

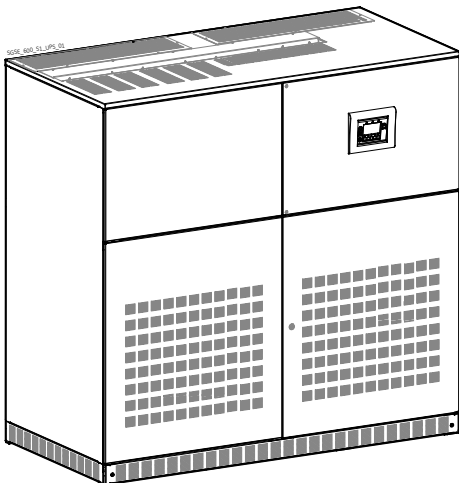
GE
Digital Energy

Technical Data Sheet

Uninterruptible Power Supply

SG Series 600

600kVA / 400Vac CE / S1



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CE

Certified
Quality System
ISO 9001

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GENERAL DATA

Topology	VFI, double conversion with integrated transformer		
Nominal output apparent power from PF=0.6 lag. to 0.8 lag.	KVA		600
Nominal output active power from PF=0.8 lag. to 0.9 lead.	kW		480
Overall efficiency at 100% load PF=0.8 lag. in VFI mode			93.0%
Overall efficiency at 75% load PF=0.8 lag. in VFI mode	% (+/- 0.2%)		93.6%
Overall efficiency at 50% load PF=0.8 lag. in VFI mode			93.7%
Overall efficiency at 100% load in SEM mode	% (+/- 0.2%)		98.4%
Heat dissipation at 100% load in VFI mode, PF=0.8 lag. & charged battery	kW		36.13
Cooling air (25°C ÷ 30°C)	m³/h		10'540
Audible noise level	dB(A)		75
Battery type	Valve regulated lead-acid (VRLA), vented lead-acid, NiCd		
Operating temperature range	UPS: 0°C ÷ 35°C		
Storage temperature range	UPS: -25°C ÷ +55°C	Battery: -20°C ÷ +40°C (higher the temperature, shorter the storage time of the battery)	
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/IEC 62040, CE marking		
EMC (Electromagnetic Compatibility)	EN/IEC 62040-2		
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 and top access only		
External cable connections	Bottom at front of the cabinet (top as option)		
Cooling	Enforced ventilation with fan failure detection		
Paralleling (RPA version)	Up to 6 units parallelable for redundancy or capacity in RPA configuration (optional).		

RECTIFIER

Rectifier bridge	Three phase, 6 thyristors, overtemperature protection		
Standard input voltage	Nominal: 3 x 380V / 400V / 415V + N Rectifier accepted ph-ph voltage range: 340V ÷ 460V		
Other input voltages	On request		
Input frequency	50 Hz +/-10% (45 ÷ 55 Hz)		
Power factor (at full load)	0.9	0.92 with option 11th harmonic filter	
Input current THD at nominal load	6%	4% with option 11th harmonic filter	
Inrush current	Limited by soft-start circuit		
Power walk-in	15 seconds		
Output voltage tolerance	+/- 1%		
DC voltage ripple	<1%		
DC current ripple	Max. 5% the battery capacity [Ah], expressed in A		
Battery charging characteristic	IU (DIN 41773), T° compensated floating voltage		
Battery charging current limit	Programmable		
Input power data		kVA	600
Input power at inverter nominal load and charged battery	at PF=0.8 lag.	kW	516.2
Max. input power at inverter nominal load and max. battery recharge current (programmable)		kW	573.9
Max. battery charging current (programmable) at the beginning of battery recharge at nominal load	at PF=0.8 lag.	A	140

BATTERY

Battery type	Valve regulated lead-acid (VRLA)-standard, Vented lead-acid, wet battery and NiCd	
Float voltage at 20°C	400V ÷ 436V (dependent on the number of cells)	
Number of cells	VRLA at 2.27V/cell: 177÷192 cells	
	Vented lead acid at 2.23V/cell, no boostcharge: 180÷195 cells	
	Vented lead acid at 2.23V/cell, with boostcharge at 2.35 V/cell: 180÷185 cells	
Min. discharge voltage (programmable)	NiCd at 1.41V/cell, no boostcharge: 284÷309 cells	
	NiCd at 1.41V/cell, with boostcharge at 1.55 V/cell: 281 cells	
Recharge time	Up to 310V (dependent on the number of cells)	
"Battery to earth" fault detection	<5 hours up to 90% of battery capacity	
Automatic and manual battery test	Standard	
Battery power data	kVA	600
DC power at full load and PF=0.8	kW	505
DC power at full typical computer load (PF=0.66)	kW	417

INVERTER

Nominal output power at PF=0.6 ... 0.8 lag.	600 kVA	
Nominal output voltage (on site programmable)	3 x 380V / 400V / 415V + N	
Inverter bridge	SVM (Space Vector Modulation) and IGBT technology	
Output transformer (for galvanic separation)	Standard	
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%	5 ms	
- output voltage THD for 100% linear load	Max. 1%	
- output voltage THD for 100% non-linear load (EN 62040)	Max. 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°: +/- 3%	
Overload capability (at 25°C ambient temperature)	125% - 10 minutes, 150% - 1 minute	
Short-circuit characteristic	Electronic short-circuit protection, current limit to: 2.7 times In for 200 ms between phase and phase 4.0 times In for 200 ms between phase and N/PE	
MTCB clearance capability (selectivity)	20% In within 5-10ms (with MTCB class C or magn. trip at max. 10In)	
Crest factor	>3:1	

BYPASS

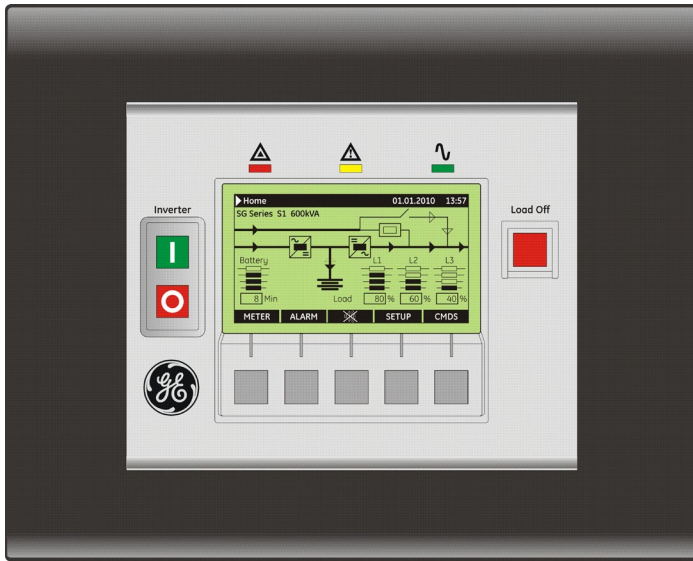
Input connection	Separate for rectifier and bypass input or common to the rectifier input (option)		
Primary components	- Static switch (SCR) on bypass		
	- Electromechanic contactors (backfeed protection) on bypass and inverter		
Voltage limits for inverter/bypass load transfers	- 2 manual switches for maintenance bypass		
	+/- 10% (adjustable)		
Overload on bypass	Up to 125%: continuous	Up to 150%: 30 min.	45 times In for 10 ms, non repetitive
	Up to 175%: 10 min.	Up to 200%: 5 min.	

INTERFACING

6 programmable signalling voltage-free contacts (available on block terminals)	- Standard information for easy integration and signalling		
Connector RJ45	- 27 user settable signals		
Input signals	Standard		
	- EMERGENCY POWER OFF (n/c contact, customer supplied)		
	- GEN ON (emergency power supply ON, n/o contact, customer supplied)		
	- 1 auxiliary signal, with settable functionality		

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

FRONT PANEL CONTROLS, SIGNALS AND ALARMS



LCD_SG_600_S1_Front_GE_01GB

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

COMMUNICATION:

1. Additional Customer Interface Card
2. 3-ph SNMP/WEB plug-in adapter
3. GE Power Diagnostics
4. GE Data Protection
5. RSB - Remote Signalling Box (cable for connection to UPS not included)

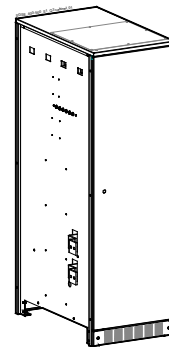
BUILT-IN UPS OPTIONS:

1. RPA kit (Redundant Parallel Architecture)
2. Kit for common input mains
3. Auxiliary Power Supply (APS) 24Vdc
4. Surge suppressors
5. 11th harmonic filter

OPTIONS IN ADDITIONAL CABINETS:

1. Battery isolator switch Q3 cabinet
2. Top entry cable cabinet
3. Battery isolator switch Q3 and Top entry cable cabinet

Dimensions (WxDxH):
570 x 950 x 1900mm



EXTERNAL ACCESSORIES:

- | | |
|--|-----------------------|
| 1. ISM - Intelligent Synchronization Module | 350mm x 190mm x 584mm |
| 2. Parallel output cabinet with centralized maintenance bypass | On request |
| 3. Battery fuses box | On request |

TECHNICAL DATA

SG Series 600

Dimensions and weights SG Series 600	
Dimensions UPS standard (WxDxH):	1950 x 950 x 1900 mm
Weight UPS standard:	2800 kg
Floor loading UPS standard:	1512 kg/m ²

UPS BLOCK DIAGRAM, PROTECTIONS AND CABLE SECTIONS

Common input Rectifier & Bypass

Separated input Rectifier & Bypass

1 = Rectifier 3 = Electronic Bypass 5 = Mains 7 = External Battery

2 = Inverter 4 = Manual Bypass 6 = Load F4 = External Battery Fuses

Protections and cable sections								
Protections for mains voltages 380V, 400V, 415V Battery voltage 440Vdc				Cable sections recommended by European Standards Alternatively, local standards to be respected				
kVA	Fuses gL/gG or equivalent MTCB				Cable sections (mm ²)			
	F1	F2	F3	F4	A	B	C & E & D	K
600	3x1000A	3x1000A	3x1000A	2x1500A	3(3x185)+2x120	4(3x185)	4(3x185)+2x120	2(4x240)+2x240

Cable sections recommended in Switzerland (mm ²)				
kVA	A	B	C & E & D	K
600	3(4x150)+2x150	4(4x150)	4(4x150)+2x150	2(4x240)+2x240

F1, F2, F3, F4, A, B, C, D, E, (K): supplied by customer
K: supplied by GE only with battery
F4 and Q3: 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 60364, IEC 61140, IEC 61557).