



EMERGENCY



E-MEDICAL



INDUSTRY



DATA CENTRE



TRANSPORT

# Sentryum



ONLINE



Tower



USB plug



Service 1st start



**sentryum**

**3:3** 10-20-30 kVA  
208 Vac, 60 Hz

## HIGHLIGHTS

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

The rapid evolution of IT technologies, augmented focus on environmental matters and complexity of critical applications are demanding more flexible, efficient, secure and interconnected power protection solutions. The Sentryum 10-30 kVA @ 208 V offers the best combination of power availability, energy efficiency and global performance ensuring installation and running cost savings. It is the very latest Riello UPS development resulting in a third-generation transformer-free UPS, originally introduced into the market over twenty years ago. The Sentryum series is a transformer-free UPS available in 10-20-30 KVA with three-phase input and output. Sentryum is designed and built using state-of-the-art technology

and components. It applies the advanced technologies such as DSP (Digital Signal Processor), dual core microprocessor, three level inverter circuits and resonant control to provide maximum protection to the critical loads with no impact on downstream systems, whilst maintaining optimised energy savings. With a unique control system, it makes it possible to reduce the inverter output harmonic voltage distortion and provide rapid response to all load variations, ensuring an outstanding sinewave form during all conditions. Furthermore, Riello's technological advances in digital control and power components contribute to minimise the impact on the grid. Sentryum provides the solution to installation problems in systems where the power

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

## EXTENSIVE RANGE OF SOLUTIONS

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

## COMPACTNESS

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

## HIGH EFFICIENCY

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

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

## HIGH POWER AVAILABILITY

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

## SMART BATTERY MANAGEMENT

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

Depending on the battery type, different charging methods are available:

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

Recharge voltage compensation based on ambient temperature to prevent excessive battery charging or overheating.

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

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

Ripple current: recharge ripple current (residual AC component at low frequency) is one of the main causes of reduced reliability and battery life. Using a high frequency battery charger, Sentryum reduces this value to negligible levels, prolonging battery life and maintaining high performance over a long period of time.

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



Graphic touch screen display

## MAXIMUM RELIABILITY AND AVAILABILITY

Distributed parallel configuration of up to 8 units per redundant (N+1) or power parallel system. The UPS continue to operate in parallel even if the connection cable is interrupted (Closed Loop). Advanced technology and use of high performance components, allows Sentryum to provide exceptional performance and efficiency from a very compact size:

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

UPS ventilation. Furthermore, the overall UPS high efficiency reduces the losses and therefore the need for high levels of ventilation compared to older legacy UPS. In addition, this results in a decrease in the overall noise level at the nominal load and a reduction in the number of fans required, which significantly benefits the operating and maintenance costs.

## FLEXIBILITY

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

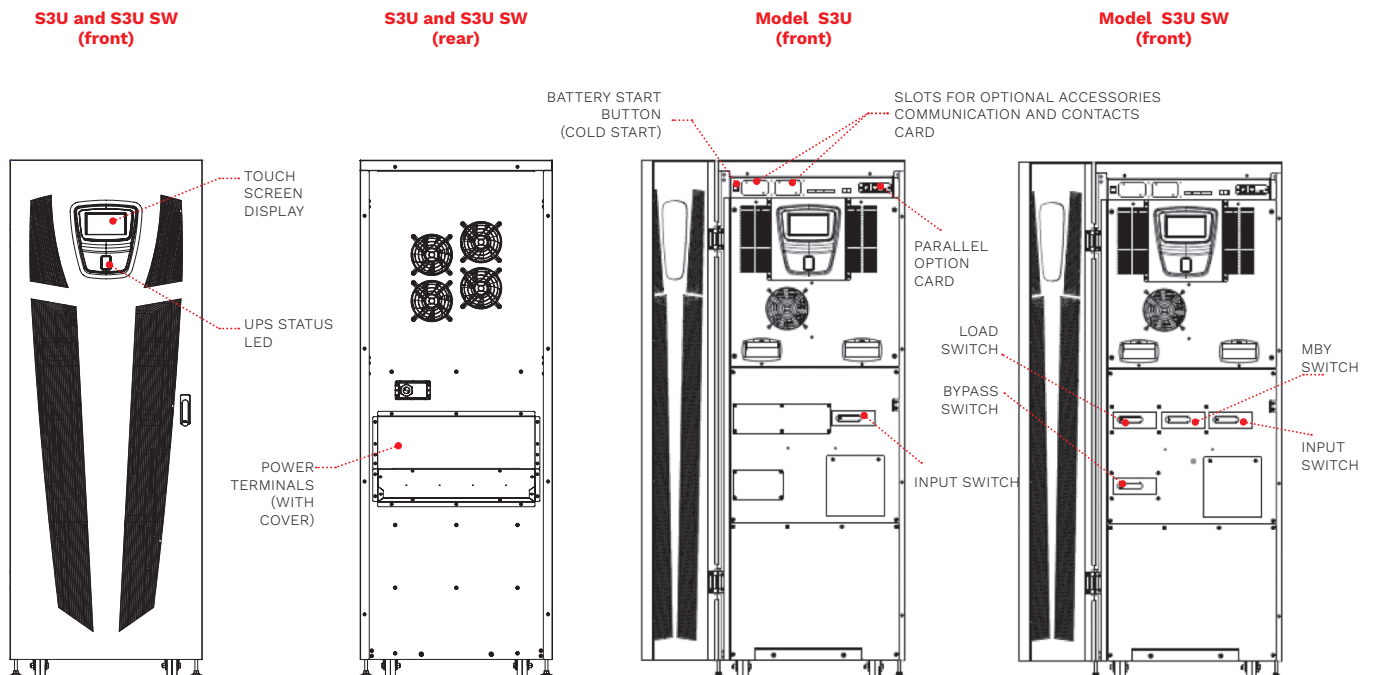
- Two modules with or without switches for better matching the customer requirements.
- On-line, Eco, Smart Active and Stand By Off operating modes.
- Frequency converter mode.
- Cold Start to switch on the UPS even when there is no mains power present.
- Parallel configuration up to 8 units.
- Optional temperature sensor for external battery cabinets, to assist recharge voltage compensation.
- High power battery chargers to optimise charge time in the event of long runtimes.
- Dual input mains power supply.
- Different sized battery cabinets and capacities, for extended runtimes.

## ADVANCED COMMUNICATIONS

Sentryum is equipped with a coloured graphic touch screen display providing UPS information, measurements, operating states and alarms in different languages. The default screen displays the UPS status, graphical indication of the energy path through the UPS and the operational condition of the various assemblies (rectifier, batteries, inverter, bypass) within the UPS.

- Furthermore, the user interface includes a UPS status led bar which delivers immediate and clear information regarding the overall status of the UPS by changing the colour (blue, yellow and red) according with the operating mode and condition.
- Advanced multi-platform communications for all operating systems and network environments: PowerShield<sup>3</sup> monitoring and shutdown software included for Windows operating systems 10, 8, 7.
  - RS232 serial on RJ10 connector and USB ports.
  - 2 slots for the installation of optional communications accessories such as network adaptors and volt free contacts etc.
  - Embedded contact interface which includes 5 programmable inputs and 4 programmable outputs.
  - REPO Remote Emergency Power Off for switching off the UPS via a remote emergency button.
  - Graphic display panel for remote connection.

## DETAILS

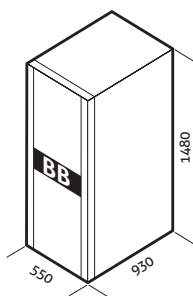


## BATTERY CABINET

## OPTIONS

<b>MODELS</b>	<b>BB 1500 240 – B1 / BB 1500 240 – N1</b>
<b>UPS MODELS</b>	S3U 10-20-30/ S3 10-20-30 SW

Dimensions (mm)



<b>SOFTWARE</b>
PowerShield <sup>3</sup>
PowerNetGuard

<b>ACCESSORIES</b>
NETMAN 204
MULTICOM 384

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

MODELS	S3U 10	S3U 20	S3U 30
<b>INPUT</b>			
Nominal voltage [Vac]	208 - 220 three-phase + N		
Voltage tolerance [V]	+ 15 % - 20 % <sup>1</sup>		
Frequency tolerance [Hz]	45 to 65		
Power factor @ full load	0.99		
Current distortion [THDI]	≤ 3%		
<b>BYPASS</b>			
Nominal voltage [Vac]	208 - 220 three-phase + N		
Voltage tolerance (Ph-N) [V]	5 to + 15% (adjustable)		
Nominal frequency [Hz]	60		
Frequency tolerance	±6% (selectable)		
Bypass overload	110% infinite, 125% for 60 minutes, 150% for 10 minutes, 200% for 1 minute		
<b>OUTPUT</b>			
Nominal power [kVA]	10	20	30
Active power [kW]	9	18	27
Power factor	0.9 up to 40 °C		
Nominal voltage [V]	208 - 220 Vac three-phase + N		
Nominal frequency [Hz]	60		
Frequency stability on battery operation	0.01%		
Voltage stability	±1%		
Dynamic stability	±3%		
Voltage distortion	≤ 1% wih ≤ 1.5% with non-linear load		
Overload	110% for 60 minutes, 125% for 10 minutes, 150% for 1 minute		
<b>BATTERIES</b>			
Type	VRLA AGM/GEL/NiCd		
Recharging method	One level, Two level, Cyclic recharge (selectable)		
<b>OVERALL SPECIFICATIONS</b>			
Weight without batteries [lb/kg]	324/147	324/147	340/154
Dimensions (WxDxH) [inches/mm]	21.7/550 x 32.7/830 x 59.0/1500		
Communications	UPS status led bar - Graphic touch screen diplay - 2 slots for communications interface USB - RS232 Contact interface with 5x opto insulated Input and 4x Output relay		
Operating temperature	0 °C / + 40 °C		
Range of relative humidity	5-95% without condensing		
Colour	Pantone Black C		
Standards	UL 1778 5th Edition CSA C22.2 107.3 -05 and Annex NNN, UL 60950-11, FCC Part 15 Subpart J class A – IEC 62040-3		
Moving the UPS	Castors/Pallet Jack		

1) Wider voltage tolerance acceptable with conditions applied



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