Three-phase uninterruptible power supplies for mission-critical applications

www.minutemanups.com/3phase
GE Digital Energy™
LP-33U Series

Introduction
The GE Digital Energy LP-33U Series is a robust, high-performance 3-phase UPS system that provides power protection for a wide range of mission critical applications, including large data networks & telecom equipment. Every LP-33U Series unit operates in a double conversion mode with true on-line VFI (voltage and frequency independent) operation, yielding maximum levels of power protection even under the toughest conditions. In addition, the LP-33U UPS is a transformerless, high-efficiency design with low THD (total harmonic distortion), which takes up less space and is easy to install and service. The robust design makes it suitable for industrial applications as well.

To achieve redundancy or to increase power capacity, GE’s unique Redundant Parallel Architecture™ (RPA™) technology enables the LP-33U Series to parallel up to four (4) units in a flexible and cost-effective manner. In the RPA™ system, every UPS is controlled in a true peer-to-peer configuration, with redundancy in all critical elements and functions. This advanced technology provides the highest possible system reliability for mission critical applications, eliminating any single points of failure associated with other types of UPS systems. The RPA™ system precisely synchronizes the outputs and automatically shares the load supported by each of the UPS.

Every GE UPS system is fully supported by GE’s Global Services team, providing world-class, 24x7 preventive and corrective services, training and application expertise.

Features and Benefits
> Transformerless design for smaller footprint, less weight and better efficiency
> High input power factor (>0.98) and low input distortion (<10%) provided by a hybrid IGBT rectifier, prevents disturbances to other electrical equipment, eliminating the need for costly filters or oversized feeders
> Compact footprint, front service access, easily transportable, robustly designed system with low audible noise, suitable for both office and industrial environments
> Utilizes high-frequency PWM(Pulse Width Modulation)
> IGBT digital control technique, resulting in extremely low output distortion and fast transient response, eliminating the need to oversize the UPS
> Redundant Parallel Architecture (RPA) increases system reliability by eliminating single points of failure
> Intelligent Energy Management™ in RPA Configuration and ECO-mode for single module configuration provides automatic energy savings
> Very wide AC-input voltage and frequency capability minimizes the need to switch to batteries, resulting in increased battery life
> Superior Battery Management (SBM) enhances battery life and reduces cost of operation
> Integrated internal manual maintenance bypass reduces the need for external equipment

10-100kVA
Digital Energy LP-33U Series
Uninterruptible Power Supply (UPS)
Options

- Internal batteries are standard to maximize operational footprint
- Remote monitoring and diagnostics via LAN or internet
- UPS management software facilitates operation and maintenance of the UPS
- SNMP plug-in card, relay card with external contacts
- RPA Card: Any single UPS can be easily field-configured for Redundant Parallel Architecture™ (up to 4 units)
- RS-232/contact interface, providing maximum flexibility
- Dual AC input option
- Additional external matching battery cabinets are available for extended runtime requirements

Technical Specifications

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Power Rating</th>
<th>Output Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10kVA / 8kW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20kVA / 16kW</td>
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<tr>
<td></td>
<td></td>
<td>30kVA / 24kW</td>
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<td></td>
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<td>40kVA / 32kW</td>
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<td>50kVA / 45kW</td>
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<td>60kVA / 54kW</td>
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<td></td>
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<td>80kVA / 72kW</td>
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<tr>
<td></td>
<td></td>
<td>100kVA / 90kW</td>
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<table>
<thead>
<tr>
<th>Power Factor</th>
<th>Output Power Factor</th>
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<tbody>
<tr>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>0.9</td>
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<table>
<thead>
<tr>
<th>Energy Efficiency</th>
<th>Double Conversion</th>
<th>Up to 90%</th>
<th>Eco Mode</th>
<th>Up to 98%</th>
</tr>
</thead>
</table>

| Physical | Weight w/o batteries (lb) | 397 | 430 | 772 | 816 | 1015 | 1323 |
|          | Dimensions (W x H x D)    | 22.7” x 30.7” x 51.6” | 23.6” x 29.6” x 71.7” | 28.4” x 28.5” x 71.7” | 39.4” x 35.4” x 75.0” |

<table>
<thead>
<tr>
<th>Input</th>
<th>Voltage Range</th>
<th>-25% / +20%</th>
<th>-20% / +15%</th>
<th>-15% / +10%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>60 Hz +/- 10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Input THD</td>
<td>&lt; 8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Input Power Factor</td>
<td>&gt; 0.98 lagging</td>
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<table>
<thead>
<tr>
<th>Output</th>
<th>Voltage Range</th>
<th>120V / 208 V</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>60 Hz +/- 1%</td>
</tr>
<tr>
<td></td>
<td>Crest Factor</td>
<td>&gt; 3:1</td>
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<tr>
<td></td>
<td>Voltage Regulation</td>
<td>+/- 1%</td>
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<table>
<thead>
<tr>
<th>Battery</th>
<th>Battery Type</th>
<th>Valve Regulated Lead Acid (VRLA)</th>
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<tbody>
<tr>
<td></td>
<td>Float Voltage</td>
<td>328 VDC @ 68°F (20°C)</td>
</tr>
<tr>
<td></td>
<td>Min Discharge Voltage</td>
<td>236 VDC</td>
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<table>
<thead>
<tr>
<th>General</th>
<th>Audible Noise dB(A)</th>
<th>50</th>
<th>55</th>
<th>61</th>
<th>62</th>
<th>65</th>
<th>65</th>
<th>68</th>
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<tbody>
<tr>
<td></td>
<td>Operating Temperature</td>
<td>UPS: 32°F to 104°F (0°C - 40°C); Battery: 68°F to 77°F (20°C - 25°C) recommended</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Humidity</td>
<td>0-95%; non-condensing</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Safety Classifications &amp; Listings</td>
<td>UL/cUL, IEC62040-ISO 9001</td>
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<td></td>
<td>EMI Classification</td>
<td>FCC Part 15, Class A, IEC 62040-2 Class A</td>
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</tr>
<tr>
<td></td>
<td>Surge Protection</td>
<td>IEEE 587-8 / ANSI C62.1-8 / IEC 1000-4</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Communication/Connectivity</td>
<td>RS-232; programmable alarm contacts; open collector outputs; SNMP optiona1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Color</td>
<td>White (RAL 9003)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Warranty</td>
<td>Twelve [12] months after commissioning or eighteen [18] months after shipment, whichever occurs first</td>
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<td></td>
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</tr>
</tbody>
</table>

Specifications subject to change without notice.
* Extended Warranties available

U.S.-Based Customer Service

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Chicago, IL 60609
USA
800 637 1738
www.gepowerquality.com

Information subject to change without notice. Please verify all details with GE.

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GEA-D2033 (4/10)
Introduction
The GE Digital Energy SG Series is one of the best performing and most reliable three-phase UPS systems, providing critical power protection for a wide range of applications, including large enterprise class data networks & data centers, as well as healthcare equipment. Every SG Series system operates in double conversion mode with true on-line VFI (voltage and frequency independent) operation, yielding the maximum levels of power reliability for all mission critical processes. The Digital Energy SG Series was developed using GE’s Design for Six Sigma methodology to ensure that the product fully meets customer requirements and expectations.

GE’s unique Redundant Parallel Architecture™ (RPA™) allows up to eight (8) units to be paralleled for redundancy or capacity. This flexible and cost-effective design controls the UPS system in a true peer-to-peer configuration, with redundancy in all critical elements and functions. This advanced technology provides the highest possible system reliability for mission critical applications, eliminating single points of failure associated with other types of UPS systems. The RPA™ system employs voltage based sharing and precision phase control, resulting in the most accurate load sharing in the industry.

Every GE UPS system is fully supported by GE’s Global Services team, providing world-class, 24x7 preventive and corrective services, training and application expertise.

Features and Benefits
> Extremely low output voltage distortion and faster transient response for non-linear and 100% step loads
> Redundant Parallel Architecture™ (RPA™) increases system reliability by eliminating single points of failure
> SVM (Space Vector Modulation), an advanced PWM (Pulse Width Modulation) digital control technique, to modulate the inverter, resulting in fast transient response with high efficiency
> Energy efficient output across the load range, with best in class part load efficiency
> Superior Battery Management (SBM) enhances battery life and reduces cost of operation
> Intelligent Energy Management™ (IEM™) automatically determines the most efficient mode of operation for the RPA™ system, reducing overall operating costs
> Zig-zag output transformer for inverter isolation providing improved output performance
> Designed for serviceability with front-service access and open architecture to reduce maintenance and repair costs
> Integrated internal manual maintenance bypass reducing the need for external equipment
> Automatic start-up procedure and a user-friendly interface simplifies UPS operation
> Remote monitoring and diagnostics via LAN or internet
> Casters and leveling feet ease installation

10-750kVA
Digital Energy SG Series
Uninterruptible Power Supply (UPS)
Options

> Input 5th harmonic filter reduces the input distortion (input THD) to 7%. This option is internal to the UPS and no additional cabinet is required.
> FCC Filter: GE provides an internal FCC filter as a cost-effective option for installations that require FCC Class A certification.
> Additional input/output isolation and voltage adaptation transformers available for all kVA sizes and voltages.

External (full wrap around) Maintenance Bypass; available in two or three breaker, panel mounted configurations; Kirk Key protection also available.
Remote Status Panel: Allows the UPS to be remotely monitored with a UPS panel, incorporating indicator lights and alarms.
RPA™ Kit: Any single UPS can be easily field-configured for Redundant Parallel Architecture™.
UPS monitoring and management software.

SNMP card: This optional plug-in card allows the UPS to be managed using an existing Network Management System or with Digital Energy exclusive UPS management software.
Additional battery systems for extended backup times.
10-20kVA has optional internal batteries.
Three wire input conversion kit (100-150kVA).

Technical Specifications

<table>
<thead>
<tr>
<th>Power Rating</th>
<th>Power Factor</th>
<th>Output Power Factor (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 * 20 * 30</td>
<td>120 150 225</td>
<td>300 400 500 750</td>
</tr>
<tr>
<td>8 16 24 32</td>
<td>40 60 80 96</td>
<td>120 180 240 320 450 675</td>
</tr>
</tbody>
</table>

Energy Efficiency

<table>
<thead>
<tr>
<th>@ 50% Load</th>
<th>89.5%</th>
<th>88.7%</th>
<th>90.5%</th>
<th>90.5%</th>
<th>92.2%</th>
<th>92.5%</th>
<th>92.9%</th>
<th>93.1%</th>
<th>93.3%</th>
<th>92.7%</th>
<th>93.1%</th>
<th>94.2%</th>
<th>96.4%</th>
<th>94.2%</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ 100% Load</td>
<td>90.0%</td>
<td>89.0%</td>
<td>91.0%</td>
<td>91.0%</td>
<td>91.8%</td>
<td>92.0%</td>
<td>92.4%</td>
<td>92.0%</td>
<td>92.4%</td>
<td>92.6%</td>
<td>93.6%</td>
<td>94.0%</td>
<td>93.8%</td>
<td>93.5%</td>
</tr>
</tbody>
</table>

Heat Rejection

875 BTU/hr @ 100% Load

Physical

<table>
<thead>
<tr>
<th>Weight (lbs)</th>
<th>Dimensions (W x D x H) Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>735</td>
<td>27 x 32 x 71</td>
</tr>
<tr>
<td>763</td>
<td>32 x 32 x 71</td>
</tr>
<tr>
<td>970</td>
<td>47 x 32 x 71</td>
</tr>
<tr>
<td>1147</td>
<td>65 x 32 x 71</td>
</tr>
<tr>
<td>1257</td>
<td>81 x 34 x 77</td>
</tr>
</tbody>
</table>

Input Voltage Range (w/o battery discharge)

-20% to +15%
60 Hz +/- 10%

Power Factor

0.8 PF (93 with input filter)

Output Voltage (sinusoidal) (VAC)

480 V, 3-phase, 4-wire w/ground
60 Hz +/- 10%

Crest Factor

3:1

Voltage Regulation

Static +/- 1%
100% Step Load +/- 3%

Voltage Distortion

100% Linear Load 2% THD maximum
100% Non-Linear Load 3% THD maximum

Overload Capability

Inverter 125% for 10 minutes; 150% for 1 minute
115% for 10 minutes, 110% for 30 seconds

Battery Compatibility

VRLA or Wet cell

Float Voltage

540 VDC @ 60° F (20° C)
545 VDC

Recharge Time

10x discharge time (for battery runtime = 30 minutes)

General

Audible Noise (dBA)

60 63 65 67 65 75

UPS Ambient Operating Temp.

UPS: 32° to 104° F (0° - 40° C)

Humidity

0-95%; non-condensing

Safety Classifications & Listings

UL 1778 / IEC 62040 / ISO 9001

Short Circuit Current Rating

IP20 and NEMA-PE-1

RFI and Surge Protection


Communication / Connectivity

RS-232; programmable alarm contacts; programmable relays; SNMP (optional)

Limited Warranty

Twelve (12) months after commissioning or Eighteen (18) months after shipment, whichever occurs first

Specifications subject to change without notice.

* Units available with internal batteries
** FCC Feature available as option (10-300kVA)
*** Extended Warranties available

The SG Series 750kVA UPS is a product of ecomagination.

The green grid member

For more information, please consult the applicable Technical Data Sheet.
Options & Accessories
The 6-Pulse rectifier is standard for the SG Series 10-750kVA. The 12-Pulse rectifier is an option only for the 750kVA. Input filter options for the SG Series include:

5th Harmonic Input Filter for 6-Pulse Rectifier (10-750kVA)
The 5th harmonic input filter is used for reducing the 5th harmonic generated by the 6-pulse rectifier (standard on SG 10-750kVA). This filter reduces the input harmonic distortion to less than 7% THD, and increases the output power factor to 0.93. This option does not require an additional cabinet and is internal to the UPS (5th filter is standard on 750kVA and optional for 10-500kVA).

11th Harmonic Input Filter for 6-Pulse Rectifier (option for 400-750kVA only)
The 11th harmonic input filter, when combined with the 5th harmonic input filter, is used for reducing the 5th and 11th harmonics generated by the rectifier. This filter combination reduces input THD to less than 5% and increases the power factor to 0.96.

12-Pulse Rectifier (option for 750kVA only)
For the 750kVA, the 12-pulse rectifier can be used in place of the 6-Pulse rectifier and reduces the input harmonic distortion to less than 9% THD without an input filter. The optional 11th input filter reduces distortion to less than 4% THD.

FCC EMI Filter
GE provides an internal FCC EMI filter as a cost-effective option for installations that require FCC Class A certification (300kVA and below).

Three Wire Kit (100kVA and above)
GE provides an internal three-wire kit as a cost-effective option for sites that cannot connect a neutral conductor to the UPS.

Battery Cabinets
GE provides line and match battery systems with integral overcurrent protection.

Accessories
GE provides a full line of accessories including PDUs, three-wire kit, flywheels, adaptation transformers, remote status panel, maintenance bypass panels, TVSS and spare part kits.

This optional hardware allows the UPS to communicate over a LAN or interface through all major building management systems (BMS).
Our UPS Backs Up Your Load, Our Service Backs Up Your UPS

GE is committed to the highest standards of quality and customer satisfaction. It is not enough to simply sell the best products. This is why GE also strives to help its customers realize the full value of the products they purchase by providing value-added applications and maintenance services. With field engineers and technicians worldwide, GE can provide the consulting, installation and on-going maintenance support programs you need to ensure power delivery isn’t a barrier to your success.

As an international leader in the power quality industry, GE serves as a single point of contact and is uniquely positioned to support all of your power needs.

To find your local GE service person globally, visit http://www.geindustrial.com/wtb/Dispatcher

Customer Service Support

Call Center 7 x 24 x 365 (toll-free phone: 1 800 637 1738)
U.S.-Based Customer Service
Answered live 24 x 7
Service engineers dispatched immediately

Spare Parts
Large inventory and immediate delivery

Operator Training
Available at numerous GE Training Centers in North America and internationally

Extended Warranty Services
Add years to GE’s standard limited warranty offering

Remote Monitoring and Diagnostics
Online monitoring and event analysis, 24 hours a day
Alarm paging via e-mail
Cell phone text messaging
WWW internet access to real-time data
Full service preventative diagnostics

Maintenance Contracts
Peace of mind...GE experts maintain critical infrastructure