212 Watts

EMA212 Series

- 3.00" x 5.00" x 1.34"
- High Power Density - 10.6 W/in³
- Up to 90% Efficiency
- 5 V Standby & 12 V Fan Outputs
- Active Current Share
- Remote On/Off
- Power Good Signal
- 48 VDC Input Versions Available (DMA212)

Specification

Input

Input Voltage	• 90-264 VAC
Input Frequency	• 47-63 Hz
Input Current	• 2.2 A max at 115 VAC, 1.1 A max at 230 VAC
Inrush Current	• 60 A max at 230 VAC, cold start at +25 °C
Power Factor	• >0.9 typical
Earth Leakage Current	• 1.1 mA max 264 VAC/50 Hz, 500 µA typical at 230 VAC/50 Hz, 290 µA typical at 115 VAC/60 Hz

Output

Output Voltage	• See table
Output Voltage Trim	• No user adjustment available
Initial Set Accuracy	• V1: ±1%, V2: ±5%, V3: ±3%
Minimum Load	• No minimum load required
Start Up Delay	• <3 s maximum
Start Up Rise Time	• 20 ms maximum
Hold Up Time	• 16 ms minimum
Drift	• <±0.2% after 20 min warm up
Line Regulation	• V1: ±0.5%, V2: ±2%, V3: ±0.5%
Load Regulation	• V1: ±1% 0-100% load, V2: ±1% 10-100% load, V3: ±1% 0-100% load
Cross Regulation	• V2: ±10% 10-100% load change on V1
Over/Undershoot	• <2% max at turn on/off for 12 V models, <5% for 24 V & 48 V models
Transient Response	• <4% max deviation for a 25-75-25% load step. Output V1 returns to within 1% in ≤500 µs
Ripple & Noise	• V1 & V3: 1%, V2: 2% pk-pk, 20 MHz BW
Overvoltage Protection	• 115-140% Vnom, recycle input to reset (output 1 only)
Overtemperature Protection	• Primary & secondary protection with auto recovery
Overload Protection	• 110-140%, auto recovery output 1
Short Circuit Protection	• Trip and restart (Hiccup mode)
Temperature Coefficient	• 0.05%/°C
Remote On/Off	• Uncommitted isolated opto-coupler diode, powered diode inhibits the supply
Current Share	• For increased power, up to 3 supplies to share within 10%, derate total output to 90%

General

Efficiency	• 88% typical
Isolation	• 3000 VAC Input to Output, 1500 VAC Input to Ground, 500 VDC Output to Ground
Switching Frequency	• 80 kHz typical for PFC, 100 kHz typical for main converter
Power Density	• 10.6 W/In³
Signals	• Combined PF & DC OK - Open collector referenced to output 0 V, transistor normally off when AC & output good. PF provides ≥5 ms warning of loss of output from AC failure. DC OK provides warning of DC output failure.
MTBF	• 212 kHrs per MIL-HDBK-217F, 25 °C GB

Environmental

Operating Temperature	• -10 °C to +70 °C, derate linearly from +50 °C at 2.5%/°C to 50% at +70 °C
Cooling	• 12 CFM airflow required (see thermal considerations)
Operating Humidity	• 5-95% RH, non-condensing
Storage Temperature	• -20 °C to +85 °C
Operating Altitude	• 3000 m
Shock	• 30 g pk, half sine 6 axes
Vibration	• 2 g, 5 Hz to 500 Hz, 3 axes

EMC & Safety

Emissions	• EN55022, level B conducted EN55022, level A radiated
Harmonic Currents	• EN61000-3-2, class A
Voltage Flicker	• EN61000-3-3
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, level 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, 10 Vrms, Perf Criteria A
Dips & Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms Perf Criteria A, B, B
Safety Approvals	• CB report IEC60950-1:2001, CSA 22.2 No. 60950-1-03, TUV EN60950-1/A11:2004, CE Mark (LVD), CCC pending, contact sales

Models and Ratings

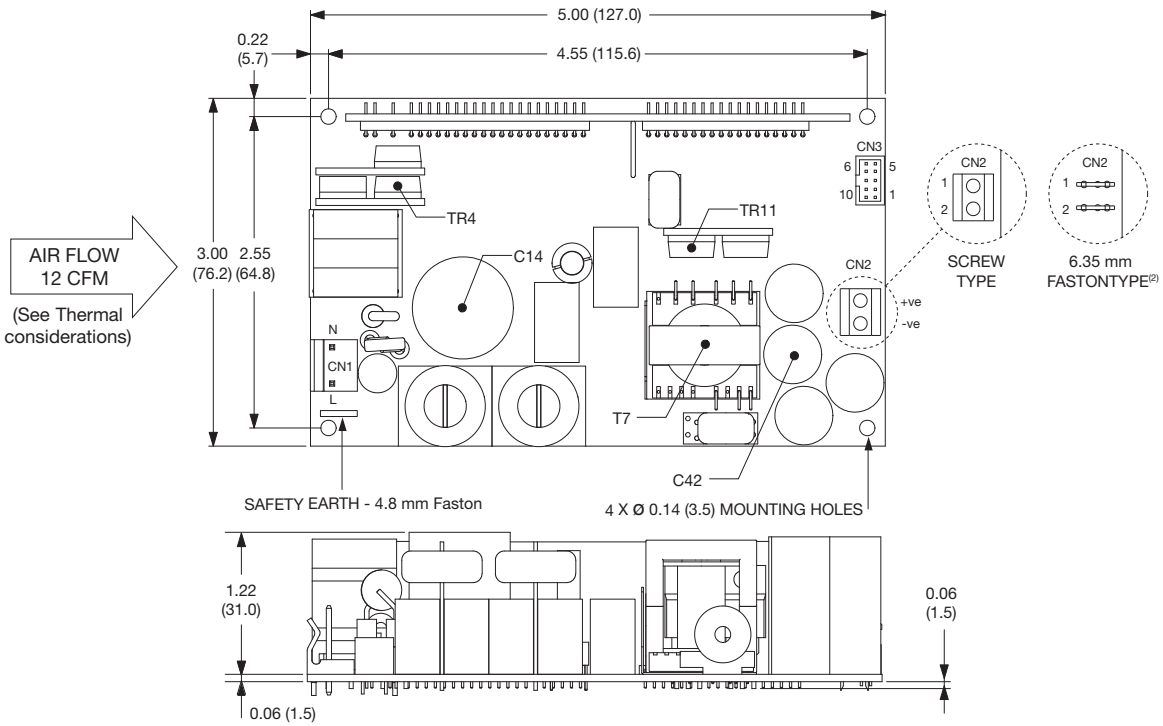
EMA212

Max Output Power (12 CFM Air Flow)	Ouput Voltage V1	Ouput Current (12 CFM Airflow)	Fan Output V2	Standby Supply V3	Model Number
212 W	12.0 VDC	16.7 A	12.0 V/1.0 A	5.0 V/0.1 A	EMA212PS12†^
212 W	24.0 VDC	8.3 A	12.0 V/1.0 A	5.0 V/0.1 A	EMA212PS24†^
205 W	48.0 VDC	4.0 A	12.0 V/1.0 A	5.0 V/0.1 A	EMA212PS48†^

† Available from Farnell. See pages 204-206.

^ Available from Newark. See pages 207-208.

Mechanical Details



Notes

1. All dimensions in inches (mm).
2. Units supplied with screw terminal (CN2) as standard. For faston type, add suffix '-F' to the part number.
3. All 4 mounting positions should be connected to safety earth.
4. The air flow needs to be directed through the power supply within the end application.

PIN CONNECTIONS - CN2	
1	+V1
2	V1 Return

PIN CONNECTIONS - CN3	
1	+V2
2	V2 Return
3	V2 Return
4	ROF
5	ROF Return
6	Power Fail/DC OK
7	Current Share
8	+V3
9	-V3
10	+V2

Mating Connectors:
CN1: Molex housing 09-50-3031 and crimp 2878.
CN3: Molex housing 51110-1050 and crimp 50394-8100.

Thermal Considerations

In order to ensure safe operation of the PSU in the end-use equipment, the temperature of the components listed in the table below must not be exceeded. See drawing above for component locations. The temperature should be monitored using K type thermocouples placed on the hottest part of the component (out of any direct air flow). See longform datasheet for more information concerning service life.

Temperature Measurements (Ambient ≤50 °C)	
Component	Max Continuous Temperature °C
TR4 case	110 °C
C14	105 °C
C42	105 °C
TR11 case	110 °C
T7 coil	120 °C