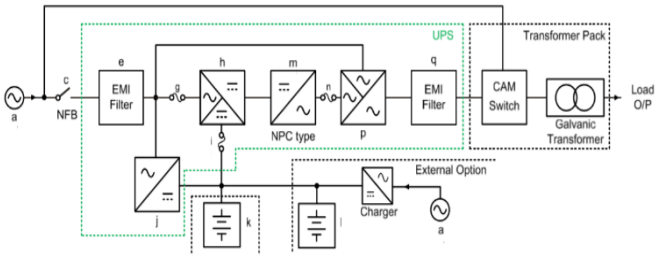
UNINTERRUPTIBLE POWER SUPPLY

The NS pf1 double conversion series with DSP technology, Digital Signal Processor, is the perfect solution for supplying sensitive mission critical utilities that require reliability and performance from an uninterruptible power supply. Input power factor correction, high efficiency and parallel redundant capability (N+X) provide a higher level of Power Quality for all sensitive electronic and safety devices such as electromedical.

PRINCIPLES OF WORKING

The backup series is composed by: Rectifier, Inverter, Static Switch, manual by-pass and Battery.
The Rectifier-Inverter line normally feeds the users, and the Battery is kept charged by the Rectifier.

If a black out occurs, the Battery supplies power energy to users always through the Inverter. When the blackout is over, the Rectifier provides for Battery charge.
If a short circuit or an overload occurs to the users, the Static By-pass switches the load over the emergency line. When the fault is over, the Inverter feeds users.



FEATURES

Output power factor equal to 1
Parallelability N + X
Double conversion with DSP technology
Sinusoidal, filtered and stabilized voltage
Input power factor correction, to reduce the harmonic content
Wide tolerance on input voltage without battery intervention
Zero intervention time
Configurable battery voltage
Display of UPS back up time
Automatic and manual battery test
Full discharge battery protection
LCD display measurements and system parameters
ECO Mode functionality
USB interface
Cold start
Emergency Power Off
Remote switch on / off

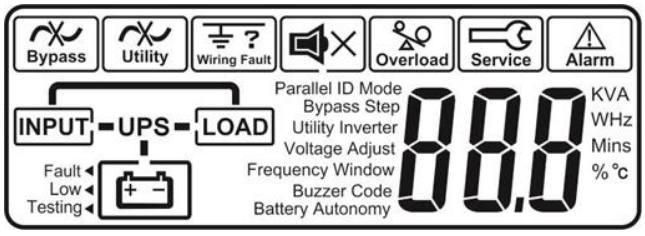
Accessories:
Ambient temperature and humidity sensors
Separate input emergency line
Isolation transformer
SNMP, RS485, RS232 and dry contacts
External manual bypass
Parallel kit
Additional battery modules
Charge additional batteries up to 20 A

CONTROL PANEL

The front display panel provides all major systems parameters and operational status of the UPS that include full diagnostics for simple, easy servicing. The NS series UPS with DSP control, systematically checks each component and displays the result using on LCD display. This feature allows service technicians the ability to pinpoint and repair the UPS very quickly.

- LED indicators:
1 Mains_1 LED
2 Mains_2 LED
3 Redundancy LED
4 ECO Mode LED
5 Common Alarm LED

- Control Keypads:
1 ON & Alarm Sil. Key
2 OFF Key
3 Function Key
4 Scroll Keys
5 Enter Key



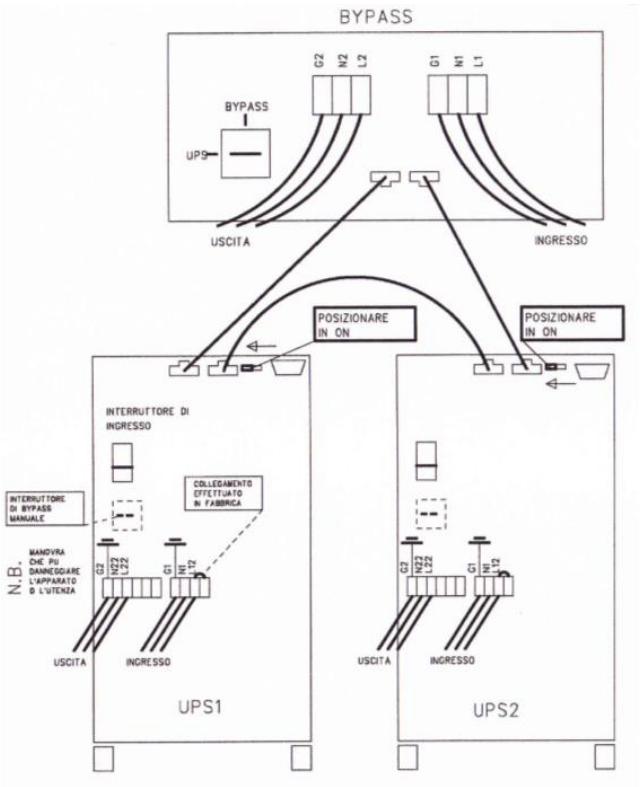
- LCD Display Explanations:

✓ Status
Line Mode, Back-up Mode, ECO Mode, Bypass Supply, Battery Low Voltage, Battery Bad/Disconnect, Overload, Transferring with Interruption & UPS fault.

✓ Parameters
Input voltage, input frequency, emergency line voltage, output voltage, output frequency, output current, load percentage, back up time, battery Voltage and ambient temperature

N+X POWER SCALABLE PARALLEL REDUNDANCY

The apparatus, for reliability or subsequent needs of greater power available, can be connected to other units of the same power by connecting the UPS control logics with a special parallel accessory kit, even after the first installation.



This feature allows up to no.4 UPS to operate in redundancy (N+1), when the required power is lower than the nominal power of the single group, and in power operation (2N) when exceeds the single UPS rated power due to peaks or greater power necessity. This operating selectivity is automatic and instantaneous. External manual by-pass accessories are available for parallel distribution up to 200A (40kW).

INTERFACES

Each NS series UPS is equipped as standard with a USB communication port. This interface can be used with software provided free of charge for all major operating systems.

In addition to the standard equipment, the NS series UPSs can use, as accessories:
- SNMP network interface with dedicated software;
- RS485 interface;
- RS232 interface;
- Relay Contact Board (programmable by software for output relay);
- Emergency Power Off (EPO) uses a NO contact which, if closed, starts the shutdown sequence. Also available NC if request.

ACCESSORIES

- Additional battery cabinets to upgrade the backup time till several hours even after the first installation. On request the add battery cabinet can be provided with an external independent battery charger to guarantee a fast recharge.

- Modular battery charger up to 20A. Its independent electronic control allows the accessory to work in parallel up to 4 units in continuous operation. It is designed to be connected to the back of the UPS.

- External Bypass Switch Box Series. Beyond to the standard manual by-pass fitted in each UPS, the external maintenance bypass and power output distribution switch allows you to manually transfer the connected equipment to utility power via a maintenance bypass switch and vice versa. It is available till 200 A and it is suitable for single UPS and for a system composed till no. 4 UPS in parallel.

REAR PANEL EXPLANATION

The back of the UPS consists of the following parts, user interface:

USB interface
Terminal Resistor for Parallel Function
CAN Bus Connection Port for Parallel System
Customer Options Slot 1
Customer Options Slot 2
Cooling Fan
External Battery Connector
External Charger Connector
Utility Input Breaker CB1
Bypass Input Breaker CB2 (for Dual Input Model Only)
CAM Switch (Maintenance Bypass Switch)
Input/Output Terminal Block
EPO (Emergency Power Off)
Air ventilation grid

Model	NS6000	NS8000	NS10000
Rated power VA/W	6000/6000	8000/8000	10000/10000
INPUT			
Nominal Voltage	110 ÷ 280Vac single phase		
Frequency	40÷60Hz (50Hz output) / 50÷70Hz (60Hz output)		
Power factor	0.99 at linear load		
Distortione (THiD)	3%		
OUPUT			
Voltage	220/230/240V ± 2% single phase, adjustable		
Frequency	50/60Hz auto sensing		
Frequency tolerance	± 0.2% free running; regulation ±1Hz or ±3Hz		
Waveform	Sinusoidal		
Distortion (THD)	≤ 2% @ 100% linear load; ≤ 7% @ 100% no linear load		
Transfer time	0 ms.		
Crest factor	3 : 1		
DC start	yes		
BATTERY			
Type	Maintenance free VRLA		
Recharge time	4hrs at 90%		
Nominal voltage	192/204/240Vdc settable		
Capacity	16x 7Ah	18x 7Ah	20x 9Ah
PROTECTION			
Short circuit	Output Breaker / Electronic Circuit		
EPO	Output shutdown immediately		
Over temperature	Normal Mode: Transfer to Bypass Mode Battery Mode: UPS shuts down immediately		
EPO	Output shuts down immediately		
Audible & visible alarms	Line Failure / Battery Low / Transfer to Bypass, System Fault Conditions		
MISCELLANEOUS			
Relative humidity	20%~95%RH (Without condensation)		
Operating temperature	from 0°C to + 40°C		
Noise	< 60 dBA at 1 meter		
interfaces	USB & EPO (2nd RS232, RS485, dry contacts, SNMP/WEB card etc., available on accessory slot)		
Mode	On-line, off-line and frequency converter		
Efficiency	94% on-line mode / 98% off-line		
Input/output connection	Terminals		
Ext. battery connection	Plug-in & Play		
Dimensions (mm)	240x509x700	288x509x700	288x509x700
Weight (kgs)	80	90	95
STANDARDS			
Safety	EN 62040-1-1, UL1778		
EMC	EN 62040-2, EN 61000-3-2, EN 61000-3-3, FCC class A		
Performance	EN 62040-3		