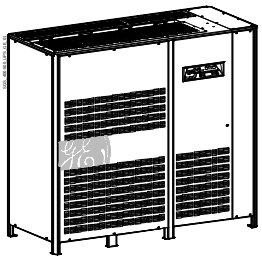
Technical Data Sheet

Digital Energy SG Series

(400-500kVA)



GENERAL DATA

Topology		**True On-line double conversion**		
Nominal output power at PF = 0.7 lag. to 0.8 lag.		**kVA**	**400**	**500**
Overall efficiency	100% load, 0.8 PF :	**%**	94.0	93.8
	50% load, 0.8 PF :	**%**	94.2	94.4
Heat rejection at 100% load, 0.8PF and charged battery		**BTU/hr**	69,711	90,236
		kW	20.42	26,44
Cooling Air (77F - 86F / 25C - 30C)		**CFM**	3,596	4,655
Audible noise level (at 5 ft.)		**dB(A)**	65	65
Fault Current Rating		**KAIC**	80	80
Operating temperature range	UPS :	**32F - 104F (0C - 40C)**		
	Battery :	**68F - 77F (20C - 25C)**		
		Higher temperatures shorten battery life		
Storage temperature range	UPS :	**5F - 122F (-15C - +50C)**		
	Battery :	**32F - 104F (0C - 40C)**		
	(VRLA)	**Storage time is 6 months at 77F (25C). Higher temperatures reduce battery storage time.**		
Relative humidity		**0-95%, non-condensing**		
Maximum altitude	Without derating :	**3281ft no derating**		
	With derating :	**4921ft/-5% 6562ft/-9% 8202ft/-14% 9843ft/-18%**		
Enclosure	Type :	**Indoor (IP20) and NEMA-PE-1**		
	Safety :	**Internal dead front construction**		
	Cooling :	**Forced Air (Redundant Fans)**		
	Color :	**White (RAL 9010)**		
Installation	Rigging :	**Suitable for handling by forklift**		
	Mounting :	**Floor mounting holes provided**		
	Installation and maintenance access :	**Front access required for normal maintenance**		
	Conduit Access :	**Top and Bottom standard**		
Standards		**UL 1778, IEC 62040, ISO9001, FCC Class A Optional**		
Electrostatic discharge immunity		**4kV contact / 8kV air discharge**		
Configuration	Standard :	**Stand-alone**		
	Optional :	**RPA - up to 8 units may be paralleled in any combination for redundancy or capacity**		

RECTIFIER

Configuration		**Six thyristor, three phase bridge**
Input	Voltage :	**480VAC, 3-phase, 4 wire + ground (-20% to +15% without battery discharge)**
	Frequency :	**60Hz, +/-10% (54-66Hz)**
	Power factor :	**0.8 lagging (typical)**
	Inrush current :	**Limited by soft-start circuit**
	Power walk-in :	**30 seconds (Adjustable)**
	Output Voltage Tolerance :	**+/- 1%**
	DC ripple voltage :	**+/- 1%**
	DC ripple current :	**Max. 5% of battery capacity expressed in amps**

Data	**Signature 5000 Model**	**400**	**500**
Nominal input (100% load)	Current[A] :	512.0	640.0
(0.8 PF load, fully chrg'd bat.)	kVA :	425.5	533.0
	kW :	340.4	426,4
Maximum input (100% load)	Current[A] :	615.0	770.0
(0.8 PF load, max. chrg current)	kVA :	511.0	639.8
	kW :	404.2	509.3
Max. charge current	0.8 PF load :	110	130

Battery

Battery compatibility	**Lead-acid or NiCd, VRLA or flooded**
Number of cells	**240 (lead-acid)**
Float voltage at 68F (20C)	**540VDC**
Minimum discharge voltage	**396VDC (adjustable)**
Recharge time for 30 minute battery	**10 times the discharge time**
Battery ground fault detection	**Standard**
Automatic and manual battery test	**Standard**

Data — **Signature 5000 Model**		**400**	**500**
100% load, 0.66 PF lag.	kWB :	276.6	346.2
100% load, 0.8 PF lag.	kWB :	335.4	419.6
Maximum Discharge Current	[A]:	848.0	1060.0

Inverter

Nominal output voltage		**480VAC, 3-phase, 4 wire + ground**
Inverter bridge		**IGBT technology and Space Vector Modulation**
Output Isolation transformer		**Standard**
Output waveform		**True sine wave**
Output voltage tolerance	Static:	**+/- 1%**
	Load step 0% - 100% - 0% :	**+/- 3%, recovering to within +/- 1% in 1 cycle**
	Load step 0% - 50% - 0% :	**+/-2%, recovering to within +/- 1% in 1 cycle**
	100% unbalanced load (Ph-N) :	**+/- 3%**
Output voltage distortion	100% linear load :	**2% THD maximum**
	100% non-linear load (IEC62040) :	**3% THD maximum**
Crest factor capability		**Greater than 3:1**
Output neutral rating		**200%**
Phase displacement	100% balanced load :	**120°+/- 1%**
	100% unbalanced load :	**120°+/- 2%**
Output frequency	Free running :	**60Hz, +/- 0.01%**
	Synchronized with utility :	**+/- 4% (adjustable from 57.6Hz to 62.4Hz)**
Overload capability (on inverter)		**125% at 0.8 PF for 10 minutes.** **150% at 0.8 PF for 60 seconds**
Short circuit capability (on inverter)		**700% of rated current for first 1.2 ms, followed by** **220% for 100 ms, electronically limited**

Data — **Signature 5000 Model**	**400**	**500**
Maximum Output Current @ 0.8pf [A]:	481.0	600.0

Bypass

Input configuration	**Common with rectifier (default) or dual input**
Primary components	**Full load rated static switch** **Back feed protection** **Internal maintenance bypass**
Transfer limits	**+/- 10% of nominal output voltage (adjustable)**
Overload capability (on bypass)	**110% continuous** **200% for 5 minutes**
Short circuit capability (on bypass)	**1000% for 1/2 cycle (non-repetitive)**

External Interface

Alarm contacts (voltage-free)	Standard :	**6 user defined contacts (form 'c')**
	Optional :	**12 user defined contacts (form 'c')** **(23 selectable signals include aux. Inputs 1 & 2)**
Serial communication		**RS-232**
Input signals		**Emergency Power Off (user supplied n/c contact)** **Aux. input 1 * (default = On Generator)** **Aux. input 2 * (default = not defined)** *** Status displayed on LCD panel**

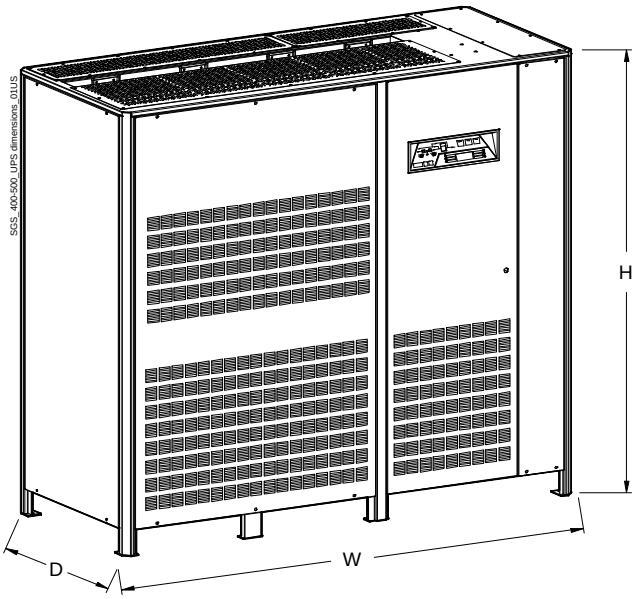
Front Panel Controls, Signals & Alarms

Mimic Diagram:	Represents the operational status of the UPS, with integrated LEDs and power flow indicators
Service Check LED:	Turns on when service is due or the internal manual bypass is active
Common Alarm:	Visual (LED) and audible signal active when any alarm condition is present
Stop Operation:	Visual (LED) and audible signal, activates approx. 3 minutes (adjustable) before complete and automatic load shutdown (due to a fully discharged battery or an over temperature condition with utility power not available)
Load Level / Battery Run Time:	Bar graph status indicator
LCD Display:	Display of UPS metering functions and event history (multi-language)
Push Buttons:	- Inverter On - Inverter Off - Alarm Silence - Lamp Test - Load Off with protective cover

Optional Features

RPA	- Redundant Parallel Operation and Intellegent Energy Management
Input/Output Transformers	Available in external cabinets for isolation or voltage transformation
5th Harmonic Input Filter	- Integral to UPS cabinet. No additional cabinet required
11th Harmonic Input Filter	- Integral to UPS cabinet. No additional cabinet required
External Maintenance Bypass	- Available in 2 or 3 breaker, panel mounted configurations.
Remote Status Panel	- Active mimic diagram w/ Stop Operation and Summary Alarms
Protection Software	- PC operated remote monitoring, control and diagnostics
SNMP	- Ethernet interface for network connection
FCC Filter	- Brings UPS into compliance with FCC, Class A Specifications
3 Wire Input Kit	Enables UPS to be fed from a Delta source for 3phase loads only.

Mechanical Data



400, 500KVA Enclosure

UPS Rating (kVA)	Dimensions			Weight	
	Height	Width	Depth	UPS	Floor Loading
400	77"	81"	33.5	4918 lbs	263 lbs/sq.ft
500	77"	81"	33.5	5226 lbs	279 lbs/sq.ft

UPS Block Diagram

1…….. Rectifier
2…….. Inverter
3…….. Static Bypass
4…….. Maintenance Bypass
5…….. Utility
6…….. Load Output
7…….. Battery
8…….. Battery Contactor
FB…….. Battery Fuses or Circuit Breaker
F in…….....AC Input Fuses or Circuit Breaker
Lb…….. Battery Line
L in…….. Input Line
L out…….. Output Line

Alternate 1 **Alternate 2**