

EMA212 Series



- High Power Density – 10.6 W/in³
- Industry Standard 3 x 5 Footprint
- Up to 90% Efficiency
- 5 V Standby & 12 V Fan Outputs
- Remote On/Off & Power Good Signal
- 48 VDC Input Version Available (DMA212)
- 3 Year Warranty

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
Input Protection	• Internal T5.0 A/250 V fitted in line

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 max
Start Up Rise Time	• 20 ms max
Hold Up Time	• 16 ms min at nominal low line and maximum power
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 bandwidth
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)
Temp. 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/in ³
Signals	• Combined PF & DC OK - Open collector referenced to output 0 V, transistor 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 to 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

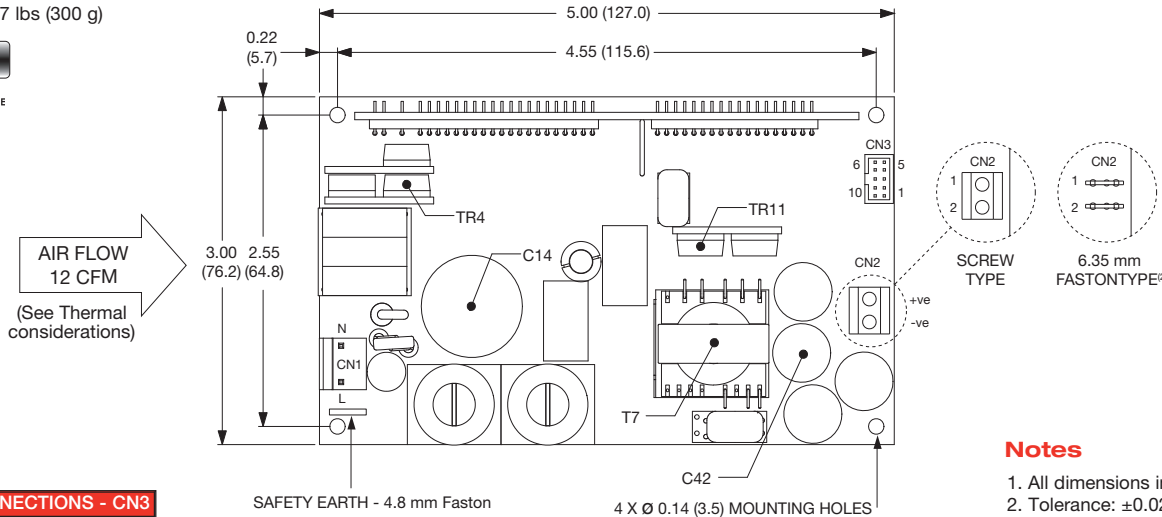
Emissions	• EN55022, level B conducted EN55022, level A radiated
Harmonic Currents	• EN61000-3-2, class A
Voltage Flicker	• EN61000-3-3
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, level 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, 10 Vrms, Perf Criteria A
Dips & Interruptions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

Models and Ratings

Max Output Power (12 CFM Air Flow)	Output Voltage V1	Output Current (12 CFM Airflow)	Fan Output V2	Standby Supply V3	Model Number ⁽³⁾
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

Mechanical Details

Weight: 0.7 lbs (300 g)



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

PIN CONNECTIONS - CN2	
1	+V1
2	V1 Return

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

Notes

- All dimensions in inches (mm).
- Tolerance: ±0.02 (±0.5)
- Units supplied with screw terminal (CN2) as standard. For faston type, add suffix '-F' to the part number.
- Max torque for CN2, 0.2 lbs-in (30 cNm)
- All 4 mounting positions should be connected to safety earth.
- The air flow needs to be directed through the power supply within the end application.

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

DMA Series



- -48 V (36-75 VDC) Input Version of EMA212
- Open Frame Telecom DC-DC Converter
- ETSI Compliant
- NEBS Compliant
- 5 V Standby & 12 V Fan Outputs
- Remote On/Off Signal
- 3 Year Warranty

Max Output Power (10 CFM Air Flow)	Output Voltage V1	Output Current (10 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	DMA21248S12

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