

June 29, 2022  
COSD# 30U5-A



## **OPERATING MANUAL**

### **Industrial Quality Sine Wave Inverter**

**MODEL: FC1000-400**

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**Model:** FC1K-UM-3U2/19-FO- 1469  
**COSD:** 30U5-A1 (30U5-A2; 30U5-A3)  
**Summary description:** 1000VA Frequency Converter  
 Universal AC Input to 115Vac/400Hz  
**Customer Name:** MDS Power Inc.  
**Customer Part Number:** FC1000-400



**Product description:**

This rugged AC/AC frequency converter system uses field proven, microprocessor controlled high frequency PWM technology to generate the required output power with pure sine wave output voltage. The frequency converter is built with internal power modules. One CAP 1200 module converts input voltage to an internal DC voltage, which feeds the MSI 1500 AC output module. Built-in fans provide sufficient airflow for operation without de-rating to the specified temperature. High frequency conversion enables compact construction, low weight and high efficiency. The unit has full electronic protection. Input and output are filtered for low noise. The use of components with established reliability results in high MTBF. The unit is manufactured at our plant under strict quality control.

**Special feature:** 19" rackmount, universal input range, PFC input, CE marking, MDS product marking, conformal coating, O /OFF switch 3-pole terminal block input, 5-15 receptacle on the frontpanel. 19" mounting flanges, Four L-brackets also included,  $\pm 2\%$  regulation and smaller version S1706

**SPECIFICATIONS**

**Input Voltage**  
 90-264Vac universal PFC. 47...410Hz  
 Input Current: 13.5Arms max  
 Input power factor is min. 0.9 at full load for the entire input range.  
 Meets EN61000-3-2

**Input Protection**  
 Inrush current limiting  
 Varistor  
 Internal safety fuse  
 Lower voltage than the specified minimum will not damage the unit

**Isolation**  
 2250Vdc input to chassis output  
 2250Vdc output to chassis  
 Output neutral is connected to the chassis

**Standards**  
 Designed to meet  
 C22.2 No. 107.1 - 01,  
 UL 458 and EN60950-1  
 CE marking

**E II**  
 EN 5503\_ Class A with margins

**Output Voltage**  
 115Vac/8.6A rms continuous, 400Hz  
 Output neutral is connected to the chassis

**Output Wave Form**  
 Sinusoidal

**Total Harmonic Distortion**  
 Less than 5% at full load

**Line/Load Regulation**  
 $\pm 2\%$  from no load to full load.(requested)

**Load Crest Factor**  
 2.5 at 90% load

**Output oise**  
 High frequency ripple is better than 500mVrms (20MHz BW)

**Output Overload Protection**  
 Current limiting with short circuit protection  
 Thermal shutdown with automatic recovery in case of insufficient cooling

**Output Overvoltage Protection**  
 140V by internal supply voltage limiting

**Efficiency**  
 85% at full load

**Operating Temperature Range**  
 0° C to +50° C

**Temperature Drift**  
 0.05% per ° C over operating temperature range

**Cooling**  
 By built-in high quality fan

**Environmental Protection**  
 Basic ruggedizing  
 Conformal coating

**Shock/Vibration**  
 IEC 61373 Cat 1 A&B

**Humidity**  
 5 - 95% non-condensing

**Indicators**  
 1 one

**Control Input**  
 O /OFF switch on the frontpanel

**Alarm Output**  
 one

**Package:Dimensions (W x H x L)**  
 3U2: 132 x 132 x 407mm  
 (5.2"x5.2"x16")  
 Mounted on 3 " x 19" mounting ear  
 (Four L-brackets included)

**Weight**  
 5.4kg (11.5 lbs)

**Connections**  
 Input: 3-pole terminal block, 1/2" spacing  
 Output: NEMA 5-15R duplex receptacle on the frontpanel

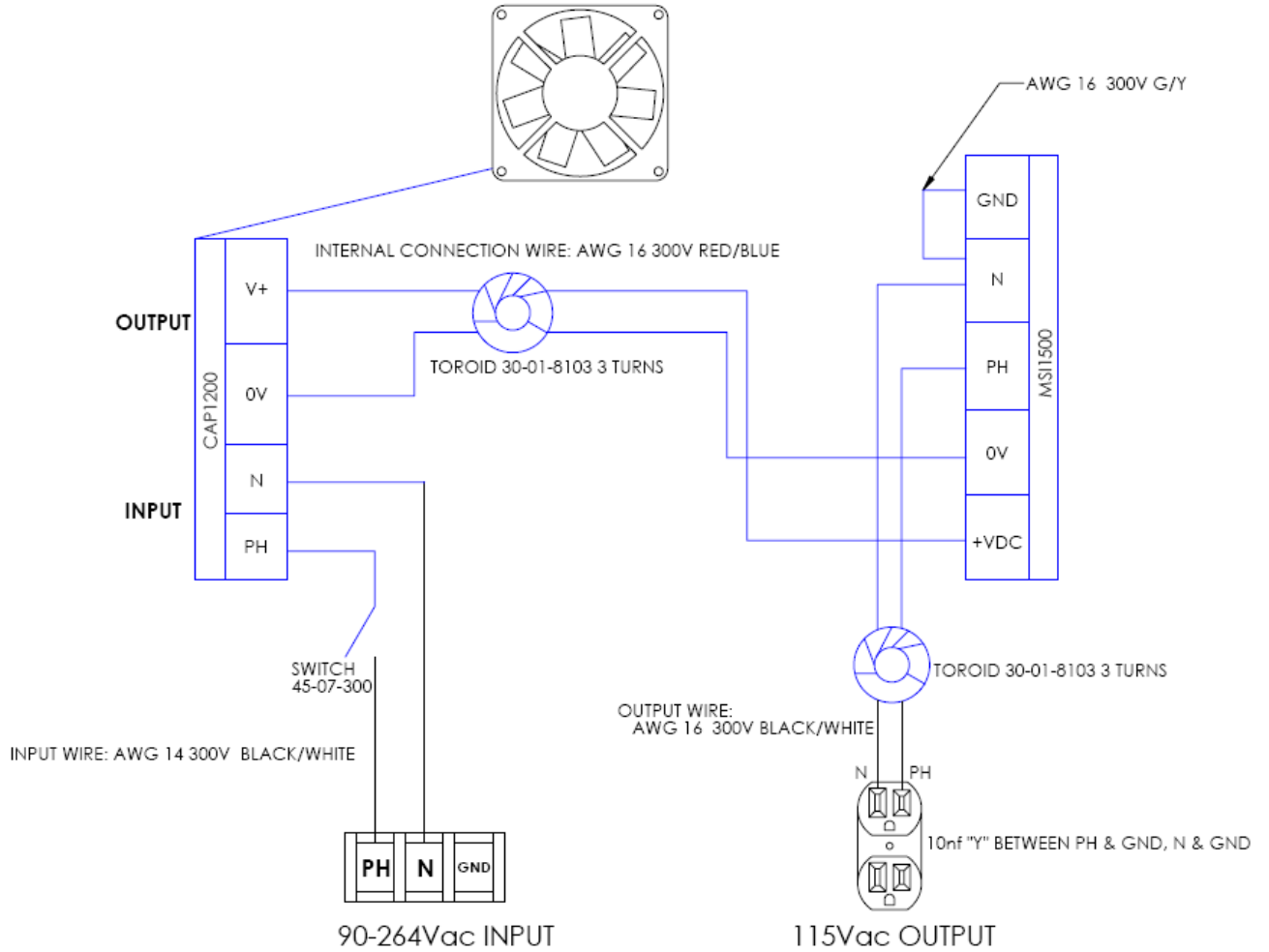
**RoHS Compliance**  
 Compliant

**Warranty**  
 Two years subject to application within good engineering practice  
 Contamination related failures and shipping cost excluded

Originated by	Date
JG/TS/kv	May 2, 2022
Updated by	Drawing No./ Rev.
TS/kv	SCD 30U5 A100A2
Approved by	
TS	

## Wiring Diagram

### FC1000-400



**TERMINATIONS**

**FC1000-400**



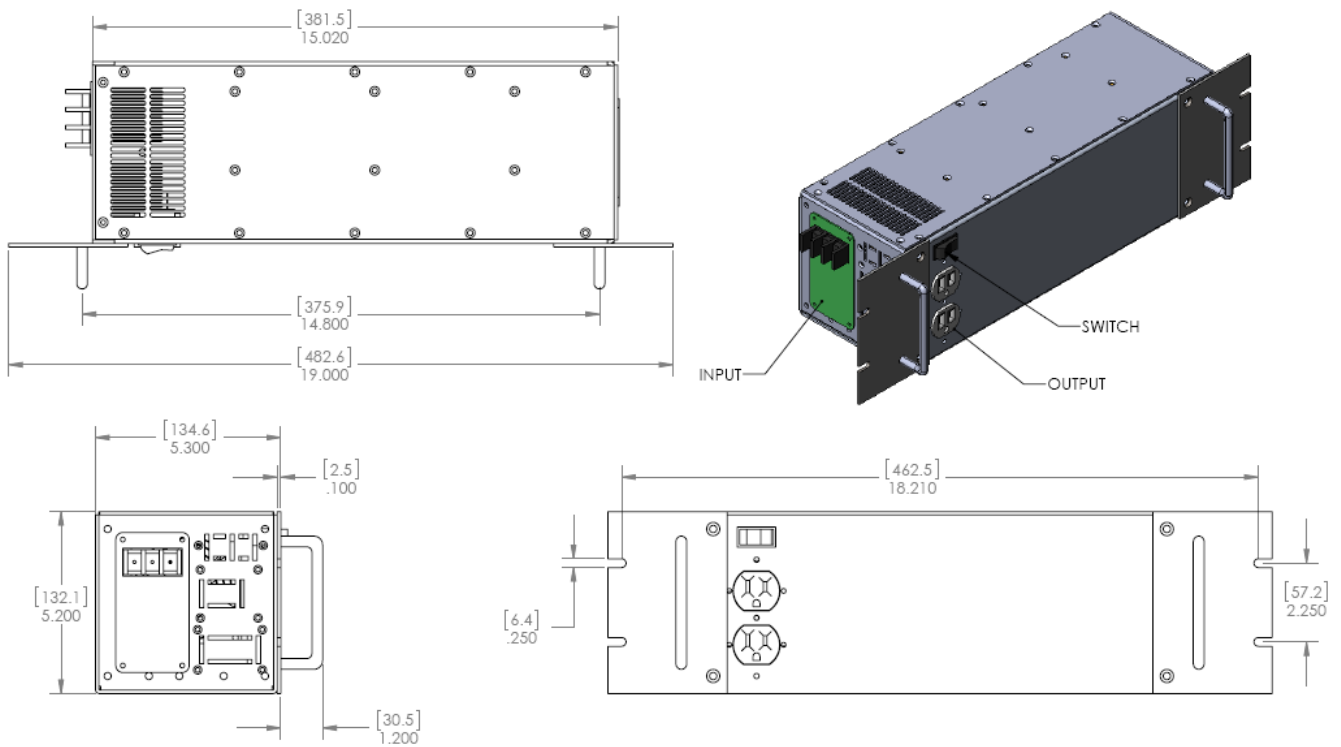
Input

1	2	3
PH ~	N ~	GND ⏏
AC INPUT		



**OUTLINE DRAWING**

**FC1000-400**



Drawn by BZ/ys	Date June 29, 2022
Updated by TS	Drawing Number ODR 30U5 A100A
Approved by TS	

**PHOTOGRAPHS**

**FC1000-400**



## **FC1000-400**

### **INSTALLATION OPERATION AND TROUBLESHOOTING**

1. Inspect unit for visible transit damage. Should there be any cause for concern, please contact factory before returning unit. No returns will be accepted without a Return Authorization
2. Check that the power supply input matches to the applicable input source.
3. Connect input and output according to the labels on the unit.
4. Verify that the proper wire gauge is used to minimize the line loss. (Guidelines for wire size applications are included.)
5. The output voltages and current limits are factory set according to the specifications. Should it be necessary to re-adjust any of these parameters, please consult with Engineering
6. This unit is fan cooled. Ensure that minimum 4” space left at the intake and exhaust openings.

### **SAFETY CONSIDERATIONS**

1. The unit has hazardous voltages at any part of the power supply circuitry also on the terminal blocks. Therefore the unit can be operated by qualified and instructed personnel only. Avoid touching any component or parts inside the unit. Wait a minimum of 30 seconds after removing the input power before doing any operation on the power supply.
2. The chassis of the unit is connected internally to the GND terminal. One ground terminal is provided on the terminal block.(Terminal #3) and the M5 bolt on the chassis. It is sufficient to wire up one of these terminals only.
3. Use the proper screw sizes for mounting.
4. This unit is electronically protected. If the system doesn't work properly, we recommend that the operator do not replace any of the internal fuses on the power modules or attempt repair. Return the power supply for servicing.
5. Repairs should only be performed by qualified service personnel.



## **RECOMMENDED WIRE SIZES**

The following values are to be used for guidelines only. For longer wire lengths, larger gauge may be needed to minimize line losses.

<b>CURRENT (AMPS)</b>	<b>WIRE SIZE (AWG)</b>	<b>Cross Section mm<sup>2</sup></b>
Up to 7Amps	18	0.8
7 to 10Amps	16	1.3
10 to 15Amps	14	2.0
15 to 20Amps	12	3.3
20 to 30Amps	10	5.3
30 to 40Amps	8	8.4
40 to 63Amps	6	13
63 to 80Amps	4	21
80 to 100Amps	2	34
100 to 150Amps	0	53
150 to 300Amps	000	85

## **MAINTENANCE**

Preventative maintenance on this product is minimal. Under normal circumstances, the only maintenance required is a regular visual inspection of the unit to check for any signs of dust, dirt, corrosion or other damage.

Electronic systems that are used in harsh environments should be inspected more frequently as well as cleaned if dusty, or dirty. Accumulated dust may block airflow and impede cooling which can cause overheating of the unit. These units should also be checked thoroughly for any loose hardware or damaged wiring caused by excessive shock and vibration.

## **WARRANTY AND SERVICE**

1. Standard warranty is for 2 years subject to application within good Engineering practice. Contamination related failures and shipping cost excluded
2. Should servicing be required please contact service manager for return authorization.