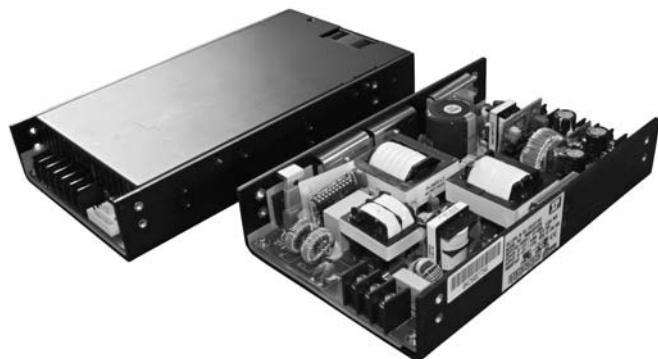


400 Watts

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
- Class B Conducted Emissions
- Optional Molex Connectors

Specification

Input

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 240 VAC & full load)
Power Factor	• Meets EN61000-3-2
Earth Leakage Current	• <300 μ A max at 264 VAC/60 Hz
UVLO	• Shut down when 75 VAC < V_{in} < 85 VAC & turns on when V_{in} > 86 VAC
Input Protection	• Internal 8 A fuse in line and neutral

Output

Output Voltage	• 3.3 to 54 VDC - see tables
Output Voltage Trim	• \pm 5% on V1, adjustable by user
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
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 4
Fan Drive	• 12 V at 500 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	• 25 kHz for PWM stage, 60 kHz for PFC stage
Power Density	• 6.25 W/In ³ based on unit without cover/fan
Signals	• Current Share, Power Good, Current Monitor & optional AC Fail (see note 5 - available on single output models only)
MTBF	• 140 kHrs at +25 $^{\circ}$ C per MIL-HDBK-217F

Environmental

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	• Minimum 23 CFM airflow required for maximum power output. '-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
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, level 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, 3 V, Perf Criteria A
Dips & Interruptions	• EN61000-4-11 70% U_T for 10 ms, 40% U_T for 100 ms, <5% U_T for 5000 ms Perf Crit A, B, B (Perf Crit A, A, B with 85% load)
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 ⁽¹⁾	Total Output Power	Maximum Output Current		Model Number ^(2,3,4,5)
		V1	V2	
3.3 V	198 W	60.00 A		SMM400PS03-C†
5.0 V	300 W	60.00 A		SMM400PS05-C†
12.0 V	400 W	33.34 A		SMM400PS12-C†
15.0 V	400 W	26.60 A		SMM400PS15-C†
18.0 V	400 W	22.20 A		SMM400PS18-C
24.0 V	400 W	16.70 A		SMM400PS24-C†
27.0 V	400 W	14.80 A		SMM400PS27-C
36.0 V	400 W	11.10 A		SMM400PS36-C
48.0 V	400 W	8.30 A		SMM400PS48-C†
54.0 V	400 W	7.40 A		SMM400PS54-C
3.3 V/12.0 V	300 W	40.00 A	25.00 A	SMM400PD21-C
3.3 V/24.0 V	300 W	40.00 A	12.50 A	SMM400PD22-C
5.0 V/12.0 V	300 W	40.00 A	25.00 A	SMM400PD23-C
5.0 V/24.0 V	300 W	40.00 A	12.50 A	SMM400PD24-C
12.0 V/24.0 V	400 W	25.00 A	12.50 A	SMM400PD25-C

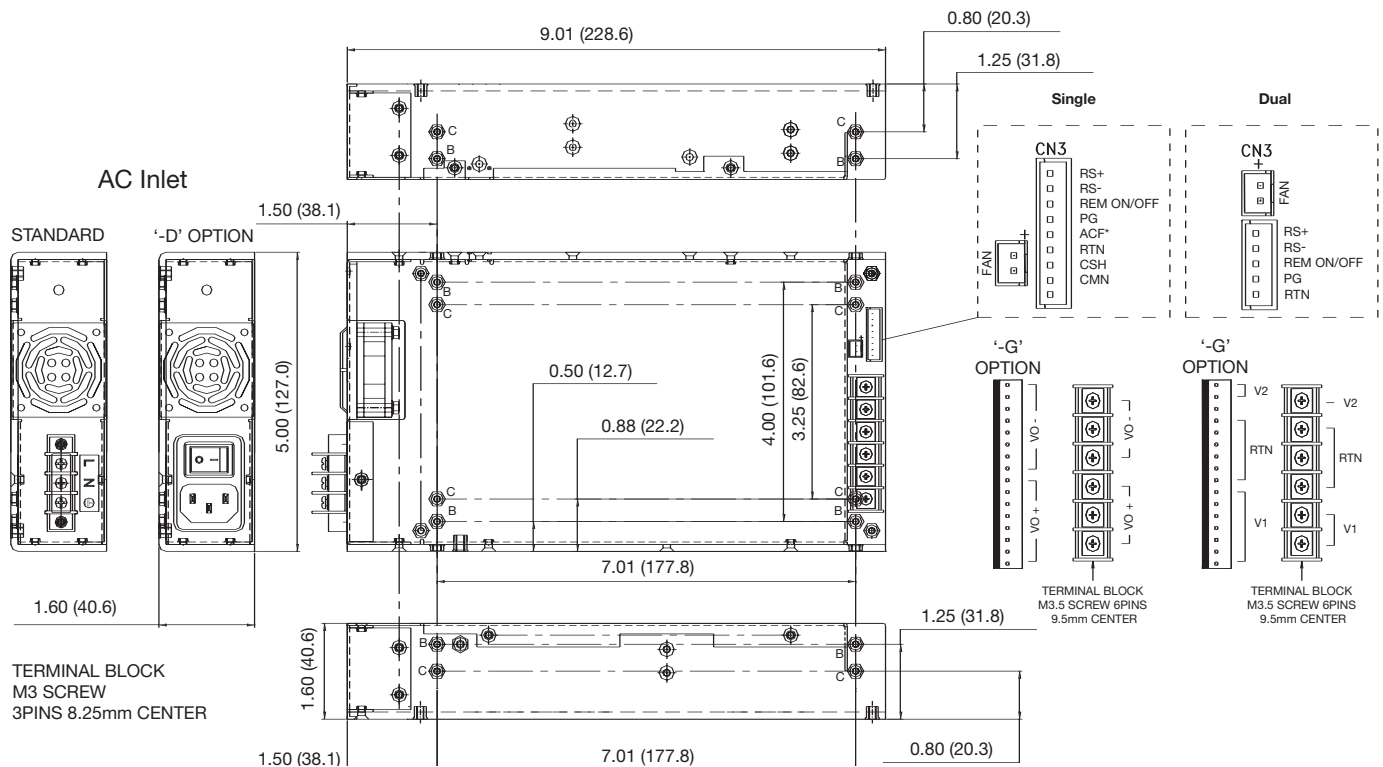
Notes

1. Other output voltages available. Contact sales.
2. Standard input is screw terminal. For optional IEC320 input and on/off switch, add suffix '-D' to model number.
3. Standard output is screw terminal. For optional Molex output connector, add suffix '-G' to model number.
4. For current share option, add suffix '-I' to model number (remote sense not available). This option also adds internal block diodes.
5. 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.
6. When ordering place option suffixes in alphabetical order, e.g. SMM400PS24-CDI.

† Available from Farnell. See pages 204-206.

Mechanical Details

All dimensions in inches (mm).
 Weight: 2.20 lbs (1.0 kg).
 Max Screw Penetration: 0.15 (3.81) on bottom, 0.25 (6.35) on sides.



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



Models and Ratings

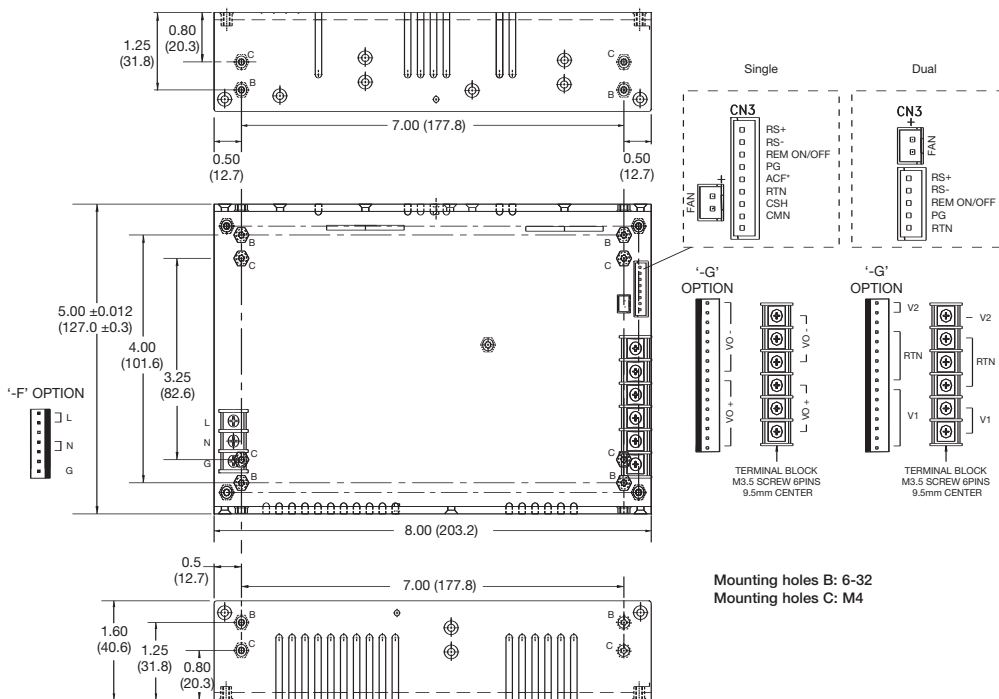
Output Voltage Range ⁽¹⁾	Total Output Power		Maximum Output Current				Model Number ^(2,3,4,5,6)
			Output 1		Output 2		
	Convection	Fan-Cooled	Convection	Fan-Cooled	Convection	Fan-Cooled	
3.3 V	148.5 W	198 W	45.00 A	60.00 A			SMM400PS03
5.0 V	225.0 W	300 W	45.00 A	60.00 A			SMM400PS05
12.0 V	250.0 W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

- Other output voltages available. Contact sales.
- For optional solid cover, add suffix '-A' to the model number (external dimensions remain the same).
- Standard input is screw terminal. For optional Molex input connector, add suffix '-F' to model number.
- Standard output is screw terminal. For optional Molex output connector, add suffix '-G' to model number.
- For current share option, add suffix '-I' to model number (remote sense not available). This option also adds internal block diodes.
- 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.
- When ordering place option suffixes in alphabetical order, e.g. SMM400PS24-GI.

Mechanical Details

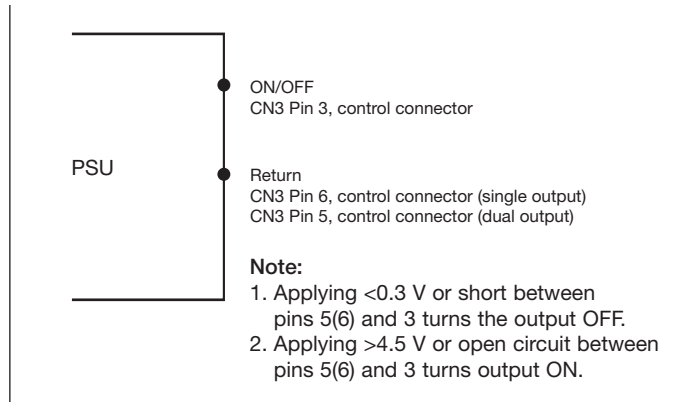
All dimensions in inches (mm).
 Weight: 2.20 lbs (1.0 kg).
 Max Screw Penetration: 0.15 (3.81) on bottom, 0.25 (6.35) on sides.



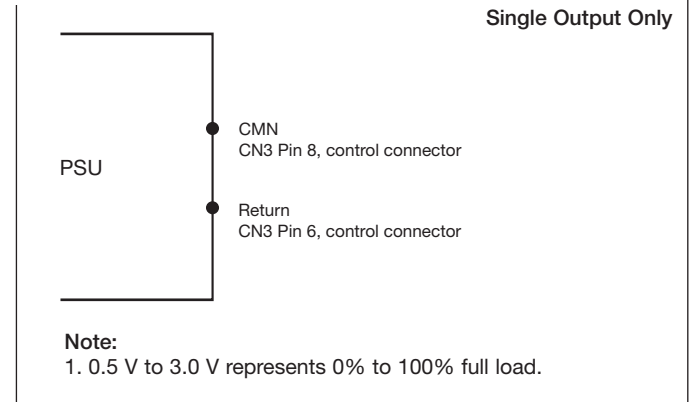
Mating Connectors

- Signal Connector (Single): JST XHP-9
- Signal Connector (Dual): JST XHP-5
- Fan Connector: JST XHP-2
- Crimp Terminals: SXH-002-P0.6
- '-F' optional input: Molex No. 09-91-0700
- '-G' optional output: Molex No. 09-91-1600
- Crimps: Molex Series 6838

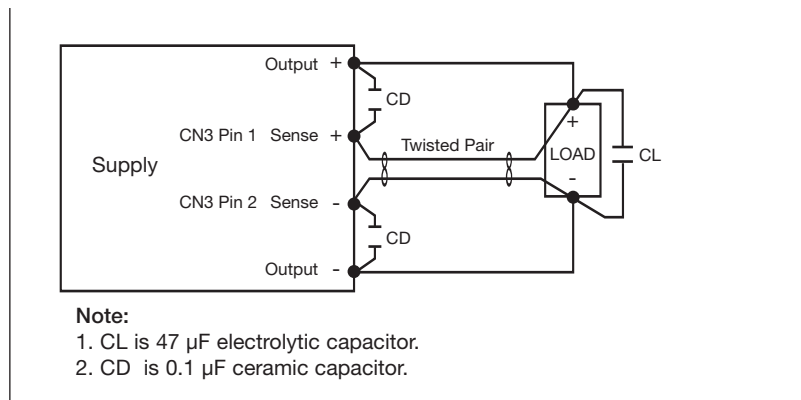
Remote On/Off



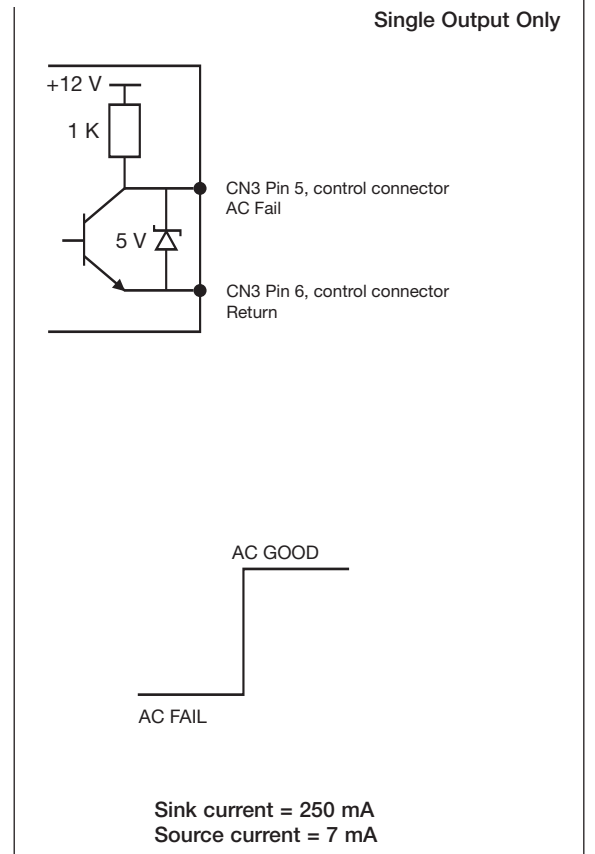
Current Monitor



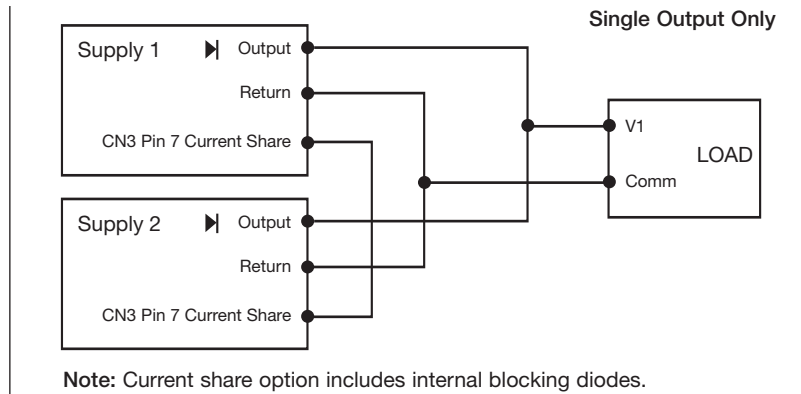
Remote Sense



Optional AC Fail



Parallel Connection with Current Share Option



Power Good

