



ReDeal

## NS 3000

threephases UPS

- + Data Center & servers
- + Telecommunication devices
- + Emergency applications (lights/alarms)
- + Customized power solutions
- + Electro-medical devices



10-20-30 kVA threephase input, threephase output

efficiency and reliability  
in power supply solutions

## Product Overview



- + HIGHER RELIABILITY
- + ZERO UTILITY IMPACT
- + FLEXIBLE AND FRIENDLY SETTINGS
- + EXCELLENT IN EFFICIENCY
- + INTELLIGENT BATTERY MANAGEMENT
- + EASY MAINTENANCE DUE THE MODULAR DESIGN

### HIGHER RELIABILITY

The fully digital control with microprocessor allows more accuracy and data monitoring, assuring an excellent protection from the failures. NS3000 Series has a precise Self-Diagnosis system which constantly monitors its system operations and function of internal components, including intermediate parameters as voltage and current, general parameters as temperature and fan speed; detecting a potential problem the Self-Diagnosis sends an alarm or takes action. Self-Correction when senses a problem instantly will transfer the inverter to batteries or the load to a bypass source with zero interruption in power; if the alarm condition passes, the NS3000 automatically reverts in normal operation mode.

NS3000 Series has split bypass line as standard to manage the alternative source. An intelligent control of fans is able to detect the own failure to avoid slow overheating of components. The NS3000 unit frame and cabinet are very robust and the manufacture is sturdy, moreover all internal components are already tropicalised as standard procedure assuring the installation in sea plants or marine environments.

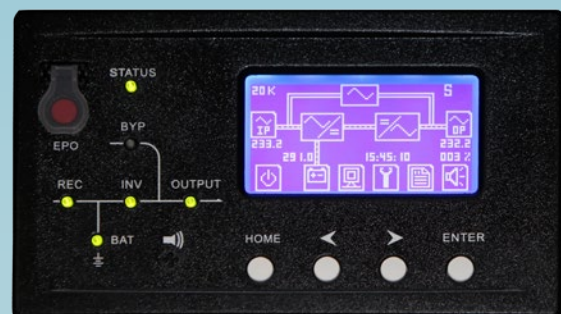
### ZERO UTILITY IMPACT

The active power factor correction (PFC) in rectifier stage provide unbeatable 0,99 input power factor and less than 3% input total harmonics distortion (THD) in current, thus allowing installation where the mains power supply is limited in capacity, or compatibility with generators and eliminating interference with other critical equipment in the same network.

### FLEXIBLE AND FRIENDLY SETTINGS

The LCD display is user friendly and very easy for understanding. The compact tower design offers a smaller footprint with maximum power density, thus enabling easy space planning and preserving valuable floor space. The internal space allows to install up to 2 batteries strings ensuring several minutes at typical loads, avoiding extra cost for additional battery cabinets. The NS3000 can work also in parallel configuration up to 6 units, the scalability of own architecture permits to invest at the beginning only for existing loads and then to expand the UPS systems according to on-site needs.

The configurations available are Normal mode, Parallel, Ecomode as single or parallel, Load Bus Sync.



The LCD display is user friendly and very easy for understanding.

# Reliability and premium performance.

## THE IDEAL SOLUTION TO SOLVE UTILITY STABILITY

The ReDeaf NS3000 Series is a medium size online, the ideal solution to solve utility stability, supply clean and power continuity for very critical loads, where space-constrained room needs a compact, flexible and scalable solution.

**NS3000 Series** is available in power capacities 10-20-30 kVA three-phase input and output, with double conversion technology according to the VFI-SS-111 classification, as defined by the IEC EN 62040-3 standard. The system is with digital signal processor (DSP) controlled IGBT rectifier and inverter transformerless, with filters for disturbances suppression.

## EXCELLENT IN EFFICIENCY

The transformerless with high frequency PWM modulation and IGBT 3-steps level technologies assure the best performance in efficiency for UPS in the market.

The benefits of lowest energy consumption are presents also for low load levels. The cost saving in efficiency is not comparable with traditional UPS, thus it can lead the full initial investment recovery within few years. The efficiency in ECOMODE operation reaches up to 99%. The cooling cost for the NS3000 room are limited.

## INTELLIGENT BATTERY MANAGEMENT

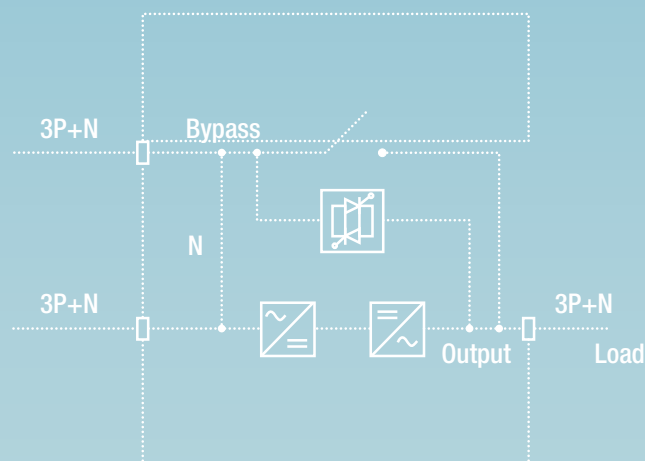
Wider input voltage window and frequency tolerances help to minimize transfer to battery, reducing the number of charging and discharging cycles extending the battery service life and optimising recharging time.

The double-conversion technology protects and conditions against the full range of power irregularities, requiring limited transfer to battery. In parallel redundant configuration is possible to connect the units to common battery string to have full battery capacity also in case of one UPS failure. The NS3000 uses a three charging modes to meet the specifications of the most common battery types as sealed VRLA, AGM or wet lead acid, Ni-Cd. Temperature-compensated charging monitors battery temperature and adjusts the charge voltage rate accordingly. The battery management system is able to manage the manual and automatic tests, monitoring battery health and remaining lifetime. The NS3000 UPS is provided with internal switch for disconnecting the internal batteries.

## EASY MAINTENANCE DUE A MODULAR DESIGN

The NS3000 layout permits the best access to all internal components. A modular concept has been adopted for the mechanical desing, in fact the components are easily replacing on site without any dedicated tools in a very short time. The key point of NS3000 Series is the facilitated maintenance operation because the power components are all on the removable tray. All the batteries are installed in horizontal position with hot-swappable feature.

## UPS - section and structure



# Connectivity Devices

## OPERATING SYSTEMS SUPPORTED

Windows 95-OSR2, 98, Me, NT 4.0, 2000, XP, 2003; Linux; Novell Netware 3.x, 4.x, 5.x, 6; Mac OS X, 9.x; IBM OS/2 Warp and Server; HP OPEN VMS; The most widely used UNIX operating systems such as: IBM AIX, HP UNIX, SUN Solaris INTEL and SPARC, SCO Unix and UnixWare, Silicon Graphic IRIX, Compaq Tru64 UNIX and DEC UNIX, BSD UNIX and FreeBSD UNIX, NCR UNIX.

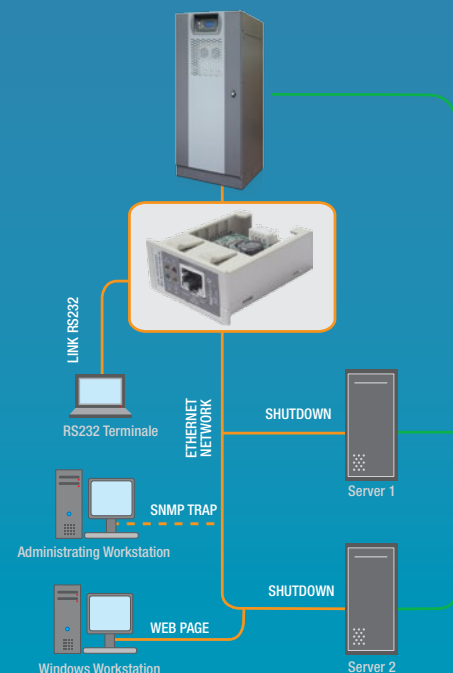


As standard the NS3000 has local monitoring software through serial port, the **UPSilon** provides user-friendly UPS management. The software displays real time information in the form of bar charts and values for critical data such as mains voltage, UPS load and battery charge. It allows remote interrogation of UPS logs and operating parameters to help diagnose alarms and potential fault conditions. When instructed the software performs an automated safe power down of the protected PCs and file sever.

## Advanced communication

- NS 3000 Series is equipped with a mimic led and graphic display that provides information, measures, states and alarms regarding the unit and load.
- Standard RS232 port and RS485 port with ModBus interface protocol.
- REPO (Remote Emergency Power Off) to power down the UPS through a remote emergency push button.
- **Web/SNMP card** allows UPS management across a LAN using any of the main network communication protocols - TCP/IP, HTTP and network interface via SNMP. In case of alert it can notify users and administrators via email; when prolonged power failure occurs the protected computer systems can be shutdown in a graceful manner.
- **Relay/AS400 card** is an easy interface for input/output dry contacts and AS400 series computer, the common manner for industrial and building management systems.

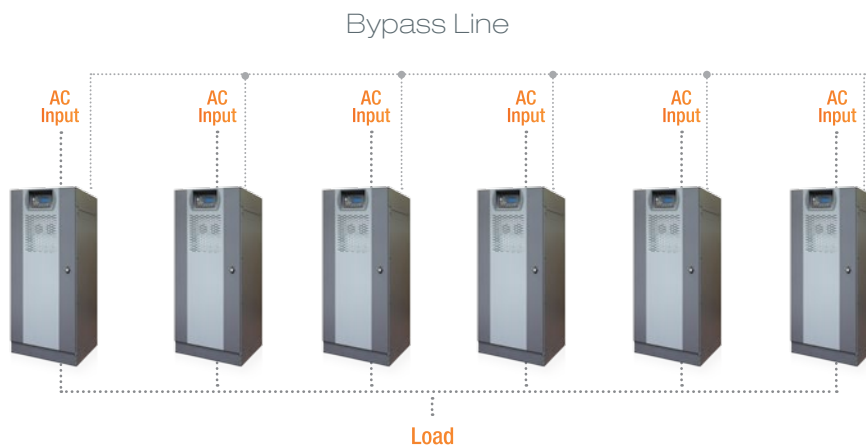
### Direct Connection with Ethernet Network



## Flexible and Scalable

The flexible technology and control permit to meet the site needs, whenever the loads become critical the logic is able to work in Load Bus Sync with additional external transfer switch or with full UPS power capacity available in Parallel configuration up to 6 units. The scalable logic of NS 3000 allows the UPS systems to increase according to load demands and the redundancy parallel configuration N+1 supplies the most critical loads.

**The N+1 parallel redundancy assures the supply in case of UPS failure. All the unit must be the same power size and an optional parallel kit should be installed for the accurate equal load sharing. The NS 3000 parallel system can work in ECOMODE and with common battery as 1+1 configuration.**



## Modular concept and customised solutions



### CUSTOMISED SOLUTIONS

ReDeaf1 has extensive knowledge in customised solutions for various scopes and environments, such experience has been taken into consideration during the NS3000 development. In fact the unit is designed for quickest repairing, the intervention time is limited at replacement of modular components on site.

Also the two internal battery strings are fully hot-swappable and easily removable.

### MODULAR CONCEPT

The modular concept in design helps the product customization encountering the most demanding applications; for example marine UPS due the standard tropicalisation of internal components; preservation against dusty and hard environment using air filters and heavy mechanical IP degree protection.

### PRODUCED IN ITALY



## Benefits in your choice

Significant are the advantages selecting your NS 3000 UPS which make it the best choice for your needs, often the benefits become noticeable during the operating life of the system and for an Uninterruptible Power Supply all the stops are critical for your business.

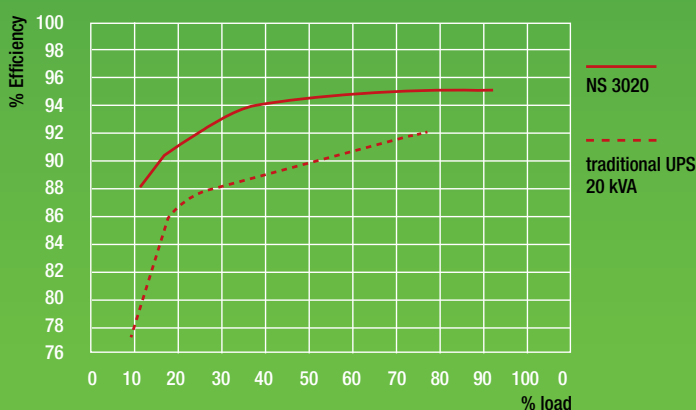
- The compact tower design has small footprint and the wheels assure the easiest installation in limited spaces. The standard UPS cabinet allows the internal housing up to 2 strings of battery achieving the reasonable backup time for the loads eliminating costly and space-consuming external battery cabinets.
- The input PFC technology extremely optimizes the upstream infrastructure without over rating the supply devices (as input transformers, diesel gensets, switches, cables and other) and eliminating the harmonics distortion troubles.
- The unit is suitable also for leading power factor load without derating
- The **HIGH EFFICIENCY** minimizes the amount of battery for equal autonomy time.
- The MTTR (Mean Time To Repair) the NS 3000 in the shortest in the UPS category due the modular concept, it means more availability of system, less cost in intervention and maintenance. NS 3000 has optimized the Services procedures and intervention.

## Green features

### COST SAVING IN EFFICIENCY

NS3000 has higher efficiency without compromise of reliability or performances, as matter of fact working in VFI – Double Conversion Mode achieves the lowest power consumption already at the very low load rate.

The top efficiency in online mode is provided by the innovative conversion technology at 3-steps level IGBT and an extremely careful in components selection focus to lowest power consumption.



The premium class of NS3000 in power performance comparing with traditional in the market allows a 50% saving in energy usage.

The NS3000 Series is an *UPS 'self-paying'* with energy save and it can lead to a full initial investment recovery within three years.

Model	NS 3000		
	10kVA	20kVA	30kVA
MAIN INPUT			
INPUT VOLTAGE	380V/400V/415V(line to line), 50/60Hz		
INPUT CONNECTION	3Ph+N+PE		
POWER FACTOR	>0.99		
INPUT VOLTAGE WINDOW	+20%~-10%, full load		
	-10%~-40%, power derating between 100% to 60%		
FREQUENCY WINDOW	40-70HZ		
BYPASS INPUT			
BYPASS VOLTAGE	380V/400V/415V		
BYPASS VOLTAGE WINDOW	+15% -20%, full load		
FREQUENCY WINDOW	±5Hz		
BATTERY			
BATTERY VOLTAGE	±240VDC		
CHARGER POWER	18%*Power W		
CHARGER VOLTAGE PRECISION	1%		
OUTPUT			
VOLTAGE PRECISION	1% (balance load),1.5% (unbalance load)		
OUTPUT VOLTAGE TRANSIENT	5%(0~100% load step)		
VOLTAGE THD (Total Harmonic Distortion)	THD<1%(linear load),THD<5%(nonlinear load)		
POWER FACTOR	0.9		
FREQUENCY TRACKING RANGE	50/60Hz±3Hz, adjustable		
FREQUENCY PRECISION (free running)	±0.02%		
PHASE TOLERANCE	120°±0.5° (balance and unalance load)		
VOLTAGE UNBALANCE (100% unbalance load)	±1%		
FREQUENCY TRACKING SPEED	0.5Hz/s to 5Hz/s, adjustable		
CREST FACTOR	3:1		
OVERLOAD CAPABILTIY	105% transfer to bypass after 1hour		
	110%, transfer to bypass after 10minutes		
	125%, transfer to bypass after 1 minutes		
	150%, transfer to bypass after 5 seconds		
	>150%, transfer to bypass after 200ms		
BYPASS OVERLOAD CAPABILITY	125%, long time operation		
	125%< load <130%, last for more than 1 hour		
	130%<load<150%,last for more than 6 minutes		
	>1000%, last for more than 100ms		
SYSTEM			
SYSTEM EFFICIENCY	Normal mode: 95%		
	ECO mode: 99%		
BATTERY MODE EFFICIENCY	95%		
BATTERY CONFIGURATION	12V, 40PCS (36~44pcs acceptable)		
DISPLAY	LCD+LED, Keyboard		
EMI	IEC62040-2		
EMS	IEC61000-4-2(ESD)		
	IEC61000-4-3(RS)		
	IEC61000-4-4 (EFT)		
	IEC61000-4-5 (Surge)		
INSULATION RESISTANCE	>2M (500VDC)		
DIELECTRIC STRENGTH	(input,output to PE) 2820Vdc, leakage current lower than 3.5mA, no flashover in 1 minute		
SURGE PROTECTION	Comply with IEC60664-1 class IV, endure surge of 1.2/50us + 8/20us higher than 6KV/3KA		
IP CLASS	IP20		
INTERFACE (Communication Ports)	RS232, RS485 Mod Bus, Dry contacts, SNMP card, EPO, Generator interface		
INSTALLATION/CONNECTION			
OPERATION TEMPERATURE	0-40°C		
RELATIVE HUMIDITY	0-90% (non-comdensing)		
NOISE (dB)	<55dB		
WEIGHT (kg) (empty)	106		118
DIMENSION (W*D*H)(mm)	540x690x1240		

# Redeal customer care

**Service, our technical assistance facility uses highly trained engineers to provide a reliable support and after-sales service.**

**CALL CENTRE** dedicated for connection to the Redeal Service organisation. Redeal Service personnel are always available and ready to provide advice and assistance regarding UPS installation, maintenance, fault finding and repair.

Redeal Service can provide assistance during commissioning and startup of the UPS equipment on-site with additional training during handover to site personnel.

**MAINTENANCE CONTRACTS** can be provided by Redeal Service to minimise response times and repair costs. Contracts range from periodic inspections to comprehensive cover including labour and materials.

**FAST & READY:** a fast repair on site is guaranteed through the use of state-of-the-art UPS technology, the professionalism of the UPS Service personnel and Authorised Assistance Centres. UPS Service guarantees that failed parts are replaced with original ones, tested and updated in order to maintain the safety, reliability and operating characteristics of the UPS.



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