## **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 Input Frequency Input Current

**Inrush Current Power Factor** 

 90-264 VAC 47-63 Hz

2.2 A max at 115 VAC,

1.1 A max at 230 VAC 60 A max at 230 VAC, cold start at +25 °C

>0.9 typical

See table

3 s max

20 ms max

maximum power

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

Internal T5.0 A/250 V fitted in line

· No user adjustment available

V1: ±1%, V2: ±5%, V3: ±3%

· 16 ms min at nominal low line and

<±0.2% after 20 min warm up</li>

• V1: ±0.5%, V2: ±2%, V3: ±0.5%

V1: ±1% 0-100% load, V2: ±1%

<5% for 24 V & 48 V models

• No minimum load required

#### **Output**

Input Protection

**Output Voltage Output Voltage Trim** Initial Set Accuracy Minimum Load Start Up Delay Start Up Rise Time Hold Up Time

Drift Line Regulation Load Regulation

Cross Regulation Over/Undershoot

Transient Response

Ripple & Noise

Overvoltage Protection •

Overtemperature Protection

**Current Share** 

**Overload Protection** 

Temp. Coefficient Remote On/Off

≤500 µs V1 & V3: 1%, V2: 2% pk-pk, 20 MHz bandwidth

115-140% Vnom, recycle input to reset (output 1 only)

<2% max at turn on/off for 12 V models.</li>

<4% max deviation for a 25-75-25% load</li>

step. Output V1 returns to within 1% in

· Primary & secondary protection with auto recovery

110-140%, auto recovery output 1

Short Circuit Protection • Trip and restart (Hiccup mode)

0.05%/°C

Uncommitted isolated opto-coupler diode, powered diode inhibits the supply

 For increased power, up to 3 supplies to share within 10%, derate total output to 90%

#### General

Efficiency Isolation

• 88% typical

3000 VAC Input to Output, 1500 VAC Input to Ground, 500 VDC Output to Ground

Switching Frequency

**Power Density** Signals

• 80 kHz typical for PFC, 100 kHz typical for main converter

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

212 kHrs to MIL-HDBK-217F, 25 °C GB

## **Environmental**

Cooling

**MTBF** 

Operating Humidity Storage Temperature Operating Altitude 10-100% load, V3: ±1% 0-100% load Shock V2: ±10% 10-100% load change on V1

Vibration

Operating Temperature • -10 °C to +70 °C, derate linearly from +50 °C at 2.5%/°C to 50% at +70 °C

· 12 CFM airflow required (see thermal considerations)

5-95% RH, non-condensing

-20 °C to +85 °C

• 3000 m

• 30 g pk, half sine 6 axes

• 2 g, 5 Hz to 500 Hz, 3 axes

#### **EMC & Safety**

**Emissions** 

**Harmonic Currents** Voltage Flicker EFT/Burst Surge **Conducted Immunity** 

**Dips & Interruptions** 

Safety Approvals

• EN55022, level B conducted EN55022, level A radiated

• EN61000-3-2, class A

• EN61000-3-3

EN61000-4-4, level 3 Perf Criteria A

• EN61000-4-5, level 3 Perf Criteria A

• EN61000-4-6, 10 Vrms, Perf Criteria A

 EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms Perf Criteria A, B, B

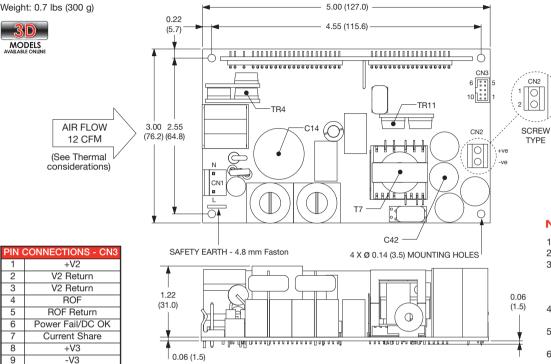
 CB report IEC60950-1, CSA 22.2 No. 60950-1-03, TUV EN60950-1



Max Output Power (12 CFM Air Flow)	Ouput Voltage V1	Ouput Current (12 CFM Airflow)	Fan Output V2	Standby Supply V3	Model Number <sup>(3)</sup>
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 <sup>†</sup> ^

<sup>†</sup> Available from Farnell. See pages 266-269.

### **Mechanical Details** Weight: 0.7 lbs (300 g)



#### Notes

- 1. All dimensions in inches (mm).
- 2. Tolerance: ±0.02 (±0.5)

CN2 1 .....

6.35 mm

FASTONTYPE(2)

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

PIN CONNECTIONS - CN2				
1	+V1			
2	V1 Return			

+V2

10

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				

# **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

Contact Sales for full details



<sup>^</sup> Available from Newark. See pages 270-272.