

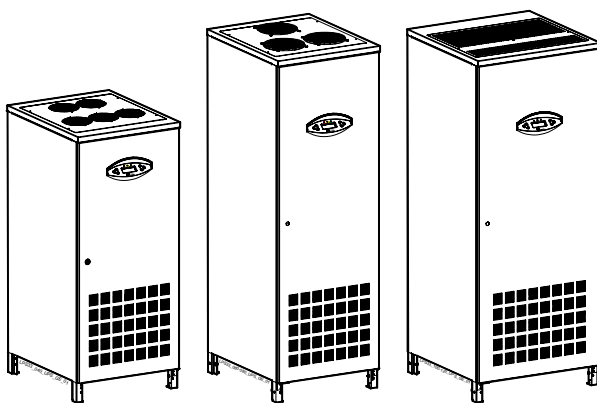
GE Consumer & Industrial  
Power Protection

# Technical Data Sheets

**Digital Energy™ Uninterruptible Power Supply**

*LP 33 Series / 40 – 60 – 80 – 100 – 120 kVA*

400 Vac CE – Series 0



**Manufactured by:**

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GE imagination at work



Certified  
Quality System  
**ISO 9001**  
Reg.No.CSQ 9130.GELE

GENERAL DATA						
Topology	VFI-SS-111, double conversion					
Nominal output apparent power at PF=0.6...0.8 lag.	kVA	40	60	80	100	120
Nominal output effective power at PF=0.8 lag.	kW	32	48	64	80	96
Overall efficiency at 100% load in VFI mode	%	92.8	93.3	92.8	92.8	92.8
Overall efficiency at 100% load in ECO mode	%	99	98.8	99	98.8	98.8
Heat dissipation at 100% load in VFI mode, PF=0.8 lag. and charged battery	kW	2.48	3.45	4.97	6.21	7.45
Cooling air (25°C ÷ 30°C)	m³/h	725	1010	1450	1815	2175
Audible noise level	dB(A)	64	67	67	70	70
Battery type	Valve regulated lead-acid (VRLA)					
Operating temperature range	UPS: 0°C ÷ 40°C					
Storage temperature range	-25°C ÷ +55°C					
Relative humidity	Max. 95% (non-condensing)					
Max. altitude without power derating	1000m					
Power derating (according to IEC 62040-3)	1500m: -5% / 2000m: -9% / 2500m: -14% / 3000m: -18%					
Protection degree	IP 20 (IEC 60529)					
Standards	EN 50091 / IEC 62040, CE marking					
EMC	EN 50091-2 / IEC 62040-2 Class A					
Electrostatic discharge immunity	4kV contact / 8kV air discharge					
Internal protection	All live parts shrouded					
Transport	Cabinet suitable for handling by forklift					
Colour	RAL 9003 (white)					
Installation	Can be positioned against a wall and floor fixed					
Service access	Front access only					
External cable connections	Bottom					
Cooling	Forced front 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 - Active IGBT rectifier					
Standard input voltage	Nominal: 3 x 380V / 400V / 415V + N Rectifier accepted ph-ph voltage range: 320V ÷ 460V					
Input frequency	50/60Hz +/-10% (45 ÷ 66 Hz)					
Input power factor	0.98 lag.					
Input current THD	Active IGBT Rectifier: <9% Active IGBT Rectifier - Clean Input Module: <4.5% (<3.5% @ 75% - load)					
Output voltage tolerance	+/- 1%					
Battery ripple current	<200 mA (pk-pk)					
Battery charging characteristic	IU (DIN 41773), T° compensated floating voltage					
Battery charging current limit	Programmable					
<b>Input power data</b>	<b>kVA</b>	<b>40</b>	<b>60</b>	<b>80</b>	<b>100</b>	<b>120</b>
Input power at inverter nominal load, PF=0.8 lag. and charged battery	kW	34.5	51.5	69	86	103.2
Max. input power at inverter nominal load and max. battery recharge current (programmable)	kW	43.1	60.1	77.6	94.6	111.8
Max. battery charging current (programmable)	A	15	15	15	15	15

BATTERY						
Battery type	Valve regulated lead-acid (VRLA)					
Number of 12V blocks, 6 cells/block	40, placed in external cabinets					
Float voltage at 20°C	2 x 273 VDC					
Min. discharge voltage (programmable)	1.65V / cell					
Recharge time	6 ÷ 8 hours					
Automatic and manual battery test	Standard					
Common battery in parallel system	Up to 4 units					
<b>Battery power data</b>	kVA	40	60	80	100	120
DC power at full load and PF=0.8 lag.	kW	34	51	68	85.1	102.2
DC power at full typical computer load (PF=0.66 lag.)	kW	28	42.1	56.2	70.2	84.3
Matching battery cabinets	See optional features on page 3					

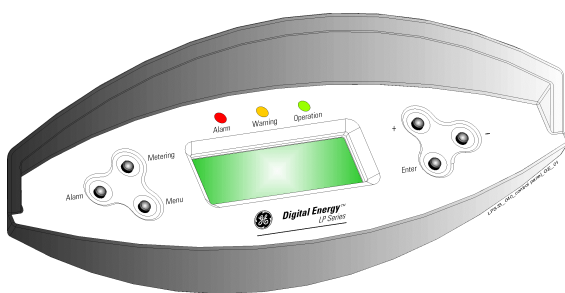
INVERTER	
Nominal output power at PF=0.6 ... 0.8 lag.	40 – 60 – 80 - 100 - 120 kVA
Nominal output voltage (on site programmable)	3 x 380V / 400V / 415V + N
Inverter bridge	IGBT technology
Output waveform	Sine wave
Output voltage tolerance:	
- static .....	+/- 1%
- dynamic (at load step 0 – 100 – 0%) .....	+/- 1%
- dynamic (at load step 0 – 50 – 0%) .....	+/- 0.5%
- recovery time to +/-1% .....	<3 ms
- output voltage THD for 100% linear load .....	<1%
- output voltage THD for 100% non-linear load (EN 50091)	<2.5%
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	<ul style="list-style-type: none"> <li>- Common input (Rectifier &amp; Bypass)</li> <li>- Dual input (optional)</li> </ul>
Primary components	<ul style="list-style-type: none"> <li>- Static switch (SCR) on bypass</li> <li>- Electromechanic contactors (backfeed protection) on bypass and inverter</li> <li>- 2 manual switches for maintenance bypass</li> </ul>
Voltage limits for inverter/bypass load transfers	+/- 10% (adjustable)
Overload on bypass	200% for 5 minutes 40 kVA: 35 times In for 10 ms, non repetitive 60-80 kVA: 45 times In for 10 ms, non repetitive

INTERFACING	
Potential free contacts	<ul style="list-style-type: none"> <li>- 4</li> <li>- 28 user settable signals</li> </ul>
Serial channel RS232 (on Delta 9 pin connector)	Standard
EPO (Emergency Power Off)	Standard
Extended Customer Interface Card (optional)	<ul style="list-style-type: none"> <li>- Genset-On contact</li> <li>- 6 potential free alarm contacts</li> <li>- 1 auxiliary contact</li> </ul>

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

## FRONT PANEL CONTROLS, SIGNALS AND ALARMS



### LCD SCREEN

Shows the UPS data system data, events messages and UPS setting.

The data is displayed on 4 rows, 20 characters each, allowing the operator to select between *English, German, French, Spanish, Italian, Finnish* or *Polish* language.

### CONTROL PANEL

<i>Metering</i>	Electrical parameters, operating statistics and information screens.
<i>Alarm</i>	Events (alarms, messages, commands, handling, etc.) and resets general alarm / buzzer.
<i>Menu</i>	Settings, LED-test and commands.
<i>+</i>	Scroll to following screen.
<i>-</i>	Scroll to previous screen.
<i>Enter</i>	Confirms the selected command.

### INDICATION LED'S

<i>Alarm (red)</i>	On:	No mains available. Load supply at risk due to: - Battery empty; - Overtemperature; - Overload.
<i>Warning (yellow)</i>	Blinking:	Alarm not jeopardizing load supply.
<i>Operation (green)</i>	On:	LOAD ON INVERTER
	Blinking:	SERVICE REQUIRED

## OPTIONS

### BUILT-IN UPS OPTIONS:

1. Customer Interface
2. RPA kit
3. Separate mains input (one for rectifier / one for bypass)
4. Input THDI <5%

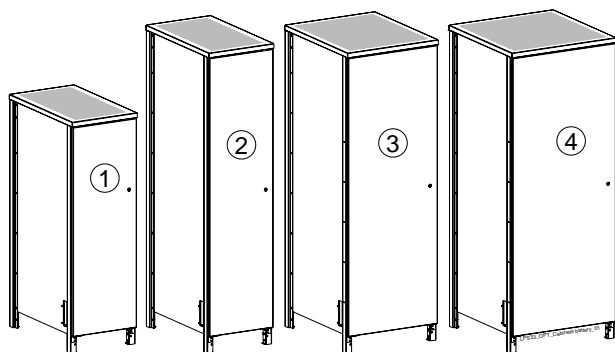
### COMMUNICATION:

1. Advanced SNMP Card
2. JUMP software suite
3. IRIS service
4. Modbus RTU Interface

### OPTIONS IN ADDITIONAL CABINETS:

1. Empty battery cabinets

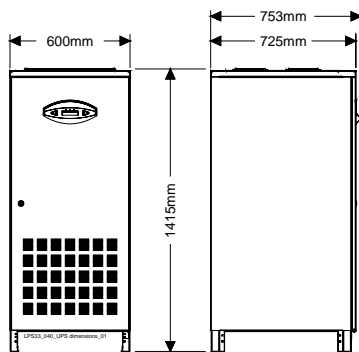
Dimensions (WxDxH): ❶ 430x725x1415 ❷ 430x725x1815 ❸ 600x725x1815 ❹ 780x725x1815



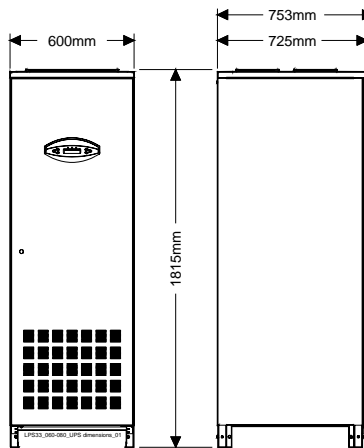
BATTERY TABLE				
UPS rating	Battery Capacity (High rate battery)	Autonomy time	Cabinet	Weight
40 kVA	22 Ah	8 minutes	❶	360 Kg
	33 Ah	12 minutes		500 Kg
60 kVA	33 Ah	9 minutes	❷	520 Kg
	50 Ah	12 minutes	❸	775 Kg
80 kVA	66 Ah (2x33Ah)	19 minutes	❸	960 Kg
	50 Ah	10 minutes	❸	775 Kg
100 kVA	66 Ah (2x33Ah)	12 minutes	❸	960 Kg
	66 Ah (2x33Ah)	10 minutes	❹	1010 Kg
120 kVA	66 Ah (2x33Ah)	9 minutes	❹	1010 Kg

## TECHNICAL DATA

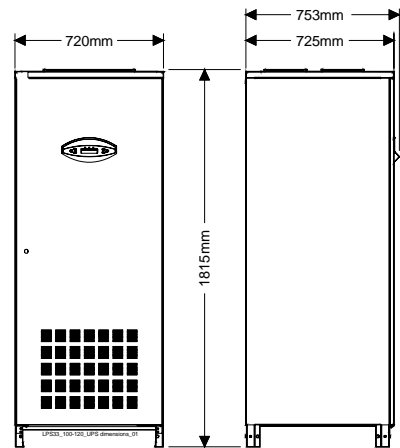
LP 33 Series / 40 kVA



LP 33 Series / 60 - 80 kVA

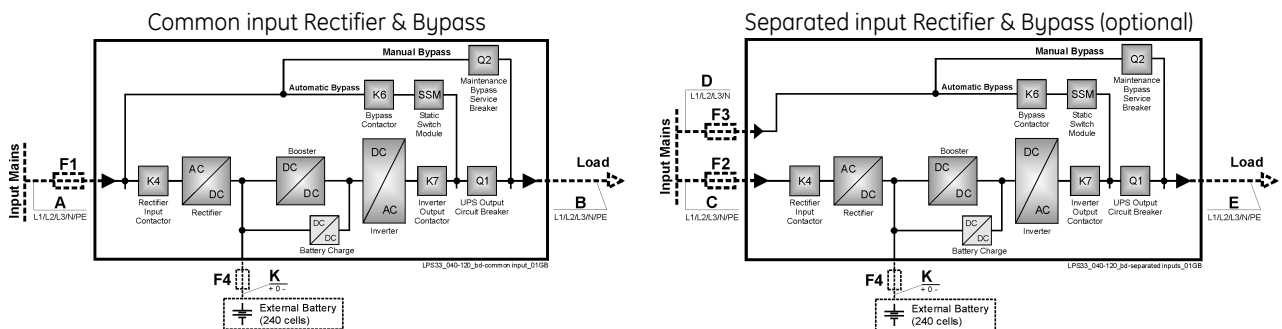


LP 33 Series / 100 - 120 kVA



UPS rating	40 kVA	60 kVA	80 kVA	100 kVA	120 kVA
UPS weight	220 Kg	275 Kg	300 Kg	370 Kg	375 Kg
UPS floor loading	487 Kg/m <sup>2</sup>	609 Kg/m <sup>2</sup>	665 Kg/m <sup>2</sup>	683 Kg/m <sup>2</sup>	692 Kg/m <sup>2</sup>
UPS packed in carton	235 Kg	295 Kg	320 Kg	395 Kg	400 Kg
UPS packed in wooden crate	300 Kg	370 Kg	395 Kg	475 Kg	480 Kg

## UPS BLOCK DIAGRAM, PROTECTIONS AND CABLE SECTIONS



### Protections and cable sections

Protections for mains voltages 3x380/220V, 3x400/230V, 3x415/240V					Cable sections A, B, C, D, E and K recommended by European Standards Alternatively, local standards to be respected			
Fuses AgL or equivalent MTCB					Cable sections (mm <sup>2</sup> )			
kVA	F1	F2	F3	F4	A / B / C	D	E	K
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
60	3 x 100 A	3 x 100 A	3 x 100 A	3 x 125 A	4 x 25 + 16	4 x 25	4 x 25 + 16	3 x 35 + 25
80	3 x 125 A	3 x 125 A	3 x 125 A	3 x 160 A	4 x 35 + 25	4 x 35	4 x 35 + 25	3 x 50 + 25
100	3 x 160 A	3 x 160 A	3 x 160 A	3 x 200 A	4 x 50 + 25	4 x 50	4 x 50 + 25	3 x 70 + 35
120	3 x 200 A	3 x 200 A	3 x 200 A	3 x 250 A	4 x 70 + 35	4 x 70	4 x 70 + 35	3 x 120 + 70

### SEV/ASE cable sections recommended in Switzerland (mm<sup>2</sup>)

kVA	A / B / C	D	E	K
40	5 x 16	4 x 16	5 x 16	3 x 25 + 16
60	4 x 35 + 25	4 x 35	4 x 35 + 25	3 x 50 + 25
80	4 x 50 + 25	4 x 50	4 x 50 + 25	3 x 70 + 35
100	4 x 70 + 35	4 x 70	4 x 70 + 35	3 x 95 + 50
120	4 x 95 + 50	4 x 95	4 x 95 + 50	3 x 150 + 95

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.