

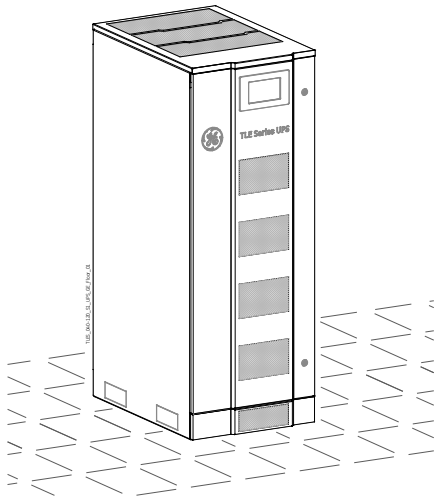
GE  
Critical Power

# Technical Data Sheet

Uninterruptible Power Supply

*TLE Scalable Series 40 - 150*

40 - 50 - 80 - 100 - 120 - 150kW - 480 Vac UL - S1



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Certified  
Quality System  
**ISO 9001**

Model: **TLE Scalable Series 40 - 150 UL S1**  
*TLE Scalable Series 150/40 UL S1*  
*TLE Scalable Series 150/50 UL S1*  
*TLE Scalable Series 150/80 UL S1*  
*TLE Scalable Series 150/100 UL S1*  
*TLE Scalable Series 150/120 UL S1*  
*TLE Scalable Series 150/150 UL S1*

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Revision	Concern	Date

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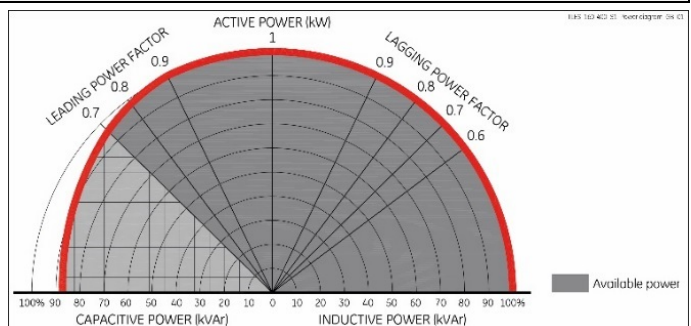
GENERAL DATA							
Topology	VFI, double conversion						
Nominal output apparent power from PF=0.6 lag. to PF=0.9 lead.	KVA	40	50	80	100	120	150
Nominal output active power at PF=1	kW	40	50	80	100	120	150
Efficiency at 100% load PF=0.9 lag. / 1 in VFI & PF=1 in Eco-Mode	% VFI Eco-Mode	95.6 / 95.5 / 98.6	95.6 / 95.5 / 98.8	95.7 / 95.6 / 98.8	95.6 / 95.5 / 98.9	95.6 / 95.5 / 98.9	95.6 / 95.4 / 98.9
Efficiency at 75% load PF=0.9 lag. / 1 in VFI & PF=1 in Eco-Mode	% VFI Eco-Mode	95.7 / 95.6 / 98.3	95.7 / 95.6 / 98.4	95.8 / 95.7 / 98.5	95.8 / 95.7 / 98.6	95.8 / 95.7 / 98.7	95.9 / 95.7 / 98.7
Efficiency at 50% load PF=0.9 lag. / 1 in VFI & PF=1 in Eco-Mode	% VFI Eco-Mode	95.2 / 95.1 / 97.7	95.6 / 95.5 / 98.0	95.6 / 95.5 / 98.2	95.7 / 95.6 / 98.3	95.7 / 95.5 / 98.4	95.9 / 95.7 / 98.4
Audible noise level	dB(A)	62					
Battery type	Valve regulated lead-acid (VRLA), vented lead-acid, NiCd						
Operating temperature range	UPS: 32°F ÷ 104°F / 0°C ÷ 40°C (up to 122°F / 50°C subjected to conditions)						
Storage temperature range	UPS: -13°F ÷ +131°F -25°C ÷ +55°C	Battery: -4°F ÷ +104°F -20°C ÷ +40°C		(higher the temperature, shorter the storage time of the battery)			
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 - ANSI/NEMA 60529)						
Standards	UL 1778 UL 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						
Color	RAL 9005 (black)						
Installation	Minimum distance from the wall 2" / 5 cm and floor fixed						
Service access	Front and top access only						
External cable connections	Bottom at the front of the cabinet or top with lateral sidecar						
Cooling	Enforced ventilation with fan failure detection						
Paralleling (RPA version)	Up to 6 units for redundancy or capacity in RPA configuration (option)						
Eco-Mode Operation	Standard						

RECTIFIER								
Rectifier bridge	Three phase, IGBT rectifier, overtemperature protection							
Standard input voltage	Nominal: 3 x 480V + N Rectifier accepted ph-ph voltage range: 410V ÷ 550V (wider voltages subject to de-rated loads)							
Other input voltages	On request							
Input frequency	60 Hz +/-10% (54 ÷ 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>		kW	40	50	80	100	120	150
Input power at inverter nominal load and charged battery	at PF=0.9 lag.	kW	38.1	47.7	76.3	95.3	114.4	143.0
	at PF=1.0 lag.	kW	42.4	53.0	84.7	105.9	127.1	158.9
Max. input power at inverter nominal load and max. battery recharge current		kW	48.5	59.1	96.9	118.1	145.4	177.2
Standard battery charging current at the beginning of battery recharge at nominal load (programmable)		A	12	12	24	24	36	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 68°F / 20°C	545V (dependent on the number of cells)						
Number of cells	VRLA at 2.27V/cell: 240 cells Vented lead acid at 2.23V/cell						
Min. discharge voltage (programmable)	396V						
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 4 units						
<b>Battery power data</b>	<b>kW</b>	<b>40</b>	<b>50</b>	<b>80</b>	<b>100</b>	<b>120</b>	<b>150</b>
DC power at full load & PF=0.8 lag. / PF=1	<b>kW</b>	33.6/42.0	42.0/52.5	67.3/84.1	84.1/105.1	100.9/126.1	126.1/157.6
Maximum discharge current (1.65V/cell)	<b>Amps</b>	85/106	106/133	170/212	212/265	255/318	318/398
Matching battery cabinets	See option features on page 5 and 7						

<b>INVERTER</b>	
Nominal output apparent power from PF=0.6 lag. to 0.9 lead.	40 – 50 – 80 – 100 – 120 - 150 kW
Nominal output active power	40 – 50 – 80 – 100 – 120 - 150 kW
Nominal output voltage (on site programmable)	3 x 480V + 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	60 Hz
Output frequency tolerance:	
- free-running .....	+/- 0.1%
- with mains synchronization adjustable to .....	+/- 4%
Phase displacement:	
- at 100% balanced load .....	120°: +/- 1%
- at 100% unbalanced load .....	120°: +/- 3%
Overload capability (at 77°F / 25°C ambient temperature)	105% continuous, 110% - 10 minutes, 125% - 1 minute, 150% - 30 seconds
Short-circuit characteristic	Electronic short-circuit protection, current limit to: 2.2 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
Primary components	- Static switch (SCR) on bypass - Electro mechanic contactors (back feed protection) on bypass and inverter
Voltage limits for inverter/bypass load transfers	+/- 10% (adjustable)
Overload on bypass	198A continuous - 270A for 1 minute – up to 3000A 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..... (available on block terminals)	- Standard information for easy integration and signaling - 27 user settable signals
Input signals .....	- GEN ON (emergency power supply ON, n/o contact, customer supplied) - 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**

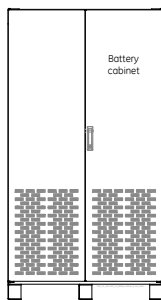
1. Additional Customer Interface Card
2. iUPS Guard
3. GE Data Protection

**BUILT-IN UPS OPTIONS**

1. IEMi Operation Mode
2. RPA kit (Redundant Parallel Architecture)

**OPTIONS IN ADDITIONAL CABINETS**

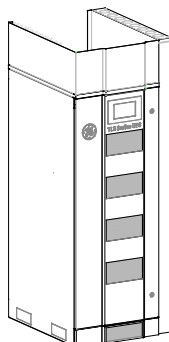
1. Battery cabinet (see page 7)



Dimensions (W x D x H):

- ❶ 29.80 x 29.50 x 75.00 inches / 757 x 750 x 1905 mm
- ❷ 40.00 x 29.50 x 75.00 inches / 1016 x 750 x 1905 mm

2. Top Hat Fascia



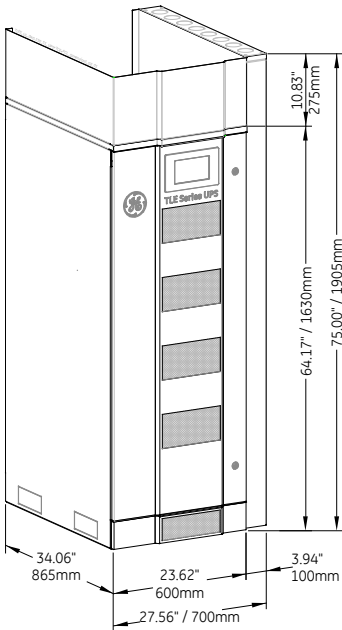
23.62 x 34.06 x 10.83 inches / 600 x 865 x 275 mm

3. Top Cable Entry/Exit Sidecar

3.94 x 34.06 x 75.00 inches / 100 x 865 x 1905 mm

**UPS TECHNICAL DATA**

**TLE Scalable Series 40 – 150**  
with options  
"Top Cable Entry/Exit Sidecar"  
"Top Hat Fascia"



**DIMENSIONS and WEIGHTS**

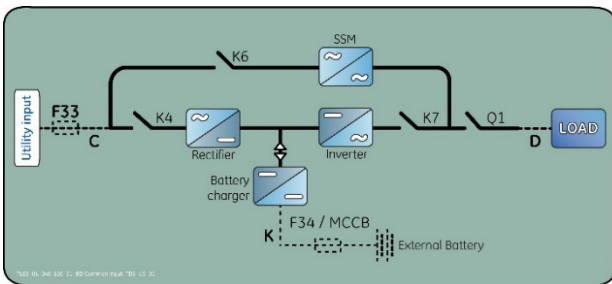
UPS (kW)	Dimensions (W x D x H)	UPS cabinet	
		Weight	Floor loading
40 & 50	23.62 x 34.06 x 64.17 inches 600 x 865 x 1630 mm	849 lbs / 385 kg	152 lbs/sq.ft / 742 kg/m <sup>2</sup>
80 & 100		992 lbs / 450 kg	178 lbs/sq.ft / 867 kg/m <sup>2</sup>
120 & 150		1147 lbs / 520 kg	205 lbs/sq.ft / 1002 kg/m <sup>2</sup>

**OPTIONS**

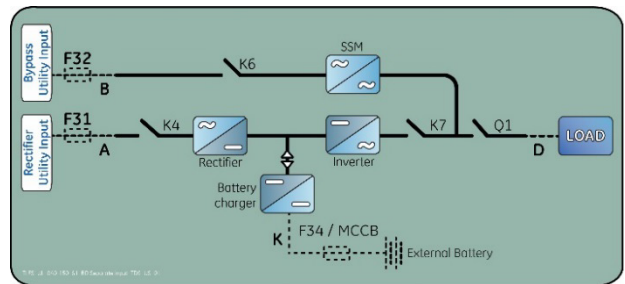
Option	Dimensions (W x D x H)	Weight
Top Hat Fascia	23.62 x 34.06 x 10.83 inches 600 x 865 x 275 mm	22 lbs / 10 kg
Top Cable Entry/Exit Sidecar	3.94 x 34.06 x 75.00 inches 100 x 865 x 1905 mm	88 lbs / 40 kg

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

**Common Input Utility Rectifier & Bypass**



**Dual Input Utility Configuration Rectifier & Bypass**



**Line protections and cable sections**

**Size of Branch Circuit Over Current Protection - All Models: - "CAUTION - To reduce the risk of fire, only connect UPS to a circuit provided with (see below) maximum amperes branch circuit over current protection in accordance with the NEC (National Electric Code), NSI / NFPA 70**

kW	F31 AC Input Rectifier	F32 AC Input Bypass	F33 AC Input	F34 / MCCB DC Input
40	80 A	60 A	80 A	110 A
50	90 A	90 A	90 A	125 A
80	175 A	175 A	175 A	200 A
100	175 A	175 A	175 A	250 A
120	225 A	200 A	225 A	300 A
150	300 A	250 A	300 A	400 A

**Maximum recommended cable size**

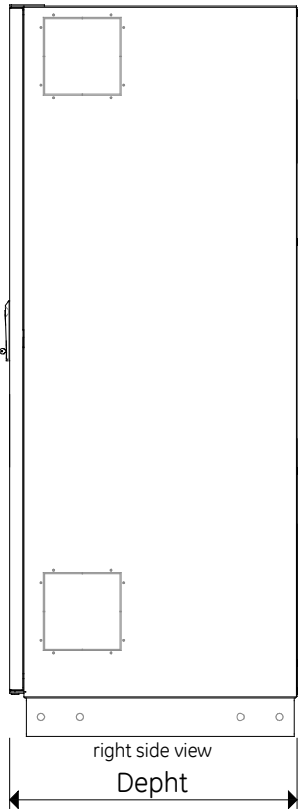
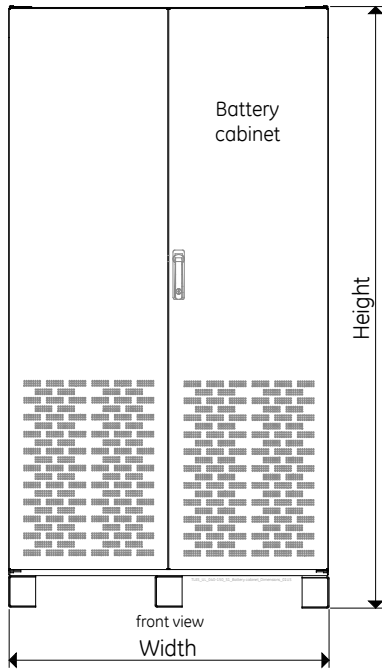
kW	Rectifier Input (A & C)	Bypass Input (B)	DC Input (K)	AC Output (D)	GND
40	1x AWG 2	1x AWG 4	1x AWG 1	1x AWG 4	AWG 6
50	1x AWG 1	1x AWG 1	1x AWG 1/0	1x AWG 1	AWG 6
80	1x AWG 4/0	1x AWG 4/0	1x AWG 4/0	1x AWG 3/0	AWG 4
100	1x AWG 4/0	1x AWG 4/0	2x AWG 2/0	1x AWG 4/0	AWG 4
120	2x AWG 2/0	2x AWG 1/0	2x AWG 3/0	2x AWG 1/0	AWG 4
150	2x AWG 3/0	2x AWG 3/0	2x AWG 4/0	2x AWG 3/0	AWG 3

**IMPORTANT NOTE !**

TLE Scalable Series 40 – 150 UL can be used as 3ph 3W, on grounded wye source.

**BATTERY CABINET TECHNICAL DATA**

**Battery cabinet**



Dimensions (Width x Depth x Height)

- ① 29.80 x 29.50 x 75.00 inches  
757 x 750 x 1905 mm
- ② 40.00 x 29.50 x 75.00 inches  
1016 x 750 x 1905 mm

Battery cabinet (*)						
UPS (kW)	Runtime PF = 1 (min.)	No. batteries	No. Cabinet	Dimensions cabinet	Cabinet weight (lbs/kg)	Multi-Cabinet weight (lbs/kg)
40	5	40	1	①	1180 lbs/535 kg	1180 lbs/535 kg
	8				1500 lbs/680 kg	1500 lbs/680 kg
	12				1620 lbs/735 kg	1620 lbs/735 kg
	21				2140 lbs/971 kg	2140 lbs/971 kg
	31			②	2860 lbs/1297 kg	2860 lbs/1297 kg
	41				3220 lbs/1461 kg	3220 lbs/1461 kg
	50				3500 lbs/1588 kg	3500 lbs/1588 kg
	73				4620 lbs/2096 kg	4620 lbs/2096 kg
50	6	40	1	①	1500 lbs/680 kg	1500 lbs/680 kg
	7				1620 lbs/735 kg	1620 lbs/735 kg
	14				2140 lbs/971 kg	2140 lbs/971 kg
	23			②	2860 lbs/1297 kg	2860 lbs/1297 kg
	29	3220 lbs/1461 kg	3220 lbs/1461 kg			
	38	3500 lbs/1588 kg	3500 lbs/1588 kg			
	54	4620 lbs/2096 kg	4620 lbs/2096 kg			
	58	80	2		2860 lbs/1297 kg	5720 lbs/2594 kg
77	3220 lbs/1461 kg				6440 lbs/2922 kg	
80	6	40	1	①	2140 lbs/971 kg	2140 lbs/971 kg
	10				2860 lbs/1297 kg	2860 lbs/1297 kg
	15			3220 lbs/1461 kg	3220 lbs/1461 kg	
	19			3500 lbs/1588 kg	3500 lbs/1588 kg	
	28	80	2	②	4620 lbs/2096 kg	4620 lbs/2096 kg
	31				2860 lbs/1297 kg	5720 lbs/2594 kg
	41				3220 lbs/1461 kg	6440 lbs/2922 kg
	50				3500 lbs/1588 kg	7000 lbs/3176 kg
73				4620 lbs/2096 kg	9240 lbs/4192 kg	
100	6	40	1	②	2860 lbs/1297 kg	2860 lbs/1297 kg
	10				3220 lbs/1461 kg	3220 lbs/1461 kg
	13				3500 lbs/1588 kg	3500 lbs/1588 kg
	19				4620 lbs/2096 kg	4620 lbs/2096 kg
	22	80	2		2860 lbs/1297 kg	5720 lbs/2594 kg
	29				3220 lbs/1461 kg	6440 lbs/2922 kg
	38				3500 lbs/1588 kg	7000 lbs/3176 kg
	54				4620 lbs/2096 kg	9240 lbs/4192 kg
63	120	3	3500 lbs/1588 kg	10500 lbs/4764 kg		
120	7	40	1	②	3220 lbs/1461 kg	3220 lbs/1461 kg
	9				3500 lbs/1588 kg	3500 lbs/1588 kg
	15				4620 lbs/2096 kg	4620 lbs/2096 kg
	17				2860 lbs/1297 kg	5720 lbs/2594 kg
	23	80	2		3220 lbs/1461 kg	6440 lbs/2922 kg
	29				3500 lbs/1588 kg	7000 lbs/3176 kg
	42				4620 lbs/2096 kg	9240 lbs/4192 kg
	50				3500 lbs/1588 kg	10500 lbs/4764 kg
73	120	3	4620 lbs/2096 kg	13860 lbs/6288 kg		
150	5	40	1	②	3500 lbs/1588 kg	3500 lbs/1588 kg
	9				4620 lbs/2096 kg	4620 lbs/2096 kg
	12				2860 lbs/1297 kg	5720 lbs/2594 kg
	17				3220 lbs/1461 kg	6440 lbs/2922 kg
	21	80	2		3500 lbs/1588 kg	7000 lbs/3176 kg
	30				4620 lbs/2096 kg	9240 lbs/4192 kg
	38				3500 lbs/1588 kg	10500 lbs/4764 kg
	54				4620 lbs/2096 kg	13860 lbs/6288 kg
78	160	4	4620 lbs/2096 kg	18480 lbs/8384 kg		

\*) For further information please consult the "Installation, Operation & Maintenance Manual" of the "Battery cabinet"