

SMM Series



- Industrial, IT & Medical Approvals
- Low Profile for 1U Applications
- Optional Current Share & AC Fail
- Output Voltages from 3.3 V to 54 V
- Enclosed with Internal Fan & U-Channel Versions
- Optional Connectors
- 3 Year Warranty

Specification

Input

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|----------------------------|--|
| Input Voltage | • 90-264 VAC (120-370 VDC) |
| Input Frequency | • 47-63 Hz |
| Input Current | • 6.35 A at 90 VAC, full load |
| Inrush Current | • 35 A peak max (cold start at 230 VAC & full load) |
| Power Factor | • EN61000-3-2 class A EN61000-3-2 class C for loads $\geq 40\%$ |
| Earth Leakage Current UVLO | • <300 μ A max at 264 VAC/60 Hz • Shut down when 75 VAC < V_{in} < 85 VAC & turns on when V_{in} > 86 VAC |
| Input Protection | • Internal T8 A/250 VAC fuse in line and neutral |

Output

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|----------------------------|--|
| Output Voltage | • 3.3 to 54 VDC - see tables |
| Output Voltage Trim | • $\pm 5\%$ on V1 |
| Initial Set Accuracy | • Within 1% of stated output voltage |
| Minimum Load | • Single output: 1%, Dual output (V1): 10% |
| Start Up Delay | • 2 s max at 120 VAC |
| Hold Up Time | • 20 ms min at 80% full load |
| Line Regulation | • 0.5% |
| Load Regulation | • $\pm 1\%$ (single outputs), $\pm 3\%$ V1, $\pm 7\%$ V2 (dual outputs) |
| Over/Undershoot | • Not to exceed 5% of nominal voltage |
| Transient Response | • 5% max deviation, recovery to within 1% in 500 μ s for a 50% load change |
| Ripple & Noise | • <1% of nominal output voltage, measured using 0.1 μ F ceramic and 22 μ F electrolytic capacitor, 20 MHz bandwidth. |
| Overvoltage Protection | • >130% V_{nom} , recycle input to reset |
| Overtemperature Protection | • Shuts down at +85 $^{\circ}$ C, measured internally with auto recovery |
| Overload Protection | • 110-140% |
| Short Circuit Protection | • Constant current, auto recovery |
| Remote Sense | • Compensates for up to 0.5 V drop (not available with current share) |
| Remote On/Off | • On = TTL Logic High or Open Off = TTL Logic Low or Short |
| Current Share | • Option '-I' available on single output models only - see note 5 |
| Fan Output | • 12 V at 400 mA |

General

| | |
|---------------------|---|
| Efficiency | • 3.3 & 5.0 V single output: 70% min, All other single output: 80% min, Dual outputs: 75% min at 230 VAC, full load |
| Isolation | • 4000 VAC Input to Output, 1500 VAC Input to Ground, 250 VDC Output to Ground |
| Switching Frequency | • 30 kHz PWM, 60 kHz PFC typical |
| Power Density | • 6.25 W/in ³ |
| Signals | • Power Good & Current Monitor as standard. AC Fail & Current Share are optional (see notes) |
| MTBF | • 140 kHrs to MIL-HDBK-217F at 25 $^{\circ}$ C, GB |

Environmental

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|-----------------------|--|
| Operating Temperature | • -0 $^{\circ}$ C to +70 $^{\circ}$ C, derate linearly from +50 $^{\circ}$ C to +70 $^{\circ}$ C at 2.5%/ $^{\circ}$ C |
| Cooling | • '-C' version has built-in fan, others require 23 CFM air flow to meet fan-cooled ratings |
| Operating Humidity | • 5-90% RH, non-condensing |
| Storage Temperature | • -20 $^{\circ}$ C to +85 $^{\circ}$ C |
| Vibration | • 5-50 Hz, acceleration 2 g, 3 minute sweep, 60 mins in 3 axes |
| Shock | • 15 g 11 ms 1/2 sine wave, 3 times in 6 axes |
| Bump | • 15 g 6 ms 1/2 sine 4000 bumps in 3 axes |

EMC & Safety

| | |
|----------------------|--|
| Emissions | • EN55011/22 Level B conducted & radiated |
| Harmonic Currents | • EN61000-3-2 class A EN61000-3-2 class C for loads $\geq 40\%$ |
| Voltage Flicker | • EN61000-3-3 |
| ESD Immunity | • EN61000-4-2, level 3 Perf Criteria A |
| Radiated Immunity | • EN61000-4-3, 3 V/m Perf Criteria A |
| EFT/Burst | • EN61000-4-4, level 2 Perf Criteria A |
| Surge | • EN61000-4-5, installation class 3 Perf Criteria A |
| Conducted Immunity | • EN61000-4-6, 3 V, Perf Criteria A |
| Dips & Interruptions | • EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms Perf Criteria A, B, B |
| Safety Approvals | • UL60601-1, EN60601-1, EN60950-1:2001, UL60950, CSA C22.2 No. 60950-1-03, CSA C22.2 No. 601.1-M90 |

Models and Ratings

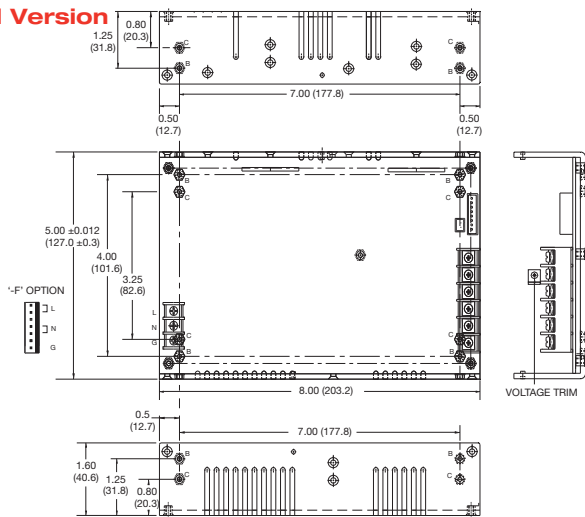
| Output Voltage Range | Total Output Power ⁽¹⁾ | | Maximum Output Current | | | | Model Number ^(2,3,4,5,6) |
|----------------------|-----------------------------------|------------|------------------------|------------|------------|------------|-------------------------------------|
| | | | Output 1 | | Output 2 | | |
| | Convection | Fan-Cooled | Convection | Fan-Cooled | Convection | Fan-Cooled | |
| 3.3 V | 148.5 W | 198 W | 45.00 A | 60.00 A | | | SMM400PS03 ⁽⁸⁾ |
| 5.0 V | 225.0 W | 300 W | 45.00 A | 60.00 A | | | SMM400PS05 ⁽⁸⁾ |
| 12.0 V | 250.0 W | 400 W | 20.80 A | 33.34 A | | | SMM400PS12 |
| 15.0 V | 250.0 W | 400 W | 16.60 A | 26.60 A | | | SMM400PS15 ⁽⁸⁾ |
| 18.0 V | 250.0 W | 400 W | 13.90 A | 22.20 A | | | SMM400PS18 ⁽⁸⁾ |
| 24.0 V | 250.0 W | 400 W | 10.40 A | 16.70 A | | | SMM400PS24 |
| 27.0 V | 250.0 W | 400 W | 9.20 A | 14.80 A | | | SMM400PS27 ⁽⁸⁾ |
| 36.0 V | 250.0 W | 400 W | 6.90 A | 11.10 A | | | SMM400PS36 ⁽⁸⁾ |
| 48.0 V | 250.0 W | 400 W | 5.20 A | 8.30 A | | | SMM400PS48 |
| 54.0 V | 250.0 W | 400 W | 4.60 A | 7.40 A | | | SMM400PS54 ⁽⁸⁾ |
| 3.3 V/12.0 V | 200.0 W | 300 W | 30.00 A | 40.00 A | 16.70 A | 25.00 A | SMM400PD21 ⁽⁸⁾ |
| 3.3 V/24.0 V | 200.0 W | 300 W | 30.00 A | 40.00 A | 8.30 A | 12.50 A | SMM400PD22 ⁽⁸⁾ |
| 5.0 V/12.0 V | 200.0 W | 300 W | 30.00 A | 40.00 A | 16.70 A | 25.00 A | SMM400PD23 ⁽⁸⁾ |
| 5.0 V/24.0 V | 200.0 W | 300 W | 30.00 A | 40.00 A | 8.30 A | 12.50 A | SMM400PD24 ⁽⁸⁾ |
| 12.0 V/24.0 V | 250.0 W | 400 W | 16.70 A | 25.00 A | 8.30 A | 12.50 A | SMM400PD25 |

Notes

1. SMM400PDXX: 10% minimum load is required for all outputs to maintain the ripple and regulation. Outputs are fully isolated.
2. For cover version add -C to the model number
3. Standard output is screw terminal. For optional Molex output connector, add suffix '-G' to model number, OEM quantities, contact Sales.
4. For AC fail option, add suffix '-L' to model number (single output only). UVLO function is disabled. Output is low when input is <80 VAC, high (5 V) if input is >86 VAC, OEM quantities, contact Sales.
5. For current share option, add suffix '-I' to model number (remote sense not available). This option also adds internal blocking diodes, OEM quantities, contact Sales.
6. For U-Channel with optional solid cover, add suffix '-A' to the model number (external dimensions remain the same).
7. Standard input for U-Channel version is screw terminal. For optional IEC320 input, on/off switch and cover add suffix '-D' to model number.
8. Available for OEM quantities, contact Sales.
9. When ordering place option suffixes in alphabetical order, e.g. SMM400PS24-GI.

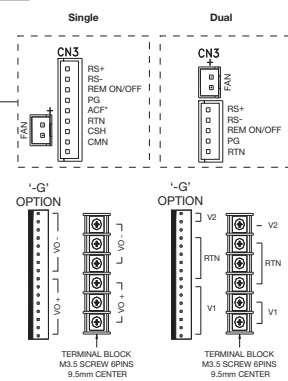
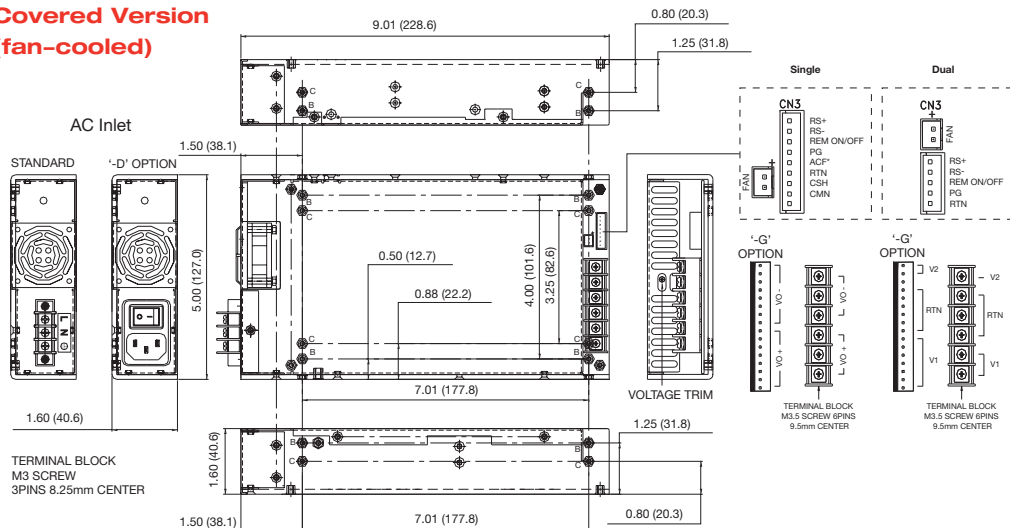
Mechanical Details

U-Channel Version



All dimensions in inches (mm).
 Tolerance: ±0.012 (±0.3)
 Weight: U-Channel - 2.20 lbs (1.0 kg). Covered - 3.53 lbs (1.6 kg).
 Max screw penetration: 0.15 (3.81) on bottom, 0.25 (6.35) on sides.
 Mounting holes B: 6-32, Mounting holes C: M4
 Max screw terminal torque: 15.7 lbs-in (1.8 Nm)

Covered Version (fan-cooled)



Mating Connectors
 Signal Connector (Single): JST XHP-9
 Signal Connector (Dual): JST XHP-5
 Fan Connector: JST XHP-2
 Crimp Terminals: SXH-002-P0.6
 '-G' optional output: Molex No. 09-91-1600
 Crimps: Molex Series 6838 (see note 3 above)