GE
Critical Power

Technical Data Sheet

Uninterruptible Power Supply

On-line VH Series UPS

700 - 1000 – 1500 – 2000 - 3000 UL / 120V

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Model:	***VH Series 700 – 1000 – 1500 - 2000 – 3000 VA UL / 120V***
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1.0	Initial release	15.10.2015

GENERAL DATA						
Topology	VFI, on line double conversion					
Model	VH	700	1000	1500	2000	3000
Nominal output rating	VA/W	700/630	1000/900	1500/1350	1920/1740	3000/2700
Overall efficiency at nominal load	%	>87				
Heat dissipation at inverter nominal load, PF=0.9 and charged battery	W	86	123	184	237	290
Cooling air (77°F ÷ 86°F)	CFM	15	21	32	41	51
Audible noise level at one meter	db(A)	<45 db(A), load and temperature dependent				
Operating temperature range	32°F ÷ 104°F (0°C ÷ +40°C) 59°F ÷ 77°F recommended for batteries					
Storage temperature range	-4°F ÷ 122°F (-20°C ÷ +50°C)					
Relative humidity max.	20-95% (non-condensing)					
Enclosure / Protection degree	Steel-plastic / IP 20					
Safety	UL 1778, 5th Edition					
EMC	FCC Part-15, Class B					
Surge capacity	EN 61000-4-5: 6kV line-line / 6kV line-earth					
Electrostatic discharge immunity	EN 61000-4-2: 4kV contact / 15kV air discharge					
Transport	On pallet / Tower and rack mountable					
Colour	RAL 9005 (black)					
Outlet connectors	NEMA 5-20R (additional L5-20R in 2000VA and L5-30R in 3000VA)					
Inlet connectors	IEC	C13	C13	C19	C19	-
Cooling	Forced air					

INPUT CONVERTER (RECTIFIER + POWER FACTOR CORRECTION)						
Nominal AC input voltage	120V					
Input frequency range	45 ÷ 66 Hz					
Power factor	>0.99					
THDi	<6%					
Nominal input current (no charging, U_{in} = nominal)	A	6.6	9.1	13.9	16	24
Inrush current	None					
DC Output voltage	2x210V					

BATTERY CHARGER			
Battery charging characteristic	Constant current until boost voltage, then float voltage		
AC input voltage range	60 to 140V		
DC output voltage	Vdc	40.5	81
Output current limitation	Adc	1.5	
Recharge time	3 hours for 90% capacity, standard battery		

BATTERY DATA						
Battery type	Sealed lead acid, VRLA					
Float voltage at 25°C	Vdc	40.5		81		
Number & rating of 12V batteries (standard version)		3*7Ah	3*9Ah	6*7Ah	6*9Ah	6*9Ah
Standard backup time at nominal resistive load	min	8	8	7.2	8	8
End of discharging voltage (Vdc/cell)	Vdc	1.66				
Standard backup extensions (table 1 for backup time)		NO	YES	YES	YES	YES

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

OUTPUT CONVERTER (INVERTER)						
Input voltage range	**Vdc**	**200-220**				
Nominal output power at PF=0.9	**VA**	**700**	**1000**	**1500**	**1920**	**3000**
Nominal output power with resistive load	**W**	**630**	**900**	**1350**	**1740**	**2700**
Nominal AC output voltage	**Vac**	**120**				
Output voltage waveform	**sine wave**					
Output voltage tolerance - static resistive load - dynamic mean deviation over half cycle - with measured non-linear load 2.5:1 - recovery time to ±1%	 **< 1%** **< 2%** (load step 0-100-0%) **< 2%** **2ms**					
Overload capability (battery operation)	**110% during 4 minutes, 150% during 2 seconds**					
Short circuit current capability	**2.1 x nominal current during approx. 200ms**					
Output frequency	**50/60 Hz auto selectable (default 60 Hz during cold start)**					
Output frequency tolerance	**± 0.05% nominal, unless synchronized with mains**					
Frequency tracking range	**± 10% default (±2% selectable)**					
Max. phase shift difference input-output	**< 1% typical (max. 7° during tracking frequency range)**					
Harmonic distortion with linear load	**< 1%**					
Harmonic distortion with non-linear load	**< 6%**					
Power factor range	**0.7 to 1 (lag & lead)**					
Crest factor handling capability of non-linear load	**Up to 3:1**					
Output power derating altitude	**Up to 1000m no derating** **Above 1000m 12.5% per 1000m, max. 4000m.**					
Protection	**Automatic transfer to bypass (if available) in case of:** **- internal circuit failure** **- over temperature** **- overload / short circuit** **Output protected against connection to the mains**					
Inverter bridge	**PWM and IGBT technology**					

BYPASS	
Primary element	**Static switch**
Bypass voltage limits	**-15% to +10% of selected output voltage**
Frequency tracking range	**± 10% default (± 2% selectable) of selected output frequency**
Slew rate	**2 Hz/sec.**
Overload capability on bypass	**120% ≥ 3 min., 150% ≥ 1 min.**

INTERFACING	
Potential free contacts (optional)	**Four change-over contacts signalling following alarms:** **- bypass active** **- mains failure** **- battery low** **- general alarm (programmable)**
Input terminals for	**- Remote Power Off** **- Battery extension pack DC connector**

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

CONTROLS, SIGNALS AND ALARMS

Front panel details

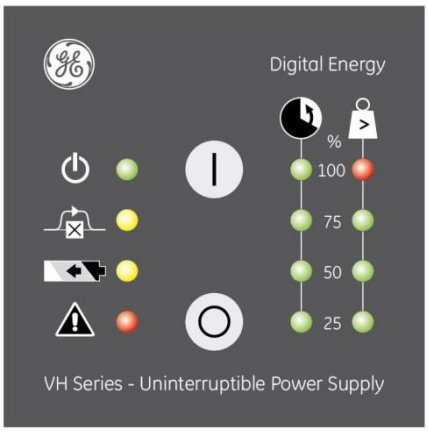
On / Off push-buttons
UPS ON / standby LED
On Bypass LED
On Battery LED
Alarm LED (red)
Runtime LED bar
Load level LED bar

Rear panel details

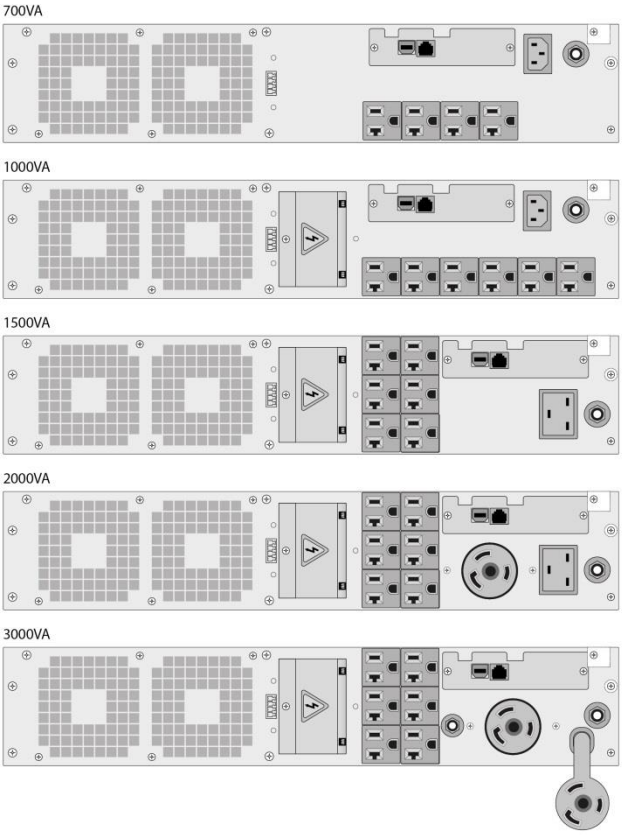
Input thermal circuit breaker
Input / Output sockets
DC connector for batteries (except VH700)
Remote External Power Off Contacts (REPO)
USB Interface Card
USB/RS232/Relay Card *
SNMP Card *

** option*

Front panel



Rear panels



OPTIONAL FEATURES

SNMP Interface card

An SNMP interface adapter can be placed in the SNMP slot in the rear panel of the UPS, which allows the data interface to be connected directly to an Ethernet or Web.

USB/RS232/Relay Card

The card is provided with an USB connector, a 9-pole sub-D connector and four potential free changeover contacts, representing: mains failure, general alarm, battery low and bypass active.

Battery modules – extended runtime

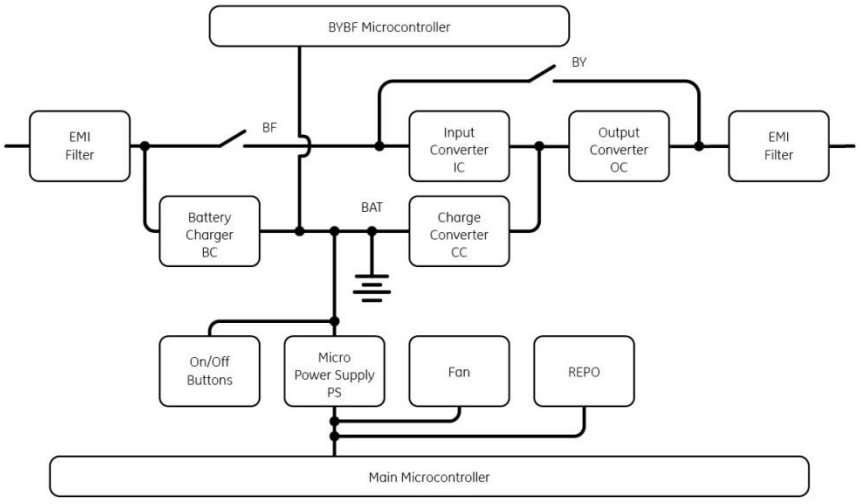
Additional battery modules (up to 3) may be connected in parallel to in order to achieve a longer runtime. Every battery module is equipped with its DC cabling and it makes connection between modules very easy and simple.
Increasing of total battery capacity will correspond to a longer recharging time.

TECHNICAL DATA

Table 1

UPS Model	Backup time (min.)	Total capacity (Ah)	No. of extra battery cabinets	Battery cabinet			UPS cabinet		
				Dimensions (HxWxD, inch/mm)	Weight lbs/kg	Shipping weight lbs/kg	Dimensions (HxWxD, inch/mm)	Weight lbs/kg	Shipping weight lbs/kg
VH700	8	7	--	--			3.4x17.2x18.5 / 87x438x470	35/16	49/22
VH1000	8	9	--	3.4x17.2x18.5 / 87x438x470	60/27	68/31		37/17	51/23
	26	23	1						
	48	37	2						
	66	51	3						
VH1500	7	7	--	3.4x17.2x21.3 / 87x438x540	101/46	110/50	3.4x17.2x21.3 / 87x438x540	64/29	73/33
	35	21	1						
	63	35	2						
	88	49	3						
VH2000	8	9	--					71/32	84/38
	26	23	1						
	50	37	2						
	74	51	3						
VH3000	4	9	--				3.4x17.2x23.0 / 87x438x585	77/35	90/41
	15	23	1						
	25	37	2						
	50	51	3						

UPS BLOCK DIAGRAM, PROTECTIONS AND CABLE SECTIONS



Recommended external fusing of input wiring		Cable sections input and output recommended by NEC standards Alternatively, local standards to be respected	
UPS Model	Mains / Bypass input	CABLE SECTIONS (90°C insulation)	
		mm2	AWG
VH700	15A Class "B" MCB	2.08	14
VH1000	15A Class "B" MCB	2.6	13
VH1500	20A Class "B" MCB	4.17	11
VH2000	20A Class "B" MCB	5.26	10
VH3000	30A Class "B" MCB	8.37	8