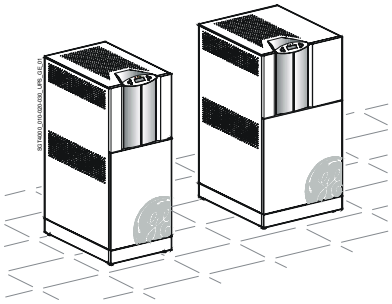
Technical Data Sheet

LP 33

Models: 10 - 20 - 30 kVA / Series 4



GENERAL DATA

Topology	**True On-line, double conversion**			
Nominal output power at PF=0.6 ... 1.0 lag.	**kVA**	**10**	**20**	**30**
Nominal output power at PF=1.0 lag.	**kW**	**10**	**20**	**30**
Overall efficiency at 100% load in On-line mode	**%**	**91**	**91**	**91**
Overall efficiency at 100% load in IEM-mode (only S version)	**%**	**98**	**98**	**98**
Heat dissipation at 100% load in On-line mode, PF=0.8 lag. and charged battery	**kW**	**0.79**	**1.58**	**2.37**
Cooling air (25°...30°C)	**m^3/h**	**250**	**500**	**700**
Audible noise level (EN 27779)	**dB (A)**	**50**	**50**	**55**

Battery type	**Valve regulated lead-acid (VRLA)**
Operating temperature range	**UPS: 0°C ÷ 40°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 derating Power derating (as per IEC 62040-3)	**1000m** **1500m - 95% / 2000m - 91% / 2500m - 86% / 3000m - 82%**
Protection degree	**IP 20 (IEC 60529)**
Standards Safety	**EN 50091 / IEC 62040, CE marking**
Standards EMC	**EN 50091-2 (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 9010 (white)**
Installation	**Minimum distance from the wall 5cm**
External cable connections	**Bottom left**
Cooling	**Forced side to top by internal blower**
Paralleling	**Up to 4 units parallelable for redundancy or capacity in RPA configuration (optional)**

RECTIFIER

Rectifier bridge	**Three phase, overtemperature protection**
Nominal input voltage Input voltage window	**- Nominal: 3x380/400/415V + N** **- phase-phase: 324÷478V**
Input frequency	**50/60Hz +/-10%**
Input power factor	**>0.98 lag.**
Input current distortion (THDI)	**<8%**
Output voltage tolerance	**+/- 1%**
DC voltage ripple	**<1%**
DC current ripple	**Max. 5% of the battery capacity [Ah], expressed in A**
Battery charging characteristic	**IU (DIN 41773), T° compensated floating voltage**
Battery charging current limit	**Programmable in 3 steps**

INPUT POWER DATA	**kVA**	**10**	**20**	**30**
Input power at inverter nominal load, PF=0.8 lag. and charged battery	**kW**	**8.97**	**17.94**	**26.91**
Max. input power at inverter nominal load and max. battery recharge current (programmable)	**kW**	**9.87**	**19.74**	**29.61**
Max. battery charging current	**A**	**1.4**	**2.8**	**4.2**

BATTERY

Battery type	**Standard: 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 table on page 4			

INVERTER

Nominal output power at PF=0.6 ... 1.0 lag.	**10 - 20 - 30 kVA**
Nominal output voltage (user selectable)	**3x380/400/415V + N**
Inverter bridge	**IGBT**
Output waveform	**Sine wave**
Output voltage tolerance: - static ..... - dynamic (at load step 0-100-0%) ..... - dynamic (at load step 0-50-0%) ..... - recovery time to +/- 1% ..... - output voltage THD for 100% linear load ..... - output voltage THD for 100% non-linear load (EN 50091)	 **+/- 1%** **+/- 3%** **+/- 2%** **20ms** **<2%** **<3%**
Output voltage tolerance at 100% unbalanced load (Ph-N)	**+/- 3%**
Output frequency	**50/60Hz (selectable)**
Output frequency tolerance: - free-running ..... - with mains synchronisation adjustable to	 **+/- 0.1%** **+/- 4%**
Phase displacement: - at 100% balanced load ..... - at 100% unbalanced load	 **+/- 1%** **+/- 2%**
Overload capability (at PF=0.8 lag.)	**125% - 10 minutes, 150% - 1 minute**
Short-circuit characteristic	**Electronic short-circuit protection,current limit to 2.2 times In for 100ms**
Fuse clearance capability (selectivity)	**20% In within - 5÷10ms (with fuses AgL or MTCB class C)**
Crest factor	**3:1**

BYPASS

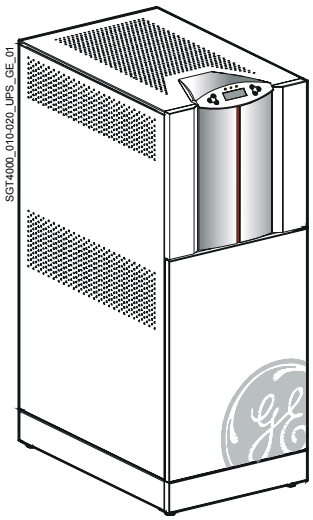
Input connection	**- Common input (Rectifier & Bypass)** **- Dual input (optional)**
Primary components	**- Thyristors (SSM - Static Switch Module)** **- 2 manual maintenance overall switch** **- 1 electromechanic contactor (backfeed protection)**
Voltage limits for inverter/bypass load transfers	**+/- 10%**
Overload on bypass	**200% for 2min. and 1000% for 10ms, non repetitive**

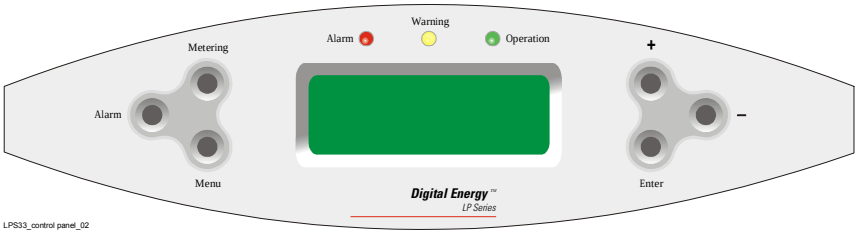
INTERFACING

Potential free contacts	**- 4** **- 28 user configurable alarms**
RS232 Interface	**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 & ALARMS





LCD SCREEN

Standard: 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

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

INDICATION LED'S

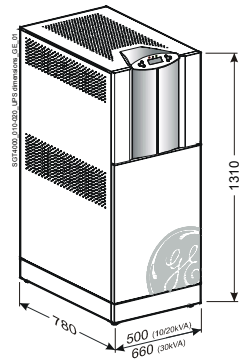
Alarm (red)	On:	No mains available. Load supply at risk due to: - Battery empty; - Overtemperature; - Overload.
Warning (yellow)	Blinking:	Alarm not jeopardizing load supply.
Operation (green)	On: Blinking:	*LOAD ON INVERTER* *SERVICE REQUIRED*

OPTIONS

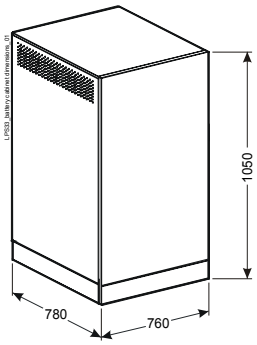
1. RPA (Redundant Parallel Architecture) to parallel up to 4 units.
2. Matching battery cabinets for longer runtimes (see page 4).
3. Battery fuse box.
4. Additional battery charger.
5. Extended Customer Interface Card.
6. SNMP Card (Ethernet) for integration into networks.
7. Connectivity Software *(ARGUS / PowerFlag / JUMP, IRIS Service, etc.*).

TECHNICAL DATA

LP 33
10 - 20 - 30 kVA



Battery Cabinet



LP 33 WEIGHT						
UPS rating	UPS without battery			UPS with battery		
	UPS	Floor loading	Standard shipping	UPS with battery	Floor loading	UPS with standard shipping
10 kVA	135 Kg	347 Kg/m²	165 Kg	269* - 367°Kg	690* - 941°Kg/m²	299* - 397°Kg
20 kVA	147 Kg	377 Kg/m²	170 Kg	379 Kg (14 Ah)	972 Kg/m² (14 Ah)	402 Kg (14 Ah)
30 kVA	185 Kg	360 Kg/m²	200 Kg	533 Kg (21 Ah)	1'036 Kg/m² (21 Ah)	548 Kg (21 Ah)

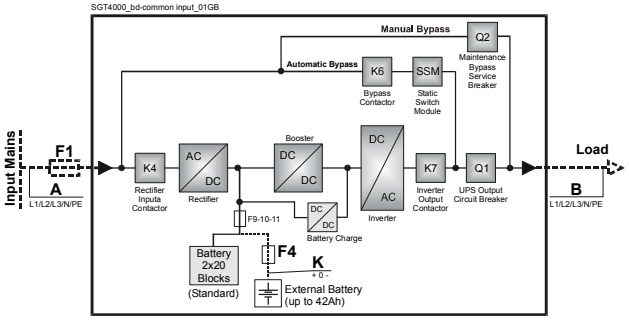
(*) Battery 7Ah **(°) Battery 14Ah**

BATTERY TABLE					
UPS rating	Battery capacity	Autonomy time	WEIGHT		
			Cabinet & Battery	Floor loading	Standard shipping
10 kVA	7Ah	10 min.	Mounted inside the UPS cabinet (see *LP 33* Weight table)		
	14Ah (2 x 7Ah)	25 min.			
	21Ah (3 x 7Ah)	45 min.	450 Kg	608 Kg/m²	510 Kg
	28Ah (4 x 7Ah)	60 min.	570 Kg	776 Kg/m²	630 Kg
	35Ah (5 x 7Ah)	80 min.	690 Kg	945 Kg/m²	750 Kg
	42Ah (6 x 7Ah)	100 min.	810 Kg	1114 Kg/m²	870 Kg
20 kVA	14Ah (2 x 7Ah)	10 min.	Mounted inside the UPS cabinet (see *LP 33* Weight table)		
	21Ah (3 x 7Ah)	20 min.	450 Kg	608 Kg/m²	510 Kg
	28Ah (4 x 7Ah)	28 min.	570 Kg	776Kg/m²	630 Kg
	35Ah (5 x 7Ah)	37 min.	690 Kg	945 Kg/m²	750 Kg
	42Ah (6 x 7Ah)	45 min.	810 Kg	1114 Kg/m²	870 Kg
30 kVA	21Ah (3 x 7Ah)	10 min.	Mounted inside the UPS cabinet (see *LP 33* Weight table)		
	28Ah (4 x 7Ah)	15 min.	570 Kg	776 Kg/m²	630 Kg
	35Ah (5 x 7Ah)	22 min.	690 Kg	945 Kg/m²	750 Kg
	42Ah (6 x 7Ah)	28 min.	810 Kg	1114 Kg/m²	870 Kg

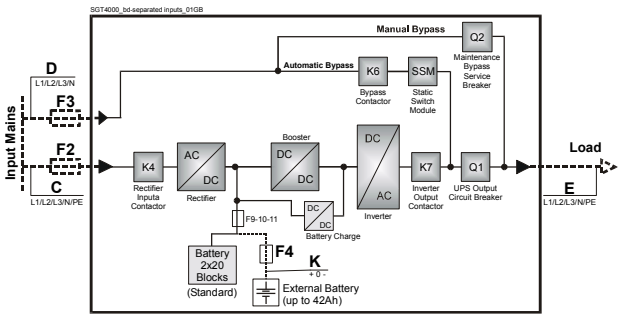
Battery autonomy time at 100% load and PF=0.8 lag., only with battery 7Ah, 36.4W/cell, 10min., 1.6V/cell end of discharge.

UPS BLOCK DIAGRAM, FUSES AND CABLE SECTIONS

Common input Rectifier & Bypass



Separated inputs Rectifier & Bypass (Option)



Fuses and cable sections

Fuses for mains voltages 3x380/220V, 3x400/230V, 3x415/240V					Cable sections A, B, C, D,E and K recommended by European standards (between brackets SEV/ASE) Alternatively, local standards to be respected				
kVA	Fuses gL or MTCB (delayed 10 ms)				Cable sections (mm²)				
	F1	**F2**	**F3**	**F4** (Battery)	**A,B**	**C**	**D**	**E**	**K**
10	3x25A	3x25A	3x20A	3x25A	5x4 (5x6)	5x4 (5x6)	4x2.5 (4x4)	5x2.5 (5x4)	4x4 (4x6)
20	3x50A	3x50A	3x35A	3x50A	5x10 (5x16)	5x10 (5x16)	4x6 (4x10)	5x6 (5x10)	4x10 (4x16)
30	3x63A	3x63A	3x50A	3x80A	5x10 (5x16)	5x10 (5x16)	4x10 (4x16)	5x10 (5x16)	4x16 (4x25)

F1, F2, F3, A, B, C, D, E: supplied by customer. F4: can be supplied by *GE*.