

250 Watts

SDR Series



- 3.2" x 5" Footprint
- Fits 1U Applications
- Low Leakage Current Option
- Up to 600 W Peak Power
- Single & Dual Outputs
- Top Fan & Convection-cooled Versions
- 3 Year Warranty

Specification

Input

Input Voltage	• 90-132 VAC/180-264 VAC, auto ranging
Input Frequency	• 47-63 Hz
Input Current	• 6 A at 115 VAC, 3 A at 230 VAC
Inrush Current	• Max 70 A at 230 VAC, 35 A at 115 VAC, cold start
Power Factor	• Meets EN61000-3-2 Class A
Earth Leakage Current	• <1.5 mA at 264 VAC, option '-L' 500 μ A leakage current
Input Protection	• Fitted with a T8A/250 V fuse

Output

Output Voltage	• See tables
Output Voltage Trim	• $\pm 5\%$ on V1 (V2 of dual output models will track by same % of adjustment)
Initial Set Accuracy	• $\pm 1\%$
Minimum Load	• 1% on single output models, 10% on both outputs for dual models
Start Up Delay	• 1.5 s max at 120 VAC
Start Up Rise Time	• 50 ms typical
Hold Up Time	• 20 ms min at 80% of full load
Line Regulation	• $\pm 0.5\%$
Load Regulation	• $\pm 1\%$ 1-100% load for single outputs $\pm 3\%$ V1, $\pm 7\%$ V2 for dual outputs (except 0312 & 0512 models, $\pm 10\%$ regulation on V2)
Over/Undershoot	• 5% max
Transient Response	• 5% max deviation, recovery to within 1% in 500 μ s for a 50% load change
Ripple & Noise	• 1% pk-pk, see note 3
Overvoltage Protection	• <130% Vnom on output V1, recycle input to reset
Overtemperature Protection	• Measured internally with auto recovery
Overload Protection	• 110-140%
Short Circuit Protection	• Trip & restart (Hiccup mode), auto recovery
Remote On/Off	• Requires a low signal to inhibit output, Hiccup mode
Fan Supply	• 12 VDC, 300 mA, not available on '-F' version with built-in fan

General

Efficiency	• Single output models: 3.3 V & 5 V models 70%, 12 V models 80%, all other models >83% at 230 V & full load. Dual output models: >70% at 230 V & full load
Isolation	• 3000 VAC Input to Output 1500 VAC Input to Ground 100 VDC Output to Ground
Switching Frequency	• 29 kHz typical
Power Density	• 10.4 W/in ³
Signals	• Power Good TTL HIGH within 100-500 ms and LOW ≤ 1 ms before loss of regulation
MTBF	• 150 kHrs typical to MIL-HDBK-217F at 25 $^{\circ}$ C, GB

Environmental

Operating Temperature	• 0 $^{\circ}$ C to +70 $^{\circ}$ C, derate at 2.5%/ $^{\circ}$ C from +50 $^{\circ}$ C to +70 $^{\circ}$ C for single output & forced air cooled dual output models. For convection cooled dual output models, see note 7.
Storage Temperature	• -20 $^{\circ}$ C to +85 $^{\circ}$ C
Operating Humidity	• 5-90%, non-condensing
Storage Humidity	• 5-90%, non-condensing
Cooling	• '-F' version has built-in fan, others require 16 CFM to meet forced air ratings
Operating Altitude	• 3000 m
Vibration	• 5-50 Hz, acceleration 7.35 m/s ² on X, Y and Z axis

EMC & Safety

Emissions	• FCC Part 15 & EN55022 Level B conducted
Harmonic Currents	• EN61000-3-2, 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, level 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, 3V Perf Criteria A
Dips & Interruptions	• EN61000-4-11 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B
Safety Approvals	• UL60950-1, CSA C22.2 No. 950, EN60950-1, CE Mark LVD

Models and Ratings

Output Voltage	Output Power	Output Current		Ripple & Noise PK-PK ⁽³⁾	Model Number ^(1,4,5)
		Nominal	Peak ⁽²⁾		
5 V	200 W	40.00 A	120.00 A	50 mV	SDR250AS05-F ⁽⁶⁾
9 V	225 W	25.00 A	66.67 A	90 mV	SDR250AS09-F ⁽⁶⁾
12 V	250 W	20.83 A	50.00 A	120 mV	SDR250AS12-F
15 V	250 W	16.70 A	40.00 A	150 mV	SDR250AS15-F
18 V	250 W	13.89 A	33.30 A	180 mV	SDR250AS18-F ⁽⁶⁾
24 V	250 W	10.42 A	25.00 A	240 mV	SDR250AS24-F
28 V	250 W	8.93 A	21.43 A	280 mV	SDR250AS28-F ⁽⁶⁾
36 V	250 W	6.94 A	16.67 A	360 mV	SDR250AS36-F
48 V	250 W	5.21 A	12.50 A	480 mV	SDR250AS48-F ⁽⁶⁾
54 V	250 W	4.63 A	11.10 A	540 mV	SDR250AS54-F ⁽⁶⁾
60 V	250 W	4.17 A	10.00 A	600 mV	SDR250AS60-F ⁽⁶⁾

Output Voltage	Output Power	Output Current		Ripple & Noise PK-PK ⁽³⁾	Model Number ^(1,4,5)
		Nominal	Peak ⁽²⁾		
V1 : +3.3 V	200 W	24 A	28.8 A	50 mV	SDR250AD0312-F ⁽⁶⁾
V2 : +12.0 V		12 A	14.4 A	120 mV	
V1 : +3.3 V	200 W	24 A	28.8 A	50 mV	SDR250AD0324-F ⁽⁶⁾
V2 : +24.0 V		6 A	7.2 A	240 mV	
V1 : +5.0 V	200 W	24 A	28.8 A	50 mV	SDR250AD0512-F ⁽⁶⁾
V2 : +12.0 V		12 A	14.4 A	120 mV	
V1 : +5.0 V	200 W	24 A	28.8 A	50 mV	SDR250AD0524-F ⁽⁶⁾
V2 : +24.0 V		6 A	7.2 A	240 mV	
V1 : +5.0 V	200 W	24 A	28.8 A	50 mV	SDR250AD0548-F ⁽⁶⁾
V2 : +48.0 V		3 A	3.6 A	480 mV	
V1 : +12.0 V	250 W	12 A	14.4 A	120 mV	SDR250AD1224-F
V2 : +24.0 V		6 A	7.2 A	240 mV	

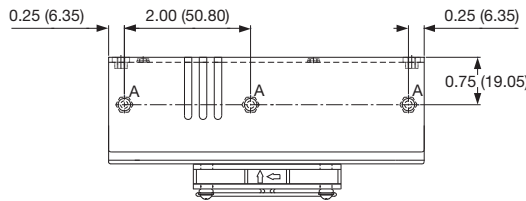
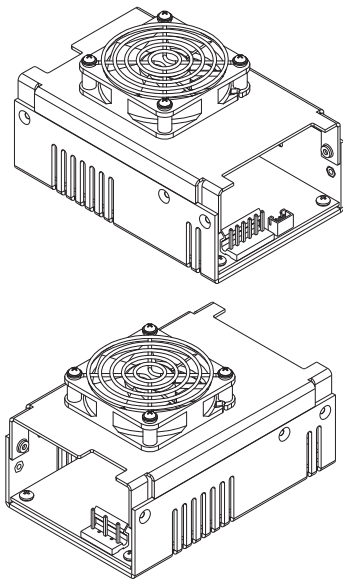
Notes

1. Add suffix 'L' to model number for optional 500 μ A leakage current.⁽⁶⁾
2. Peak load can be taken for 500 μ s. Average power not to exceed max power.
3. Ripple & noise is measured using a 0.1 μ F ceramic capacitor in parallel with 22 μ F electrolytic and 20 MHz bandwidth.
4. Add suffix 'D' for optional output terminal block except the 5 V and 9 V output models which are only available with output terminal blocks.⁽⁶⁾
5. Add suffix 'E' for optional input terminal block.⁽⁶⁾
6. Available for OEM quantities, contact Sales.

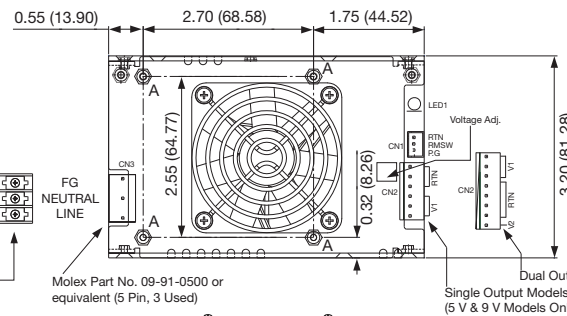
Mechanical Details

Enclosed with top fan (option -F)

All dimensions are in inches (mm). Tolerance: ± 0.012 (± 0.3)
Weight: 0.95 lbs (430 g)



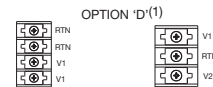
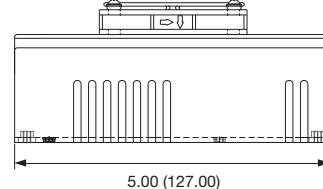
A Mounting hole 7 places, M3 x 0.5 mm.
Max penetration 3.8 mm



OPTION 'E'
Terminal Block
M3 Screw
3 Pins 0.25 (6.35) Centre

Molex Part No. 09-91-0500 or equivalent (5 Pin, 3 Used)

Dual Output Models
Single Output Models
(5 V & 9 V Models Only Available With Screw Terminals)



Single Output Models
Terminal Block
M3 Screw 4 Pins
0.25 (6.35) Centre

Dual Output Models
Terminal Block
M4 Screw 3 Pins
0.33 (8.35) Centre

Max torque for all screw terminals 7.0 lbs-in (0.8 Nm)
(1) Available for OEM quantities, contact Sales.

Signal connector CN1 mates with JST XHP-3 or equivalent & crimp terminals SXH-002T-P0.6.
Input: Molex No. 09-91-0500, crimp terminals Molex series 6838.
Output: Molex No. 09-91-0600 for 12 V to 60 V single output models, 09-91-0800 for dual output models, crimp terminals Molex series 6838.
Terminal block for 5 V to 9 V single output models.

Mechanical Details

Output Voltage	Forced Air Cooled		Convection-cooled		Peak Current ⁽²⁾	Ripple & Noise Pk-Pk ⁽³⁾	Model Number ^(1,4,5,6)
	Output Power	Output Current	Output Power	Output Current			
5 V	200 W	40.00 A	100 W	20.00 A	120.00 A	50 mV	SDR250AS05 ⁽⁶⁾
9 V	225 W	25.00 A	121 W	13.50 A	66.67 A	90 mV	SDR250AS09 ⁽⁶⁾
12 V	250 W	20.83 A	135 W	11.23 A	50.00 A	120 mV	SDR250AS12
15 V	250 W	16.70 A	135 W	9.00 A	40.00 A	150 mV	SDR250AS15
18 V	250 W	13.89 A	135 W	7.50 A	33.30 A	180 mV	SDR250AS18 ⁽⁶⁾
24 V	250 W	10.42 A	135 W	5.63 A	25.00 A	240 mV	SDR250AS24
28 V	250 W	8.93 A	135 W	4.82 A	21.43 A	330 mV	SDR250AS28 ⁽⁶⁾
36 V	250 W	6.94 A	135 W	3.75 A	16.67 A	360 mV	SDR250AS36
48 V	250 W	5.21 A	135 W	2.81 A	12.30 A	480 mV	SDR250AS48 ⁽⁶⁾
54 V	250 W	4.63 A	135 W	2.50 A	11.10 A	540 mV	SDR250AS54 ⁽⁶⁾
60 V	250 W	4.17 A	135 W	2.25 A	10.00 A	600 mV	SDR250AS60 ⁽⁶⁾

Output Voltage	Forced Air Cooled		Convection-cooled		Peak Current ⁽²⁾	Ripple & Noise Pk-Pk ⁽³⁾	Model Number ^(1,4,5,6,7)
	Output Power	Output Current	Output Power	Output Current			
V1 : +3.3 V V2 : +12.0 V	200 W	24 A	100 W	12 A	28.8 A	50 mV	SDR250AD0312 ⁽⁶⁾
		12 A		7 A	14.4 A	120 mV	
V1 : +3.3 V V2 : +24.0 V	200 W	24 A	100 W	12 A	28.8 A	50 mV	SDR250AD0324 ⁽⁶⁾
		6 A		4 A	7.2 A	240 mV	
V1 : +5.0 V V2 : +12.0 V	200 W	24 A	100 W	12 A	28.8 A	50 mV	SDR250AD0512 ⁽⁶⁾
		12 A		7 A	14.4 A	120 mV	
V1 : +5.0 V V2 : +24.0 V	200 W	24 A	100 W	12 A	28.8 A	50 mV	SDR250AD0524 ⁽⁶⁾
		6 A		4 A	7.2 A	240 mV	
V1 : +5.0 V V2 : +48.0 V	200 W	24 A	100 W	12 A	28.8 A	50 mV	SDR250AD0548 ⁽⁶⁾
		3 A		2 A	3.6 A	480 mV	
V1 : +12.0 V V2 : +24.0 V	250 W	12 A	135 W	7 A	14.4 A	120 mV	SDR250AD1224
		6 A		4 A	7.2 A	240 mV	

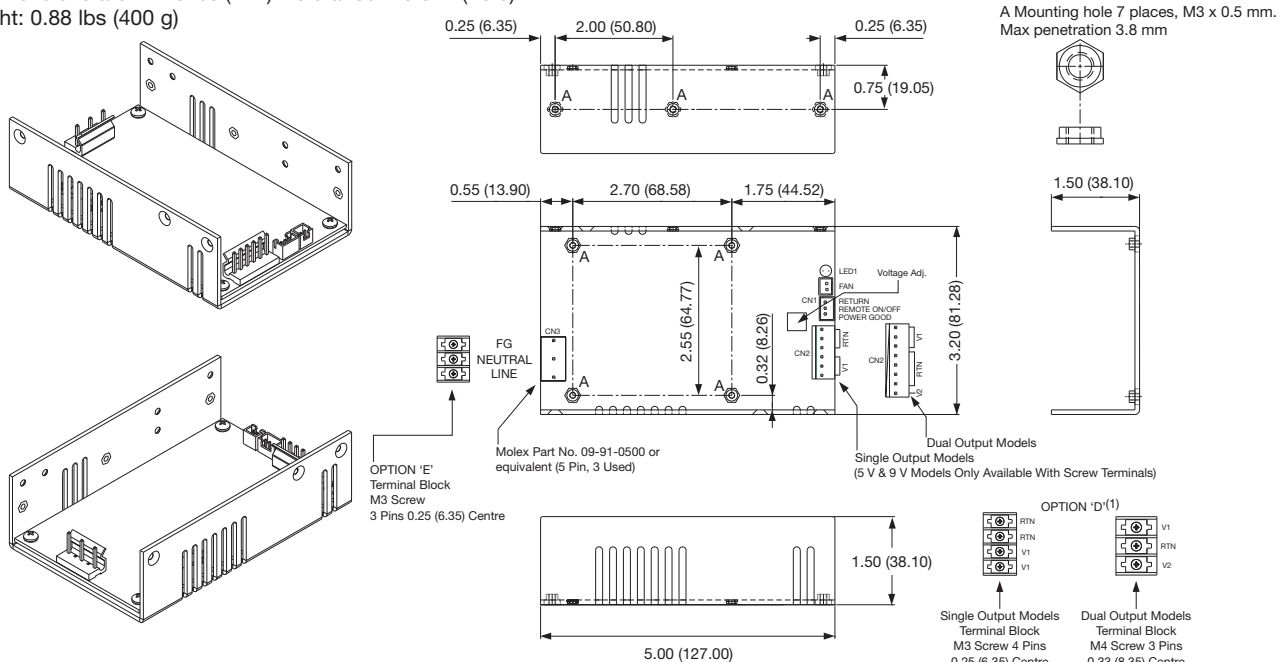
Notes

1. Add suffix 'L' to model number for optional 500 µA leakage current.⁽⁸⁾
2. Peak load can be taken for 500 µs. Average power not to exceed max power.
3. Ripple & noise is measured using a 0.1 µF ceramic capacitor in parallel with 22 µF electrolytic and 20 MHz bandwidth.
4. For optional vented cover add suffix '-C' to model number.
5. Add suffix '-D' for optional output terminal block except the 5 V and 9 V output models which are only available with output terminal blocks.⁽⁸⁾
6. Add suffix '-E' for optional input terminal block.⁽⁸⁾
7. Operating temperature - 0 °C to +60 °C, derate at 5%/ °C from 50 °C to 60 °C for convection cooled dual output models.
8. Available for OEM quantities, contact Sales.

Mechanical Details

U-Channel

All dimensions are in inches (mm). Tolerance: ±0.012 (±0.3)
Weight: 0.88 lbs (400 g)

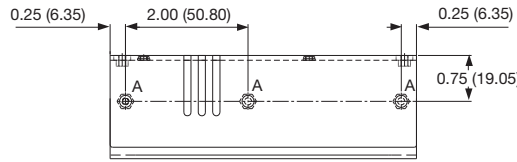
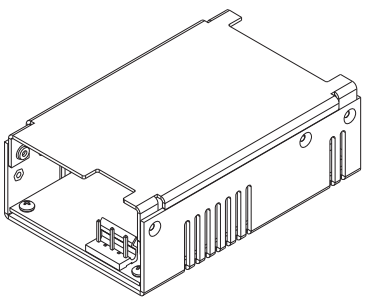
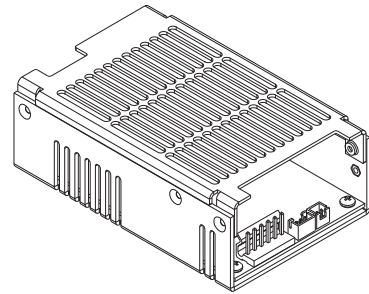


Signal connector CN1 mates with JST XHP-3 or equivalent & crimp terminals SXH-002T-P0.6.
Fan connector mates with JST XHP-2 or equivalent & crimp terminals.
Input: Molex No. 09-91-0500, crimp terminals Molex series 6838.
Output: Molex No. 09-91-0600 for 12 V to 60 V single output models, 09-91-0800 for dual output models, crimp terminals Molex series 6838.
Terminal block for 5 V to 9 V single output models.
(1) Available for OEM quantities, contact Sales.

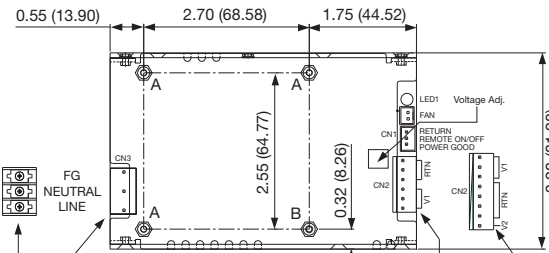
Mechanical Details

U-Channel with cover (Option '-C')

All dimensions are in inches (mm). Tolerance: ± 0.012 (± 0.3)
 Weight: 0.93 lbs (420 g)



A Mounting hole 7 places, M3 x 0.5 mm.
 Max penetration 3.8 mm



OPTION 'E'
 Terminal Block
 M3 Screw
 3 Pins 0.25 (6.35) Centre

Molex Part No. 09-91-0500 or equivalent (5 Pin, 3 Used)

Single Output Models
 Dual Output Models



OPTION 'D'(1)

Single Output Models
 Terminal Block
 M3 Screw 4 Pins
 0.25 (6.35) Centre

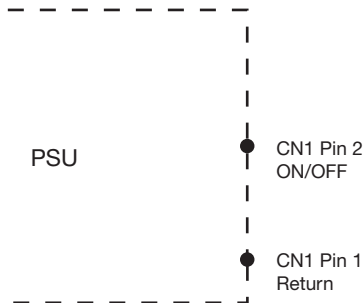
Dual Output Models
 Terminal Block
 M4 Screw 3 Pins
 0.33 (8.35) Centre

Max torque for all screw terminals 7.0 lbs-in (0.8 Nm)
 (1) Available for OEM quantities, contact Sales.

Signal connector CN1 mates with JST XHP-3 or equivalent & crimp terminals SXH-002T-P0.6.
 Fan connector mates with JST XHP-2 or equivalent & crimp terminals.
 Input: Molex No. 09-91-0500, crimp terminals Molex series 6838.
 Output: Molex No. 09-91-0600 for 12 V to 60 V single output models, 09-91-0800 for dual output models, crimp terminals Molex series 6838.
 Terminal block for 5 V to 9 V single output models

Application Notes

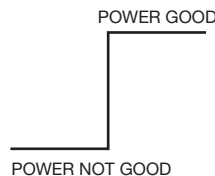
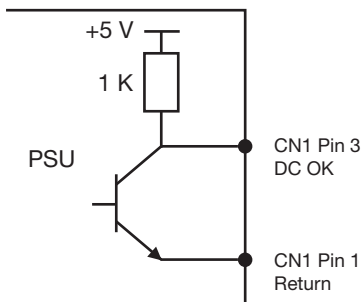
Remote On/Off



Note:

1. Applying < 0.3 V or short between pins 2 and 1 turns the output OFF.
2. Applying > 4.5 V or open circuit between pins 2 and 1 turns output ON.
3. The output will enter at hiccup mode. Recommended maximum time is 3 minutes.

Power Good



Sink current = 6 mA
 Source current = 1 mA