

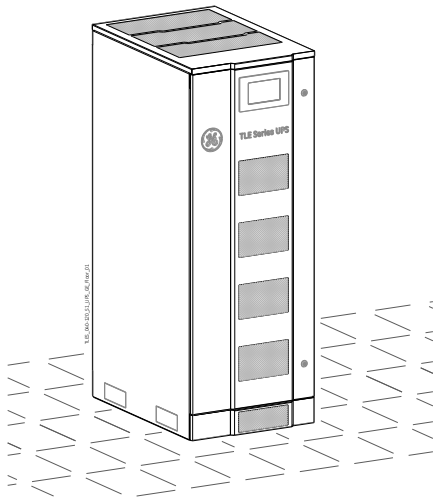
GE  
Critical Power

# Technical Data Sheet

Uninterruptible Power Supply

*TLE Series 40 to 120*

40 – 60 – 80 – 100 - 120 kVA/kW - 400 Vac CE – S1



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Model: **TLE Series 40 to 120 CE S1**

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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 SEM	95.1 / 95.0 98.6	95.2 / 95.1 98.8	95.3 / 95.2 98.8	95.3 / 95.2 98.9	95.4 / 95.3 98.9
Efficiency at 75% load PF=0.9 lag. / 1 in VFI & PF=1 in SEM	% VFI SEM	95.2 / 95.2 98.3	95.3 / 95.3 98.4	95.3 / 95.3 98.5	95.4 / 95.3 98.6	95.4 / 95.3 98.7
Efficiency at 50% load PF=0.9 lag. / 1 in VFI & PF=1 in SEM	% VFI SEM	95.0 / 95.0 97.7	95.2 / 95.1 98.0	95.1 / 95.1 98.2	95.3 / 95.2 98.3	95.3 / 95.2 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)					

## RECTIFIER

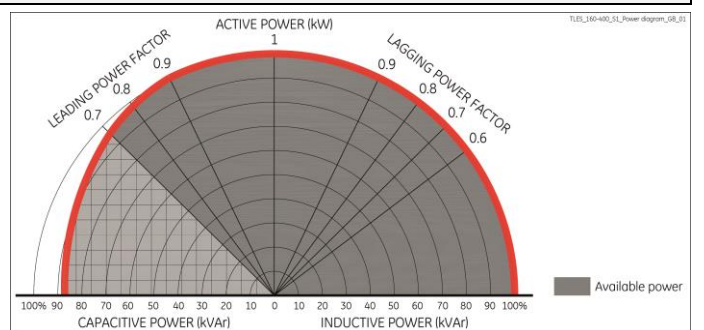
Rectifier bridge	Three phase, IGBT rectifier, overtemperature protection					
Standard input voltage	Nominal: 3 x 400V + N      Programmable: 3 x 380 / 415V + N Rectifier accepted ph-ph voltage range: 340V ÷ 460V (wider voltages subject to de-rated loads)					
Other input voltages	On request					
Input 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					

Input power data		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 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>	<b>33.7/37.9/42.1</b>	<b>50.5/56.8/63.1</b>	<b>67.3/75.7/84.2</b>	<b>84.2/94.7/105.2</b>	<b>101/113.6/126.2</b>
Maximum discharge current (1.65V/cell)	<b>Amps</b>	<b>113/128/142</b>	<b>170/191/213</b>	<b>227/255/283</b>	<b>283/319/354</b>	<b>340/393/425</b>
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 kVA: 2.2 times In for 100ms between phase/phase and phase/N/PE 60 kVA: 2.9 times In for 100ms between phase/phase and phase/N/PE 100 kVA: 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 - Static switch (SCR) on bypass
Primary components	- 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	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 - 27 user settable signals
(available on block terminals)	
Input signals .....	- GEN ON (emergency power supply ON, n/o contact, customer supplied) - 1 auxiliary signal, with settable functionality
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. 3-ph SNMP/MODBUS/WEB plug-in Adapter
3. iUPS Guard
4. GE Data Protection

### BUILT-IN UPS OPTIONS:

1. SEM Operation Mode
2. IEMi Operation Mode
3. RPA kit (Redundant Parallel Architecture)
4. Auxiliary Power Supply (APS) 24Vdc

### 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) |

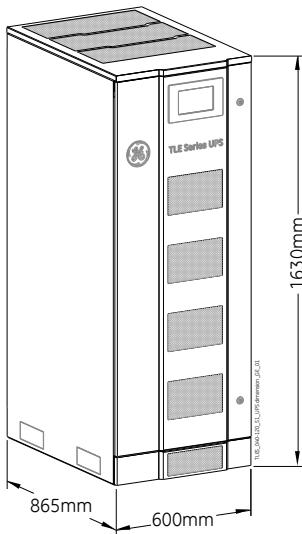
### EXTERNAL ACCESSORIES:

- |  |            |
|--|------------|
| 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 Series 40 to 120



Dimensions

(Width x Depth x Height)

600 x 865 x 1630 mm

### DIMENSIONS and WEIGHTS

UPS (kVA)	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

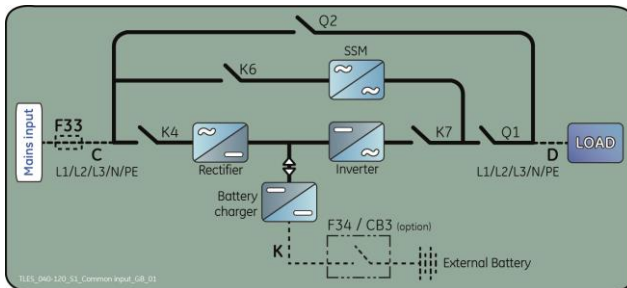
Battery autonomy (0.8 PF full load)			
UPS (kVA)	*) 10 year design life batteries		
	1x33Ah *)	2x33Ah *)	3x33Ah *)
40	12.0 min.	27.9 min.	42.8 min.
60	6.6 min.	17.5 min.	27.9 min.
80	4.0 min.	12.0 min.	20.1 min.
100	-	8.7 min.	15.3 min.
120	-	6.6 min.	12.0 min.

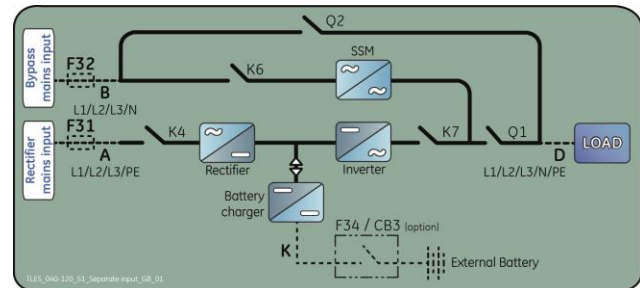
Battery cabinet			
Dimensions			
790 x 865 x 1630 mm (W x D x H)			
Weight		610 Kg	1010 Kg
Floor loading		893 Kg/m <sup>2</sup>	1478 Kg/m <sup>2</sup>

## UPS BLOCK DIAGRAM, PROTECTIONS AND CABLE SECTIONS

### Common input Rectifier & Bypass



### Separated input Rectifier & Bypass



### Line protections and cable sections

Protections for mains voltages			Battery protection (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				
kVA	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 160A	4x25 + 16	4x25 + 16	4x25 + 16	2 x 50 + 35
80	3 x 125A	3 x 125A	3 x 125A	2 x 250A	4x35 + 25	4x35 + 25	4x35 + 25	2 x 95 + 70
100	3 x 160A	3 x 160A	3 x 160A	2 x 300A	4x50 + 25	4x50 + 25	4x50 + 25	2 x 150 + 120
120	3 x 200A	3 x 200A	3 x 200A	2 x 355A	4x70 + 35	4x70 + 35	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.