



# SynQor®

**MPC**  
**MPC-1500-1U**

## MILITARY-GRADE POWER CONDITIONER

<b>1500 VA/ 1250 W Output Power</b>	<b>80-265 Vrms 47-65 Hz or 47-800 Hz AC Input Voltage Options</b>	<b>115 Vrms or 230 Vrms 50 Hz, 60 Hz or 400 Hz AC Output Voltage Options</b>	<b>28 Vnom DC Input Voltage Option</b>	<b>500 W or 1250 W DC Output Voltage Option</b>
---	---	--	--	---

*Sealed Construction, Ultra low Weight, Compact Size*



DESIGNED & MANUFACTURED IN USA

SynQor's Military Power Conditioner units are designed for the extreme environmental and demanding electrical conditions of Military/Aerospace applications. SynQor's MPC incorporates field proven high efficiency designs and rugged packaging technologies. This MPC will accept a wide range of input voltage and frequency values while delivering a well-conditioned AC output to the load. It is designed and manufactured in SynQor's USA facilities to comply with a wide range of military standards. Options include two DC outputs and the ability to also draw power from a military standard 28 VDC input.

### Combine Up to 3 units for Higher Power, Voltage and/or 3-Phase AC output

#### Features

- Sealed, weather-proof, shock-proof construction
- 1250 W (1500 VA) output power
- Full power operation: -40 °C to +55 °C
- Universal AC input: 80-265 VAC; 47-65 Hz (see options)
- Power factor correction at AC input
- Dual input (AC and optional DC)
- True on-line double conversion
- Pure sinusoidal AC output voltage (115 VAC, 60 Hz)
- 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 (17.00"W x 21.60"D x 1.73"H)
- Low weight: 24 lbs.

#### Options

- DC input (28 Vnom) for dual source
- Wide-range AC input frequency: 47 Hz to 800 Hz
- 115 Vrms or 230 Vrms AC output
- 50 Hz, 60 Hz, or 400 Hz output
- DC1: Auxiliary isolated DC output (up to 500 W)
- DC2: High power DC output (up to 1250 W) paralleable for higher power
- Shipboard version with floating neutral wire

#### Specification Compliance

MPC-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

#### In-Line Manufacturing Process

- AS9100 and ISO 9001 certified facility
- Full component traceability

#### Contents

Technical Specification.....	2
Mechanical Diagrams.....	5
Accessory Options.....	7
Ordering Information.....	8

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

#### 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 (1500 VA)
Maximum DC1 Output Power	510 W
Maximum DC2 Output Power	1250 W
(Note: Available AC power is reduced by power delivered to the DC output)	

#### AC Output

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

#### DC1 Output (optional)

Voltage Regulation (Over Load & Temperature)	± 3%
Common Voltage/Power combinations (DC1)	12 V at 42 A =504 W (Other Options Available) 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 =500 W 50 V at 10 A =500 W

#### DC2 Output (optional)

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 =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 =1250 W

### ENVIRONMENTAL CHARACTERISTICS MIL-STD-810G

#### Temperature Methods 501.5, 502.5

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

#### Temperature Methods 503.5

Storage Temperature	-40°C — +70°C
---------------------	---------------

#### Altitude Method 500.5

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

### 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 Chassis

Chassis Size	17.00"W x 21.60"D x 1.73"(1U)H
Case Material	Aluminum
Total Weight	24 lbs.

#### 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
AC Output Connector	MS3470L14-4S
DC1 Output Connector	MS3470L14-4SW
DC2 Output Connector	MS3470L18-8S

#### 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.



# SynQor®

## Safety & Qualifications

**MPC**  
**MPC-1500-1U**



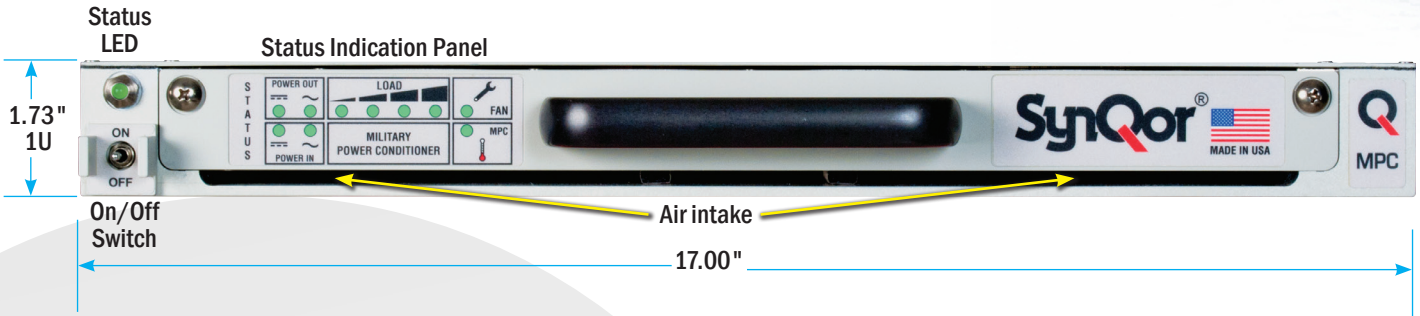
### High Density DB15 Female (15 Pin Connector)

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
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
REMOTE_START	12	Drive this line "high" with $\geq 5$ mA to enable MPC outputs
SHUTDOWN	13	Drive this line "high" with $\geq 5$ mA to disable MPC 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 MPC is at or above its maximum temperature

### Safety & Qualifications

EN 62040-1	General and safety requirements for UPS (Does not apply to 400Hz operation)
EN 62040-2	UPS Electromagnetic compatibility (Category C4)

#### MPC-1500-1U



#### MPC-1500-1U with DC Input / DC1 Output Option

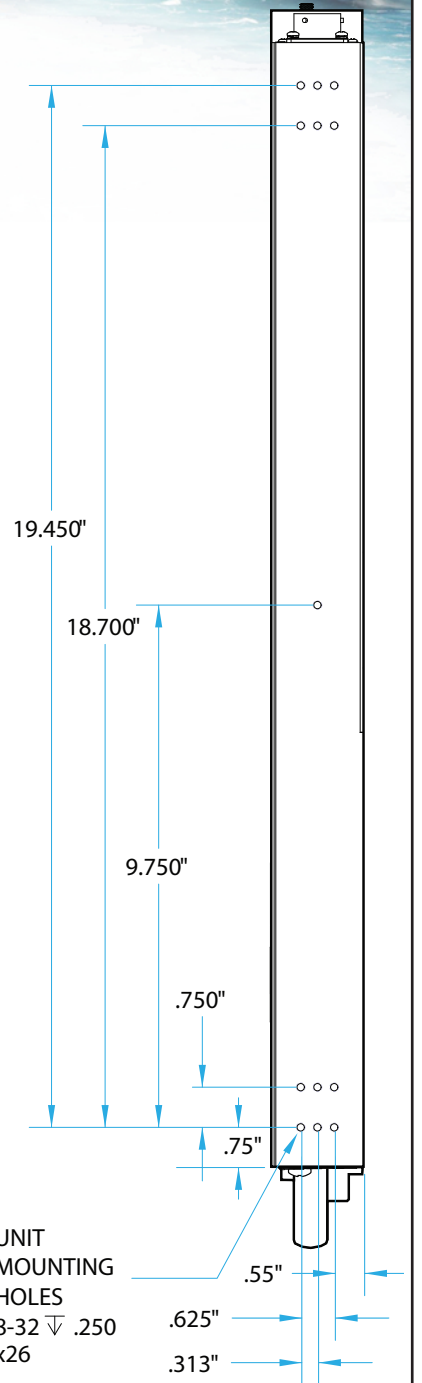


#### MPC-1500-1U with DC1 Output / DC2 Output Options





Mechanical Diagrams



UNIT MOUNTING HOLES  
8-32  $\nabla$  .250 x26



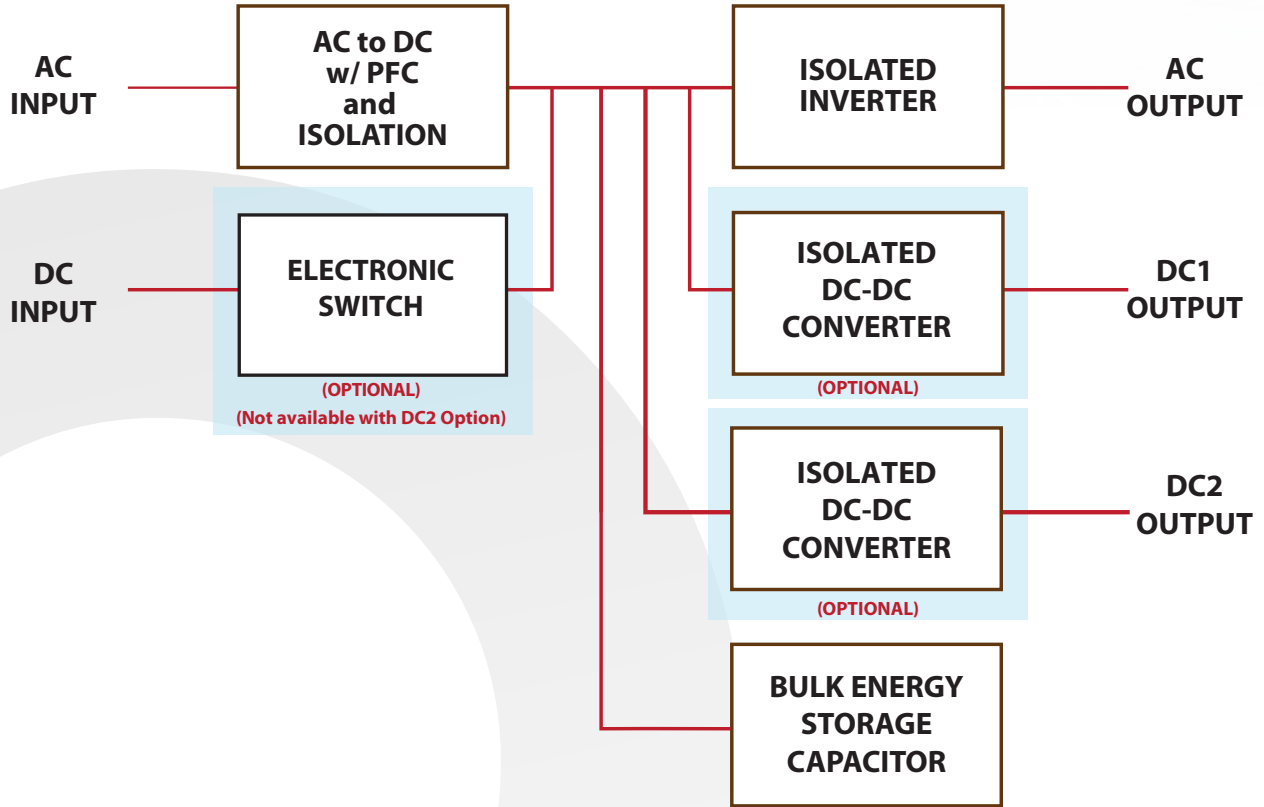


# SynQor®

## MPC MPC-1500-1U

### Block Diagram

#### BLOCK DIAGRAM





# SynQor®

## Accessory Options

**MPC**  
**MPC-1500-1U**

Rail Kits	
Slide Rail Kit <sup>2</sup>	SYN-9002
Fixed Bracket Kit <sup>3</sup>	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 Output (115Vrms) (NEMA 5-20 Receptacle)	SYN-9131
AC Output (Hardwire)	SYN-9130
DC Input (Ring Connectors)	SYN-9151
DC Input (Hardwire)	SYN-9152
DC Input (NATO Connector)	SYN-9154
DC1 Output (Fork Connectors)	SYN-9171
DC1 Output (Hardwire)	SYN-9172
DC2 Output (Hardwire)	SYN-9174
DC2 Output (Fork Connectors)	SYN-9175
AC Output Power Strips (Circular Connector)	
6 NEMA Receptacles with Breaker (1U Rackmount & 3' Cable)	SYN-9232
6 NEMA Receptacles (1U Rackmount & 3' Cable)	SYN-9231
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

**Notes:**

- 1: Other Options also available, check the website or contact [power@synqor.com](mailto: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



6 NEMA Receptacles with Breaker

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	
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





# Ordering Information

## PART NUMBERING SYSTEM

Model Number	Power	Height	Weight	Options					
				DC Input (28 V nom)	DC Output	Floating Neutral AC Output	AC Input Frequency (47-65 Hz or 47-800 Hz)	AC Output Voltage (115 Vrms or 230 Vrms)	AC Output Frequency (50 Hz, 60 Hz or 400 Hz)
MPC-1500-1U	1250 W 1500 VA	1U	24 lbs.	•	500 W DC1 1250 W DC2	•	•	•	•

Family	Output Power	Height	AC Input Frequency	AC Output Voltage	AC Output Neutral Wire	AC Output Set Point Frequency	DC Input / DC2 Output	DC1 Output	Additional Options
MPC	1500	1U	L	1	G	6	D	28	E00
MPC	1500: 1500VA 1250W	1U: 1.73"	L: 47-65Hz W: 47-800Hz	1: 115Vrms 2: 230Vrms	G: Grounded F: Floating *	5: 50Hz 6: 60Hz 4: 400Hz	S: Not Installed D: DC Input M: DC2 Out 24 VDC with P: Droop Share DC2 Out 24 VDC R: No Sharing DC2 Out 28 VDC with V: Droop Share DC2 Out 28 VDC No Sharing W: DC2 Out 50 VDC No Sharing	00: None 12: 12V 15: 15V 24: 24V 28: 28V 40: 40V 50: 50V	000: None 0CE: CE Marking E00: Ethernet / SNMP ECE: Ethernet / SNMP & CE Marking

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

\* Note: Order "F: Floating" option when configuring the AC output for multi-unit combinations.

**Examples: MPC-1500-1U-L1G6D28-E00, MPC-1500-1U-L1F4S00-000**

### 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](mailto:power@synqor.com)  
**Web:** [www.synqor.com](http://www.synqor.com)  
**Address:** 155 Swanson Road  
 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 one (1) year limited warranty. Complete warranty information is listed on our website or is available upon request from SynQor.