

**riello ups**



DATACENTRE



E-MEDICAL



INDUSTRY



TRANSPORT



EMERGENCY

## NextEnergy



ONLINE



Tower



## NextEnergy

**3:3** 250-400 kVA/kW



USB  
plug



SmartGrid  
ready



Flywheel  
compatible



Supercaps  
UPS



Service  
1st start



### HIGHLIGHTS

- **Efficiency up to 97% in double conversion**
- **kW = kVA (pf 1) up to 40°C**
- **Transformerfree UPS**
- **Full front access, back-to-back install**
- **High overload capacity**
- **Interactive LCD Touch Screen**

The Riello NextEnergy is the latest UPS series designed for mission critical applications as data centers, communication networks and commercial and industrial installations.

The three phase UPS offers transformerfree double conversion technology VFI SS 111, with integrated IGBT three-level design. NextEnergy is designed to offer unsurpassed performance and meet the power requirements of tomorrow.

NextEnergy is fully scalable to evolve with growing business demands. It offers the highest level of power availability as well as reduced TCO, minimum energy consumption and CO2 emissions.

Its unity power factor and easy system upgrading make it the ideal solution for the business continuity of any IT application. Thanks to its fault tolerant architecture,

concurrent maintainability and hot scalability, NextEnergy guarantees continuous operation and premium protection for your customers' business.

### Zero impact source and peak demand management

NextEnergy is designed with the latest technology to prevent disturbances on the mains and "clean" the power from e.g. harmonics generated by non-linear loads. The input AC/DC converter is based on the IGBT rectifier design using the latest 3-level technology.

The key features are:

- input current distortion < 3%
- input power factor 0.99
- power walk-in function that ensures progressive rectifier start-up



- start-up delay function, to restart the rectifiers when mains power is restored. Thanks to the programmable maximum input power (kW or kVA), NextEnergy can be installed into AC supply systems with limited power availability such as a diesel generator or contractually reduced power sources and then supply the additional power required using the batteries (peak demand function).

### Outstanding performances

- The latest technology of NextEnergy and the careful selection of high-quality components help to achieve first-class performance such as unity power factor (kVA = kW) and the capability to supply capacitive loads, which are very common in most Data Centres, without any power derating up to 40 °C.
- Outstanding system efficiency up to 97% in on-line double conversion mode, increasing to 99% in stand-by mode or smart-active.
- The unit design adopts the forced

ventilation method to extract the heat produced by the internal components. Specific attention has been given to the ventilation system to ensure the best operational level and lifetime. This is thanks to the automatic speed control which constantly adjusts to the specific load level, the fan failure alarm and the fan redundancy with condition apply.

### Battery care system

The battery is one of the most important parts of the UPS that ensures the correct operation in case of mains failure. NextEnergy includes all the latest features to prolong the battery life and keep the battery working efficiently, as well as advising users about any potential problem. In addition, the flexibility of the battery cells, NextEnergy allows users to choose the most cost-effective solution for the required back-up time. The battery charging and discharging is assured by the STEP-UP/STEP-DOWN converter which means

that when the batteries are charged and the mains is available, the battery is no longer connected to the supply. This means the ripple current is practically zero which leads to a significant improvement in battery life.

### Battery Storage

The variety of the charging methods allow to use NextEnergy in conjunction with the most common type and battery technologies available in the market like VRLA, AGM, GEL, NiCd and Li-ion Battery solutions. For short back-up time from some seconds up to a couple of minutes NextEnergy can use also the SuperCaps or FlyWheels, very reliable in such applications.

### Operation without Neutral

NextEnergy can work with or without the neutral connection. This is an important feature to reduce the TCO of the distribution system where the neutral is created by an isolation transformer close to the load. For example, in the modern Data Centre, or where the neutral is not used at all, allowing reduced cost of the distribution arrangements or effortless replacement of legacy equipment.

### Capacity and installation flexibility

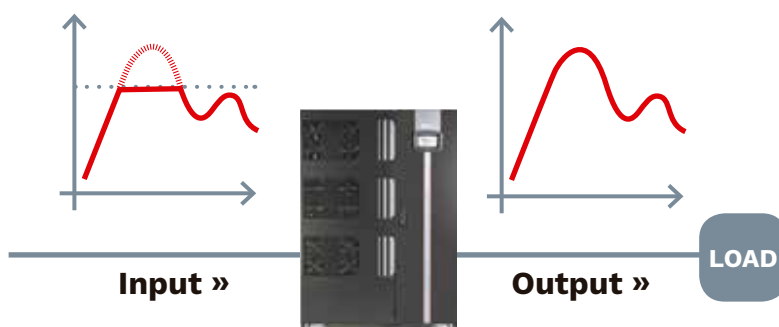
- The ventilation is from the front to the top so no additional rear clearance required allowing vast range of layouts configurations, whether it be a straight row, back to wall or back-to-back, the system easily adapts to available floor space.
- The small footprint of the cabinet and complete front access for all maintenance activities, ensures maximum space for installation and service.
- NextEnergy includes top and bottom cable entry as standard (except the NXE250), removing the need for large and costly top entry cabinets.

### Maximum reliability and availability

The NextEnergy architecture and features deliver significant cost savings thanks to an easy adapting to new or existing installations without impacting power infrastructure. This is possible through scalability granting minimized initial investment (CAPEX), adding power cores as business demands grow:

- NextEnergy UPS can be connected in parallel with up to 8 units to increase the capacity or add redundancy (N+1). Considering that a typical load can vary from 20% to 80%, the Efficiency Control System (ECS) function optimises the operating efficiency of the entire system according to the power absorbed by the load. This ensures higher overall efficiency during all load conditions.

### PEAK DEMAND FUNCTION



- Hot System Expansion (HSE) allows the addition of further UPS into an existing system, without the need to switch off the operational units or transfer them to bypass mode.

## Operation modes

### Double Conversion – ON Line

ON Line Mode provides the highest level of power conditioning and protects the load from all electrical network disturbance in terms of voltage and frequency, the AC/AC efficiency is up to 97%.

### ECO Mode

The load is normally powered from the bypass live and the rectifier keeps the battery charged. When the mains exceeds the limits the load is automatically transferred in ON-Line mode in approx. 3 ms. The efficiency more than 99%.

### Active ECO

In this mode the UPS works as Active Filter, the bypass is the priority source and supply the active power whilst the inverter only provides the reactive part of the load. This ensures that the UPS input power factor remains close to unity, regardless of the load power factor. In addition, the inverter operation reduces significantly the harmonic content (THDi) applied to the mains supply..

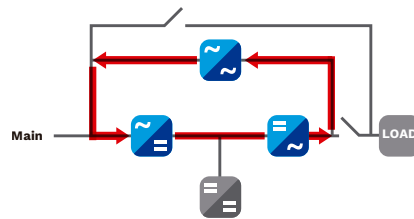
### Smart Active

NextEnergy automatically defines whether to operate in On-Line and or ECO mode, this is selected by monitoring the performances of the of the bypass supply, if this remains stable for a defined period the system stays in ECO mode otherwise in ON line mode. In Smart Active mode of operation, the NextEnergy is able to combine the superior availability of a double conversion (ON Line) operating mode with the excellent energy cost savings of a high efficiency mode (ECO Mode)

for a reduced total cost of ownership.

### Load Test mode

The system can be tested on site during the commissioning before connecting the real load, in this condition the UPS output supplies energy to the input in re-circulating mode. Very useful on site when is required the soak test avoiding the renting of the temporarily load or waste the energy from the power network. In this mode NextEnergy is consuming just the energy due the internal losses.



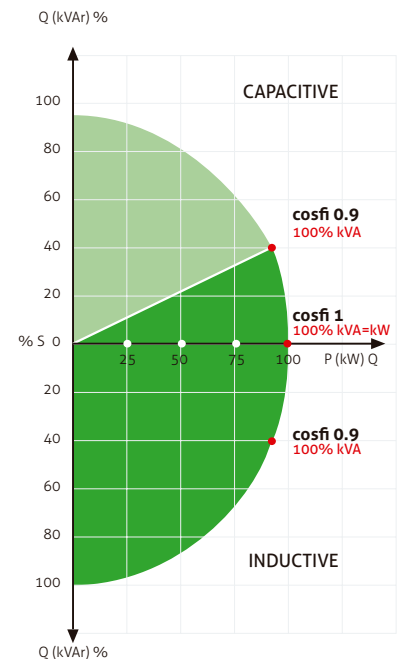
### Interactive LCD Touch Screen

Users can benefit from the different communication systems developed specifically for IT personnel, facilities managers and service engineers to ensure that the UPS setup, control and monitoring is easy. NextEnergy is equipped with an LCD Touch screen 7" graphic display (800x480 pixels) providing in a User-friendly graphical interface the UPS information: line mimic diagram showing system status, dashboard-style indicators for all the system values and conditions, voltage and current waveforms, operating states and alarms. The panel is used for configuration and setting the parameters of the UPS with high security access thanks to 3 separate password levels for users and service engineers.

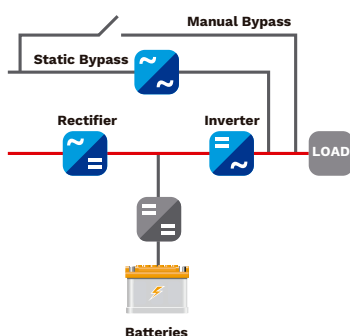
### Advanced Communication

NextEnergy offers wide communication and supervision tool and interface granting an easy integratio into any building management system and data centre infrastructure (CDIM).

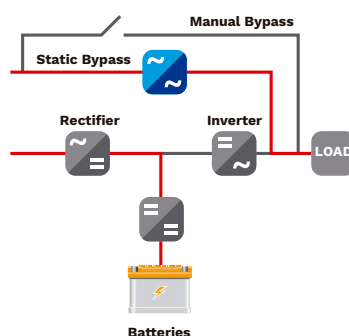
- PowerShield<sup>3</sup> monitoring and shutdown software for Windows operating systems 7, 8, 10; Hyper-V 2019, 2016, 2012 and previous versions; Mac OS X; Linux; VMWare ESXi; Citrix XenServer and many other Unix operating systems.
- PowerNetGuard for remote monitoring service.
- 2 slots suitable for the installation of the communication accessories such as network adapters and BMS interface.
- Ethernet and USB ports.
- Relay cards with customized alarms and commands.



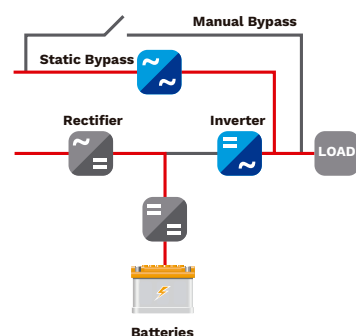
## OPERATION MODES



ON line



ECO Mode



Active ECO (Active Filter)

## OPTIONS

### SOFTWARE

PowerShield<sup>3</sup>  
PowerNetGuard

### ACCESSORIES

NETMAN 204  
MULTICOM 302

MULTICOM 352

Multi I/O  
I/O Expansion board

### PRODUCT ACCESSORIES

Isolation transformer  
Parallel configuration kit

Synchronisation device (UGS)

Hot connection device (PSJ)

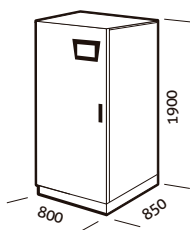
Battery cabinets empty or for extended runtimes

IP21/IP31 versions, other on request

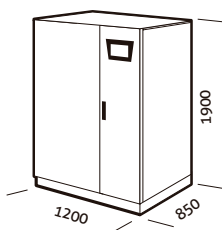
Cold start: to start the UPS from battery without mains

## DIMENSIONS

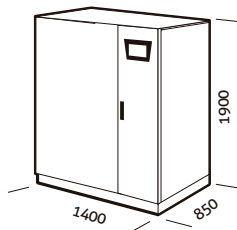
**NXE 250**



**NXE 300**



**NXE 400**



## BATTERY BOX

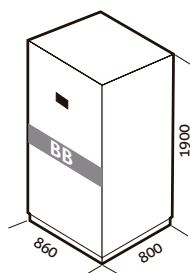
### MODELS

BB 1900 480-V6 / BB 1900 480-V7  
BB 1900 480-V8 / BB 1900 480-V9

### UPS MODELS

NXE 250-300-400

Dimensions  
(mm)



## THREE-PHASE ISOLATION TRANSFORMERS

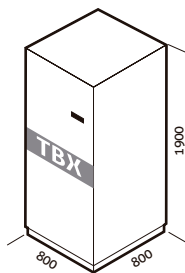
### MODELS

TBX 200 T - TBX 250 T

### UPS MODELS

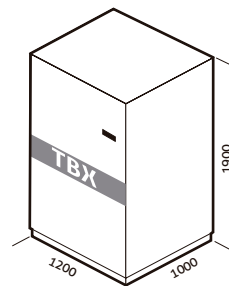
NXE 250

Dimensions  
(mm)



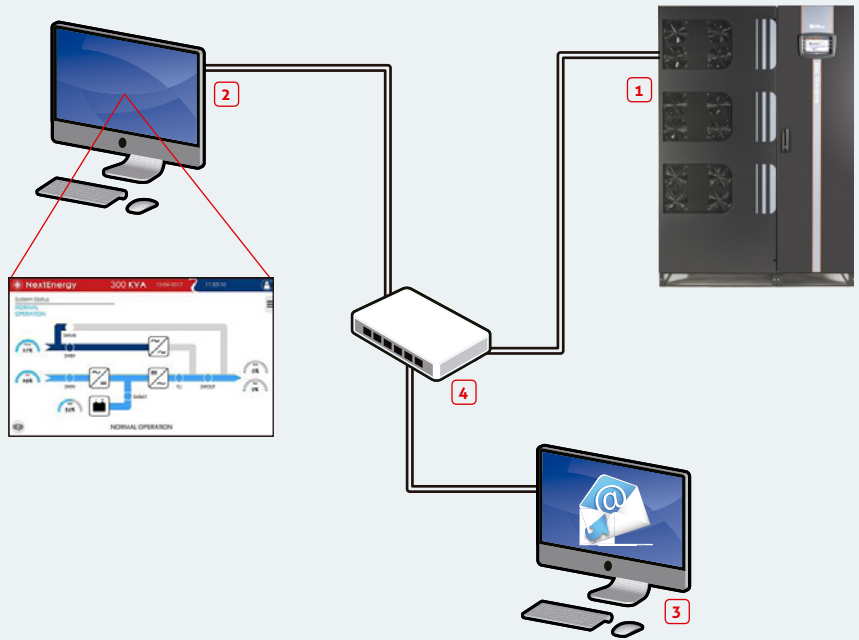
TBX 300 T - TBX 400 T

NXE 300 - 400



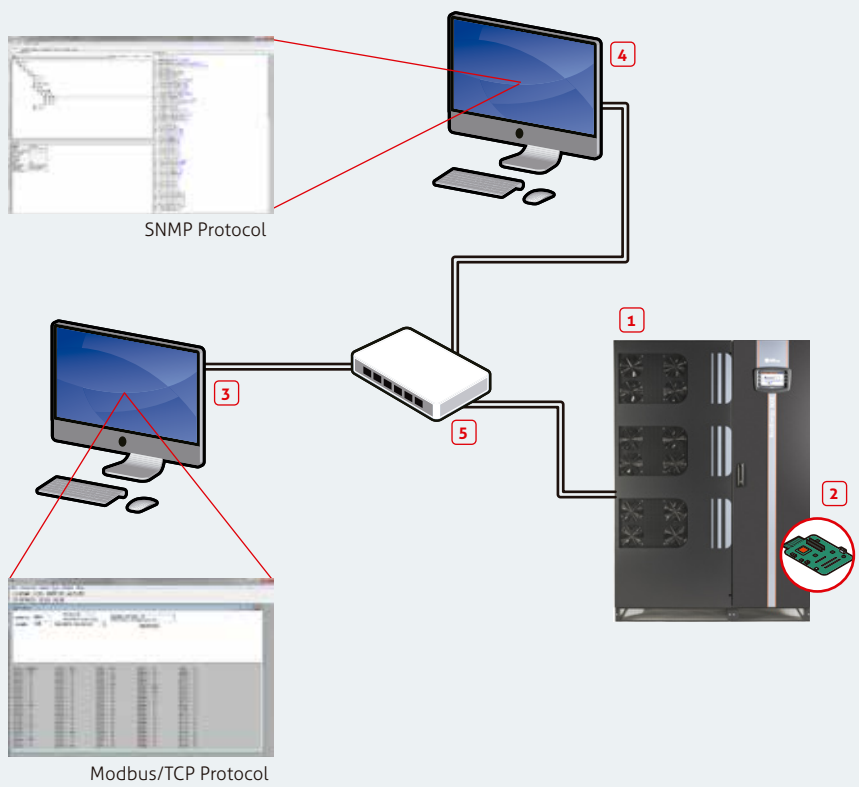
MODELS	NXE 250		NXE 300	NXE 400
INPUT				
Nominal Voltage [Vac]	380-400-415 three-phase			
Voltage tolerance [V]	+20% -40% (with restrictions)			
Frequency tolerance [Hz]	45 - 65			
Power factor	0.99			
THDI [%]	< 3%			
Soft Start	0 - 100 % in 120 sec (selectable)			
Standard equipment provided	Back feed protection, separate bypass line			
BATTERIES				
Type	VRLA AGM / GEL, NiCd, Supercaps, Li-ion, Flywheels			
Ripple current	Zero			
Recharge voltage compensation	-0.11 V x °C			
OUTPUT				
Nominal Power (kVA)	250	300	400	
Active Power (kW)	250	300	400	
Number of phases	3 + N			
Nominal Voltage [Vac]	380 - 400 - 415 three-phase + N (selectable)			
Static Stability	± 1%			
Dynamic Stability	± 5% in 10 ms			
Voltage distortion	< 1% with linear load/< 3% with non-linear load			
Frequency stability on battery [%]	± 0.05			
Frequency	50 or 60 Hz (selectable)			
Overload	110% for 60 min; 125% for 2 min; 150 % for 20 seconds	110% for 60 minutes; 125% for 10 minutes; 150 % for 1 minute		
BYPASS				
Nominal voltage [Vac]	380-400-415 three phase + N			
Nominal frequency [Hz]	50 or 60 (selectable)			
Frequency tolerance	± 2% (selectable from ± 1% to ± 5%)			
OVERALL SPECIFICATIONS				
Weight (kg)	634	880	1100	
Dimension (WxDxH) (mm)	800 x 850 x 1900	1200 x 850 x 1900	1400 x 850 x 1900	
Input cable	Bottom	Top and bottom	Top and bottom	
Remote signals	Volt-free contact (configurable)			
Remote controls	EPO, bypass and another spare			
Communications	USB + Dry contacts + 2 slots for communications interface			
Operating temperature	0 °C to 40 °C			
Relative humidity	5 to 95 % non-condensing			
Colour	Dark grey RAL 7016			
IP rating	IP 20 (other on request)			
Efficiency (AC-AC) – On line mode	up to 97%			
Standards	Safety: IEC EN 62040-1 (directive 2014/35/UE); EMC: IEC EN 62040-2 (directive 2014/30/UE)			
Classification in accordance with IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111			
Moving the UPS	Pallet Jack			

NXE EMBEDDED PROTOCOLS



- 1 NXE
- 2 PowerShield<sup>3</sup>
- 3 Mail Server
- 4 Ethernet Switch
- Ethernet

NXE PROTOCOLS ADDING NETMAN 204 CARD



- 1 NXE
- 2 Netman 204 board
- 3 Modbus/TCP Manager
- 4 SNMP Manager
- 5 Ethernet Switch
- Ethernet