

GE Consumer & Industrial  
Power Protection

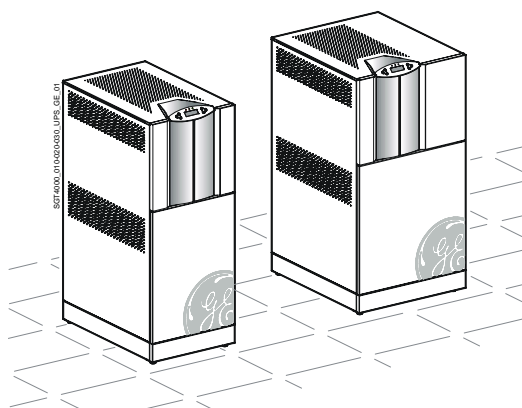
# Technical Data Sheets

## Digital Energy™ Uninterruptible Power Supply

*LP 33 Series / 10 – 20 – 30 kVA*

400 Vac CE – Series 4

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### GE Consumer & Industrial SA

General Electric Company  
CH - 6595 Riazzino (Locarno)  
Switzerland  
T +41 (0)91 / 850 51 51  
F +41 (0)91 / 850 51 44

[www.gedigitalenergy.com](http://www.gedigitalenergy.com)



GE imagination at work



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

GENERAL DATA				
Topology	VFI-SS-111, double conversion			
Output power	kVA	10	20	30
Max. active power at nominal operating conditions	kW	10	20	30
Overall efficiency at 100% load in VFI mode	%	91.1	91.6	91
Overall efficiency at 100% load in ECO mode	%	98.2	98.6	98.5
Heat dissipation at 100% load in VFI mode, PF=0.8 lag. and charged battery	kW	0.78	1.47	2.37
Cooling air (25°C ÷ 30°C)	m³/h	235	430	700
Audible noise level	dB(A)	53	55	60
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 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			
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 ÷ 478V			
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
Input power at inverter nominal load, PF=0.8 lag. and charged battery	kW	8.78	17.47	26.37
Max. input power at inverter nominal load and max. battery recharge current (programmable)	kW	9.68	19.27	29.07
Max. battery charging current (default)	A	1.4	2.8	4.2

BATTERY				
Battery type	Valve regulated lead-acid (VRLA)			
Number of blocks (12V / 7Ah)	1 x 40 (10 kVA)	2 x 40 (20 kVA)	3 x 40 (30 kVA)	
Float voltage at 20°C	2 x 273 VDC			
Min. discharge voltage	2 x 192 VDC			
Recharge time	6 ÷ 8 hours			
Automatic and manual battery test	Standard			
Battery power data	kVA	10	20	30
DC power at full load and PF=0.8 lag.	kW	8.42	16.84	25.26
Standard autonomy time at 100% load and PF=0.8 lag.	Min.	10	10	10
Standard autonomy time at 50% load and PF=0.8 lag.	Min.	26	26	26
Matching battery cabinets	See optional features on page 4			

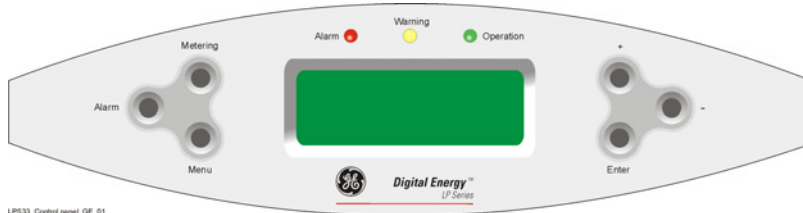
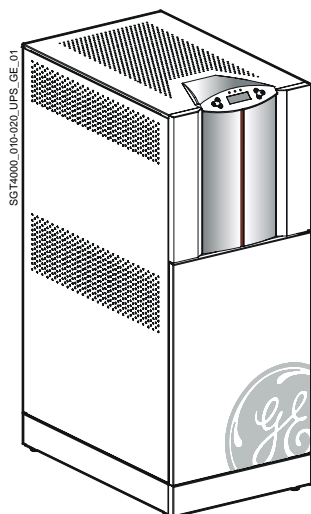
INVERTER	
Nominal output power at PF=0.6 ... 1.0 lag.	10 – 20 – 30 kVA
Nominal output voltage (on site programmable)	3 x 380V / 400V / 415V + N
Inverter bridge	IGBT technology
Output waveform	Sine wave
Output voltage tolerance:	
- static .....	+/- 1%
- dynamic (at load step 0 – 100 – 0%) .....	+/- 3%
- 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 .....	+/- 1%
- at 100% unbalanced load .....	+/- 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 I <sub>n</sub> for 100 ms
MTCB clearance capability (selectivity)	20% I <sub>n</sub> 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.

## 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. Additional battery charger

### COMMUNICATION:

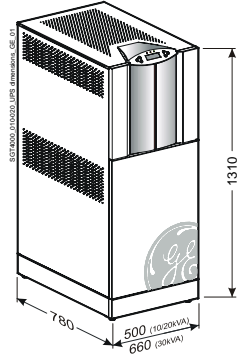
1. Advanced SNMP Card
2. JUMP software suite
3. IRIS service
4. Modbus RTU Interface

### OPTIONS IN ADDITIONAL CABINETS:

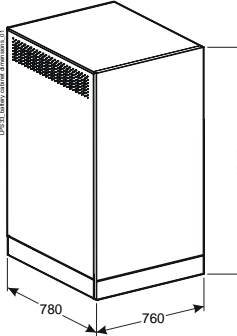
1. Empty battery cabinets (see page 4)
2. Battery fuse box

## TECHNICAL DATA

### LP 33 Series 10 - 20 - 30 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 <sup>2</sup>	170 Kg	270* - 370° Kg	693* - 949° Kg/m <sup>2</sup>	300* - 400° Kg
20 kVA	150 Kg	385 Kg/m <sup>2</sup>	180 Kg	375 Kg (14 Ah)	962 Kg/m <sup>2</sup> (14 Ah)	405 Kg (14 Ah)
30 kVA	195 Kg	379 Kg/m <sup>2</sup>	230 Kg	555 Kg (21 Ah)	1078 Kg/m <sup>2</sup> (21 Ah)	590 Kg (21 Ah)

(\*) Battery 7Ah

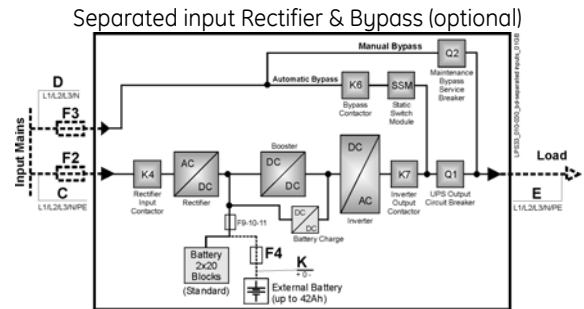
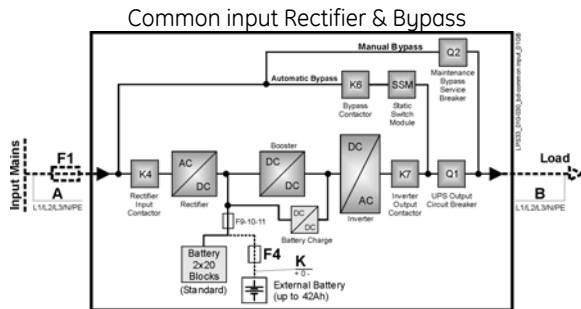
(°) Battery 14Ah

### 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 <sup>2</sup>	480 Kg
	28 Ah (4 x 7 Ah)	60 min.	570 Kg	962 Kg/m <sup>2</sup>	600 Kg
	35 Ah (5 x 7 Ah)	80 min.	690 Kg	1164 Kg/m <sup>2</sup>	720 Kg
20 kVA	42 Ah (6 x 7 Ah)	100 min.	810 Kg	1367 Kg/m <sup>2</sup>	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.			
	28 Ah (4 x 7 Ah)	28 min.	570 Kg	962 Kg/m <sup>2</sup>	600 Kg
	35 Ah (5 x 7 Ah)	37 min.	690 Kg	1164 Kg/m <sup>2</sup>	720 Kg
30 kVA	42 Ah (6 x 7 Ah)	45 min.	810 Kg	1367 Kg/m <sup>2</sup>	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.			
	35 Ah (5 x 7 Ah)	22 min.	690 Kg	1164 Kg/m <sup>2</sup>	725 Kg
	42 Ah (6 x 7 Ah)	28 min.	810 Kg	1367 Kg/m <sup>2</sup>	845 Kg

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

## 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			
kVA	Fuses AgL or equivalent MTCB				Cable sections (mm <sup>2</sup> )			
	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

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

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

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	4 x 25

### 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).