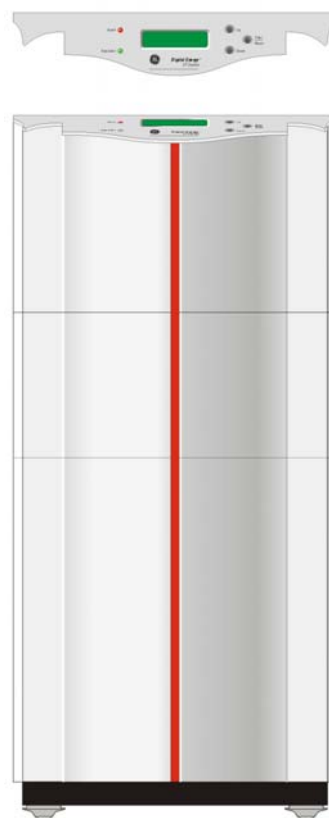


GE Consumer & Industrial
Power Protection

Technical data sheets

Digital Energy™ Uninterruptible Power Supply
LP 11U Series / 5 – 6 – 8 – 10 kVA



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Certified
Quality System

ISO 9001 / EN 29001
Reg. No. 10448

General data					
Topology	VFI, double conversion				
Nominal output rating	kVA/kW	5/4	6/4.8	8/6.4	10/8
Overall efficiency at nominal load	%	88	88	88	89
Heat dissipation at inverter nominal load, PF=0.8. and charged battery	W	545	655	872	988
Cooling air (25°C ÷ 30°C)	m³/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	UL 1778; EN 50091-1-1; IEC 60950, IEC 62040-1				
EMC	FCC part 15 class A; 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 (aluminum)				
Cable connections	On terminals, bottom-rear				
Cooling	Forced by regulated internal fans				

Input converter (rectifier + power factor correction)					
Nominal AC input voltage	208 ÷ 240V split phase (120Volt with optional transformer, 5/6kVA only)				
Input frequency range	40 ÷ 70Hz				
Power factor	> 0.99				
THDi	<10%				
Nominal input current (no charging, U _{in} = 120Volt)	A	43.3	50.8	n.a.	n.a.
Nominal input current (no charging, U _{in} = 208Volt)	A	25	30	40.5	50.3
Nominal input current (no charging, U _{in} = 240Volt)	A	21.4	25.1	34.8	42
Inrush current	None				
DC output voltage	380 V				

Battery charger					
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	271/295.5V				
Output current limitation	Adc	2.0	2.0	3.0	3.0
Recharge time	1.5 ÷ 3 hours for 80% capacity				

Battery data					
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)	20x7Ah (5/6kVA) 20x12Ah (8/10kVA)				
Standard backup time at nominal load PF=0.8	min	10	8	11	8
Standard backup extensions	See table on page 4				

Output converter (inverter)					
Input voltage range	270 ÷ 400 V				
Nominal output power at PF=0.8	kVA	5	6	8	10
Nominal output power with resistive load	kW	4	4.8	6.4	8
Nominal AC output voltage	120 + 208 + 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 capability (240ms)	2.1 x Inom				
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 50091-3)	<10%				
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				

Bypass					
Primary components	- Thyristor switch - Synchronisation circuit inverter/bypass utility				
Bypass voltage limits	-15% ÷ +10% of nominal				
Frequency tracking range	+/- 2, 4 or 6% of nominal, selectable				
Slew rate	1Hz/s or 5Hz/s, selectable				
Bypass MCB	A	32	32	50	63
Overload capability on bypass, 1 minute/10 minutes	A	45/30	45/30	65/47	70/60

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				

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

Controls, signals and alarms

Front

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

Rear

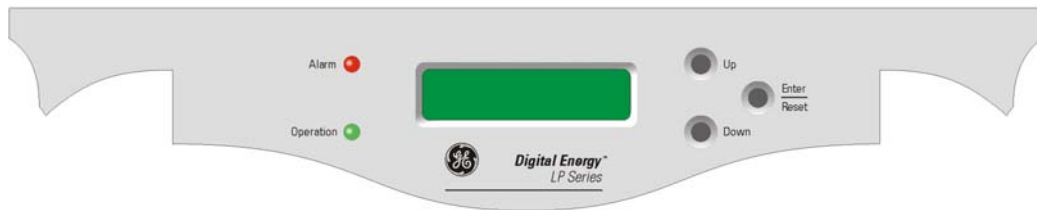
3 option slots for : RS232 interface card (std installed)
: Potentialfree contacts*
: SNMP*
: RPA* redundant parallel architecture

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.

Power distribution module

This Power Distribution Module (PDM) contains 4 x Nema 5-20R, 2 x Nema L6-30R and 1 x Nema L14-30 R Power sockets. The PDM replaces the conduit box, and converts the LP 11U into a pluggable UPS.

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 11U 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.

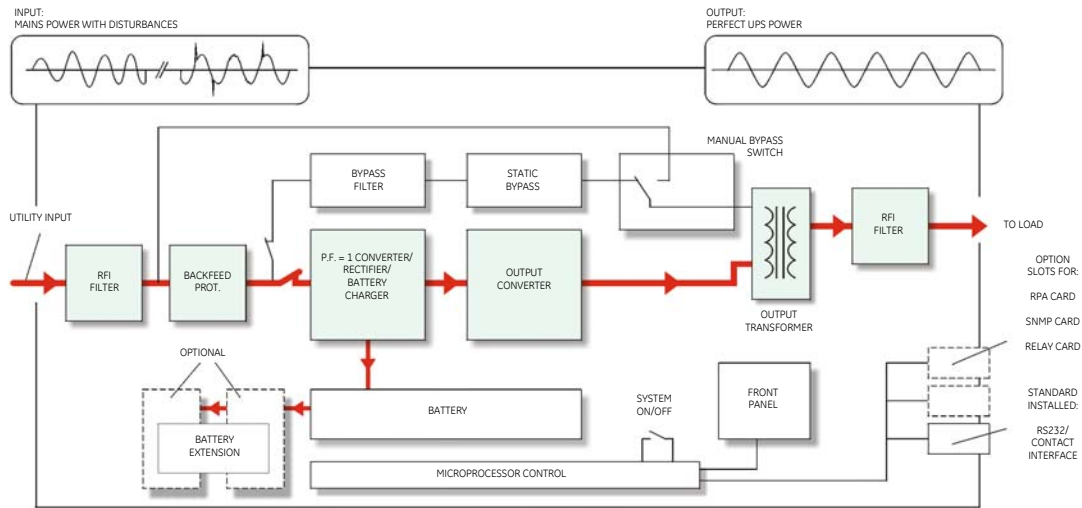
Battery packs can be connected in parallel to increase the runtime. DC connectors make installation of battery packs easy and simple.

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 (*)		
LP5-11U	10 *	7 *	-	Dimensions (h _x w _x d): 537x313x590 mm 21.1x12.3x23.2 inch Shipping dimensions (h _x w _x d): 800x460x750mm Battery: 240Vdc 7Ah or 14Ah Weight with battery: 73kg or 123kg 161 or 271 Lbs Shipping weight: 85kg or 135kg 187 or 298 lbs	Cabinet: "VSD2"	134 kg 295Lbs	125 kg 276 Lbs		
	25	14	1						
	45	21	1						
	60	28	2						
	80	35	2						
LP6-11U	8 *	7 *	-		Dimensions (h _x w _x d): 537x313x590 mm 21.1x12.3x23.2 inch Shipping dimensions (h _x w _x d): 800x460x750mm Battery: 240Vdc 7Ah or 14Ah Weight with battery: 73kg or 123kg 161 or 271 Lbs Shipping weight: 85kg or 135kg 187 or 298 lbs	Cabinet: "VSD2"	134 kg 295 Lbs	130 kg 287 Lbs	
	21	14 *	1						
	35	21	1						
	50	28	2						
LP8-11U	65	35	2			Dimensions (h _x w _x d): 537x313x590 mm 21.1x12.3x23.2 inch Shipping dimensions (h _x w _x d): 800x460x750mm Battery: 240Vdc 7Ah or 14Ah Weight with battery: 73kg or 123kg 161 or 271 Lbs Shipping weight: 85kg or 135kg 187 or 298 lbs	Cabinet: "VSD2"	175 kg 386 Lbs	185kg 408 Lbs
	11 *	12 *	-						
	22	19	1						
	33	26	12						
LP10-11U	44	33	2	Dimensions (h _x w _x d): 537x313x590 mm 21.1x12.3x23.2 inch Shipping dimensions (h _x w _x d): 800x460x750mm Battery: 240Vdc 7Ah or 14Ah Weight with battery: 73kg or 123kg 161 or 271 Lbs Shipping weight: 85kg or 135kg 187 or 298 lbs			Cabinet: "VSD2"	186kg 410 Lbs	190kg 419 Lbs
	55	40	2						
	8 *	12 *	-						
	16	19	1						
	25	26	1						
LP10-11U	34	33	2		Dimensions (h _x w _x d): 537x313x590 mm 21.1x12.3x23.2 inch Shipping dimensions (h _x w _x d): 800x460x750mm Battery: 240Vdc 7Ah or 14Ah Weight with battery: 73kg or 123kg 161 or 271 Lbs Shipping weight: 85kg or 135kg 187 or 298 lbs		Cabinet: "VSD2"	186kg 410 Lbs	190kg 419 Lbs
	43	40	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 and output recommended by European standards (mm ²) / NEC standard(AWG) Alternatively, local standards to be respected	
UPS Model	Fuses gL / gG or Automatic Breakers	CABLE SECTIONS	
	Utility / Bypass input	mm ²	AWG
LP5-11U	32A	6	10
LP 6-11U	32A	6	10
LP 8-11U	50A	10	8
LP 10-11U	63A	10	8