

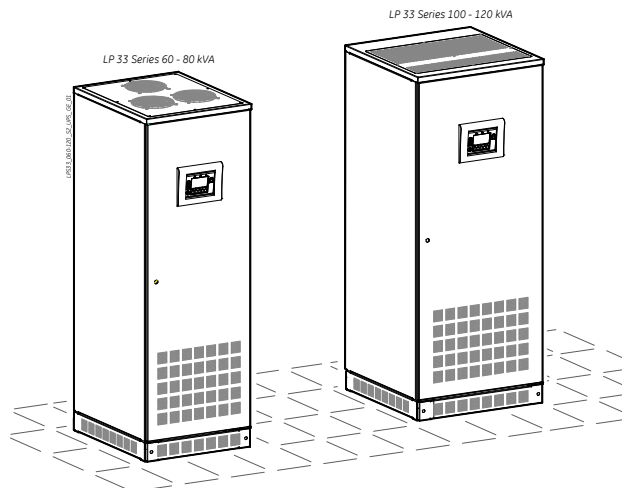
GE Digital Energy  
Power Quality

# Technical Data Sheets

Digital Energy™ Uninterruptible Power Supply

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

400 Vac CE – Series 2



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GE imagination at work



Certified  
Quality System  
**ISO 9001**

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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				
Nominal output apparent power at PF=0.6...0.8 lag.	kVA	60	80	100	120
Nominal output effective power at PF=0.8 lag.	kW	48	64	80	96
Overall efficiency at 100% load in VFI mode	%	93.3	92.8	92.8	92.8
Overall efficiency at 100% load in ECO mode	%	98.8	99	98.8	98.8
Heat dissipation at 100% load in VFI mode, PF=0.8 lag. and charged battery	kW	3.45	4.97	6.21	7.45
Cooling air (25°C ÷ 30°C)	m³/h	1010	1450	1815	2175
Audible noise level	dB(A)	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 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 Class A / EN/IEC 62040-2 Category C2				
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: 323V ÷ 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>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	51.5	69	86	103.2
Max. input power at inverter nominal load and max. battery recharge current (programmable)	kW	60.1	77.6	94.6	111.8
Max. battery charging current (programmable)	A	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	60	80	100	120
DC power at full load and PF=0.8 lag.	kW	51	68	85.1	102.2
DC power at full typical computer load (PF=0.66 lag.)	kW	42.1	56.2	70.2	84.3
Matching battery cabinets	See optional features on page 5				

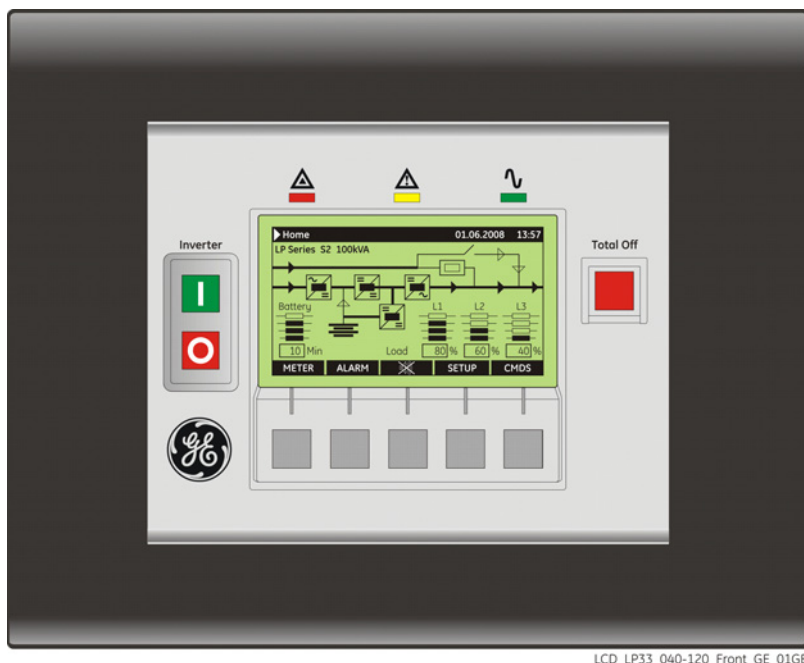
INVERTER	
Nominal output power at PF=0.6 ... 0.8 lag.	60 – 80 - 100 - 120 kVA
Nominal output voltage (on site programmable)	3 x 380V / 400V / 415V + N
Inverter bridge	IGBT technology
Output waveform	Sine wave
Output voltage tolerance:	
- static .....	+/- 1%
- dynamic (at load step 0 – 100 – 0%) .....	+/- 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	- Common input (Rectifier & Bypass) - Dual input (optional)
Primary components	- Static switch (SCR) on bypass - Electromechanic contactors (backfeed protection) on bypass and inverter - 2 manual switches for maintenance bypass
Voltage limits for inverter/bypass load transfers	+/- 10% (adjustable)
Overload on bypass	200% for 5 minutes 45 times In 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.

## FRONT PANEL CONTROLS, SIGNALS AND ALARMS



The control panel, positioned on the UPS front door, 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;
  - Graphic 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. EMC filter EN/IEC 62040-2 Category C2 (Class A) for common or separate mains input (one for rectifier / one for bypass)
4. Input THDI <4.5%

### COMMUNICATION:

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

### OPTIONS IN ADDITIONAL CABINETS:

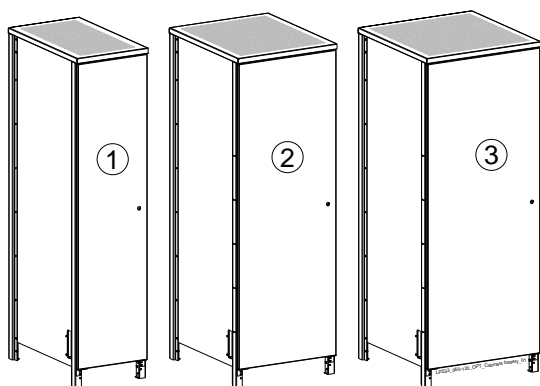
1. Empty battery cabinets

Dimensions (WxDxH):

① 430x725x1815

② 600x725x1815

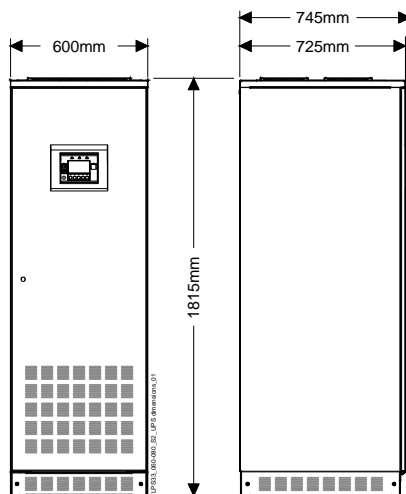
③ 780x725x1815



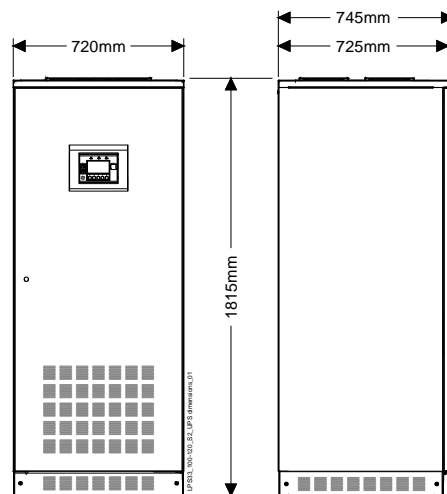
BATTERY TABLE				
UPS rating	Battery Capacity (High rate battery)	Autonomy time	Cabinet	Weight
60 kVA	33 Ah	9 minutes	①	520 Kg
	50 Ah	12 minutes	②	775 Kg
	66 Ah (2x33Ah)	19 minutes	②	960 Kg
80 kVA	50 Ah	10 minutes	②	775 Kg
	66 Ah (2x33Ah)	12 minutes	②	960 Kg
100 kVA	66 Ah (2x33Ah)	10 minutes	③	1010 Kg
120 kVA	66 Ah (2x33Ah)	9 minutes	③	1010 Kg

## TECHNICAL DATA

LP 33 Series 60 - 80 kVA

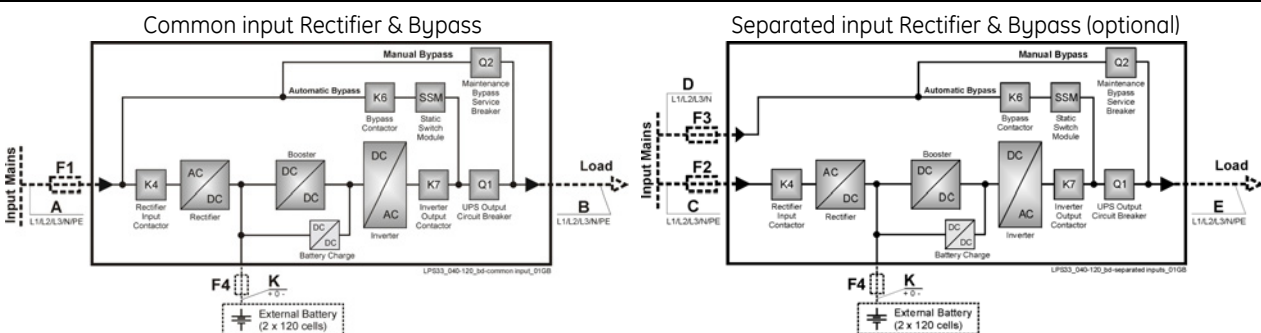


LP 33 Series 100 - 120 kVA



UPS rating	60 kVA	80 kVA	100 kVA	120 kVA
UPS weight	275 Kg	300 Kg	370 Kg	375 Kg
UPS floor loading	633 Kg/m <sup>2</sup>	690 Kg/m <sup>2</sup>	709 Kg/m <sup>2</sup>	719 Kg/m <sup>2</sup>
UPS packed in carton	295 Kg	320 Kg	395 Kg	400 Kg
UPS packed in wooden crate	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
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

### Cable sections recommended in Switzerland (mm<sup>2</sup>)

kVA	A / B / C	D	E	K
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.

### 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).