

Features

- RoHS lead-solder-exemption compliant
- Universal input 85-264 VAC
- Input transient & ESD compliance to EN61000-4-2/-3/-4
- CE marked to Low Voltage Directive
- Industry-standard footprint: 7.00" x 4.30" x 1.80" (177.8mm x 109.2mm x 45.7mm)
- Remote sense and overvoltage protection
- Power Fail signal standard on MAP140-3000P, optional on MAP140-1012 and MAP140-1024
- Optional overtemperature protection, L-bracket, and cover

Description

Power-One's MAP140 Series provides a full range of options and up to 30 watts more power than comparable products in this industry-standard footprint. With a universal input from 85 to 264 VAC and power densities up to 2.6 watts/inch³, the MAP140 meets the most rigorous requirements of commercial, industrial, and datacom systems.

Rated for use in convection and forced-air cooled (200 LFM) applications, the MAP140 delivers dependable power with a Mean Time Between Failures (MTBF) in excess of 180,000 hours. In addition to UL, CSA, and TÜV regulatory compliance, the MAP140 displays the CE Mark.

Single Output Model Selection

| MODEL | OUTPUT VOLTAGE | ADJUSTMENT RANGE | CONVECTION COOLED CURRENT | FORCED AIR CURRENT (NOTE 3) | LINE REGULATION | LOAD REGULATION | RIPPLE & NOISE %p-p (NOTE 1) | INITIAL SETTING ACCURACY |
|-------------|----------------|------------------|---------------------------|-----------------------------|-----------------|-----------------|------------------------------|--------------------------|
| MAP140-1012 | 12V/15V | 11.0V to 16.0V | 9.2/7.3A (Note 2) | 12.5A/10A (Note 2) | 0.1% | 0.5% | 1% | 11.97V to 12.03V |
| MAP140-1024 | 24V/28V | 22.8V to 29.2V | 4.6/4A (Note 2) | 6.3A/5.4A (Note 2) | 0.1% | 0.5% | 1% | 23.95V to 24.05V |
| MAP140-1048 | 48V | 45.6V to 54.0V | 2.3A | 3.1A | 0.1% | 0.5% | 1% | 47.9V to 48.1V |

- NOTES:** 1) Maximum peak to peak noise expressed as a percentage of output voltage, 20MHz bandwidth.
 2) MAP140-1012 output currents are expressed as 12V/15V operation. MAP140-1024 output currents are expressed as 24V/28V operation.
 3) With 200 LFM forced air cooling.

Multiple Output Model Selection 80W Convection Cooled, 140W Forced-Air Cooled (200 LFM)

| MODEL | OUTPUT VOLTAGE | ADJUSTMENT RANGE | OUTPUT CURRENT (NOTE 1) | PEAK OUTPUT CURRENT (NOTE 1) | LINE REGULATION | LOAD REGULATION | RIPPLE & NOISE %p-p (NOTE 2) | INITIAL SETTING ACCURACY |
|--------------|----------------|------------------|-------------------------|------------------------------|-----------------|-----------------|------------------------------|--------------------------|
| | +5V | 4.75 - 5.25V | 16A/25A | 20A/25A PK | 0.2% | 1% | 1% | 5.09V to 5.11V |
| MAP140-3000P | +12V | Fixed | 4A/9A PK | 4A/9A PK | 0.1% | 2% | 1% | 11.97V to 12.03V |
| | -12V | Fixed | 1A/1.5A PK | 1A/1.5A PK | 0.1% | 2% | 1% | -11.4V to -12.6V |

- NOTES:** 1) Peak loads up to 140 Watts for 60 seconds or less are acceptable, (10% duty cycle max.). Peak power must not exceed 140 watts.
 2) Maximum peak to peak noise expressed as a percentage of output voltage, 20MHz bandwidth.

Model numbers highlighted in yellow or shaded are not recommended for new designs.

Input Specifications

| PARAMETER | CONDITIONS/DESCRIPTION | MIN | NOM | MAX | UNITS |
|----------------------|--|----------------|-----|-----|-------|
| Input Voltage - AC | Continuous input range. | 85 | | 264 | VAC |
| Input Frequency | AC input. | 47 | | 63 | Hz |
| Brown Out Protection | Lowest AC input voltage that regulation is maintained with full rated loads. | 85 | | | VAC |
| Hold-up Time | Nominal AC input voltage (110 VAC) | 110 watt load: | 20 | | mS |
| | | 140 watt load: | 16 | | |
| Input Current | 85 VAC (140W load). | | | 2.5 | ARMS |
| | 110 VAC (140W load). | | | 2.0 | |
| Input Protection | Non-user serviceable internally located AC input line fuse. | | | | |
| Inrush Surge Current | Internally limited by thermistor. Vin = 264VAC (one cycle). 25°C. | | | 41 | APK |
| Operating Frequency | Switching frequency of main transformer. | | 22 | | kHz |

Output Specifications

| PARAMETER | CONDITIONS/DESCRIPTION | MIN | NOM | MAX | UNITS |
|------------------------|---|----------------------|-----|-----|----------------------------|
| Efficiency | Full load, 110 VAC. Varies with distribution of loads among outputs. | 65 | 70 | 80 | % |
| Minimum Loads | Single output models. | 0 | | | Amps |
| | MAP140-3000P, total output current of V1 + V2 (Note 1). | 2 | | | |
| Ripple and Noise | Full load, 20MHz bandwidth. | | | | See Model Selection Chart. |
| Output Power | Single output models. | | | | See Model Selection Chart. |
| | MAP140-3000P with convection cooling. | | | 80 | Watts |
| | MAP140-3000P with 200 LFM forced air cooling. | | | 140 | |
| Overshoot / Undershoot | Output voltage overshoot/undershoot at turn-on/turn-off. | | | 0 | V |
| Regulation | Varies by output. Total regulation includes: line changes from 90-132 VAC or 175-264, changes in load starting at 20% load and changing to 100% load. | | | | See Model Selection Chart. |
| Transient Response | Recovery time, to within 1% of initial set point due to a 50-100% load change, 4% max. deviation. | | 500 | | µS |
| Turn-on Delay | Time required for initial output voltage stabilization. | MAP140-3000P | | 1 | Sec |
| | | Single output models | | 2 | |
| Turn-on Rise Time | Time required for output voltage to rise from 10% to 90%. | | | 20 | mS |

NOTES: 1) Minimum load is required only to meet the regulation limits of V3.

Interface Signals and Internal Protection

| PARAMETER | CONDITIONS/DESCRIPTION | MIN | NOM | MAX | UNITS |
|----------------------------|---|------------------|------|------|-------|
| Overvoltage Protection | Provided on single output models and V1 of MAP140-3000P. | MAP140-3000P, V1 | 6.1 | 7.2 | V |
| | | MAP140-1012 | 17.3 | 20.2 | |
| | | MAP140-1024 | 32.2 | 37.8 | |
| | | MAP140-1048 | 55.2 | 64.8 | |
| Overload Protection | Fully protected against output overload and short circuit. Automatic recovery upon removal of overload condition. | | | | |
| Remote Sense | Voltage drop compensated for at the load. | | | 250 | mV |
| Input Power Fail Warning | TTL compatible logic signal. Time before regulation dropout due to loss of input power at 140 watts, 110 VAC. Standard on MAP140-3000P and optional on MAP140-1012. | 2.3 | | | mS |
| Overtemperature Protection | Optional signal provides system shutdown due to excessive internal temperature. See options. | | | | |

Safety, Regulatory, and EMI Specifications

| PARAMETER | CONDITIONS/DESCRIPTION | MIN | NOM | MAX | UNITS |
|---|--|----------------|-----|----------|-------|
| Agency Approvals | UL1950. CSA 22.2 No. 234/950. EN60950 (TÜV). | | | Approved | |
| Dielectric Withstand Voltage | Input to output, 1 second. | 2600 | | | VDC |
| Electromagnetic Interference, Conducted | FCC CFR title 47 part 15 sub-part B - conducted & radiated. EN55022 / CISPR 22 conducted. | B | | | Class |
| ESD Susceptibility | Per EN61000-4-2, level 4. | 8 | | | kV |
| Radiated Susceptibility | Per EN61000-4-3, level 3. | 10 | | | V/M |
| EFT/Burst | Per EN61000-4-4, level 3. | ±2 | | | kV |
| Input Transient Protection | Per EN61000-4-5, class 3. | Line to Line | 1 | | kV |
| | | Line to Ground | 2 | | |
| Insulation Resistance | Input to Output. | 10 | | | MΩ |
| Leakage Current | Per EN60950, 264VAC. | 110 VAC | | 0.5 | mA |
| | | 264 VAC | | 1.5 | |

Environmental Specifications

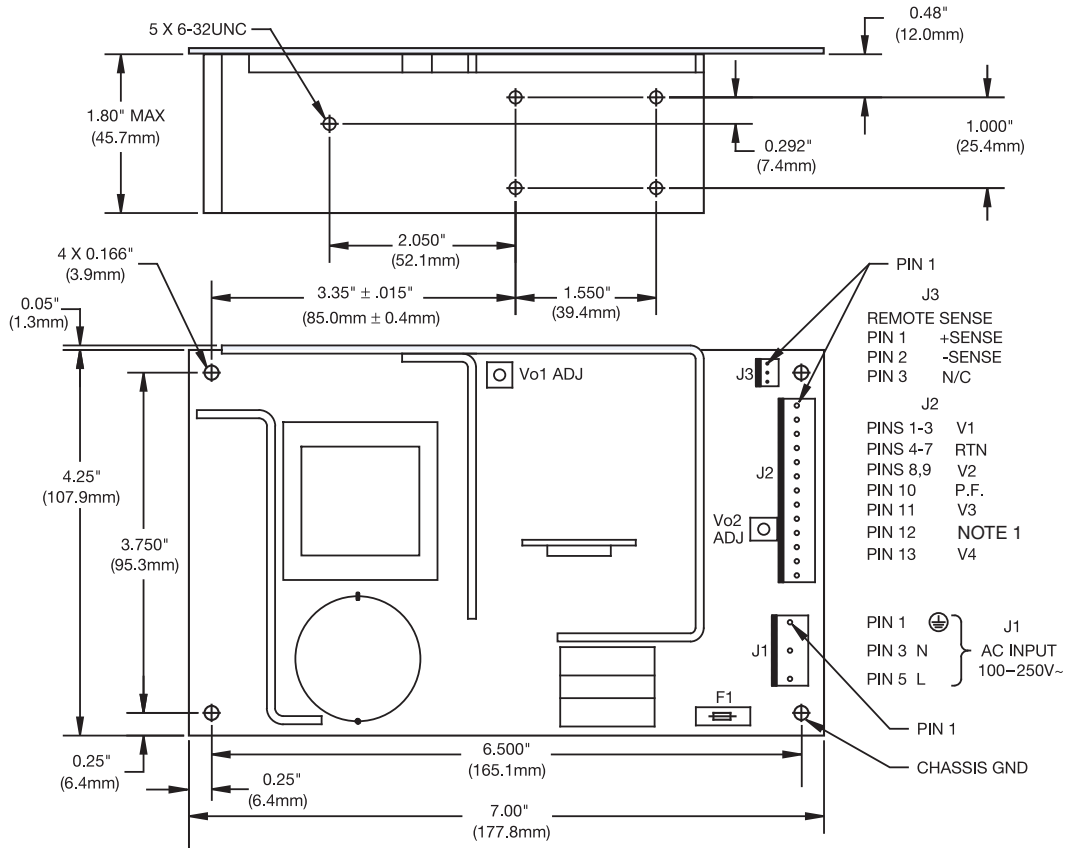
| PARAMETER | CONDITIONS/DESCRIPTION | MIN | NOM | MAX | UNITS |
|-------------------------|---|---------------|-------|-------|---------|
| Altitude | Operating. | | | 10k | ASL Ft. |
| | Non-operating. | | | 40k | ASL Ft. |
| Operating Temperature | Derate linearly above 50°C by 2.5% per °C | At 100% load: | 0 | 50 | °C |
| | | At 50% load: | 0 | 70 | °C |
| Storage Temperature | | -40 | | 85 | °C |
| Temperature Coefficient | 0°C to 70°C (after 15 minute warm-up period). | | ±0.02 | ±0.05 | %/°C |
| Relative Humidity | Non-condensing. | | | 95 | %RH |
| Shock | Operating, peak acceleration. | | | 20 | GPK |
| Vibration | Random vibration, 10Hz to 2kHz, 3 axis. | | | 6 | GRMS |

Options

| DESCRIPTION | NOTES | DIMENSIONS |
|-------------------|---|---|
| L-Bracket | Add 'L' suffix to model number. | 7.19" x 4.50" x 2.40" (182.6mm x 114.3mm x 61.0mm) |
| Cover | Add 'C' suffix to model number. Includes L-Bracket. For convection cooled applications, derate output power to 75 watts, maximum. | 7.19" x 4.50" x 2.40" (182.6mm x 114.3mm x 61.0mm) |
| Power Fail Signal | Add 'P' suffix to model number. Provides 2.3mS warning time before main output drops 5%. Warning time increases at reduced load levels. Option available only on MAP140-1012 and MAP140-1024. Power fail is standard on MAP140-3000P. | N/A |
| Thermal Shutdown | Add 'T' suffix to model number. Initiates shut-down in the event of an overtemperature condition. Automatic recovery. Where available, Power Fail signal is initiated prior to shutdown. | N/A |

OVERALL SIZE: 7.00" X 4.30" X 1.97" (177.8mm x 109.2mm x 50.0mm)

OVERALL WEIGHT: 1.3 lb (0.59 kg)



- PIN 1
- J3
- REMOTE SENSE
- PIN 1 +SENSE
- PIN 2 -SENSE
- PIN 3 N/C
- J2
- PINS 1-3 V1
- PINS 4-7 RTN
- PINS 8,9 V2
- PIN 10 P.F.
- PIN 11 V3
- PIN 12 NOTE 1
- PIN 13 V4
- J1
- PIN 1 \oplus
- PIN 3 N
- PIN 5 L
- AC INPUT
- 100-250V~
- PIN 1
- CHASSIS GND

| MOLEX PCB PIN CONNECTOR INFORMATION | | | | |
|-------------------------------------|----------|-------------|--------------|--------------|
| REF DESIG | SERIES | MOLEX P/N | SPACING | PINS, SQUARE |
| J1 | 41671 or | 26-48-1055* | 0.156 (3.96) | 0.045 (1.14) |
| | 41791 | 26-60-4050* | 0.156 (3.96) | 0.045 (1.14) |
| J2 | 41671 or | 26-48-1135 | 0.156 (3.96) | 0.045 (1.14) |
| | 41791 | 26-60-4130 | 0.156 (3.96) | 0.045 (1.14) |
| J3 | 6373 | 22-23-2031 | 0.100 (2.54) | 0.025 (0.64) |

*With pins 2 & 4 removed for double spacing.

NOTES:

- 1.) When the V4 output is a positive (+) output, pin 12 on J2 is connected to RTN.
When the V4 output is a negative (-) output, pin 12 on J2 is connected to V4.

Contact factory for dimensions for L-bracket and cover.

NUCLEAR AND MEDICAL APPLICATIONS - Power-One products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Power-One, Inc.

TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.