

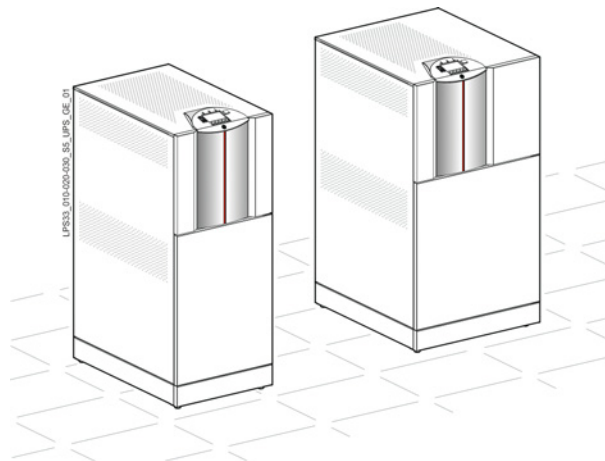
GE Digital Energy
Power Quality

Technical Data Sheets

Digital Energy™ Uninterruptible Power Supply

LP 33 Series 10 – 20 – 30 – 40 kVA

400 Vac CE – Series 5



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GE imagination at work

CE

Certified
Quality System

ISO 9001

Model: **LP 33 Series 10 – 20 – 30 – 40 kVA**, Series 5
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Up-dating		
Revision	Concern	Date

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The illustrations and plans describing the equipment are intended as general reference only and are not necessarily complete in every detail.

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GENERAL DATA

Topology	VFI-SS-111, double conversion				
Output power	kVA	10	20	30	40
Output nominal power factor (lag.)		1.0	1.0	1.0	0.8
Max. active power at nominal operating conditions	kW	10	20	30	32
Overall efficiency at 100% load in VFI mode	%	91.1	91.6	91.0	91.7
Overall efficiency at 100% load in ECO mode	%	98.2	98.6	98.5	98.0
Heat dissipation at 100% load in VFI mode, PF=0.8 lag. and charged battery	kW	0.78	1.47	2.37	2.90
Cooling air (25°C ÷ 30°C)	m³/h	235	430	700	850
Audible noise level	dB(A)	53	55	60	65
Battery type	Valve regulated lead-acid (VRLA)				
Operating temperature range	UPS: 0°C ÷ 40°C (nominal 25°C) Battery: 20°C ÷ 25°C recommended				
Storage temperature range	-25°C ÷ +55°C (higher the temperature, shorter the storage time of the battery)				
Storage time of the battery without recharge at 20°C	Max. 6 months				
Relative humidity	Max. 95% (non-condensing)				
Max. altitude without power derating	1000m				
Power derating (according to EN/IEC 62040-3)	1500m: -5% / 2000m: -9% / 2500m: -14% / 3000m: -18%				
Protection degree	IP 20 (IEC 60529)				
Standards	EN 50091 / EN/IEC 62040, CE marking				
EMC	EN 50091-2 / EN/IEC 62040-2 Class A				
Electrostatic discharge immunity	4kV contact / 8kV air discharge				
Internal protection	All live parts shrouded				
Enclosure	Metal sheet and castors				
Transport	Cabinet suitable for handling by forklift				
Colour	RAL 9003 (white)				
Installation	Minimum distance from the wall 5 cm				
External cable connections	Bottom left				
Cooling	Forced side to top by internal blower				
Paralleling (RPA version)	Up to 4 units parallelable for redundancy or capacity in RPA configuration (optional)				

RECTIFIER

Rectifier bridge	Three phase, overtemperature protection				
Standard input voltage	Nominal: 3 x 380V / 400V / 415V + N Rectifier accepted ph-ph voltage range: 323V ÷ 460V				
Input frequency	50/60Hz +/-10% (45 ÷ 66 Hz)				
Input power factor	>0.98 lag.				
Input current distortion (THD)	<8%				
Output voltage tolerance	+/- 1%				
Battery ripple current	<40 mA (pk-pk)				
Battery charging characteristic	IU (DIN 41773), T° compensated floating voltage				
Battery charging current limit	Selectable: 1.4 A, 2.8 A, 4.2 A				
Input power data	kVA	10	20	30	40
Input power at inverter nominal load, PF=0.8 lag. and charged battery	kW	8.78	17.47	26.37	34.90
Max. input power at inverter nominal load and max. battery charging current (selectable)	kW	9.68	19.27	29.07	37.12
Max. battery charging current (default inside battery)	A	1.4	2.8	4.2	4.2

BATTERY					
Battery type	Valve regulated lead-acid (VRLA)				
Number of blocks mounted inside the UPS cabinet (12V / 7Ah)	10kVA: 40 (2x20) 20kVA: 80 (2x2x20) 30-40kVA: 120 (3x 2x20)				
Float voltage at 20°C	2 x 273 Vdc				
Min. discharge voltage	2 x 198 Vdc (1.65 V/cell)				
Recharge time	6 ÷ 8 hours				
Automatic and manual battery test	Standard				
Battery power data	kVA	10	20	30	40
DC power at full load and PF=0.8 lag.	kW	8.8	17.5	26.4	35.0
Standard autonomy time at 100% load and PF=0.8 lag.	Min.	10	10	10	7
Standard autonomy time at 50% load and PF=0.8 lag.	Min.	26	26	26	15
Battery autonomy time at 100% load and PF=0.8 lag., only with High Rate Battery.					
Matching battery cabinets	See optional features on page 6				

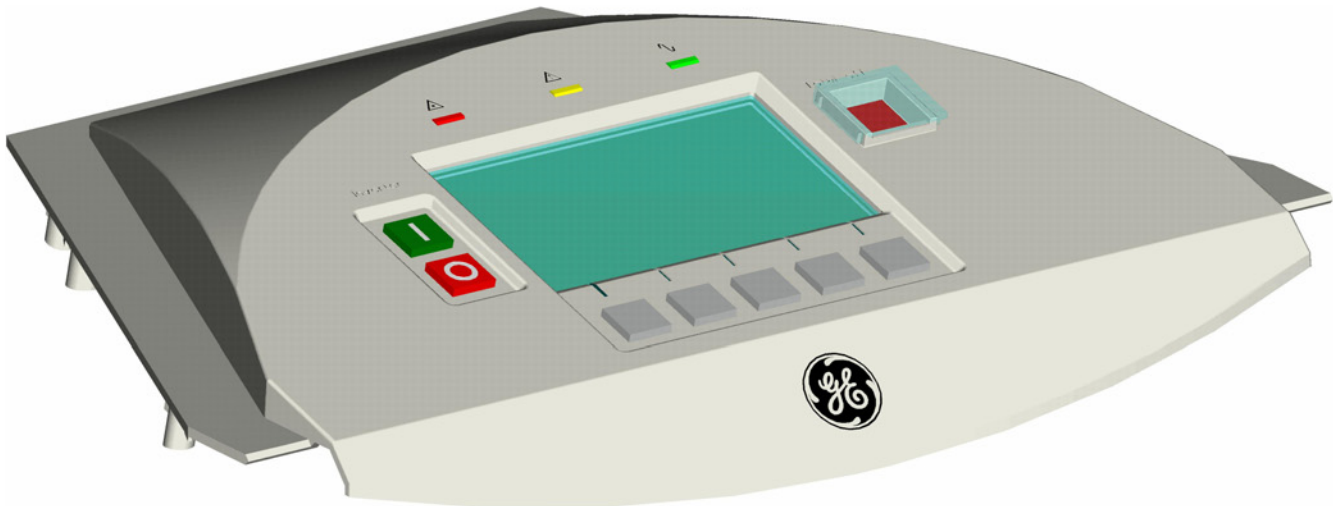
INVERTER	
Nominal output power	10-20-30 kVA at PF=0.6÷1.0 lag. 40 kVA at PF=0.6÷0.8 lag.
Nominal output voltage (on site programmable)	3 x 380V / 400V / 415V + N
Inverter bridge	IGBT technology
Output waveform	Sine wave
Output voltage tolerance:	
- static	+/- 1%
- dynamic (at load step 0 - 100 - 0%)	+/- 3%
- dynamic (at load step 0 - 50 - 0%)	+/- 2%
- recovery time to +/-1%	20 ms
- output voltage THD for 100% linear load	<2%
- output voltage THD for 100% non-linear load (EN 50091)	<3%
Output voltage tolerance at 100% unbalanced load (Ph-N)	+/- 3%
Output frequency	50/60 Hz (selectable)
Output frequency tolerance:	
- free-running	+/- 0.1%
- with mains synchronisation adjustable to	+/- 4%
Phase displacement:	
- at 100% balanced load	120°: +/- 1%
- at 100% unbalanced load	120°: +/- 2%
Overload capability (at PF=0.8)	125% - 10 minutes, 150% - 1 minute
Short-circuit characteristic	Electronic short-circuit protection, current limit to 2.2 times In for 100 ms
MTCB clearance capability (selectivity)	20% In within 5-10 ms (with MTCB class C)
Crest factor	>3:1

BYPASS	
Input connection	- Common input (Rectifier & Bypass) - Dual input (optional)
Primary components	- Thyristors (SSM - Static Switch Module) - Electromechanic contactors (backfeed protection) on bypass and inverter - 2 manual switches for maintenance bypass
Voltage limits for inverter/bypass load transfers	+/- 10%
Overload on bypass	200% for 2 min. and 1000% for 10 ms, non repetitive

INTERFACING	
Potential free contacts	- 4 - 28 user settable signals
Serial channel RS232 (on Delta 9 pin connector)	Standard
EPO (Emergency Power Off)	Standard
Extended Customer Interface Card (optional)	- Genset-On contact - 6 potential free alarm contacts - 1 auxiliary contact

Note: all indicated values are typical. Variations may be found from one unit to another.

CONTROL PANEL



The control panel, positioned on the UPS front-top, acts as the UPS user interface and comprises of the following elements:

- Back lit Graphic Display (LCD) with the following characteristics:
 - Multilanguage communication interface:
English, German, Italian, Spanish, French, Finnish, Polish, Portuguese, Czech, Slovakian, Chinese, Swedish, Russian and Dutch;
 - Synoptic diagram indicating UPS status.
- Command keys and parameters setting.
- UPS status control LED.

OPTIONS

BUILT-IN UPS OPTIONS:

1. Customer Interface
2. RPA kit
3. Separate mains input (one for rectifier / one for bypass)
4. Additional battery charger

COMMUNICATION:

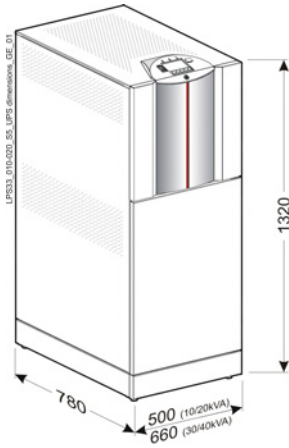
1. Advanced SNMP Card
2. GE Power Diagnostics
3. GE Data Protection
4. Modbus RTU Interface

OPTIONS IN ADDITIONAL CABINETS:

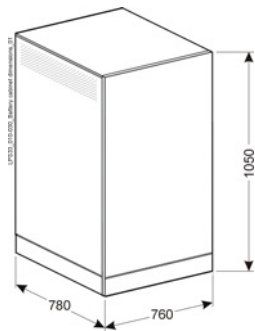
1. Battery cabinets (see page 6)
2. Battery fuse box

TECHNICAL DATA

LP 33 Series 10–20–30–40 kVA



Battery cabinet



WEIGHT

UPS rating	UPS without battery			UPS with battery		
	UPS	UPS floor loading	UPS with t. shipping	UPS with battery	Floor loading	UPS with standard shipping
10 kVA	140 kg	359 kg/m ²	170 kg	270* - 370* kg	693* - 949* kg/m ²	300* - 400* kg
20 kVA	150 kg	385 kg/m ²	180 kg	375 kg (14 Ah)	962 kg/m ² (14 Ah)	405 kg (14 Ah)
30 kVA	195 kg	379 kg/m ²	230 kg	555 kg (21 Ah)	1078 kg/m ² (21 Ah)	590 kg (21 Ah)
40 kVA	200 kg	389 kg/m ²	235 kg	560 kg (21 Ah)	1088 kg/m ² (21 Ah)	595 kg (21 Ah)

(*) Battery 7Ah

(*) Battery 14Ah (2x7Ah)

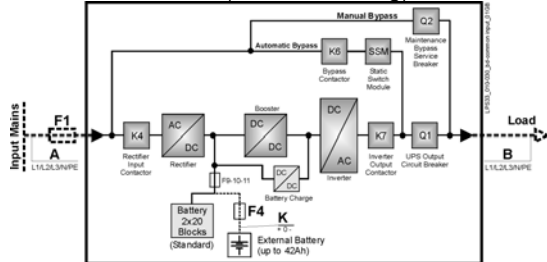
BATTERY TABLE

UPS rating	Battery capacity	Autonomy time	WEIGHT		
			Cabinet & Battery	Floor loading	Standard shipping
10 kVA	7 Ah	10 min.	Mounted inside the UPS cabinet (see WEIGHT table)		
	14 Ah (2 x 7 Ah)	25 min.			
	21 Ah (3 x 7 Ah)	45 min.	450 kg	760 kg/m ²	480 kg
	28 Ah (4 x 7 Ah)	60 min.	570 kg	962 kg/m ²	600 kg
	35 Ah (5 x 7 Ah)	80 min.	690 kg	1164 kg/m ²	720 kg
20 kVA	42 Ah (6 x 7 Ah)	100 min.	810 kg	1367 kg/m ²	840 kg
	14 Ah (2 x 7 Ah)	10 min.	Mounted inside the UPS cabinet (see WEIGHT table)		
	21 Ah (3 x 7 Ah)	20 min.	450 kg	760 kg/m ²	480 kg
	28 Ah (4 x 7 Ah)	28 min.	570 kg	962 kg/m ²	600 kg
	35 Ah (5 x 7 Ah)	37 min.	690 kg	1164 kg/m ²	720 kg
30 kVA	42 Ah (6 x 7 Ah)	45 min.	810 kg	1367 kg/m ²	840 kg
	21 Ah (3 x 7 Ah)	10 min.	Mounted inside the UPS cabinet (see WEIGHT table)		
	28 Ah (4 x 7 Ah)	15 min.	570 kg	962 kg/m ²	605 kg
	35 Ah (5 x 7 Ah)	22 min.	690 kg	1164 kg/m ²	725 kg
40 kVA	42 Ah (6 x 7 Ah)	28 min.	810 kg	1367 kg/m ²	845 kg
	21 Ah (3 x 7 Ah)	7 min.	Mounted inside the UPS cabinet (see WEIGHT table)		
	28 Ah (4 x 7 Ah)	11 min.	570 kg	962 kg/m ²	605 kg
	35 Ah (5 x 7 Ah)	14 min.	690 kg	1164 kg/m ²	725 kg
	42 Ah (6 x 7 Ah)	18 min.	810 kg	1367 kg/m ²	845 kg

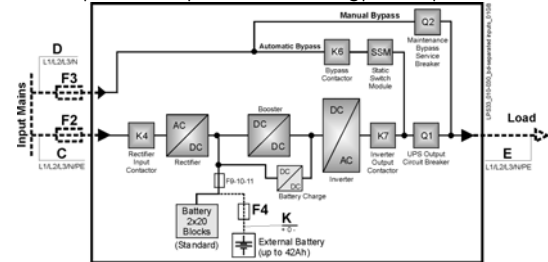
Battery autonomy time at 100% load and PF=0.8 lag., only with High Power Battery.

UPS BLOCK DIAGRAM, PROTECTIONS AND CABLE SECTIONS

Common input Rectifier & Bypass



Separated input Rectifier & Bypass (optional)



Protections and cable sections

kVA	Protections for mains voltages 3x380/220V, 3x400/230V, 3x415/240V Fuses AgL or equivalent MTCB				Cable sections recommended by European Standards Alternatively, local standards to be respected Cable sections (mm ²)			
	F1	F2	F3	F4 (battery)	A / B / C	D	E	K
10	3 x 25 A	3 x 25 A	3 x 20 A	3 x 25 A	5 x 4	4 x 2.5	5 x 2.5	4 x 4
20	3 x 50 A	3 x 50 A	3 x 35 A	3 x 50 A	5 x 10	4 x 6	5 x 6	4 x 10
30	3 x 63 A	3 x 63 A	3 x 50 A	3 x 80 A	5 x 10	4 x 10	5 x 10	4 x 16
40	3 x 63 A	3 x 63 A	3 x 63 A	3 x 80 A	5 x 10	4 x 10	5 x 10	4 x 16

Cable sections recommended in Switzerland (mm²)

kVA	A / B / C	D	E	K
10	5 x 6	4 x 4	5 x 4	4 x 6
20	5 x 16	4 x 10	5 x 10	4 x 16
30	5 x 16	4 x 16	5 x 16	3 x 25 + 1 x 16
40	5 x 16	4 x 16	5 x 16	3 x 25 + 1 x 16

F1, F2, F3, F4, A, B, C, D, E, (K): supplied by customer

K: supplied by GE only with battery

F4: can be supplied by GE

IMPORTANT NOTE !

The UPS is designed for TN System. The input neutral shall be grounded at source and shall never be disconnected.

4 pole breaker shall not be used at the UPS input (see also IEC 60634, IEC 61140, IEC 61557).