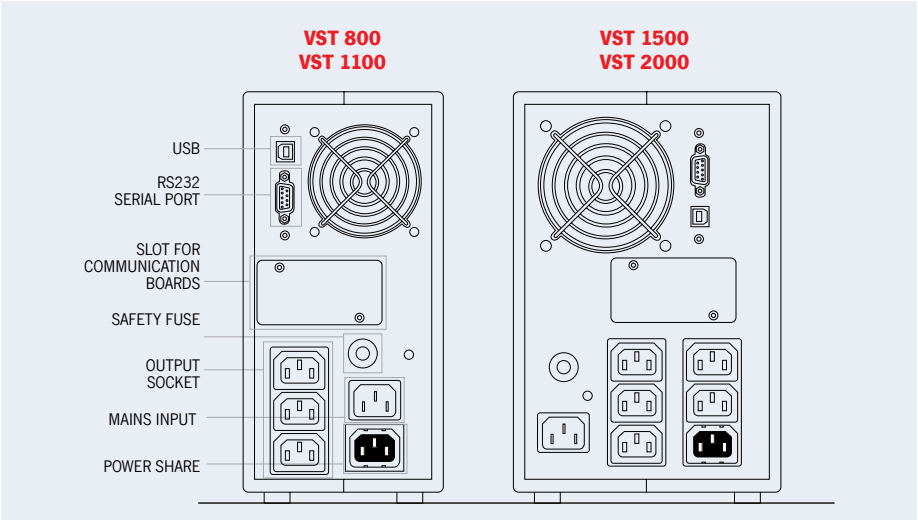
- User replaceable batteries (Battery Swap)
- USB Interface and RS232
- Slot for communication boards
- Maximum reliability and protection of PCs and file servers running PowerShield[3] supervision and shutdown software, downloadable free from **www.riello-ups.com**

- Fully configurable using UPS Tools configuration software
- High reliability (automatic and manually activated battery test)

- Short circuit proctection
- Auto restart (when mains power is restored, after battery discharge)
- GS/Nemko Safety mark

2-YEAR WARRANTY

Details



MODELS	VST 800	VST 1100	VST 1500	VST 2000
POWER	800VA/640W	1100VA/880W	1500VA/1200W	2000VA/1600W
INPUT				
Nominal voltage	230 Vac (200, 208, 220, 240 V selectable)			
Voltage tolerance	160 - 294 Vac			
Frequency	50 or 60 Hz with automatic selection			
Frequency tolerance	±5%			
OUTPUT				
Nominal voltage	230 Vac (200, 208, 220, 240 V selectable)			
Frequency	50 or 60 Hz with automatic selection			
Waveform	Sinusoidal			
BATTERIES				
Type	VRLA AGM lead acid maintenance free batteries			
Charging time	4-6 h			
OTHER FEATURES				
Net weight (kg)	10.5	11.3	16.5	18.5
Gross weight (kg)	12.2	13	18.4	20.4
Dimensions (hwd) (mm)	247 x 120 x 443		247 x 160 x 443	
Packaging dimensions (hwd) (mm)	342 x 208 x 530		354 x 250 x 540	
Protection devices	Overcurrent - short-circuit - overvoltage - undervoltage - temperature - excessive low battery			
Communication	USB / RS232 / slot for communications interface			
Input sockets	1IEC 320 C14			
Output socket	4 IEC 320 C13		6 IEC 320 C13	
Regulations	EN 62040-1-1 e direttiva 2006/95/EC EN 62040-2 e direttiva 2004/108 EC			
Ambient temperature	0°C / +40°C			
Storage temperature	-15°C / 45°C			
Colour	Dark grey RAL 7016			
Relative humidity	<95% non-condensing			
Noise level	< 50 dBA			

SMALL INFORMATION NETWORKS | LOCAL AREA NETWORKS (LAN) | WORK STATIONS | SERVERS | POINT oF SALES SYSTEMS (PoS)

Dialog Vision

500-3000 VA
Single-phase

ECO LINE

Highlights

- Superior protection
- High availability
- Versatility
- LCD display
- Advanced communication
- Automatic Voltage Regulator (AVR)

The DIALOG VISION series includes the DVR (Rack version) and DVD (Dual Rack/ Tower version) with models from 500VA to 3000VA and uses sinewave digital technology.
The DIALOG VISION range, with its advanced communications and connectivity options, is the ideal solution for installations requiring superior protection and versatility.
DIALOG VISION is the best protection for network devices, rackmounted servers, conventional rack-mounted or tower servers, network storage systems.

Superior protection
An Automatic Voltage Regulator (AVR) provides stabilisation from brownouts, sag and surge voltages. EMI filters then provide further protection from spikes and transients. When the mains power supply fails, the load is powered by the inverter and receives a true sinewave supply for maximum power continuity and reliability.
The UPS also incorporates protection for PC and network, telephone line/modem connections (RJ45-RJ11).

High availability
One Power Share socket for load-shedding of the least critical loads to maximise back up time for the most critical servers.
Hot swappable battery (front access) for simple and risk-free UPS maintenance.

Additional Battery Boxes (with chargers) are available for the DVD 2200 and 3000 for long back up time applications.
Battery Test facility to detect deteriorating battery performance and failure.
Deep discharge protection: to prevent the battery set being damaged by a low load, long duration discharge, using an increased end-of-discharge battery voltage threshold.

Versatility

DIALOG VISION Dual (DVD 1500, 2200 and 3000) can be placed directly onto the floor or mounted in 19'' rackmount cabinets.
The front panel digital display can be easily pulled out and rotated to suit the installation format.
DIALOG VISION includes an Emergency Power Off (EPO) input contact.
Cold Start function to allow a DIALOG VISION to power up with no mains power supply present.

Advanced communication

- Advanced communication and multiplatform, for all operating systems and network environments: Powershield[3] supervision and shut-down software included, with SNMP agent, for Windows 7, 2008, Vista, 2003, XP, Linux, Mac OS X, Sun Solaris, Linux, VMWare ESX operating systems and other Unix operating systems
- USB or RS232 serial port (selectable)
- Slot-in SNMP network adapter card
- LCD display.

Features

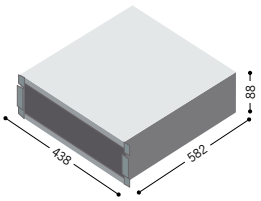
- ECO LINE product
- Power Share socket
- Surge-protected sockets for powering strong impulsive absorption loads (laser printers, etc)
- Ability to switch on the UPS in the absence of mains power (Cold Start)
- User-replaceable batteries (Battery Swap)
- USB Interface AND RS232
- Slot for communication boards
- Maximum reliability, monitoring and auto-shutdown using PowerShield[3] software, available free of charge from **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)
- EPO

2-YEAR WARRANTY

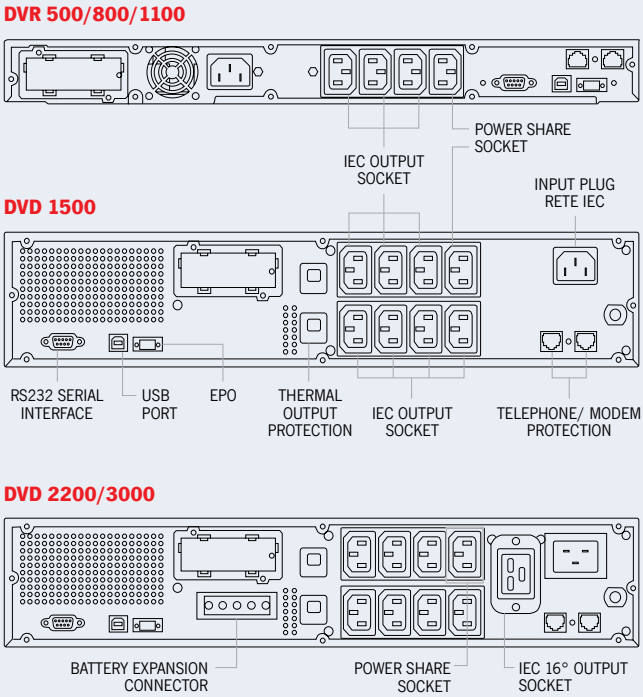
Battery box

MODELS	BB DVD 96-A5
DVD MODELS	DVD 2200 - DVD 3000

Dimensions (mm)



Details



1. Remove the mimic panel by pressing the appropriate button

2. Rotate the mimic panel and insert it into position

3. Rotate the UPS 90°

4. Insert the UPS into the rack

MODELS	DVR 500	DVR 800	DVR 1100	DVD 1500	DVD 2200	DVD 3000
POWER	500VA/350W	800VA/540W	1100VA/740W	1500VA/1050W	2200VA/1540W	3000VA/2100W
INPUT						
Nominal voltage	230 Vac (200, 208, 220, 240 V selectable)					
Voltage tolerance	160 - 294 Vac					
Frequency	50 or 60 Hz with automatic selection					
Frequency tolerance	±5%					
OUTPUT						
Nominal voltage	230 Vac (200, 208, 220, 240 V selectable)					
Frequency	50 or 60 Hz with automatic selection					
Waveform	Sinusoidal					
BATTERIES						
Type	VRLA AGM lead acid maintenance free batteries					
Charging time	4-6 h					
OTHER FEATURES						
Net weight (kg)	12	13.5	15.6	28.7	31	32.8
Gross weight (kg)	16	18	20	32.5	36	38
Dimensions (hwd) (mm)	1U x 19" x 460			T 88 x 438 x 582 - R 2U x 19" x 582		
Packaging dimensions (hwd) (mm)	200 x 605 x 623			260 x 726 x 623		
Protection devices	Overcurrent - short-circuit - overvoltage - undervoltage - temperature - excessive low battery					
Communication	USB / RS232 / slot for communications interface					
Input sockets	1 IEC 320 C14				1 IEC 320 C20	
Output socket	4 IEC 320 C13			8 IEC 320 C13	8 IEC 320 C13 - 1 IEC 320 C19	
Regulations	EN 62040-1-1 and Directive 2006/95/EC EN 62040-2 and Directive 2004/108 EC					
Ambient temperature	0°C / +40°C					
Storage temperature	-15°C / 45°C					
Colour	Dark grey RAL 7016					
Relative humidity	<95% non-condensing					
Noise level	< 50 dBA					

SMALL INFORMATION NETWORKS | LOCAL AREA NETWORKS (LAN) | WORK STATIONS | SERVERS | POINT OF SALES SYSTEMS (EPO)

Sentinel Pro

700-3000 VA
Single-phase

ECO LINE

Highlights

- Operating flexibility
- Emergency function
- Battery optimisation
- Runtime expandability
- Reduced noise
- On-line (VFI)

The SENTINEL PRO has evolved from the highly successful Dialog UPS series. The UPS has a unique, modern design and improved electrical characteristics, representing a benchmark product from 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, runtimes up to several hours are possible, using ER models fitted with more powerful battery chargers, and battery extension packs.
The front mimic panel has been entirely redesigned, adding an LCD display that shows the input and output voltages, and battery readings in addition to UPS operating status information.
The inverter and the microprocessor control stage has been completely redesigned to provide increased efficiency and greater configuration options.

Another feature of the SENTINEL PRO series is its communication capabilities. The UPS is supplied with a USB port and an expansion slot for protocol conversion or relay contacts boards.

SENTINEL PRO features a unique shut-off button to reduce energy consumption during periods of prolonged inactivity (ECO LINE). SENTINEL PRO is available in 700VA, 1000VA, 1500VA, 2200VA and 3000VA models.

Operating flexibility

Different operating modes, programmable depending on user requirements and the load to be powered, have been introduced in order to reduce energy consumption.

- Economy Mode: the UPS can operate in line interactive mode, 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 the type of disturbances present.
- Stand by Off (emergency back-up) Mode: the UPS powers the loads only in the event of mains failure. The inverter begins working with a progressive start-up sequence to prevent inrush currents.
- Operation as a frequency converter (50 or 60 Hz)

Emergency function

This configuration is designed for emergency systems incljuding lighting, fire detection/exit systems and alarms. When the mains power supply fails, the inverter begins powering the loads with a progressive start (Soft Start) in order to prevent overload.

Battery optimisation

The SENTINEL PRO UPS has a wide input voltage range and deep discharge protection to optimise battery its life. Periodically the UPS carries out a battery efficiency test (can also be manually activated) and its wide input voltage range, helps to reduce battery usage.

Runtime expandability

Optional battery extension packs can be connected to increase the UPS runtime. In addition the SENTINEL PRO range includes ER versions with more powerful battery chargers in place of the internal batteries for faster recharge times.

Reduced noise

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

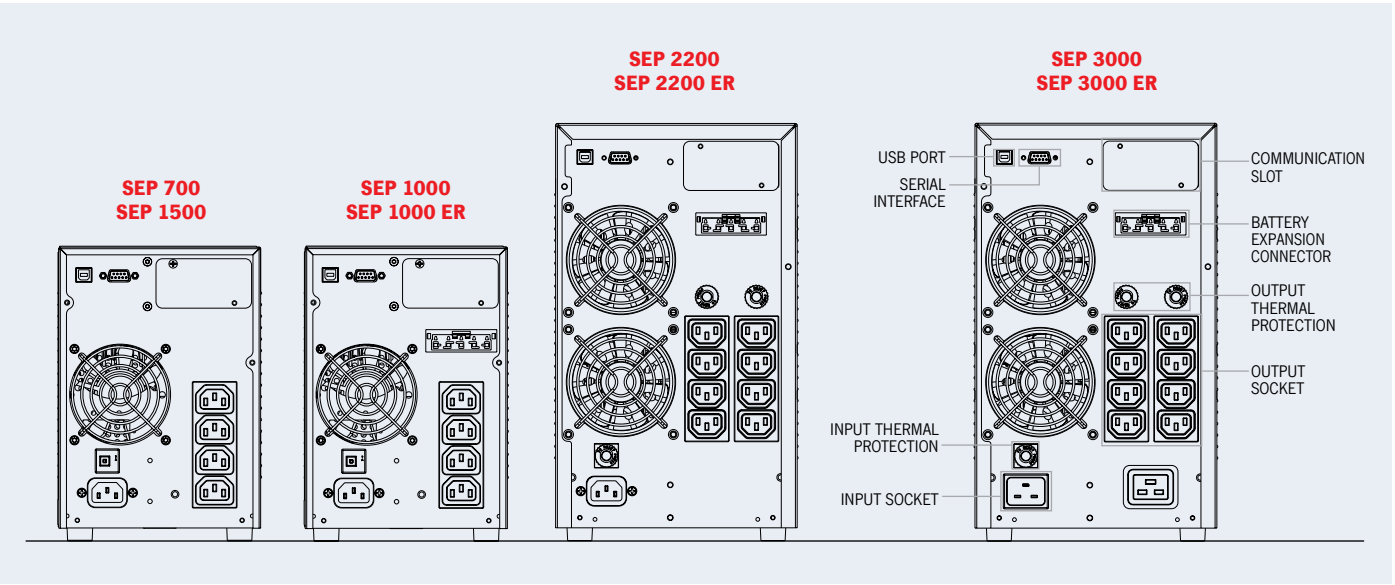
Features

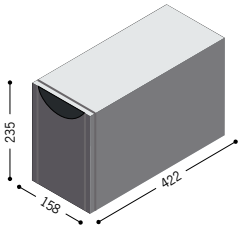
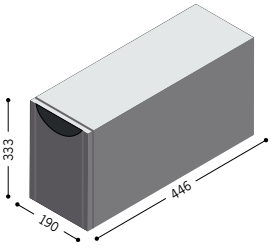
- Filtered, stabilised and reliable voltage: double conversion On-line technology (VFI compliant with IEC 62040-3) standard with filters for the suppression of atmospheric disturbances.
- High overload capability (up to 150%)
- Programmable Auto-restart when mains is restored
- Battery start-up (cold start)
- Power factor correction (UPS input power factor, close to 1)
- Wide input voltage range (from 140V to 276V) without battery intervention.
- Runtime extension 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 absorption)
- Input protection with resettable fuse.

Advanced communication

- Multi-platform communication for all operating systems and network environments; supervision and shutdown PowerShield[3] software for Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OS X, Sun Solaris, VMware ESX and other Unix operating systems
- Standard supplied UPS Tools configuration and customisation software
- RS232 serial port and opto-isolated contacts
- USB Port
- Slot for communication boards

2-YEAR WARRANTY



MODELS	BB SEP 36-A3 / BB SEP 36-M1	BB SEP 72-A3 / BB SEP 72-M1
SEP MODELS	SEP 1000	SEP 2200-3000 / ER
Dimensions (mm)		

MODELS	SEP 700	SEP 1000	SEP 1000 ER	SEP 1500	SEP 2200	SEP 2200 ER	SEP 3000	SEP 3000 ER
POWER	700VA/560W	1000VA/800W		1500VA/1200W	2200VA/1760W		3000VA/2400W	
INPUT								
Nominal voltage	220-230-240 Vac							
Voltage range without battery intervention	140 Vac < Vin < 276 Vac @50% LOAD / 184 Vac < Vin < 276 Vac @ 100% LOAD							
Max allowable voltage	300 Vac							
Nominal frequency	50 or 60 Hz							
Frequency range	50 Hz ± 5% / 60 Hz ± 5%							
Power factor	> 0.99							
Current distortion	≤7%							
BY PASS								
Voltage tolerance	180 - 264 Vac							
Frequency tolerance	Selectable from ±1.5Hz to ±5Hz							
OUTPUT								
Voltage distortion with linear load / with non-linear load	< 2% / < 4%							
Frequency	Selectable: 50 Hz or 60 Hz or automatic selection							
Static variation	± 1%							
Dynamic variation	≤ 5% in 20 msec.							
Waveform	Sinusoidal							
Current crest factor	3 : 1							
ECO Mode and Smart Active Output	98%							
BATTERIES								
Type	VRLA AGM lead acid maintenance free batteries							
Charging time	2-4 hours		N.A.	2-4 hours		N.A.	2-4 hours	N.A.
OVERLOAD TIMES								
100% < Load < 110%	2 minutes							
110% < Load < 150%	5 seconds							
Load > 150%	1 second							
OTHER FEATURES								
Net weight (kg)	10.9	13.3	7	14.8	25.6	10.6	28	14
Gross weight (kg)	12.5	14.9	8.6	15.5	28.8	13.8	31.2	17.2
Dimensions (hwd) (mm)	235 x 158 x 422				333 x 190 x 446			
Packaging dimensions (hwd) (mm)	340 x 245 x 500				470 x 325 x 585			
Surge protection	300 joule							
Protection devices	Overcurrent - short-circuit - overvoltage - undervoltage - thermal - deep battery discharge protection							
Communication	USB / DB9 with RS232 and contacts / Slot for communications interface							
Input sockets	1 IEC 320 C14						1 IEC 320 C20	
Output socket	4 IEC 320 C13				8 IEC 320 C13		8 IEC 320 C13 + 1 IEC 320 C19	
Regulations	Safety: EN 62040-1 and Directive 2006/95/EL; EMC: EN 620040-2 category C2 and Directive 2004/108/EL							
Ambient temperature	0°C / +40°C							
Relative humidity	< 95% non-condensing							
Colour	Black							
Noise level	< 40 dBA @ 1 m							
Standard equipment provided standard	Power cable, serial cable, USB cable, safety manual, quick start, software on CD-ROM							

LOCAL AREA NETWORKS (LAN) | SERVERS | DATA CENTRES | CASH REGISTERS | TELECOM-MUNICATIONS DEVICES | INDUSTRIAL PLCS | EMERGENCY DEVICES (Lights/Alarms)

Sentinel Dual *Low Power*

1-3 kVA
Single-phase

ENERGY LEVELS 6

Highlights

- Simplified installation
- Installation versatility
- Low running costs
- Runtime expandability
- Low noise output
- On-line (VFI)

SENTINEL DUAL is a new range of high density double conversion on-line UPS, suitable for powering a wide range of devices including servers, storage systems, telephony equipment - VoIP, network, medical and industrial systems.

SENTINEL DUAL are 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 performanance 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% opersting efficiency in on-line mode.

For critical applications requiring long battery rutnimes, extension packs and ER versions with larger battery chargers are available.

As an ECO UPS product, SENTINUAL 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 removing and rotating the mimic panel
- Low noise (<40dBA) thanks to a high frequency switching inverter and load-dependent digitally controlled ventilation.
- Features guaranteed up to 40°C (the components are designed for high temperatures and 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 (Power Share function).

Installation versatility

SENTINEL DUAL can be used in a tower or rack format, by simply turning the display and adding the supplied feet or optional runners.

Reduced running costs

The UPS is highly flexible and easy to configure. Programmable functions can be set using the software supplied or manually via the front mimic panel.
SENTINEL DUAL can be configured in the following operating modes:

- On-line Mode: maximum protection and output voltage waveform quality
- ECO Mode: to increase output (up to to 98%), using Line Interactive operation.
- Smart Active Mode: the UPS automatically decides upon the best operating mode based on the quality of the network - On-line or Line interactive.
- Back-up Mode: the UPS can be selected to function only when the mains power supply fails.
- Frequency converter (50 or 60 Hz)
- Multi-platform communication for all operating systems and network environments; supervision and shutdown PowerShield[3] software for Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OS X, Sun Solaris, VMware ESX and other Unix operating systems.
- Standard UPS Tools software supplied for configuration and customisation
- RS232 serial port and opto-isolated contacts
- USB Port
- Slot for communication boards such as Modbus/Jbus, TCP/IP, SNMP and relay contacts

Emergency function

This configuration is designed for emergency systems incljuding lighting, fire detection/exit systems and alarms. When the mains power supply fails, the inverter begins powering the loads with a progressive start (Soft Start) in order to prevent overload.

High quality output voltage

- Even with non-linear loads (loads with a crest factor of up to 3:1)
- High short circuit current on Bypass
- High overload capacity 150% on inverter (even with mains failure).
- Filtered, stabilised and reliable voltage (On-line double conversion technology (VFI compliant with EN62040-2 class C1) with filters for the suppression of atmospheric disturbances.
- Power factor correction: UPS input power factor, close to 1 and sinewave current absorption

High battery reliability

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

Reduced noise

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

Other features

- Output voltage can be selected using software (220-230-240V)
- Auto-restart when mains power is restored (programmable via software)
- Stand-by on Bypass: when the UPS is switched off, it automatically goes into bypass and battery charging 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 through resettable thermal switch (versions up to 1500VA)
- Standard Back-feed protection: to prevent energy from being fed back to the network
- Manual switching to bypass.

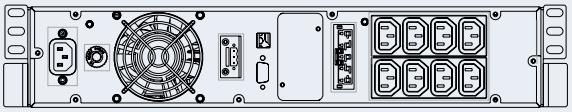
2-YEAR WARRANTY

1. Remove the mimic panel

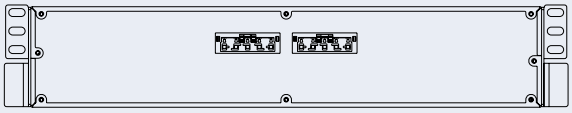
2. Rotate the mimic panel and insert it into position

3. Rotate the UPS 90°

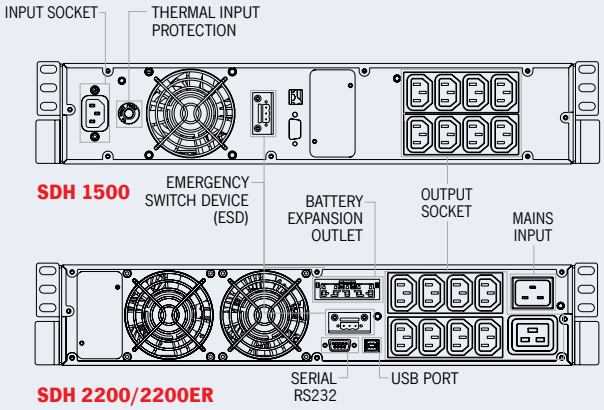
4. Attach the rack supports



SDH 1000



BBX



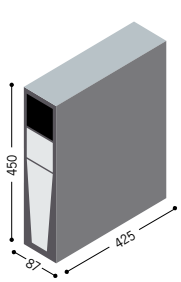
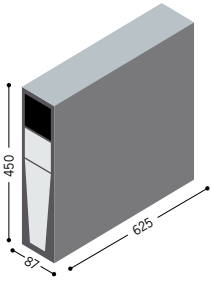
SDH 1500

SDH 2200/2200ER
3000/3000 ER

OPTIONS

- Universal rails for installation in rack cabinets
- Multipass 16 bypass (mm/kg): 2U x 438 x 360 - rack 6.8 version weight

Battery box

MODELS	BB SDH 36-A3 / BB SDH 36-M1	BB SDH 72-A3 / BB SDH 72-M1
MODELS SDH	SDH 1000	SDH 2200-3000
Dimensions (mm)		

MODELS	SDH 1000	SDH 1500	SDH 2200	SDH 2200 ER	SDH 3000	SDH 3000 ER
POWER	1000VA/900W	1500VA/1350W	2200VA/1980W	2200VA/1760W	3000VA/2700W	3000VA/2400W
INPUT						
Nominal voltage	220-230-240 Vac					
Voltage range without battery intervention	140 Vac < Vin < 276 Vac @50% LOAD / 184 Vac < Vin < 276 Vac @ 100% LOAD					
Max allowable voltage	300 V					
Nominal frequency	50 or 60 Hz ±5Hz					
Frequency range	50 Hz ± 5% / 60 Hz ± 5%					
Power factor	> 0.98					
Current distortion	≤7%					
BY PASS						
Voltage tolerance	200 - 253 Vac					
Frequency tolerance	Frequency selected (from ±0.5Hz to ±5Hz configurable)					
OUTPUT						
Voltage distortion with linear load / with non-linear load	< 2%					
Frequency	Selectable: 50 Hz or 60 Hz or automatic selection					
Static variation	± 1%					
Dynamic variation	≤ 5% in 20 msec.					
Waveform	Sinusoidal					
Current crest factor	3 : 1					
ECO Mode and Smart Active Output	98%					
BATTERIES						
Type	VRLA AGM lead acid maintenance free batteries					
Charging time	2-4 hours					
OVERLOAD TIMES						
100% < Load < 110%	1 minute					
110% < Load < 150%	4 seconds					
Load > 150%	0.5 seconds					
OTHER FEATURES						
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 (hwd) (mm)	87x450x425 (2Ux19"x425)		87x450x625 (2Ux19"x625)			
Packaging dimensions (hwd) (mm)	245x550x600		245x600x760			
Surge protection	300 joule					
Protection devices	Overcurrent - short-circuit - overvoltage - undervoltage - thermal - low battery discharge protection					
Communication	USB / DB9 with RS232 and contacts / Slot for communications interface					
Input sockets	1 IEC 320 C14		1 IEC 320 C20			
Output socket	8 IEC 320 C13		8 IEC 320 C13 + 1 IEC 320 C19			
Compliance with Standards	Safety: EN 62040-1 and Directive 2006/95/EL; EMC: EN 620040-2 category C2 and Directive 2004/108/EL					
Ambient temperature	0°C / +40°C					
Relative humidity	< 95% non-condensing					
Colour	Black					
Noise level	< 40 dBA @ 1 m					
Standard equipment provided	Power cable, serial cable, USB cable, safety manual, quick start, software on CD-ROM					

LOCAL AREA NETWORKS (LAN) | SERVERS | DATA CENTRES | CASH REGISTERS | INDUSTRIAL PLCS | ELECTRO-MEDICAL DEVICES | EMERGENCY DEVICES (Lights/Alarms)

Sentinel Dual *High Power*

3.3-10 kVA

single/single-phase and three/single-phase

ENERGY LEVELS 6

Highlights

- Simplified installation
- Operation selection
- High quality output voltage
- High battery reliability
- Emergency back-up function
- Battery optimisation
- Power Share
- Low noise level
- On-line (VFI)

SENTINEL DUAL is the best solution for powering mission critical applicaitons and eletro-medical devices requiring maximum power reliability. The UPS is suitable for a wide variety of applications, offering a flexible format (tower or rack), digital display, communication options and user-replaceable batteries.
The SENTINEL DUAL is available in 3.3-4 5-6-8-10 kVA models and uses 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 network disturbances and lightning strikes.

Technology and performance: selectable Economy Mode and Smart Active Mode functions.
Diagnostics: digital display, RS232 and USB interface with PowerShield[3] software included, and communication slot for connectivity accessories.

Simplified Installation

- Can be installed on the floor (tower version) or in rackmount cabinets (rack version). The mimic panel can be rotated (using the key supplied)
- Low noise (<40dBA): can be installed in any environment thanks to its high frequency switching PWM inverter and load-dependent digitally controlled fan.
- External bypas option maintenance (5-6-8-10 kVA)

- Operation guaranteed up to 40°C (the components are designed for high temperatures and are thus subject to less stress at normal temperatures)
- Two built-in IEC output sockets with thermal protection (5-6- 8-10 kVA)
- Two 10A outpit sockets with Power Share on the 5-6-8-10 kVA models that can be turned off when the mains power supply fails.

Operation selection

Programmed using the software supplied or manually via the front mimic panel

- On-line double conversion Mode: to provide maximum protection.
- ECO Mode:to increase output (up to 98%), operating in line interactive (VI) mode, powering loads from the mains.
- Smart Active Mode: the UPS automatically decides upon the operating mode (VI or VFI) based on the quality of the mains power supply.
- Emergency Mode: the UPS can be selected to function only when mains power fails (emergency mode only)
- Frequency converter (50 or 60 Hz).

High quality output voltage

- Even with non-linear loads (loads with a rest 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 IEC 62040-3) with filters for the suppression of atmospheric disturbances.
- Power factor correction: UPS input power factor, close to 1 and sinewave current absorption

High battery reliability

- Automatic and manual battery test
- Reduced ripple component (detrimental to the batteries) using the “LRCD” (Low Ripple Current Discharge) system
- Batteries are user replaceable without interruption to the load (Hot Swap)
- Unlimited extendible runtime using matching Battery Boxes
- High hold-up time and wide input voltage range. The batteries are not used during mains power supply failures of <40 ms or within an input voltage range of 84-276V.

Emergency Back-up function

This configuration is designed for emergency systems incljuding lighting, fire detection/exit systems and alarms. When the mains power supply fails, the inverter begins powering the loads with a progressive start (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.

Power Share (5-10kVA)

Two configurable IEC output sockets, for runtime optimisation, with the facility to programme the sockets to switch-off low priority loads on mains power failure; alternatively, emergency loads, normally not powered when the mains is present, can be activated.

Low noise output

Using digital PWM control, the speed of the load dependent fans is adjusted depending on the temperature of the two internal heatsinks, to achieve a reduced noise level of 45dB and help extend their operating life.

Other features

- Output voltage can be selected using software (220-230-240V)
- 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 control
- Automatic bypass without interruption
- Use of IMS modules (Insulated Metallic Substrates)
- Statuses, measurements and alarms available on standard, backlit display.
- UPS digital updating (flash upgradable)
- Input protection through resettable thermal switch
- Standard Back-feed protection: to prevent energy from being fed back to the network
- Manual switching to bypass.

1. Release the mimic panel by applying pressure to the catch

2. Rotate the mimic panel counter clockwise and then secure it back in place

3. Rotate the UPS 90°

4. Attach the rack supports

Advanced communication

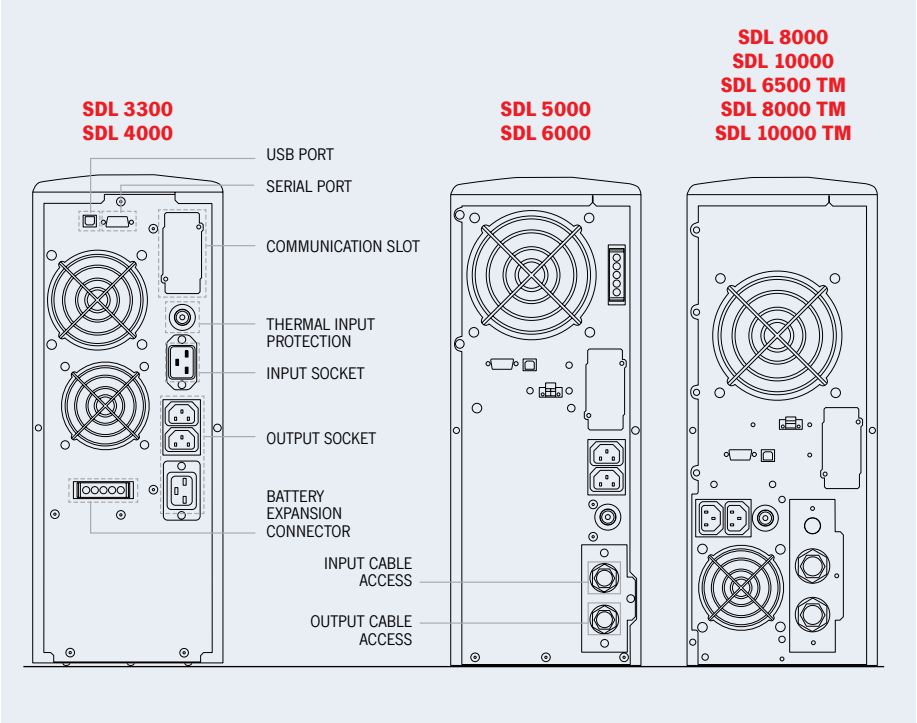
- Advanced multi-platform communication for all operating systems and network environments; supervision and shutdown PowerShield[3] software for Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OS X, Sun Solaris, VMware ESX and other Unix operating systems.
- Plug and Play function
- USB Port
- RS232 serial port
- Communications slot

2-YEAR WARRANTY

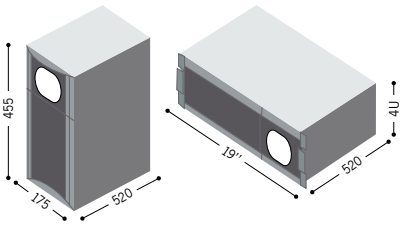
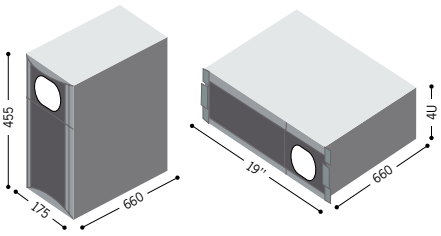
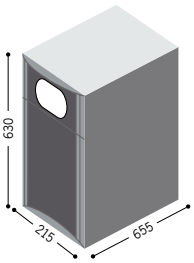
Options

- Battery cabinets for extended runtimes, with or without batteries
- Telescopic rails for rack cabinet mounting

Details



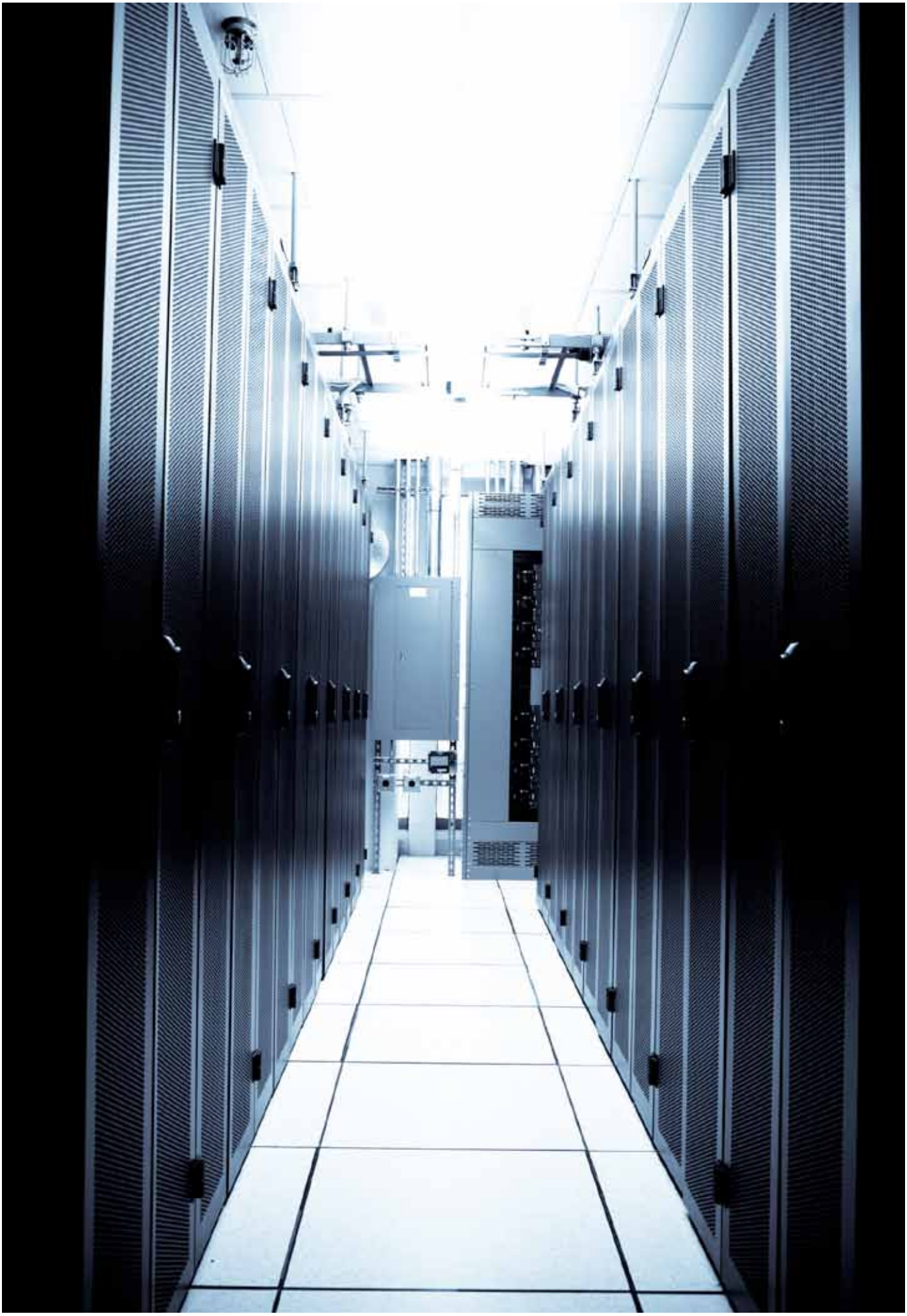
Battery box

MODELS	BB SDL 108-A4 / BB SDL 108-M1	BB SDL 192-A3/ BB SDL 192-A6	BC SDL 108-B1
MODELS SDL	SDL 3300-4000	SDL 5000-6000 SDL 6500TM-8000-8000TM-10000-10000TM	SDL 3300-4000 Tower
Dimensions (mm)			

4U = 176 mm; 19" = 438 mm

MODELS	SDL 3300	SDL 4000	SDL 5000	SDL 6000	SDL 8000	SDL 10000
POWER	3300VA/2300W	4000VA/2400W	5000VA/3500W	6000VA/4200W	8000VA/6400W	10000VA/8000W
INPUT						
Nominal voltage	220-230-240 Vac					
Minimum voltage	164 Vac @ load 100% / 84 Vac @ load 50%					
Nominal frequency	50 or 60 Hz ±5Hz					
Power factor	> 0.98					
Current distortion	≤7%					
BY PASS						
Voltage tolerance	180 - 264 Vac (selectable in Economy Mode and Smart Active Mode)					
Frequency tolerance	Selected frequency ±5% (selectable by user)					
OUTPUT						
Nominal voltage	220-230-240 Vac selectable					
Voltage distortion	< 3% with linear load / < 6% with non-linear load					
Frequency	50 or 60 Hz selectable					
Static variation	1.5%					
Dynamic variation	≤ 5% in 20 ms					
Waveform	Sinusoidal					
Crest factor	3 : 1					
BATTERIES						
Charging time	4-6 hours					
OVERLOAD TIMES						
100% < Load < 110%	1 minute					
110% < Load < 150%	4 seconds					
Load > 150%	0.5 seconds					
OTHER FEATURES						
Net weight (kg)	38	40	62	64	94	95
Gross weight (kg)	42.5	44.5	70	72	102	103
Dimensions (hwd) (mm)	455 x 175 x 520 tower 175(4U)x19"x483 rack		455 x 175 x 660 tower 175(4U)x19"x660 rack		2 x 455 x 175 x 660 tower 2 x 175(4U)x19"x660 rack	
Packaging dimensions (hwd) (mm)	540 x 620 x 280		720 x 530 x (270+15)		780 x 555 x (270+15)	
Line-Interactive/ Smart Active output	98%					
Protection devices	Overcurrent - short-circuit - overvoltage - undervoltage - thermal - low battery discharge protection					
Communication	USB / RS232 + slot for communications interface					
Input sockets	1 IEC 320 C20		Terminal board			
Output socket	2 IEC 320 C13 + 1 IEC 320 C20		Terminal board + 2 IEC 320 C13			
Regulations	EN 62040-1 EMC EN 62040-2 Directive 73/23 - 93/68 - 2004/108 EC EN 62040-3					
Ambient temperature	0°C / +40°C					
Relative humidity	< 95% non-condensing					
Colour	Dark grey RAL 7016					
Noise level	< 40 dBA a 1 m		< 45 dBA a 1 m			
Standard equipment provided	Two 10A cables; One IEC-16A plug; software; serial cable; keys to release mimic panel; handles kit		Two cable guides; terminal board connections; One IEC-16A plug; software; serial cable; keys to release mimic panel; handle kit			

MODELS	SDL 6500 TM	SDL 8000 TM	SDL 10000 TM
POWER	6500VA/5200W	8000VA/6400W	10000VA/8000W
INPUT			
Nominal voltage	400 Vac Three-phase + N		
Minimum voltage (F + N)	164 Vac @ load 100% / 84 Vac @ load 50%		
Nominal frequency	50 or 60 Hz ±5Hz		
Power factor	> 0.95		
BY PASS			
Voltage tolerance	180 - 264 Vac (selectable in Economy Mode or Smart Active Mode)		
Frequency tolerance	Selected frequency ±5% (selectable by user)		
OUTPUT			
Nominal voltage	220-230-240 Vac selectable		
Voltage distortion	< 3% with linear load / < 6% with non-linear load		
Frequency	50 or 60 Hz selectable		
Static variation	1.5%		
Dynamic variation	≤ 5% in 20 ms		
Waveform	Sinusoidal		
Crest factor	3 : 1		
BATTERIES			
Charging time	4-6 hours		
OVERLOAD TIMES			
100% < Load < 110%	1 minute		
110% < Load < 150%	4 seconds		
Load > 150%	0.5 seconds		
OTHER FEATURES			
Net weight (kg)	91	94	95
Gross weight (kg)	99	102	103
Dimensions (hwd) (mm)	2 x 660x175x455 / 2 x 4Ux19"x660		
Packaging dimensions (hwd) (mm)	780 x 555 x (270+15)		
Smart Active Output	up to 98%		
Protection devices	Overcurrent - short-circuit - overvoltage - undervoltage - thermal - low battery discharge protection		
Communication	USB / RS232 + slot for communications interface		
Input sockets	Terminal board		
Output socket	Terminal board + 2 IEC 320 C13		
Regulations	EN 62040-1 EMC EN 62040-2 Directive 73/23 - 93/68 - 2004/108 EC EN 62040-3		
Ambient temperature	0°C / +40°C		
Relative humidity	< 95% non-condensing		
Colour	Dark grey RAL 7016		
Noise level	< 45 dBA a 1 m		
	Two cable guides; terminal board connections; One IEC-16A plug; software; serial cable; keys to release mimic panel; handle kit		



LOCAL AREA NETWORKS (LAN) | SERVERS | DATA CENTRES | CASH REGISTERS | TELECOM-MUNICATIONS DEVICES | INDUSTRIAL PLCS | ELECTRO-MEDICAL DEVICES | EMERGENCY DEVICES (Lights/Alarms)

Sentinel Power

5-6 kVA
single/single-phase

6.5-10 kVA
single/single-phase
and three/single-phase

ENERGY LEVELS 6

Highlights

- High UPS reliability
- Operational mode selection
- High quality output voltage
- Simplified installation
- High battery reliability
- Power Share
- Low impact on mains supply

SENTINEL POWER is the ideal solution for powering critical network systems and processes. The series includes 5-6kVA single/single-phase and 6.5-8-10kVA single/single-phase and three/three-phase models with On-line double conversion technology (VFI); the load is always powered by the inverter which provides a sinusoidal voltage, filtered and stabilised in terms of voltage, form and frequency. EMI filters (input and output) significantly provide further immunity from mains disturbanes and lightning strikes.

SENTINEL POWER stands for technology, performance (selectable Economy Mode and Smart Active Mode) and diagnostics (LCD custom display, RS232 and USB interfaces with Powershield[3] software included, ESD input, and a communications slot for optional interface cards).

High UPS reliability

- Total microprocessor control
- Static and manual maintenance bypass

- Features guaranteed up to 40°C (the components are designed to work at high temperatures and thus are subject to less stress at normal temperatures)

Operation selection

The operating mode may be programmed using software supplied or manually via the mimic panel.

- On-line double conversion Mode: for critical applications.
- ECO Mode: to increase output (up to to 98%), allows for selection of Line Interactive technology (VI) to power low priority loads from the mains supply.
- Smart Active Mode: the UPS automatically decides upon the operating mode (VI or VFI) based on the quality of the network.
- Back-up Mode: the UPS can be selected to function only when mains power fails (emergency mode only)
- Frequency converter (50 or 60 Hz).

High quality output voltage

- Even with non-linear loads (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 IEC 62040-3) with filters for the suppression of atmospheric disturbances.
- Power factor correction: UPS input power factor close to 1 and sinewave current absorption

Simplified Installation

- UPS can be installed on a single-phase or three-phase distribution network
- Output terminal board + 2 IEC sockets for powering local utilities (computers, modems, etc.)
- Simplified positioning (built-in castors).

High battery reliability

- Automatic and manual battery test
- Reduced ripple component (detrimental to the batteries) using an Low Ripple Current Discharge (LCRD) system
- Unlimited extendible runtime using matching Battery Boxes
- The batteries are not used during mains failures of <40 ms (high hold up time) or when the input supply is between 84V to 276V.

Power Share

Two 10A configurable IEC output sockets for runtime optimisation. Power Share allows low priority loads to be switched-off on mains failure; alternatively, emergency loads, normally not powered when mains is present, can be activated.

Low impact on mains network

- Input current sinusoidal absorption on single-phase/single-phase series.

Other features

- Advanced diagnostics: status, measurements, alarms available on custom LDC display
- Low noise (<40dBA) for installation in any environment thanks to load dependent, PWM digitally-controlled ventilation and the use of a high frequency switching inverter (>20kHz, value greater than the audible range)
- Auto restart (automatic when mains supply is restored, programmable via software or mimic panel)
- Emergency back-up function, the UPS can be selected to function only when mains fails (emergency lighting only)
- Back feed protection: to prevent energy being fed back into the mains supply
- Flash upgradable firmware

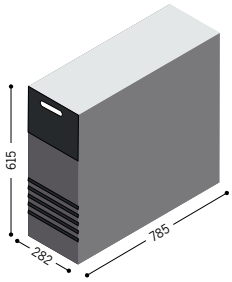
Advanced communication

- Compatible with Riello UPS TeleNetGuard service monitoring
- Advanced multi-platform communication for all operating systems and network environments: PowerShield[3] supervision and shutdown software for Windows operating systems 7, 2003, Vista, 2003, XP, Linux, Mac OS X, Sun Solaris, Linux, Novell and other Unix operating systems.
- RS232 serial port
- Plug and Play function
- Slot for installation of communications boards.

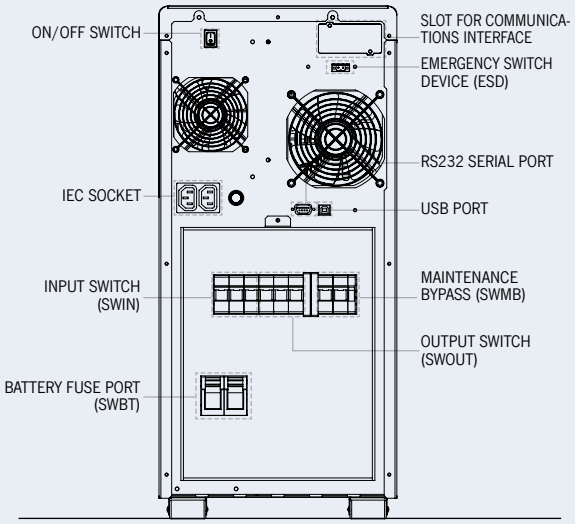
Battery box

MODELS	BB SPW 240-A3 / BB SPW 240-A6 BC SPW 240-M1/ BC SPW 240-M4

Dimensions
(mm)



SPW 5000 - SPW 6000
SPW 6500 - SPT 8000
SPW 10000



MODELS	SPW 5000	SPW 6000	SPT 6500	SPT 8000	SPT 10000
POWER	5000VA/4000W	6000VA/4800W	6500VA/5200W	8000VA/6400W	10000VA/8000W
INPUT					
Nominal voltage	220-230-240 Vac Single-phase		220-230-240 Vac single-phase or 380-400-415 Vac three-phase with neutral		
Minimum voltage without battery intervention	170 Vac @ load 100% / 140 Vac @ load 50%				
Nominal frequency	50 or 60 Hz ±5Hz				
BY PASS					
Voltage tolerance	180 - 264 Vac (selectable in Economy Mode and Smart Active Mode)				
Frequency tolerance	Selected frequency ±5%				
OUTPUT					
Nominal voltage	220 - 230 - 240 Vac selectable				
Voltage distortion	< 3% with linear load / < 6% with non-linear load				
Frequency	50 or 60 Hz selectable o with automatic selection				
Static variation	± 1.5 %				
Dynamic variation	≤ 5% in 20 ms				
Waveform	Sinusoidal				
Crest factor	≥ 3 : 1				
BATTERIES					
Charging time	6-8 hours				
OVERLOAD TIMES					
100% < Load < 125%	1 minute				
125% < Load < 150%	4 seconds				
Load > 150%	0.5 seconds				
OTHER FEATURES					
Net weight (kg)	91		92	105	106
Gross weight (kg)	99		100	110	111
Dimensions (hwd) (mm)	615 x 282 x 785				
Packaging dimensions (hwd) (mm)	863 x 388 x (650+15)				
Smart Active Output	up to 98%				
Protection devices	Overcurrent - short-circuit - overvoltage - undervoltage - thermal - low battery discharge protection				
Communication	USB / RS232 + slot for communications interface				
Input sockets	Terminal board				
Output socket	Terminal board + 2 IEC 320 C13				
Regulations	EN 62040-1 EMC EN 62040-2 directive 2006/95/EC - 2004/108 EC EN 62040-3				
Ambient temperature	0°C / +40°C				
Relative humidity	< 95% non-condensing				
Colour	Dark grey RAL 7016				
Noise level	< 45 dBA a 1 m				
OPTIONS					
Battery cabinets for extended runtimes	yes (with and without battery charger)				
Isolation transformer (hlp) mm/kg	500 x 400 x 265 / 80			–	

LOCAL AREA NETWORKS (LAN) | SERVERS | DATA CENTRES | CASH REGISTERS | TELECOM-MUNICATIONS DEVICES | E-BUSINESS (Servers Farms, ISP/ASP/POP) | INDUSTRIAL PLCS | ELECTRO-MEDICAL DEVICES | EMERGENCY DEVICES (Lights/Alarms)

Multi Sentry

10-20 kVA
Single-phase

10-120 kVA
Three-phase

ENERGY LEVELS 6

Highlights

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

The MULTI SENTRY series is ideal for protecting data centres and telecommunications systems, IT networks and critical systems. The MULTI SENTRY series is available in 10-12-15-20 kVA models with three-phase/single-phase input and single-phase output, and 10-12-15- 20-30-40-60-80-100-120 kVA models with three-phase input and output and On-Line double donversion technology, VFI-SS-111 classification (defined in IEC EN 62040-3).

MULTI SENTRY: designed and built using state of the art technology and components, and controlled by DSP (Digital Signal Processor) microprocessors, to provide maximum protection to the powered loads with no impact on downsteam systems, and optimised energy savings.
Its highly flexible design allows full compatibility with both three-phase and single-phase power supplies.

Zero impact source

MULTI SENTRY solves installation problems in systems where the power supply has limited power available, where the UPS is supported by a generator or where there are compatibility problems with loads that generate harmonic currents; MULTI SENTRY has a zero impact on its power source, whether this is the mains power supply or a generator:

- input current distortion < 3%
- Input power factor 0.99
- power walk-in function to provide a 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 the reactive power, generated by the power utilities.

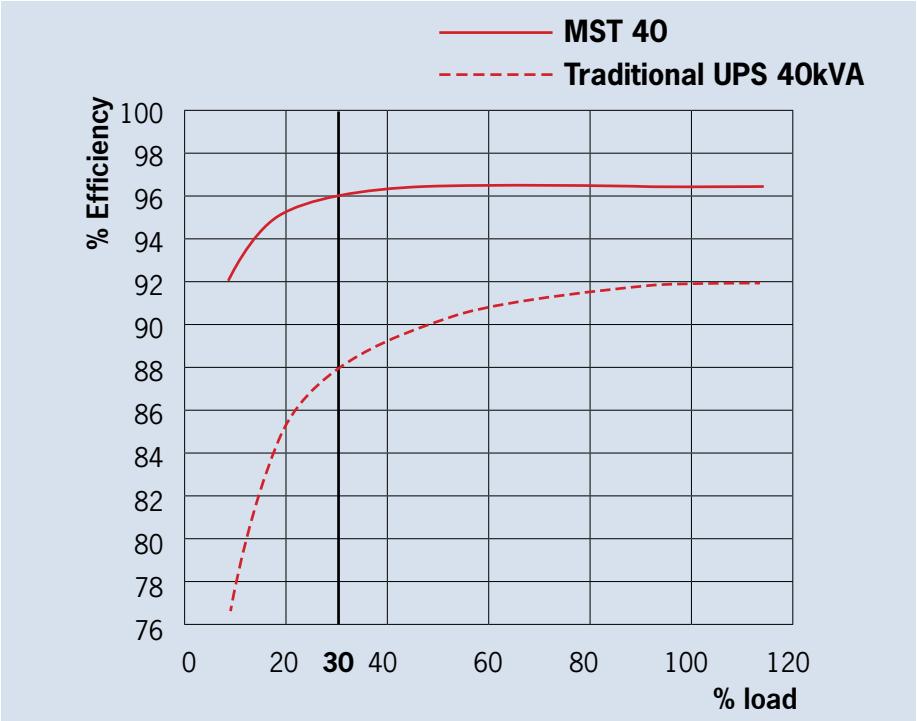
High output

State-of-the-art three-level NPC inverters are used to achieve an operating efficiency of 96.5%.
This techology halves (50%) the energy dissipated in a year by traditional UPS with a 92% efficient operation.
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 the correct operation of a UPS in emergency conditions.
The Riello UPS Battery Care System consists of a series of features and capabilities to optimise battery management and obtain their best performance and operating life.
Battery charging: 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 VRLA AGM batteries
- Two-level voltage recharge according to IU characteristic
- Charge block system to reduce electrolytic consumption and further extend the life of VRLA batteries.



Recharge voltage compensation as a function of temperature in order to prevent excessive battery charges or overheating.

Battery tests to quickly diagnose any reduction in performance or problems with the batteries.
Protection against deep discharges: during extended low-load discharges, the end-of-discharge voltage is increased - as recommended by the battery manufacturers - to prevent damage or reduced battery performance.
Ripple current: recharge ripple (residual AC component) current is one of the most important causes of a reduction in 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 battery extend life.

Maximum reliability and availability

Connect up to 6 units in redundant (N+1) or parallel configuration. The UPS continues to operate in parallel even in the event of an interruption in the connection cable (closed loop).

Low management cost

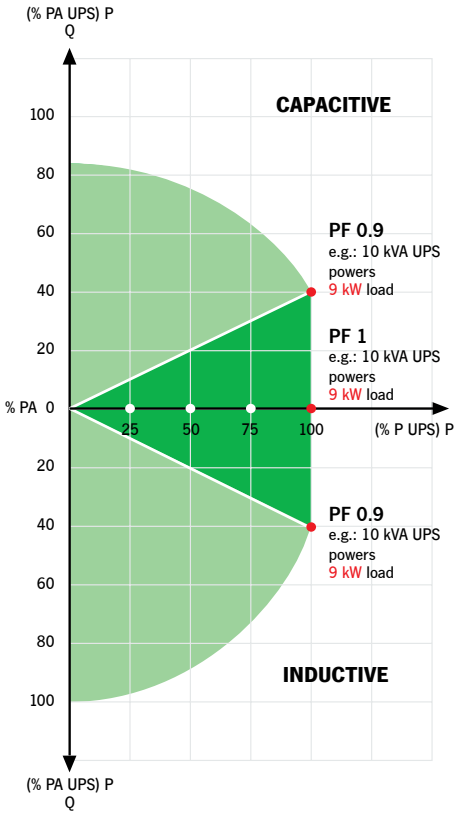
Advanced technology and use of high performance components, allows MULTI SENTRY to provide exceptional performance and a compact size.

- smallest overall footprint is only 0.26sqm for MULTI SENTRY 20kVA with batteries
- an input power factor close to 1 with low current distortion, avoiding the need for bulky and expensive filters
- output power factor of 0.9 providing up to 15% more active power than a traditional UPS, guaranteeing a greater margin when UPS sizing for potential load increases.

Flexibility

With its flexible configuation, accessories, options and performance MULTI SENTRY is suitable for use in a wide range of applications,

- suitable for powering capacitive loads, such as Blade servers, without any reduction in active power from 0.9 lead to 0.9 lag
- On-line, Eco, Smart Active and Stand By Off operating modes - compatible with centralised power systems (CSS) applications.
- frequency converter mode (50 / 60Hz)

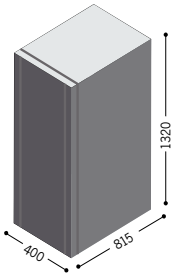
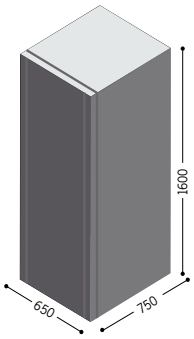
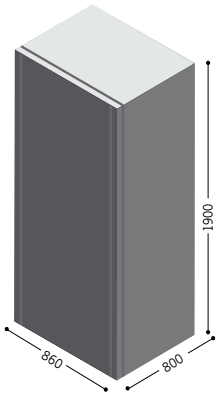


- configurable Power Share sockets to switch-off less critical loads on mains failure or turn-on those programmed to operate only when mains power fails
- Cold Start to switch on the UPS even when there is no mains power present
- MST/MSM version: cabinet (1320x440x850mm HLW) for optimised solutions when medium to long-term runtimes are required.
- optional temperature sensor for external battery cabinets, to assist recharge voltage compensation
- additional battery chargers to optimise charge time
- optional dual input to mains power supply
- isolation transformers for neutral separation (separate power sources) or galvanic isolation between the input and output
- different sized battery cabinets and capacities, for extended runtimes.

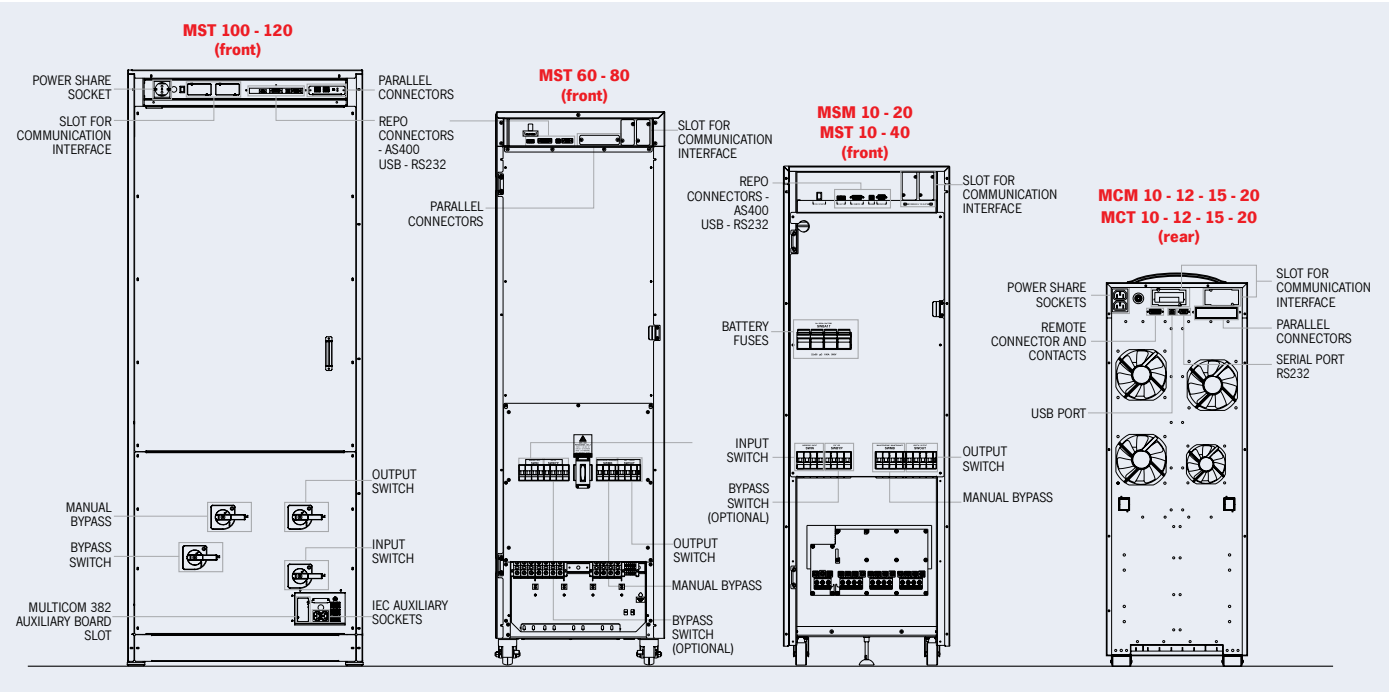
Advanced communication

MULTI SENTRY is equipped with a back-lit graphic display (240x128 pixels) providing UPS information, measurements, status, and alarms in different languages and displays wave forms and voltage/current. The default screen displays the status of the UPS graphically indicating the status of the various assemblies (rectifier, batteries, inverter, bypass).

- Advanced multi-platform, communication for all operating systems and networks: PowerShield[3] supervision and shutdown software for Windows operating systems 7, 2008, Vista, 2003, XP, Linux Mac OS X, Sun Solaris, Linux, Novell and other Unix operating systems.
- Compatible with the Riello TeleNetGuard service
- RS232 serial port or USB
- 3 slots for the installation of optional communications accessories including network adapters and volt free contacts
- 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 mimic panel display for remote connection.

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
MODELS UPS	up to 60 kVA	up to 80 kVA	up to 120 kVA
Dimensions (mm)			

Details



MODELS	MCM/MSM 10	MCM/MSM 12	MCM/MSM 15	MCM/MSM 20
INPUT				
Nominal voltage	380-400-415 Vac three-phase with neutral / 220-230-240 single-phase			
Nominal frequency	50 or 60 Hz			
Frequency tolerance	40 ÷ 72 Hz			
Power factor at full load	0.99			
Current distortion	THDI ≤ 3%			
BY PASS				
Nominal voltage	220-230-240 Vac			
Number of phases	1			
Voltage tolerance	180 ÷ 264 V (selectable)			
Nominal frequency	50 or 60 Hz (selectable)			
Frequency tolerance	±5 (selectable)			
OUTPUT				
Nominal power (kVA)	10	12	15	20
Active power (kW)	8	9.6	12	16
Power factor	0.8			
Number of phases	1			
Nominal voltage (V)	220-230-240 Vac (selectable)			
Static variation	± 1%			
Dynamic variation	± 3%			
Crest factor (Ipeak/Irms)	3 : 1			
Voltage distortion	< 1% with linear load / < 3% with non-linear load			
Frequency	50 or 60 Hz			
Frequency stability during battery operation	0.01%			
Overload at Pf 0.8	110% for 10 minutes, 133% for 1 minute, 150% for 5 seconds			
BATTERIES				
Type	VRLA AGM/GEL			
Charging time	6 hours			
INFO FOR INSTALLATION				
Weight without internal batteries (kg) (MCM/MSM)	80/105	82/110	90/115	95/120
Dimensions (hwd) (mm)	930 x 320 x 840 (MCM version) 1320 x 440 x 850 (MSM version)			
Communication	3 slot for communications interface /RS232/USB			
Ambient temperature	0°C / +40°C			
Relative humidity	90% non-condensing			
Colour	Dark grey RAL 7016			
Noise level	< 52 dBA a 1 m			
Protection level	IP20			
Smart Active Output	up to 98%			
Regulations	Directive EMC 2004/108/CE Electromagnetic Compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2 C2 Classification according to IEC 62040-3 (Voltage Frequency Independent) VFI - SS – 111			

MODELS	MCT/MST 10	MCT/MST 12	MCT/MST 15	MCT/MST 20	MST 30	MST 40	MST 60	MST 80	MST 100	MST 120
INPUT										
Nominal voltage	380-400-415 Vac three-phase with neutral									
Nominal frequency	50 or 60 Hz									
Frequency tolerance	40 ÷ 72 Hz									
Power factor at full load	0.99									
Current distortion	THDI ≤ 3%									
BY PASS										
Nominal voltage	380-400-415 Vac three-phase with neutral									
Number of phases	3 + N									
Voltage tolerance	180 ÷ 264 V (selectable)									
Nominal frequency	50 or 60 Hz (selectable)									
Frequency tolerance	±5 (selectable)									
OUTPUT										
Nominal power (kVA)	10	12	15	20	30	40	60	80	100	120
Active power (kW)	9	10.8	13.5	18	27	36	54	72	90	108
Power factor	0.9									
Number of phases	3 + N									
Nominal voltage (V)	380-400-415 Vac (selectable)									
Static variation	± 1%									
Dynamic variation	± 3%									
Crest factor (Ipeak/Irms)	3 : 1									
Voltage distortion	≤ 1% with linear load / ≤ 3% with non-linear load									
Frequency	50 or 60 Hz									
Frequency stability during battery operation	0.01%									
Overload at Pf 0.8	115% unlimited, 125% for 10 minutes, 150% for 1 minute, 168% for 5 seconds									
BATTERIES										
Type	VRLA AGM/GEL									
Charging time	6 hours									
INFO FOR INSTALLATION										
Weight without internal batteries (kg) (MCT/MST)	80/105	82/110	90/115	90/115	135	145	190	200	370	380
Dimensions (hwd) (mm)	930 x 320 x 840 (versione MCT) 1320 x 440 x 850 (versione MST)				1320 x 440 x 850		1600 x 500 x 850		1900 x 750 x 855	
Communication	3 slot for communications interface /RS232/USB									
Ambient temperature	0°C / +40°C									
Relative humidity	90% non-condensing									
Colour	Dark grey RAL 7016									
Noise level	< 52 dBA a 1 m				< 48 dBA a 1 m		< 52 dBA a 1 m		< 65 dBA a 1 m	
Protection level	IP20									
Smart Active Output	up to 99%									
Regulations	European directives L V 2006/95/CE Low Voltage Directive EMC 2004/108/CE Electromagnetic Compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2 C2 Classification according to IEC 62040-3 (Voltage Frequency Independent) VFI - SS – 111									

LOCAL AREA NETWORKS (LAN) | SERVERS | DATA CENTRES | TELECOM-MUNICATIONS DEVICES | E-BUSINESS (Server Farms, ISP/ASP/POP) | EMERGENCY DEVICES (Lights/Alarms)

Multi Guard

Highlights

- Power flexibility 15-120 KVA
- UPS module with hot-swap function
- Modular power and runtime
- Intelligent battery charging system
- High MTBF and low MTTR

The MULTI GUARD 15-120 kVA modular UPS is a scalable 3 Phase / 3 phase with double conversion Uninterruptible Power Supply system. Its power capacity ranges from 15kVA to 120kVA, delivering the best combination of reliability, functionality and flexibility.
The MULTI GUARD 15-120 N+X parallel architecture adopts a drawer-style, highly intelligent design to achieve maximum power availability and redundancy.
It is specially designed to meet the protection demands of mission critical loads in Datacentres or other important applications. Each module has an individual power capacity of 15 kVA, and a standard cabinet can be fitted with up to 8 modules to reach 120 kVA. If the load is within limits, modules can be hot-swapped to enable true power continuity without any interruptions.

System features

- Maximum 120kVA capacity in a 19“ rack.
- 15kVA per module with hot-swappable feature

- The LCD display on the front panel displays unit status and important information such as input and output rating, capacity and temperature. This is available in a number of languages, and can include after sales contact details.
- Communication port is available for RS232, RS485, SNMP & AS400.
- Regular battery strings for the DC power without using particular battery modules.
- DSP Technology.
- Charging current is up to 36 DC Amp constant current on 90kVA system, suitable for several hours of battery back up.
- High output power availability up to 99.999%, MTBF more than 1,000,000 hours & MTTR<5mins Input power factor >0.99 and THDi <5%

Other advantage

- The MULTI GUARD 15-120 UPS power modules use the latest DSP microchip technology. This reduces hardware components, increases UPS reliability and also makes it convenient to upgrade and maintain using the remote software.
- The UPS operates with load sharing technology. Should any of the UPS modules fail, the load will be taken over by the rest of the modules without interruption. This increases the real time operation and power availability compared to other standby UPS.
- The MULTI GUARD 15-120 UPS is designed to connect to external battery banks without limiting the battery run time. The 19" racks in black color design can blend easily into most Data Centres, Computer or Power Rooms.

N+X Parallel Redundancy UPS

The N+X parallel redundant configuration of the MULTI GUARD 15-120 increases the reliability of the UPS system.

Advanced Modular Design

The MULTI GUARD 15-120 system contains UPS modules, LCD Display module, PDU and other accessories. Each UPS module is a fully functionable 15kVA UPS.

Through the advanced wireless parallel control technology and smart communication modulation, the UPS modules or LCD display module can be replaced easily at any time without affecting the operation of the UPS. The user friendly "plug & play" design simplifies UPS service and maintenance.

The most reliable N+X parallel redundancy

The MULTI GUARD 15-120 de-centralises its controller in each UPS Module. The LCD Display module is for display and communication purposes only, so even if the LCD Display module fails, the UPS system would still function and support the load without any interruption.

High MTBF ability

Each UPS module in the 15-120 UPS system is a fully functional UPS. There is no additional controlling module for parallel and load sharing. System MTBF for two modules in parallel is more than 1,000,000 hours and power availability is above 99.999%.

MTTR < 5 mins

In a parallel redundant 15-120 UPS system, the UPS will keep working even one of the modules fails. The module replacement procedure only needs 5 minutes for full system recovery, minimizing expensive downtime.

Superior Electrical Characteristic

Pure Sine Wave input current with THDi ≤5% and unity input power (≥0.99). The output voltage distortion is ≤1.5%.

Intelligent charging system

The MULTI GUARD 15-120 UPS system applies a two-step intelligent charging system. The first stage is a constant charging current that can recharge the battery capacity to 90% in a short time. The system then transfers to a constant voltage mode to complete the charging

GMT 30kVA

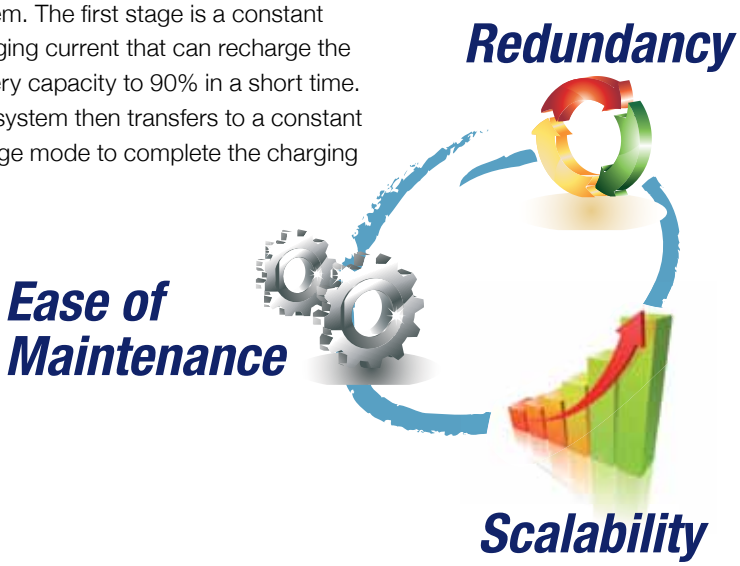
and guarantee the battery can be fully charged all the time. This intelligent charging system not only reduces the battery recharging time, but can also extend runtime by using plug-in battery packs.

Modular back up time

The MULTI GUARD 30 and 60 versions are designed to build up autonomy time using a single battery mode brick.

Saving:

- Installation costs
- electricity costs
- cooling costs
- expansions costs
- maintenance costs



UPS Power selection

The MULTI GUARD 15-120 can be configured from 1 up to 8 modules in its cabinet to form the most suitable N+ X configuration.

The MULTI GUARD grows as business grows by simply adding further UPS modules to the to exhisting frame. The initial investment is minimised, while future expansion is easy, cost-effective and efficient to complete.

Multi Guard 30

MULTI GUARD 30 is the Entry Level to the MULTI GUARD Range. It is the ideal solution to supply a medium load that requires redundancy with the ability to expand the capacity in the future. Its flexibility and expandability give it an advantage over any stand alone ups solution.The solution is very compact, with the possibility to also expand the autonomy by adding up to 3 battery banks in the same cabinet. Power ranges from 15 kVA to 30 kVA (2 modules); 19'' rack mounted with the internal battery pack.

NO. OF POWER MODULES	kVA	Typical runtime (min)(*)
1	15	90
2	30	42

(*) The autonomy refers to the max number of installed batteries.

Multi Guard 60

Modular three phase UPS system ranging from 15 kVA to 60 kVA, 19'' rack mounted with the internal battery pack. This solution can include 4 x 15 kVA modules providing the following back up time at 75% of nominal load.
If redundancy is requested (N+1 modules) the max output power will be 45 kVA.

NO. OF POWER MODULES	kVA	Typical runtime (min)(*)
1	15	113
2	30	54
3	45	30
4	60	21

(*) The autonomy refers to the max number of installed batteries.

Multi Guard 120

Modular three phase UPS system ranging from 15 kVA to 120 kVA, 19'' rack mounted and designed for an external battery cabinet. The maximum output power of the MULTI GUARD cabinet is 120 kVA (8 x 15 kVA modules). If redundancy is requested (N+1 modules) the max output power is 105 kVA.

MODELS	GMT - 15kVA -120kVA
INPUT	
Voltage	380V/ 400V/ 415V, 4-wire three-phase + E
Voltage range	294Vac - 520Vac
Frequency range	f 40 Hz - 70 Hz
Power factor	>0.99
THDI	< 5%
BY PASS	
Voltage	380V/ 400V/ 415V, 4-wire three-phase + E
Voltage range	f 323Vac - 437Vac
Transfer time from On-line to Off-Line or vice versa	0 sec
OUTPUT	
Voltage	380V/ 400V/ 415V, 4-wire three-phase + E
Voltage stability	≤ 1.5%
Frequency	50 Hz / 60 Hz
MODULE	
Power	15kVA / 13,5kW
Output power	15kVA x number of modules (up to 8 modules)
TECHNICAL SPECIFICATIONS	
Noise level (measured at 1m from UPS)	from ≤ 60dBA to ≤62dBA
Operating temperature	0°C / +40°C
Humidity	20% - 90% non-condensing
Storage temperature	-15° +55°
Module weight	35 kg
Module dimensions (hwd) (mm)	131 x 440 x 700
GMT 30 Dimensions (hwd) (mm)	1500 x 600 x 1000
GMT 60 Dimensions (hwd) (mm)	2000 x 600 x 1000
GMT 120 Dimensions (hwd) (mm)	2000 x 600 x 1000
Eco Mode efficiency	up to 99%
Standards	Safety: IEC 62040-1-1 EMC: IEC 62040-2

LOCAL AREA NETWORKS (LAN) | SERVERS | DATA CENTRES | TELECOM-MUNICATIONS DEVICES | E-BUSINESS (Servers Farms, ISP/ASP/POP) | INDUSTRIAL PROCESSES | INDUSTRIAL PLCS | ELECTRO-MEDICAL DEVICES | EMERGENCY DEVICES (Lights/Alarms)

Master MPS

10-800 kVA
Three-phase/Three-phase

10-100 kVA
Three-phase/Single-phase

ENERGY LEVELS 6

Highlights

- Efficiency Control System (ECS)
- Galvanic isolation
- High overload capacity
- LCD display
- Extensive parallel configurations

Total protection

MASTER MPS series UPS provides maximum protection and power quality for critical loads, including data centres, industrial processes, telecommunications, security and electro-medical systems. The UPS 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 100kVA, and three-phase input and output versions from 10 to 800kVA. Three phase MPS models from 10 to 200 kVA are available with a 6 or 12-pulse thyristor-based rectifier. From 100 to 500 kVA, the Master HP series has an IGBT-based rectifier, to

provide lower harmonic input current distortion (THDi) and a high input power factor (see Master HP section). From 600 to 800kVA, Master MPS have a 12-pulse rectifier and optional harmonic filters.

Easy source

MASTER MPS technology removes the problems of oversizing upstream power sources, whilst improving load power factors and current harmonics. The MPS range features the latest input-current absorption techniques including progressive rectifier start-up and the option to reduce battery charging currents. These features make the MASTER MPS series one of the most generator and environmentally friendly UPS available.

Power continuity

For years, Riello UPS has developed and supplied solutions for dealing with the different requirements and the 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 component or subsystem failures, while continuing to operate normally, to provide service without interruption.
This is achieved by installing carefully designed redundant elements, eliminating common failure points, scheduling maintenance activities and through the control and supervision of the operating parameters of the system and the environment. The TEC service team is ready to provide guidance and advice on projects.

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, without any reduction in active power, 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 users. Using the Riello UPS Group Synchroniser (UGS) and Parallel Systems Joiner (PSJ), sophisticated inter group parallel and redundant systems can be achieved to provide the highest possible levels of resilience and availability.

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 inverter loads. Therefore, 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.

- Dual level charging regime to optimise recharge currents and reduce charge times
- Temperature compensation and deep discharge protection to reduce overall battery ageing
- Charge blocking system to reduce electrolyte consumption and lengthen the life of VRLA batteries
- Battery tests to diagnose, in advance, any reduction in performance or problems with the batteries.

MASTER MPS is also compatible with different battery technologies: vented open lead acid, VRLA AGM and NiCd.

Ease of Installation

MASTER MPS requires only a very small space for installation (only 0.64 sqm for a 200KVA system); in addition, front access allows servicing of all major components from the front panel, making side access unnecessary. MASTER MPS requires minimal space for access, utilising top-cabinet ventilation and front panel access.

Specific solutions

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

Advanced communication

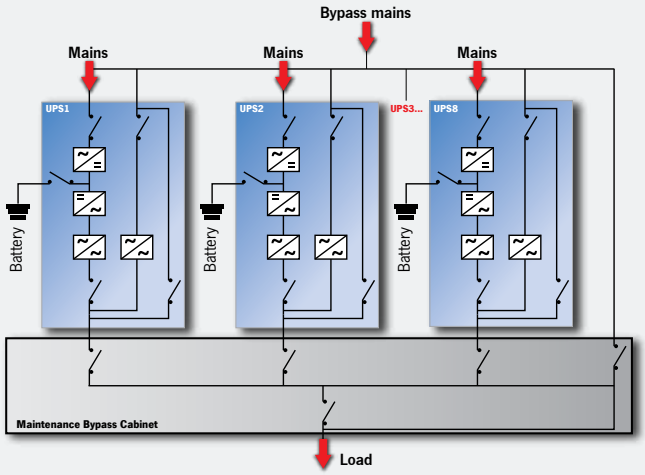
- Compatible with TeleNetGuard for remote monitoring.
- Advanced communication, multi-platform, for all operating systems and network environments: Supervision and shutdown PowerShield^3 software for Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OS X, Sun Solaris, Linux, Novell and other Unix operating systems.
- UPS is supplied with a cable for direct PC connection (Plug and PLay)
- RS232 double serial port
- Communications slot for network adapter installation; ESD contact (Emergency Switching Device) for switching off the UPS by remote emergency button.
- Remote LED mimic panel or graphic display.

Maximum reliability and availability

Distributed or centralised parallel configuration of up to 8 units per redundant (N+1) or power parallel system, even using different power ratings.
Hot System Expansion (HSE): allows the addition of a further UPS into an existing system, without the need to switch off the 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.

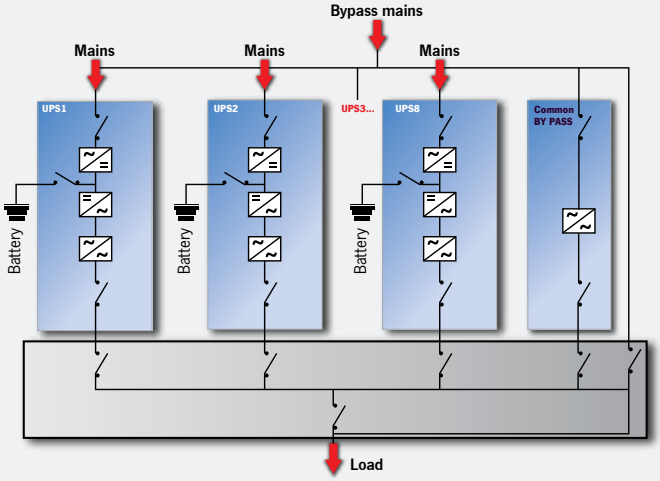
OPTIONS

- 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): connects two UPS groups in parallel configurations through a power couplign switch. The Slave UPS group is permanently synchronised to the master group. Should one of the UPS in one of the parallel groups fail, the PSJ will automatically connect the remaining UPS to the other group via an external bypass.



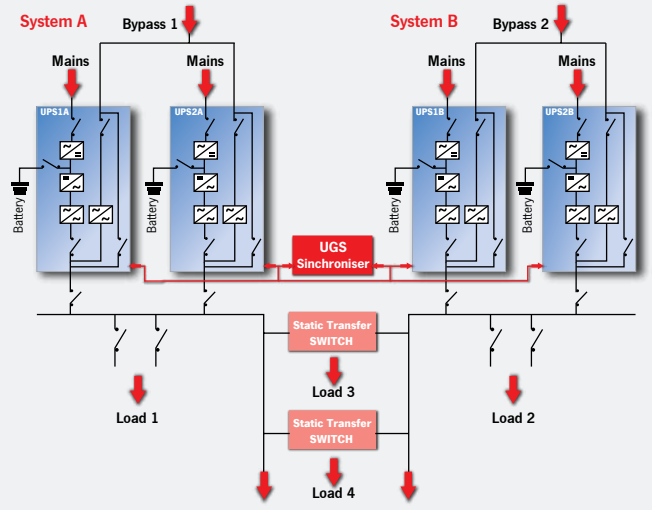
Parallel configuration of up to 8 units with distributed bypass

Parallel architecture to ensure redundancy of the power source.
+Flexibility and modularity



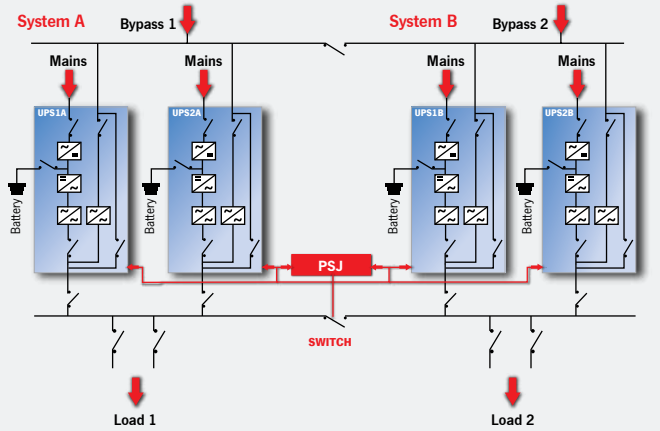
Parallel configuration of up to 8 units with common bypass

Parallel architecture to ensure redundancy of the power source, with autonomous bypass management. **+ Selectivity of downstream faults in bypass mode**



Dynamic dual bus configuration

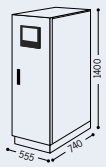
Solution to ensure redundancy until the distribution of the power supply to the loads **+ Downstream fault discrimination**



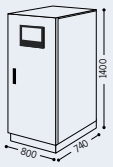
Dual bus system configuration

Solution to ensure redundancy of the power supply even during maintenance **+ High availability and redundancy**

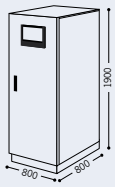
MPM/MPT 10÷40



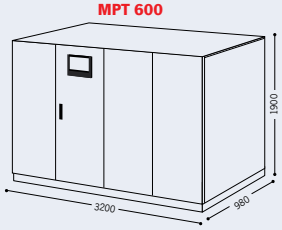
MPM/MPT 60÷80



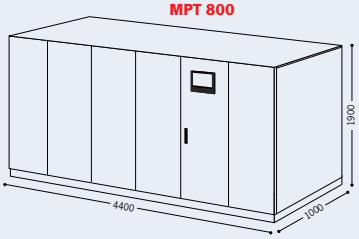
MPT 100 - MPT 120
MPT 160- MPT 200



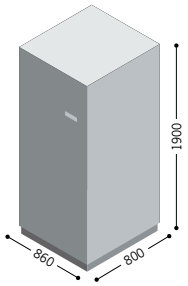
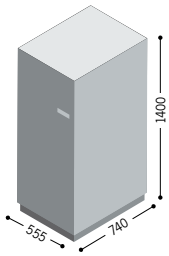
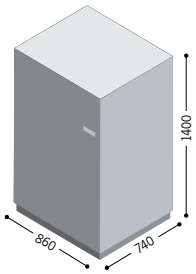
MPT 600

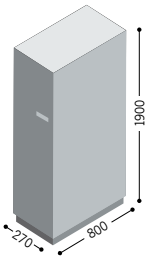
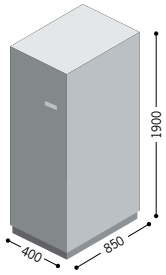
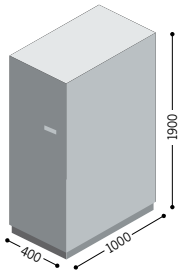


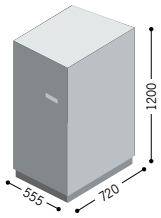
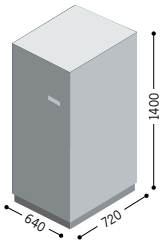
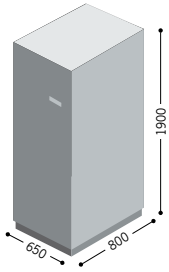
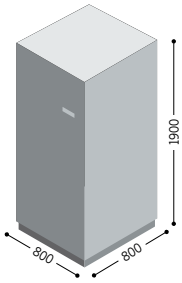
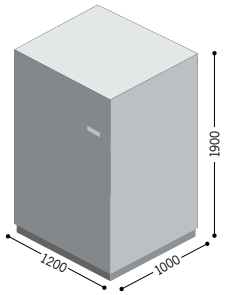
MPT 800



Battery box

MODELS	BB 1900 396-L6 / BB 1900 396-L7 BB 1900 396-L8 / BB 1900 396-L9	BB 1900 480-L6 / BB 1900 480-L7 BB 1900 480-L8 / BB 1900 480-L9	BB 1400 384-B1	BB 1400 384-B2 / BB 1400 384-B3 BB 1400 384-B4 / BB 1400 384-B5
MODELS UPS	MPT 100-200 MPM 100	MPT 600-800 MHT 100-500	MPT 10-60	MPT 10-80
Dimensions (mm)				

MODELS	TCE 270	TCE 400	TLE 400
MODELS UPS	MPT 100-200 / MPM 100	MHT 100-250	MPT D 600-800 / MHT 300-500
Dimensions (mm)			

MODELS	TI 10 T / TI 15 T / TI 20 T TI 30 T / TI 40 T	TI 60 T / TI 80 T	TI 100 T / TI 120 T TI 160 T	TI 200 T / TI 250 T	TI 300 T / TI 400 T TI 500 T / TI 600 T
Dimensions (mm)					

OPTIONS

- Isolation transformer
- Synchronisation device (see UGS)
- Hot connection device (see PSJ)
- Generator interface
- Closed Loop parallel kit option
  (Closed loop: to be ordered with the UPS)
- Battery cabinets

MODELS	MPM 10 *	MPM 15 *	MPM 20 *	MPM 30	MPM 40	MPM 60	MPM 80	MPM 100
POWER	**10**	**15**	**20**	**30**	**40**	**60**	**80**	**100**
INPUT								
Nominal voltage	380 - 400 - 415 Vac Three-phase							
Voltage tolerance	400 V + 20% /- 25%							
Frequency	45 - 65 Hz							
Soft start	0 ÷ 100% in 30'' (selectable)							
Permissible frequency tolerance	± 2% (selectable from ± 1% to ± 5% from front panel)							
Standard equipment provided standard	Back Feed protection; separable bypass line							
BATTERIES								
Type	open lead acid and VRLA AGM / GEL; NiCd.							
Residual ripple voltage	< 1%							
Temperature compensation	-0.5 Vx°C							
Typical charge current	0.2 x C10							
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							
Nominal voltage	220 - 230 - 240 Vac Single-phase							
Static stability	± 1%							
Dynamic stability	± 5% in 10 ms							
Voltage distortion	< 1% with linear load / < 3% with non-linear load							
Crest factor (Ipeack/Irms)	3:1							
Frequency stability on battery	0.05%							
Frequency	50 or 60 Hz (selectable)							
Overload	110% for 60'; 125% for 10'; 150% for 1'							
INFO FOR INSTALLATION								
Net weight	200	220	230	290	340	440	520	650
Dimensions (hwd) (mm)	1400 x 555 x 740					1400 x 800 x 740		1900 x 800 x 800
Remote signals	volt-free contacts							
Remote controls	ESD and bypass							
Communication	Double RS232 + remote contacts + 2 slots for communications interface							
Ambient temperature	0°C / +40°C							
Relative humidity	< 95% non-condensing							
Colour	Dark grey RAL 7016							
Noise level at 1 m (dBA)	54		62		62			63
Protection level	IP20							
Smart Active Output	up to 98%							
Regulations	Regulatory Directives LV 2006/95/EC - 2004/108/EC; IEC Safety EN 62040-1; EMC IEC EN 62040-2; IEC Performance EN 62040-3							
Classification according to IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111							

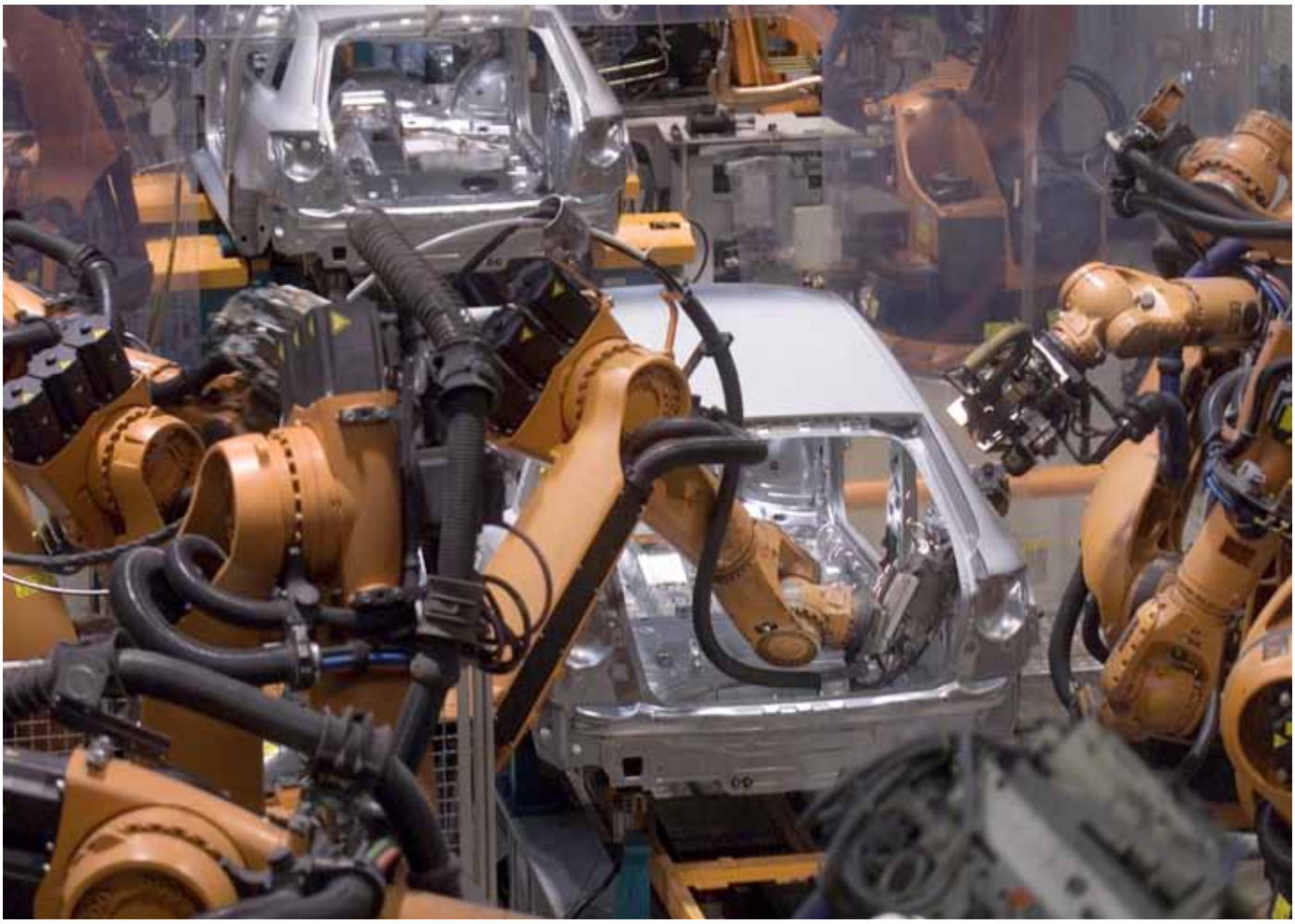
* Also available with internal batteries

MODELS	MPT 10 *	MPT 15 *	MPT 20 *	MPT 30	MPT 40	MPT 60	MPT 80
POWER	**10**	**15**	**20**	**30**	**40**	**60**	**80**
INPUT							
Nominal voltage	380 - 400 - 415 Vac Three-phase						
Voltage tolerance	400 V + 20% /- 25%						
Frequency	45 ÷ 65 Hz						
Soft start	0 ÷ 100% in 30'' (selectable)						
Permissible frequency tolerance	± 2% (selectable from ± 1% to ± 5% from front panel)						
Standard equipment provided standard	Back Feed protection; separable bypass line						
BATTERIES							
Type	open lead acid and VRLA AGM / GEL; NiCd.						
Residual ripple voltage	< 1%						
Temperature compensation	-0.5 Vx°C						
Typical charge current	0.2 x C10						
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						
Nominal voltage	380 - 400 - 415 Vac Three-phase + N						
Static stability	± 1%						
Dynamic stability	± 5% in 10 ms						
Voltage distortion	< 1% with linear load / < 3% with non-linear load						
Crest factor (Ipeack/Irms)	3:1						
Frequency stability on battery	0.05%						
Frequency	50 or 60 Hz (selectable)						
Overload	110% for 60'; 125% for 10'; 150% for 1'						
INFO FOR INSTALLATION							
Weight without internal batteries (kg)	212	220	230	280	330	450	600
Dimensions (hwd) (mm)	1400 x 555 x 740					1400 x 800 x 740	
Remote signals	volt-free contacts						
Remote controls	ESD and bypass						
Communication	Double RS232 + remote contacts + 2 slots for communications interface						
Ambient temperature	0°C / +40°C						
Relative humidity	< 95% non-condensing						
Colour	Dark grey RAL 7016						
Noise level at 1 m (dBA)	54		60		62		
Protection level	IP20						
Smart Active Output	up to 98%						
Regulations	Regulatory Directives LV 2006/95/EC - 2004/108/EC; IEC Safety EN 62040-1; EMC IEC EN 62040-2; IEC Performance EN 62040-3						
Classification according to IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111						

* Also available with internal batteries

MODELS	MPT 100	MPT 120	MPT 160	MPT 200
POWER	100	120	160	200
INPUT				
Nominal voltage	380 - 400 - 415 Vac Three-phase			
Voltage tolerance	400 V + 20% /- 25%			
Frequency	45 ÷ 65 Hz			
Soft start	0 ÷ 100% in 30'' (selectable)			
Permissible frequency tolerance	± 2% (selectable from ± 1% to ± 5% from front panel)			
Standard equipment provided standard	Back Feed protection; separable bypass line			
BATTERIES				
Type	open lead acid and VRLA AGM / GEL; NiCd.			
Residual ripple voltage	< 1%			
Temperature compensation	-0.5 Vx°C			
Typical charge current	0.2 x C10			
OUTPUT				
Nominal power (kVA)	100	120	160	200
Active power (kW)	90	96	144	180
Number of phases	3 + N			
Nominal voltage	380 - 400 - 415 Vac Three-phase + N			
Static stability	± 1%			
Dynamic stability	± 5% in 10 ms			
Voltage distortion	< 1% with linear load / < 3% with non-linear load			
Crest factor (Ipeack/Irms)	3:1			
Frequency stability on battery	0.05%			
Frequency	50 or 60 Hz (selectable)			
Overload	110% for 60'; 125% for 10'; 150% for 1'			
INFO FOR INSTALLATION				
Weight (kg)	640	650	770	810
Dimensions (hwd) (mm)	1900 x 800 x 800			
Remote signals	volt-free contacts			
Remote controls	ESD and bypass			
Communication	Double RS232 + remote contacts + 2 slots for communications interface			
Ambient temperature	0°C / +40°C			
Relative humidity	< 95% non-condensing			
Colour	Dark grey RAL 7016			
Noise level at 1 m (dBA)	63 ÷ 68			
Protection level	IP20			
Smart Active Output	up to 98%			
Regulations	Regulatory Directives LV 2006/95/EC - 2004/108/EC; IEC Safety EN 62040-1; EMC IEC EN 62040-2; IEC Performance EN 62040-3			
Classification according to IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111			

MODELS	MPT 600	MPT 800
POWER	600	800
INPUT		
Nominal voltage	380 - 400 - 415 Vac Three-phase	
Voltage tolerance	400 V ± 20%	
Frequency	45 ÷ 65 Hz	
Power factor	> 0.93 in HC version	
Current distortion	< 3% in HC version	
Soft start	0 ÷ 100% in 30'' (selectable)	
Permissible frequency tolerance	± 2% (selectable from ± 1% to ± 5% from front panel)	
Standard equipment provided standard	Back Feed protection; separable bypass line	
BATTERIES		
Type	open lead acid and VRLA AGM / GEL; NiCd.	
Residual ripple voltage	< 1%	
Temperature compensation	-0.5 Vx°C	
Typical charge current	0.2 x C10	
OUTPUT		
Nominal power (kVA)	600	800
Active power (kW)	480	640
Number of phases	3 + N	
Nominal voltage	380 - 400 - 415 Vac Three-phase + N	
Static stability	± 1%	
Dynamic stability	± 5% in 10 ms	
Voltage distortion	< 1% with linear load / < 3% with non-linear load	
Crest factor (Ipeack/Irms)	3:1	
Frequency stability on battery	0.05%	
Frequency	50 or 60 Hz (selectable)	
Overload	110% for 60'; 125% for 10'; 150% for 1'	
INFO FOR INSTALLATION		
Weight (kg)	4000	5300
Dimensions (hwd) (mm)	1900 x 3200 x 1000	1900 x 4400 x 1000
Remote signals	voltage-free contacts	
Remote controls	ESD and bypass	
Communication	Double RS232 + remote contacts + 2 slots for communications interface	
Ambient temperature	0°C / +40°C	
Relative humidity	< 95% non-condensing	
Colour	Dark grey RAL 7016	
Noise level at 1 m (dBA)	< 75	< 78
Protection level	IP20	
Smart Active Output	up to 98%	
Regulations	Regulatory Directives LV 2006/95/EC - 2004/108/EC; IEC Safety EN 62040-1; EMC IEC EN 62040-2; IEC Performance EN 62040-3	
Classification according to IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111	



LOCAL AREA NETWORKS (LAN) | SERVERS | DATA CENTRES | TELECOM-MUNICATIONS DEVICES | E-BUSINESS (Servers Farms, ISP/ASP/POP) | INDUSTRIAL PROCESSES | INDUSTRIAL PLCS | ELECTRO-MEDICAL DEVICES | EMERGENCY DEVICES (Lights/Alarms)

Master HP

100-500 kVA
Three-phase/Three-phase

ENERGY LEVELS 6

Highlights

- IGBT-based rectifier technology
- Galvanic isolation
- High overload capacity
- LCD display

The MASTER MPS range has been enhanced with the HP series available from 100 to 500kVA
MASTER HP Series provides maximum protection and power quality for data centres and industrial loads. The UPS has an IGBT-based rectifier, DSP (Digital Signal Processors) technology and provides true On-line, double conversion power protection, (VFI SS 11 - Voltage and Frequency Independent in accordance with IEC EN 62040-3).
The HP series provides exceptional operating efficiency (over more conventional thyristor rectifier-based systems), a compact footprint and easy maintenance access - all ideal for today's critical operating environments.

Zero impact source

As an evolution of the MASTER series, the HP features the added advantages offered by an IGBT-based rectifier assembly. This further reduces the impact of the UPS on the local supply and simplifies installation where there is limited power capacity in the form of available electrical supply rating or generator size.
The MASTER HP is classed as a 'Zero Impact Source' and provides:

- Low input current distortion – less than 2.5%
- High input power factor 0.99
- Power walk-in function that ensures progressive rectifier start up
- Delayed start up phased with the return of mains power supply, when several UPS are connected in the system.

MASTER HP also performs the role of a high performance filter, protecting its upstream power supply sources from any harmonics and reactive power generated by the loads powered.

Battery care system: maximum battery care

MASTER HP uses the Battery Care System, also available on the MASTER MPS models, which optimises battery performance in order to extend the battery life for as long as possible.

Flexibility

The configuration with the output transformer, a feature of both the MASTER HP and conventional series, is characterised by the galvanic isolation of the load and the battery for greater versatility in system configurations.
As a matter of fact it allows for two network inputs (main and emergency) separate, and coming from two different power sources; this is particularly suited to parallel systems in order to ensure the selectivity between the two sources, thus improving the reliability of the entire installation.

Main features

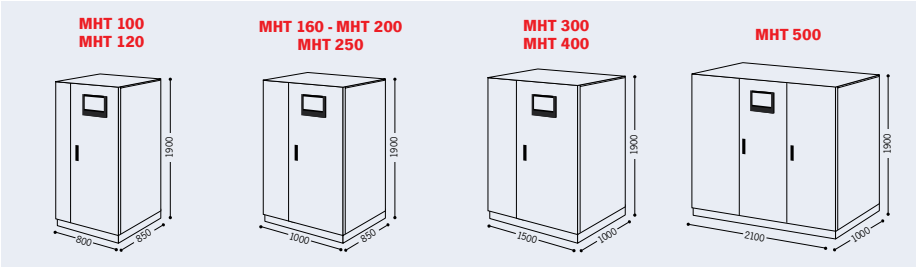
- High output power
- Compact size: only 0.85 m2 a for 250kVA UPS
- Reduced weight
- Double load protection, both electronic and galvanic, for the battery.

The MASTER HP range is suitable for use in the widest selection of application. Thanks to the flexible configurations, accessories and optionals available, it is suitable for powering capacitive loads, such as blade servers. Reliability and availability of the power supply for critical applications is guaranteed by the distributed or centralised parallel of up to 8 units for (N+1) backup or power parallel, and by all the various configurations available in the MASTER MPSrange.

Options

- Input isolation transformer
- Synchronisation device (see UGS Master MPS)
- Hot connection device (see PSJ Master MPS)
- Generator interface
- Closed Loop parallel kit option (Closed loop: to be ordered with the UPS)
- Battery cabinets for runtimes and rack stands

Dimensions (mm)



MODELS	MHT 100	MHT 120	MHT 160	MHT 200	MHT 250	MHT 300	MHT 400	MHT 500
POWER	**100**	**120**	**160**	**200**	**250**	**300**	**400**	**500**
INPUT								
Nominal voltage	380 - 400 - 415 Vac Three-phase							
Frequency	45 ÷ 65 Hz							
Power factor	> 0.99							
Harmonic current distortion	<3% THDi							
Soft start	0 ÷ 100% in 30'' (selectable)							
Frequency tolerance	± 2% (selectable from ± 1% to ± 5% from front panel)							
Standard equipment provided standard	Back Feed protection; separable bypass line							
BATTERIES								
Type	open lead acid and VRLA AGM / GEL; NiCd.							
Ripple current	Zero							
Charge voltage compensation	-0.5 Vx°C							
OUTPUT								
Nominal power (kVA)	100	120	160	200	250	300	400	500
Active power (kW)	90	108	144	180	225	270	360	450
Number of phases	3 + N							
Nominal voltage	380 - 400 - 415 Vac Three-phase + N							
Static stability	± 1%							
Dynamic stability	± 5% in 10 ms							
Voltage distortion	< 1% with linear load / < 3% with non-linear load							
Crest factor (Ipeack/Irms)	3:1							
Frequency stability on battery	0.05%							
Frequency	50 or 60 Hz (selectable)							
Overload	110% for 60'; 125% for 10'; 150% for 1'							
INFO FOR INSTALLATION								
Weight (kg)	656	700	800	910	1000	1400	1700	2100
Dimensions (hwd) (mm)	1900 x 800 x 850		1900 x 1000 x 850			1900 x 1500 x 1000		1900 x 2100 x 1000
Remote signals	volt-free contacts (configurable)							
Remote controls	ESD and bypass (configurable)							
Communication	Double RS232 + remote contacts + 2 slots for communications interface							
Ambient temperature	0°C / +40°C							
Relative humidity	< 95% non-condensing							
Colour	Dark grey RAL 7016							
Noise level (1 m)	63 ÷ 68 dBA					70 ÷ 72 dBA		70 dBA
Protection level	IP20 (others upon request)							
Smart Active Output	up to 98,5%							
Regulations	Safety: EN 62040-1-1 (directive 2006/95/EC); EMC: EN 62040-2 (directive 2004/108/EC)							
Classification according to IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111							

INDUSTRIAL PROCESSES

INDUSTRIAL PLCS

Master Industrial

30-80 kVA

Three-phase/Single-phase
DC BUS 220 Vdc

Highlights

- Battery voltage: 220 Vdc
- Galvanic isolation
- High short-circuit current
- Redundant ventilation

Industrial Application Protection

The MASTER INDUSTRIAL series UPS provide maximum protection and power quality for any type of load, especially industrial applications, manufacturing and petrochemical processes, electrical distribution and power plants. MASTER INDUSTRIAL is an On-line double conversion UPS (VFI SS 111 - IEC EN 62040-3) with input and inverter transformers.

Industrial Environment

MASTER INDUSTRIAL is suited to demanding installation environments where there are vibrations, mechanical stress, dust and where operating conditions are unfavourable to products created for general IT environments (different levels of IP protection available upon request).

High ICC

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

Continuous voltage 220Vdc

The input and inverter output transformers guarantee isolation of the AC side and the batteries, which are sized for a 220Vdc voltage (from 108 to 114 blocks) - 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 checked and an alarm signal is provided in case of failure.

The Easy Source input feature, the Battery Care System, and the flexibility and communication capabilities are the same as those available in the traditional MASTER MPS series.

Dimensions (mm)

MODELS	MIM 30	MIM 40	MIM 60	MIM 80
POWER	30	40	60	80
INPUT				
Nominal voltage	380 - 400 - 415 Vac Three-phase			
Voltage tolerance	400 V ± 20%			
Frequency	45 ÷ 65 Hz			
Power factor	≥ 0.93			
Current distortion	< 5%			
Soft start	0 - 100% in 30'' configurable			
Permissible frequency tolerance	± 2% (selectable from ± 1% to ± 5% from front panel)			
Standard equipment	Back Feed protection; separable bypass line; battery isolation			
BATTERIES				
Number of cells	108 ÷ 114			
Max charge voltage	274 V			
Temperature compensation	-0.5 Vx°C			
OUTPUT				
Nominal power (kVA)	30	40	60	80
Active power (kW)	24	32	48	64
Nominal voltage	230 Vac Single-phase			
Static stability	± 1%			
Dynamic stability	± 5%			
Voltage distortion	< 1% with linear load / < 3% with non-linear load			
Frequency	50 or 60 Hz (selectable)			
Crest factor (Ipeack/Irms)	3:1			
Overload	110% for 60'; 125% for 10'; 150% for 1'			
Short circuit current	3 I nom.			
INFO FOR INSTALLATION				
Weight (kg)	850	900	1400	1500
Dimensions (hwd) (mm)	1900 x 800 x 800		1900 x 1600 x 800	
Remote signals	volt-free contacts			
Remote controls	ESD and bypass			
Communication	Double RS232 + remote contacts + 2 slots for communications interface			
Ambient temperature	0°C / +40°C			
Relative humidity	< 95% non-condensing			
Colour	Dark grey RAL 7016			
Noise level	63 ÷ 68 dBA a 1 m			
Ventilation	Redundant fans			
Protection level	IP20			
Rendimento	up to 94%			
Regulations	Regulatory Directives LV 2006/95/EC - 2004/108/EC; IEC Safety EN 62040-1; EMC IEC EN 62040-2; IEC Performance EN 62040-3			
Classification according to IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111			

INDUSTRIAL PROCESSES

INDUSTRIAL PLCS

Master FC400

30-120 kVA
Three-phase/Three-phase

Highlights

- Frequency converter 50/400 Hz
- Output voltage: 208 V - 3F
- Galvanic isolaltion
- Two versions to reduce input harmonics
- Applications:airport, military and naval

The MASTER FC400 series static frequency converters are available from 30 to 120kVA, with a 50 or 60Hz input and a 400Hz output. The product of extended experience acquired in the UPS industry, the MP FC 400 series is distinguished by the use of technologically advanced components and for excellent reliability, ease of maintenance and easy 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 output transformer inside in order to ensure the isolation of the load from network disturbances in all conditions.

The output voltage is 208Vca three-phase (200/115V versions upon request).
Thanks to high frequency, digitally-controlled IGBT technology, the MASTER FC400 static converters are ideal for airport, military and naval applications.

Minimum impact on network – easy source
MP FC 400 technology removes the problems of over sizing upstream power sources, whilst improving load power factors and current harmonics. The UPS features the latest input current absorption techniques including progressive rectifier start-up and the option to reduce battery charging currents.

These features make MP FC 400 one of the most generator compatible and environmentally friendly UPS available.

Ease of Installation and Maintenance

MASTER FC400 only requires a small space for installation (only 0.86m2 for 120kVA).
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

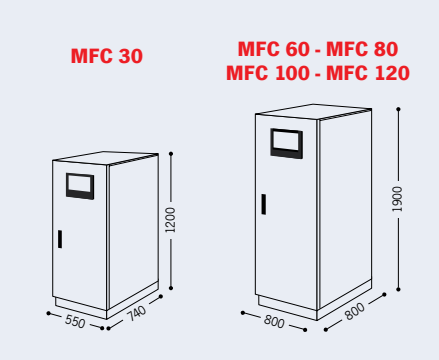
MASTER FC400 provides additional protection for a wide range of applications, including:

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

Options

- Input isolation transformer
- 2 Programmable relay contact boards
- Remote LCD mimic panel
- Remote Graphic Panel
- Higher protection level than IP20
- Parallel.

Dimensions (mm)



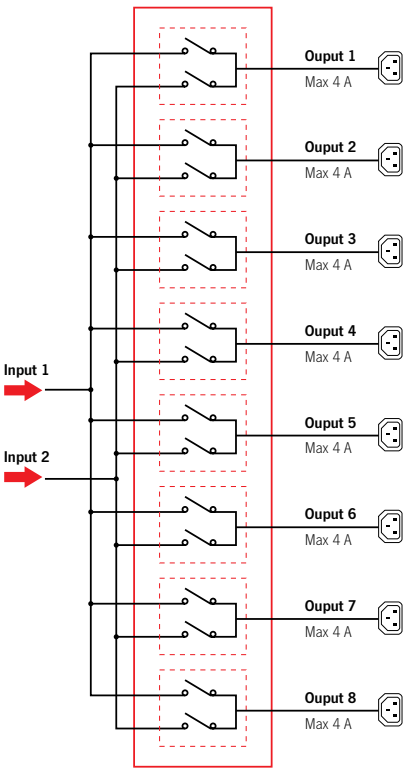
MODELS	MFC 30	MFC 60	MFC 80	MFC 100	MFC 120
POWER	**30**	**60**	**80**	**100**	**120**
INPUT					
Nominal voltage	380 - 400 - 415 Vac Three-phase				
Voltage tolerance	400 V ± 20%				
Frequency	45 ÷ 65 Hz				
Power factor	≥ 0.93 (HC Version)				
Current distortion	< 5% C (HC Version)				
Soft start	0 - 100% in 120'' configurable				
OUTPUT					
Nominal power (kVA)	30	60	80	100	120
Active power (kW)	24	48	64	80	96
Nominal voltage	208 Vac Three-phase + Neutro				
Static stability	± 1%				
Dynamic stability	± 5%				
Voltage distortion	< 3% with linear load / < 4% with non-linear load				
Frequency	400 Hz				
Crest factor (Ipeack/Irms)	3:1				
Overload	110% for 60'; 125% for 10'; 150% for 1'				
INFO FOR INSTALLATION					
Weight (kg)	330	480	500	530	560
Dimensions (hwd) (mm)	1200 x 550 x 740	1900 x 800 x 800			
Remote signals	volt-free contacts				
Remote controls	ESD and ON/OFF				
Communication	Double RS232 + remote contacts + 2 slots for communications interface				
Ambient temperature	0°C / +40°C (50°C @ 75% load)				
Relative humidity	< 95% non-condensing				
Colour	Dark grey RAL 7016				
Noise level	61 ÷ 63 dBA a 1 m				
Protection level	IP20 (others upon request)				
Rendimento	up to 92%				
Regulations	Regulatory Directives LV 2006/95/EC - 2004/108/EC; IEC Safety EN 62040-1; EMC IEC EN 62040-2; IEC Performance EN 62040-3				
Classification according to IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111				

Multi Switch STS

16A
Single-phase

Highlights

- Dual AC power sources
- Load protection
- Versatile



MULTI-SWITCH is a rackmount source transfer switch that can supply up to eight loads from two AC power sources. Should one source fail, the other automatically powers the load. The sources can be two separate AC sources including mains power and UPS, or a combination of the two.

Operating Principal

The MULTI-SWITCH provides electrical distribution and remote management for up to eight network users, powered from two direct mains supplies or UPS or a combination of both. The MULTI-SWITCH can connect each load (up to eight, each with a maximum power demand not greater than 4A), to either of the two power sources (1 and 2). Load demand is shown on the LCD.
See “principle of operation” diagram.

Protection against power supply faults

If one of the two power source fails or falls outside specification, MULTI-SWITCH will transfer the connected loads to the second power source (switching is instantaneous even if the two sources are not in phase).

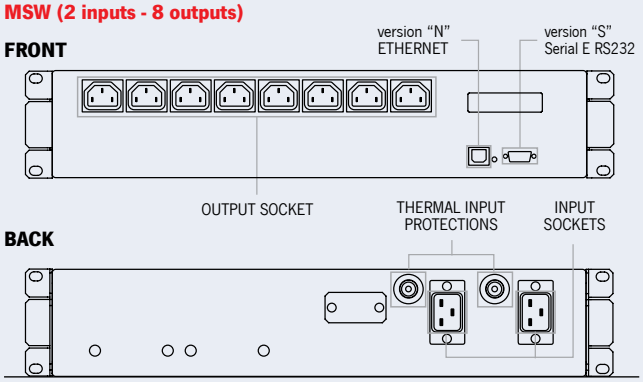
Protection against load faults

If a fault occurs with one of the loads (for example due to a short-circuit or overload), MULTI-SWITCH will disconnect the load to prevent disruption to the others. MULTI-SWITCH protects sensitive installations from both power and hardware faults.

Features

- Full load protection against mains and load failures
- Versatile: Multi-Switch can be powered from 2 different power supplies (2 UPS devices even of different sizes/types)
- 19" cabinet installation
- LCD display for monitoring measurements / alarms / status
- Can be connected to PowerNetGuard supervision software (Ethernet version)
- No signal connection between the MULTI-SWITCH and the power sources or mains power supplies is necessary
- Visualisation software
- Network interface.

MSW (2 inputs - 8 outputs)



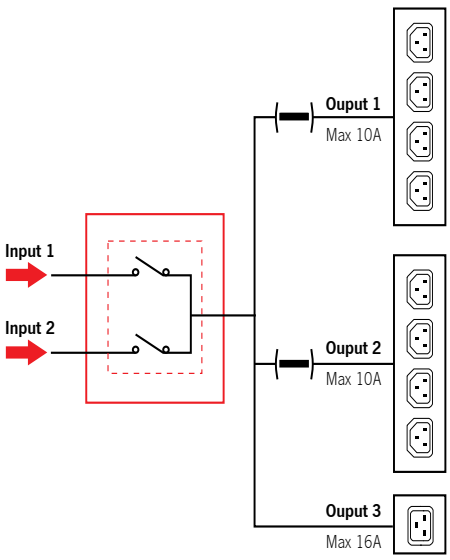
MODELS	MSW
POWER	16A
INPUT	
Nominal voltage	180 - 276 Vac
Nominal frequency	50 or 60 Hz
Max load for every input (A)	16
Input sockets	2 IEC 320 (16A)
OUTPUT	
Nominal voltage	two input power sources
Max load for every output (A)	4
Output socket	8 IEC 320 10A
INFO FOR INSTALLATION	
Weight (kg)	10
Dimensions (hwd) (mm)	2U x 19" x 360
Ambient temperature	0°C / +40°C
Relative humidity	< 95% non-condensing
Protection devices	Overcurrent - overvoltage - undervoltage - thermal - protection against energy back-feed
Max altitude	3000 m
Max altitude (in storage conditions)	6000 m; 45 °C
Communication	RS232 in MSW-S / Ethernet in MSW-N
Colour	Dark grey RAL 5004
Protection level	IP20
Noise level	< 35 dBA a 1 m

Multi Switch ATS

16A
Single-phase

Highlights

- Load protection
- Versatile
- Only 1U high



MULTI-SWITCH ATS provides power supply continuity for am installation. 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 10A IEC supplies or one 16A IEC supply in a system with two input power supplies (two mains inputs, or two UPS or a combination of the two). MULTI-SWITCH ATS is able to connect to either of the two inut power supplies.

Protection against load faults

In case one of the loads fails (e.g. short circuit) the MULTI-SWITCH ATS

disconnects the group of sockets where the load itself is connected, thus preventing other loads from being switched off (e.g. in case of poor protection selectivity) .

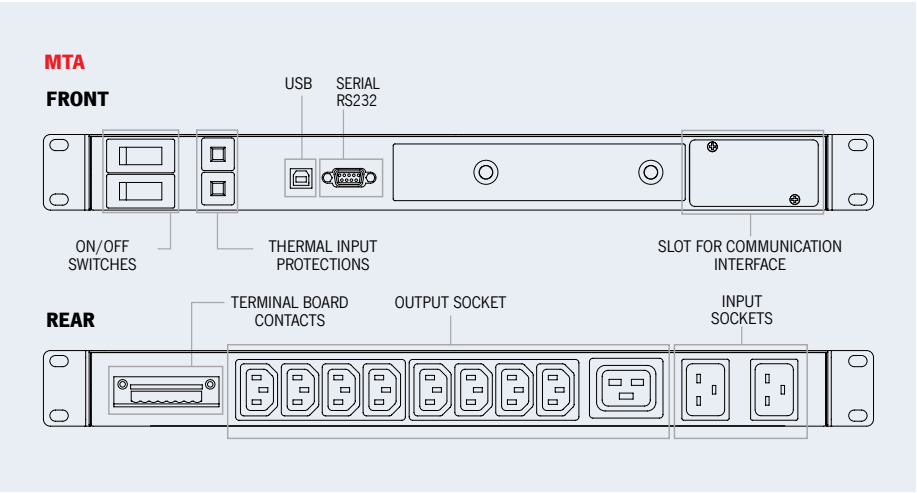
Protection against power supply faults

In the event that one of the two power sources does not fall within tolerance, MULTI-SWITCH ATS will transfer the other loads to the second power source (this occurs instantaneously if the two sources are in phase).

Features

- Full utilities protection against mains and load failures
- Versatility of use: MULTI-SWITCH ATS can be powered with 2 different power supplies (2 UPS devices even of different sizes/types)
- 19" cabinet installation
- Mimic panel
- Can be connected to PowerNetGuard supervision software
- No signal connection between the MULTI-SWITCH ATS and the power sources or utilities is necessary.
- Compatible with Powershield[3] software
- Slot for communication boards

particulars



MODELS	MTA
CORRENTE	16A
INPUT	
Nominal voltage	180 - 276 Vac
Nominal frequency	50 or 60 Hz
Max load for every input (A)	16
INPUT SOCKETS	2 IEC-320 C20 (16A)
OUTPUT	
Nominal voltage	choice between the two input power sources
Max load for every output (A)	10A su IEC-320 C13 - 16A su IEC-320 C19
Output socket	4+4 IEC-320 C13 (10A) + 1 IEC-320 C19 (16A)
INFO FOR INSTALLATION	
Weight (kg)	6
Dimensions (hwd) (mm)	1U x 19" x 330
Ambient temperature	0°C / +40°C
Relative humidity	< 95% non-condensing
Protection devices	Overcurrent - overvoltage - undervoltage - thermal - protection against energy back-feed
Max altitude	3000 m
Max altitude (in storage conditions)	6000 m; 45 °C
Communication	DB with RS232 USB slot for communications interface, contact port relay
Colour	Dark grey RAL 5004
Protection level	IP20
Noise level	< 35 dBA a 1 m

Master Switch

STS

Highlights

- High reliability
- “Hot Replacement” function
- 3- or 4-pole version
- Advanced communication

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

In the event that one of the two power sources does not fall within accepted tolerance values, MASTER SWITCH will transfer the other loads over to the second power source (this happens instantly if the two sources are in phase).

Protection against environmental disturbances

Load overloads and faults

In the event of an overload, the user can decide the level of intervention of the internal protections in order to block the supply of energy. In the extreme case a downstream short circuit, MASTER SWITCH disconnects the load, in order to prevent jeopardising the operation of other loads (e.g.. in case of poor protection selectivity).

Total microprocessor control

Microprocessor control logic ensures:

- Fast and safe switching between power sources
- Monitoring of all parameters via LCD display
- Constant control of the SCRs
- Advanced remote diagnostics (RS232 and TCP/IP)

Redundant Design

Power is supplied to the internal logic by two, 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 Backup** function that provides auxiliary power supply to the circuit through an external, independent power source. MASTER SWITCH is equipped with dual redundant ventilation defined as: "**fan redundancy 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 rated load and with an ambient temperature up to 40° C. The fans can be replaced in "**hot replacement**" mode, ensuring continuity during the intervention.

High protection

In the event of an output short circuit, MASTER SWITCH will block the transfer between the two power sources eliminating the risk of propagating the short circuit and its effects on the other loads.

A backfeed control circuit ensures the automatic intervention of protection devices when a return of energy to one of the two MASTER SWITCH inputs is detected.

Accessibility

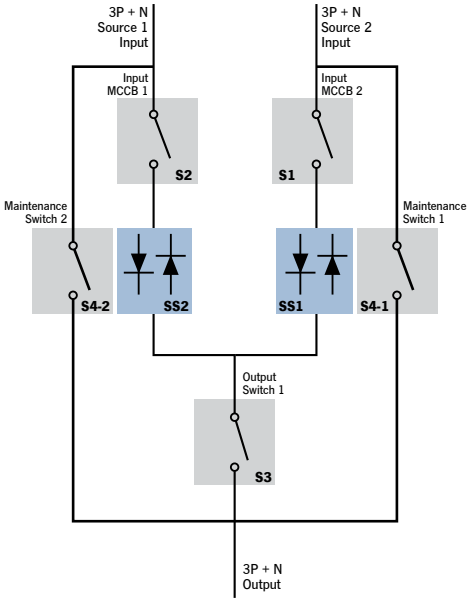
The layout of the moving components and parts is designed to ensure easy frontal access:

- 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 controls, maintenance and/or replacement.

Advanced communication

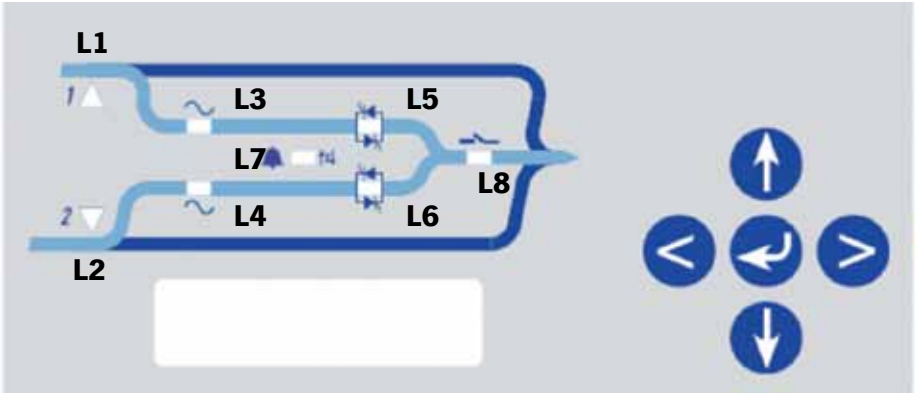
Master Switch provides information, measurements, statuses, and alarms via the LCD display.

The STS is compatible with Powershield[3] supervision and shutdown software for Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OS X, and Sun Solaris.

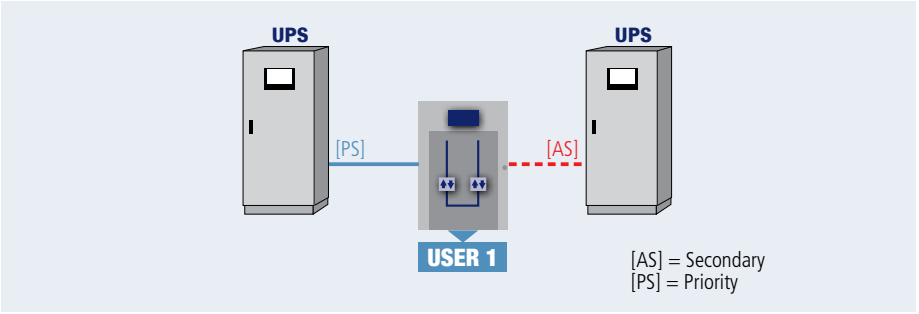


dimensions (mm)

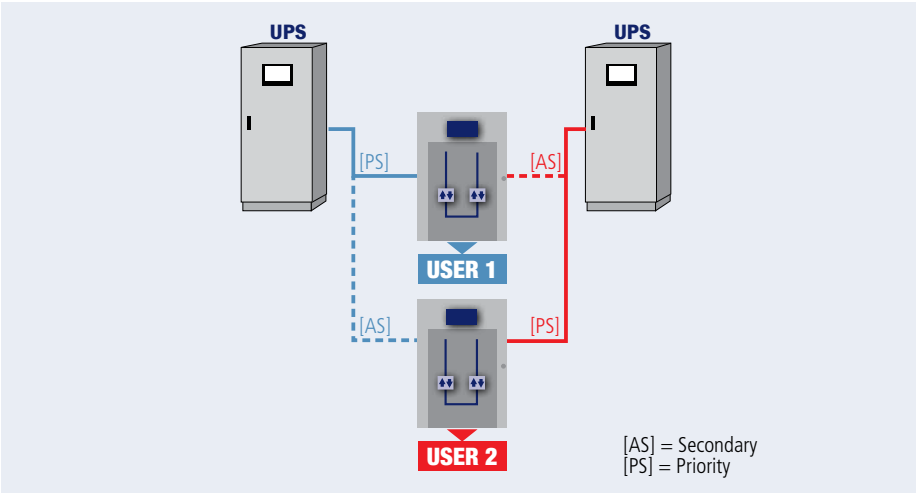
LED	FUNCTION
L1	S1 Priority Source
L2	S2 Priority Source
L3	S1 Present
L4	S2 Present
L5	Static transfer switch SS1 closed
L6	Static transfer switch SS2 closed
L7	Alarm indicator
L8	Output selector ON/OFF
5 function keys and LCD operation	



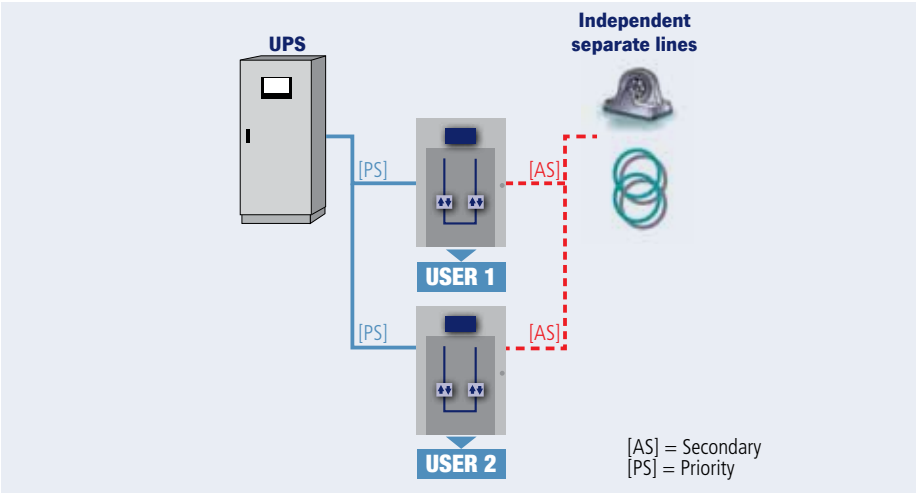
MASTER SWITCH in
REDUNDANT mode
The secondary source [AS], although highly reliable, only powers the load power in the event of a failure with the priority source [PS], ensuring maximum redundancy and power quality to the loads.



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).

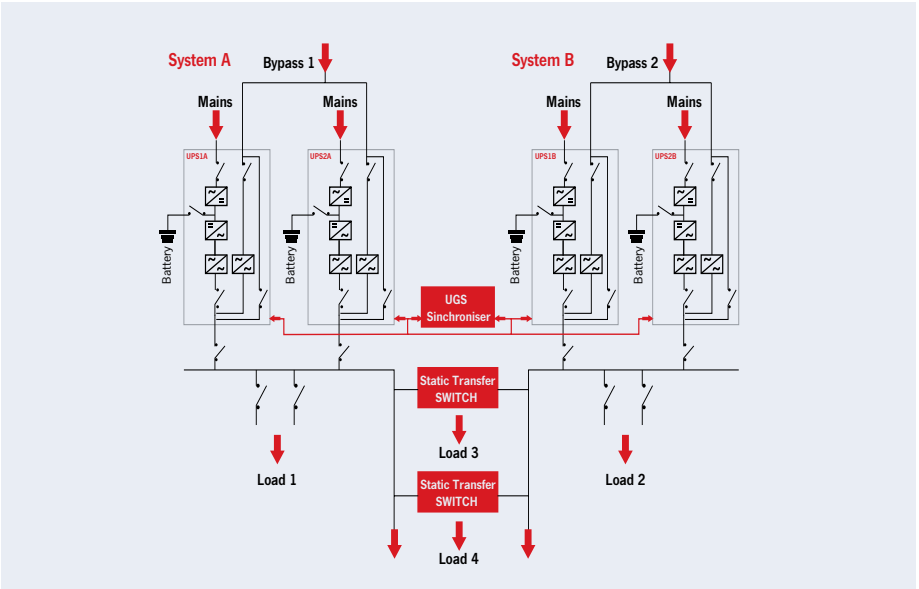


MASTER SWITCH in
BACK-UP mode
MASTER SWITCHES power utilities via the priority energy source [PS]; the secondary energy source [AS] is made up of independent, separate power sources and to make up for any faults in the priority power source.
[PS]



DYNAMIC DUAL BUS
CONFIGURATION
The Riello UPS solution guarantees maximum reliability and ensures continuity of power supply in 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 rather is made by another manufacturer or when the input sources are not UPSs.



MODELS	MTS 100	MTS 150	MTS 200	MTS 250	MTS 300	MTS 400	MTS 600
RATED CURRENT (A)	100	150	200	250	300	400	600
INPUT							
Nominal voltage - sources S1/S2	380 - 400 - 415 Vac three-phase with neutral						
Input voltage tolerance	180÷264 Vac (selectable)						
Switched input phases	3+N (4-pole) - 3 (3-pole)						
Nominal frequency	50 or 60 Hz						
Input frequency tolerance range	+/-10% (selectable)						
Distribution compatibility	IT, TT, TNS, TNC						
OPERATING FEATURES							
Transfer type	“Break Before Make” (no overlapping sources)						
Available transfer methods	Automatic / Manual / Remote						
Transfer time for source failure	< 4 msec (S1/S2 synchronised) 10 msec (S1/S2 NON synchronised)						
ENVIRONMENTAL							
Efficiency at full load (%)	> 99%						
Noise level at 1 m from front (dBA) (from 0 to full load) - (dBA)	55	55	55	55	55	55	57
Storage temperature	-10°C up to +50°C						
Ambient temperature	0°C - 40°C						
Relative humidity	95% non-condensing						
Max installation height	1000 m at rated power (-1% power for every 100 m above 1000 m) - Max 4000 m						
Reference Standards	EN 62310-1 (safety) EN 62310-2 (electro-magnetic compatibility)						
INFO FOR INSTALLATION							
Weight (kg)	155	175	205	210	220	240	375
Dimensions (hwd) (mm)	1500 x 685 x 530		1770 x 685 x 580				1900 x 950 x 730
Colour	RAL 7016						
Protection level	IP 20						

LOCAL AREA NETWORKS (LAN) | SERVERS | DATA CENTRES | TELECOM-MUNICATIONS DEVICES | E-BUSINESS (Servers Farms, ISP/ASP/POP) | INDUSTRIAL PROCESSES | INDUSTRIAL PLCS | ELECTRO-MEDICAL DEVICES | EMERGENCY DEVICES (Lights/Alarms)

Flywheel Energy Storage

Highlights

- High reliability
- Very low TCO
- Life expectancy of more than 20 years
- High energy density
- Parallelability with identical units or batteries
- Green Energy
- High efficiency

Model with touch screen (optional)

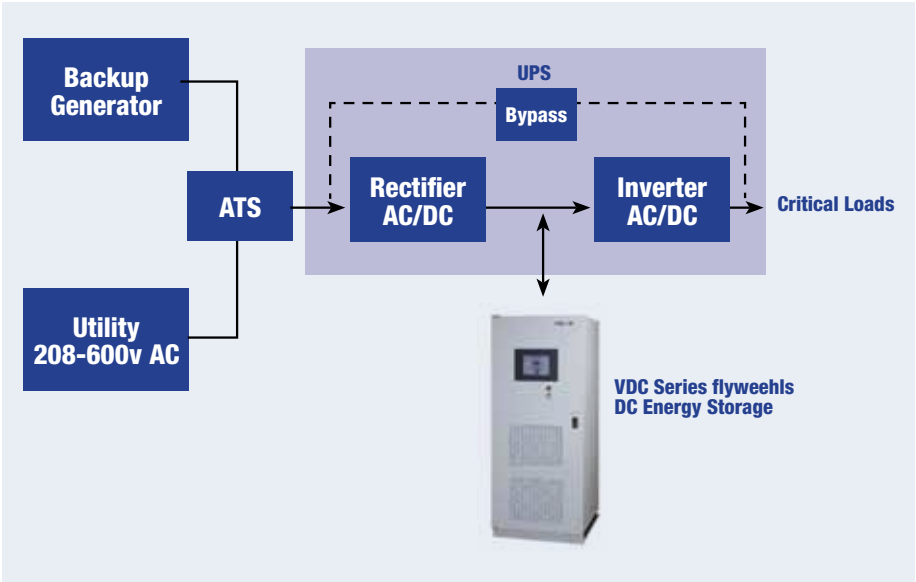
The VDC series of flywheel energy storage systems provide Riello Master Plus UPS with a source of dc power that can be used to ride through short mains power supply failures. The length of supply available can be used to cover the start-up time of a standby generator or prevent the initial discharge of a locally connected battery set.

The VDC flywheel connects directly to the UPS DC busbar and is a standalone device supplied in a matching cabinet. The VDC series of flywheels has been designed for UPS applications within datacentres, hospitals and industrial installations. The patented flywheel concept is a form of energy storage and provides a green, clean source of back up power by converting the kinetic energy

stored within a rotating mass to electrical power through a built-in IGBTbased converter.
Two sizes are available (VDC and VDC-XE) with a load-related back-up autonomy.

VDC flywheel concept

The Riello UPS VDC-series flywheel stores kinetic energy in the form of a rotating mass (spinning at 36,000 RPM) within a sealed container. The patented technology includes the flywheel hub, formed from aerospace-grade steel, a high speed permanent magnet motor generator, contact-free magnetic bearings that levitate and sustain the rotor during operation, and a superior touch-screen control system that provides vital information on system performance.
A flywheel is also known as a 'mechanical battery' and energy storage system, and is used to perform the traditional role of battery sets within a standby power application.



Benefits

- High reliability
- Lowest cost of ownership (TCO)
- High power density
- Small footprint
- High efficiency - 99.4%
- Minimal maintenance
- Simple installation

Battery hardening

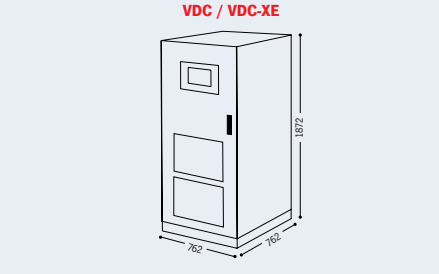
For applications without Gensets or for those who still want to use batteries, the VDC and VDCXE can operate in parallel with batteries. In this configuration, the VDC is the first line of defense against power anomalies – saving the batteries for prolonged power outages.
By being first to provide the necessary energy to ride-through power glitches, the VDC system significantly increases battery life by absorbing over 98% of the discharges that would normally cause the batteries to be cycled. This innovative patented technology enables the flywheel to charge and discharge at high rates for countless cycles without degradation throughout its 20 year life – unlike traditional batteries.

Options

The following options are available:

- Colour Touch Screen panel
- Remote Emergency Power Off (EPO) board
- Modbus communication board
- Dry contacts interface board

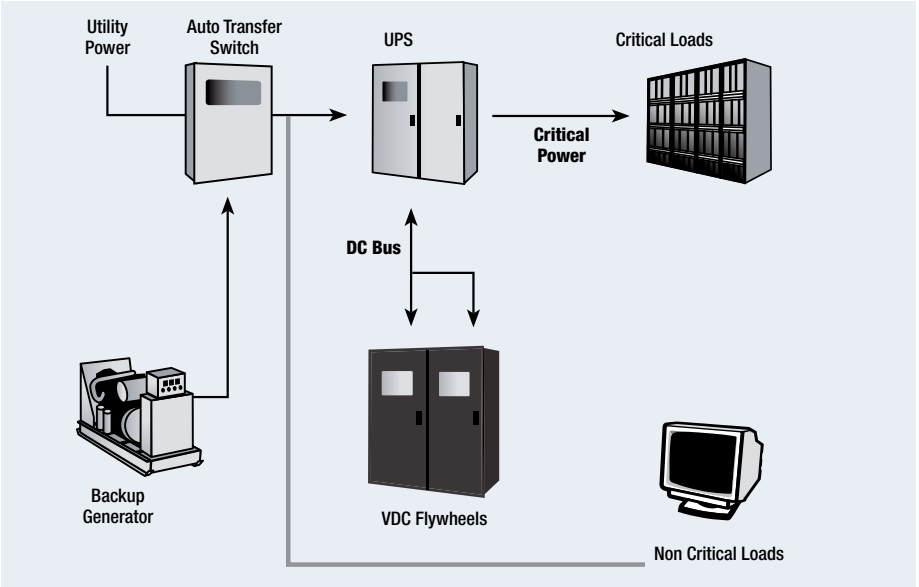
dimensions (mm)



Configurations

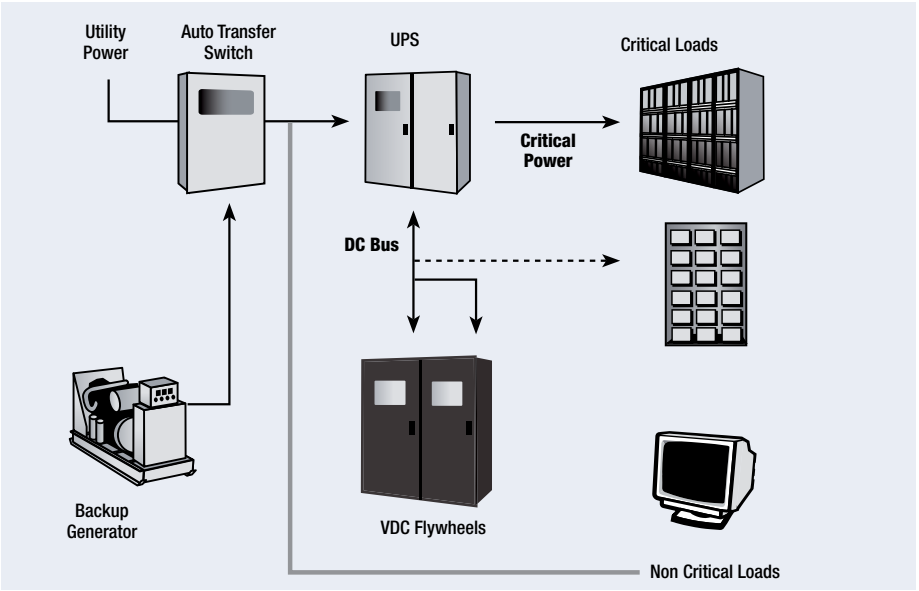
Backup during auxiliary generator start-up phase

Genset Ride-Through: Generators must be able to assume critical loads quickly. While batteries can carry out this function, Riello UPS VDC series systems provide reliable energy storage instantaneously; assuring a predictable transition to the stand-by generator, all in a compact footprint.



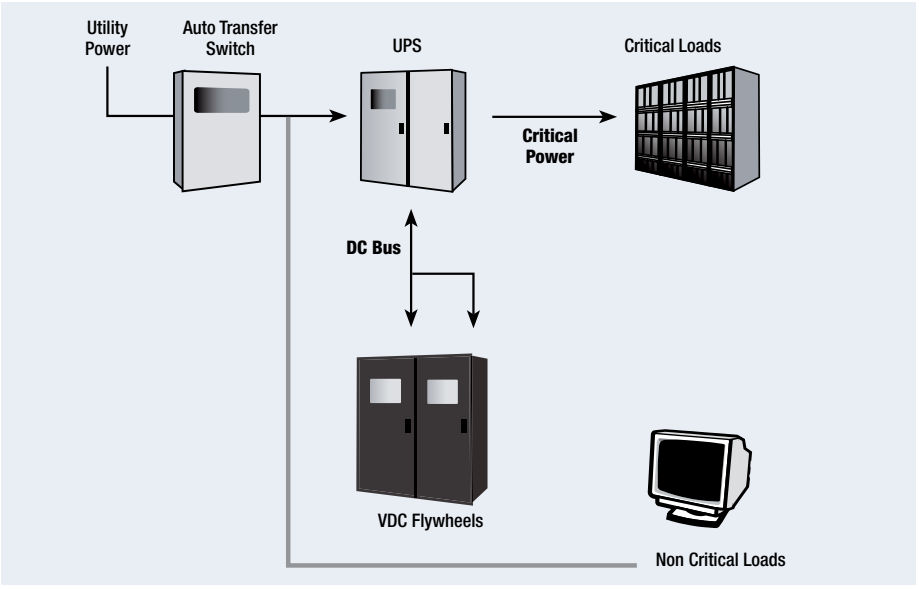
Aid to batteries

For applications without Generators or for those who still want to use batteries, the VDC and VDC-XE can operate in parallel. In this configuration, the VDC is the first line of defense against power fluctuations – saving the batteries for prolonged power outages. By being first to provide the necessary energy to ride through power glitches, the Riello UPS VDC series significantly increases battery life by absorbing over 98% of the discharges that would have normally caused the batteries to be cycled.



Protection for industrial applications

For applications in industrial markets where power disturbances can shut down sensitive process control equipment leading to lost productivity, the Riello UPS VDC series is the perfect solution. 98% of all power disruptions and outages are less than 10 seconds in duration; all of which can be covered by the energy stored in the flywheel. Because the VDC series can operate in harsh environments and occupies a compact space, it is also the ideal solution for industrial applications where space is limited.



Run times *

VDC	UPS OUTPUT POWER RATING (kVA)											
Number of flywheels	40	60	80	100	120	160	225	275	450	550	750	1100
1	99.8	67.0	50.3	40.3	33.6	21.9	11.7	6.4				
2				80.0	65.0	48.8	34.8	26.6	11.3	6.2		
3						72.3	51.5	42.2	23.2	16.8	8.5	
4								55.6	34.1	26.1	16.0	6.0
5										34.8	23.0	11.7

Runtime in seconds

VDC-XE	UPS OUTPUT POWER RATING (kVA)											
Number of flywheels	40	60	80	100	120	160	225	275	450	550	750	1100
1	133.3	88.9	66.7	53.3	44.4	32.9	20.5	14.1				
2				102.4	85.3	64.0	45.5	37.3	19.7	13.6	6.7	
3						95.0	67.6	55.3	33.6	26.3	16.2	6.9
4								72.9	44.6	36.5	25.3	13.3
5										45.6	33.3	20.0

Runtime in seconds

(*) Backup Times are typical using 0.9 Output Power Factor, 80% Load Rating, 96% Inverter Efficiency

MODELS	VDC	VDC-XE
POWER		
Max Power	215 kW	300 kW
Max Energy Storage	3000kWsec@100kW	4000kWsec@100kW
Flywheel rotation speed	from 18500 to 36000 rpm	from 14500 to 36750 rpm
INPUT		
Input Voltage	400-600 Vdc	
Recharge Rate	15-50 A Adjustable for application	
Efficiency	99.2% at max. power	99.4% at max. power
OUTPUT		
Voltage Discharge	400-520 Vdc Adjustable for application	
Voltage Regulation	+/- 1%	
DC Ripple	≤ 2%	
INFO FOR INSTALLATION		
Operating Temperature	-20°C / +40°C	
Humidity	95% non-condensing	
Colour	Dark grey RAL 7016	
Noise level	≤ 68dBA a 1 m	
Dimensions (hwd) (mm)	1872 x 762 x 762	
Weight (kg)	705	
Protection level	IP 20	
Regulations	EMC EN 61000-6-4:2001; EMC EN 61000-6-2:2001; Safety EN 60204-1; Directives: 2004/108/EC; 98/37/EC	

Emergency devices

Highlights

- High reliability
- “Hot Replacement” function
- Advanced communication

Riello UPS systems are also designed and built to be used in applications such as centralised power supply systems for emergency lighting, alarms, and electro-medical equipment. Regulatory standards CEI 64-8 V2, EN 50171 and other guidelines, define the features and capabilities that the systems must have; below the main features/capabilities are summarised:

- Runtime of up to 3 h
- Battery recharge time under 12 hours
- Galvanic isolation input/output
- Advanced diagnostics (information on equipment’s mimic panel)
- Interface device to provide information remotely (usually via voltage free contacts)
- High short circuit current

These applications require a UPS configured as follows:

- Standard UPS with high capacity battery charger
- Isolation transformer (when required)
- Ability to communicate with remote peripheral devices.

Features

- Total microprocessor control: for reduced overall size and superior reliability
- Use of IGBT technology (Isolated Gate Bipolar Transistor) has been used in UPS devices for over 10 years to optimise electrical performance including overload management and small size.
- Advanced communications interface (UPS devices equipped with free contact interfaces, RS232/485 serial interface for communication with local PC or network PC)
- “TeleNetGuard” teleassistance for remote equipment control and diagnostics.
- LCD display for complete control of equipment (statuses/alarms/ measurements/event logs)
- Option of expanding the power and/or of increasing reliability through the parallel connection of several models (8kVA models and higher)

CSS CONFIGURATIONS

Model	Sentinel Pro	Sentinel Dual	Sentinel Power	Multi Sentry
Runtime up to 3 hours: Power	1.600 W	2.000 W	3.000 W	30.000 W
Runtime up to 1 hour: Power	2.100 W	3.500 W	7.000 W	64.000 W

Options

- Communications interfaces: see accessories table of individual models
- Isolation transformers

Advanced communication

Multi-platform communication for all operating systems and network environments: PowerShield[3] supervision and shutdown software for Windows operating systems 7, 2008, Vista, 2003, XP, Linux, Mac OS X and Sun Solaris, VMware ESX and other Unix operating systems.

Regulatory Compliance

Riello UPS systems comply with European and available national guidelines.

A full range of CSS, from 700VA to 200kVA

The CSS range is comprised of the following blocks:

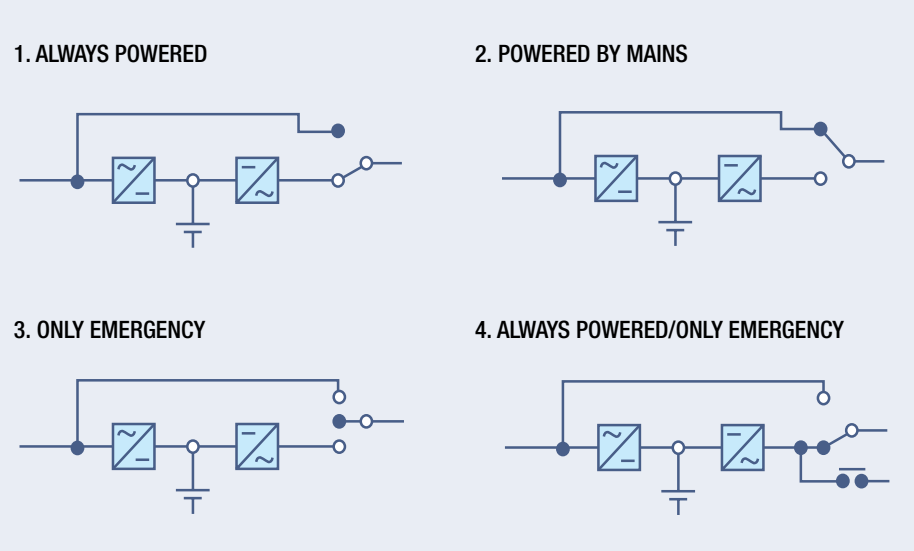
Rectifier: converts the alternating current input voltage, coming from the mains power supply or from an alternative source (generator) into continuous current voltage.

Inverter: converts the continuous current voltage supplied by the rectifier into alternating current voltage: in this way, the voltage is reconstructed,filtered and stabilised compared to the input voltage.

By-pass: allows switching between the inverter and the mains power supply. In the “always powered” operating mode, the CSS load is always powered by the inverter and is only switched onto the mains via the bypass circuit in the event of a failure. In the “powered from the mains” mode, the load is powered and only switched onto the inverter when there is no mains power. In “emergency only” mode the load is only powered by the inverter if there is no mains power. The inverter has a soft-start feature, to handle current surges when powered utilities are switched on, and limit the value of the power required. In “always powered/emergency only” mode two outputs can be used: one always powered (such as for powering computer loads) and one that is only powered when there is no mains power (such as for powering emergency lights that by law must switch on within 0.5 seconds of a mains failure).

Batteries: used to power the inverter for a period of time required by law (up to 3 hours if there is no generator).
The batteries used are generally valve-regulated, lead-acid batteries, and do not require maintenance or a special installation environment as they have very low gas emissions.

Diagrams of the various system solutions



Connectivity

PowerShield³

Communications Software

All the trademarks indicated are the property of their respective owners.

PowerShield³ can be downloaded free of charge from **www.riello-ups.com**

GRAPHIC MONITORING OF UPS AND ENVIRONMENTAL SENSORS STATUS
PowerShield³ is a simple but powerful RIELLO UPS management tool. There are various graphic versions for all the operating systems.

DETAILED UPS PARAMETER DISPLAY AND ENVIRONMENTAL SENSORS
PowerShield³ provides all the information required for first level diagnostics.

EVENTS LOG AND GRAPHICAL DISPLAY
All changes in UPS operating status are logged and displayed in a graphical format from which the user can monitor trends in the mains electrical parameters monitored.

PROGRAMMING OF UPS PARAMETERS
The user can select several options remotely: turn the UPS on or off, restart after a power loss and instigate a battery test.

GRAPHIC MONITORING OF UPS STATUS VERSION FOR MAC OS X
RIELLO UPS **PowerShield³** software is the only UPS control and shut-down software running under Macintosh with a client-server cross platform architecture. It allows integration in TCP/IP networks with Windows, Novell, IBM OS/2 and the most widely used UNIX operating systems. **PowerShield³** supports the Netman Plus series of network agents and provides multi-language support.

BLOCK AND FUNCTIONAL DIAGRAMS
PowerShield³ also displays the UPS in block format providing the user with information regarding operating status.

NOTIFICATION OF ALARMS VIA E-MAIL, SMS, FAX AND VOICE
PowerShield³ can be configured to forward alarm messages automatically via e-mail, SMS, fax and voice.

PowerShield³ software guarantees efficient and intuitive UPS management, displaying the most important information such as input voltage, applied load, and battery capacity. In the event of a failure, it is able to provide detailed information on the status of the UPS. Its client/server architecture makes it an ideal tool for managing multi-platform network systems.

Features

- Sequential and priority-based shutdown: PowerShield³ carries out unattended shutdowns of all network PCs, saving any work in progress by the most common applications. Users can define the shutdown priority of the various computers connected to the network and customise the procedure.
- Multi-platform compatibilty, PowerShield ensures multi-platform interoperability using the standard TCP/IP as a communications protocol. This makes it possible to monitor computers with different operating systems from a single console,for example monitoring a UNIX server from a Windows PC or connecting to a UPS located indifferent geographical areas using dedicated networks (intranets) or the Internet.
- Event scheduling: PowerShield³ allows users to define their own shutdown and start-upprocedures for powered systems, thereby increasing system security and providing significant energy savings.
- Message management: PowerShield³ keeps users constantly informed of the status of both the UPS and the environmental sensors, both locally and by sending messages via the network. In addition, it also is possible to define a list of users that will receive e-mails, faxes, voice mails and SMS in the event of failures or black-outs.
- Integrated SNMP agent: PowerShield³ features an integrated SNMP agent for UPS management allows sending all information pertaining to the UPS using the standard RFC 1628 and related trap ,and environmental sensors. This feature makes it possible to manage the UPS in compatible SNMP management stations such as HP Open View, Novell Managewise and IBM NetView
- Integrated wap server integrated: PowerShield³ allows the user to remotely monitor the UPS via aWAP mobile phone UPS diagnostics has never been so easy and immediate.
- Security and communication is now password protected for increased security in UPS management. Thanks to the discovery/browsing function, all the UPS devices connected to a computer and/or via LAN are immediately displayed in list format in order to be monitored. In the absence of a LAN connection, communication is supported via modem.

Supported operating systems

- Windows 2000, 2003 Server, XP, Vista, 2008 Server, 7, on X86, X86_64 and IA64 processors
- Linux on X86, X86_64 and IA64 processors
- Novell Netware 3.x, 4.x, 5.x, 6
- Mac OS X
- 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
- VMWare ESX, VSPHERE.

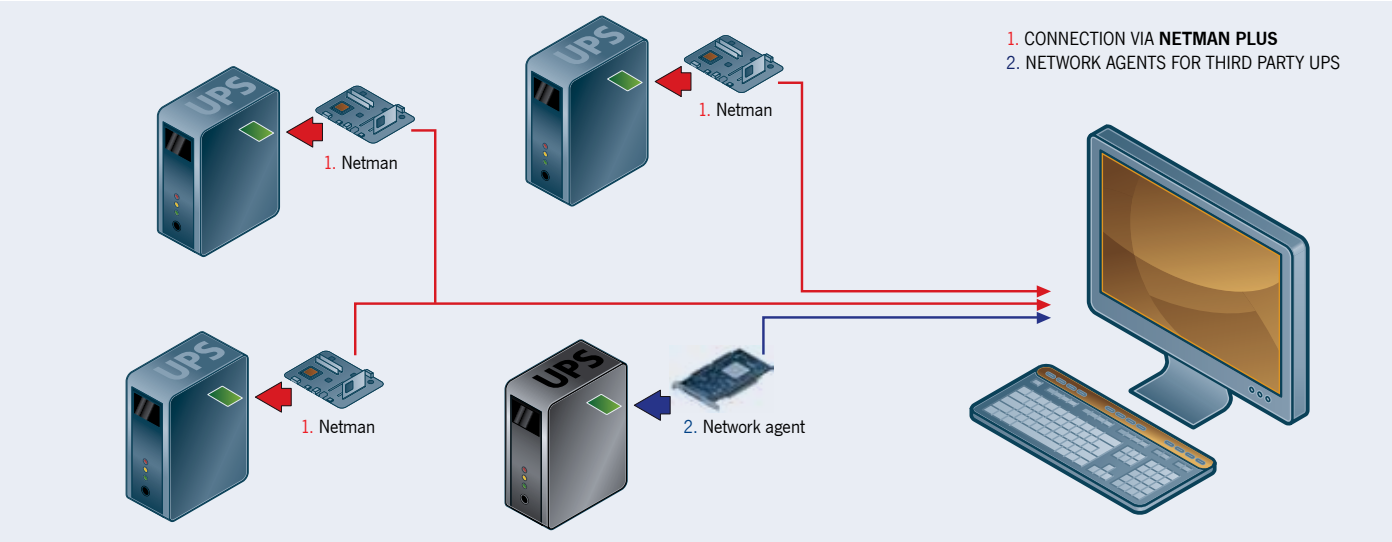
PowerNetGuard

Supervision software

PowerNetGuard is a programme for the centralised management of UPS devices through SNMP communication protocol and is the ideal tool for EDP Managers in Data Centres and medium and large networks. Using the Management Information Base (MIB) described with RFC1628 it is able to homogeneously manage all the UPSs conforming to this world standard.

Features
- Centralised control of remote UPSs 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 Standard SNMP RFC1628 interfaces
- Creation of graphs of UPS input and output values and data back-up on files
- Alarm notification via e-mail and SMS
- Integrated Wap Server for alarm display
- For Windows operating systems (2008 Server, Vista, 2003 and XP), Linux, Mac OS X, Solaris 8, 9 and 10, and Silicon Graphics IRIX

Centralised control of remote UPS devices



NetMan 101/102 Plus

Network agent

The NetMan Plus network agent allows for the management of the UPS directly connected on LAN 10/100 Mb using the main network communication protocols (TCP/IP, HTTP andSNMP).
It was developed to integrate the UPS into medium and large networks, in order to provide a high degree of communications reliability between the UPS and its management systems.

Features
- Compatible with 10/100Mbps Ethernet and IPv4/6 network
- Compatible with PowerShield[3] and TeleNetGuard
- SNMP with RFC1628 for PowerNETGuard and NMS connection
- SNMP with RFC 3433 for managing environmental sensors
- HTTP for UPS control via web browser
- SMTP for emailing alarm notification or UPS status
- Serial port for UPS control
- Modem management for TeleNetGuard and PowerShield[3]
- Events log management
- Wake-on Lan management for starting computer via TCP/IP network
- Other standards: DHCP, DNS, RARP, FTP, NTP, ICMP, IGMP
- Configured via TELNET or serial terminal with data import/export
- Firmware upgradeable through the serial port and TFTP server.

NetMan 202 Plus

Network agent

The NetMan 202 network agent allows for the management of UPSs directly connected to LAN 10/100 Mb using the main network communication protocols (TCP/IP, HTTP and SNMP). It was developed to integrate the UPS into medium and large networks, in order to provide a high degree of communications reliability between the UPS and its management systems.

Features

- 32bit RISC processor
- Compatible with 10/100Mbps Ethernet and IPv4/6 network
- Compatible with PowerShield³ and TeleNetGuard
- SNMP v1 and v3 with RFC1628 for PowerNETGuard and NMS connection
- SNMP v1 and v3 with RFC3433 for the management of environmental sensors
- HTTP for UPS control via web browser
- SMTP for emailing alarm notification or UPS status
- Maximum expandability
- USB host for Pendrive USB connection
- Events log and data management
- Wake-on Lan management for starting computer via TCP/IP network
- Other standards: DHCP, DNS, RARP, FTP, NTP, ICMP, IGMP
- Management of environmental sensors
- Configurable via Telnet, SSH, and serial terminal sessions with data export/import.
- Firmware upgradeable via USB port FTP and http.

Environmental sensors

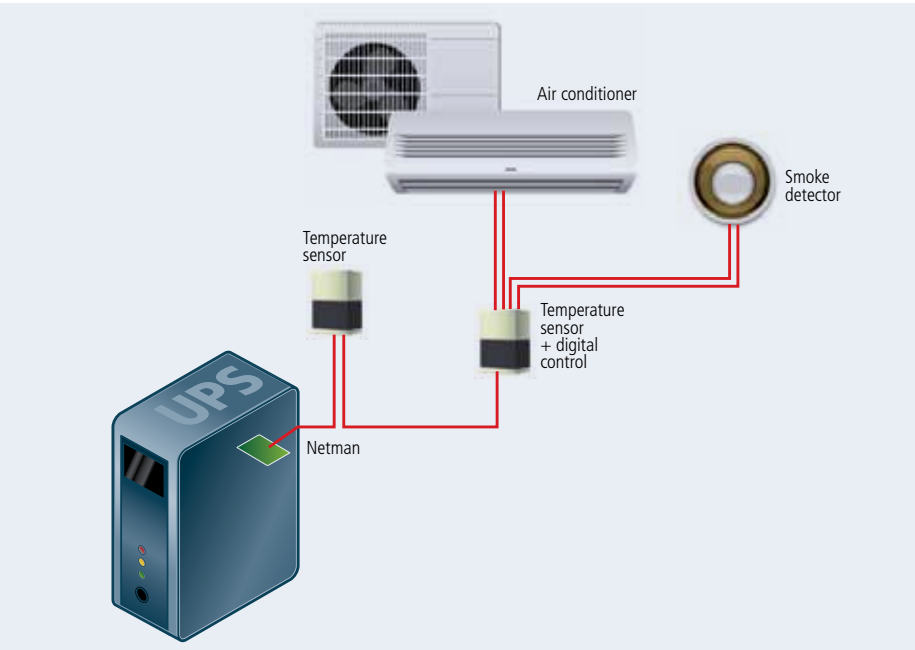
With Netman environmental sensors it is possible to monitor and record environmental conditions and activities in protected areas and at premises where the UPS is installed. Environmental sensors allow extending the control and management of the environment surrounding the UPS, monitoring temperature, humidity and allowing the operation of devices such as fans or locks, providing the values via Web, SNMP, and through PowerShield³ software.

Using the PowerShield³ software it is possible to manage the status of sensors for sending messages. For further information, refer to the PowerShield³ software.
NetMan plus can handle up to a maximum of 6 separate sensors. The environmental sensors can be installed quickly, thanks to their small size, and do not require external power. In addition, configuration is quick and intuitive thanks to the self-learning of the connected sensors.

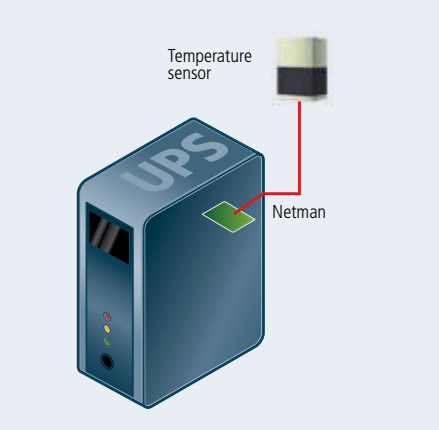
The following sensors are available:

- **Sensor for temperature: -55 +125 °C**
- **Sensor for temperature: -55 +125 °C and humidity: 0- 100%**
- **Sensor for temperature: -55 +125 °C and digital I/O: 0-12Vdc. In, 1A max Out 48Vdc**

Application diagram



Application diagram



Multicom 301/302

Protocol converter

The MultiCOM 301/302 protocol converter allows UPS monitoring using the MODBUS/JBUS protocol on RS232 or RS485 serial lines.
In addition, it provides a second independent RS232 serial line that can be used to connect to other devices such as the Netman 101 or a PC that uses PowerShield[3] software.

Features
- Port configuration for MODBUS/JBUS as RS232 or RS485
- Management of two independent serial lines
- Suited for integration with main BMS systems.

Multicom 351/352

Serial duplicator

The MultiCOM 351/352 serial duplicator is an accessory that allows two devices to be connected to a single UPS communication serial port.
It can be used where several serial connections and multiple UPS polling are required, and is ideal for LAN networks with a firewall, where a high level of security is required or for the management of separate LAN networks powered by a singe UPS.

Features
- Cascading configuration to obtain a maximum of 4 serial communication ports
- LED communication flow indicator
- Firmware can be updated via the serial port

Multicom 362

Serial Port / USB

The Multicom 362 accessory allows the UPS to communicate via the RS232 serial line or alternatively via USB through the auxiliary communication port. It allows UPSs not equipped with a USB communication port to be connected to Apple Macintosh computers or computers with Windows and Linux operating systems.

Features
- Compatible with USB 1.2
- Compatible with PowerShield[3].

For compatibility, refer to the Compatibility table on pg. 17 and 20

Multicom 372

SERIAL PORT / ESD

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 input (Emergency UPS Shutdown) 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 EPO and UPS Shut-down
- Powering of devices up to 12V 80mA max.

For compatibility, refer to the Compatibility table on pg. 17 and 20

Multicom 382

Contacts /ESD board

MultiCOM 382 provides a set of relay contacts for the management of UPS statuses and alarms. The board is equipped with two removable terminal boards. The ESD signal (emergency UPS Shutdown) and the RSD signal (Remote shutdown) are found on one of these terminal boards. Using this board, Battery Bypass, Alarm and Low Battery signals can be associated with SPDT dry contacts or normally open contacts.

Features
- Max power 3A to 250Vac
- Ability to configure the association of the signals on the contacts.

For compatibility, refer to the Compatibility table on pg. 17 and 20

Multi I/O

Protocol and contacts converter

The Multi I/O is a device that integrates the UPS with a control system, via input and output relay signals, that is fully configurable. It allows two devices to be connected to a single UPS communication serial port.
It can be used in all cases where there is a real need for several serial connections for the multiple interrogation of the UPS. It is also able to communicate on RS485 lines via the MODBUS/JBUS protocol.

Features
- 8 analog/digital inputs
- 8 relay outputs (3A to 250Vac), configurable using the input and UPS statuses.
- Communicate with the UPS via RS232
- It can control two independent RS232/ RS485 serial lines to monitor the UPS and its statuses with the MODBUS/JBUS protocol.
- Firmware can be updated via the serial port

I/O

Expansion board

The I/O expansion board for the Master Plus range is equipped with:

- 6 outputs with NC/NO volt-free contacts (250V/5A), electrically isolated from each other and from other circuits
- 2 self-powered inputs

Each output or input can be configured with different meanings, using the relative menu.

For compatibility, refer to the Compatibility table on pg. 17 and 20

Multicom 401

Protocol converter

Multicom 401 is an accessory that allows the UPS to be connected to a Profibus DP network. The device combines UPS management and monitoring in a control system based on a field bus that is among the most widely used in the industrial sector and in communication between control / automation and I/O distributed systems.

Features

- PROFIBUS DP-V1 protocol
- Configurable addresses from 0 to 99
- Data format: Profidrive V2 PP05
- Communication speed configurable from 9.6kBit/s to 12 MBit/s
- Led displaying the communication flow

Kit for AS400 and i-Series

Communications kit

The IBM AS/400 system, due to single level memory management, requires the almost-mandatory connection to a UPS as any drop in voltage resulting in a power shutdown, causes long, if not very long, restoration times as well as possible hardware damage due to even simple disturbances in electrical power signal.

The AS/400 systems connection kit, allows for the correct closure of the OS/400 operating system, during a black-out.

Features

- Compatible with all AS/400 and i-Series Systems
- Supports all UPSs in the Riello UPS range.

Multi Panel

Multi Panel is a remote control panel that allows users to remotely monitor the UPS and to have a detailed overview of operating conditions in real time. Using this type of device, network power, output, and battery measurements as well as UPS statuses can be viewed.

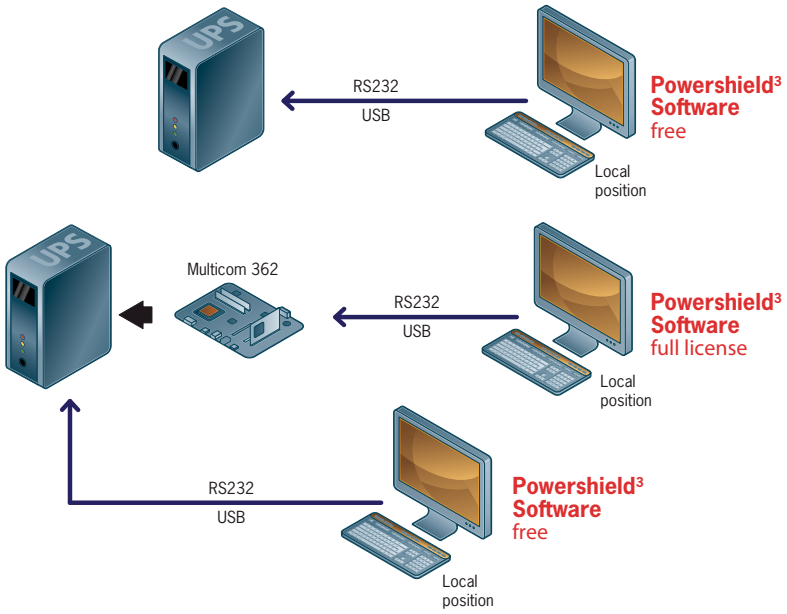
The high-visibility graphic display is available in English, Italian, German, French, Spanish, Russian, Chinese and many other languages.

Multi Panel is equipped with three independent serial ports, one of which permits monitoring the UPS via the MODBUS / JBUS or on RS485 or RS232 serial lines. The other independent serial lines allow other other devices to be connected, such as Netman 101 or a PC that uses PowerShield[3] software.

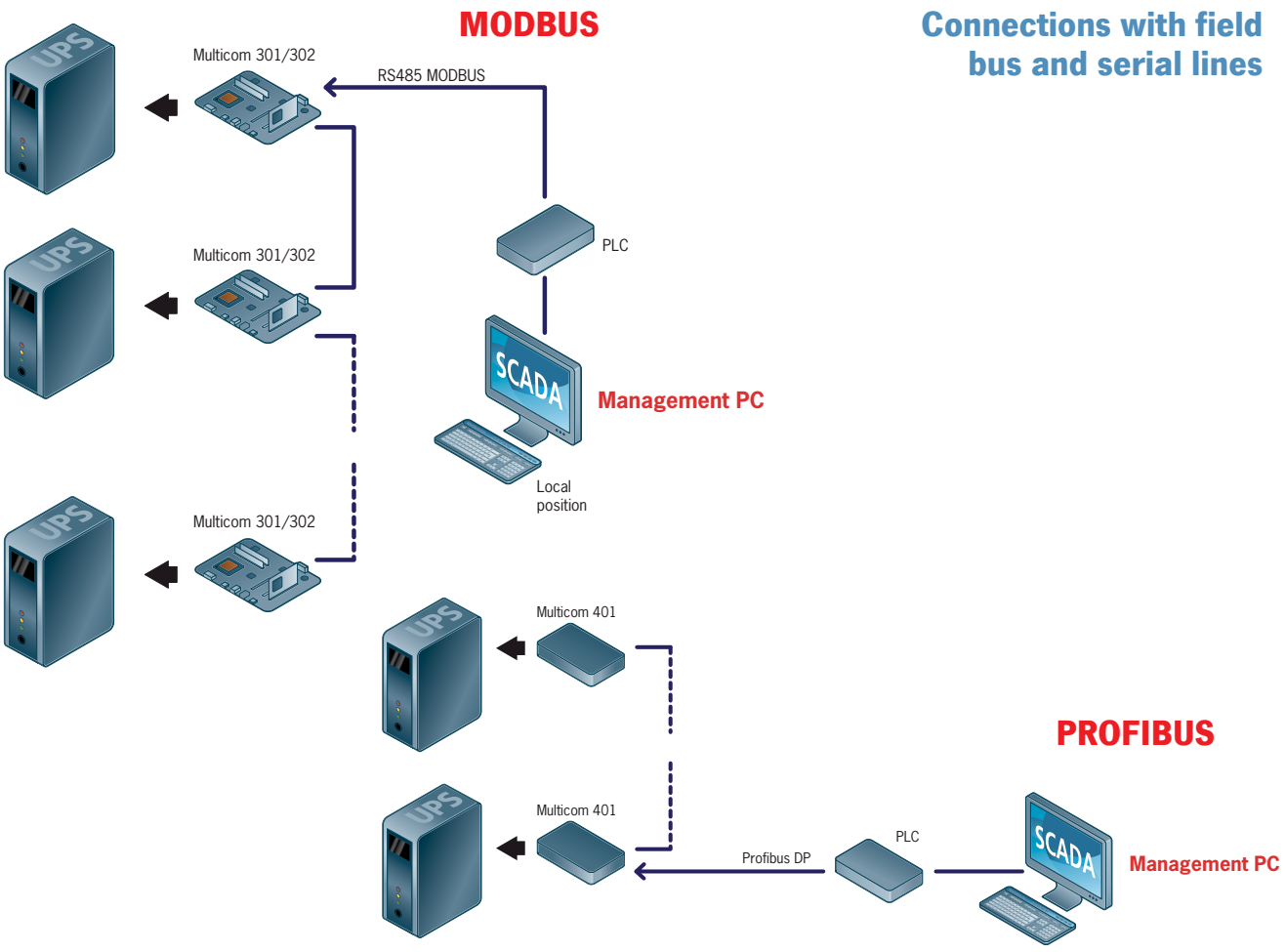
- High visibility LCD with graphic functions
- Management of three independent serial lines
- Port configuration for MODBUS/JBUS as RS232 or RS485
- Suited for integration with main BMS management systems.
- Firmware can be updated via the serial port

Connectivity: some solutions

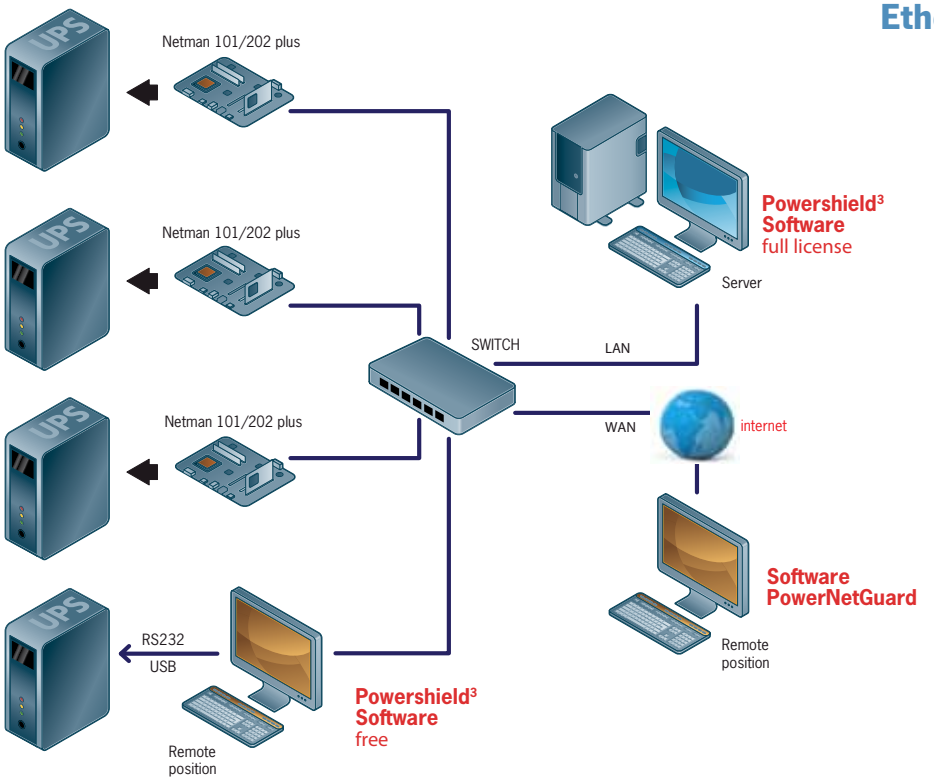
Point-to-point connections with serial lines



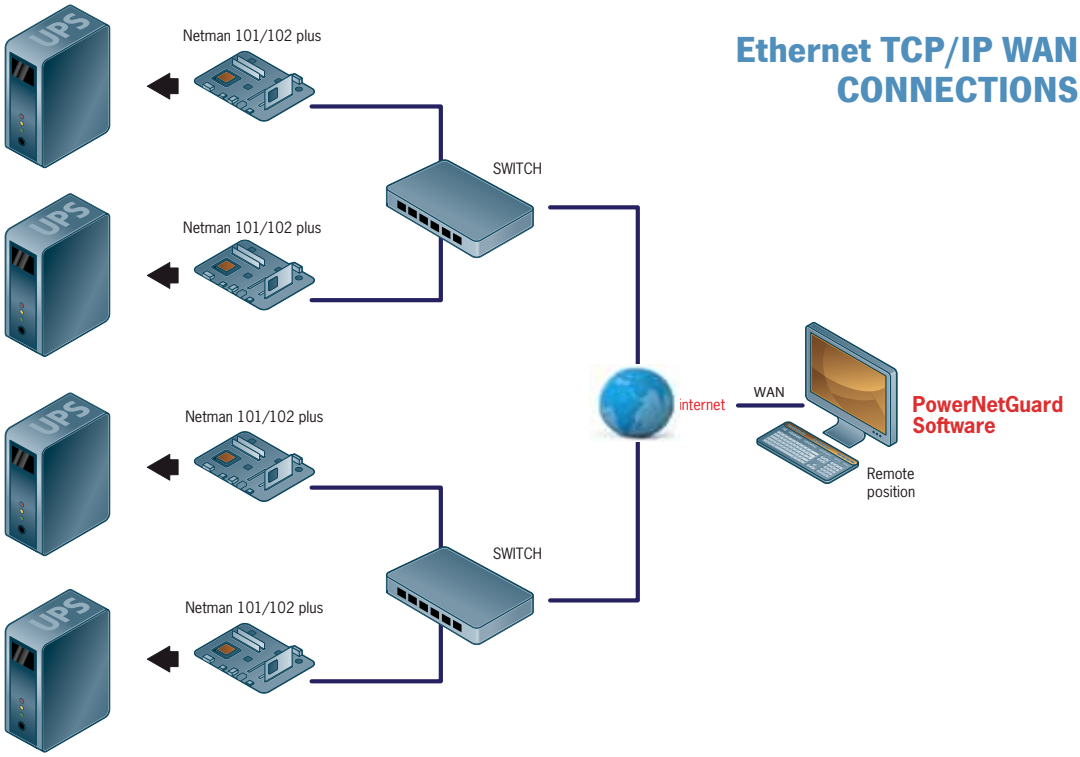
Connections with field bus and serial lines



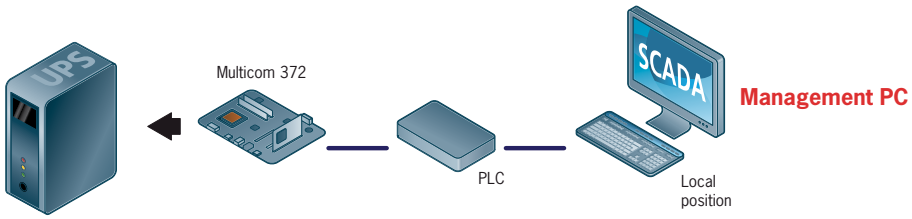
Ethernet TCP/IP LAN/WAN CONNECTIONS



Ethernet TCP/IP WAN CONNECTIONS



Connection with PLC to contacts



Maintenance Bypass

Multi Pass 10, 16 & 16-R

Multi PASS 16
Box version

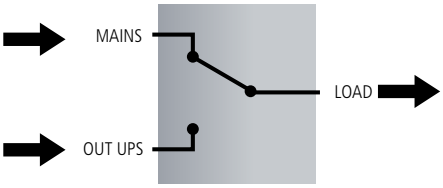
Multi PASS 16-R
Rack version

The MultiPASS manual bypass cuts out the UPS in the event of malfunction or breakage. MultiPASS ensures that the connected utilities are automatically switched to the main power line if the UPS is switched off or is blocked.
MultiPASS 16 is available for rack or wall installations (box).

Features

- Rack or wall version
- Standard back-feed protection
- Automatic switching during mains failure
- Mains power present LED indicator
- Available with sockets of different standards (IEC, english socket, terminal boards).

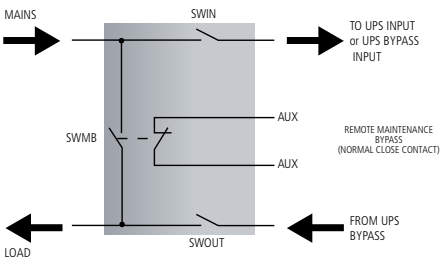
MBB32A



Available in a 32A single-phase configuration, enables UPS servicing up to 6kVA in a quick and safe manner, and meanwhile ensuring power continuity.

MBB32A is equipped with a metal support for wall mounting.

MBB100A



Available in a 100A configuration, can be used as manual bypass for 10-20kVA single-phase UPS and 10-40kVA three-phase UPS.

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

Services and contacts

Services and consultancy

Pre-sales consultancy

TEC is the RIELLO UPS pre-sales advisory service.
Our TEC (Technical Energy Consultant) experts have been working in the power sector for years, and come from backgrounds with technical experience in industry and power plants.

Consultancy On Standards

TEC personnel can provide advice on the relevant standards affecting:

- RIELLO UPS product ranges
- Batteries
- Installation
- Applications - such as emergency lighting, security and electro-medical

Work tools

TEC training and information is provided in the form of:

- UPS sizing
- Official technical guides
- Installation and specification manuals
- TEC newsletters
- Technical specifications

Technical consultancy

TEC personnel can provide advice and guidance on the selection, sizing and installation of RIELLO UPS products.

Support in design

TEC personnel can provide assistance in the design of a UPS system to completely satisfy customer specifications, including bespoke designs.

Help desk

TEC is available 24-7 around the world and may be reached by phone, fax or e-mail to answer your requests immediately.

tec@riello-ups.com

Technical Assistance Services

The Team

UPService, our technical assistance facility uses highly trained engineers to provide a reliable and competent technical support and after-sales service.

The services

UPService can provide customers with:

- A dedicated CALL CENTRE for connection to the UPService organisation. UPService personnel are always available and ready to provide advice and assistance regarding UPS installation, maintenance, fault finding and repair.
- The free SWAP assistance service.
- ON SITE a site based service for larger UPS that cannot be transported back to the UPService facility, either inside or outside warranty. A fast repair on site is guaranteed through the use of state-of-the-art UPS technology and the professionalism of the UPService personnel and Authorised Assistance Centres. UPService guarantees that failed parts are replaced with functioning ones, tested and updated in order to maintain the safety, reliability and operating characteristics of the UPS.
- On request, UPService can provide assistance during installation and initial startup of the UPS and train on-site personnel. UPService engineers can also verify site suitability, analyse and advise on rental solutions and disconnect and relocate equipment.
- MAINTENANCE CONTRACTS can be provided by UPService to minimise response times and repair costs. Contracts range from periodic inspections to comprehensive cover including labour and materials.
- **UPService organises regular TECHNICAL TRAINING COURSES for UPS operators and installers.**

upservice@riello-ups.com

TeleNETGuard 24 hour Teleassistance

Teleassistance

The teleassistance service consists of a modem connection (GSM or dedicated telephone line) between your UPS and Riello UPS's Service Centre.
In case of failure your UPS will automatically call the Service Centre, which analyses the parameters sent and determines the importance of the call, distinguishing between a real failure and a simple alarm, and simultaneously transmits the alarm via fax, email or SMS to the customer.

Advantages

With TeleNetGuard, our Service Centres are able to intervene, already knowing the nature of the problem, thus shortening the time required for its resolution, while the regular transmission of more than 500 UPS parameters, helps to prevent any problems due to the ageing of electronic components.
With this service, your UPS is controlled 24 hours a day, all year round.

The teleassistance service is free for the first year (with the exception of the initial modem cost) To renew the TeleNETGuard service after the first 12 months, a maintenance contract must be stipulated, whose cost is included in the Teleservice.

Renting as an energy solution

Why renting?

- Renting the UPS protects the original investment, while avoiding risks associated with technological obsolescence and limitations related to property ownership.
- Renting does not require any minimum duration obligations and the fees are considered operating costs and therefore, are tax deductible.
- By renting the UPS, the customer enjoys the benefits of using the latest technologies, without having to deal with the disadvantages of property ownership.

Advantages

- Immediate UPS availability.
- Maintenance and assistance for the entire duration of the rental lease.
- Variable and flexible lease periods: from 36 to 60 months.
- Increased reliability due to the presence of constantly updated UPS devices.
- All Risk insurance.

Guaranteed services

- Dedicated toll-free number
- Dedicated e-mail.
- Assistance in selecting the UPS.
- Priority intervention thanks to the extensive network of Riello Service Centres.
- Teleassistance.
- Removal of old UPS.

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