UPS

Sentinel DUAL SDH

Illustration photo

HIGHLIGHTS

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

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

Simplified installation

- Sentinel Dual can be installed as a tower or in 19" rack cabinets, by simply removing and rotating the display panel
- Low noise (<40 dBA): can be installed in any environment thanks to its high frequency switching inverter and PWM load-dependent digitally controlled fan.
- Operation guaranteed up to 40°C (the components are designed for high temperatures and are thus subject to less stress at normal temperatures)
- On Sentinel Dual models, the output sockets can be programmed to disconnect less critical loads during blackouts (EnergyShare function).

Installation versatility

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

Reduced running costs

The UPS is highly flexible and easy to configure. Programmable functions can be set via software or manually via the front display panel. Sentinel Dual can be configured in the following operating modes:

- **On Line**, maximum load protection and output voltage waveform
- **ECO** Mode, to increase efficiency (up to to 98%); allows you to select Line Interactive technology
- **Smart Active,** the UPS automatically decides the operating mode based on the mains power quality
- **Emergency,** the UPS can be selected to function only when the mains power supply fails (emergency only mode)
- **Frequency converter** operation (50 or 60 Hz).

Advanced communications

Sentinel Dual offers maximum flexibility for integration with all types of communication systems.

- Multi-platform communication for all operating systems and network environments: PowerShield3 supervision and shutdown software for Windows operating systems 8, 7, Hyper-V, 2012, 2008, and previous versions, Mac OS X, Linux, VMWare ESXi, Citrix XenServer and other Unix operating systems.

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- UPS Tools configuration and customization software supplied as standard
- RS232 serial port and opto-isolated contacts
- USB port
- Slot for communications boards such as Modbus/Jbus, TCP/IP-SNMP and relay contacts.

Emergency function

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

High quality output Voltage

- Even with non-linear loads (IT loads with a crest factor of up to 3:1)
- High short circuit current on bypass
- High overload capacity: 150% by inverter (even with mains failure)
- Filtered, stabilised and reliable voltage (On-line double conversion technology (VFI compliant with EN62040-2 class C2) with filters for the suppression of atmospheric disturbances
- Power factor correction: UPS input power factor close to 1 and sinusoidal current uptake.

High battery reliability

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

Low noise level

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

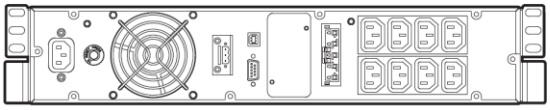
Other features

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

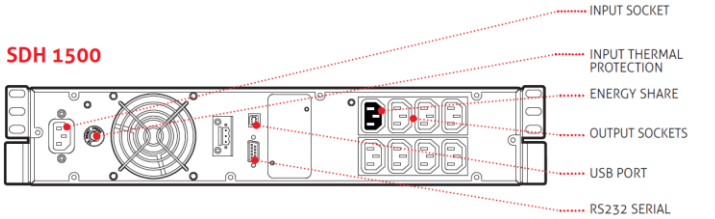
Technical specifications

Details

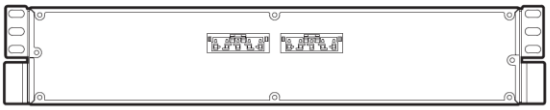
SDH 1000



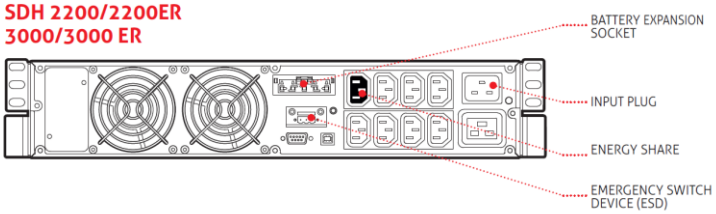
SDH 1500



BBX



SDH 2200/2200ER
3000/3000 ER



UPS

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Technical specifications

Models	SDH 1000	SDH 1500	SDH 2200	SDH 2200ER	SDH 3000	SDH 3000ER
Power (VA/W)	1000/900	1500/1350	2200/1980	2200/1760	3000/2700	3000/2400
Input	**SDH 1000**	**SDH 1500**	**SDH 2200**	**SDH 2200ER**	**SDH 3000**	**SDH 3000ER**
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. permitted voltage	300 V					
Frequency range	50 Hz ±5 Hz / 60 Hz ±5 Hz					
Power factor	> 0.98					
Current distortion	≤ 7%					
By-pass	**SDH 1000**	**SDH 1500**	**SDH 2200**	**SDH 2200ER**	**SDH 3000**	**SDH 3000ER**
Voltage tolerance	200 - 253 Vac					
Frequency tolerance	Frequency selected (from ±0.5Hz to ±5Hz configurable)					
Overload Times	125% for 4 seconds, 150% for 0,5 seconds					
Output	**SDH 1000**	**SDH 1500**	**SDH 2200**	**SDH 2200ER**	**SDH 3000**	**SDH 3000ER**
Voltage distortion	< 2% (with linear load / with non-linear load)					
Frequency	Selectable: 50 Hz or 60 Hz or self-learning					
Static variation	± 1%					
Dynamic variation	≤ 5% in 20 msec.					
Waveform	Sinusoidal					
Current Crest factor	3 : 1					
Efficiency ECO and Smart Active Modes	98%					
Batteries	**SDH 1000**	**SDH 1500**	**SDH 2200**	**SDH 2200ER**	**SDH 3000**	**SDH 3000ER**
Type	Maintenance-free lead-acid VRLA, AGM					
Charging time	4 up to 6 h					
Other parameters	**SDH 1000**	**SDH 1500**	**SDH 2200**	**SDH 2200ER**	**SDH 3000**	**SDH 3000ER**
Net weight (kg)	17,5	18	30,5	15	31	15
Gross weight (kg)	21	21,5	35	19,5	35,5	19,5
Dimensions (wxdxh) (mm) - tower	(tower- 87 x 425 x 450) (rack- 19” x 425 x 2U)		(tower - 87 x 625 x 450) (rack - 19” x 625 x 2U)			
Packaged dimensions (wxdxh) (mm)	550 x 600 x 245		600 x 760 x 245			
Protection against overvoltages	300 joules					
Operating Protections	Overcurrent - short-circuit - overvoltage - undervoltage - temperature - excessive low battery					
Input plugs	1 IEC 320 C14		1 IEC 320 C20			
Output sockets	8 IEC 320 C13		8 IEC 320 C13 + 1 IEC 320 C19			
Standards	Safety: EN 62040-1 and Directive 2006/95/EL; EMC: EN 620040-2 category C2 and Directives 2004/108/EL					
Operating temperature	0 °C / +40 °C					
Relative humidity	< 95% non-condensing					
Color	Black					
Noise level at 1 m (ECO Mode)	< 40 dBA					
Standard equipment provided	Power cable, serial cable, USB cable, safety manual, quick start guide					
Accessories	NETMAN 204, MULTICOM 302 (352, 372, 382, 401), MULTI I/O, Interface kit AS400, MULTIPANEL, RTG 100, Manual Bypass 16 A (Rack), Automatic Bypass 16 A (Rack)					