



UPS MILITARY FIELD-GRADE

UPS-1250 with High Voltage Adjustable Output

MILITARY FIELD-GRADE UNINTERRUPTIBLE POWER SUPPLY

1250 W Output Power	80-265 Vrms 47-65 Hz or 47-800 Hz AC Input Voltage	25 - 325 V Adjustable 0 - 6 A Adjustable 1250 W Main DC3 Output	12V - 50 V Fixed 500 W and 1250 W Aux DC1, DC2 Output Options	28 Vnom DC Input Voltage Option	>10/13.5/16 Min. - 1U Battery Run Time Options
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Sealed Construction, Ultra Low Weight, Compact Size



N+M REDUNDANCY

DESIGNED & MANUFACTURED IN USA

SynQor's Military Field-Grade Uninterruptible Power Supply units are designed for the extreme environmental and demanding electrical conditions of Military/Aerospace applications. SynQor's UPS incorporates field proven high efficiency designs and rugged packaging technologies. This UPS will accept a wide range of input voltage and frequency values while delivering a wide range of DC voltages to the load. The use of lithium ion batteries permits the lowest profile and lowest weight solution in its power class. It is designed to comply with a wide range of military standards. Options include two low voltage DC outputs, and a DC input rated for military 28 VDC sources.

Combine units for Higher Power and/or Redundancy

Features

- Sealed, weather-proof, shock-proof construction
- Hot swappable internal battery pack (lithium ion)
- >10 minute run-time at full power
- 1250 W output power
- Full power operation: -20°C to +55°C
- Universal AC input: 80-265 VAC; 47-65 Hz
- Power factor correction at AC input
- Dual input (AC and optional DC)
- True on-line double conversion
- Cold start with no AC or DC input connections
- DC3 programmable output: 25-325 V
- DC3 full power range: 210-325 V
- DC3 programmable current limit: 0-6 A
- DC3 ideal diode allows OR'ing with external sources
- DC3 ideal diode allows HV battery charging
- Up to 32 units can be combined to form a higher power fault-tolerant, glitch-free system, perhaps with N+M redundancy on DC3
- User I/O and Configuration signal ports
- 1U high rack mount unit (17.00"W x 21.60"D x 1.73"H)
- Low weight: 32 lbs. (including battery)

Options

- DC input (28 Vnom) for dual source
- UPS-1250-M-1U >16 minutes of run-time and -40°C operation
- UPS-1250-H-1U >13.5 minutes of run-time
- Wide-range AC input frequency: 47 Hz to 800 Hz
- DC1: Auxiliary isolated DC output (up to 500 W)
- DC2: High power DC output (up to 1250 W) parallelable for higher power

Specification Compliance

- UPS-1250 units are designed to meet:
- MIL-STD-1399-300B - Interface Std for Shipboard Systems
 - MIL-STD-810G - Environmental Engineering Considerations
 - MIL-STD-461F - Electromagnetic Interference
 - MIL-STD-704F - Aircraft Electrical Power Characteristics
 - MIL-STD-1275D - Vehicle Electrical Power Characteristics

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Technical Specification

INPUT CHARACTERISTICS

Operating AC Input

Voltage	80-265 Vrms*
Frequency	47-65 Hz (47-800 Hz Optional)
Input Power Factor	>0.98 at 47-65 Hz >0.97 at 400 Hz >0.93 at 800 Hz

Maximum Input Current Continuous	20 A (full load, 85 Vrms)
AC Input Circuit Breaker Rating (* Power Derating to 80% below 90 Vrms)	25 A

Operating DC Input (Optional)

Voltage	22-33 V
Continuous Maximum Input Current	62 A (full load, 22 V)
Transient Maximum Input Current	75 A

OUTPUT CHARACTERISTICS

Total Output Power Continuous	1250 W
Maximum DC3 Output Power	1250 W
Maximum DC2 Output Power	1250 W
Maximum DC1 Output Power	510 W

(Note: Available DC3 power is reduced by power delivered to DC2 and DC1)

DC 3 Output (Adjustable)

Voltage Range	25 - 325 V
Voltage Setpoint (Default)	270 V
Voltage Setpoint Accuracy	± 3%
Voltage Setpoint Resolution	1 V
Voltage Regulation (Over Load & Temperature)	± 5%
Current limit Range (User Adjustable)	0 - 6.0 A
Current Limit Resolution	4 mA
Current Limit Accuracy	± 50 mA
Short Circuit Protection Trip Current	20 A
Maximum Output Capacitance	18 mF

DC1 Output (Optional, Fixed)

Voltage Regulation (Over Load & Temperature)	± 3%
Common Voltage/Power combinations (DC1) (Other Options Available)	12 V at 42 A =504 W 15 V at 34 A =510 W 24 V at 21 A =504 W 28 V at 18 A =504 W 40 V at 12.5 A =500 W 50 V at 10 A =500 W

DC2 Output (Optional, Fixed)

Voltage Setpoint	± 3%
No Sharing	
Voltage Regulation (Over Load & Temperature)	-2%
Common Voltage/Power combinations (DC2)	50 V at 20 A =1000 W 24 V at 50 A =1200 W 28 V at 44.6 A =1250 W

Droop Share (Output droops vs. load to allow passive sharing among modules.)

24 V Option

Voltage Regulation (Over Load & Temperature)	-15%
	26 V at 0 A 22 V at 50 A =1100 W

28 V Option

Voltage Regulation (Over Load & Temperature)	-13%
	30 V at 0 A 26 V at 48.1 A =1250 W

Specifications subject to change without notice.

ENVIRONMENTAL CHARACTERISTICS MIL-STD-810G

Temperature Methods 501.5, 502.5

Operating Temperature	-20 °C to +55 °C
Non-operating Temperature	-40 °C to +65 °C

Altitude Method 500.5

Operating	0 - 18,000 ft
Non-operating	0 - 40,000 ft

Environmental Tests

Shock/Drop	Method 516.6, Procedures 1,4,6
Temperature Shock	Method 503.5, Procedure 1
Vibration	Method 514.6, CAT 5, 7, 8, 9, 24
Fungus	Method 508.6
Salt Fog	Method 509.5
Sand and Dust	Method 510.5, Procedures 1,2
Rain	Method 506.5 Procedure 1
Humidity	Method 507.5 Procedure 2
Mechanical Vibrations of Shipboard Equipment	Method 528 Procedure 1

RELIABILITY CHARACTERISTICS MIL-HDBK-217F

MTBF	100 kWhrs	MIL-217F Ground Benign, Ta=25 °C
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ELECTROMAGNETIC CAPABILITY MIL-STD-461F

CE101	30 Hz - 10 kHz
CE102	10 kHz - 10 MHz
CS101	30 Hz - 150 kHz
CS106	10 kHz - 40 GHz
CS114	10 kHz - 200 MHz
CS116	10 kHz - 100 MHz
RE101	30 Hz - 100 kHz
RE102	10 kHz - 18 GHz
RS101	30 Hz - 100 kHz
RS103	2 MHz - 40 GHz

MECHANICAL CHARACTERISTICS

1U Standard Battery Pack Chassis

Chassis Size	17.00"W x 21.60"D x 1.73"(1U)H
Case Material	Aluminum
Total Weight	32 lbs. (with chassis & battery)

Connectors

AC Input Connector	MS3470L14-4P
User I/O Ports	HD DB15 Female
Configuration I/O Port	HD DB15 Male
Ethernet Port	Amphenol RJF22N00, Code B
DC Input Connector	MS3470L18-8P
DC1 Output Connector	MS3470L14-4SW
DC2 Output Connector	MS3470L18-8S
DC3 Output Connector	MS3470L14-4S

Cooling Exhaust Fans

Sound Pressure Level (SPL)	54 dB(A)
Air Flow	0.67(m³/min) 23.7 CFM

Two fans in system, above specs are for each fan separately.

Technical Specification

High Density DB15 Female (15 Pin Connector)

Signal	PIN	Function
TX	2	RS232 DCE Device Transmit
RX	3	RS232 DCE Device Receive
GND	4, 5	Ground reference for all digital inputs and outputs
LOW_BATT	6	Open collector output where "low" indicates battery charge level <10%
ACIN_GOOD	7	Open collector output where "low" indicates AC Input voltage is within range
+5V	8	Vout with minimal current drive usable as a pull-up voltage for open collector output signals. Load must be <35 mA
ON_BATT	9	Open collector output where "low" indicates UPS is running on battery power
REMOTE_START	12	Drive this line "high" with ≥5 mA to enable UPS outputs
SHUTDOWN	13	Drive this line "high" with ≥5 mA to disable UPS outputs
OUT_OK	14	Open collector output where "low" indicates DC3 Output voltage is within range
OVER_TEMP	15	Open collector output where "low" indicates that the UPS is at or above its maximum temperature

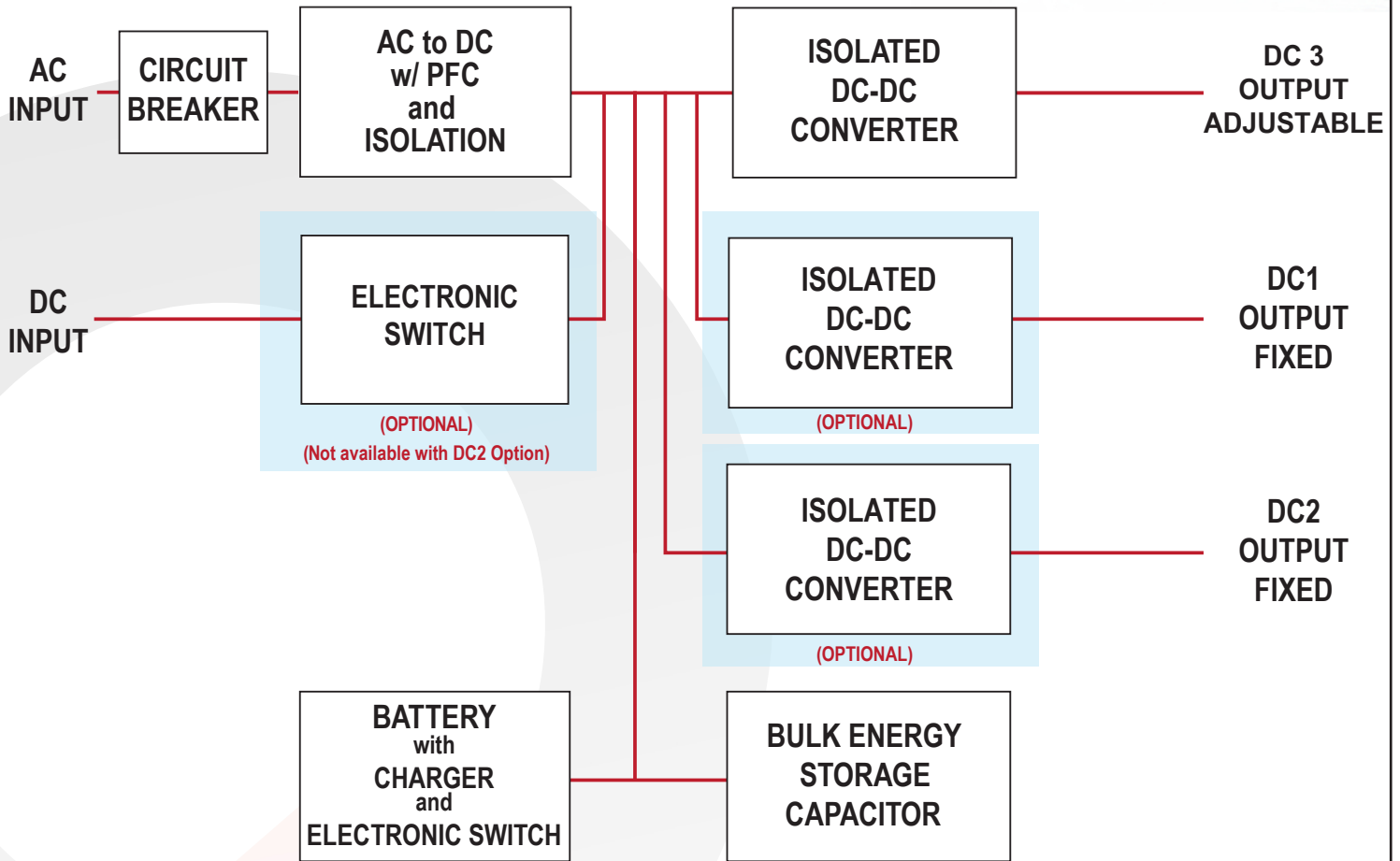


Safety & Qualifications	Pending
IEC 62133	Safety requirements for portable secondary sealed cells.
ST/SG/AC.10/11	UN Recommendations on the Transport of Dangerous Goods
UL 1642	Lithium Batteries
EN 62040-1	General and safety requirements for UPS (Does not apply to 400 Hz operation)
EN 62040-2	UPS Electromagnetic compatibility (Category C4)

LITHIUM-ION BATTERY CHARACTERISTICS		
UPS-1250-S-1U, BAT-0200 Pack Run Time		
1250 W : 10 min	1000 W : 13 min	625 W : 21 min
UPS-1250-H-1U, BAT-0400 Pack Run Time		
1250 W : 13.5 min	1000 W : 18 min	625 W : 27 min
UPS-1250-M-1U, BAT-0400 Pack Run Time		
1250 W : 16 min	1000 W : 22 min	625 W : 34 min
Recharge Time (to 90% charge)		
UPS-1250-[S,H,M]-1U, BAT-0200 or BAT-0400		
Total Output Power	< 1000 W	2 hrs
Temperature Range for Recharge: 0°C to 45°C		
Internal heaters maintain battery temperature above 0°C when input power is present.		
Battery charging only enabled below +45°C.		



Block Diagram





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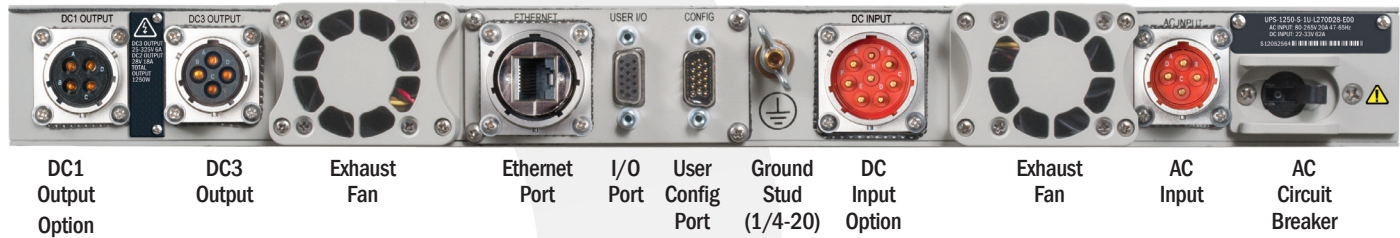
UPS-1250 with High Voltage Adjustable Output

Mechanical Features

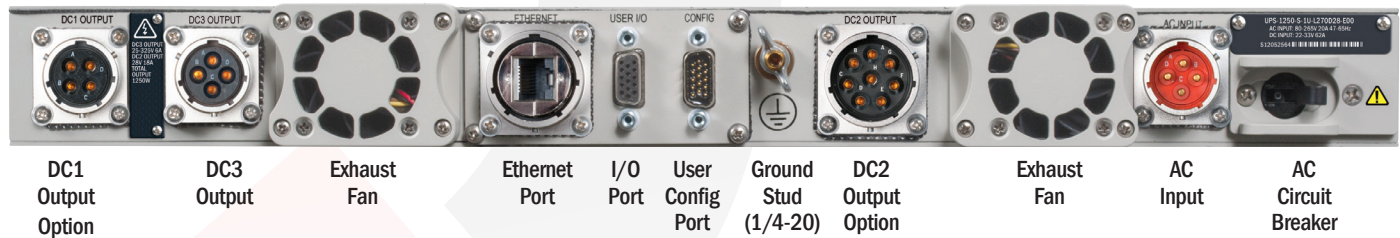
UPS-1250-[S,H,M]-1U



UPS-1250-[S,H,M]-1U DC3 with DC Input/DC1 Output Option

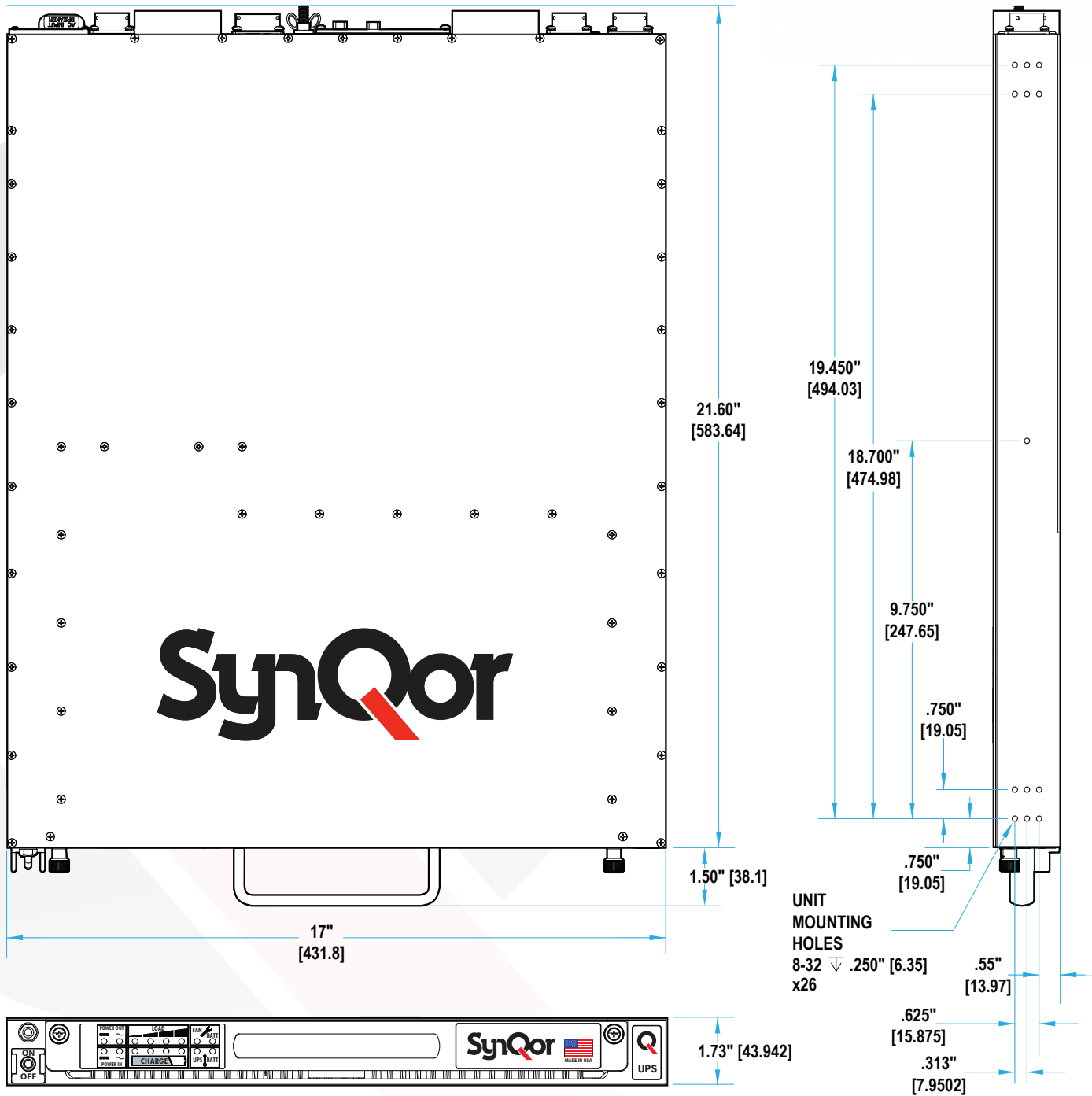


UPS-1250-[S,H,M]-1U DC3 with DC1 Output/DC2 Output Option





Mechanical Diagram 1U



Note:

- 1) ALL DIMENSIONS IN INCHES [mm]
- TOLERANCES: X.XXIN +/- 0.02 [0.5]
- X.XXXIN +/- 0.010 [0.25]



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Accessory Options

Replacement Battery Packs	
1U: 10 lbs., >10 Min Full Load Run Time	UPS-1250 1U BAT-0200-S-1U-000
1U: 11.8 lbs., >13.5 Min Full Load Run Time	BAT-0400-H-1U-000
1U: 11.8 lbs., >16 Min Full Load Run Time	BAT-0400-M-1U-000
Rail Kits	
Slide Rail Kit ²	SYN-9002
Fixed Bracket Kit ³	SYN-9031
Power Cables (10' long)	
AC Input (NEMA 5-20 Plug)	SYN-9101
AC Input (NEMA 5-15 Plug)	SYN-9104
AC Input (Hardwire)	SYN-9102
AC Input, 10' Grounded (Hardwire)	SYN-9108
AC Input, 10' UK 13A 250V Plug	SYN-9111
AC Input, 10', SCHUKO 16A, 250V-3W Euro Plug	SYN-9112
DC3 Output, 10', Hardwire	SYN-9130
DC2 Output (Hardwire)	SYN-9174
DC2 Output (Fork Connectors)	SYN-9175
DC1 Output (Fork Connectors)	SYN-9171
DC1 Output (Hardwire)	SYN-9172
DC Input (Ring Connectors)	SYN-9151
DC Input (Hardwire)	SYN-9152
DC Input (NATO Connector)	SYN-9154
Rackmount Transit Cases	
Transit Case, 3U, Gray, with Casters ³	SYN-9410
Transit Case, 3U, Gray, No Casters ³	SYN-9412

Notes:

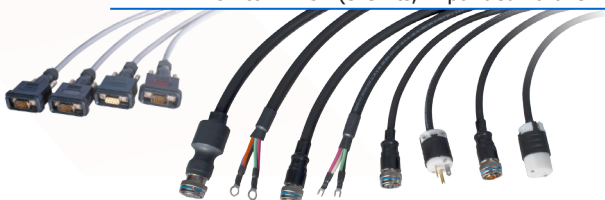
- 1: Other Options also available, check the website or contact power@synqor.com for further information.
- 2: Slide Rail Kit (SYN-9002) is not recommended for transit and ruggedized use.
- 3: Fixed Bracket Kit (SYN-9031) with Transit Case (SYN-9410 or SYN-9412) is required for transit and ruggedized use (qualified to pass MIL-STD-810G Loose Cargo and Transit Drop requirements).



Optional Rackmount Transit Case



User Communications (I/O) Cables	
HD DB15M to DB9F (RS232, 10')	SYN-9301
HD DB15M to DB15M (RS232 and Digital I/O, 10')	SYN-9305
Mil-Circular to RJ45 (Ethernet, 10')	SYN-9321
Configuration Cables (Main DC Output Sharing Only)	
HD DB15F to DB15F (2 Units, Expanded Paralleling, 3')	SYN-9341
HD DB15F to DB15F (3 Units, Expanded Paralleling, 3')	SYN-9343





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Ordering Information

Base Models				
Model Number	Power	Battery Run-Time @Full Power (80% Power)	Height (W x D x H)	Weight
UPS-1250-S-1U (1 BAT-0200-S Battery Pack)	1250 W	>10 min. (>13 min.)	1U (17.00" x 21.60" x 1.73")	32 lbs.
UPS-1250-H-1U (1 BAT-0400-H Battery Pack)	1250 W	>13.5 min. (>18 min.)	1U (17.00" x 21.60" x 1.73")	33.8 lbs.
UPS-1250-M-1U (1 BAT-0400-M Battery Pack)	1250 W	>16 min. (>22 min.)	1U (17.00" x 21.60" x 1.73")	33.8 lbs.

Base Models	Options					Options		
	AC Input Freq	DC3 Output	DC Input / DC2 Output	DC1 Output	Additional Options	AC input Freq		
UPS-1250-S-1U- UPS-1250-H-1U- UPS-1250-M-1U-	L W	270	S	00	-E 00	AC input Freq	L 47-65 HZ W 47-800 HZ	
			D	12			DC3 Output	270 270V Default, 25-325 Vdc
			M	15			DC Input / DC2 Output	S Not Installed
			P	24				D DC Input
			R	28				M DC2 Out 24 VDC with Droop Share
V	40	P DC2 Out 24 VDC No Share						
W	50	DC1 Output	R DC2 Out 28 VDC with Droop Share V DC2 Out 28 VDC No Share W DC2 Out 50 VDC No Share					
					Additional Options	-E Ethernet/SNMP with Configuration Loading 00 No CE Marking		

Not all combinations make valid part numbers, please contact SynQor for availability. See the Product Summary web page for more options.

Examples:
UPS-1250-S-1U-L270D50-E00, UPS-1250-M-1U-W270M28-E00

Contact SynQor for further information and to order:
Phone: 978-849-0600 **Toll Free:** 888-567-9596 **Fax:** 978-849-0602
E-mail: power@synqor.com **Web:** www.synqor.com
Address: 155 Swanson Road, Boxborough, MA 01719 USA

WARRANTY
SynQor offers a 1 year limited warranty. Complete warranty information is listed on our website or is available upon request from SynQor.

PATENTS
SynQor holds numerous U.S. patents, one or more of which apply to most of its power conversion products. Any that apply to the product(s) listed in this document are identified by markings on the product(s) or on internal components of the product(s) in accordance with U.S. patent laws. SynQor's patents include the following:
7,050,309 7,765,687 7,787,261
8,149,597 8,644,027