

SynQor®

UPS**UPS-1500-S-1U****UPS-1500-E-2U**

MILITARY GRADE UNINTERRUPTIBLE POWER SUPPLY

1500VA/1250W
Output Power**80-265Vrms/47-65Hz**
AC Input Voltage***115Vrms/60Hz**
AC Output Voltage***>10min.**
Internal Battery Run Time*

Sealed Construction, Ultra low Weight, Compact Size



DESIGNED & MANUFACTURED IN USA

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 AC output to the load. Up to three units can be combined to provide higher power, higher voltage and/or multiple output phases. 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. Options include a DC input and the ability to also draw power from a military standard 28VDC input.

Features

- Sealed, weather-proof, shock-proof construction
- Hot swappable internal battery pack (lithium polymer)
- >10 minute run-time at full power
- 1250W (1500VA) output power
- Full power operation: -20 °C to +55 °C
- Universal AC input: 80-265VAC; 47-65Hz
- 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
- Pure sinusoidal AC output voltage (115VAC, 60Hz)
- Handles 0.0—1.0 power factor loads and non-linear loads
- Up to 3 units can be combined for higher power, voltage or a 3-phase AC output
- User I/O and Configuration signal ports
- 1U high rack mount unit (17" x 21.6")
- Low weight: 32 lbs. (including battery)

In-Line Manufacturing Process

- AS9100 and ISO 9001:2008 certified facility
- Full component traceability

*Options

- DC input (28Vnom) for dual source
- 2U Extended battery pack gives >24 minutes of run-time
- 360Hz — 800Hz AC input
- 230Vrms AC output
- 50Hz or 400Hz output
- Auxiliary isolated DC output (up to 500W)
- Shipboard version with floating neutral wire

Specification Compliance

UPS-1500 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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**UPS****UPS-1500-S-1U****UPS-1500-E-2U**

Technical Specification

INPUT CHARACTERISTICS

Operating AC Input

Voltage	80-265Vrms*
Frequency	47-65Hz*
(Extended Option)	(320-800Hz Optional)
Input Power Factor	>0.98 at 47-65Hz
	>0.97 at 400Hz
Maximum Input Current Continuous	20A (full load, 85Vrms)
AC Input Circuit Breaker Rating	25A
(* Power Derating to 80% below 90Vrms)	

Operating DC Input (Optional)

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

OUTPUT CHARACTERISTICS

Total Output Power Continuous	1250W (1500VA)
Maximum DC Output Power	510W
(Note: Available AC power is reduced by power delivered to the DC output)	

AC Output

AC Output Waveform	Pure Sinusoidal
Voltage	115Vrms $\pm$ 3%
	230Vrms $\pm$ 3%
Frequency	60Hz $\pm$ 0.5%
	50Hz $\pm$ 0.5%
	400Hz $\pm$ 0.5%
Peak Load Current	26A (115Vrms)
	13A (230Vrms)
Load Power Factor	0-1.0 (leading or lagging)
Total Harmonic Distortion	2% (1000W resistive load)

DC Output (optional)

Voltage Regulation (Over Load & Temperature)	$\pm$ 3%
Common Voltage /Power combinations	12V at 25A=300W
(Other Options Available)	15V at 25A=375W
	24V at 21A=504W
	28V at 18A=504W
	40V at 12.5A=500W
	50V at 10A=500W

LITHIUM-POLYMER BATTERY CHARACTERISTICS

Standard 1U Battery Pack Run Time

1250W : 10 min	1000W : 13 min	625W : 21 min
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Optional 2U Extended Battery Pack Run Time

1250W : 24 min	1000W : 31 min	625W : 50 min
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Recharge Time (to 90% charge)

Standard

Total Output Power	< 1000W	2 hrs
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Optional 2U Extended Battery Pack

Total Output Power	< 1000W	4 hrs
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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.

ENVIRONMENTAL CHARACTERISTICS MIL-STD-810G

MTBF	100kHrs	MIL-217F Ground Benign, Ta=25°C
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Temperature Methods 501.5, 502.5

Operating Temperature	-20°C — +55°C
Storage Temperature	-20°C — +65°C

Altitude Method 500.5

Operating	0 - 15,000 ft
Non-operating	0 - 40,000 ft

Environmental Tests

Shock/Drop	Method 516.6, Procedures 1,4,6
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
EMI	MIL-STD-461F
Humidity	Method 507.5
Mechanical Vibrations of Shipboard Equipment	Method 528

MECHANICAL CHARACTERISTICS

Standard 1U Battery Pack

Chassis Size (H x W x D)	1.73"(1U) x 17" x 21.6"
Case Material	Aluminum
Total Weight	32 lbs. (with chassis & battery)

Optional 2U Extended Internal Battery Pack

Chassis Size (H x W x D)	3.33"(2U) x 17" x 21.6"
Case Material	Aluminum
Total Weight	49 lbs. (with chassis & battery)

Connectors

AC Input Connector	MS3470L14-4P
DC Input Connector	MS3470L18-8P
AC Output Connector	MS3470L14-4S
DC Output Connector	MS3470L14-4SW
User I/O Ports	HD DB15 Female
Configuration I/O Port	HD DB15 Male

Safety & Qualifications

IEC 62133	Safety requirements for portable secondary sealed cells.
ST/SG/AC.10/11/Rev.5	UN Recommendations on the Transport of Dangerous Goods
UL 1642	Lithium Batteries
	Pending
IEC 62040-1	General and safety requirements for UPS
IEC 62040-2	UPS Electromagnetic compatibility (Category C4)
UL 1642	Lithium Batteries



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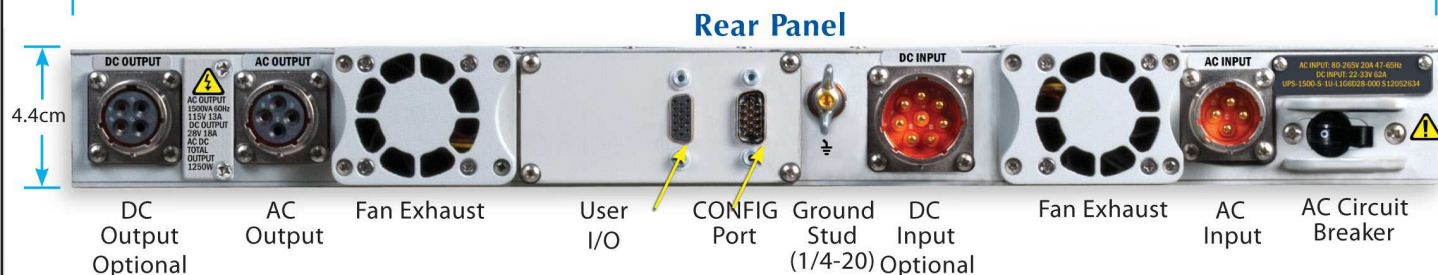
Mechanical Features

UPS

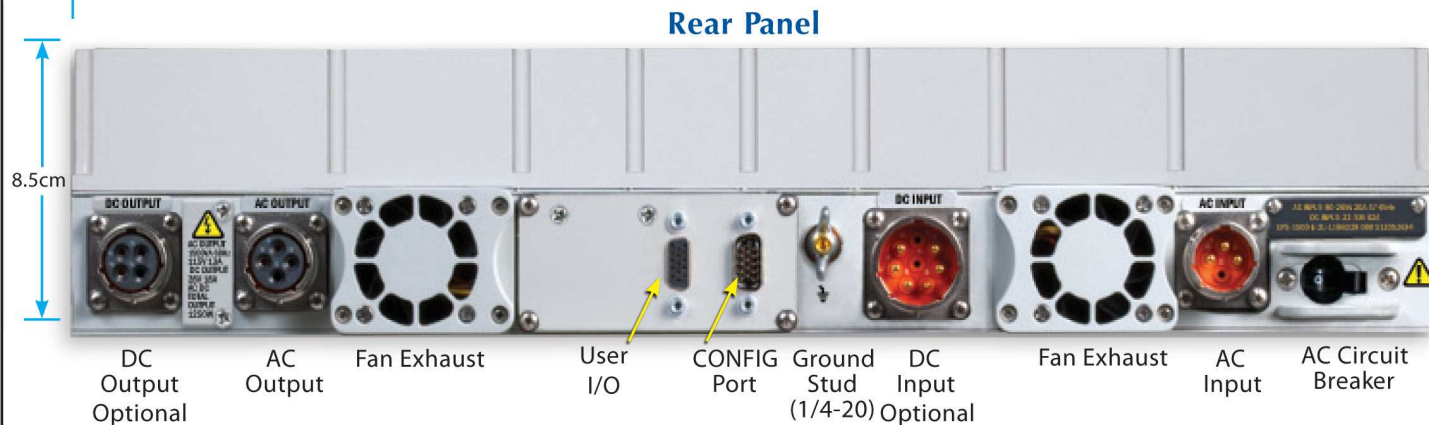
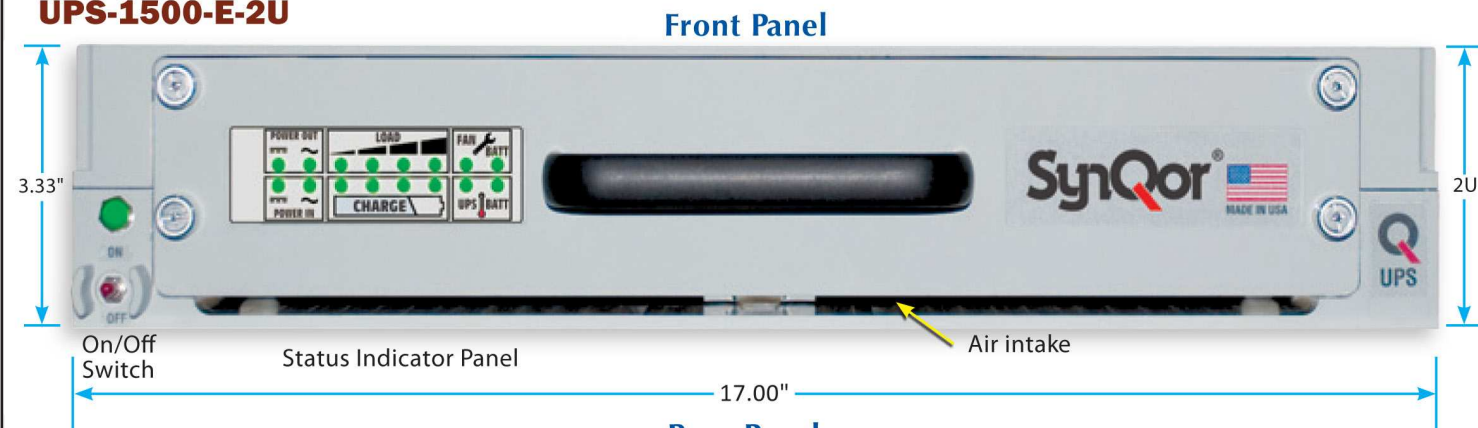
UPS-1500-S-1U

UPS-1500-E-2U

UPS-1500-S-1U



UPS-1500-E-2U





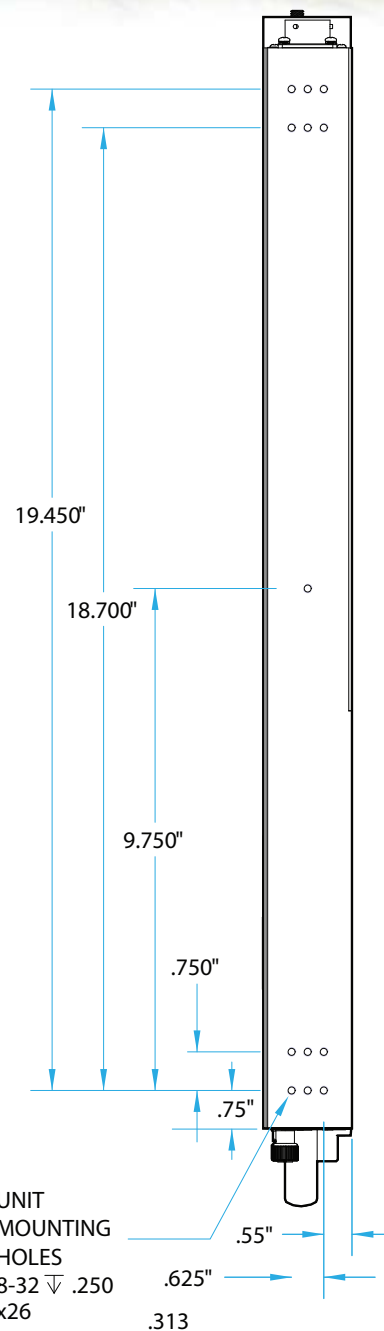
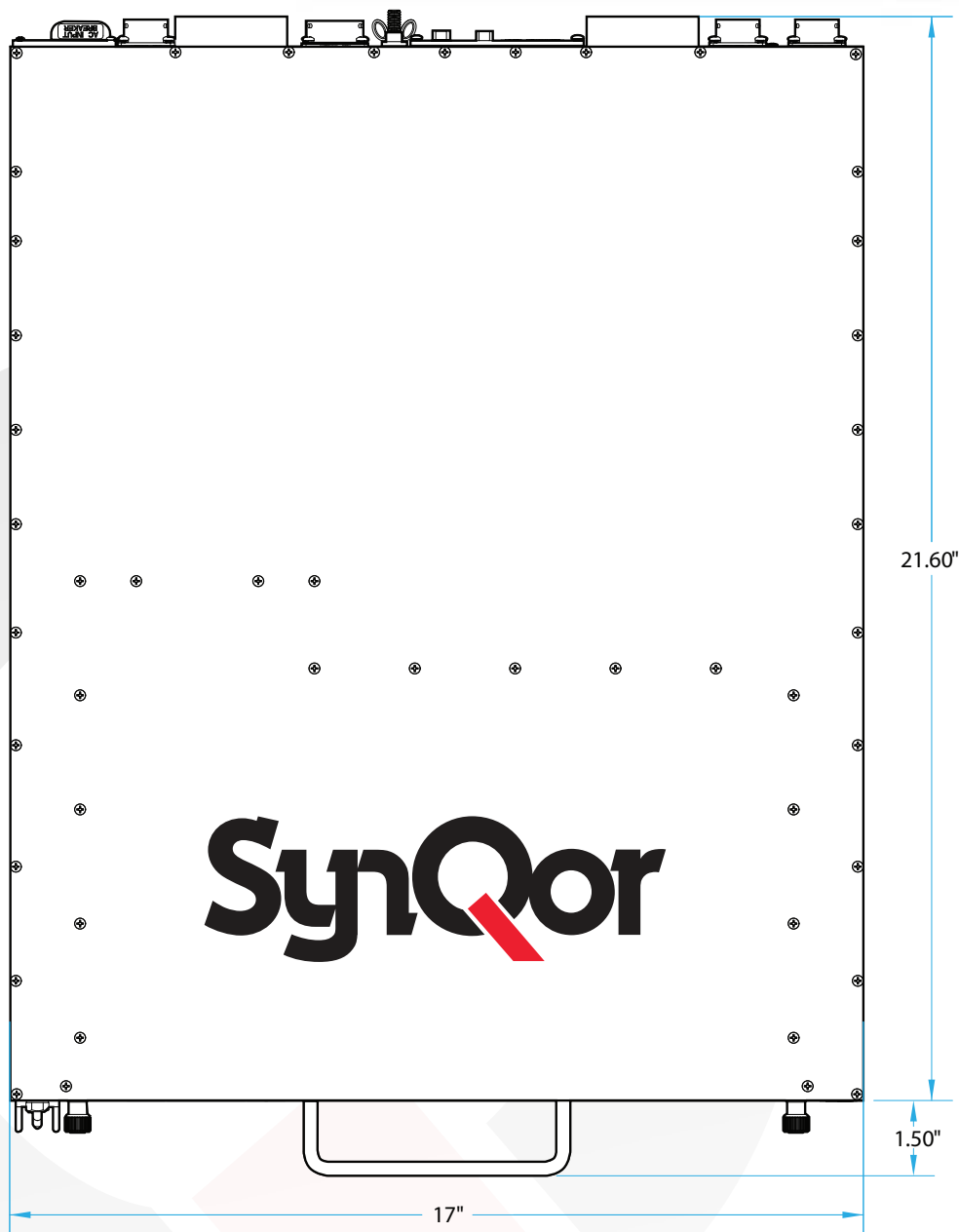
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Mechanical Diagrams

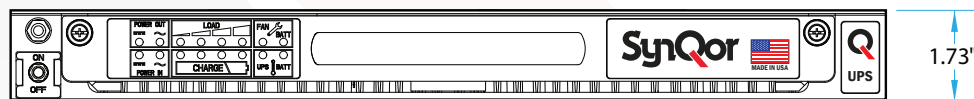
UPS

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UPS-1500-E-2U



UNIT
MOUNTING
HOLES
8-32 ∇ .250
x26





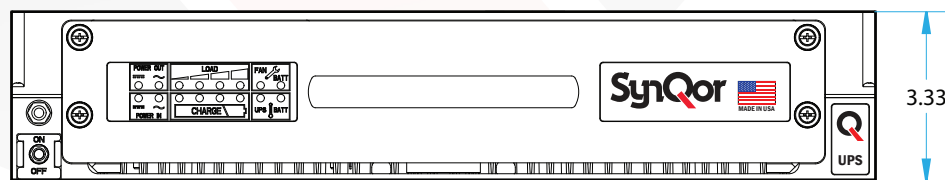
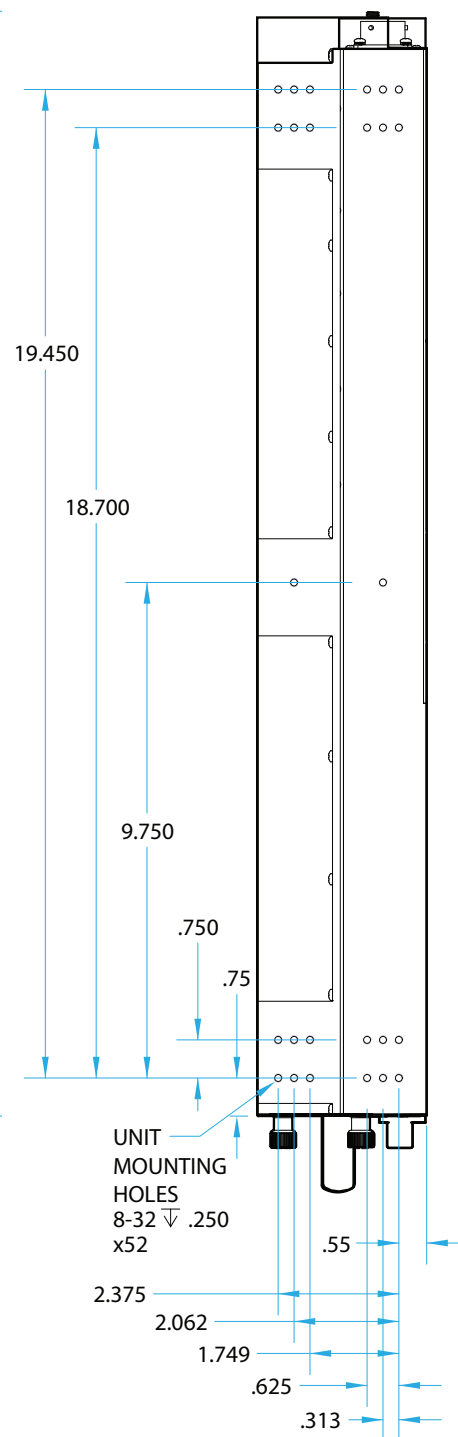
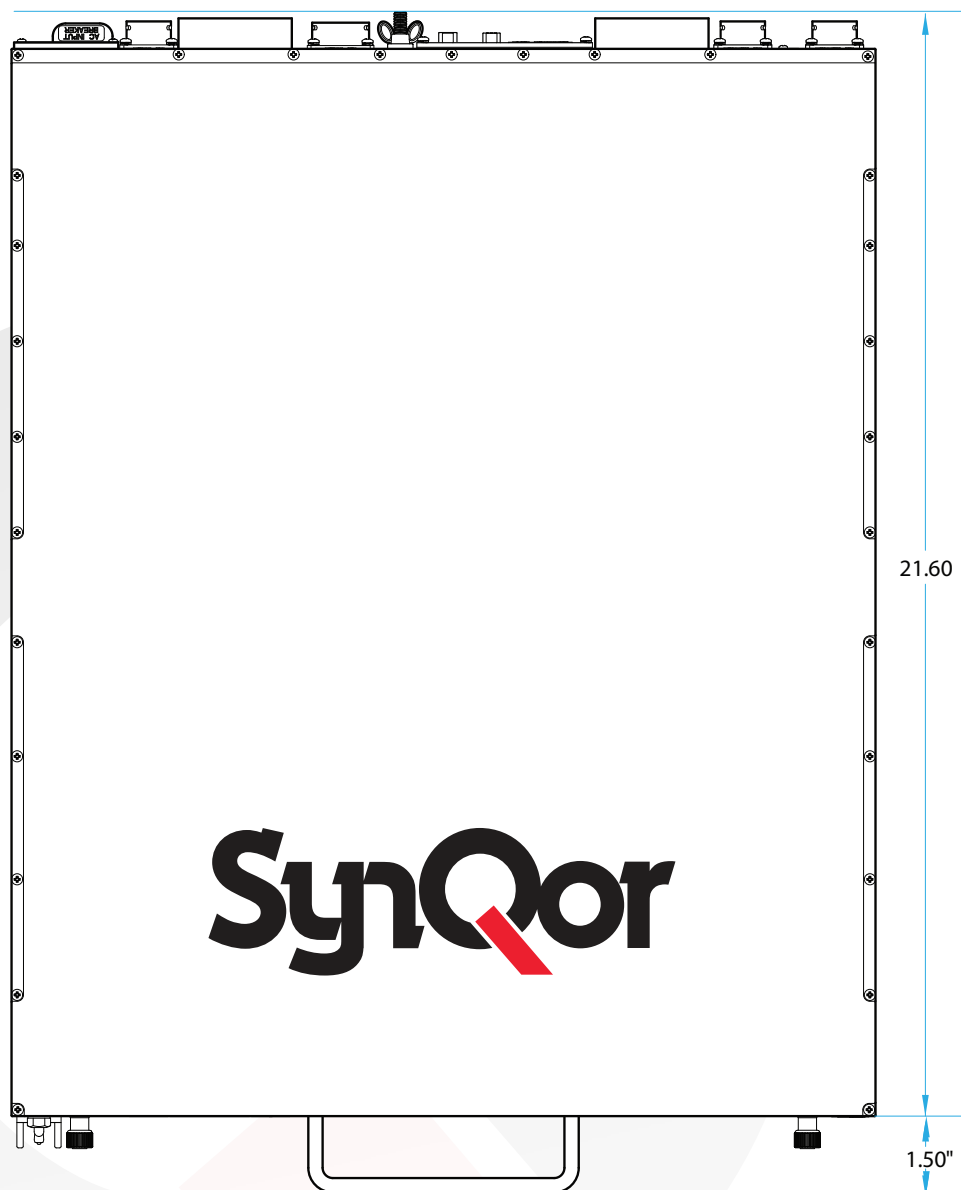
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Extended Mechanical

UPS

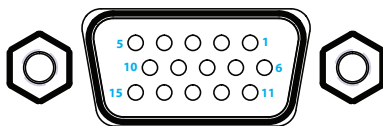
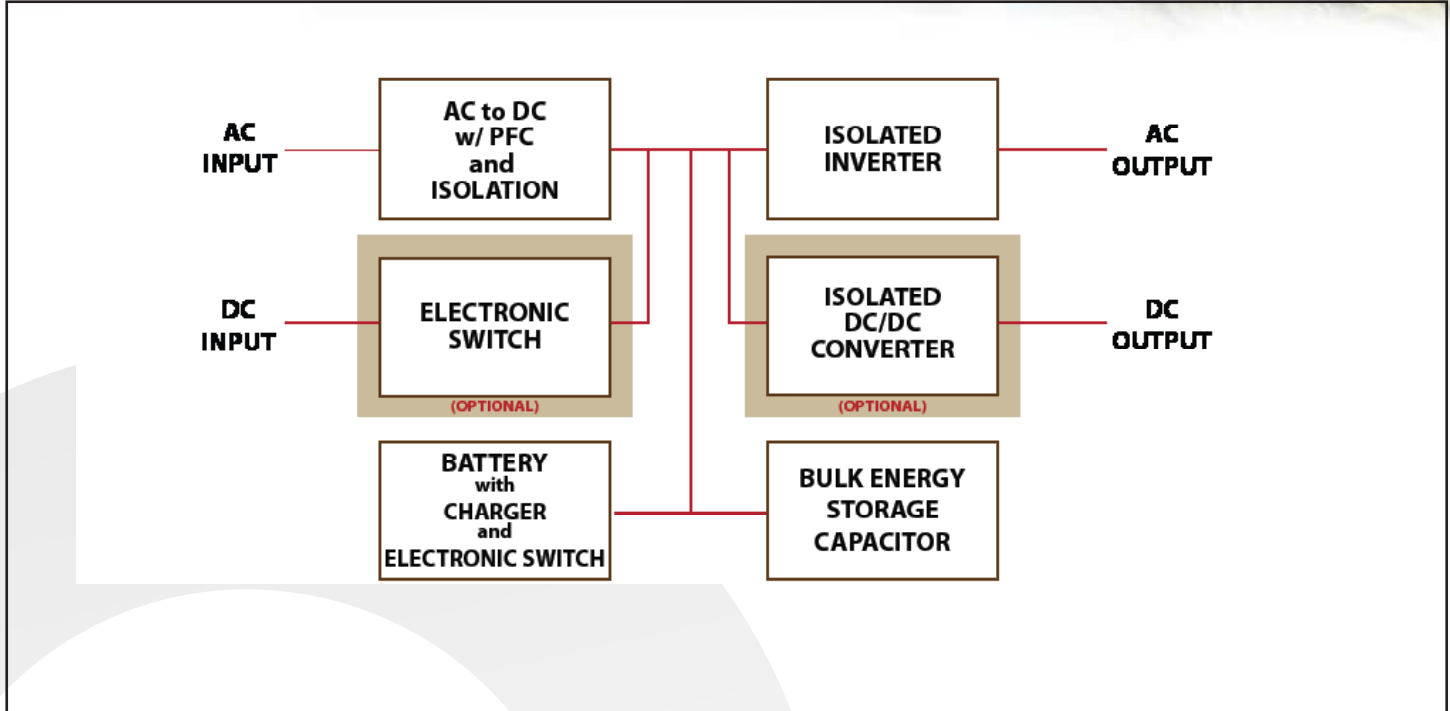
UPS-1500-S-1U

UPS-1500-E-2U



Block Diagram

BLOCK DIAGRAM



High Density DB15 Female (15 Pin Connector)

Signal	PIN Number	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	Output voltage with minimal current drive usable as a pull-up voltage for open collector output signals
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 $\geq 5\text{mA}$ to enable UPS outputs
SHUTDOWN	13	Drive this line "high" with $\geq 5\text{mA}$ to disable UPS outputs
OUT_OK	14	Open collector output where "low" indicates AC Output voltage is within range
OVER_TEMP	15	Open collector output where "low" indicates that the UPS is at or above its maximum temperature



UPS

UPS-1500-S-1U

UPS-1500-E-2U

Accessory Options

Battery Packs	1500S Series (1U; 32 lbs.)	1500E Series (2U; 50 lbs.)	3000S Series (2U; 64 lbs.) 2 battery packs required	3000E Series (4U; 98 lbs.) 2 battery packs required
Standard Battery Pack	BAT-0200-S-1U-000 (200 Watt Hours)		BAT-0200-S-1U-000 (200 Watt Hours)	
Extended Battery Pack		BAT-0500-E-2U-000 (500 Watt Hours)		BAT-0500-E-2U-000 (500 Watt Hours)
Rail Kits	1500S Series	1500E Series	3000S Series	3000E Series
Slide Rail Kit	SYN-9001		SYN-9001	SYN-9005
Fixed Bracket Kit	SYN-9031	SYN-9033	SYN-9033	SYN-9035
Tray Kit	SYN-9051		SYN-9051	
Single Unit Power Cables (10' long)	1500S Series	1500E Series	3000S Series	3000E Series
AC Input (NEMA Plug)	SYN-9101		SYN-9105	
AC Output (115V _{rms}) (NEMA Receptacle)	SYN-9131		SYN-9135	
AC Output (230V _{rms}) (NEMA Receptacle)	SYN-9132		SYN-9136	
DC Input (Ring Connectors)	SYN-9151		SYN-9155	
DC Output (Fork Connectors)	SYN-9171		SYN-9173	
Multiple Unit Power Cables (10' long)	1500S Series	1500E Series	3000S Series	3000E Series
UPSCable 115V (50A DC)	SYN-9142			
UPSCable 115V (3Phase 20A DC)	SYN-9144			
UPSCable 115V - 230V (20A DC)	SYN-9143			
UPSCable 115V (30A DC)	SYN-9141			
AC Output Power Strips (Circular Connector)	1500S Series	1500E Series	3000S Series	3000E Series
6 NEMA Receptacles (10' Cable)	SYN-9201		SYN-9205	
6 NEMA Receptacles with Breaker (1U Rackmount & 3' Cable)	SYN-9232		SYN-9236	
6 NEMA Receptacles (1U Rackmount & 3' Cable)	SYN-9231		SYN-9235	

Other Options also available, check the website or contact power@synqor.com for further information.



Optional
Rackmount Transit Case



User I/O Cables

HD DB15M to DB9F (RS232, 10')	SYN-9301
HD DB15M to DB15M (RS232 and Digital I/O, 10')	SYN-9305

Configuration Cables

HD DB15F to DB15F (2 Units Parallel, 3')	SYN-9311
HD DB15F to DB15F (3 Units Parallel, 6')	SYN-9315
HD DB15F to DB15F (2 Units Series, 3')	SYN-9313
HD DB15F to DB15F (3 Units 3 Phase, 6')	SYN-9317



6 NEMA Receptacles with Breaker





UPS

UPS-1500-S-1U

UPS-1500-E-2U

Ordering Information

PART NUMBERING SYSTEM

Model Number	Power	Battery Run-Time @ Full Power (80% Power)	Height	Weight	Options					
					DC Input (28V nom)	DC Output	Floating Neutral AC Output	AC Input Frequency (50/60Hz or 400Hz)	AC Output Voltage (115Vrms or 230Vrms)	AC Output Frequency (50Hz, 60Hz or 400Hz)
UPS-1500-S-1U (1 Standard Battery Pack)	1250W 1500VA	>10 min. (>13 min.)	1U	32 lbs.	•	500W	•	•	•	•
UPS-1500-E-2U (1 Extended Battery Pack)	1250W 1500VA	>24 min. (>31 min.)	2U	50 lbs.	•	500W	•	•	•	•
UPS-3000-S-2U (2 Standard Battery Packs)	2500W 3000VA	>10 min. (>13 min.)	2U	64 lbs.	•	1000W (2x500W)	•	•	•	•
UPS-3000-E-4U (2 Extended Battery Packs)	2500W 3000VA	>24 min. (>31 min.)	4U	98 lbs.	•	1000W (2x500W)	•	•	•	•

UPS with Internal Battery Pack PART NUMBERING

UPS	Output Power	Battery Pack Size	Height	AC Input Frequency	AC Output Voltage	AC Output Neutral Wire	AC Output Set Point Frequency	DC Input	DC Output Voltage
UPS	1500	E	2U	L	1	G	6	D	28
UPS	1500: 1500VA 1250W 3000: 3000VA 2500W	S: Standard E: Extended N: No Battery	1U: 1.73" 2U: 3.48" 4U: 7.00"	L: 50/60Hz H: 400Hz	1: 115Vrms 2: 230Vrms	G: Grounded F: Floating	5: 50Hz 6: 60Hz 4: 400Hz	S: Not Installed D: Installed	00: None 12: 12V 24: 24V 28: 28V 40: 40V 50: 50V

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

Part Numbering Examples: UPS-1500-S-1U-L1G6D50-000 or UPS-1500-E-2U-L1G6D24-000

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PATENTS

SynQor holds the following U.S. patents, one or more of which apply to each product listed in this document. Additional patent applications may be pending or filed in the future.

5,999,417	6,222,742	6,545,890	6,577,109	6,594,159	6,731,520
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		

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