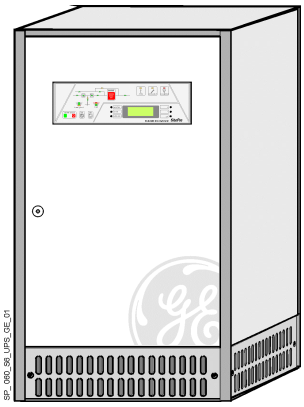
GE Consumer & Industrial
Power Protection

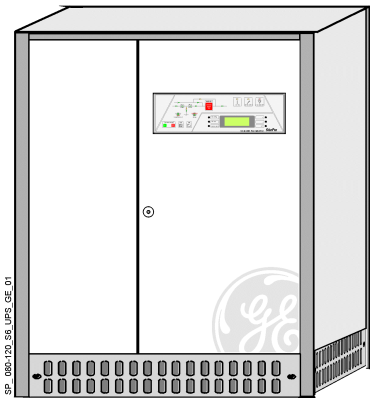
# Technical Data Sheets

## Digital Energy™ Uninterruptible Power Supply

### *SitePro 60 – 80 – 100 – 120 kVA*

### 400 VAC CE – Series 6



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GE imagination at work

CE

Certified
Quality System
SQS
ISO 9001 / EN 29001
Reg. No. 10448

| GENERAL DATA | | | | | |
|---|---|---|---|---|---|
| Topology | **VFI, double conversion with integrated transformer** | | | | |
| Nominal output power at PF=0.6 ... 0.9 lag. | **kVA** | **60** | **80** | **100** | **120** |
| Overall efficiency in VFI mode | **%** | **Up to 91.9** | | | |
| Overall efficiency in SEM mode | **%** | **Up to 98.3** | | | |
| Heat dissipation at 100% load in VFI mode, PF=0.8 lag. and charged battery | **kW** | **4.92** | **6.33** | **8.30** | **9.61** |
| Cooling air (25°C ÷ 30°C) | **$m^3/h$** | **1440** | **1850** | **2425** | **2805** |
| Audible noise level | **dB(A)** | **63** | **65** | **65** | **65** |
| Battery type | **Valve regulated lead-acid (VRLA)-standard, Vented lead-acid, wet battery and NiCd** | | | | |
| Operating temperature range | **UPS: 0°C ÷ 40°C**<br>**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<br>Power derating (according to IEC 62040-3) | **1000m**<br>**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** | | | | |
| 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**<br>**Rectifier accepted ph-ph voltage range: 320V ÷ 460V**<br>**(320V only for 405 VDC battery floating)** | | | | | |
| Other input voltages | **On request** | | | | | |
| Input frequency | **50/60 Hz +/-10% (45 ÷ 66 Hz)** | | | | | |
| Power factor | **>0.8 lag.** | | | | | |
| 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** | | | | | |
| **Input power data** | | **kVA** | **60** | **80** | **100** | **120** |
| Input power at inverter nominal load and charged battery | at PF=0.8 lag.<br>at PF=0.9 lag. | **kW** | **52.9**<br>**59.5** | **70.3**<br>**72.1** | **88.3**<br>**99.3** | **105.6**<br>**118.8** |
| Max. input power at inverter nominal load and max. battery recharge current (programmable) | | **kW** | **66.2** | **87.2** | **109.9** | **131.7** |
| Max. battery charging current (programmable) at the beginning of battery recharge at nominal load | at PF=0.8 lag.<br>at PF=0.9 lag. | **A** | **33**<br>**17** | **43**<br>**22** | **54**<br>**27** | **64**<br>**32** |

| BATTERY | | | | | |
|---|---|---|---|---|---|
| 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, placed in external cabinets** | | | | |
| Float voltage at 20°C | **405 ÷ 436V (dependent on the number of blocks)** | | | | |
| Min. discharge voltage (programmable) | **1.65V / cell** | | | | |
| 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** | | | | |
| **Battery power data** | **kVA** | **60** | **80** | **100** | **120** |
| DC power at full load and PF=0.8 lag. | **kW** | **51.6** | **68.8** | **86.0** | **103.2** |
| DC power at full load and PF=0.9 lag. | **kW** | **58.1** | **77.4** | **96.8** | **116.1** |
| DC power at full typical computer load (PF=0.66 lag.) | **kW** | **42.6** | **56.8** | **71.0** | **85.2** |
| Matching battery cabinets | **See optional features on page 3** | | | | |

| INVERTER | |
|---|---|
| Nominal output power at PF=0.6 ... 0.9 lag. | **60 – 80 – 100– 120 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 2.2 times In for 200 ms** |
| Protection clearance capability (selectivity) | **20% In within 5-10 ms (with MTCB class C)** |
| Crest factor | **>3:1** |

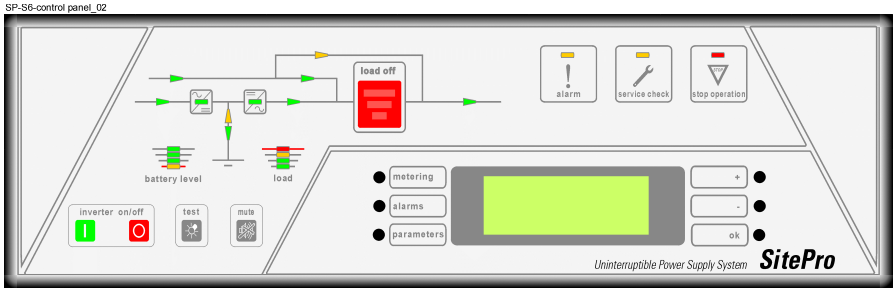
| BYPASS | |
|---|---|
| Input connection | **Separate (dual input-recommended) or common to the rectifier input** |
| Primary components | **- Static switch (SCR) on bypass**<br>**- Electromechanic contactors (backfeed protection)**<br>**- 2 manual switches for maintenance bypass** |
| Voltage limits for inverter/bypass load transfers | **+/- 10% (adjustable)** |
| Overload on bypass | **200% for 5 minutes and 1000% for 10 ms, non repetitive** |

| INTERFACING | |
|---|---|
| 6 programmable signalling voltage-free contacts (available on Delta and block terminals) | **- Standard information for easy integration and signalling**<br>**- 27 user settable signals** |
| Serial channel RS232 (on Delta 9 pin connector) | **Standard** |
| Input signals | **- EPO - Emergency Power Off** (n/c contact, customer supplied)<br>**- GEN ON** (emergency power supply ON, n/o contact, customer supplied)<br>**- 2 auxiliary signals with settable functionality** |
| Auxiliary power supply | **- 230 VAC single phase outlet (EU type)**<br>**- 24 VDC auxiliary power supply (optional)** |

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

## FRONT PANEL CONTROLS, SIGNALS AND ALARMS

SP-S6-control panel_02




- Synoptic diagram of the UPS: represents the operational status with integrated LEDs and power flow indicators.
- SERVICE CHECK (LED): turns on when maintenance is due or the manual bypass is active.
- COMMON ALARM: visual (LED) and audible signal (buzzer), active when an alarm condition is present.
- STOP OPERATION: visual (LED) and audible signal (buzzer) active approx. 3 minutes before complete and automatic load disconnection (due to an overtemperature condition or fully discharged battery).
- LOAD LEVEL, BATTERY AUTONOMY: status indicator bar graphs.
- MONITORING SYSTEM with multi language LCD display and control keys.
- Push-buttons:
  - INVERTER ON
  - INVERTER OFF
  - MUTE
  - LAMP TEST
  - LOAD OFF (key with protective cover): to be pressed for emergency load disconnection.

## OPTIONS

**BUILT-IN UPS OPTIONS:**

1. RPA kit
2. 24 VDC Auxiliary Power Supply

**COMMUNICATION:**

1. Advanced SNMP Card
2. JUMP software suite
3. IRIS service
4. Modbus RTU Interface
5. RMS - Remote Monitoring System (Cable for connection to UPS not included)
6. RSB - Remote Signalling Box (Cable for connection to UPS not included)

**OPTIONS IN ADDITIONAL CABINETS:**

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

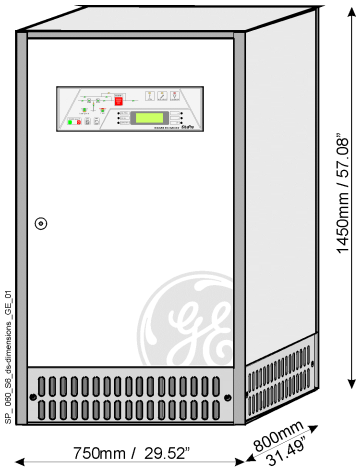
| | |
|---|---|
| 1. Rectifier and/or bypass transformer | ❶ |
| 2. 5th harmonic filter | ❶ |
| 3. 12 pulse rectifier with or without galvanic separation | ❶ |
| 4. Distortion Control Unit (DCU) with dynamic filtering of 5th, 7th, 11th and 13th harmonics | ❶ |
| 5. Distortion Control Unit (DCU) "Light" with filtering of 11th and 13th harmonics (For 80-100-120 kVA only in combination with 12 pulse rectifier) | ❶ |
| 6. Special voltages: input and/or output | On request |
| 7. Centralized maintenance bypass for RPA configuration | On request |
| 8. Empty battery cabinets | ❶ ❷ ❸ |
| 9. Top cable entry box | ❹ |

**External accessories:**

| | |
|---|---|
| 1. External battery fuses box | On request |

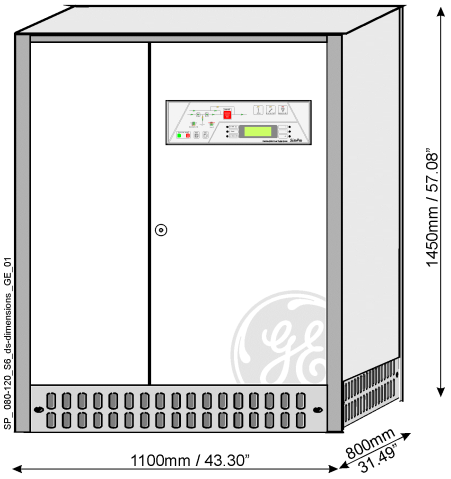
## TECHNICAL DATA

*SitePro 60 kVA*




| UPS weight | | Floor loading |
|---|---|---|
| **60 kVA** | 475 Kg | 792 Kg/m² |
| **80 kVA** | 620 Kg | 705 Kg/m² |
| **100 kVA** | 675 Kg | 767 Kg/m² |
| **120 kVA** | 715 Kg | 813 Kg/m² |

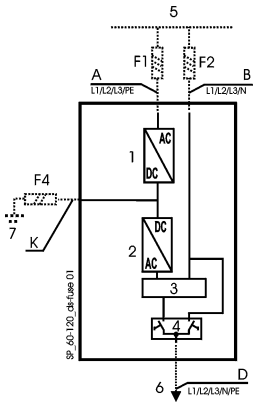
*SitePro 80 – 100 – 120 kVA*



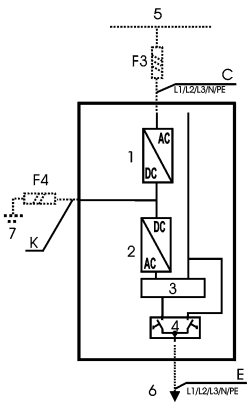

## UPS BLOCK DIAGRAM, PROTECTIONS AND CABLE SECTIONS

| | |
|---|---|
| **1** | Rectifier |
| **2** | Inverter |
| **3** | Electronic Bypass |
| **4** | Manual Bypass |
| **5** | Mains |
| **6** | Load |
| **7** | External Battery |
| **F4** | External Battery Fuses |

Separated input Rectifier & Bypass (recommended)




Common input Rectifier & Bypass




**Protections and cable sections**

| kVA | Protections for mains voltages 3x380/220V, 3x400/230V, 3x415/240V<br>Fuses AgL or equivalent MTCB<br>F1 | F2 | F3 | F4 (battery) | Cable sections A, B, C, D, E, K Recommended by European Standards Alternatively, local standards to be respected<br>Cable sections (mm²)<br>A | B | C / E | D | K |
|---|---|---|---|---|---|---|---|---|---|
| **60** | 3 x 125 A | 3 x 100 A | 3 x 125 A | 2 x 160 A | 3 x 35 + 25 | 4 x 25 | 4 x 35 + 25 | 4 x 25 + 16 | 2 x 50 + 25 |
| **80** | 3 x 160 A | 3 x 125 A | 3 x 160 A | 2 x 250 A | 3 x 50 + 25 | 4 x 35 | 4 x 50 + 25 | 4 x 35 + 25 | 2 x 120 + 70 |
| **100** | 3 x 200 A | 3 x 160 A | 3 x 200 A | 2 x 315 A | 3 x 70 + 35 | 4 x 50 | 4 x 70 + 35 | 4 x 50 + 25 | 2 x 150 + 95 |
| **120** | 3 x 250 A | 3 x 200 A | 3 x 250 A | 2 x 355 A | 3 x 120 + 70 | 4 x 70 | 4 x 120 + 70 | 4 x 70 + 35 | 2 x 185 + 95 |

**SEV/ASE cable sections recommended in Switzerland (mm²)**

| kVA | A | B | C / E | D | K |
|---|---|---|---|---|---|
| **60** | 3 x 50 + 25 | 4 x 35 | 4 x 50 + 25 | 4 x 35 + 25 | 2 x 70 + 35 |
| **80** | 3 x 70 + 35 | 4 x 50 | 4 x 70 + 35 | 4 x 50 + 25 | 2 x 150 + 95 |
| **100** | 3 x 95 + 50 | 4 x 70 | 4 x 95 + 50 | 4 x 70 + 35 | 2 x 185 + 95 |
| **120** | 3 x 150 + 95 | 4 x 95 | 4 x 150 + 95 | 4 x 95 + 50 | 2 x 240 + 120 |

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

F4: can be supplied by *GE*