

## 10W Ultraminiature Medical Grade Switching Power Supplies

EFM10/M series





■ Universal 90-264VAC Input

High Efficiency

Improved EMI Performance

■ 4000VAC Isolation

■ Single, Dual & Triple Outputs

Full Safety Approvals

1.66"W x 2.46"L x 0.91"H



Model Number	Output Voltage	Output Amps(max)
	-	
SINGLE OUTPUT		
EFM-0100/M	3.3 Volts	2.5Amps
EFM-0101/M	5 Volts	2Amps
EFM-0122/M	9 Volts	1.1Amps
EFM-0102/M	12 Volts	0.85Amps
EFM-0103/M	15 Volts	0.67Amps
EFM-0118/M	18 Volts	0.55Amps
EFM-0105/M	24 Volts	0.42Amps
DUAL OUTPUT		
EFM-0106/M	±12 Volts	±0.42Amps
EFM-0107/M	±15 Volts	±0.34Amps
EFM-0108/M	5 / 12volts	1.3/0.6Amps
TRIPLE OUTPUT		
EFM-0109/M	5 /±12 Volts	$1.8 / \pm 0.13$ Amps
EFM-0111/M	5 / ±15 Volts	1.8 / ±0.13Amps

All specifications are typical at nominal input, full load, and 25°C unless otherwise noted

> ASTRODYNE USA: 1-800-823-8082 **ASTRODYNE PACIFIC: 886-2-26983458**



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Input Voltage Range	90-264 VAC (100-240VAC nom.)
Frequency Range	47-63 Hz
Inrush Current (115/230Vin)	20/40Amps, typ., Cold Start
Leakage Current	<0.3mA @ 264VAC, 50Hz

### **OUTPUT SPECIFICATIONS**

Voltage and Current (Note 5)	See Selection Chart
Load Regulation (20%-FL)(Note 6)	Single: ±1%, max.
	Duals: ± 3% (EFM-0108: 0.5/3%)
	Triple: 0.5 / ±0.5%
Line Regulation, max. (Note 7)	Single/Duals ±1%
	Triple: 0.6 / ±0.2%
Cross Regulation, typ. (Note 10)	Duals 2% (EFM-0108: 0.5/3%)
	Triple: NA/ ±0.1%
Preset Accuracy, typ. (Note 8)	Single/Duals 1%
	(except EFM-0108: 2 / 5%)
	Triple: 1 / ±5%
DC Voltage Adjust (typ)	± 6% of FS (Primary)
Temperature Coefficient	±0.03%/°C
Ripple/Noise, max. (Note 1, 9)	Single/Dual: 100mVpk-pk
	Triple: 75 / ±100mVpk-pk
Over Voltage Protection	Clamp
Short Circuit Protection (Note 2)	Continuous, self-recovering
Hold Up Time	30 mS, typ @ nom. input
DC Output Power	10 Watts, max
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## PHYSICAL SPECIFICATIONS

Size	1.66" x 2.46" x 0.91"
Construction	Open Frame
Weight	1.6oz (45g)

GENERAL	SPECIF	<b>ICATION</b>	2.1
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Isolation	(Note 3)	3KVAC Input-Output
Efficience	cy @ nom. input	Single/Dual 67~75% typ
		Triple 70% typ.
Switchin	g Frequency	100Khz, (fixed, typical)
Safety	UL/cUL:	ANSI/AAMI ES60601-1 3rd ed.
		CSA C22.2 No. 60601-1 3rd ed.
	UL-EU:	EN60601-1 3rd ed.
	CB:	IEC60601-1 3rd ed.
	CE:	EN60601-1-2
EMC		EN55011 Class B

### **ENVIRONMENTAL SPECIFICATIONS**

Oper. Temperature (Note 4)	-0 to +40°C (See Derate)
Storage Temperature	-25 to +71°C *
Relative Humidity	0 to + 95%, non-cond *
MTBF (Mil Std 217, 25°C)	270,000 Hrs min.

#### NOTES

- 1. Ripple and Noise depend upon output voltage as specified per particular model.
- 2. Short Curcuit Protection is self-recovering when overcurrent condition is removed.
- 3. Isolation for up to 1 minute duration.
- 4. Specified for free-air convection cooling.
- 5. Minimum load is NOT required for proper operation. However, auxiliary outputs should be reduced as a function of primary output minimum load or load regulation will be higher.
- 6. Load regulation measured from 20% to full load.
- 7. Line regulation measured from 90VAC to 264VAC.
- 8. Preset accuracy measured at nominal load, 120VAC input.
- 9. O/P noise measured directly at pins/terminals at nom. load, 0.1uF bypass, pk-pk @20MHz bandwidth.
- 10.Cross Reg-Duals: Measured at nom. load with the other output varied between 60% and 100% output load.

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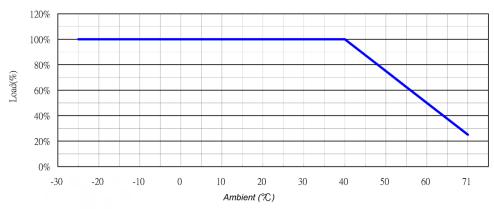
<sup>\*</sup> These are stress ratings. Exposure of the devices to any of these conditions may adversely affect long term reliability. Proper operation under conditions other than the standard operating conditions is neither warranteed nor implied.



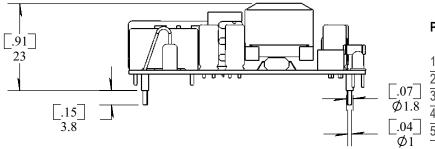
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## **OUTPUT DERATING CURVE**

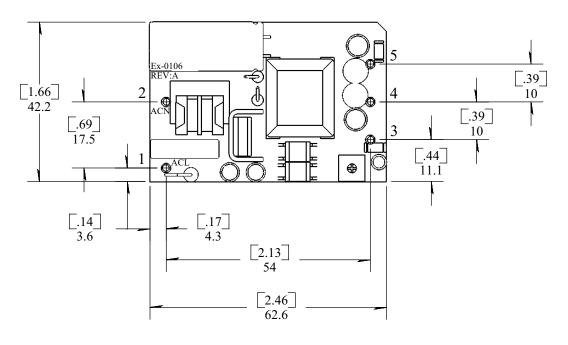


## **MECHANICAL DIMENSIONS - SINGLE + DUAL OUTPUTS**



Pin#	Single	Dual	Dual(0108)
1	ACL	ACL	ACL
2	ACN	ACN	ACN
3	+Vout	+Vout	+12V
4	NC	Com	+5V
5	-Vout	-Vout	Com

## Dimensions are in inches



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### **MECHANICAL DIMENSIONS - TRIPLE OUTPUTS**

