SynQor®

UPS MILITARY FIELD-GRADE

UPS-1250DC

MILITARY FIELD-GRADE UNINTERRUPTIBLE POWER SUPPLY

1250 W Output Power	**80-265 Vrms** **47-65 Hz or 47-800 Hz** AC Input Voltage Options	**24 Vdc @ 52A** **28 Vdc @ 45 A** **48 Vdc @ 26 A** DC Output	**>10 /13.5/16 Min. (-1U, -2S)** Battery Run Time Options

Sealed Construction, Ultra Low Weight, Compact Size



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 well-conditioned DC output to the load. Up to 32 units can be placed in parallel with N+M redundancy. 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.

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 DC)
- True on-line double conversion
- Up to 32 units in parallel with N+M redundancy
- Cold start with no AC or DC input connections
- User I/O and Configuration signal ports
- 1U high rack mount unit (17"W x 22.25"D x 1.73"H)
- Low weight: 33 lbs. (including battery)

In-Line Manufacturing Process

- AS9100 and ISO 9001 certified facility
- Full component traceability

Options

- 48 V, 28 V, or 24 V output voltage
- UPS-1250-H-[1U,2S] Standard Battery Pack. > 13.5 min. run-time
- UPS-1250-M-[1U,2S] Standard Battery > 16 min. run-time and -40°C operation
- 2S Shallow rack mount (17"W x 13.80"D x 3.40"H)
- Wide-range AC input frequency: 47 Hz to 800 Hz

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

OUTPUT CHARACTERISTICS	
Output Power Continuous	1250 W
Voltage Setpoint Accuracy	± 3%
Voltage Regulation (Over Load & Temperature)	± 5%
DC Output - Fully Regulated	
48V Option	
Voltage Setpoint (Nominal)	48 V
Operating Output Current Range	0 - 26 A
Overload Current Maximum (< 1 sec)	45 A
28V Option	
Voltage Setpoint (Nominal)	28 V
Operating Output Current Range	0 - 45 A
Overload Current Maximum (< 1 sec)	60 A
24V Option	
Voltage Setpoint (Nominal)	24 V
Operating Output Current Range	0 - 52 A
Overload Current Maximum (< 1 sec)	60 A

RELIABILITY CHARACTERISTICS MIL-		
MTBF	100 kHrs	MIL-217F

ELECTROMAGNETIC CAPABILITY MIL-	
CE101**	30 Hz - 10 kHz
CE102	10 kHz - 10 MHz
CS101	30 Hz - 150 kHz
CS106	Pulse Transient
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

** Regarding MIL-STD-461 CE-101, the 50 uH series inductance of a standard LISN adversely affects the input ripple of the UPS (DC input only). Such a large series source inductance (50 uH in each power lead) is not generally encountered in a 28 V DC source of such high power rating. Therefore, testing for CE-101 (DC input) was conducted with 3 different configurations: two using 50 uH LISNs and a 54 mF capacitor connected across the input to the UPS, and one using 5 uH LISNs for which no additional capacitor was added.
These configurations all passed CE-101 for all frequencies.

* Limited to +50 °C by battery pack. See Operator's Guide for details.

Specifications subject to change without notice.

MECHANICAL CHARACTERISTICS	
UPS-1250-S-1U (Standard Battery Pack)	
Chassis Width	17"W
Chassis Depth	22.25"D
Chassis Height	1.73"(1U)H
Case Material	Aluminum
Total Weight	33 lbs. (with chassis & battery)
UPS-1250-S-2S (Shallow Rack, Standard Battery Pack)	
Chassis Width	17"W
Chassis Depth	13.80"D
Chassis Height	3.40"(2U)H
Case Material	Aluminum
Total Weight	33 lbs. (with chassis & battery)
Cooling Exhaust Fans	
Sound Pressure Level (SPL)	54 dB(A)
Air Flow	0.67(m^3/min) 23.7 CFM
Two fans in system, above specs are for	

MECHANICAL CONNECTORS	
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
DC Output Connector	MS3470L18-8S

ENVIRONMENTAL	
Operating Temperature (Methods 501.5, 502.5)	
UPS-1250-S-1U	-20 °C to +55 °C
UPS-1250-S-2S From DC Input	-20 °C to +55 °C
UPS-1250-S-2S From AC Input*	-20 °C to +50 °C
Non-Operating Temperature	
All Models	-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

High Density DB15 Female (15 Pin Connector)

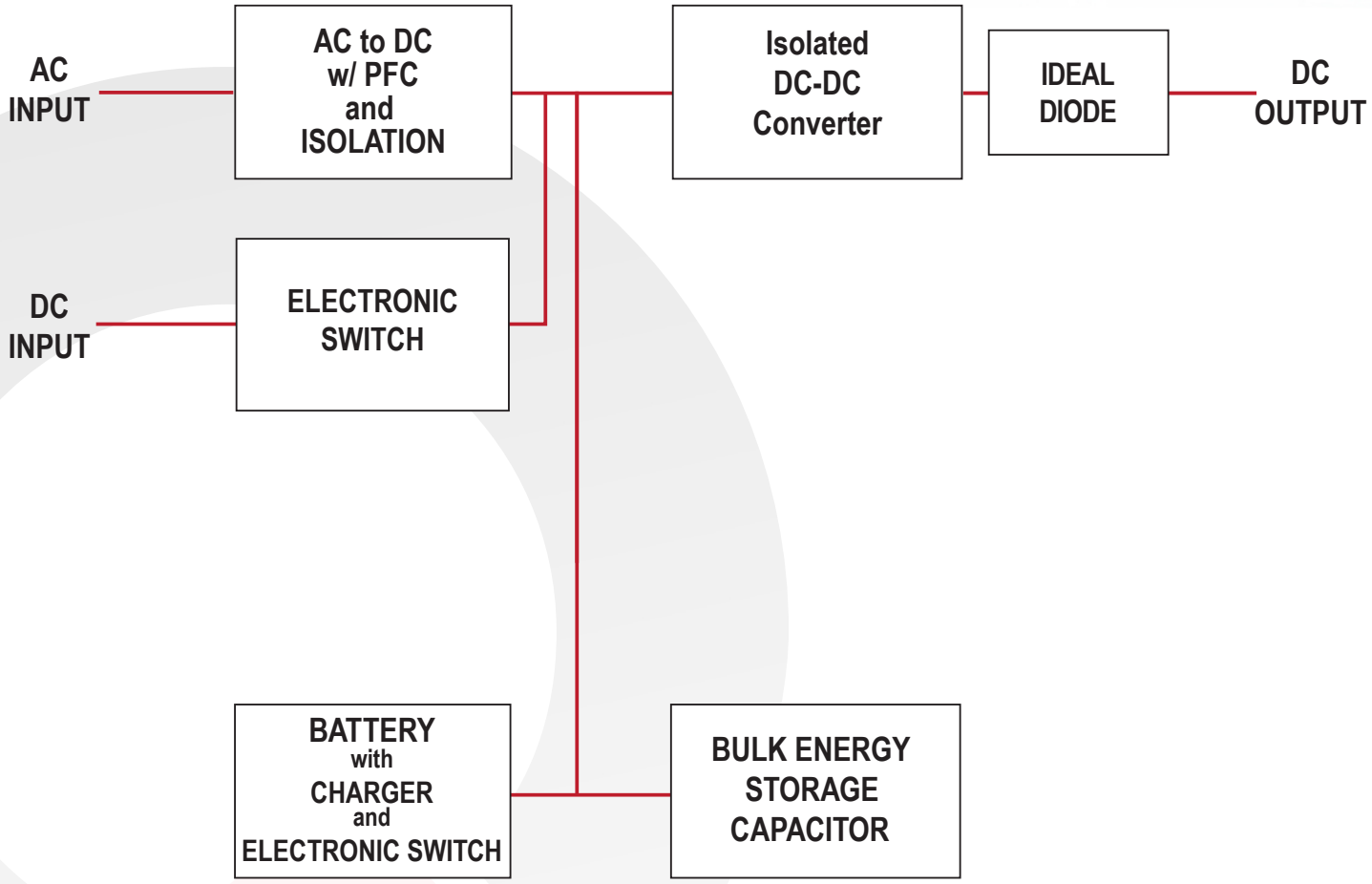
Signal	PIN	Function
TX	2	RS232 DCE Device Transmit
RX	3	RS232 DCE Device Receive
GND	4, 5	Ground reference for all digital inputs and outputs
$\overline{\text{LOW_BATT}}$	6	Open collector output where "low" indicates battery charge level <10%
$\overline{\text{ACIN_GOOD}}$	7	Open collector output where "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
$\overline{\text{ON_BATT}}$	9	Open collector output where "low" indicates that the 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
$\overline{\text{OUT_OK}}$	14	Open collector output where "low" indicates DC Output voltage is within range
$\overline{\text{OVER_TEMP}}$	15	Open collector output where "low" indicates that the UPS is at or above its maximum temperature



Safety & Qualifications	
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)

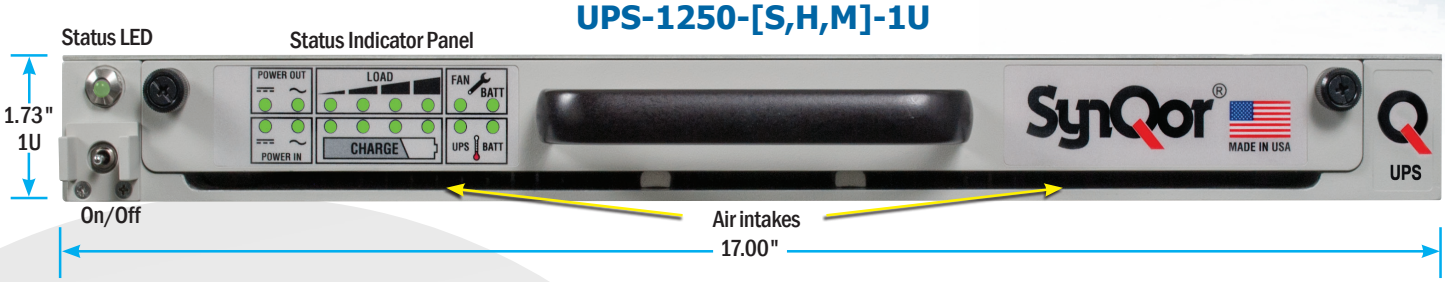
LITHIUM-ION BATTERY CHARACTERISTICS		
UPS-1250-S-[1U,2S], BAT-0200 Pack Run Time		
1250 W : 10 min	1000 W : 13 min	625 W : 21 min
UPS-1250-H-[1U,2S], BAT-0400 Pack Run Time		
1250 W : 13.5 min	1000 W : 18 min	625 W : 27 min
UPS-1250-M-[1U,2S], BAT-0400 Pack Run Time		
1250 W : 16 min	1000 W : 22 min	625 W : 34 min
Recharge Time (to 90% charge)		
UPS-1250-[S,H,M]-[1U,2S], 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



Mechanical Features

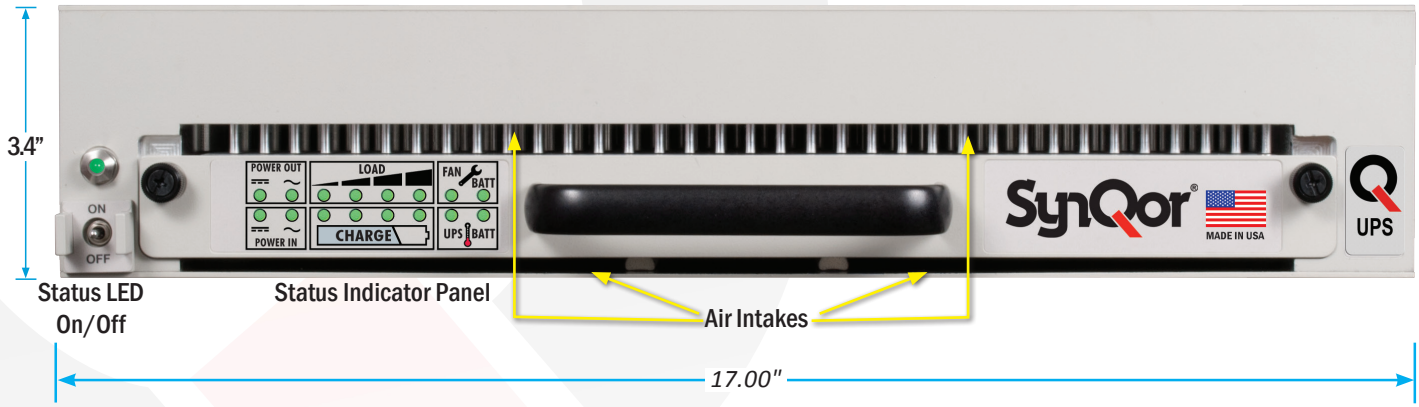
UPS-1250-[S,H,M]-1U



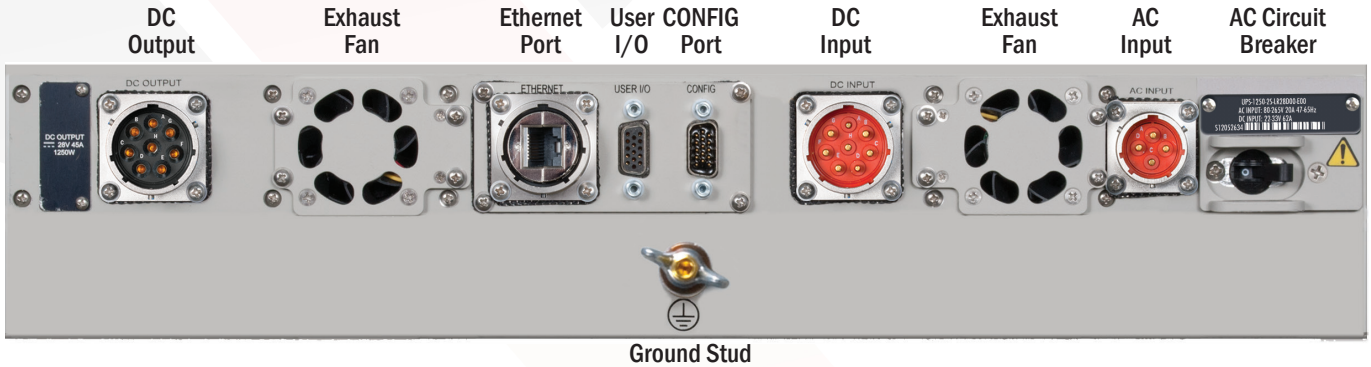
UPS-1250-[S,H,M]-1U with DC & AC Input/DC Output



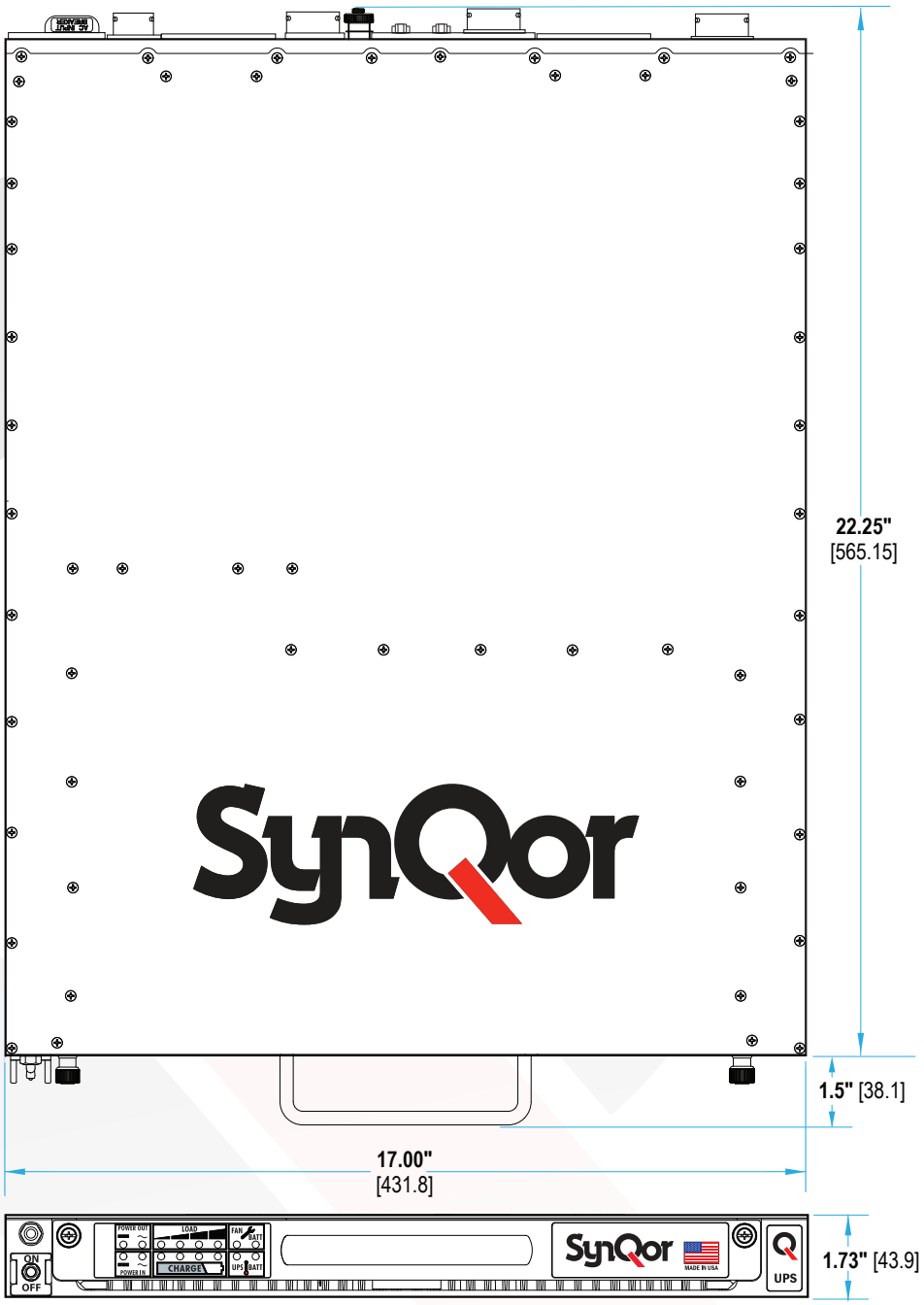
UPS-1250-[S,H,M]-2S

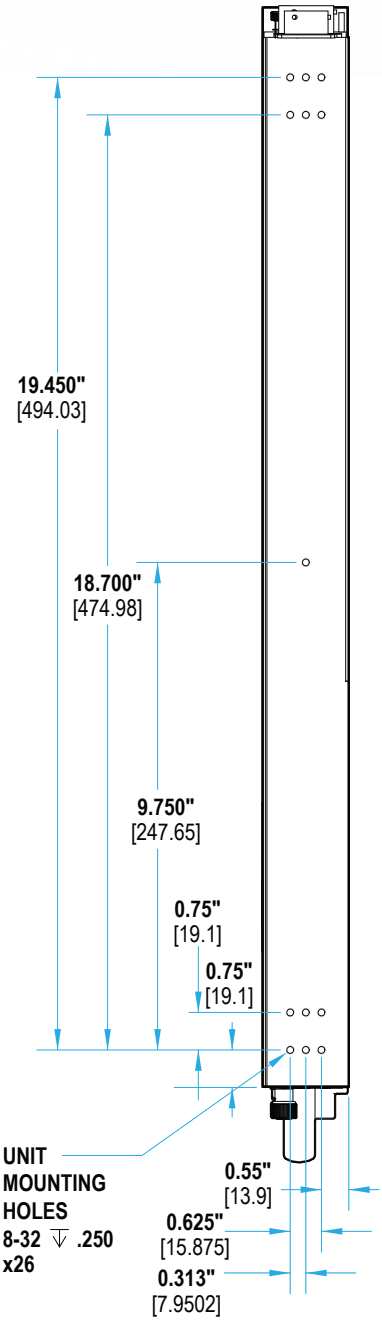


UPS-1250-[S,H,M]-2S Unit with AC & DC Input / DC Output



Mechanical Diagram 1U

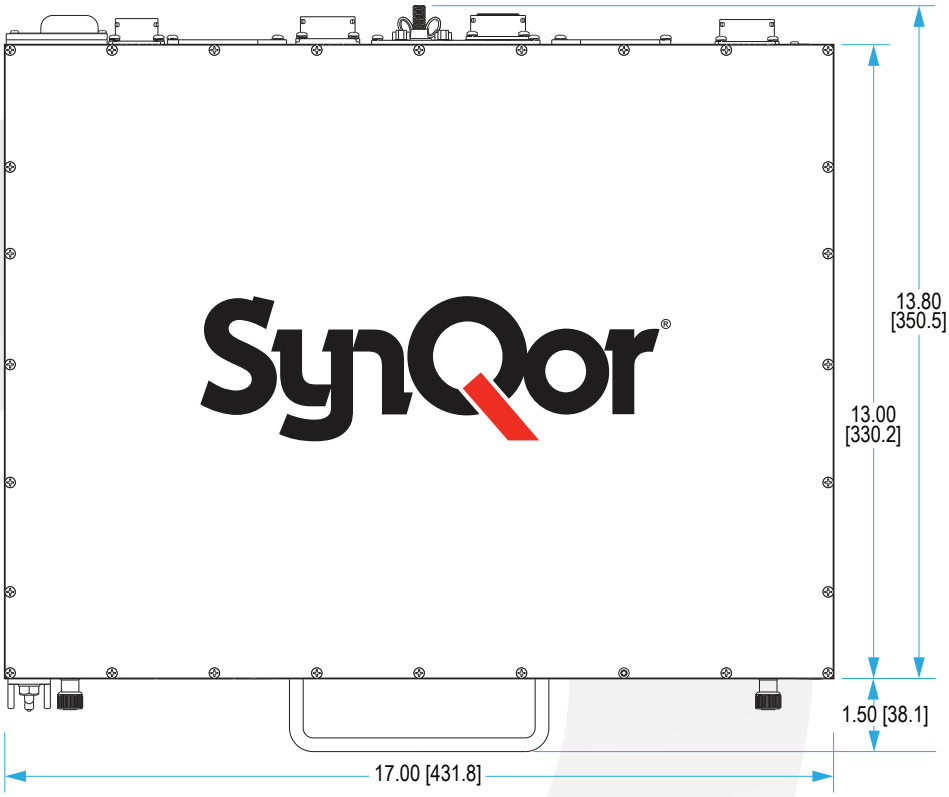


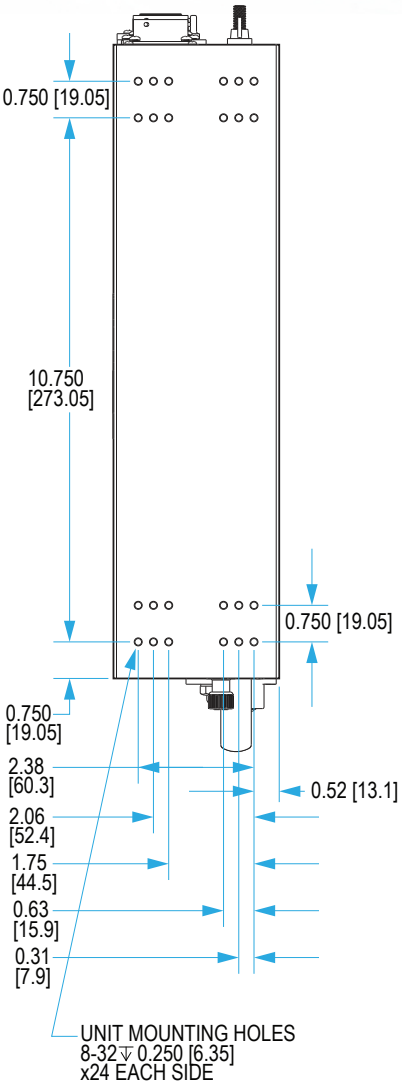


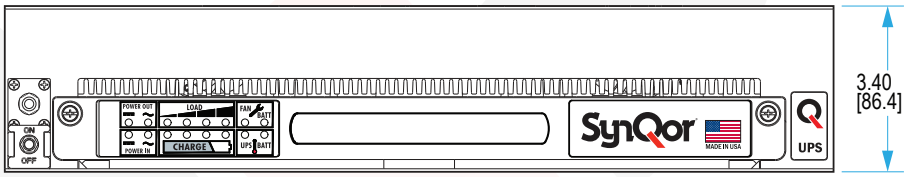
Note:

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

Shallow Rack Mechanical Diagrams







Note:

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

Accessory Options

Replacement Battery Packs	UPS-1250 1U	UPS-1250 2S
1U: 10 lbs., >10 Min Full Load Run Time	BAT-0200-S-1U-000	BAT-0200-S-1U-000
1U: 11.8 lbs., >13.5 Min Full Load Run Time	BAT-0400-H-1U-000	BAT-0400-H-1U-000
1U: 11.8 lbs., >16 Min Full Load Run Time	BAT-0400-M-1U-000	BAT-0400-M-1U-000
Rail Kits		
Slide Rail Kit[2]	SYN-9002	SYN-9043
Fixed Bracket Kit[3]	SYN-9031	SYN-9041
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	
DC Input (Ring Connectors)	SYN-9151	
DC Input (Hardwire)	SYN-9152	
DC Input (NATO Connector)	SYN-9154	
DC Output (Hardwire)	SYN-9174	
DC Output (Fork Connectors)	SYN-9175	
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 andTransit 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 for Paralleling	
HD DB15F to DB15F (2 Units, 3')	**SYN-9341**
HD DB15F to DB15F (3 Units, 6')	**SYN-9343**
HD DB15F to DB15F (4 Units, 9')	**SYN-9344**

* Contact factory for additional configuration cables.



Ordering Information

DC Base Models				
Base 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" x 22.25" x 1.73")	**33 lbs.**
UPS-1250-H-1U (1 BAT-0400-H Battery Pack)	**1250 W**	**>13.5 min.** (>18 min.)	**1U** (17" x 22.25" x 1.73")	**34.8 lbs.**
UPS-1250-M-1U (1 BAT-0400-M Battery Pack)	**1250 W**	**>16 min.** (>22 min.)	**1U** (17" x 22.25" x 1.73")	**34.8 lbs.**
UPS-1250-S-2S (1 BAT-0200-S Battery Pack)	**1250 W**	**>10 min.** (>13 min.)	**2U** (17" x 13.80" x 3.40")	**33 lbs.**
UPS-1250-H-2S (1 BAT-0400-H Battery Pack)	**1250 W**	**>13.5 min.** (>18 min.)	**2U** (17" x 13.80" x 3.40")	**34.8 lbs.**
UPS-1250-M-2S (1 BAT-0400-M Battery Pack)	**1250 W**	**>16 min.** (>22 min.)	**2U** (17" x 13.80" x 3.40")	**34.8 lbs.**

Base Model	Options				
	AC Input Frequency	DC Regulation Type	DC Output Voltage	DC Input	Additional Options
UPS-1250-S-1U- **UPS-1250-H-1U-** **UPS-1250-M-1U-** **UPS-1250-S-2S-** **UPS-1250-H-2S-** **UPS-1250-M-2S-**	**L** **W**	**R** **P**	**48** **28** **24**	**D00**	**-E** **00** **CE**

Options		
AC Input Frequency	**L**	47-65 Hz
	W	47-800 Hz
DC Regulation	**R**	Fully Regulated, No Paralleling
	P	Fully Regulated with Paralleling
DC Output	**48**	48 V Output
	28	28 V Output
	24	24 V Output
DC Input	**D00**	DC Input
Additional Options	**-E**	Ethernet/SNMP with Configuration Loading
	00	No CE Marking
	CE	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-LR28D00-E00, UPS-1250-M-1U-WR28D00-ECE

Contact SynQor for further information and to order:
Phone: 1 (603) 541-4141 **Web**:www.synqor.com
E-mail: power@synqor.com
Address: 9 Northeastern Blvd., Suite 200, Salem, NH 03079 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:

7,765,687 7,787,261
8,149,597 8,644,027