Technical Data Sheet

Digital Energy SG Series

(10-40kVA)

GENERAL DATA

Topology		**True On-line double conversion**				
Nominal output power at PF = 0.7 lag. to 0.8 lag.		**kVA**	**10**	**20**	**30**	**40**
Overall efficiency	100% load, 0.8 PF :	**%**	90.0	89.0	91.0	91.0
	50% load, 0.8 PF :	**%**	89.5	88.7	90.5	90.5
Heat rejection at 100% load, 0.8PF and charged battery		**BTU/hr**	3,036	6,751	8,104	10,808
		kW	0.89	1.98	2.37	3.17
Cooling Air (77F - 86F / 25C - 30C)		**CFM**	135	301	361	482
Audible noise level (at 5 ft.)		**dB(A)**	60	60	60	60
Fault Current Rating		**KAIC**	35	35	35	35
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**	**10**	**20**	**30**	**40**	
Nominal input (100% load)	Current[A] :	17.2	27.3	40.4	53.9	
(0.8 PF load, fully chrg'd bat.)	kVA :	14.3	22.7	33.6	44.8	
	kW :	11.2	17.7	26.4	35.1	
Max. input (100% load)	Current[A] :	20.2	36.6	53.1	63.2	
(0.8 PF load, max. chrg current)	kVA :	16.8	30.4	44.1	52.5	
	kW :	12.9	23.4	33.9	40.4	
Max. charge current	0.8 PF load :	5	10	10	15	

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**	**10**	**20**	**30**	**40**
100% load, 0.66 PF lag.	kWB :	7.1	14.2	21.0	28.2
100% load, 0.8 PF lag.	kWB :	8.6	17.2	25.6	34.1
Maximum Discharge Current	[A]:	21.7	43.4	64.6	86.1

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**	**10**	**20**	**30**	**40**
Maximum Output Current @ 0.8pf [A]:		12.0	24.1	36.1	48.2

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 matching cabinets for isolation or voltage transformation
5th 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
Internal Batteries	- Internal batteries available for 10KVA units with 14min of runtime and 20KVA units with 5min of runtime.

Mechanical Data

10-40KVA Enclosure

UPS Rating (kVA)	Dimensions			Weights lbs		Floor Loading lbs/sqft	
	Height	Width	Depth	UPS	w/Batts	UPS	w/Batts
10	71"	27"	31.5"	735	1,121	126	192
20	71"	27"	31.5"	763	1,169	131	200
30	71"	27"	31.5"	970	NA	165	NA
40	71"	27"	31.5"	1,147	NA	196	NA

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**