GE
Critical Power

Technical Data Sheet

Uninterruptible Power Supply

On-line VH Series UPS

2000 - 3000 UL / 208V

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Model:	***VH Series 2000 – 3000 VA UL / 208V***
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1.0	Initial release	15.10.2015

GENERAL DATA			
Topology	**VFI, on line double conversion**		
Model	**VH**	**2000**	**3000**
Nominal output rating	**VA/W**	**2000/1800**	**3000/2700**
Overall efficiency at nominal load	**%**	**>87**	
Heat dissipation at inverter nominal load, PF=0.9 and charged battery	**W**	**237**	**290**
Cooling air (77°F ÷ 86°F)	**CFM**	**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 (manual: EN 62040-2)**		
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**		
Colour	**RAL 9005 (black)**		
Outlet connectors	**2xNEMA 6-20R + 1x L6-20R**		
Inlet connector	**NEMA L6-20P**		
Cooling	**Forced air**		

INPUT CONVERTER (RECTIFIER + POWER FACTOR CORRECTION)			
Nominal AC input voltage	**208V**		
Input frequency range	**45 ÷ 66 Hz**		
Power factor	**>0.99**		
THDi	**<6%**		
Nominal input current (no charging, U_{in} = nominal)	**A**	**10.4**	**15.2**
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**	**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**	**81**	
Number & rating of 12V batteries (standard version)		**6*7Ah**	**6*9Ah**
Standard backup time at nominal resistive load	**min**	**5**	**4**
End of discharging voltage (Vdc/cell)	**Vdc**	**1.66**	
Standard backup extensions (table 1 for backup time)	**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**	**2000**	**3000**
Nominal output power with resistive load	**W**	**1800**	**2700**
Nominal AC output voltage	**Vac**	**208 / 220 / 230 / 240 (selectable)**	
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	**nominal ± 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	**125% of TCB ≥ 3 min., 200% of TCB for 10 seconds**

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

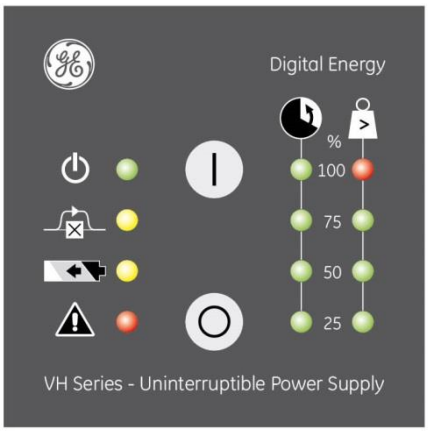
On / Off push-buttons
UPS ON / standby LED
On Bypass LED
On Battery LED
Alarm LED (red)
Runtime LED bar
Load level LED bar

Rear panel details

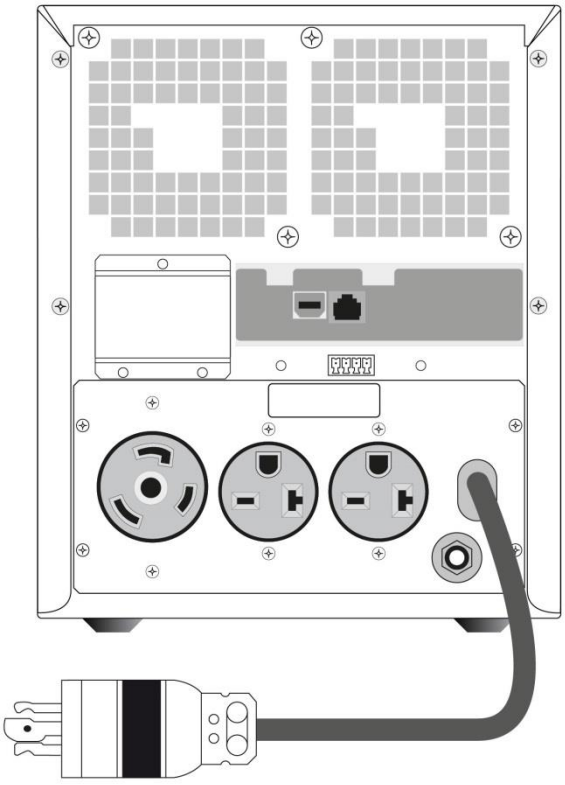
Input thermal circuit breaker
Input / Output sockets
DC connector for external battery packs
Remote External Power Off Contacts (REPO)
USB Interface Card
USB/RS232/Relay Card *
SNMP Card *

** option*

Front panel



Rear panel



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

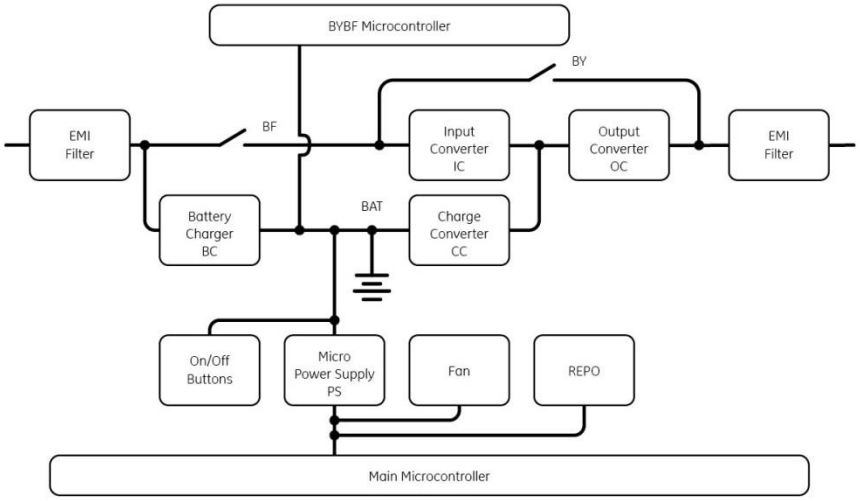
Additional battery modules (up to 3) may be connected in parallel to in order to achieve a longer runtime. Every battery module is equipped with its DC cabling and it makes connection between modules very easy and simple.
Increasing of total battery capacity will correspond to a longer recharging time.

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
VH2000	5	7	--	9.0x7.4x23.6 / 228x188x600	88/40	110/50	9.0x7.4x23.4 / 228x188x595	66/30	68/31
	30	21	1						
	60	35	2						
	90	49	3						
VH3000	4	9	--					68/31	73/33
	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
VH2000	20A Class "B" MCB	3.33	12
VH3000		5.26	10