Amphenol
MILITARY HIGH SPEED



# M3110 SERIES

*3-PHASE AC/DC POWER SUPPLY*

## PRODUCT HIGHLIGHTS

- ULTRA-LOW INPUT CURRENT THD
- HIGH POWER FACTOR
- HIGH EFFICIENCY
- SINGLE OUTPUT
- LAGGING POWER FACTOR OPTIONAL
- UP TO 1000 W

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# M3110 SERIES 3-PHASE AC/DC POWER SUPPLY

## *Applications*

Military (Airborne, ground-fix, shipboard), Ruggedized, Telecom, Industrial

## *Special Features*

- High efficiency
- Wide input range
- Input / Output isolation
- Limited Inrush Current
- EMI filters included
- P.F. > 97% (75-100% load)
- THDI < 2% @ full load
- Remote On/Off
- Output Good signal (option)
- Indefinite short circuit protection with auto-recovery
- Over-voltage shutdown
- Over temperature shutdown with auto-recovery

## *Electrical Specifications*

### *AC Input*

Nominal:
115/200 $V_{AC}$, 47-440 Hz, 3-phase
Steady state:
100 to 130 $V_{AC}$
(173 to 225 $V_{AC}$ Line to line)
Transients:
180 VAC (312VAC Line to line)/ 50 msec per MIL-STD-704
Full performances between 104 to 127VAC (180 to 220VAC Line-to-Line

### *DC Output*

Voltage range: 5 to 50 $V_{DC}$
Output power: up to 1000 W
Output Current: Up to 40A

### *Isolation*

Input to Output: 500 $V_{DC}$
Input to Case: 500 $V_{DC}$
Output to Case: 100 $V_{DC}$

### *Output Voltage Regulation*

Up to ±1% (no load to full load, over input voltage normal range, –40 °C to +71 °C)

### *Efficiency*

88% Typical (nominal input, 28$V_{DC}$ output, full load, room temperature)

### *EMC*

Complies with MIL-STD-461E: CE101, CE102, CS101, CS114, CS115, CS116, RE102, RS103

### *Ripple and Noise*

100–150 $mV_{p-p}$, typical (max. 1%) without external capacitance.

### *Turn on Transient*

No Voltage over shoot during power on.

### *Power Factor*

Lagging PF per MIL-STD-704F Optional.
**Please consult factory for details.**

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## *Protections and Properties**

### *Input*

- **Inrush Current:** Up to 0.09 $A^2$sec (for circuit breaker selection purposes) Up to 6 x $I_{in,max}$ in the first 20 ms post energizing.
- **Phase loss detection:** The unit disable in case of phase loss.

### *Output*

- **Over Voltage Protection**: Shutdown and latch at 10-20% above maximum voltage.
- **Current Limiting**: Continuous protection less than 150% of the current rating.

### General

- **Over Temperature Protection:** Shutdown at base plate temperature of +100 °C ± 5 °C Automatic recovery at base plate temperature of +85 °C ± 5 °C.

## *Environmental Conditions*

Designed to meet MIL-STD-810F

### *Temperature*

Operating: –40 °C to +71 °C (at baseplate)
Storage: –55 °C to +125 °C

### *Altitude*

Method 500.4, Procedure I & II:
Up to 70,000 ft. non-operational
Up to 50,000 ft. operational

### *Salt Fog*

Method 509.4

### *Humidity*

Method 507.4
Procedure I
Up to 95% RH

### *Vibration (random)*

Method 514.5
Category 4 - General minimum integrity exposure
IAW Figure 514.5C-17
1 hour per axis.

### *Shock*

Method 516.5
Procedure I
30 g, 11 ms terminal peak saw-tooth,

## *Reliability*

74,677 hours, at +71 °C baseplate, Airborne Inhabited Fighter (AIF) environment.
37,128 hours, at +71 °C baseplate, Airborne Uninhabited Fighter (AUF) environment.
1,505,738 hours, at +25 °C baseplate, Ground Fixed (GF) environment.
Calculated IAW MIL-HDBK-217F Notice 2.

## *Environmental Stress Screening (ESS)*

Including random vibration and thermal cycles is also available. **Please consult factory for details.**

* Thresholds and protections can be modified / removed – please consult factory.

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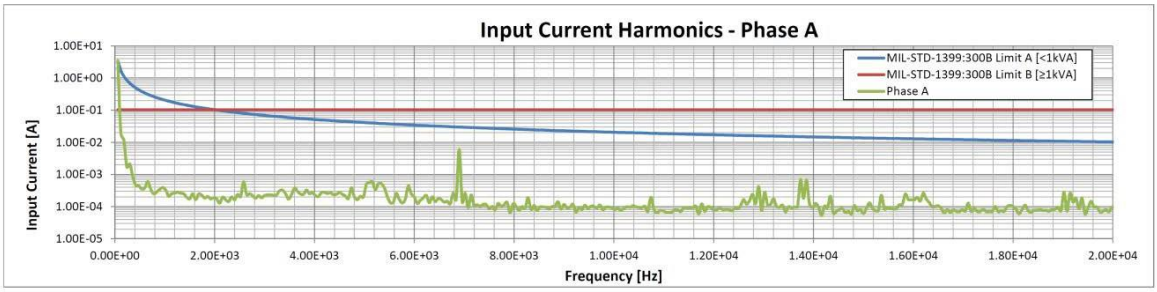
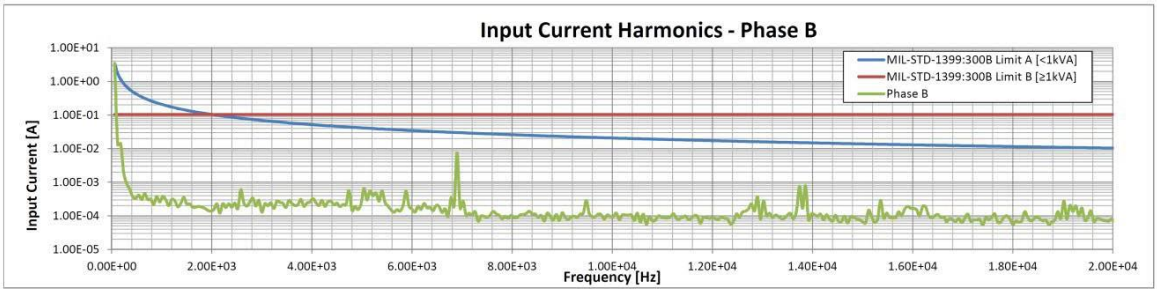
## Highlights and Typical Characteristics

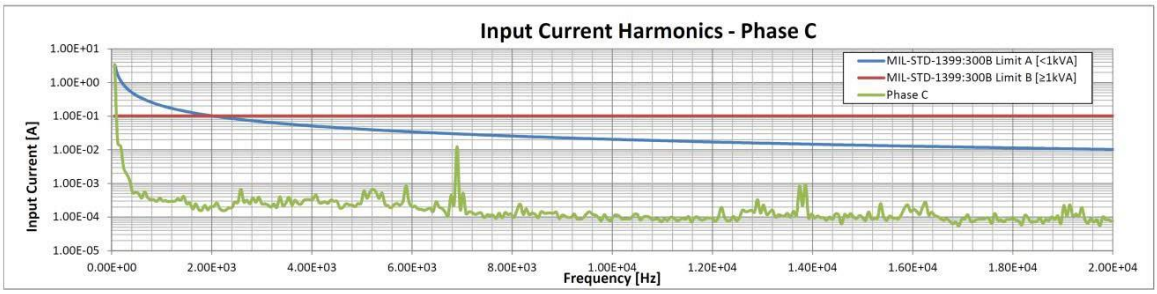
### Input Current Harmonics

Input: 3x 115 $V_{rms}$ /

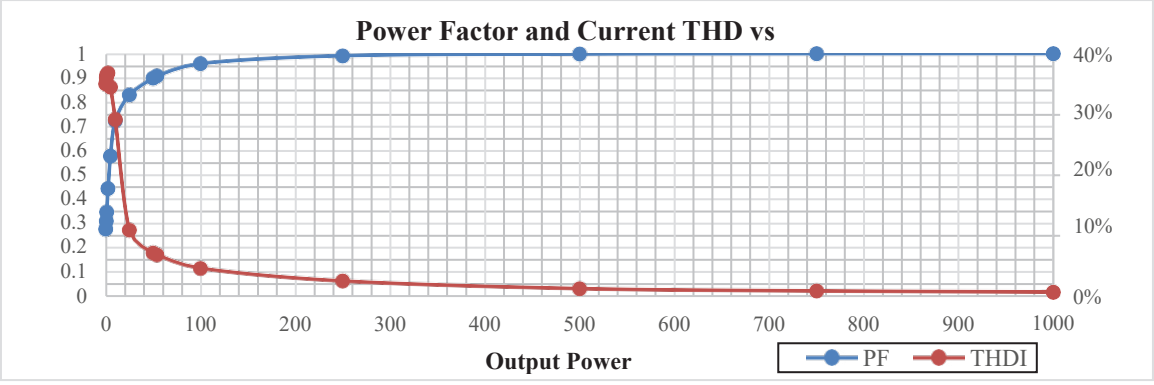
400 Hz Output: 28 $V_{DC}$ /




### *Power Factor and THDI vs. Load*

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## Pin Assignment Standard Version

### J1 - Input Connector

**Connector type:** M24308/24-26F or eq.

**Mates with:** M24308/2-2F or eq.

| Pin No. | Pin Function |
|---|---|
| 1 | PHASE A |
| 2 | PHASE A |
| 3 | N.C. |
| 4 | PHASE B |
| 5 | PHASE B |
| 6 | N.C. |
| 7 | PHASE C |
| 8 | PHASE C |

| Pin No. | Pin Function |
|---|---|
| 9 | PHASE A |
| 10 | CHASSIS |
| 11 | N.C. |
| 12 | PHASE B |
| 13 | N.C. |
| 14 | CHASSIS |
| 15 | PHASE C |
| | |

### *J2 - Signal Connector*

**Connector type:** M24308/2-1F or eq.

**Mates with:** M24308/4-1F or eq.

| Pin No. | Pin Function |
|---|---|
| 1 | REMOTE SENSE (+) |
| 2 | REMOTE SENSE (–) |
| 3 | N.C. |
| 4 | N.C. |
| 5 | N.C. |
| 6 | N.C. |
| 7 | N.C. |
| 8 | N.C. |
| 9 | REMOTE SHUTDOWN |

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## Pin Assignment Optional

### J1 - Input Connector

**Connector type:** M24308/24-26F or eq.

**Mates with:** M24308/2-2F or eq.

| Pin No. | Pin Function |
|---|---|
| 1 | PHASE A |
| 2 | PHASE A |
| 3 | N.C. |
| 4 | PHASE B |
| 5 | PHASE B |
| 6 | N.C. |
| 7 | PHASE C |
| 8 | PHASE C |

| Pin No. | Pin Function |
|---|---|
| 9 | PHASE A |
| 10 | CHASSIS |
| 11 | N.C. |
| 12 | PHASE B |
| 13 | N.C. |
| 14 | CHASSIS |
| 15 | PHASE C |
| | |

### *J2 - Signal Connector*

**Connector type:** M24308/2-1F or eq.

**Mates with:** M24308/4-1F or eq.

| Pin No. | Pin Function |
|---|---|
| 1 | REMOTE SENSE (+) |
| 2 | REMOTE SENSE (–) |
| 3 | N.C. |
| 4 | Power Good RTN |
| 5 | N.C. |
| 6 | N.C. |
| 7 | N.C. |
| 8 | Power Good |
| 9 | REMOTE SHUTDOWN |

### *Output studs*

Two 10-32 studs

Polarity marked on unit

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## Functions and Signals

### REMOTE SHUTDOWN signal

The SHDN signal is used to turn the power supply ON and
OFF. OPEN will turn the power supply ON.
5V applied between pin 9 and pin 2 will turn the power supply OFF.

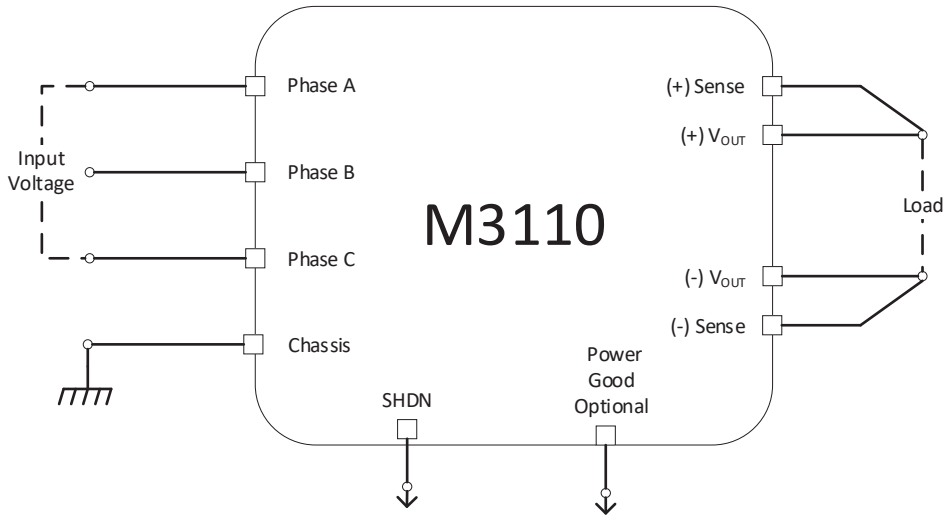
### REMOTE SENSE signal

The SENSE is used to achieve accurate load regulation at the load (this is done by connecting the pins directly to the load).
The remote sense will compensate up to 2V or 10% of the nominal voltage, the lower of.
In case remote sense is not required, short the +SENSE pin to the +OUT stud and the –SENSE pin to the –OUT stud.

### Power Good signal - Optional

Uncommitted collector and emitter of an opto-isolator.
Low (V< 0.8 @ 1mA, relative to Power Good RTN) indicates normal output voltage.
Open (I< 0.1mA @ 5V) indicates low output voltage (due to over load, inhibited output or a failure).
Absolute maximum ratings (Power Good to Power Good RTN): -0.5V/+15V

## Typical Connection Diagram



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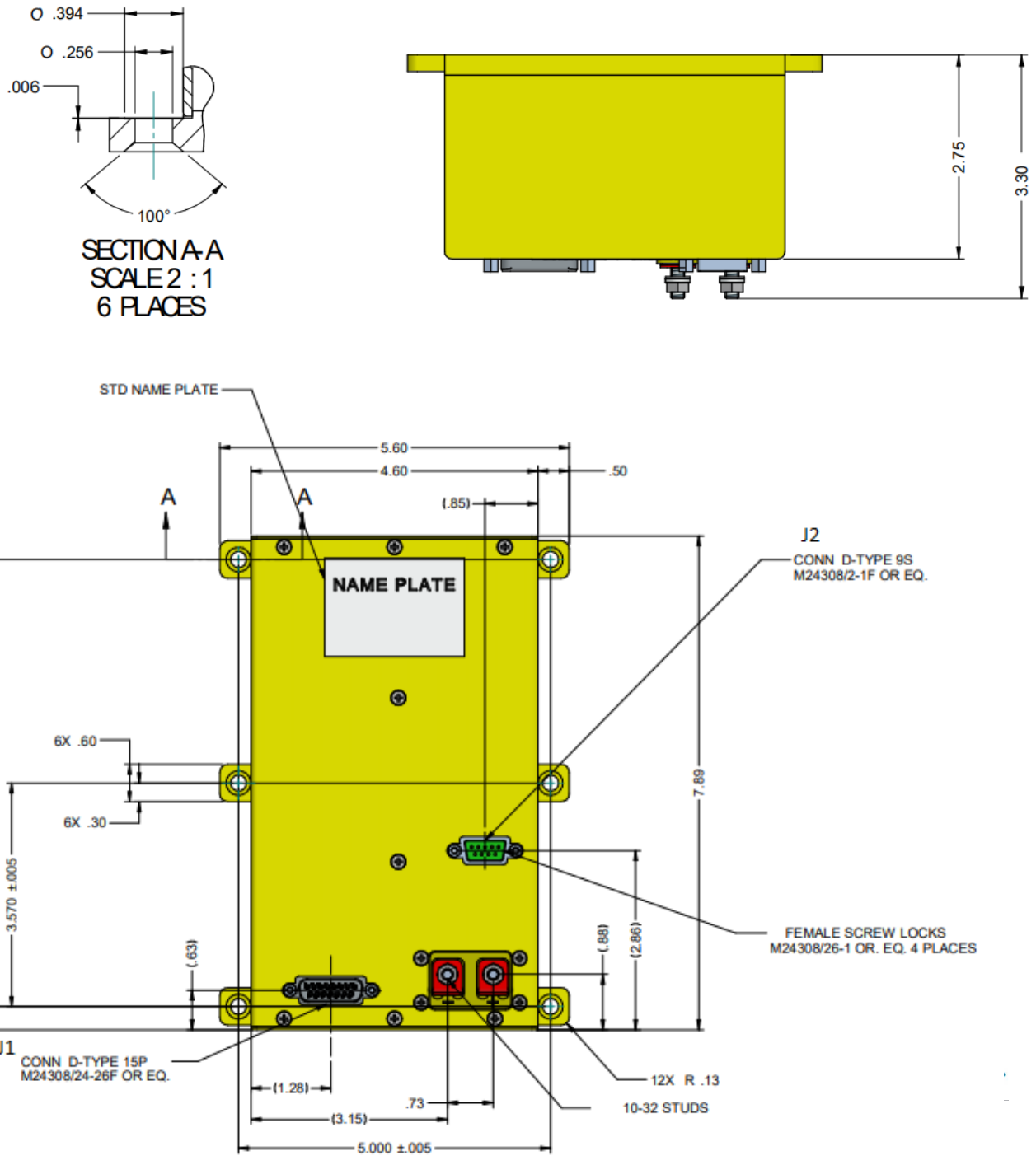
## Outline Drawing

**This figure is for reference only. For more details see Drawing M3110100**

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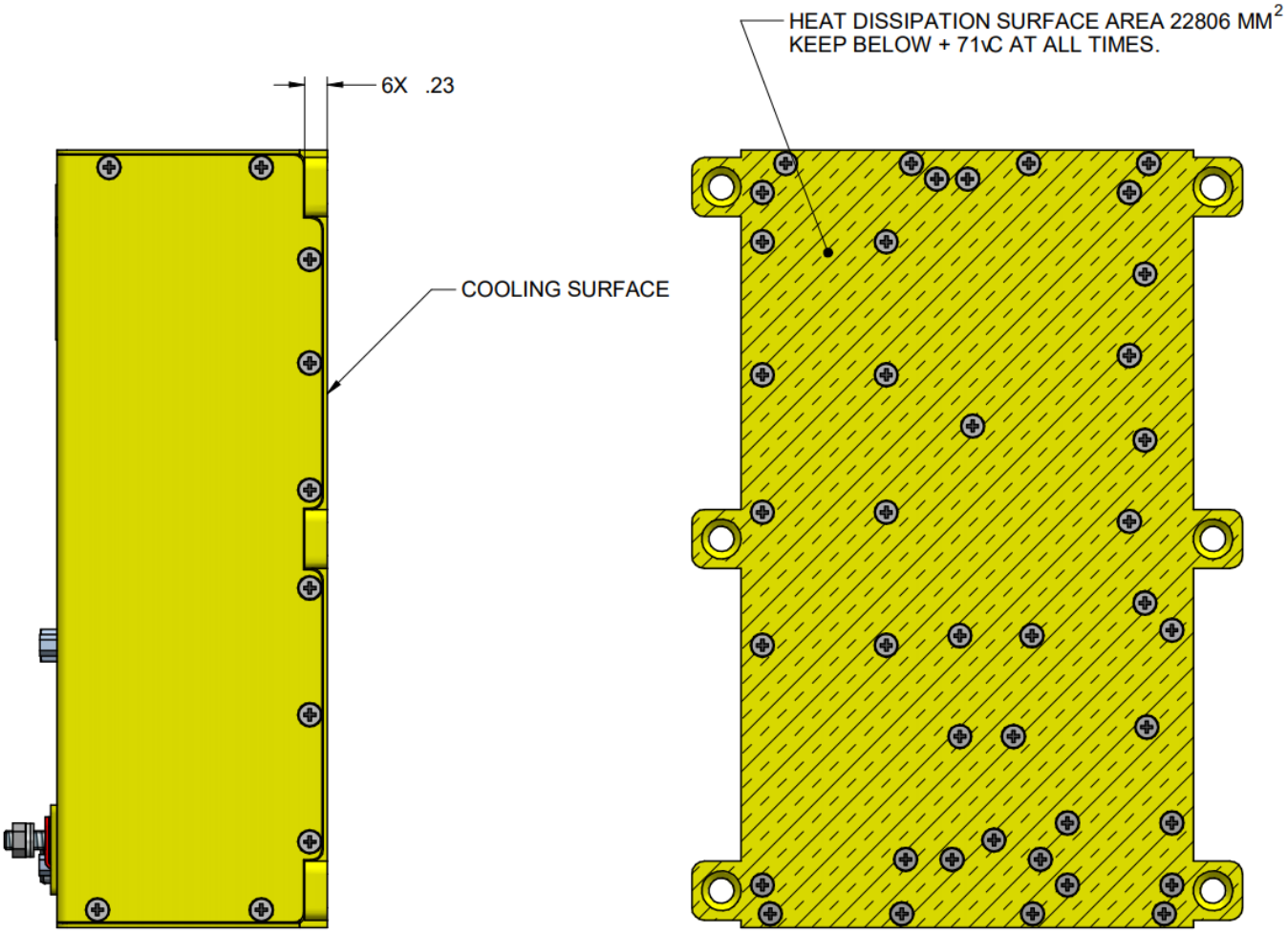


NOTES :

1. MTL. BODY : AL 6061-T651 COVERS : AL 5052-H32 OR EQ.
2. CONVERSION COATING PER MIL -C-5541 CL 3

**Notes**

Dimensions are in Inches
Tolerance is:
.XX ± 0.03 IN
.XXX ± 0.10 IN
Weight: Approx. 6 lbs [2.75 kg]

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***Standard Configurations***

| Part number | Input | | Output | | Special features |
|---|---|---|---|---|---|
| | Voltage range | Frequency | Voltage | Current | |
| M3110-100 | 3-phase, 104 to 127 $V_{AC}$ | 50/60/400 Hz | 5 $V_{DC}$ | 40 A | |
| M3110-101 | 3-phase, 104 to 127 $V_{AC}$ | 50/60/400 Hz | 12 $V_{DC}$ | 40 A | |
| M3110-102 | 3-phase, 104 to 127 $V_{AC}$ | 50/60/400 Hz | 15 $V_{DC}$ | 40 A | |
| M3110-103 | 3-phase, 104 to 127 $V_{AC}$ | 50/60/400 Hz | 24 $V_{DC}$ | 40 A | |
| M3110-104 | 3-phase, 104 to 127 $V_{AC}$ | 50/60/400 Hz | 28 $V_{DC}$ | 36 A | |
| M3110-105 | 3-phase, 104 to 127 $V_{AC}$ | 50/60/400 Hz | 48 $V_{DC}$ | 21 A | |
| M3110-106 | 3-phase, 104 to 127 $V_{AC}$ | 50/60/400 Hz | 28 $V_{DC}$ | 36 A | Parallel operation via output voltage droop. Voltage regulation is ±3%. |
| M3110-107 | 3-phase, 104 to 127 $V_{AC}$ | 50/60/400 Hz | 48 $V_{DC}$ | 21 A | Parallel operation via output voltage droop. Voltage regulation is ±3%. |

*Note: Specifications are subject to change without prior notice by the manufacturer*

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