

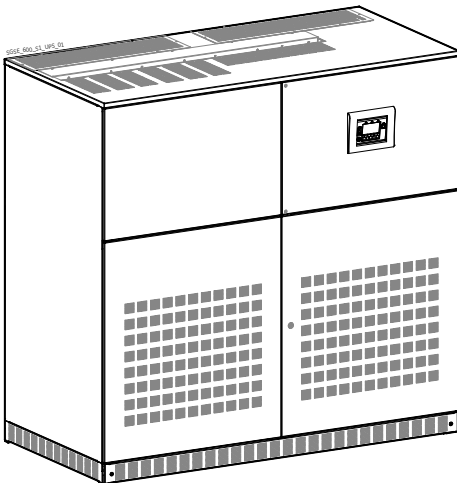
GE  
Digital Energy

# 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	<b>VFI, double conversion with integrated transformer</b>		
Nominal output apparent power from PF=0.6 lag. to 0.8 lag.	<b>KVA</b>		<b>600</b>
Nominal output active power from PF=0.8 lag. to 0.9 lead.	<b>kW</b>		<b>480</b>
Overall efficiency at 100% load PF=0.8 lag. in VFI mode			<b>93.0%</b>
Overall efficiency at 75% load PF=0.8 lag. in VFI mode	<b>% (+/- 0.2%)</b>		<b>93.6%</b>
Overall efficiency at 50% load PF=0.8 lag. in VFI mode			<b>93.7%</b>
Overall efficiency at 100% load in SEM mode	<b>% (+/- 0.2%)</b>		<b>98.4%</b>
Heat dissipation at 100% load in VFI mode, PF=0.8 lag. & charged battery	<b>kW</b>		<b>36.13</b>
Cooling air (25°C ÷ 30°C)	<b>m³/h</b>		<b>10'540</b>
Audible noise level	<b>dB(A)</b>		<b>75</b>
Battery type	<b>Valve regulated lead-acid (VRLA), vented lead-acid, NiCd</b>		
Operating temperature range	<b>UPS: 0°C ÷ 35°C</b>		
Storage temperature range	<b>UPS: -25°C ÷ +55°C</b>	<b>Battery: -20°C ÷ +40°C (higher the temperature, shorter the storage time of the battery)</b>	
Relative Humidity	<b>Max. 95% (non-condensing)</b>		
Max. altitude without power derating	<b>1000m</b>		
Power derating (according to EN/IEC 62040-3)	<b>1500m: -5%</b>	<b>/ 2000m: -9%</b>	<b>/ 2500m: -14%</b> / <b>3000m: -18%</b>
Protection degree	<b>IP 20 (IEC 60529)</b>		
Standards	<b>EN/IEC 62040, CE marking</b>		
EMC (Electromagnetic Compatibility)	<b>EN/IEC 62040-2</b>		
Electrostatic discharge immunity	<b>4kV contact / 8kV air discharge</b>		
Internal protection	<b>All live parts shrouded</b>		
Transport	<b>Cabinet suitable for handling by forklift</b>		
Colour	<b>RAL 9003 (white)</b>		
Installation	<b>Can be positioned against a wall and floor fixed</b>		
Service access	<b>Front and top access only</b>		
External cable connections	<b>Bottom at front of the cabinet (top as option)</b>		
Cooling	<b>Enforced ventilation with fan failure detection</b>		
Paralleling (RPA version)	<b>Up to 6 units parallelable for redundancy or capacity in RPA configuration (optional).</b>		

**RECTIFIER**

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

## 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		
	NiCd at 1.41V/cell, no boostcharge: 284÷309 cells		
Min. discharge voltage (programmable)	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		
<b>Battery power data</b>	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 50091) .....	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 inverter input or common to the rectifier input (option)		
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	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 - 27 user settable signals		
Connector RJ45	Standard		
Input signals	- 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)

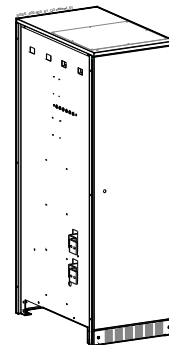
### BUILT-IN UPS OPTIONS:

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

## 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 <sup>2</sup> )			
	F1	F2	F3	F4	A	B	C & E & D	K
<b>600</b>	3x1000A	3x1000A	3x1000A	2x1500A	3(3x185)+2x120	4(3x185)	4(3x185)+2x120	2(4x240)+2x240

Cable sections recommended in Switzerland (mm <sup>2</sup> )				
kVA	A	B	C & E & D	K
<b>600</b>	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).