



LOCAL AREA NETWORKS (LAN)



SERVERS



DATA CENTRES



CASH REGISTERS



TELECOMMUNICATIONS DEVICES



INDUSTRIAL PLCs



EMERGENCY DEVICES (Lights/Alarms)

# Sentinel Dual *Low Power*



1-3 kVA  
Single-phase

## Highlights

- Simplified Installation
- Installation Versatility
- Reduced management costs
- Runtime Expandability
- Reduced noise
- 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.

The Sentinel Dual ratings are ideal for powering and protecting Blade Server systems with high input power factor.

Its height of only 2U makes Sentinel ideal for 19" rack cabinets.

Customers will appreciate Sentinel Dual for its practical, modern design and for

improvements in performance made possible by the continuous technological research carried out by Riello UPS research and development team.

The newly-designed inverter is one of the best energy conversion systems on the market, thanks to its 0.9 output power factor and its 92% efficiency rate in On-line operation mode.

In business continuity applications that require long battery operation times, it is possible to extend runtime by several hours by using ER versions equipped with more powerful battery chargers.

Having always been sensitive to energy savings, Riello UPS has introduced a shut-off button in the Sentinel Dual series 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) for installation in any environment thanks to PWM digitally-controlled ventilation, depending on the load applied on the use of the high frequency switching inverter.
- 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 plugs can be programmed to disconnect less critical loads during blackouts (EnergyShare function).

### Installation Versatility

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

### Reduced management costs

The functions can be programmed using software or manually set by the mimic panel, making this UPS range very flexible and easy to use.

Sentinel Dual can be configured in the following operating modes:

- On-line, maximum power protection and output voltage waveform quality
- ECO Mode, to increase output (up to to 98%) , allows Line Interactive technology to be selected
- Smart Active, the UPS automatically decides upon the operating mode based on the quality of the network.

- Back-up, the UPS can be selected to function only when mains power fails (emergency mode only)
- Frequency converter (50 or 60 Hz). Sentinel Dual offers maximum flexibility for integration with any communication system.
- Multi-platform communication for all operating systems and network environments; supervision and shutdown PowerShield<sup>3</sup> 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 such as Modbus/Jbus, TCP/IP, SNMP and relay contacts

### Emergency function

This configuration ensures the operation of those devices that must be powered during mains failure, including emergency lighting systems, fire detection/exit systems, alarms etc.

In case of a black-out, the inverter begins powering the load with a progressive start (Soft start) in order to prevent overloading.

### 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 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 via dedicated Battery Boxes with the same appearance as the UPS.

### 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 charge mode
- Minimum load switch-off
- Battery discharge warning
- Start-up delay
- Total microprocessor control
- Automatic bypass without interruption
- Status, measurements and alarms available on standard, backlit display.
- UPS firmware updating via PC
- Input protection 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



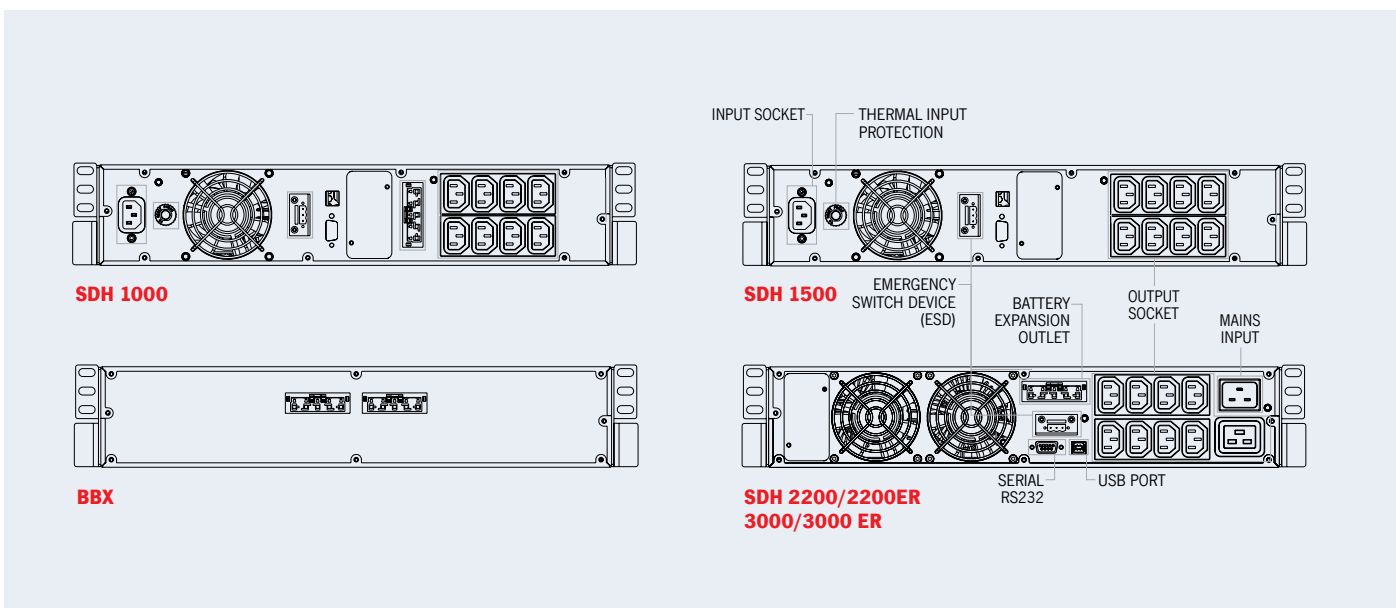
3. Rotate the UPS 90°



4. Attach the rack supports



MODELS	SDH 1000	SDH 1500	SDH 2200	SDH 2200 ER	SDH 3000	SDH 3000 ER
<b>POWER</b>	1000VA/900W	1500VA/1350W	2200VA/1980W	2200VA/1760W	3000VA/2700W	3000VA/2400W
<b>INPUT</b>						
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 $\pm$ 5Hz					
Frequency range	50 Hz $\pm$ 5% / 60 Hz $\pm$ 5%					
Power factor	> 0.98					
Current distortion	$\leq$ 7%					
<b>BY PASS</b>						
Voltage tolerance	200 - 253 Vac					
Frequency tolerance	Frequency selected (from $\pm$ 0.5Hz to $\pm$ 5Hz configurable)					
<b>OUTPUT</b>						
Voltage distortion with linear load / with non-linear load	< 2%					
Frequency	Selectable: 50 Hz or 60 Hz or automatic selection					
Static variation	$\pm$ 1%					
Dynamic variation	$\leq$ 5% in 20 msec.					
Waveform	Sinusoidal					
Current crest factor	3 : 1					
ECO Mode and Smart Active Output	98%					
<b>BATTERIES</b>						
Type	VRLA AGM lead acid maintenance free batteries					
Charging time	2-4 hours					
<b>OVERLOAD TIMES</b>						
100% < Load < 110%	1 minute					
110% < Load < 150%	4 seconds					
Load > 150%	0.5 seconds					
<b>OTHER FEATURES</b>						
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 - excessive low battery protection devices					
Communication	USB / DB9 con RS232 e contatti / 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					



**battery box**

**OPTIONS**

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

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)

