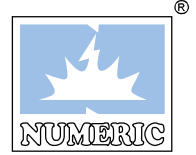


NUMERIC[®]

HPE i 33 Series

100 kVA to 500 kVA



The ultimate in clean power

A Group brand | **legrand**



High Performance Power Quality Solutions for Mission Critical Applications

Features

- True online double conversion UPS Systems
- High Efficiency
- Advanced IGBT Rectifier
- Compact footprint
- In-built Galvanic Isolation transformer
- Parallel System Joiner
- Online, Eco, Intelligent Eco modes of operations
- Energy saving feature as standard



NUMERIC - No .1 UPS Manufacturer in India*

(*Source: Softdisk)

HPE i33: Critical Power Protection up to 3200 kVA

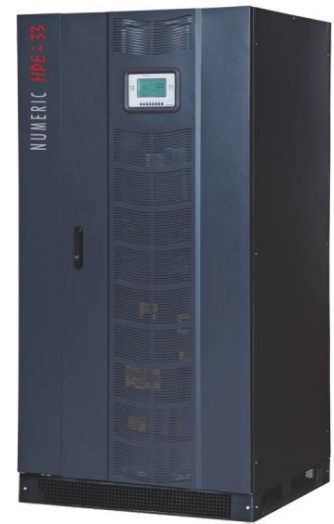
The new range of HPE i 33 series from Numeric is ideal for today's advanced digital computing, communications, process control and medical systems.

The UPS Systems are designed with a True On-Line Double Conversion topology, and the state of the art Digital Signal Processor (DSP) control. It is especially suited for mission critical applications being classified as VFI SS 111 (Voltage and Frequency Independent) in compliance with IEC EN 62040-3 standards.

The Digital HPE i 33 series guarantees maximum protection as well as high quality power for any type of IT and

industrial load. This series has been designed using a new configuration that includes an IGBT rectifier with Sinusoidal input current in place of the traditional Thyristor Rectifier.

The UPS capacity ranges from 100 to 500 kVA.



Main Features & Applications



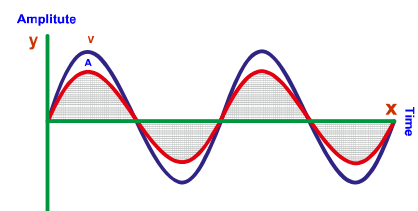
- IGBT Rectifier.
- 0.99 Input Power Factor
- THDi: <3%
- Efficiency up to 94% for On-line mode and upto 98% for Eco Mode.
- Compact footprint : 0.85 m² for the 500 kVA UPS Model.
- Galvanic protection of the load from the mains.

The HPE i 33 range is suitable for a wide range of applications, thanks to the flexibility of the configurations, accessories, options and choice of performance levels. These systems are compatible with capacitive loads, such as blade servers, without any reduction in active power, ranging from 0.9 lead to

0.8 lag. It is an efficient and reliable power supply for mission critical applications by operating in redundant Configurations such as the Power Parallel Mode (N+1), Dual Bus System and Dynamic Dual Bus system configurations.

Active Power Factor Correction :

The input current is maintained sinusoidal with power factor > 0.99 and low current harmonics distortion of <3%



Cost effective equipment

- A compact unit.
- Simplified maintenance.
- An advanced diagnostic system
- A remote access device connected to the remote maintenance centre.
- An IGBT rectifier, which reduces the size of the infrastructure (transformer, generator set and distribution).

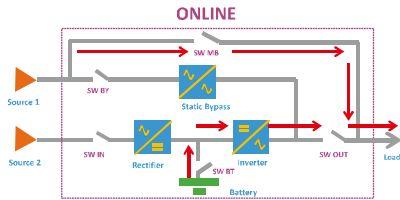
- Easy access to subassemblies and components, facilitating tests and reducing maintenance time (MTTR), includes a built-in maintenance bypass, optional wrap-around maintenance bypass with IP 20 protection

Easy to install

- Small footprint.
- No need for rear or side access. All connections are made through the front.
- All switches requiring connection can be accessed from the front
- Ready for all system earthing arrangement.

Operational modes:

These systems can be set to operate in four operating modes: ON-LINE, STAND-BY ON, INTELLIGENT ECO MODE and STAND-BY OFF.



Mode: ON-LINE Normal Operation:

The rectifier draws energy from the mains to power the inverter and charge the battery; the inverter powers the load with voltage and frequency stabilized and in synchronization with the by-pass. When the mains power supply goes out of the pre-set limits,

the rectifier switches off and the inverter is powered from the battery for the envisaged back-up time without any disturbance to the load.

Mode: STAND-BY ON The load is normally powered from the by-pass mains, and the rectifier keeps the batteries charged. When the mains voltage is outside the preset range, the load is transferred automatically to the inverter until the mains returns to the preset range. This mode is suitable for powering loads that are not sensitive to mains interference, thus allowing increased efficiency of upto 98%.

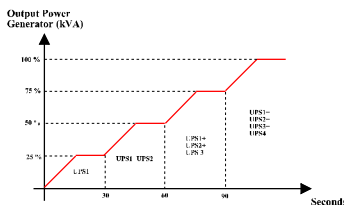
Mode : INTELLIGENT ECO MODE

When the HPEi 33 is configured in Intelligent Eco Mode, it automatically defines whether to operate in ON-LINE

or STAND-BY OFF mode. This is done by monitoring the by-pass mains if this remains suitable for a defined period, the system sets itself to STAND-BY ON mode; otherwise it remains in ON-LINE mode.

Mode : STAND-BY OFF When the mains power supply is present, the rectifier keeps the batteries charged and the inverter is switched off. When the mains fails, the rectifier switches off and the inverter is activated in approx. 200 ms, using the battery energy. This application is suitable for the power supply of emergency lighting, as defined by standard EN 50171.

Zero Impact on source



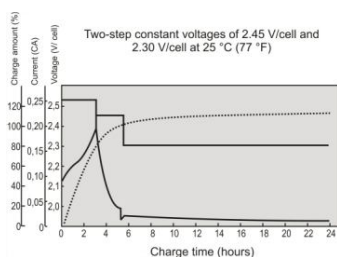
The HPE i 33 series with the added advantages offered by an IGBT-based rectifier assembly reduces the impact of the UPS on the local supply and simplifies installation where there is limited power capacity in the form of available electrical supply rating or generator size:

- Low input current distortion – less than 3%
- High input power factor 0.99
- Power walk-in function that ensures progressive rectifier start up

Delayed start up phased with the return of mains power supply as shown in the figure, when several UPS are connected in the system.



Battery Care System



The "Battery Care System" is a set of functions to control, manage and preserve the battery as long as possible.

a) Battery Recharging: This UPS is suitable for hermetic sealed lead acid batteries (VRLA), AGM, and Ni-Cd. Depending on the battery type, two recharge methods are available:

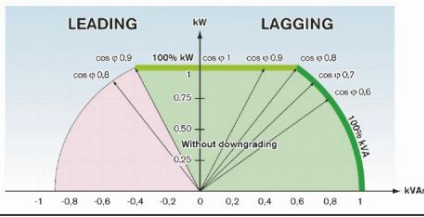
- **Cyclical recharging (factory set):** The state of the battery charge is kept constantly under control and when the charge level drops below the established level, a recharge cycle starts up automatically.
- **Two level recharging (configurable):** This recharge is carried out with two levels of current at two voltage levels

following the U1 U2 characteristic (EN 50272-2).

b) Battery test: In normal operating conditions, the battery is checked automatically at regular intervals or on manual command.

c) Protection against slow discharge: In the event of discharges of long duration and low load, the end of discharge voltage is raised to approx. 1.8 V/cell as prescribed by the battery manufacturers so as to avoid damaging the batteries.

Designed to Support New IT Loads



- The HPE i 33 range of UPS systems fitted with a transformer integrated downstream of the

inverter allows supply to your installations with:

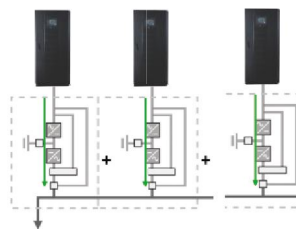
- Stable output voltage during significant and quick variations in loads ($\pm 2\%$ in less than 5 ms).
- Sinusoidal THDu output voltage $< 1\%$ with linear loads and $< 3\%$ with non-linear loads.
- Active power without de-rating on loads from 0.8 lagging power factor to 0.9 leading power factor.

Flexibility and Easy to upgrade

Power requirements can change over time. HPE i 33 output can be multiplied upto 8 UPS Systems in parallel. Redundancy can also be added or upgraded as needed e.g. 2N, N+1 or N+2.

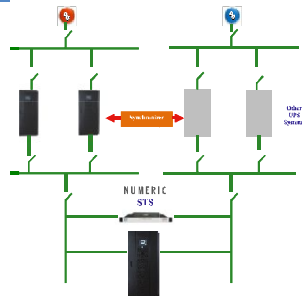
The "Hot System Expansion" feature means that a new UPS can be added to the system while the integrated UPS will configure itself automatically with

the system data without any disturbance to the load.



Dynamic Dual Bus System

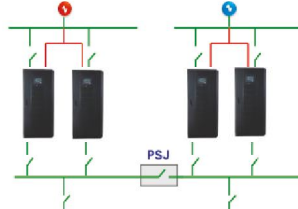
Two independent systems can be configured in Dual Bus with a single or separate power source. The synchronization option keeps the outputs of the two systems constantly synchronized, regardless of the input variations and when the system is powered by the battery.



Parallel System Joiner

Two independent systems (up to 4 units each) can be connected in a "Dynamic Dual Bus" configuration by means of the PSJ (Parallel System Joiner) option. This enables the two systems to be joined to form a single system when, for example, part of one system is undergoing maintenance and it is felt appropriate to use the redundant UPS for both bus bars of the

load. The synchronization and the equal distribution of power is guaranteed by the PSJ.



Energy savings up to 94% efficiency

The Innovative Technology and Engineering built into the Electronics of HPE i 33 UPS Systems, for better and faster regulation, results in high

efficiency, benefiting in energy savings to cut costs and reduced air conditioning and ventilation costs.

High Availability Configurations and Flexible architecture

High availability results not only from UPS reliability, but also from innovative and resilient architectures providing:

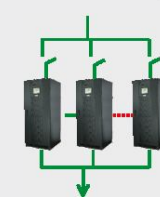
On-line UPS Configuration



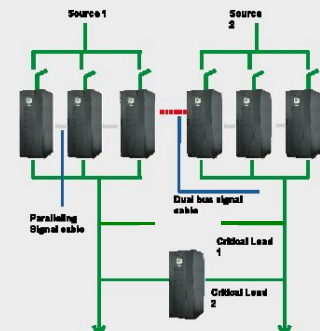
Hot Standby Configuration



Parallel UPS Configuration



Dual Bus Architecture



Specifications

Power

kVA	100	120	160	200	250	300	400	500
KW	90	108	144	180	225	270	360	450
Topology	True On-line Double Conversion (VFI-SS-III)							

Input

Voltage	380/400/415V TP+N (settable)							
Voltage range	± 15%							
Frequency	50 / 60Hz							
Frequency range	45 - 65 Hz							
Input Power Factor	> 0.99							
THDi	< 3%							
Soft-start	0 to 100 in 30 sec (selectable)							
Bypass Frequency Tolerance	± 2% selectable between 1Hz - 5Hz							
Standard fittings	Backfeed protection							

Output

Voltage	380/400/415V TP+N (settable)							
Static Regulation	± 1%							
Dynamic Response to 100% load step	± 2%, < 5 msec recovery time							
Frequency	50 / 60Hz (Selectable)							
Frequency Synchronization	0.25Hz - 3Hz Selectable							
Waveform	Sinusoidal							
THDu	< 1% for 100% linear load < 3% for 100% non-linear load							
Crest Factor	3 : 1							
Overload	110% for 60 minutes							
	125% for 10 minutes							
	150% for 60 seconds							

Overall Efficiency

Eco Mode	> 98.0%							
On-line Mode	upto 94.0%							

General

Ambient temperature	0 to 40° C							
Relative Humidity	95% Max non-condensing							
Altitude	1000m w/o de-rating							
Colour	RAL 7016							
Noise Level	63 - 68dBA				70 - 72dBA		75dBA	

Standards

Safety	IEC 62040-1-1							
EMC	IEC 62040-2							
Enclosure Protection	IP 20 (others on request)							
Marking	CE							

Communication Options

	2 x RS 232 ports for remote contacts							
	2 x Slots for Communication Interface for SNMP & BMS							
	Other additional options available on request							

Dimensions in mm

Width	800		1000			1500		2100
Depth and Height	850 / 1900				1000/1900			
Weight (Kgs)	656	700	800	910	1000	1400	1700	2100

Note :

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.

Monitoring and control

The alarms, commands and the communication software supplied together with the UPS to interface the unit with the system are listed below.

Two DB9 connectors are available for RS232 connection; these outputs can be connected to a remote computer or to a Modem.

Two Communication slots are available at the Front of the UPS to house any two of the following communication options:

a) Network Agent: For the management of the UPS connected directly on the LAN 10/100Mbps using the main protocol of network communication (TCP / IP, HTTP and SNMP). A MODEM can also be connected to the same device.

b) Modbus / Jbus protocol converter: By means of RS232 or RS485 output for the monitoring of UPS in BMS (Building Management System). It also manages a second independent RS232 serial line that can be used to connect other devices such as a PC.

c) Profibus Connectivity: An accessory that makes it possible to connect the UPS to mains that uses the Profibus DP communication protocol.

d) Contact card with programmable power relay (5A-250V) for connecting a remote control device.

e) Graphic remote panel Gets UPS status remotely on a graphic panel with measurements and alarms. In addition it is fitted with a RS485 port which provides the information in JBUS/MODBUS protocol for the BMS.



Support:

Wide Sales & After Sales Support Network with :

- 12 Regional offices
- Over 258 Service Centers across India
- Over 900 Field Support Team
- 24 x 7 x 365 Help Desk



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ISO 9001 : 2008
ISO 14001 : 2004
BS OHSAS 18001 : 2007



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