



**DC OUTPUT UPS**  
**UPS-1250-S-1U**  
**UPS-1250-E-2U**

**MILITARY-GRADE UNINTERRUPTIBLE POWER SUPPLY**

<b>1250 W Output Power</b>	<b>80-265 Vrms</b> <b>47-65 Hz or 47-800 Hz</b> <b>AC Input Voltage Options</b>	<b>28 Vdc @ 45 A</b> <b>Full or Semi Regulation</b> <b>DC Output Options</b>	<b>&gt;10 Min. - 1U</b> <b>&gt;24 Min. - 2U</b> <b>Battery Run Time Options</b>
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*Sealed Construction, Ultra Low Weight, Compact Size*

DESIGNED & MANUFACTURED IN USA



N+M Redundancy

SynQor's Military-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. The use of lithium polymer batteries permits the lowest profile and lowest weight solution in its power class. It is designed and manufactured in SynQor's USA facilities to comply with a wide range of military standards.

**Features**

- Sealed, weather-proof, shock-proof construction
- Hot swappable internal battery pack (lithium polymer)
- >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
- 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**

- Fully Regulated or Semi-Regulated DC output
- 2U Extended battery pack gives >24 minutes of run-time
- 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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# DC OUTPUT UPS

## UPS-1250-S-1U

## UPS-1250-E-2U

### 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

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
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#### DC Output - Fully Regulated

Voltage Setpoint (Nominal)	28 V
Voltage Setpoint Accuracy	± 3%
Voltage Regulation (Over Load & Temperature)	± 5%
Operating Output Current Range	0 - 45 A
Overload Current Maximum ( < 1 sec)	60 A

#### DC Output - Semi-Regulated (Parallelable)

Voltage Setpoint (Nominal)	28 V
Voltage Regulation	-11%
	28 V at 0 A
	25 V at 50 A
Operating Output Current Range	0 - 50 A
Overload Current Max ( < 1 sec)	60 A

#### MECHANICAL CHARACTERISTICS

##### 1U Standard Battery Pack Chassis

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)

##### Optional 2U Extended Battery Pack

Chassis Width	17"W
Chassis Depth	22.25"D
Chassis Height	3.33"(2U)H
Case Material	Aluminum
Total Weight	52 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
DC Output Connector	MS3470L18-8S

#### Cooling Exhaust Fans

Sound Pressure Level (SPL)	54 dB(A)
Air Flow	0.67(m <sup>3</sup> /min) 23.7 CFM

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

#### ENVIRONMENTAL CHARACTERISTICS MIL-STD-810G

##### Temperature Methods 501.5, 502.5

Operating Temperature	-20 °C to +55 °C
Non-operating Temperature	-20 °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 kHrs	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

\* 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.

## 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 that the UPS is running on battery power.
REMOTE_START	12	Drive this line "high" with $\geq 5$ mA to enable UPS outputs
SHUTDOWN	13	Drive this line "high" with $\geq 5$ mA to disable UPS outputs
OUT_OK	14	Open collector output where "low" indicates DC Output voltage is within range
OVER_TEMP	15	Open collector output where "low" indicates that the UPS is at or above its maximum temperature

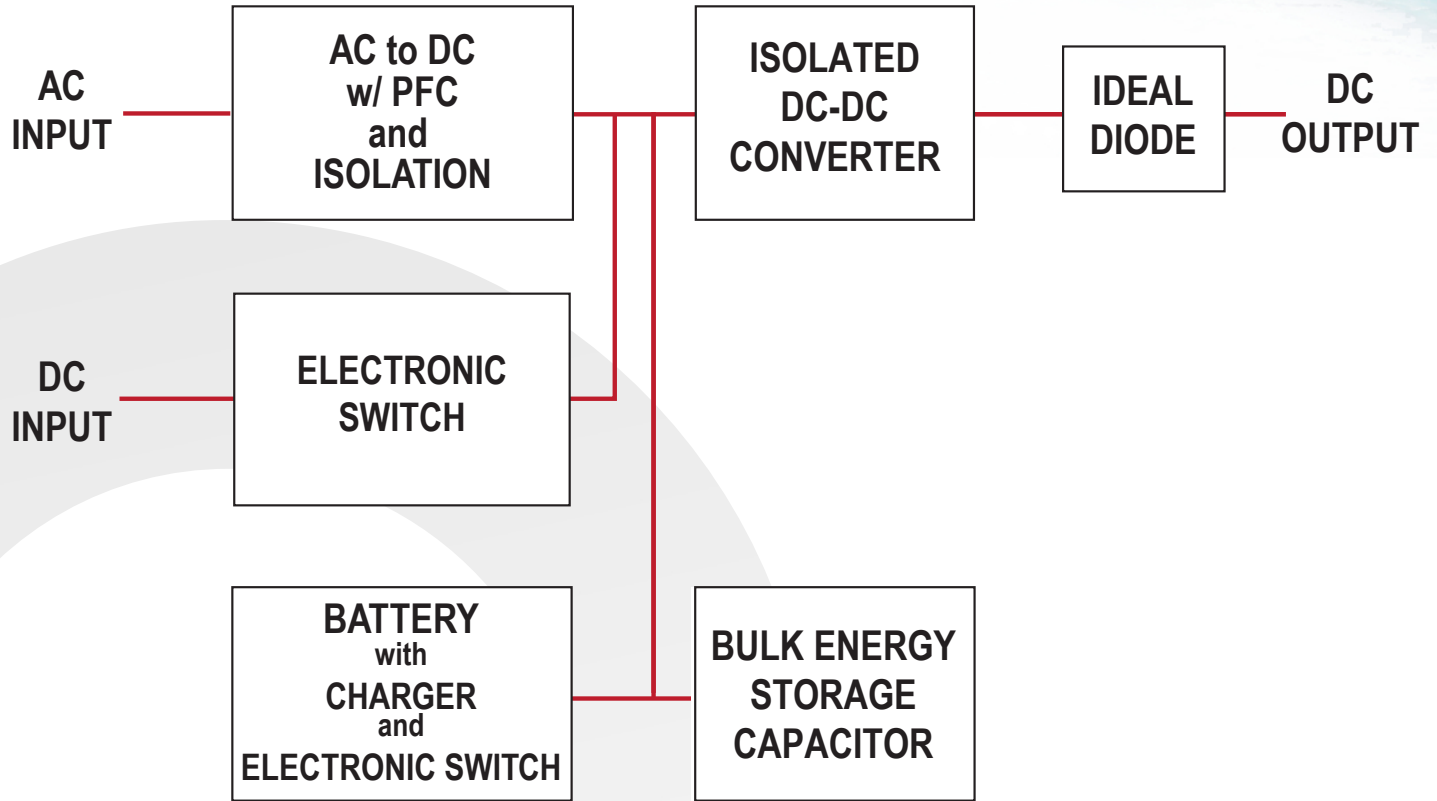
Safety & Qualifications	Pending
IEC 62133	Safety requirements for portable secondary sealed cells.
ST/SG/AC.10/11	UN Recommendations on the Transport of Dangerous Goods
UL 1642	Lithium Batteries
EN 62040-1	General and safety requirements for UPS (Does not apply to 400 Hz operation)
EN 62040-2	UPS Electromagnetic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

LITHIUM-POLYMER BATTERY CHARACTERISTICS		
<b>Standard 1U Battery Pack Run Time</b>		
1250 W : 10 min	1000 W : 13 min	625 W : 21 min
<b>Optional 2U Extended Battery Pack Run Time</b>		
1250 W : 24 min	1000 W : 31 min	625 W : 50 min
<b>Recharge Time (to 90% charge)</b>		
<b>Standard</b>		
Total Output Power	< 1000 W	2 hrs
<b>Optional 2U Extended Battery Pack</b>		
Total Output Power	< 1000 W	4 hrs
<b>Temperature Range for Recharge: 0°C to 45°C</b>		
Internal heaters maintain battery temperature above 0°C when input power is present.		
Battery charging only enabled below +45°C.		





## Block Diagram





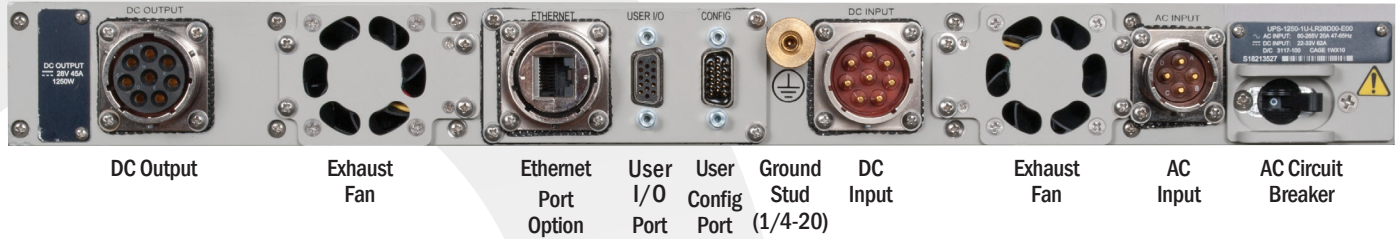
**DC OUTPUT UPS**  
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**UPS-1250-E-2U**

**Mechanical Features**

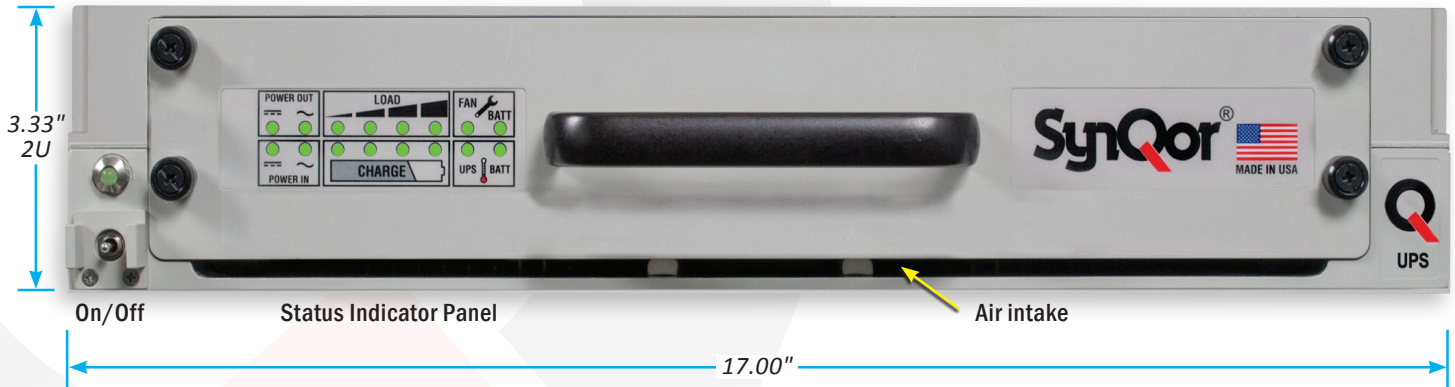
**UPS-1250-S-1U**



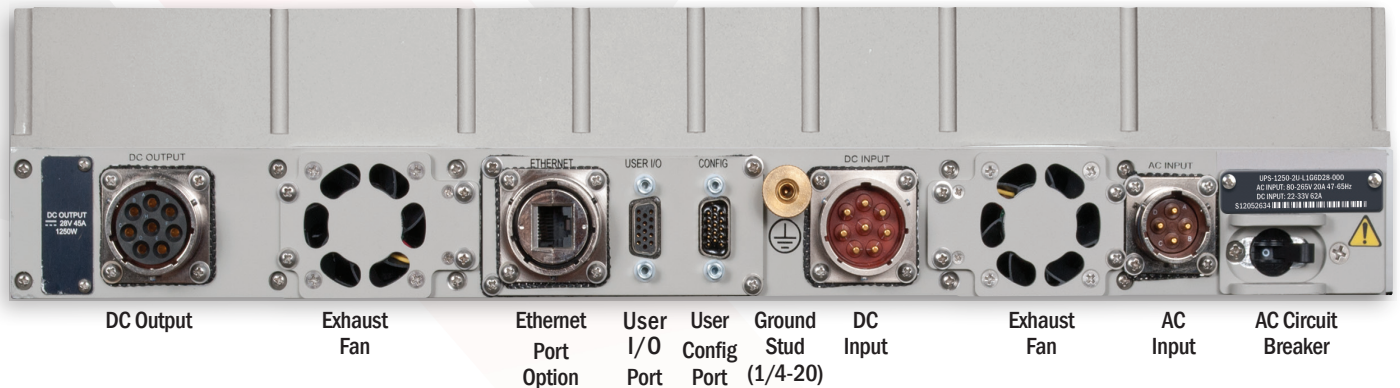
**UPS-1250-S-1U with DC & AC Input/DC Output**



**UPS-1250-E-2U with DC & AC Input/DC Output**



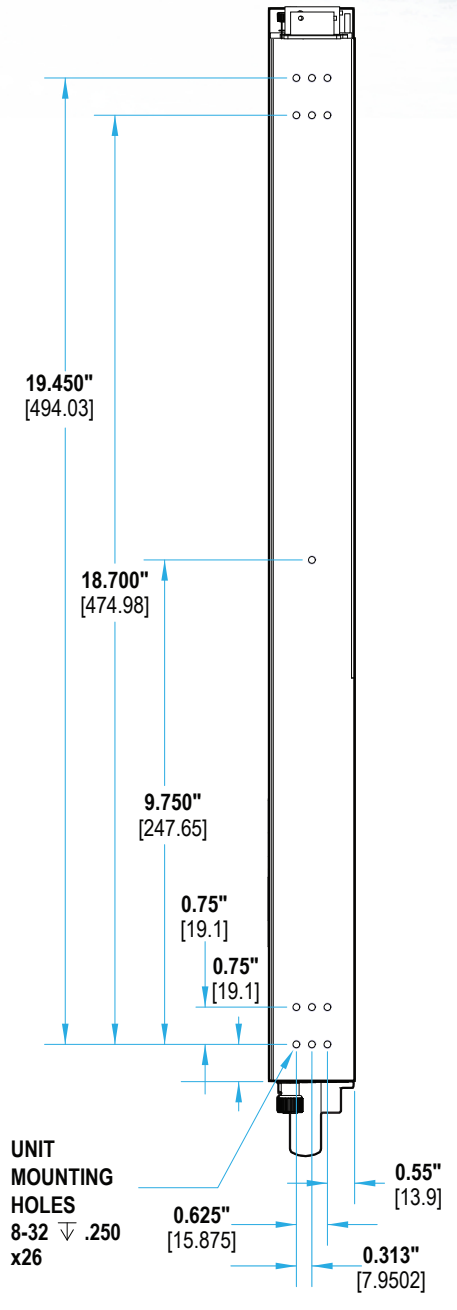
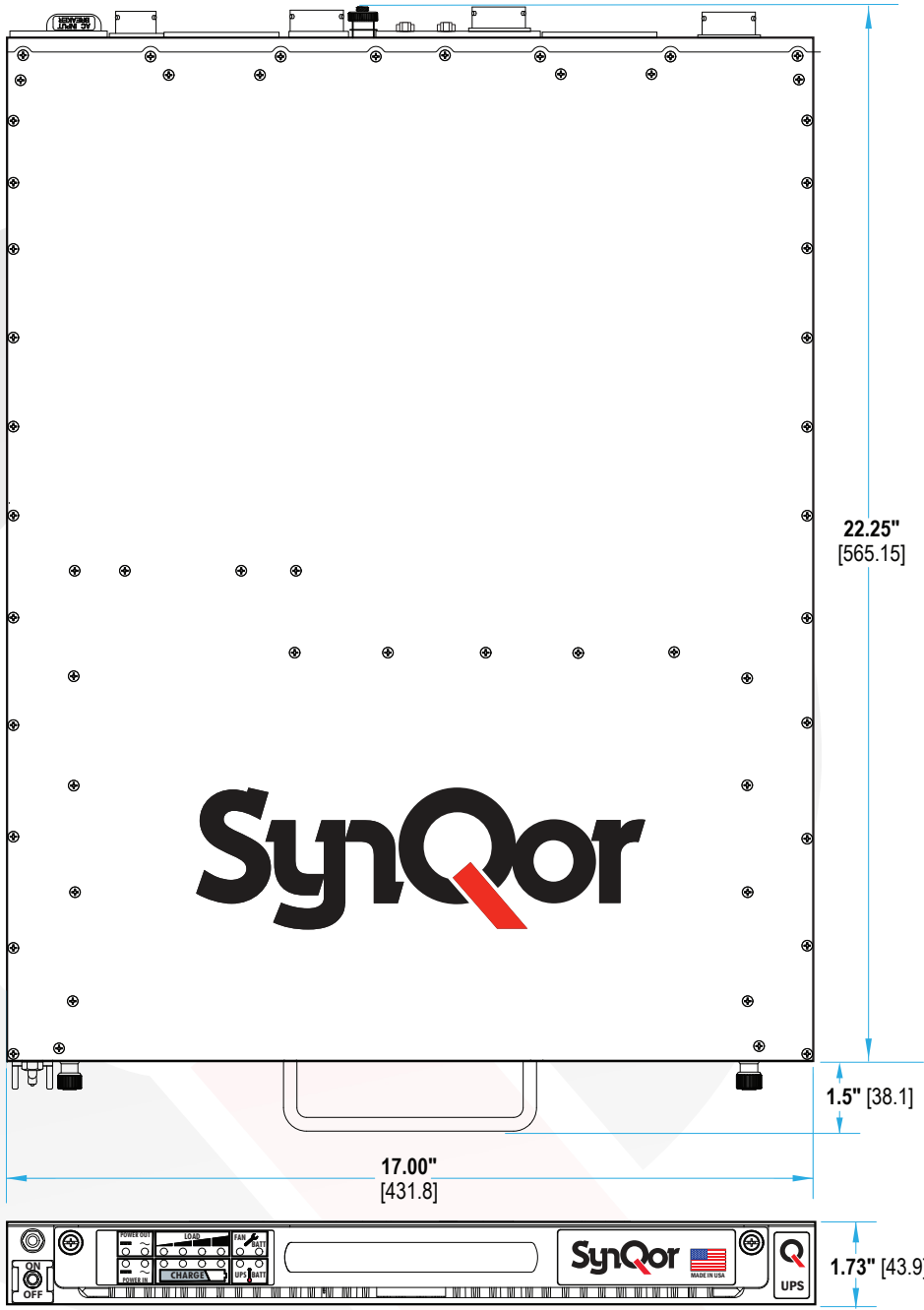
**UPS-1250-E-2U with DC & AC Input/DC Output**





**DC OUTPUT UPS**  
**UPS-1250-S-1U**  
**UPS-1250-E-2U**

**Mechanical Diagrams**

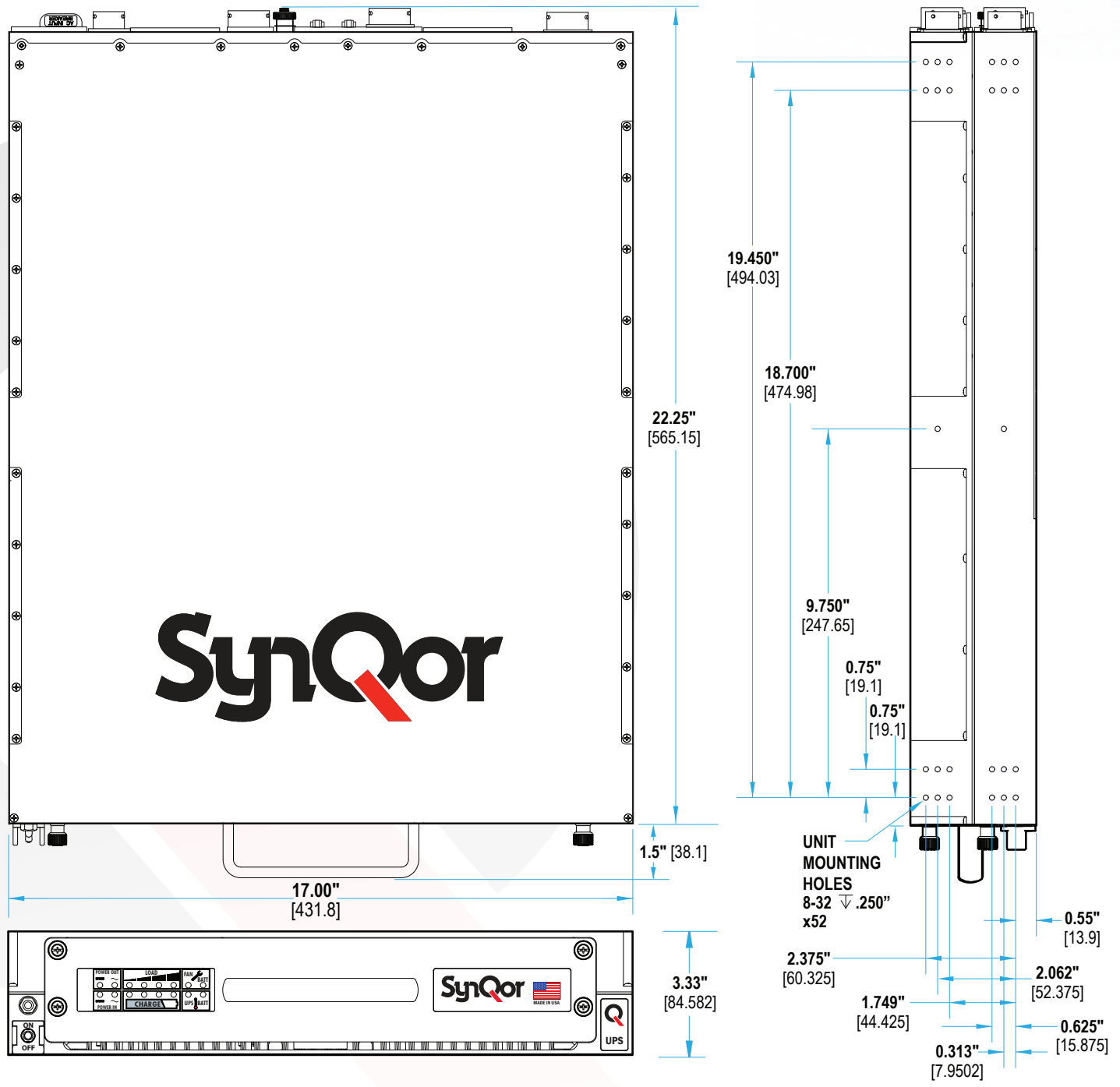






**DC OUTPUT UPS**  
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**UPS-1250-E-2U**

Extended Mechanical





**DC OUTPUT UPS**  
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**UPS-1250-E-2U**

**Accessory Options**

Replacement Battery Packs	UPS-1250-S Series	UPS-1250-E Series
1U; 10 lbs. (200 Watt Hours)	BAT-0200-S-1U-000	
2U; 21 lbs. (500 Watt Hours)		BAT-0500-E-2U-000
Rail Kits		
Slide Rail Kit <sup>2</sup>		SYN-9002
Fixed Bracket Kit <sup>3</sup>	SYN-9031	SYN-9033
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 <sup>3</sup>		SYN-9410
Transit Case, 3U, Gray, No Casters <sup>3</sup>		SYN-9412
Fan Replacement Kit		
Replaceable Fan Modules		SYN-9450

**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







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Ordering Information

Base Models				
Model Number	Power	Battery Run-Time @Full Power (80% Power)	Height	Weight
<b>UPS-1250-S-1U</b> (1 Standard Battery Pack)	<b>1250 W</b>	<b>&gt;10 min.</b> (>13 min.)	<b>1U</b>	<b>33 lbs.</b>
<b>UPS-1250-E-2U</b> (1 Extended Battery Pack)	<b>1250 W</b>	<b>&gt;24 min.</b> (>31 min.)	<b>2U</b>	<b>52 lbs.</b>

Options	
<b>AC Input Frequency</b>	47 - 65 Hz; 47 - 800 Hz
<b>DC Output Regulation</b>	Fully-Regulated; Semi-Regulated

UPS	Output Power	Battery Pack Size	Height	AC Input Frequency	DC Regulation Type	DC Output Voltage	DC Input	Reserved	Options
<b>UPS</b>	<b>1250</b>	<b>S</b>	<b>1U</b>	<b>L</b>	<b>R</b>	<b>28</b>	<b>D</b>	<b>00</b>	<b>E00</b>
<b>UPS</b>	<b>1250:1250 W</b>	<b>S: Standard</b> <b>E: Extended</b>	<b>1U: 1.73"</b> <b>2U: 3.33"</b>	<b>L: 47-65 Hz</b> <b>W: 47-800 Hz</b>	<b>R: Fully Regulated</b> <b>D: Semi-Regulated</b>	<b>28 V</b> <b>28: Output</b>	<b>D: DC Input</b>	<b>00: N/A</b>	<b>000: None</b> <b>OCE: CE Marking</b> <b>E00: Ethernet/SNMP</b> <b>ECE: Ethernet/SNMP &amp; CE Marking</b>

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

\*Note: Order "D: Semi-Regulated" option to place multiple UPS units in parallel

Examples: **UPS-1250-S-1U-LR28D00-000**, **UPS-1250-S-1U-WR28D00-E00**  
**UPS-1250-S-1U-LD28D00-OCE** (Parallelable with CE mark)

**Contact SynQor for further information and to order:**

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 Boxborough, MA 01719  
 USA

**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:

5,999,417	6,222,742	6,545,890	6,594,159	6,894,468	6,896,526
6,927,987	7,050,309	7,072,190	7,085,146	7,119,524	7,269,034
7,272,021	7,272,023	7,558,083	7,564,702	7,765,687	7,787,261
8,023,290	8,149,597	8,493,751	8,644,027	9,143,042	

**WARRANTY**

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