riello ups

DATACENTRE TRANSPORT

Multi Power

VFI TYPE
ONLINE

Modular

ECO LEVEL 6

multipower

3:3 25-600 kW
+ redundancy
42-1008 kW
+ redundancy

USB
USB plug

SmartGrid ready

HIGHLIGHTS

- **Utmost Availability**
- **Ultimate Scalability**
- **Unmatched Power Density**
- **Efficiency > 96.5%**
- **Multiple Controls**
- **Highly Flexible**
- **Multiple comms**

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

Advanced Technology

To ensure the highest levels of power availability, only the most reliable, cutting edge power components and innovative control technologies have been used in the development of the MPW power modules and other major aspects of the system. The major power components and assemblies within the MPW have been specifically designed and tailor made in conjunction with the respective component manufacturers. This design work ensures that the MPW achieves the highest levels of power and performance.

In order to optimize the overall performance of the finished product, Riello's R&D team made the decision to specifically design certain power components, including the IGBT modules and associated packages. Rather than using standard components that are readily available in the marketplace, the Multi Power hosts one single optimised and reliable power assembly which guarantees the best availability and overall efficiency.

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

Scalability

Multi Power provides a comprehensive, easy to integrate power protection solution for data centres and any critical IT application matching the evolving demands of a networked environment. The end user can easily increase power, redundancy level and battery autonomy by simply adding additional UPS **Power Modules (PM)** and **Battery Units (BU)**. Three different cabinets are available to build the system:

The **Power Cabinets** (PWC - 2 versions) and the **Battery Cabinet**. The Power Cabinets can accommodate either only the 25 kW Power Modules (PM25) or 42 kW Power Modules (PM42).

The available UPS power and redundancy level can expand vertically using the PM25 power module from:

- 25 to 125 kW in one single Power Cabinet (PWC 130)
- 25 to 175 kW in one single Power Cabinet (PWC 300)

Also, power solution can expand vertically using the PM42 power module from:

- 42 to 294 kW in one single Power (PWC 300)

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

- 125 up to 500 kW (with PM25)
- 175 up to 700 kW (with PM25)
- 294 up to 1176 kW (with PM42)

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

In addition, the MPW is available as an optimized solution providing a Multi Power/ Battery combination with three UPS Power Module slots and five battery shelves (**Combo Cabinet**). This solution can be utilized within extremely compact areas requiring a small footprint with maximum power density. This modular and reliable solution is perfect for any small to medium business applications. The user might decide to build the solution using the combination of three PM either PM25 or PM42 kW power not mingling the two power rates in the same cabinet.

Outstanding Performances

- The advanced technologies deployed within the MPW guarantees full rated power even with unity power factor loads (kVA=kW) without any power downgrading even when operating at temperatures up to 40°C.
- High system efficiency whilst operating in on-line double-conversion mode greater than 96.5%. Even when loaded at only 20%, the MPW still achieves an outstanding performance greater than 95%. This superior performance ensures extremely low losses at any load level whilst maintaining a true modular solution for any changing UPS environment in terms power demands.

Power Module 25 kW - PM25

Power Module 42 kW - PM42

Battery Unit Array - 4 x BU

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

Multiple Controls

The entire Multi Power solution was developed with particular care to ensure

Power Cabinet 300 (1÷7 x PM25 or PM42) x 4

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

Combo Cabinet 130 1÷3 x PM25 or PM42 + 1÷5 Battery Shelves with air filter on front door (optional available on all cabinet types).

Flexible Modularity

Multi Power grows both vertically and horizontally from 1 to 28 Power Modules increasing from 25/42 to 700/1176 kW (including redundancy) as well as battery units (from 1 cabinet, up to 10), therefore the system is completely scalable in accordance with any business requirements.
The Plug & Play modular concept simplifies any power or battery autonomy expansion process, rather than a complete Power Module or Battery unit replacement.
The modular hot-swappable principle is further extended to all major elements of the system, resulting in convenient replacement of parts such as fans from within individual Power Modules rather than accessing major components within the cabinet. Furthermore, all Power Modules and critical components are easily accessible from the front of the unit as standard. The system is equipped with a **Manual Bypass** change over switch and **Backfeed** control with a mechanical interlock contactor inbuilt, eliminating any

Battery Cabinet with open and closed door.

maintenance-related downtime.
Combination systems (Combo Cabinet with Battery Cabinet) are supplied with a battery switch and shunt trip to enable remote battery switch operation. All these features ensure easy UPS expansion, operation and maintenance; minimizing downtime, decreasing the Mean Time to Repair (MTTR) and removing any possible risk to power continuity, when carried out by authorized service personnel.
Flexibility is measured by the ease of both on site installation and the operations undertaken by the user. Input/Output/battery terminal bars are deployed enabling authorized installers to easily terminate the cables either from the top or the bottom of the system. Mechanical supports and cable glands as well as the terminal bar positioning (in the centre of the cabinet) are purposely positioned to reduce the installation time and costs. In addition, in terms of flexibility of the battery installation, whether a conventional or modular type system is implemented these can be arranged in two different configurations: centralised (common battery) or distributed (separate battery for each Power/Combo Cabinet). This will ensure the highest level of adaptability for any critical installation and/or economical driving factors.

Turn Key Solutions

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

Advanced Communications

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

- UDP to communicate with our shutdown software PowerShield³
- HTTP and HTTPS to monitor the UPS status using a standard web browser without any additional software.
- SMTP to send emails related to the UPS status, alarms and a power quality daily and weekly report.

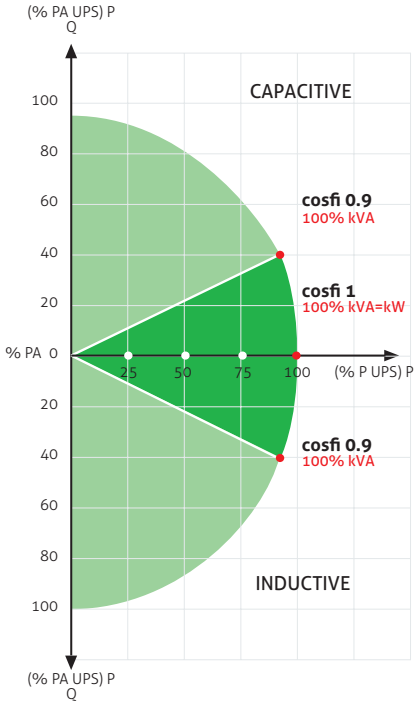
In addition, with the network card NetMan 204, MPW can be integrate into any building management system and data centre infrastructure (CDIM) with the protocols:

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

Multi Power is compatible with the very latest operating systems including

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

and many other Unix operating systems.



Power Cabinet 130 (1÷5 x PM25).

MPW LCD Touch screen: user friendly UPS configuration and monitoring display.

OPTIONS

SOFTWARE
PowerShield³
PowerNetGuard

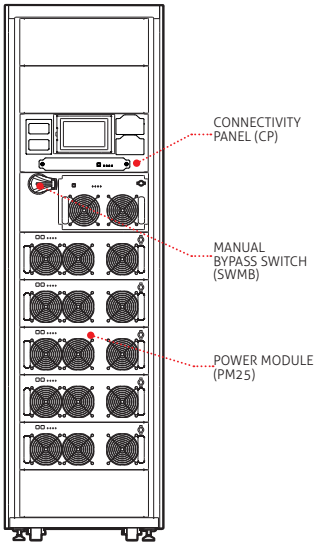
ACCESSORIES
NETMAN 204
MULTICOM 302
MULTICOM 352
MULTICOM 372
MULTICOM 384
MULTICOM 401
MULTI I/O
MULTIPANEL

PRODUCT ACCESSORIES
Battery temperature sensor
Air Filter on front door
IP21 Protection Kit
Programmable relay board MULTICOM 392

DETAILS

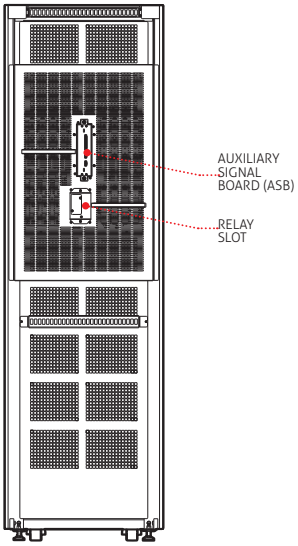
PWC 130

MPW Power Cabinet 130 25-125 kW (front)



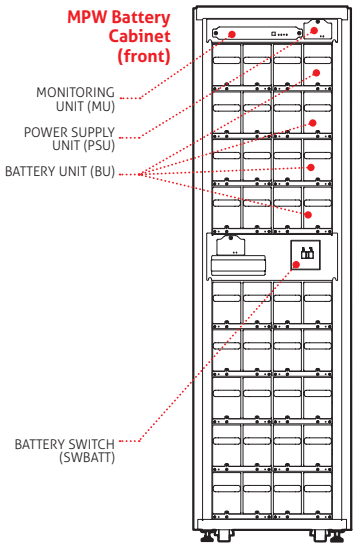
PWC 130

MPW Power Cabinet 130 25-125 kW (rear)



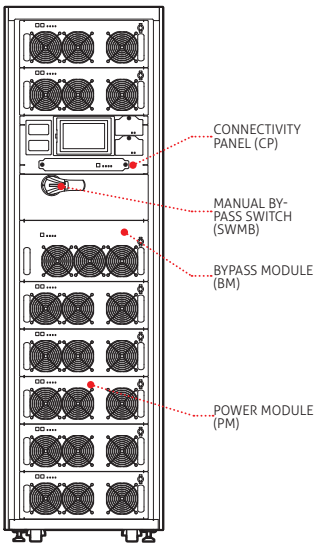
BTC 170

MPW Battery Cabinet (front)



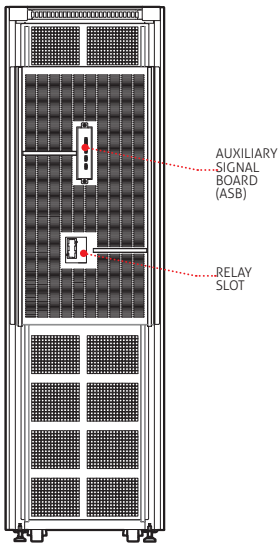
PWC 300

MPW Power Cabinet 300 25-175 kW or 42-294 kW (front)



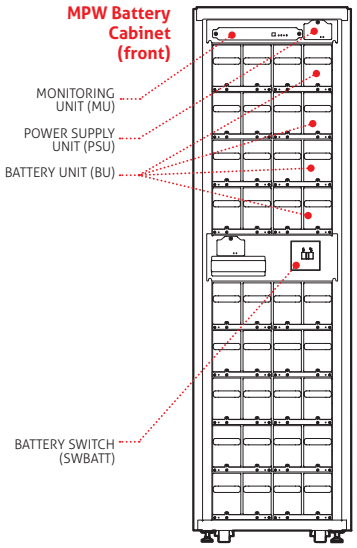
PWC 300

MPW Power Cabinet 300 25-175 kW or 42-294 kW (rear)



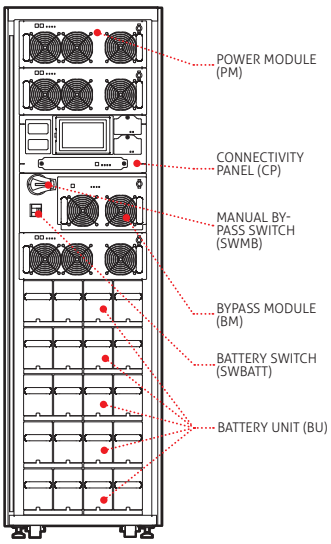
BTC 170

MPW Battery Cabinet (front)



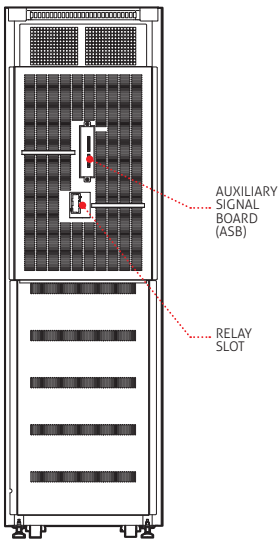
CBC 130

MPW Combo Cabinet 130 25-75 kW or 42-126 kW (front)



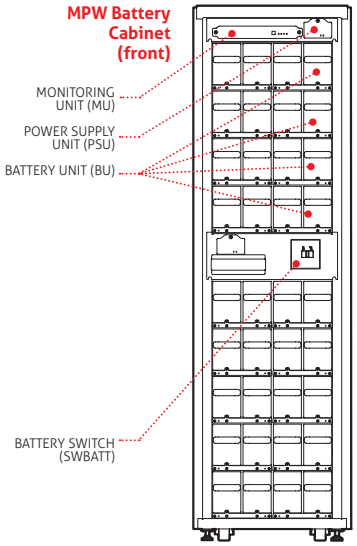
CBC 130

MPW Combo Cabinet 130 25-75 kW or 42-126 kW (rear)



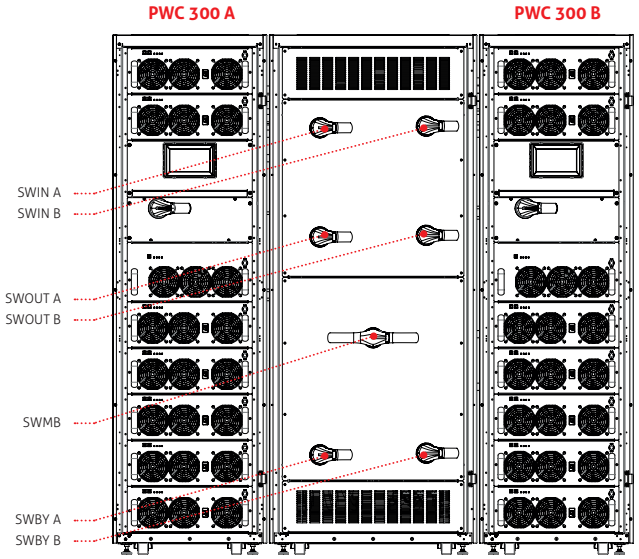
BTC 170

MPW Battery Cabinet (front)

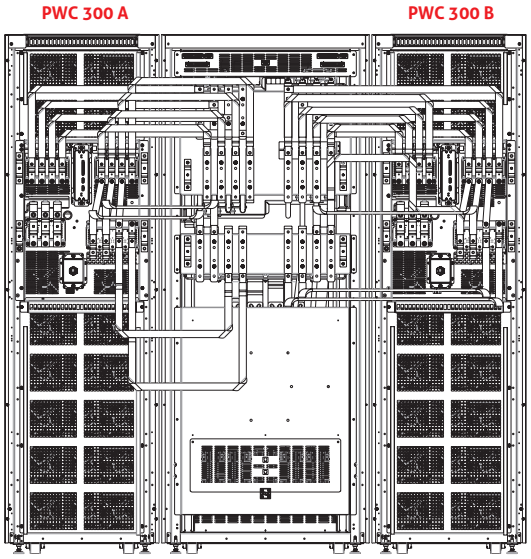


DETAILS

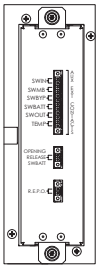
MPW Switching Cabinet 500
+ 2 x Power Cabinet 300
(front without doors)



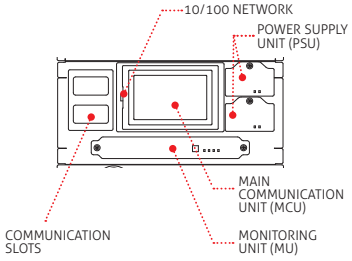
MPW Switching Cabinet 500
+ 2 x Power Cabinet 300
(rear without panels)



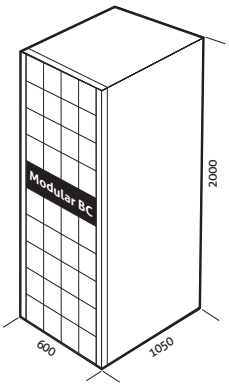
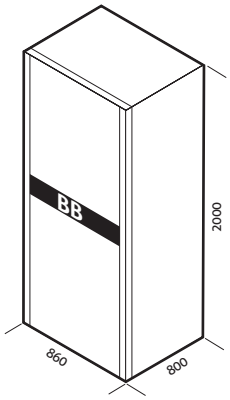
AUXILIARY SIGNAL BOARD (ASB)



CONNECTIVITY PANEL (CP)



CABINETS

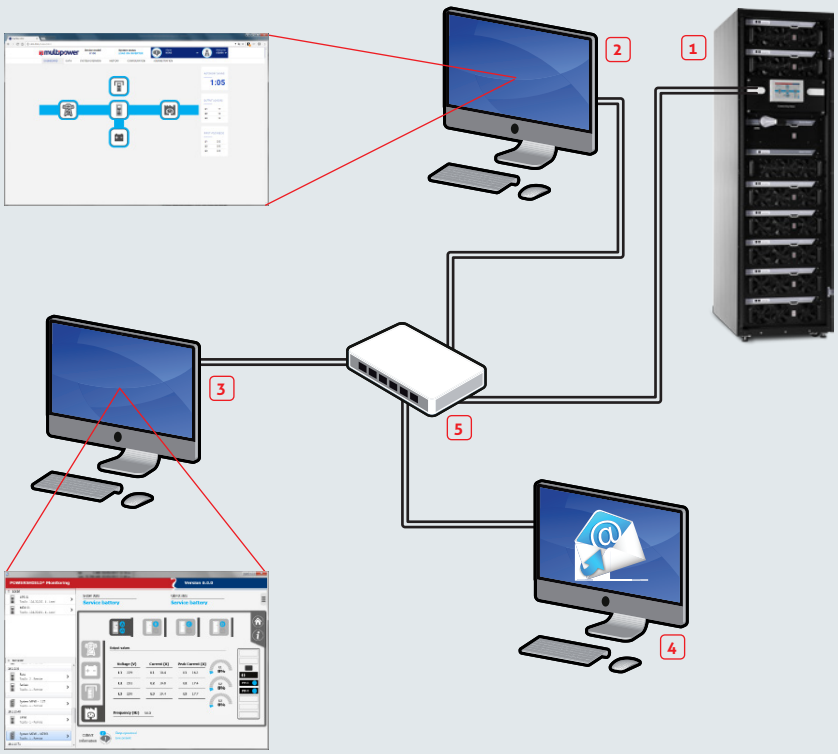
MODELS	CABINET MPW BATTERY (Modular Battery Cabinet)	BB 2000 480-V6 / BB 2000 480-V7 BB 2000 480-V8 / BB 2000 480-V9 / AB 2000 480-V9 (Conventional Battery Box)
UPS MODELS	Select the Battery configuration according Multi Power range	
Dimensions (mm)		

MODEL	MPW - from 25 to 294 kW[1]	
INPUT		
Voltage [Vac]	380-400-415 Three-Phase plus neutral	
Voltage tolerance [V]	240 to 480 [2]	
Frequency tolerance [Hz]	40 to 72	
Power factor	1	
THDI [%]	< 1.5	
BYPASS		
Nominal power [kW]	252 / 126 (According to system power configuration)	
Nominal voltage [Vac]	380-400-415 Three-Phase plus neutral	
Voltage tolerance [V]	from 180 (adjustable 180-200) to 264 (adjustable 250-264) referring to Neutral	
Nominal frequency [Hz]	50 or 60	
Overload	125% for 10 minutes; 150% for 1 minute	
BATTERIES	**Modular Type (BTC 170)**	**Conventional Type**
Layout	Modular type made up by Battery Unit (named BU)	Free Standing Battery Box / Shelf
Battery features	VRLA batteries lined up inside BU; Constant voltage and current measuring at BU level; Battery status monitoring via MPW LCD display	Conventional battery Blocks VRLA Type
Cabinet lay out description	9 x Battery shelves	1 x (20 + 20) Blocks
Dimensions [WxDxH]	600x1050x2000	860x800x2000
Weight [kg] (without PM[3]/BU[4])	280	250
OUTPUT		
Nominal voltage [Vac]	380/400/415 Three-Phase plus neutral	
Nominal frequency [Hz]	50 or 60	
Voltage stability [%]	± 0.5	
Dynamic stability	EN62040-3 class performance 1 distorting load	

OVERALL SPECIFICATION					
Cabinet type	**PWC 130 Power Cabinet 130**	**PWC 300 Power Cabinet 300**	**PWC 300 Power Cabinet 300**	**CBC 130 Combo Cabinet 130**	**CBC 130 Combo Cabinet 130**
Power Module nominal power [kW] (Named PM)	PM25	PM25	PM42	PM25	PM42
Solution nominal Power [kW]	125	175	294	75	126
Output power factor [pf]	1	1	1	1	1
Parallelable (up to)	4	4	4	4	4
Cabinet layout description	5 x PM25	7 x PM25	7 x PM42	3 x PM25 5 x Battery shelves	3 x PM42 5 x Battery shelves
Dimensions [WxDxH]	600x1050x2000	600x1050x2000	600x1050x2000	600x1050x2000	600x1050x2000
Weight [kg] (without PM[3]/BU[4])	240	300	300	340	340
System Noise Level at 1 m [dBA±2]	<65	<68	<68	<64	<64
Eco Mode Efficiency	Up to 99%				
Cabinet IP rating	IP20 finger proof (either with cabinet doors open or close)				
Cable input	Rear side either top or bottom				
Colour	RAL 9005				
Standards	Safety: IEC EN62040-1 EMC: IEC EN 62040-2-category C2				
Moving UPS cabinet types	Castors (any cabinet type is shipped without PM and BU)				

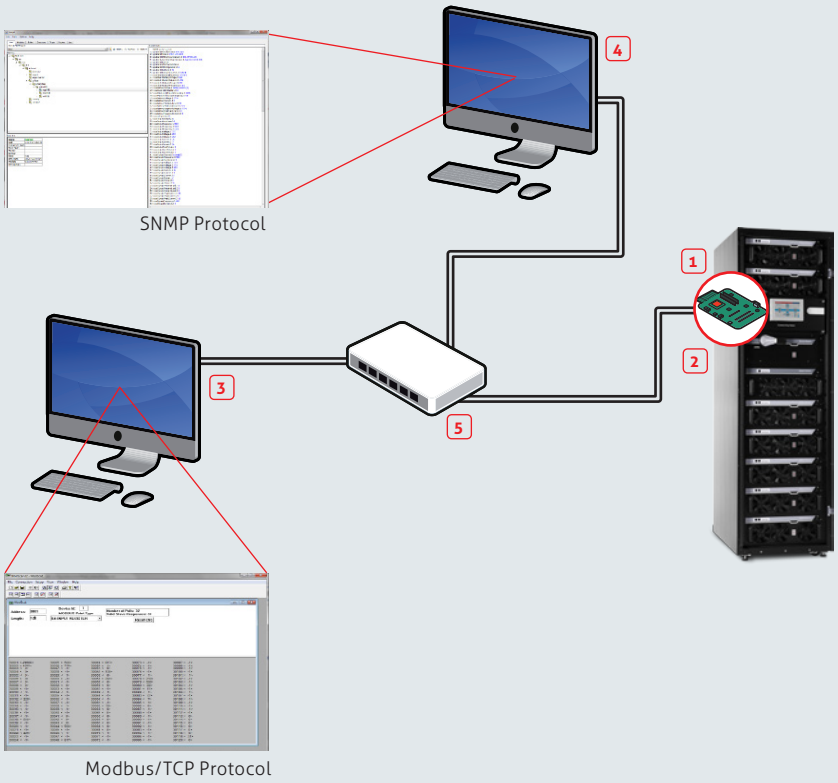
[1] Including Redundancy
[2] Conditions applied
[3] PM = Power Module (either referring to PM25 or PM42 kW)
[4] BU = Battery Unit
NOTE: All performances quoted in a single row refer to any UPS system configuration from one to seven modules running in parallel unless specified differently.

MPW EMBEDDED PROTOCOLS



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

MPW PROTOCOLS ADDING NETMAN 204 CARD



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

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RPS SpA - Riello Power Solutions - *Member of the Riello Elettronica Group*
Viale Europa, 7 - 37045 Legnago (Verona) - ITALY
Tel: +39 0442 635811 - Fax: +39 0442 629098
www.riello-ups.com
riello@riello-ups.com