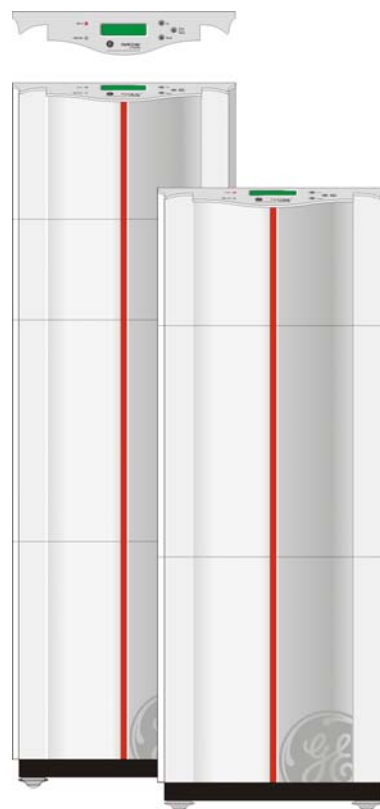


GE Consumer & Industrial  
Power Protection

# Technical data sheets

Digital Energy™ Uninterruptible Power Supply  
LP 31T Series / 5 – 6 – 8 – 10 kVA



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GE imagination at work



Certified  
Quality System  
**ISO 9001**  
Reg.No.CSQ 9130.GELE

<b>General data</b>					
Topology	VFI, double conversion				
Nominal output rating	kVA/kW	5/4	6/4.8	8/6.4	10/8
Overall efficiency at nominal load	%	83	83	80	84
Heat dissipation at inverter nominal load, PF=0.8. and charged battery	W	835	1000	1342	1561
Cooling air (25°C - 30°C)	m <sup>3</sup> /h	330 max.			
Audible noise level	dB(A)	40-50 (EN 27779)			
Operating temperature range	-10°C - 40°C (15°C - 25°C recommended for battery)				
Storage temperature range	-20°C - +45°C				
Relative humidity	Max. 95% (non-condensing)				
Protection degree	IP 20 (IEC 60529 and DIN 40050)				
Safety	EN 50091-1-1, IEC/EN 60950, IEC/EN 62040-1				
EMC	EN 50091-2, IEC/EN 62040-2 Class A				
Surge capacity	IEC 61000-4-5 (6kV 1.2/50 µsec -3kA 8/20µsec)				
Electrostatic discharge immunity	4kV contact / 8kV air discharge				
Transport	On pallet / rollers for installation				
Colour	Cubicle: RAL 9010 (white) Front panel: RAL 9006 (aluminium)				
Cable connections	On terminals, bottom-rear				
Cooling	Forced by regulated internal fans				

<b>3-phase to 1-phase converter</b>					
Nominal AC input voltage	230 / 400V, 3 phase, 4 wire				
AC input voltage range	230/400V +/- 15%				
Input frequency range	45 - 65Hz				
Input current (100% load)	A	4x11	4x13.5	4x17	4x21
Inrush current	None				
Efficiency	94%				

<b>Input converter (rectifier + power factor correction)</b>					
Nominal AC input voltage	220 - 240V L + N				
Input frequency range	40 - 70Hz				
Power factor	>0.99				
THDi	<10%				
Nominal input current (no charging, U <sub>in</sub> = nominal)	A	19.8	23.7	31.6	39
Inrush current	None				
DC output voltage	380 V				

<b>Battery charger</b>					
Battery charging characteristic	IU (DIN 41773) constant current charging until floating voltage, then constant voltage charging + boost charge				
DC input voltage range	350 - 450 V				
DC output voltage	162.5/177V (3kVA), 271/295.5V (5/6/8/10kVA)				
Output current limitation	Adc	2.0	2.0	3.0	3.0
Recharge time	1.5 - 3 hours for 80% capacity				

<b>Battery data</b>				
Battery type	Sealed and maintenance free (VRLA=Valve Regulated Lead Acid)			
Float voltage at 25°C	162.5 / 271 V			
Number of 12V batteries (in standard version)	12x7Ah (3kVA) 20x7Ah (5/6kVA) 20x12Ah (8/10kVA)			
Standard backup time at nominal load PF=0.8	min	10	8	11
Standard backup extensions	See table on page 4			

<b>Output converter (inverter)</b>				
Input voltage range	270 - 400 V			
Nominal output power at PF=0.8	kVA	5	6	8
Nominal output power with resistive load	kW	4	4.8	6.4
Nominal AC output voltage	220 / 230 / 240V			
Output voltage waveform	Sine wave			
Output voltage tolerance:				
- static resistive load	+/- 1%			
- dynamic mean deviation over half cycle (load step 0-100-0%)	+/- 2%			
- with measured non-linear load 2.5:1	+/- 2%			
- recovery time to +/-1%	10ms			
Overload capability (battery operation)	110%: 20 min., 130%: 3.5 min., 150%: 2 min.			
Short circuit current capability (240ms)	A	45	50	67
Output frequency	50/60Hz (selectable)			
Output frequency tolerance	+/- 0.1%, unless synchronised with the utility			
Frequency tracking range	+/- 2, 4 or 6% of nominal, selectable			
Max. phase shift difference input-output	7°			
Harmonic distortion with linear load	1% max			
Harmonic distortion with non-linear load (EN 50091)	10% max. with measured crest factor 2.5:1			
Power factor range	Any lagging or leading power factor is permitted within the specified rating to PF=0.5			
Crest factor handling capability of a non-linear load	5:1			
Output power derating altitude	Up to 1000m no derating Above 1000m 12.5% per 1000m, max. 4000m			
Protection	Automatic shut down (or transfer to bypass if available) in case of: - low/high DC voltage - overtemperature - overload / short circuit Output protected against connection to the mains			
Short-circuit clearance capability	20% In within 10 ms with MCB class B			
Inverter bridge	PWM and IGBT technology			

<b>Bypass</b>				
Primary components	- Thyristor switch - Synchronisation circuit inverter/bypass mains			
Bypass voltage limits	+/- 10% of nominal			
Frequency tracking range	+/- 2, 4 or 6% of nominal, selectable			
Slew rate	1Hz/s or 5Hz/s, selectable			
Overload capability on bypass, 1 minute/10 minutes	A	45/30	65/45	73/60
				90/75

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

## Interfacing

Potential free contacts	Four open-collector contacts signalling following alarms: - bypass active - mains failure - battery low - general alarm
ComConnect port (on Delta 9 pin connector)	For serial communication
Input terminals for	- Emergency shutdown - Battery extension MCB alarm wiring

## Controls, signals and alarms

### Front

Operation/Alarm : green/red LED  
LCD screen : 2 x 16 characters  
Push-buttons  
Buzzer (resettable)

### Rear

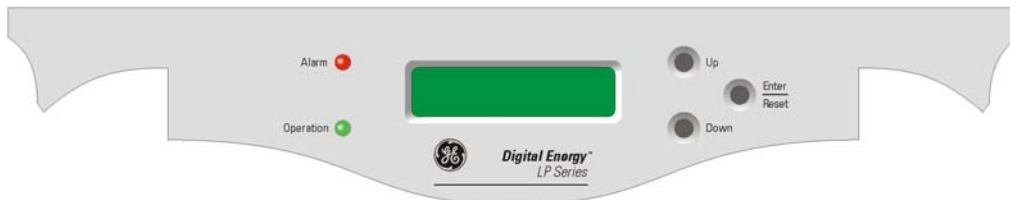
3 option slots for : RS232 interface card (std installed)  
: Potentialfree contacts\*  
: SNMP\*  
: RPA\* redundant parallel architecture

On/off switch  
Manual bypass switch  
Input/Output terminals  
DC connector for external batteries  
Line circuit breaker  
Bypass circuit breaker

\* = option

The LCD screen shows UPS system data, status messages, alarm messages, settings.

### Front panel



## Optional features

### SNMP interface card

An SNMP interface card can be placed in the rear panel of the UPS, and allows the data interface to be connected directly to an Ethernet network.

When this option is installed the ComProt communication link (serial communication) is no longer available to the user.

### Relay card

The relay plug-in card can be installed in the rear panel of the UPS. The card is provided with four potential free contacts representing: battery low, bypass active, utility failure and general alarm.

### Alarm boxes

An interface box linked to the ComConnect port, the VIC/RELAYBOX/01 translates the ComConnect signals to five independent changeover contacts, with a maximum switching capacity of 230V/5A each.

Wall mounted plastic alarm boxes are available for remote audible and visual alarm indication.

### Connectivity products

A splitter box translates information from the ComConnect to several computers.

Interface kits (cables and/or software) are available for operating systems supporting JAVA and most commonly used network operating systems, including Novell, UNIX, VMS, Windows platforms, IBM AS/400, IBM OS/2, LINUX.

Please contact your dealer for specific information.

### Battery extension packs

The LP 31T UPS can be equipped with additional batteries to increase the runtime of the unit. These additional batteries are housed in a separate battery pack. Additional batteries will increase the recharging time for the unit. All other operational information is the same.

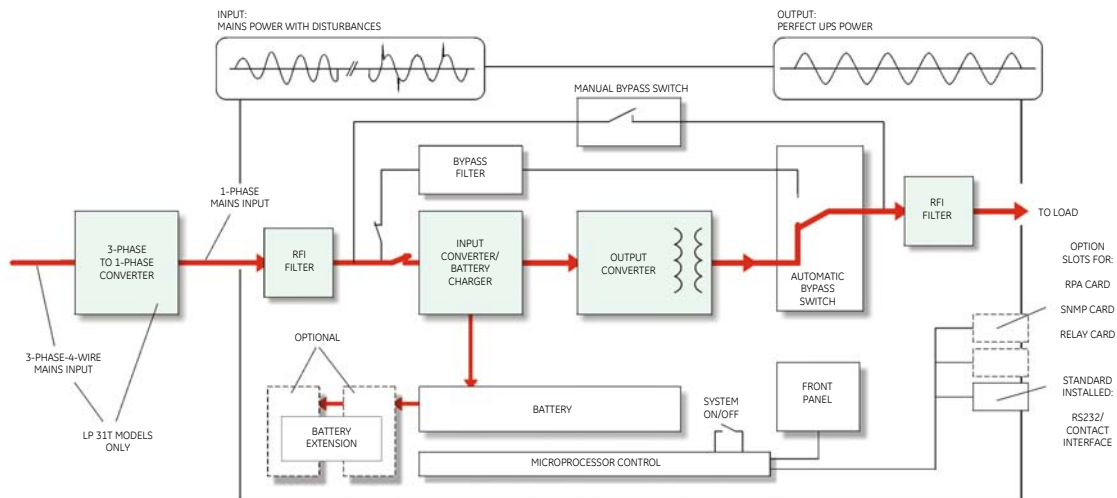
Battery packs can be connected in parallel to increase the runtime. DC connectors make installation of battery packs easy and simple.

## Dimensions and battery

UPS Model	Backup time (min.)	Total capacity (Ah)	Nr. of extra battery cabinets	Battery cabinet "VSDA 1"	UPS cabinet			
					Dimensions	UPS weight (*)	Shipping weight (*)	
LP5-31T	10 *	7 *	-	Dimensions (h×w×d): 537×313×590mm  Shipping dimensions (h×w×d): 800×460×750mm  Battery: 240Vdc 7Ah or 14Ah  Weight with battery: 70kg or 120kg  Shipping weight: 85kg or 135kg	Cabinet: "VSD1+VSDT1"	180kg	200kg	
	25	14	1					Dimensions (h×w×d): 855×313×590mm (height with wheels)
	45	21	1					
	60	28	2					
	80	35	2					
LP6-31T	8 *	7 *	-		Shipping dimensions: 1260×460×810mm	185kg	205kg	
	21	14 *	1					
	35	21	1					
	50	28	2					
	65	35	2					
LP8-31T	11 *	12 *	-	Cabinet: "VSD2+VSDT2"	270kg	290kg		
	22	19	1				Dimensions (h×w×d): 995×313×720mm (height with wheels)	
	33	26	12					
	44	33	2					
	55	40	2					
LP10-31T	8 *	12 *	-	Shipping dimensions: 1260×460×810mm	275kg	295kg		
	16	19	1					
	25	26	1					
	34	33	2					
	43	40	2					

(\*): Standard backup time and capacity

## UPS block diagram, protections and cable sections



Recommended external fusing of input wiring		Cable sections input / output recommended by European standards / in ( ) SEV Alternatively, local standards to be respected	
UPS Model	Fuses gL/ gG or Automatic Breakers	CABLE SECTIONS	
	Mains / Bypass input	in/out, mm <sup>2</sup>	AWG
LP 5-31T	3 x 16A	4 / 6	12 / 10
LP 6-31T	3 x 16A	4 / 6	12 / 10
LP 8-31T	3 x 25A	6 / 10	10 / 8
LP 10-31T	3 x 32A	6 / 10	10 / 8