

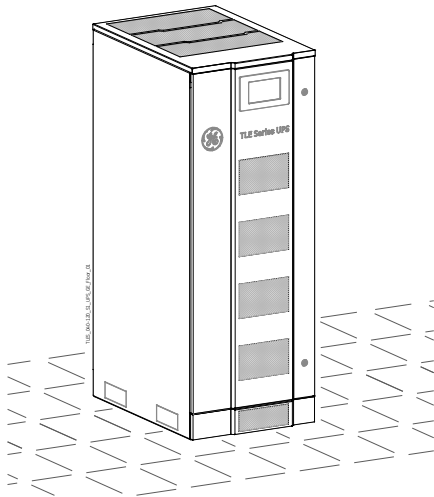
GE  
Critical Power

# Technical Data Sheet

Uninterruptible Power Supply

*TLE Scalable Series 40 - 120*

40 - 60 - 80 - 100 - 120 kW - 400 Vac CE - S1



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imagination at work



Model: **TLE Scalable Series 40 - 120 CE S1**  
*TLE Scalable Series 120/40 CE S1*  
*TLE Scalable Series 120/60 CE S1*  
*TLE Scalable Series 120/80 CE S1*  
*TLE Scalable Series 120/100 CE S1*  
*TLE Scalable Series 120/120 CE S1*

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| <b>Up-dating</b> |  |            |
|------------------|--|------------|
| Revision         | Concern  | Date       |
| 2.0              | ECN 2499 (3-ph SNMP/MODBUS/WEB plug-in Adapter) & Line Protections | 08.11.2016 |
| 3.0              | ECN 2646 (IM0305 - UVR Control Board)                              | 06.06.2017 |

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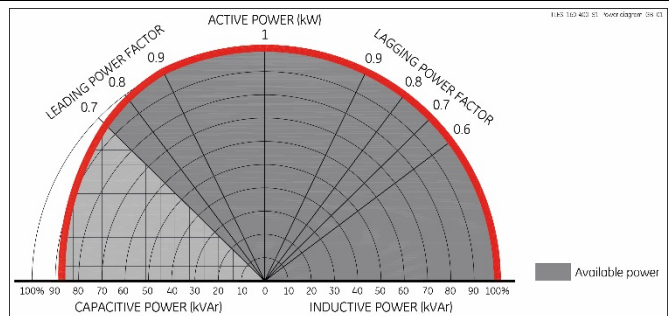
| GENERAL DATA   |  |            |                     |                     |                     |                     |                     |
|--|--|------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Topology   | VFI, double conversion   |            |                     |                     |                     |                     |                     |
| Nominal output apparent power from PF=0.6 lag. to PF=0.9 lead. | KVA  | 40         | 60                  | 80                  | 100                 | 120                 |                     |
| Nominal output active power at PF=1                            | kW   | 40         | 60                  | 80                  | 100                 | 120                 |                     |
| Efficiency at 100% load PF=0.9 lag. / 1 in VFI & PF=1 in SEM   | %  | VFI<br>SEM | 95.1 / 95.0<br>98.6 | 95.2 / 95.1<br>98.8 | 95.3 / 95.2<br>98.8 | 95.3 / 95.2<br>98.9 | 95.4 / 95.3<br>98.9 |
| Efficiency at 75% load PF=0.9 lag. / 1 in VFI & PF=1 in SEM    | %  | VFI<br>SEM | 95.2 / 95.2<br>98.3 | 95.3 / 95.3<br>98.4 | 95.3 / 95.3<br>98.5 | 95.4 / 95.3<br>98.6 | 95.4 / 95.3<br>98.7 |
| Efficiency at 50% load PF=0.9 lag. / 1 in VFI & PF=1 in SEM    | %  | VFI<br>SEM | 95.0 / 95.0<br>97.7 | 95.2 / 95.1<br>98.0 | 95.1 / 95.1<br>98.2 | 95.3 / 95.2<br>98.3 | 95.3 / 95.2<br>98.4 |
| Audible noise level  | dB(A)  | 62         |                     |                     |                     |                     |                     |
| Battery type   | Valve regulated lead-acid (VRLA), vented lead-acid, NiCd   |            |                     |                     |                     |                     |                     |
| Operating temperature range                                    | UPS: 0°C ÷ 40°C (up to 50°C subjected to conditions)   |            |                     |                     |                     |                     |                     |
| 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: -2.5% / 2000m: -5% / 2500m: -7.5% / 3000m: -10%   |            |                     |                     |                     |                     |                     |
| Protection degree  | IP 30 (IEC 60529)  |            |                     |                     |                     |                     |                     |
| Standards  | EN/IEC 62040, CE marking   |            |                     |                     |                     |                     |                     |
| EMC (Electromagnetic Compatibility)                            | EN/IEC 62040-2 Category C3 (Category C2 as option)   |            |                     |                     |                     |                     |                     |
| Electrostatic discharge immunity                               | 4kV contact / 8kV air discharge  |            |                     |                     |                     |                     |                     |
| Internal protection  | All internal live parts shrouded   |            |                     |                     |                     |                     |                     |
| Transport  | On pallet- Cabinet suitable for handling by forklift   |            |                     |                     |                     |                     |                     |
| Colour   | RAL 9005 (black)   |            |                     |                     |                     |                     |                     |
| Installation   | Can be positioned against a wall and floor fixed   |            |                     |                     |                     |                     |                     |
| Service access   | Front and top access only  |            |                     |                     |                     |                     |                     |
| External cable connections                                     | Bottom at the front of the cabinet   |            |                     |                     |                     |                     |                     |
| Cooling  | Enforced ventilation with fan failure detection  |            |                     |                     |                     |                     |                     |
| Paralleling (RPA version)                                      | Up to 6 units for redundancy or capacity in RPA configuration (option)   |            |                     |                     |                     |                     |                     |
| SEM Operation Mode   | Standard   |            |                     |                     |                     |                     |                     |

| RECTIFIER   |   |     |      |      |      |       |       |
|---|---|-----|------|------|------|-------|-------|
| Rectifier bridge  | Three phase, IGBT rectifier, overtemperature protection   |     |      |      |      |       |       |
| Standard input voltage  | Nominal: 3 x 400V + N      Programmable: 3 x 380 / 415V + N<br>Rectifier accepted ph-ph voltage range: 340V ÷ 460V (wider voltages subject to de-rated loads) |     |      |      |      |       |       |
| Other input voltages  | On request  |     |      |      |      |       |       |
| Input frequency   | 50/60 Hz +/-10% (45 ÷ 66 Hz)  |     |      |      |      |       |       |
| Power factor  | 0.99  |     |      |      |      |       |       |
| Input current THD   | <3%   |     |      |      |      |       |       |
| Inrush current  | Limited by soft-start circuit   |     |      |      |      |       |       |
| Power walk-in   | 15 seconds (programmable)   |     |      |      |      |       |       |
| Output voltage tolerance  | +/- 1%  |     |      |      |      |       |       |
| Battery voltage ripple  | <1%   |     |      |      |      |       |       |
| Battery 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  |     |      |      |      |       |       |
| <b>Input power data</b>   |   | kVA | 40   | 60   | 80   | 100   | 120   |
| Input power at inverter nominal load and charged battery  | at PF=0.9 lag.  | kW  | 37.9 | 56.8 | 75.7 | 94.7  | 113.6 |
|   | at PF=1.0 lag.  | kW  | 42.1 | 63.1 | 84.2 | 105.2 | 126.2 |
| Max. input power at inverter nominal load and max. battery recharge current                           |   | kW  | 46.9 | 76.0 | 95.2 | 123.8 | 130.1 |
| Standard battery charging current at the beginning of battery recharge at nominal load (programmable) |   | A   | 12   | 32   | 24   | 43    | 36    |

**UPS OUTPUT POWER CAPABILITY**

Output UPS power versus power factor for:

- Inductive loads
- Resistive loads
- Capacitive loads



| <b>BATTERY</b>   |  |                |                |                |                 |                 |
|--|--|----------------|----------------|----------------|-----------------|-----------------|
| Battery type   | Valve regulated lead-acid (VRLA)-standard, Vented lead-acid, wet battery and NiCd                  |                |                |                |                 |                 |
| Float voltage at 20°C                                    | 409V ÷ 490V (dependent on the number of cells)   |                |                |                |                 |                 |
| Number of cells  | VRLA at 2.27V/cell: 180÷216 cells<br>Vented lead acid at 2.23V/cell, no boostcharge: 195÷220 cells |                |                |                |                 |                 |
| Min. discharge voltage (programmable)                    | 297V ÷ 356V dependent on the number of cells   |                |                |                |                 |                 |
| Recharge time  | <5 hours up to 90% of battery capacity   |                |                |                |                 |                 |
| "Battery to earth" fault detection                       | Standard   |                |                |                |                 |                 |
| Automatic and manual battery test                        | Standard   |                |                |                |                 |                 |
| Common battery in parallel system                        | Up to 3 units  |                |                |                |                 |                 |
| <b>Battery power data</b>                                | <b>kVA</b>   | <b>40</b>      | <b>60</b>      | <b>80</b>      | <b>100</b>      | <b>120</b>      |
| DC power at full load & PF=0.8 lag. / PF=0.9 lag. / PF=1 | <b>kW</b>  | 33.7/37.9/42.1 | 50.5/56.8/63.1 | 67.3/75.7/84.2 | 84.2/94.7/105.2 | 101/113.6/126.2 |
| Maximum discharge current (1.65V/cell)                   | <b>Amps</b>  | 113/128/142    | 170/191/213    | 227/255/283    | 283/319/354     | 340/393/425     |
| Matching battery cabinets                                | See option features on page 5  |                |                |                |                 |                 |

| <b>INVERTER</b>  |  |
|--|--|
| Nominal output apparent power from PF=0.6 lag. to 0.9 lead.    | 40 – 60 – 80 – 100 – 120 kVA   |
| Nominal output active power                                    | 40 – 60 – 80 – 100 – 120 kW  |
| Nominal output voltage (on site programmable)                  | 3 x 380V / 400V / 415V + N   |
| Inverter bridge  | Advanced Neutral Point Clamped three level IGBT technology   |
| 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 .....                | <3%  |
| - output voltage THD for 100% non-linear load (EN 62040) ..... | <5%  |
| 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)              | 105% continuous, 110% - 10 minutes, 125% - 1 minute, 150% - 30 seconds   |
| Short-circuit characteristic                                   | 40-80-120 kW: Electronic short-circuit protection, current limit to:<br>60 kW: 2.2 times In for 100ms between phase/phase and phase/N/PE<br>100 kW: 2.9 times In for 100ms between phase/phase and phase/N/PE<br>2.6 times In for 100ms between phase/phase and phase/N/PE |
| MCCB clearance capability (selectivity)                        | 20% In within 5-10ms (with MCCB class C or magn. trip at max. 10In)  |
| Crest factor   | >3:1   |

| <b>BYPASS</b>                                     |   |
|---|---|
| Input connection                                  | Separate for rectifier and bypass input or common to the rectifier input<br>- Static switch (SCR) on bypass             |
| Primary components                                | - Electromechanic contactors (backfeed protection) on bypass and inverter<br>- 2 manual switches for maintenance bypass |
| Voltage limits for inverter/bypass load transfers | +/- 10% (adjustable)  |
| Overload on bypass                                | 190A continuous - 260A for 1 minute & 3810A for 10ms, non repetitive  |

| <b>INTERFACING</b>                                    |   |
|---|---|
| RS232 serial port                                     | Standard  |
| EPO - EMERGENCY POWER OFF                             | Standard  |
| Customer Interface board                              | Standard  |
| 6 programmable signalling voltage-free contacts ..... | - Standard information for easy integration and signalling<br>- 27 user settable signals                                  |
| (available on block terminals)                        |   |
| Input signals .....                                   | - GEN ON (emergency power supply ON, n/o contact, customer supplied)<br>- 1 auxiliary signal, with settable functionality |
| 3-ph SNMP/MODBUS/WEB plug-in Adapter                  | Standard  |
| Black Box   | Standard Intelligent Diagnostic   |

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

**FRONT PANEL CONTROLS, SIGNALS AND ALARMS**



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) Touch Screen 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 OPTIONS:**

1. Additional Customer Interface Card
2. iUPS Guard
3. GE Data Protection

**BUILT-IN UPS OPTIONS:**

1. IEMi Operation Mode
2. RPA kit (Redundant Parallel Architecture)
3. UVR Control Board (IM0305) for CB3 battery breaker box

**OPTIONS IN ADDITIONAL CABINETS:**

- |   |                         |
|---|-------------------------|
| Dimensions (W x D x H):                         | ① 790 x 865 x 1630 mm   |
| 1. Rectifier or bypass or UPS input transformer | On request              |
| 2. Special voltages: input and/or output        | On request              |
| 3. Empty battery cabinets                       | ①                       |
| 4. Battery cabinet 1x33Ah / 2x33Ah / 3x33Ah *)  | ① (see table on page 6) |

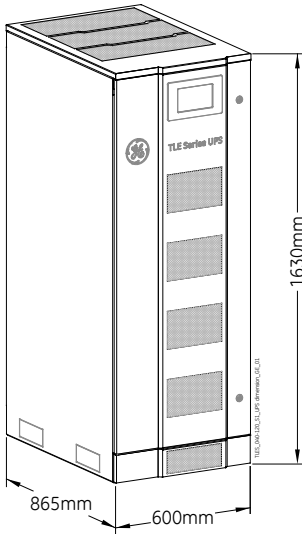
**EXTERNAL ACCESSORIES:**

- |  |            |
|--|------------|
| 1. Parallel output cabinet with centralized maintenance bypass | On request |
| 2. Battery fuse /MCCB box                                      | On request |

\*) 10 year design life batteries

**TECHNICAL DATA**

**TLE Scalable Series 40 - 120**



Dimensions  
(Width x Depth x Height)  
600 x 865 x 1630 mm

| DIMENSIONS and WEIGHTS |                             |             |                                    |
|------------------------|-----------------------------|-------------|------------------------------------|
| UPS (kW)               | Dimensions (W x D x H / mm) | UPS cabinet |                                    |
|                        |                             | Weight (Kg) | Floor loading (Kg/m <sup>2</sup> ) |
| 40                     | 600 x 865 x 1630            | 385         | 755                                |
| 60                     |                             | 450         | 883                                |
| 80                     |                             | 450         | 883                                |
| 100                    |                             | 520         | 1020                               |
| 120                    |                             | 520         | 1020                               |

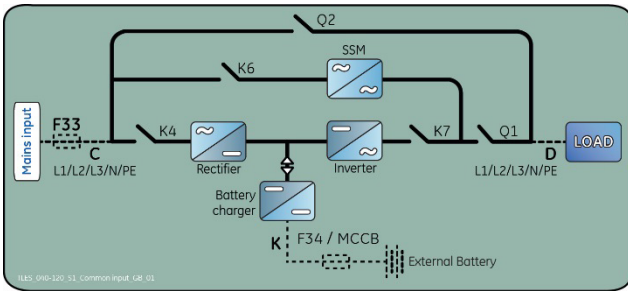
| EXTERNAL BATTERY TABLE              |           |           |                                  |
|-------------------------------------|-----------|-----------|----------------------------------|
| Battery autonomy (0.8 PF full load) |           |           | *) 10 year design life batteries |
| UPS (kW)                            | 1x33Ah *) | 2x33Ah *) | 3x33Ah *)                        |
| 40                                  | 12 min.   | 27 min.   | 45 min.                          |
| 60                                  | 6 min.    | 17 min.   | 27 min.                          |
| 80                                  | 4 min.    | 12 min.   | 20 min.                          |
| 100                                 | -         | 8 min.    | 15 min.                          |
| 120                                 | -         | 6 min.    | 12 min.                          |

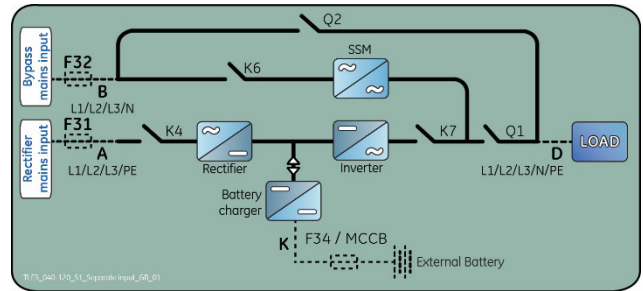
| Battery cabinet |                                 |                        |                        |
|-----------------|---------------------------------|------------------------|------------------------|
| Dimensions      | 790 x 865 x 1630 mm (W x D x H) |                        |                        |
| Weight          | 610 Kg                          | 1010 Kg                | 1410 Kg                |
| Floor loading   | 893 Kg/m <sup>2</sup>           | 1478 Kg/m <sup>2</sup> | 2064 Kg/m <sup>2</sup> |

**UPS BLOCK DIAGRAM, LINE PROTECTIONS AND CABLE SECTIONS**

**Common input Rectifier & Bypass**



**Separated input Rectifier & Bypass**



**Line protections and cable sections**

| kW  | Protections for mains voltages |          |          | Battery protection<br>(for external battery) | Cable sections (mm <sup>2</sup> ) IEC 60950-1                    |      |           |                          |
|-----|--------------------------------|----------|----------|--|--|------|-----------|--------------------------|
|     | 3 x 380V / 400V / 415 Vac      |          |          |  | Local Standard and cables installation disposal shall be applied |      |           |                          |
|     | F31                            | F32      | F33      | F34 / CB3                                    | A  | B    | C & D     | K (for external battery) |
| 40  | 3 x 63A                        | 3 x 63A  | 3 x 63A  | 2 x 125A                                     | 4x10   | 4x10 | 5x10      | 2 x 35 + 25              |
| 60  | 3 x 100A                       | 3 x 100A | 3 x 100A | 2 x 200A                                     | 3x25 + 16  | 4x25 | 4x25 + 16 | 2 x 70 + 50              |
| 80  | 3 x 125A                       | 3 x 125A | 3 x 125A | 2 x 250A                                     | 3x35 + 25  | 4x35 | 4x35 + 25 | 2 x 95 + 70              |
| 100 | 3 x 160A                       | 3 x 160A | 3 x 160A | 2 x 300A                                     | 3x50 + 25  | 4x50 | 4x50 + 25 | 2 x 150 + 120            |
| 120 | 3 x 200A                       | 3 x 200A | 3 x 200A | 2 x 355A                                     | 3x70 + 35  | 4x70 | 4x70 + 35 | 2 x 185 + 150            |

F31, F32, F33, A, B, C, D, (K): supplied by customer  
External battery protection: can be supplied by GE

**IMPORTANT NOTE !**

The UPS is designed for TN System.