

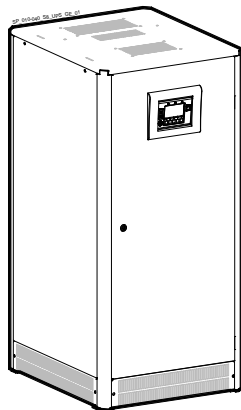
GE Digital Energy  
Power Quality

# Technical Data Sheets

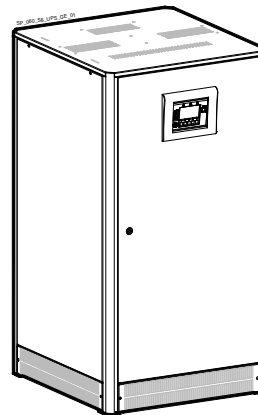
Digital Energy™ Uninterruptible Power Supply

*SitePro 10 – 15 – 20 – 30 – 40 – 60 kVA*

400 Vac CE / Series 8



*SitePro 10 – 15 – 20 – 30 – 40 kVA*



*SitePro 60 kVA*

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GE imagination at work



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Revision	Concern	Date
2.0	GE Digital Energy / Power Quality	01.09.2008
3.0	ECN 1257 (Short-circuit characteristic)	15.12.2008

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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, double conversion with integrated transformer						
Nominal output power at PF=0.6 ... 1* (10-40) / 0.9 (60) lag.	kVA	10	15	20	30	40*	60
Overall efficiency in VFI mode	%	Up to 91.7					Up to 91.9
Overall efficiency in SEM mode	%	Up to 97.8					Up to 96.8
Heat dissipation at 100% load in VFI mode, PF=0.8 lag. and charged battery	kW	1.15	1.61	2.14	2.73	3.36	4.92
Cooling air (25°C ÷ 30°C)	m <sup>3</sup> /h	340	470	625	800	980	1440
Audible noise level	dB(A)	55	58	58	60	63	63
*) 40 kVA at PF=1.0 only with 20°C ÷ 25°C ambient temperature							
Battery type	Valve regulated lead-acid (VRLA)-standard, Vented lead-acid, wet battery and NiCd						
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 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 / 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						
Access	Access required at front and right side of the cabinet						
External cable connections	Bottom-front (standard), top side (optional)						
Cooling	Forced bottom to top by internal blowers						
Paralleling (RPA version)	Up to 8 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: 320V ÷ 460V (320V only for 405 VDC battery floating)						
Other input voltages	On request						
Input frequency	50/60 Hz +/-10% (45 ÷ 66 Hz)						
Power factor (with 5 <sup>th</sup> harmonic filter)	0,92						
Input current THD at nominal load (with 5 <sup>th</sup> harmonic filter)	8%						
Inrush current	Limited by soft-start circuit						
Power walk-in	>30 seconds						
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						
<b>Input power data</b>	kVA	10	15	20	30	40	60
Input power at inverter nominal load and charged battery	at PF=0.8 lag.	9.2	13.6	18.2	26.7	35.4	52.9
	at PF=1 (10-40) / 0.9 (60) lag.	11.5	17.0	22.7	33.4	44.2	59.5
Max. input power at inverter nominal load and max. battery recharge current (programmable)	kW	12.7	18.6	24.8	36.5	46.9	66.2
Max. battery charging current (programmable) at the beginning of battery recharge at nominal load	at PF=0.8 lag.	9	13	17	25	33	33
	at PF=1 (10-40) / 0.9 (60) lag.	3	4	6	8	11	17

<b>BATTERY</b>							
Battery type	Valve regulated lead-acid (VRLA)-standard, Vented lead-acid, wet battery and NiCd						
Number of 12 V blocks, 6 cells/block	30 to 32 (30 blocks can be mounted in the UPS cabinet 10-40 kVA)						
Float voltage at 20°C	405 ÷ 436V (dependent on the number of blocks)						
Min. discharge voltage (programmable)	306V						
Recharge time	<5 hours up to 90% of battery capacity						
"Battery to earth" fault detection	Standard						
Automatic and manual battery test	Standard						
Automatic battery contactor	Standard (only for SitePro 60 kVA)						
<b>Battery power data</b>	<b>kVA</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>60</b>
Standard autonomy time at 100% load and PF=0.8 lag.	Min.	8	10	6	6	6	10
Standard autonomy time at 50% load and PF=0.8 lag.	Min.	20	26	16	15	16	25
Standard autonomy time at 100% typical computer load	Min.	10	12	8	8	8	12
DC power at full load and PF=0.8 lag.	kW	8.6	12.9	17.2	25.8	34.4	51.6
DC power at full load and PF=0.9 lag.	kW	9.7	14.5	19.4	29.1	38.7	58.1
DC power at full load and PF=1.0 lag.	kW	10.8	16.1	21.5	32.3	43.0	-
DC power at full typical computer load (PF=0.66 lag.)	kW	7.1	10.7	14.2	21.3	28.4	42.6
Matching battery cabinets	See table on page 3 and 4						

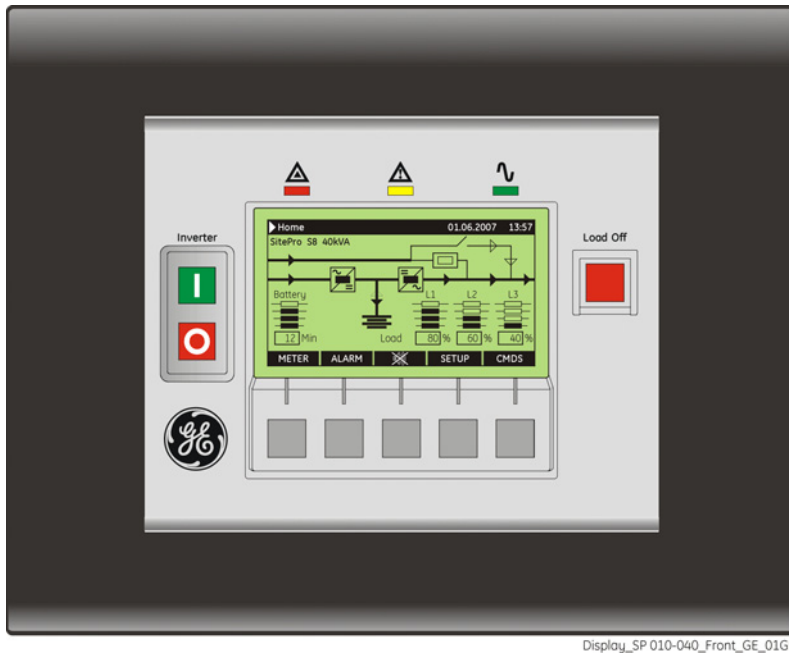
<b>INVERTER</b>	
Nominal output power at PF=0.6 ... 1.0 lag. (10-40) / 0.9 (60).	10 - 15 - 20 - 30 - 40 - 60 kVA
Nominal output voltage (on site programmable)	3 x 380V / 400V / 415V + N
Inverter bridge	SVM (Space Vector Modulation) and IGBT technology
Output transform (for galvanic separation)	Standard
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% .....	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 .....	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: 2.7 times I <sub>n</sub> for 200 ms between phase and phase 4.0 times I <sub>n</sub> for 200 ms between phase and N/PE
Protection clearance capability (selectivity)	20% I <sub>n</sub> within 5-10 ms (with MTCB class C)
Crest factor	>3:1

<b>BYPASS</b>	
Input connection	Separate (dual input-recommended) or common to the rectifier input
Primary components	- Static switch (SCR) on bypass - Electromechanic contactors (backfeed protection) - 2 manual switches for maintenance bypass
Voltage limits for inverter/bypass load transfers	+/- 10% (adjustable)
Overload on bypass	200% for 5 minutes and 35 times I <sub>n</sub> for 10 ms, non repetitive

<b>INTERFACING</b>	
6 programmable signalling voltage-free contacts (available on Delta and block terminals)	- Standard information for easy integration and signalling - 27 user settable signals
Serial channel RS232 (on Delta 9 pin connector)	Standard
Input signals	- EPO - Emergency Power Off (n/c contact, customer supplied) - GEN ON (emergency power supply ON, n/o contact, customer supplied) - 2 auxiliary signals with settable functionality
Auxiliary power supply	- 24 VDC auxiliary power supply (optional)

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

## CONTROL PANEL



Display\_SP 010-040\_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

### BUILT-IN UPS OPTIONS:

	10 kVA	15 kVA	20 kVA	30 kVA	40 kVA	60 kVA
1. RPA kit	●	●	●	●	●	●
2. 24VDC Auxiliary Power Supply	●	●	●	●	●	●
3. Battery contactor	●	●	●	●	●	Standard
4. Rectifier and/or bypass transformer	●*	●*	●*	●*	●*	●**
5. 5 <sup>th</sup> harmonic filter	●*	●*	●*	●*	●*	●**

\*) Mounted in UPS cabinet battery cavity, instead of battery

\*\*) In additional cabinet

### COMMUNICATION:

1. Advanced SNMP Card
2. GE Power Diagnostics
3. GE Data Protection
4. Modbus RTU Interface
5. RSB - Remote Signalling Box (cable for connection to UPS not included)
6. RMS - Remote Monitoring System (cable for connection to UPS not included)

### OPTIONS IN ADDITIONAL CABINETS:

Dimensions (WxDxH):      ❶ 500x800x1450mm      ❷ 750x800x1450mm      ❸ 1100x800x1450mm      ❹ 100x800x1450mm

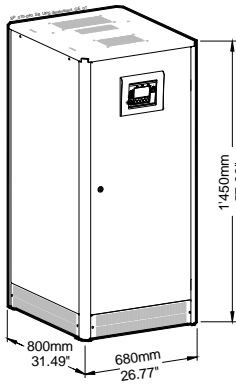
	10 kVA	15 kVA	20 kVA	30 kVA	40 kVA	60 kVA
1. Rectifier and/or bypass transformer						❶
2. 5 <sup>th</sup> harmonic filter						❶
3. 12 pulse rectifier with or without galvanic separation					❶	❶
4. Special voltages: input and/or output				On request		
5. Centralized maintenance bypass for RPA configuration				On request		
6. Top cable entry box				❹		
7. Empty battery cabinets	❶	❷	❸			

### External accessories:

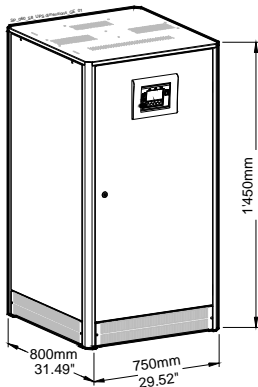
1. External battery fuses box      On request

## TECHNICAL DATA

### SitePro 10 – 40 kVA



### SitePro 60 kVA



Battery table		Width			Weight				
UPS (kVA)	Autonom. time (Min.) ◆	Battery capacity (Ah)	Battery cabinet (mm)	Total width (mm)	UPS (Kg)	Battery (Kg) ●	Battery + cabinet (Kg) ●	Total (Kg) ●	Floor loading (Kg/m2) ▲
10	8	10	in UPS	680	285	114÷123	-	399÷408	750
	15	17	in UPS	680		183÷195	-	468÷480	883
	30	24	in UPS	680		264÷270	-	549÷555	1021
	43	33	in UPS	680		360	-	645	1186
	50	38	500	1180		-	498÷560	783÷845	1400 ●
	100	65	750	1430		-	760÷878	1045÷1163	1464 ●
15	120	2x38	1110	1780	285	-	1006÷1130	1231÷1355	1285 ●
	10	17	in UPS	680		183÷195	-	468÷480	883
	15	24	in UPS	680		264÷270	-	549÷555	1021
	24	33	in UPS	680		360	-	645	1186
	30	38	500	1180		-	498÷560	783÷845	1400 ●
	60	65	750	1430		-	760÷878	1045÷1163	1464 ●
20	70	2x38	1100	1780	285	-	1006÷1130	1231÷1355	1285 ●
	6	17	in UPS	680		183÷195	-	468÷480	883
	10	24	in UPS	680		264÷270	-	549÷555	1021
	16	33	in UPS	680		360	-	645	1186
	20	38	500	1180		-	498÷560	783÷845	1400 ●
	40	65	750	1430		-	760÷878	1045÷1163	1464 ●
30	50	2x38	1100	1780	285	-	1006÷1130	1231÷1355	1285 ●
	6	24	in UPS	680		264÷270	-	604÷610	1122
	10	33	in UPS	680		360	-	700	1287
	12	38	500	1180		-	498÷560	838÷900	1400 ●
	25	65	750	1430		-	760÷878	1100÷1218	1464 ●
	30	2x38	1100	1780		-	1006÷1130	1346÷1470	1285 ●
40	6	33	in UPS	680	340	360	-	700	1287
	17	65	750	1430		-	760÷878	1100÷1218	1464 ●
	20	2x38	1100	1780		-	1006÷1130	1346÷1470	1285 ●
60	10	65	750	1500	475	-	760÷878	1235÷1353	1464 ●
	12	2x38	1100	1850		-	1006÷1130	1481÷1605	1884 ●

◆ At full load and PF=0.8 lag.

● Depending on manufacturer of the battery

▲ Valid for the max. possible weight

● Max. value for battery cabinet only

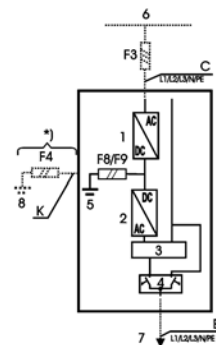
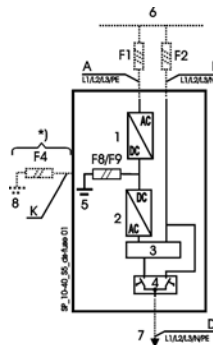
## UPS BLOCK DIAGRAM, PROTECTIONS AND CABLE SECTIONS

- 1 Rectifier
- 2 Inverter
- 3 Electronic Bypass
- 4 Manual Bypass
- 5 Internal Battery (only up to 40 kVA)
- 6 Mains
- 7 Load
- 8 External Battery
- F4 External Battery Fuses
- F8/9 Internal Battery Fuses (only up to 40 kVA)

\*) Alternatively external battery + fuses

Separated input Rectifier & Bypass (recommended)

Common input Rectifier & Bypass



### PROTECTIONS AND CABLE SECTIONS

Protections for mains voltages  
3x380/220V, 3x400/230V, 3x415/240V

Fuses AgL or equivalent MTCB

kVA	Fuses AgL or equivalent MTCB				Cable sections recommended by European Standards In (...) only for Switzerland Alternatively, local standards to be respected Cable sections (mm <sup>2</sup> )				
	F1	F2	F3	F4, F8/F9	A	B	C / E	D	K
10	3 x 25A	3 x 20A	3 x 25A	2 x 40A	4x4 (4x6)	4x2,5 (4x4)	5x4 (5x6)	5x2,5 (5x4)	3x6 (3x10)
15	3 x 40A	3 x 25A	3 x 40A	2 x 63A	4x6 (4x10)	4x4 (4x6)	5x6 (5x10)	5x4 (5x6)	3x10 (3x16)
20	3 x 50A	3 x 35A	3 x 50A	2 x 63A	4x10 (4x16)	4x6 (4x10)	5x10 (5x16)	5x6 (5x10)	3x10 (3x16)
30	3 x 63A	3 x 50	3 x 63A	2 x 100A	4x10 (4x16)	4x10 (4x16)	5x10 (5x16)	5x10 (5x16)	2x25+16 (2x35+25)
40	3 x 80A	3 x 63A	3 x 80A	2 x 100A	4x16 (3x25+16)	4x10 (4x16)	5x16 (4x25+16)	5x10 (5x16)	2x25+16 (2x35+25)
60	3 x 125A	3 x 100A	3 x 125A	2 x 160A	3x35+25 (3x50+25)	4x25 (4x35)	4x35+25 (4x50+25)	4x25+16 (4x35+25)	2x50+25 (2x70+35)

F1, F2, F3, A, B, C, D, E: supplied by customer. 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).