

5, 10, 15 and 30W Ultraminiature Medical Grade Encapsulated Switchers

- Universal 90-264VAC Input
- High Efficiency
- Improved EMI Performance
- 4000V Isolation
- Single and Dual Outputs
- UL60601, EN60601-1 & IEC60601-1



Model Number	Output Voltage	Output Amps(max)	(pk)
SINGLE OUTPUT - PCB Mount			
ESMA-5000	3.3VDC	1.25A	1.56A
ESMA-5001	5VDC	1A	1.5A
ESMA-5002	12VDC	0.42A	0.63A
ESMA-5003	15VDC	0.33A	0.5A
ESMA-5005	24VDC	0.23A	0.35A
ESMA-0100	3.3VDC	2.5A	3.3A
ESMA-0101	5VDC	2A	2.6A
ESMA-0122	9VDC	1.1A	1.5A
ESMA-0102	12VDC	0.85A	1.2A
ESMA-0103	15VDC	0.67A	0.9A
ESMA-0105	24VDC	0.42A	0.6A
ESMA-1500	3.3VDC	3.5A	3.8A
ESMA-1501	5VDC	3A	3.6A
ESMA-1522	9VDC	1.66A	1.9A
ESMA-1502	12VDC	1.25A	1.5A
ESMA-1503	15VDC	1A	1.25A
ESMA-1505	24VDC	0.63A	0.75A
SINGLE OUTPUT - Chassis Mount			
ESMC-5000	3.3VDC	1.25A	1.56A
ESMC-5001	5VDC	1A	1.5A
ESMC-5002	12VDC	0.42A	0.63A
ESMC-5003	15VDC	0.33A	0.5A
ESMC-5005	24VDC	0.23A	0.35A
ESMC-0100	3.3VDC	2.5A	3.3A
ESMC-0101	5VDC	2A	2.6A
ESMC-0122	9VDC	1.1A	1.5A
ESMC-0102	12VDC	0.85A	1.2A
ESMC-0103	15VDC	0.67A	0.9A
ESMC-0105	24VDC	0.42A	0.6A
ESMC-1500	3.3VDC	3.5A	3.8A
ESMC-1501	5VDC	3A	3.6A
ESMC-1522	9VDC	1.66A	1.9A
ESMC-1502	12VDC	1.25A	1.5A
ESMC-1503	15VDC	1A	1.25A
ESMC-1505	24VDC	0.63A	0.75A

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Environmental Specifications

Oper. Temperature	0 to +70°C (See Derate)	
Storage Temperature	-25 to +71°C *	
Relative Humidity	0 to + 95%, non-cond *	
EMC / EMI	FCC/A, VDE 0871/A , CISPRB	
MTBF	(Mil Std 217, 25°C)	180,000 Hrs

Input Specifications

Input Voltage Range	90-264 VAC
Frequency Range	47-63 Hz
Inrush Current, typ:	20A@100V, 40A@200V Input *

*Please see page 4 for Waiver of Liability Statement

Model Number	Output Voltage	Output Amps(max)	(pk)
DUAL OUTPUT - PCB Mount			
EDMA-5006	+/-12VDC	+/-0.21A	+/-0.26A
EDMA-5007	+/-15VDC	+/-0.17A	+/-0.21A
EDMA-0106	+/-12VDC	+/-0.42A	+/-0.6A
EDMA-0107	+/-15VDC	+/-0.34A	+/-0.45A
EDMA-0108	<i>Coming Soon!</i> +5/12 VDC	+1/0.42A	+1.3/0.6A
EDMA-1506	+/-12VDC	+/-0.63A	+/-0.8A
EDMA-1507	+/-15VDC	+/-0.5A	+/-0.65A
EDMA-1508	<i>Coming Soon!</i> +5/12VDC	+1.5/0.65A	+1.8/0.8A
DUAL OUTPUT - Chassis Mount			
EDMC-5006	+/-12VDC	+/-0.21A	+/-0.26A
EDMC-5007	+/-15VDC	+/-0.17A	+/-0.21A
EDMC-0106	+/-12VDC	+/-0.42A	+/-0.6A
EDMC-0107	+/-15VDC	+/-0.34A	+/-0.45A
EDMC-0108	<i>Coming Soon!</i> +5/12VDC	+1/0.42A	+1.3/0.6A
EDMC-1506	+/-12VDC	+/-0.63A	+/-0.8A
EDMC-1507	+/-15VDC	+/-0.5A	+/-0.65A
EDMC-1508	<i>Coming Soon!</i> +5/12VDC	+1.5/0.65A	+1.8/0.8A
TRIPLE OUTPUT - PCB Mount <i>Coming Soon!</i>			
EDMA-5009	5/±12VDC	0.53/±0.1A	0.6/±0.1A
EDMA-5011	5/±12VDC	0.41/±0.1A	0.45/±0.1A
EDMA-0109	5/±12VDC	1.5/±0.1A	1.8/±0.13A
EDMA-0111	5/±12VDC	1.4/±0.1A	1.8/±0.13A
EDMA-1509	5/±12VDC	2.5/±0.1A	2.8/±0.13A
EDMA-1511	5/±12VDC	2.5/±0.1A	2.8/±0.13A
TRIPLE OUTPUT - Chassis Mount <i>Coming Soon!</i>			
EDMC-5009	5/±12VDC	0.53/±0.1A	0.6/±0.1A
EDMC-5011	5/±15VDC	0.41/±0.1A	0.45/±0.1A
EDMC-0109	5/±12VDC	1.5/±0.1A	1.8/±0.13A
EDMC-0111	5/±15VDC	1.4/±0.1A	1.8/±0.13A
EDMC-1509	5/±12VDC	2.5/±0.1A	2.8/±0.13A
EDMC-1511	5/±15VDC	2.5/±0.1A	2.8/±0.13A

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Model Number	Output Voltage	Output Amps	Output Watts	Load Regulation	Efficiency	Ripple & Noise
SINGLE OUTPUT - PCB Mount						
ESMA-0300	3.3VDC	7.5	25W	3% max.	73%, typ.	150mV p-p max.
ESMA-0301	5VDC	6	30W	2% max.	78%, typ.	150mV p-p max.
ESMA-0302	12VDC	2.5	30W	1% max.	83%, typ.	150mV p-p max.
ESMA-0303	15VDC	2	30W	1% max.	84%, typ.	150mV p-p max.
ESMA-0305	24VDC	1.25	30W	1% max.	84%, typ.	150mV p-p max.
ESMA-0312	48VDC	0.63	30W	1% max.	85%, typ.	150mV p-p max.
SINGLE OUTPUT - Chassis Mount						
ESMC-0300	3.3VDC	7.5	25W	3% max.	73%, typ.	150mV p-p max.
ESMC-0301	5VDC	6	30W	2% max.	78%, typ.	150mV p-p max.
ESMC-0302	12VDC	2.5	30W	1% max.	83%, typ.	150mV p-p max.
ESMC-0303	15VDC	2	30W	1% max.	84%, typ.	150mV p-p max.
ESMC-0305	24VDC	1.25	30W	1% max.	84%, typ.	150mV p-p max.
ESMC-0312	48VDC	0.63	30W	1% max.	85%, typ.	150mV p-p max.
DUAL OUTPUT - PCB Mount						
EDMA-0306	±12 VDC	±1.25	30W	±3% max.	80%, typ.	±100mV p-p max.
EDMA-0307	±15 VDC	±1	30W	±3% max.	80%, typ.	±100mV p-p max.
EDMA-0308	+5/12 VDC	3/1.25	30W	±2 / ±4% max.	74%, typ.	100/150mV p-p max.
DUAL OUTPUT - Chassis Mount						
EDMC-0306	±12 VDC	±1.25	30W	±3% max.	80%, typ.	±100mV p-p max.
EDMC-0307	±15 VDC	±1	30W	±3% max.	80%, typ.	±100mV p-p max.
EDMC-0308	+5/12 VDC	3/1.25	30W	±2 / ±4% max.	74%, typ.	100 / 150mV p-p max.
TRIPLE OUTPUT - PCB Mount						
ETMA-0309	+5,±12 VDC	3,0.63/0.63	30W	0.6 / ±0.5% max.	74%, typ.	100, ±75mV p-p max.
ETMA-0311	+5,±15 VDC	3,0.5/0.5	30W	0.6 / ±0.5% max.	74%, typ.	100, ±75mV p-p max.
TRIPLE OUTPUT - Chassis Mount						
ETMC-0309	+5,±12 VDC	3,0.63/0.63	30W	0.6 / ±0.5% max.	74%, typ.	100, ±75mV p-p max.
ETMC-0311	+5,±15 VDC	3,0.5/0.5	30W	0.6 / ±0.5% max.	74%, typ.	100, ±75mV p-p max.

Note: Optional DIN Rail Mount Clips are available for all CHASSIS Mount supplies. Simply add the suffix "/DRL" to the Model Number. For example: "ESCC-5000/DRL." Contact Astrodyne Sales for further information.

Physical Specifications - EMA5 & EMA10

Size	PCB Mount (5W)	2.28L" x 1.77W" x 0.83H"
	PCB Mount (10W)	2.56L" x 1.77W" x 0.83H"
	Chassis Mount (5W, 10W)	3.77L" x 2.16W" x 1.0H"
Case Material	Rynite, 94V-0 Rated	
Construction	Encapsulated. Soft Pot	
Weight	PCB / CHA 4 oz (112g) / 8.5 oz (238g)	

Physical Specifications - EMA15

Size	PCB Mount	2.75L" x 1.89W" x 0.93H"
	Chassis Mount	3.96L" x 2.16W" x 1.0H"
Case Material	Rynite, 94V-0 Rated	
Construction	Encapsulated	
Weight	PCB / CHA 5.6 oz (158g) / 8.9 oz (250g)	

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Physical Specifications - EMA30

Case Material	Rynite, 94V-0 Rated
Construction	Encapsulated,
Weight	PCB / CHASSIS Mount
Singles	10.4 oz (292g) / 13.4 oz (376g)
Duals/Triples	12.1 oz (340g) / 15.4 oz (430g)

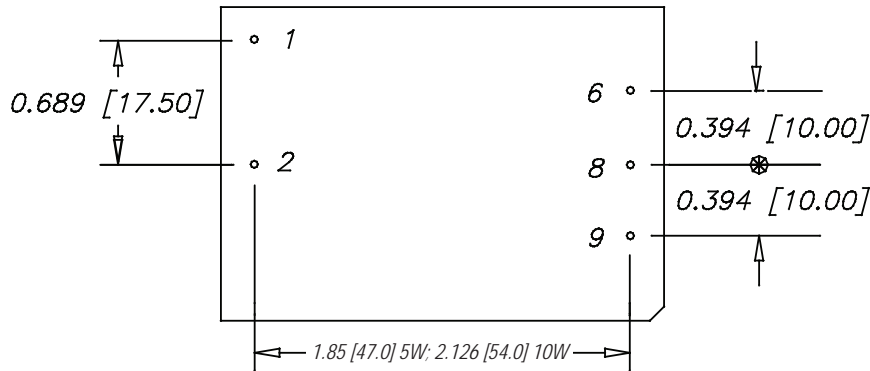
General Specifications

Input-Out Isolation	3KVAC, (4KVAC Medical)
I/P-Ground	2500VAC
O/P-Ground	1000VAC
Efficiency	75%~78%, typ
Switching Frequency	100Khz, (fixed, typical)
Safety	UL/EN 60601-1, IEC60601

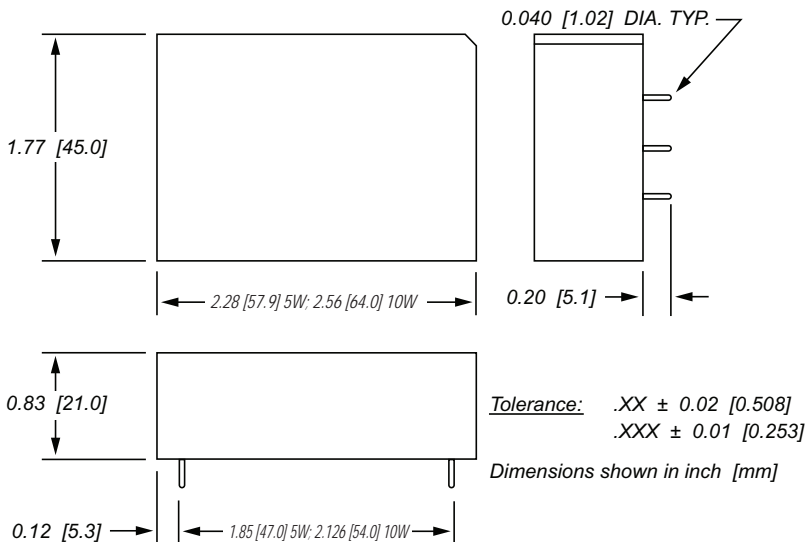
Output Specifications

Voltage and Current	See Selection Chart
Load Regulation (20%-FL)	Singles: +/- 3%, Duals: +/- 3%
Line Regulation	Singles +/- 0.1~1%, typ
	Duals +/- 0.3~1%, typ
Cross Regulation (Duals)	2%
Preset Accuracy	1%
Temperature Coefficient	+/-0.03%/°C
Ripple/Noise	100mV Pk-Pk, typ
Over Voltage Protection	Clamp, 130-150% *
Over Temp. Protection	Auto Recovery after Cooling
Short Circuit Protection	Continuous, self-recovering
Hold Up Time	20 mS, typ

Mechanical Dimensions - PCB Mount - EMA5 & EMA10



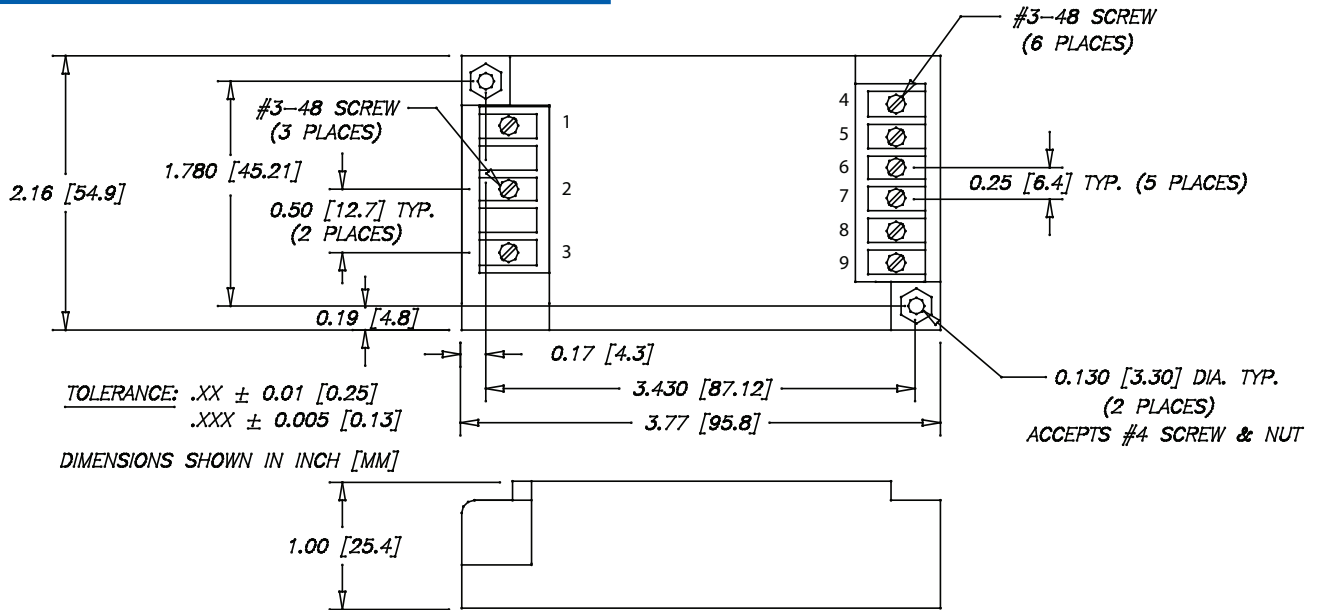
PIN-OUT VIEWED FROM BOTTOM



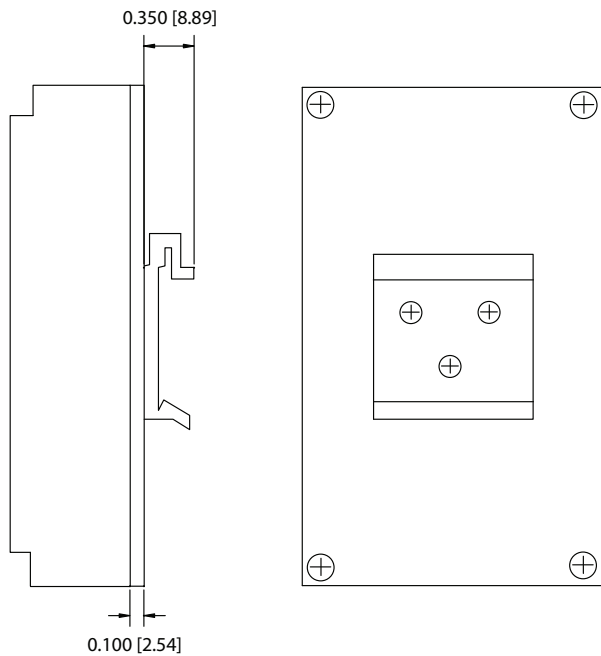
Model Type / Pin#	Single	Dual
1	AC HI	AC HI
2	AC LO	AC LO
6	+Vout	+Vout
8	No Pin	Out Com
9	-Vout	-Vout

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Mechanical Dimensions - Chassis Mount - EMA5 & EMA10

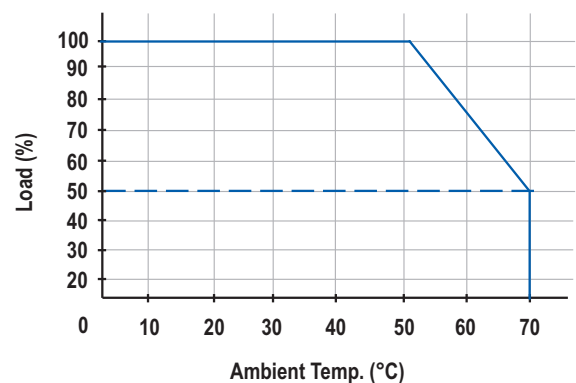


Mechanical Dimensions - DIN Rail - EMA5 & EMA10



Model Type / Pin#	Single	Dual
1	AC LO	AC LO
2	N/C	N/C
3	AC HI	AC HI
4	N/C	N/C
5	-Vout	-Vout
6	-Vout	Com
7	+Vout	Com
8	+Vout	+Vout
9	N/C	N/C

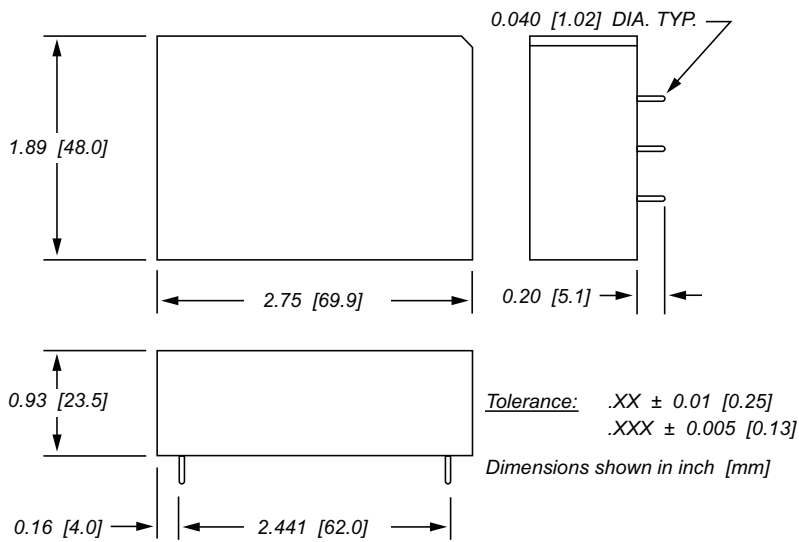
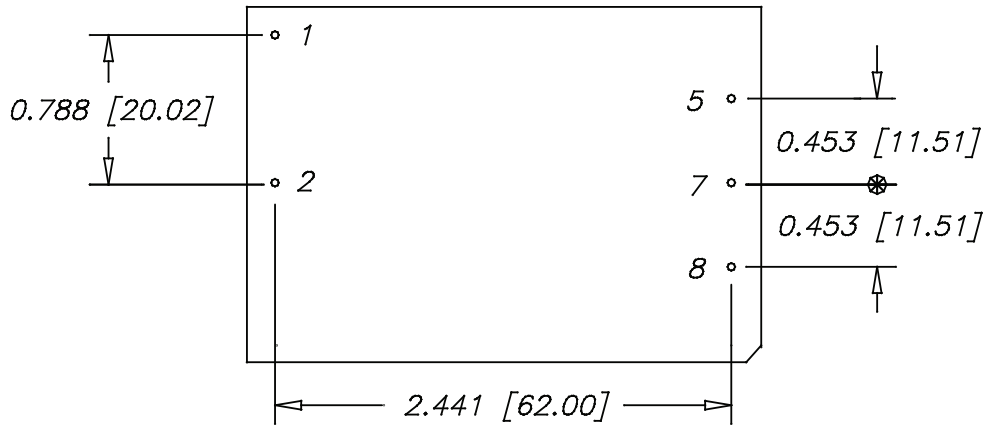
Output Derating Curve - EMA5 & EMA10



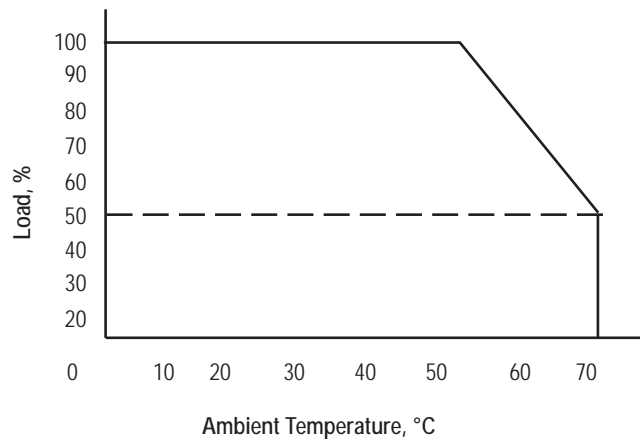
DIN Rail mounting kit available for Chassis-mount modules, specify part # M-DRL-01. Kit includes mounting plate, DIN Rail clip and assembly hardware.

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Mechanical Dimensions - PCB Mount - EMA15



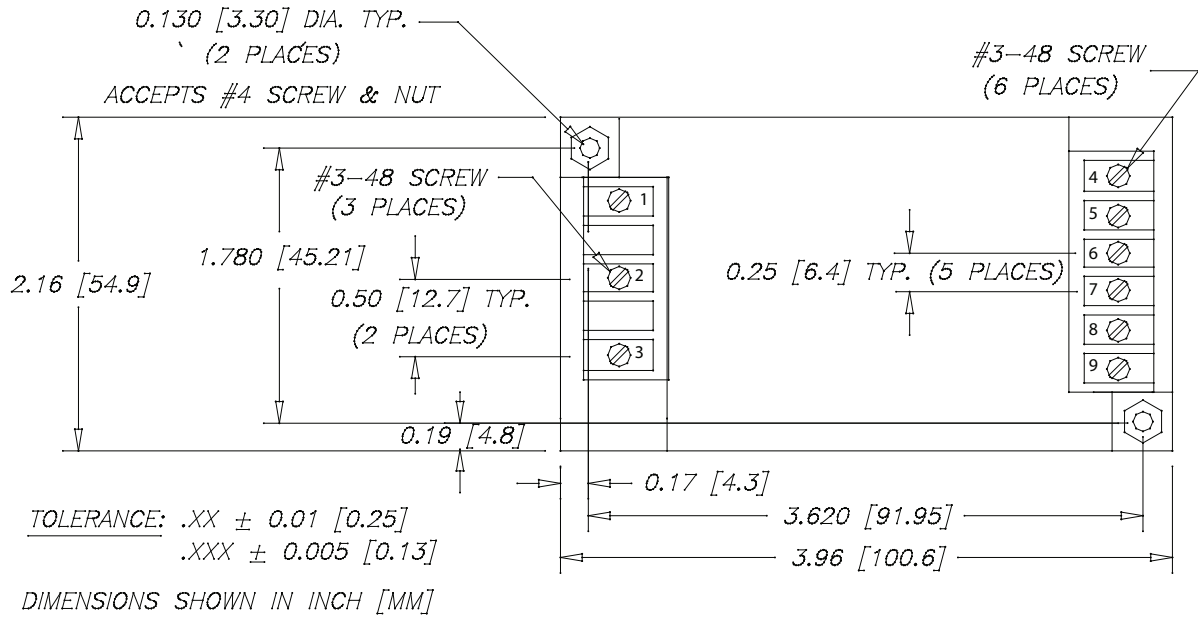
Output Derating Curve - EMA15



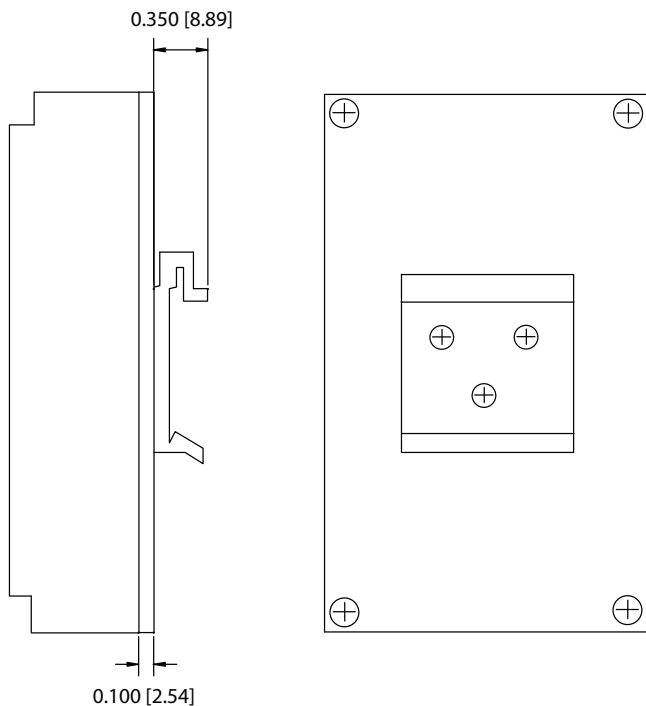
Model Type / Pin#	Single	Dual
1	AC HI	AC HI
2	AC LO	AC LO
5	+ Vout	+ Vout
7	No Pin	Out Com
8	- Vout	- Vout

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Mechanical Dimensions - Chassis Mount - EMA15



Mechanical Dimensions - DIN Rail - EMA15

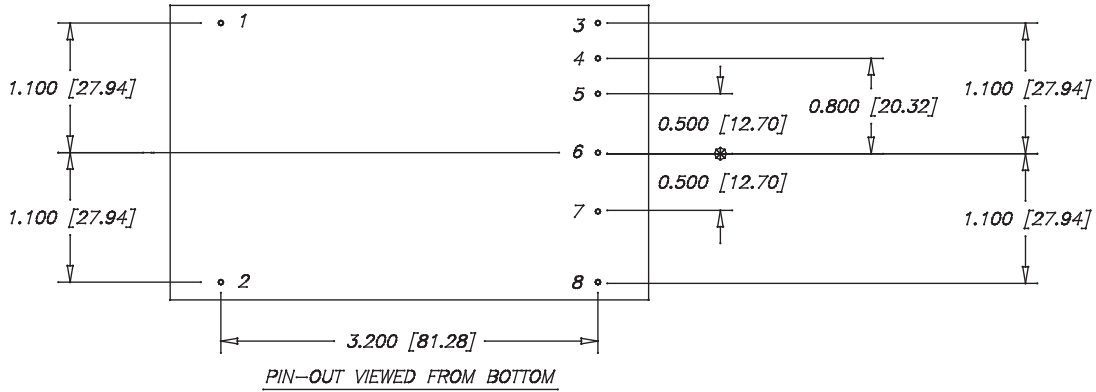


Model Type / Pin#	Single	Dual
1	AC LO	AC LO
2	N/C	N/C
3	AC HI	AC HI
4	N/C	N/C
5	-Vout	-Vout
6	-Vout	Com
7	+Vout	Com
8	+Vout	+Vout
9	N/C	N/C

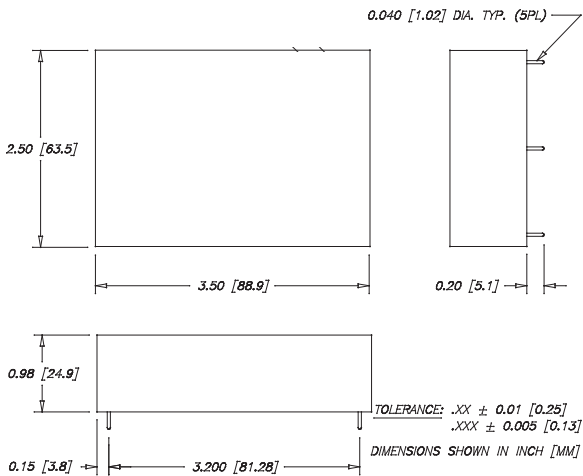
DIN Rail mounting kit available for Chassis-mount modules, specify part # M-DRL-15. Kit includes mounting plate, DIN Rail clip and assembly hardware.

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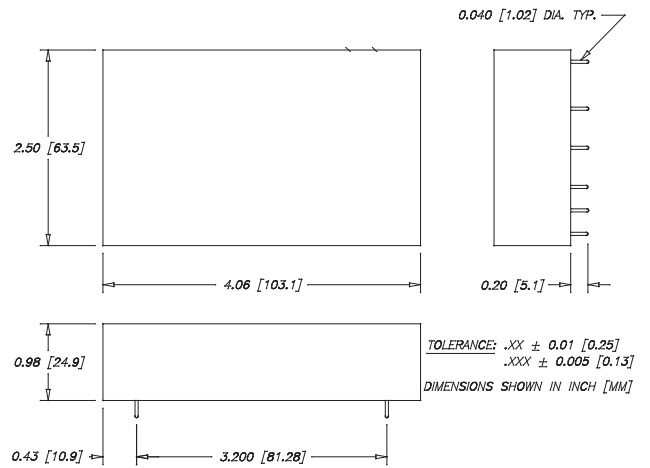
Mechanical Dimensions - PCB Mount - EMA30



SINGLE OUTPUT



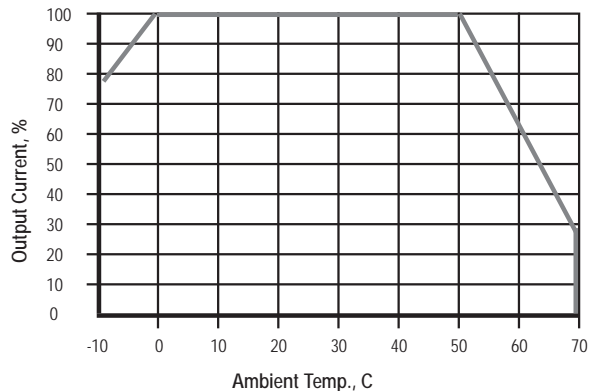
DUAL/TRIPLE OUTPUT



Medical 5W to 450W

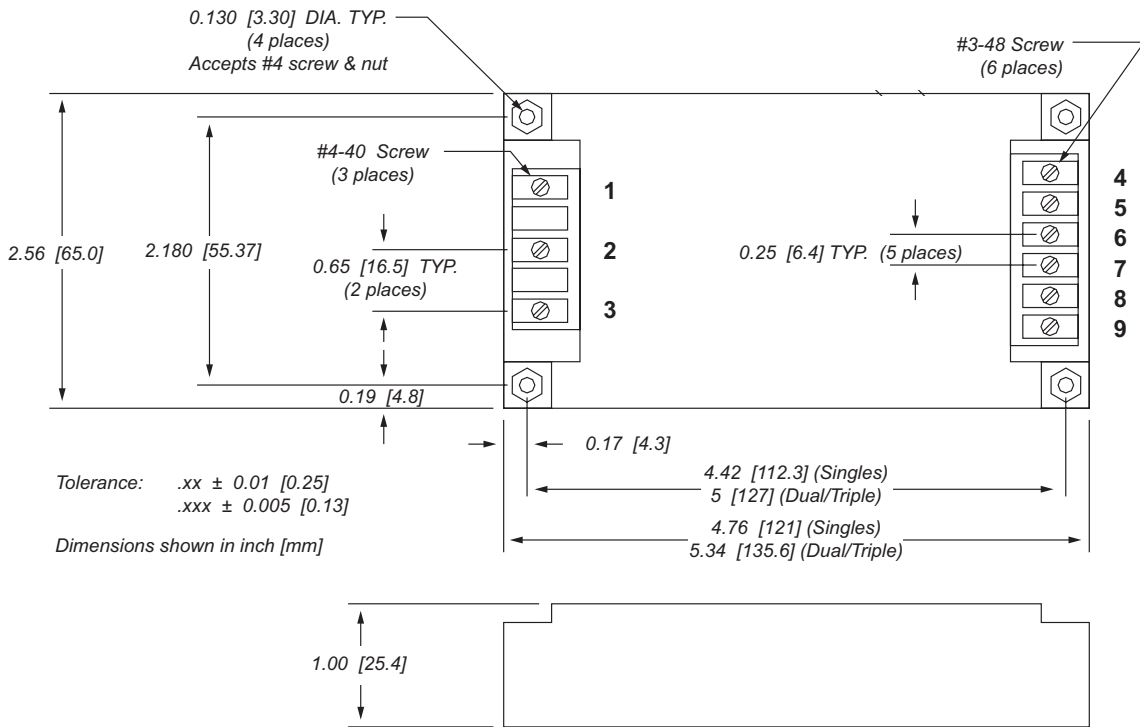
Model Type / Pin#	Dual Single	Dual Matched	Dual 5/12V	Dual Triple
1	AC HI	AC HI	AC HI	AC HI
2	AC LO	AC LO	AC LO	AC LO
3	No Pin	-Vout	Com	-Vout
4	No Pin	No Pin	No Pin	No Pin
5	No Pin	No Pin	No Pin	+5 Ret
6	-Vout	Com	+5out	+/-Com
7	No Pin	No Pin	No Pin	+5Vout
8	+Vout	+Vout	+12Vout	+Vout

Output Derating Curve - EMA30

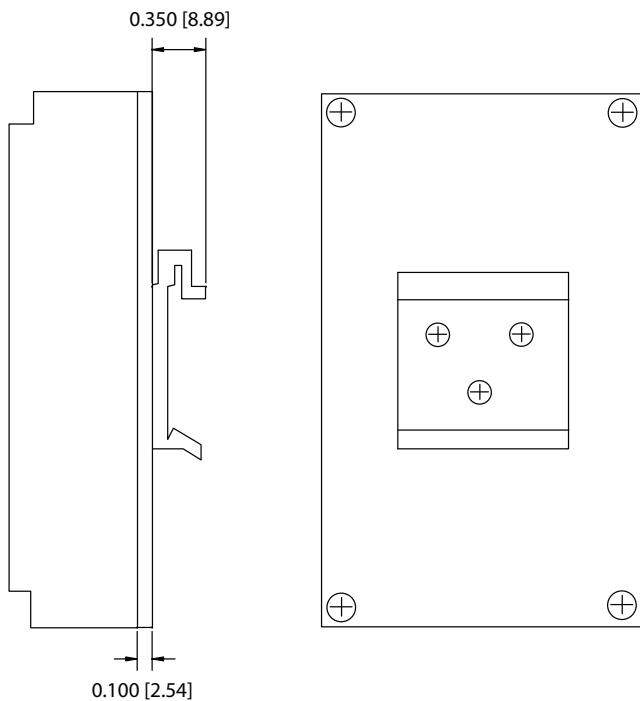


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Mechanical Dimensions - Chassis Mount - EMA30



Mechanical Dimensions - DIN Rail - EMA30



Model Type / Pin#	Single	Match Dual	Unmatch Dual	Triple
1	AC LO	AC LO	AC LO	AC LO
2	N/C	N/C	N/C	N/C
3	AC HI	AC HI	AC HI	AC HI
4	+Vout	+Vout	+12Vout	+Vout
5	+Vout	Com	+5Vout	+5Vout
6	-Vout	Com	+5Vout	+/- Com
7	-Vout	-Vout	Com	+5V Ret
8	N/C	N/C	Com	-Vout
9	N/C	N/C	N/C	N/C

DIN Rail mounting kit available for Chassis-mount modules.
 - For 30 watt single outputs specify part # M-DRL-30S
 - For 30 watt dual/single outputs specify part # M-DRL-30T
 Kit includes mounting plate, DIN Rail clip and assembly hardware.