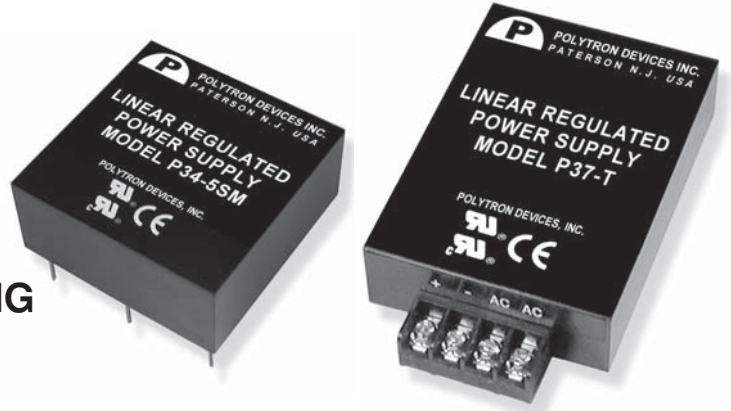




# LINEAR ENCAPSULATED POWER MODULES

REGULATED 5Vdc-250Vdc  
P.C. CARD OR CHASSIS MOUNTING



## FEATURES

- **UL, CE & CSA Approved (All Models)**
- **Regulation Line & Load 0.2% to 0.02%**
- **P.C. Card/Chassis Mounting**
- **High Isolation Voltage Available**
- **Short Circuit Protection**
- **Single, Dual & Triple Outputs**
- **Finger Safe Terminal Available**

P3, P5 Series

### Specifications

115 Vac, 50 to 400 Hz @ 25°C

#### INPUT

Voltage Range.....105-125 Vac, 50-60 Hz  
.....400Hz available

*For Worldwide Input Voltage Options, see Options Available chart on pg. 4*

#### OUTPUT

Voltage Accuracy @ FL for Single and Dual Output.....±1.0%  
Line Regulation: Single Output.....±0.2%  
Load Regulation: Single Output.....±0.2%  
Temperature Coefficient.....±0.02%/°C typ.

#### GENERAL

Isolation Resistance.....50MOhms  
Protection.....Short Circuit Protection

#### ENVIRONMENTAL

Operating Temperature Range.....-25 to +71°C  
.....-40 to +85°C Optional  
Storage Temperature Range.....-25 to +85°C  
Cooling.....Free Air Convection

#### PHYSICAL

Dimensions.....See Chart and Diagrams

1. Case style ending with letter "T"(Chassis mounted units with terminal barrier strip) are designated by the suffix "T" . Case styles A,B,C,D,G and E (PC card mounting) do not require suffixing.
2. **Most competitors pinouts available--contact factory.**
3. For 400HZ, use suffix "04" after model number.
4. For wide operating temperature range, use "W" suffix after model number.

**FAST DELIVERY**

Selection Guide

(Continued)

	Output (Vdc)	Output Current (mA)	Regulation		Ripple & Noise (mV rms)	Case	Model Number	Slow Blow (A)	
			Line	Load					
SINGLE OUTPUT VOLTAGE	5	200	0.20%	0.20%	1.0	G, 1GT	P34-5SM	1/32	
		500	0.20%	0.20%	0.5	A, 1AT	P37	1/16	
		500	0.02%	0.05%	0.5	A, 1AT	P37-1	1/16	
		1000	0.20%	0.20%	1.0	B, 1BT	P38	1/8	
		1000	0.02%	0.05%	1.0	B, 1BT	P38-1	1/8	
		1000	0.02%	0.05%	0.5	C, 1CT	P38/1.56	1/8	
		2000	0.02%	0.10%	1.0	C, 1CT	P39	1/4	
		3000	0.02%	0.15%	1.0	D, 1DT	P39-3	3/8	
	9	2000	0.02%	0.10%	0.5	D, 1DT	P39-9ST	1/2	
	10	120	0.10%	0.10%	1.0	E, 1ET	P33-10SM	1/32	
		150	0.10%	0.10%	1.0	A, 1AT	P33-10S	1/16	
		250	0.10%	0.10%	1.0	B, 1BT	P34-10S	1/16	
		500	0.02%	0.05%	0.5	C, 1CT	P37-10S	1/8	
		1000	0.02%	0.05%	0.5	D, 1DT	P38-10S	3/8	
1500		0.02%	0.05%	0.5	D, 1DT	P38-10SA	1/4		
12	100	0.10%	0.10%	1.0	E, 1ET	P32-12SM	1/32		
	120	0.02%	0.10%	1.0	A, 1AT	P33-12S	1/16		
	200	0.10%	0.10%	1.0	B, 1BT	P34-12S	1/16		
	500	0.02%	0.10%	0.5	C, 1CT	P37-12S	1/5		
	1000	0.10%	0.10%	1.0	D, 1DT	P38-12S	3/10		
15	80	0.10%	0.10%	1.0	E, 1ET	P33-15SM	1/32		
	120	0.02%	0.10%	1.0	A, 1AT	P33-12S	1/16		
	200	0.10%	0.10%	1.0	B, 1BT	P34-15S	1/10		
	300	0.10%	0.10%	1.0	C, 1CT	P35-15S	1/8		
	500	0.02%	0.10%	0.5	C, 1CT	P37-15S	1/5		
	800	0.02%	0.10%	1.0	D, 1DT	P38-15S	3/10		
18	50	0.10%	0.10%	1.0	E, 1ET	P32-18SM	1/32		
	50	0.02%	0.05%	1.0	A, 1AT	P32-18S	1/32		
	100	0.02%	0.05%	1.0	B, 1BT	P33-18S	1/16		
24	50	0.10%	0.10%	1.0	E, 1ET	P32-24SM	1/32		
	100	0.10%	0.10%	1.0	A, 1AT	P33-24S	1/16		
	200	0.10%	0.10%	1.0	B, 1BT	P34-24S	1/8		
	300	0.10%	0.10%	1.0	C, 1CT	P35-24S	1/5		
	500	0.10%	0.10%	1.0	D, 1DT	P37-24S	1/4		
	800	0.10%	0.10%	1.0	H, 1HT	P38-24S	3/8		
	1000	0.10%	0.10%	1.0	H, 1HT	P39-24S	1/2		
48	50	0.20%	0.20%	2.0	B, 1BT	P32-48S	1/16		
	100	0.20%	0.20%	2.0	B, 1BT	P33-48S	1/8		
	200	0.20%	0.20%	2.0	C, 1CT	P34-48S	1/4		
50	50	0.05%	0.20%	2.0	B, 1BT	P32-50S	1/16		
	100	0.05%	0.20%	2.0	B, 1BT	P33-50S	1/8		
	200	0.05%	0.20%	2.0	C, 1CT	P34-50S	1/4		
	300	0.20%	0.20%	3.0	D, 1DT	P35-50S	3/8		
75	35	0.05%	0.20%	2.0	B, 1BT	P32-75S	1/10		
	70	0.05%	0.20%	2.0	B, 1BT	P33-75S	1/5		
	150	0.05%	0.20%	2.0	C, 1CT	P34-75S	3/10		
	200	0.10%	0.20%	3.0	D, 1DT	P35-75S	3/8		
100	25	0.05%	0.20%	2.0	B, 1BT	P32-100S	1/16		
	50	0.05%	0.20%	2.0	B, 1BT	P33-100S	1/8		
	100	0.05%	0.20%	3.0	C, 1CT	P34-100S	1/4		
	150	0.10%	0.20%	3.0	D, 3DT	P35-100S	3/8		

1. Case style ending with letter "T"(Chassis mounted units with terminal barrier strip) are designated by the suffix "T" . Case styles A,B,C,D,G and E (PC card mounting) do not require suffixing.
2. Most competitors pinouts available--contact factory.
3. For 400HZ, use suffix "04" after model number.
4. For wide operating temperature range, use "W" suffix after model number.



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Selection Guide

(Continued)

	Output (Vdc)	Output Current (mA)	Regulation		Ripple & Noise (mV rms)	Case	Model Number	Slow Blow (A)		
			Line	Load						
SINGLE OUTPUT	150	17	0.05%	0.20%	2.0	A,1AT	P32-150S	1/16		
		35	0.05%	0.20%	3.0	B,1BT	P33-150S	2/10		
		70	0.05%	0.20%	3.0	C,1CT	P34-150S	1/4		
		100	0.20%	0.20%	3.0	D,1DT	P35-150S	3/8		
	180	15	0.05%	0.20%	3.0	B, 1BT	P32-180S	1/16		
		30	0.05%	0.20%	3.0	B, 1BT	P33-180S	1/5		
		55	0.05%	0.20%	3.0	C, 1CT	P34-180S	1/4		
		80	0.10%	0.20%	3.0	D, 1DT	P35-180S	3/8		
	200	12	0.05%	0.20%	3.0	B, 1BT	P32-200S	1/16		
		25	0.05%	0.20%	3.0	B, 1BT	P33-200S	1/8		
		50	0.05%	0.20%	3.0	C, 1CT	P34-200S	1/4		
		75	0.10%	0.20%	3.0	D, 1DT	P35-200S	3/8		
	250	10	0.05%	0.20%	3.0	B, 1BT	P32-250S	1/16		
		20	0.05%	0.20%	3.0	B, 1BT	P33-250S	1/8		
		40	0.05%	0.20%	3.0	C, 1CT	P34-250S	1/4		
		60	0.10%	0.20%	3.0	D, 1DT	P35-250S	3/8		
DUAL OUTPUTS	±5	±50	0.02%	0.02%	1.0	A, 2AT	P32-5	1/32		
		±100	0.10%	0.10%	1.0	A, 2AT	P33-5	1/32		
		±200	0.10%	0.10%	1.0	B, 2BT	P34-5	1/16		
		±300	0.02%	0.05%	0.5	C, 2CT	P35-5	1/10		
		±500	0.02%	0.05%	0.5	C, 2CT	P37-5	1/8		
		±1000	0.01%	0.10%	1.0	D, 2DT	P38-5	1/4		
	±8	±500	0.10%	0.10%	2.0	D, 2DT	P37-8	1/5		
	±10	±100	0.02%	0.05%	2.0	A, 2AT	P33-10	1/16		
	±12	±25	0.10%	0.10%	2.0	G, 1GT	P31-12M	1/32		
		±25	0.02%	0.05%	5.0	A, 2AT	P31-12	1/32		
		±50	0.02%	0.05%	5.0	A, 2AT	P32-12	1/32		
		±100	0.10%	0.10%	1.0	A, 2AT	P33-12	1/16		
		±200	0.10%	0.10%	1.0	B, 2BT	P34-12	1/8		
		±300	0.10%	0.10%	1.0	C, 2CT	P35-12	1/5		
		±500	0.10%	0.10%	1.0	D, 2DT	P37-12	3/10		
		±800	0.10%	0.10%	1.0	D, 2DT	P38-12	2/5		
		±15	±25	0.10%	0.10%	2.0	G, 1GT	P31-M	1/32	
			±25	0.20%	0.20%	1.0	A, 2AT	P31	1/32	
	±25		0.02%	0.02%	0.5	A, 2AT	P31-1	1/32		
	±50		0.20%	0.20%	1.0	A, 2AT	P32	1/16		
	±50		0.02%	0.02%	0.5	A, 2AT	P32-1	1/16		
	±100		0.20%	0.20%	1.0	A, 2AT	P33	1/10		
	±100		0.02%	0.02%	1.0	A, 2AT	P33-1	1/10		
	±200		0.20%	0.20%	1.0	B, 2BT	P34	1/5		
	±200		0.02%	0.05%	1.0	B, 2BT	P34-1	1/5		
	±200		0.02%	0.05%	1.0	B, 2BT	P34-1/22-P (5)	1/5		
	±350		0.20%	0.20%	1.0	C, 2CT	P35	1/4		
	±350		0.02%	0.05%	1.0	C, 2CT	P35-1	1/4		
	±500		0.10%	0.10%	1.0	D, 2DT	P37-15	3/8		
	±800		0.10%	0.10%	1.0	D, 2DT	P38-15	1/2		
	±18	±50	0.10%	0.10%	1.0	A, 2AT	P32-18	1/16		
		±100	0.10%	0.10%	1.0	B, 2BT	P33-18	1/10		
	±24	±50	0.10%	0.10%	1.0	B, 2BT	P32-24	1/16		
		±100	0.10%	0.20%	1.0	B, 2BT	P33-24	1/8		
		±200	0.10%	0.20%	1.0	C, 2CT	P34-24	1/4		
	TRIPLE VOLTAGE	5/±12	250/±60	0.02%	0.10%	1.0	C, 3CT	P51-12	1/10	
			250/±120	0.02%	0.10%	1.0	C, 3CT	P52-12	1/10	
			300/±180	0.02%	0.10%	1.0	C, 3CT	P53-12L	1/5	
			500/±120	0.02%	0.10%	1.0	C, 3CT	P53-12	1/5	
			1000/±150	0.02%	0.10%	1.0	D, 3DT	P53-1280	1/4	
		5/±15	250/±50	0.02%	0.10%	1.0	C, 3CT	P51-15	1/10	
			250/±100	0.02%	0.10%	1.0	C, 3CT	P52-15	1/10	
300/±150			0.02%	0.10%	1.0	C, 3CT	P53-15L	1/5		
500/±100			0.02%	0.10%	1.0	C, 3CT	P53-15	1/5		
1000/±150			0.02%	0.10%	1.0	D, 3DT	P53-1580	1/4		

1. Case style ending with letter "T"(Chassis mounted units with terminal barrier strip) are designated by the suffix "T".  
Case styles A,B,C,D,G and E (PC card mounting) do not require suffixing.

2. Most competitors pinouts available--contact factory.

3. For 400HZ, use suffix "04" after model number.

4. For wide operating temperature range, use "W" suffix after model number.

5. For rugged/critical applications, use suffix "P" (Upgraded Capacitors/components)



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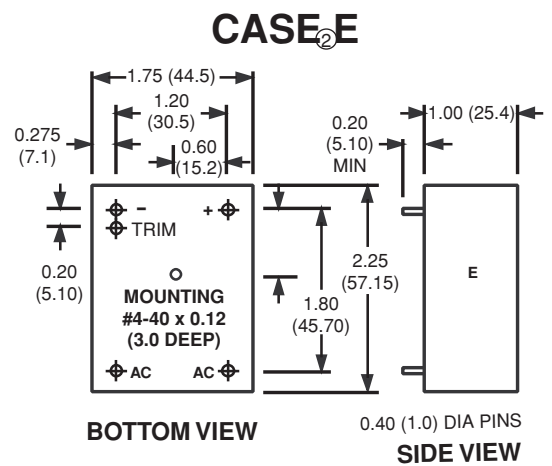
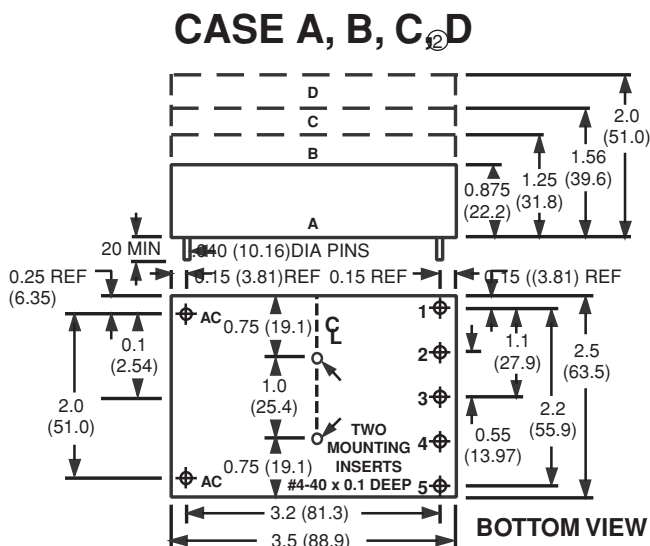
## Mechanical Specification

I/O Connections			
Pin	SINGLE	DUAL	TRIPLE
1	-Vdc*	-Vdc*	Com (5)
2	No Pin	No Pin	+5Vdc
3	Com*	Com*	-12 / -15
4	No Pin	No Pin	CMN (12/15)
5	+Vdc	+Vdc	+12 / +15

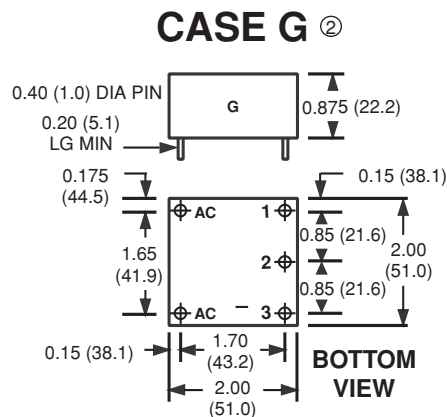
\* -Vdc Internally connected to COM for single output units.

OPTIONS AVAILABLE	SUFFIX	
220Vac	X	
230Vac	XA	
240Vac	XE	
100Vac	Q	
115/220	AX	
Alternate Pin-Out	22	
Chassis mounting with terminal barrier strip (case styles ending with letter ("T"))	T	
Finger Safe Chassis Mount Terminal Barrier Strip	FST	
Wide Oper. Temp. Range	W	
400Hz	04	

② Most competitors pinouts available--contact factory.



All Dimensions are in inches (mm)

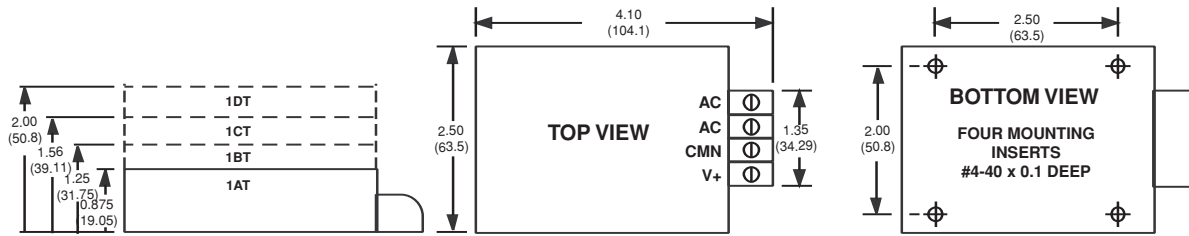


P34-5SM: ① + 5VDC ② and ③ COM  
 P31-M + P31-12M: ① - 15VDC ② COM  
 ③ + 15VDC

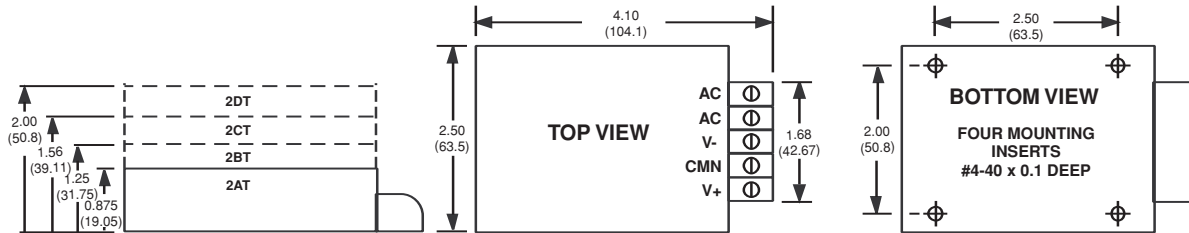
Power Supply Options

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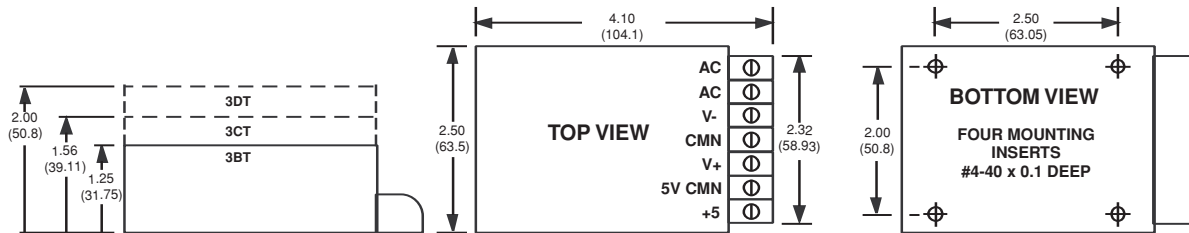
CHASSIS MOUNTED UNITS



SINGLE OUTPUT MODELS



DUAL OUTPUT MODELS

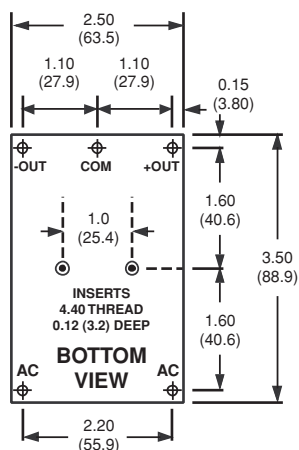


TRIPLE OUTPUT MODELS

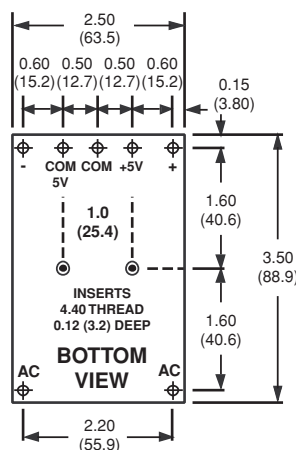
All Dimensions are in inches (mm)

ALTERNATE PIN-OUT

SINGLE & DUAL OUTPUT MODELS

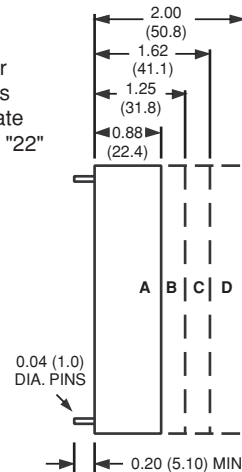


TRIPLE OUTPUT MODELS



Note:  
 \* No connection for single output units  
 \* To specify alternate pin-out use suffix "22"

SIDE VIEW



All Dimensions are in inches (mm)



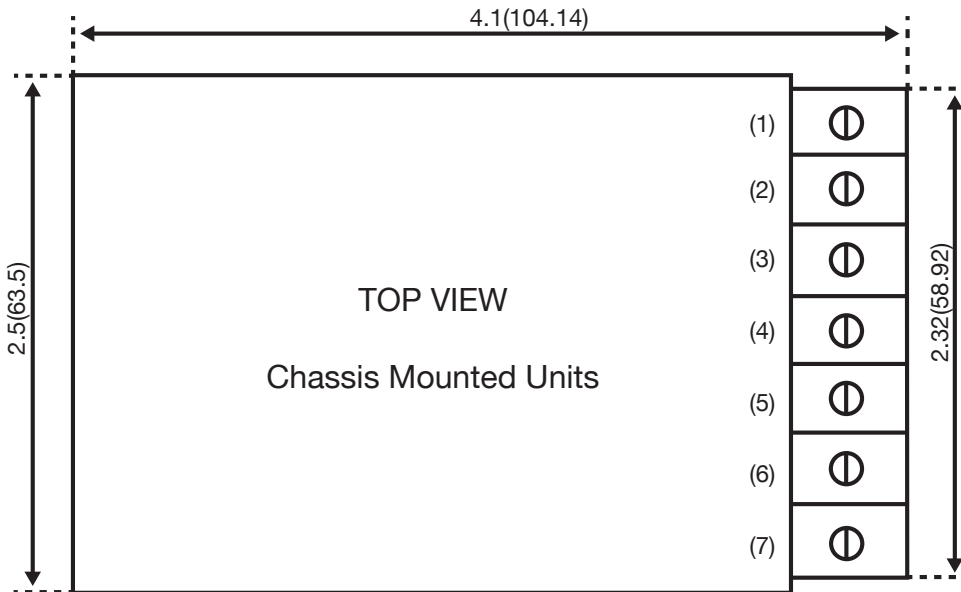
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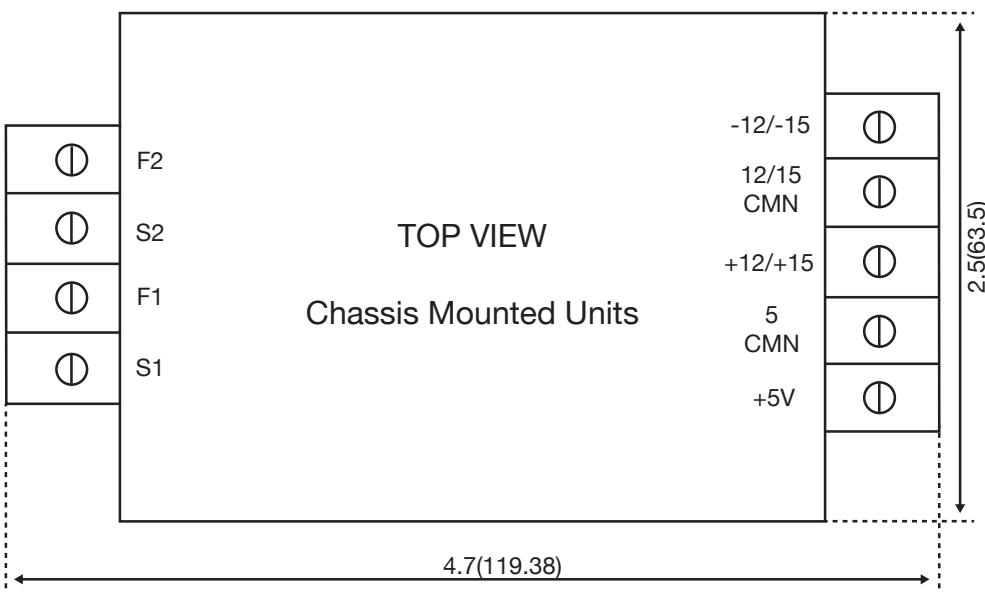
**Single and Dual Output Chassis Mount (Case A, B, C, D)  
115/220Vac Input**



1. Case Height dimensions can be: 1.25", 1.56" or 2.0" depending on model
2. For 220V Operation Jumper "f1" to S2"
3. Apply 220V Excitation Across "S1" and "F2"
4. For 115V Operation Jumper "S1" to "S2" and "F1" to F2"
5. Apply 115V excitation across "S1" and "F1"

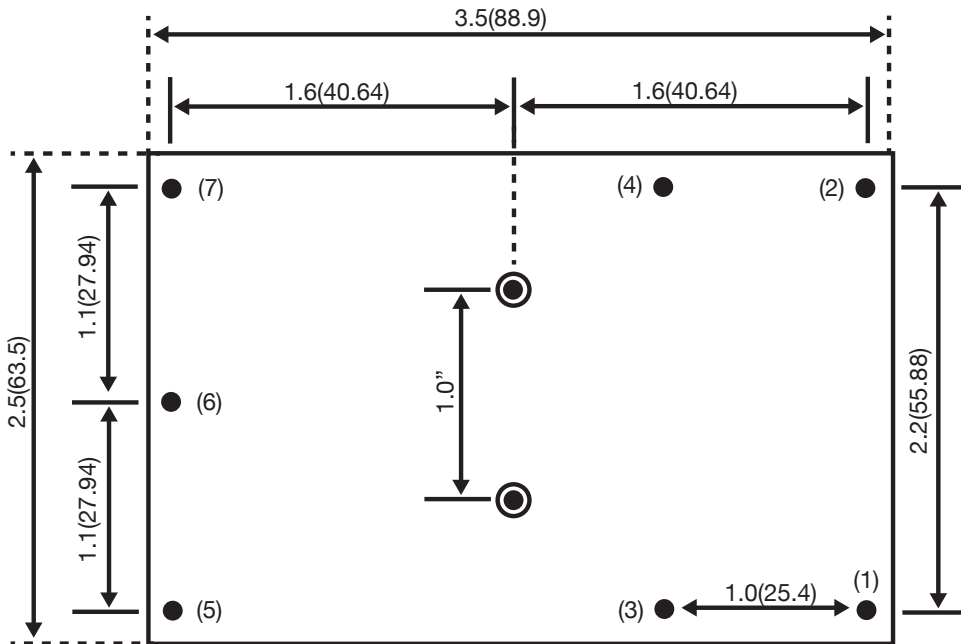
Terminal	Single Voltage	Dual V0
1	S1	S1
2	F1	F1
3	S2	S2
4	F2	F2
5	NC	-V0
6	CMN	CMN
7	+Vout	+V0

**Triple Output Chassis Mount  
115/220Vac Input**



1. Case Height dimensions can be: 1.56" or 2.0" depending on model
2. Wire primaries in parallel for 115Vin Series for 220Vin
3. S = Start of Primary Winding
4. F = Finish of Primary Winding
5. For lower voltage operation wire AC Input in parallel and connect S1 and S2 and F1 and F2 together and excite across
6. For higher voltage operation put winding in series, wire F1 to S2 and excite S1 and F2

**Single and Dual Output PC Mount  
115/220Vac Input**

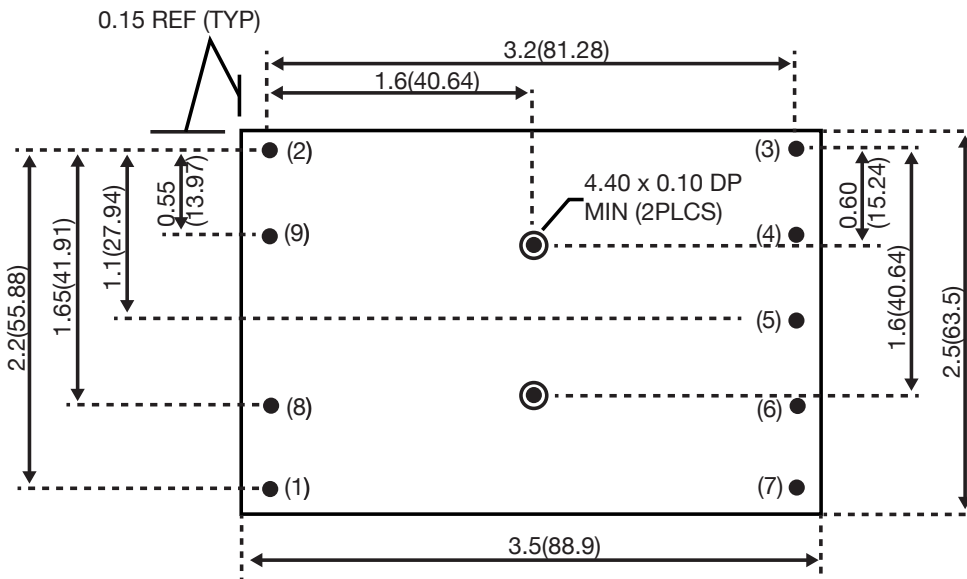


1. Case height dimensions can be: 1.25", 1.56" or 2.0" depending on model

**Connections**

PIN 1	Start Winding 1
PIN 2	Finish Winding 1
PIN 3	Finish Winding 2
PIN 4	Start Winding 2
PIN 5 + PIN 6	Common Out for Single V
PIN 5	For Dual Vout -Vout
PIN 6	For Dual Vout CMN
PIN 7	For Single/ Dual +Vout

**Triple Output PC Mount  
115/220Vac Input**



1. Case height: 2.0"
2. Pin 5-15 VDC Output -12 or -15
3. Pin 6±15 VDC Return CMN 12/15
4. Pin 7+15 VDC Output +12 or +15
5. For 115V Input jumper 2 to 9 and 1 to 8
6. For 220V Input jumper 8 to 9

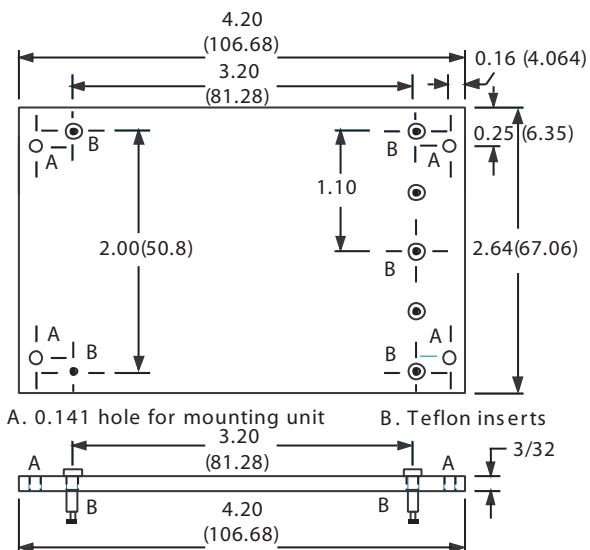
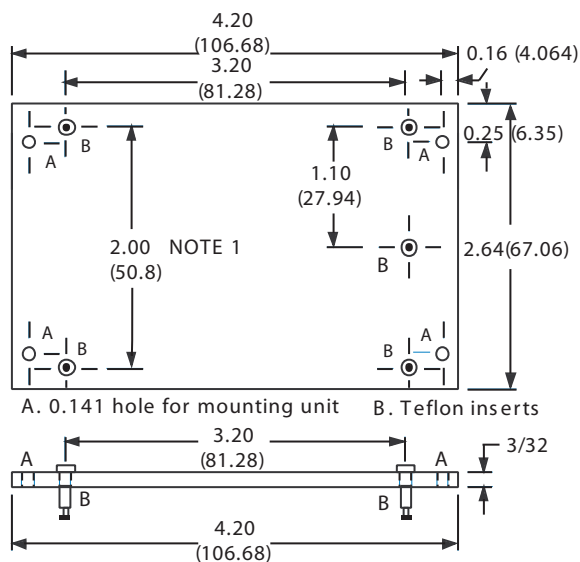
**Connections**

Pin 1	F/N Winding 2
Pin 2	Start Winding 1
Pin 3	5 VDC Return
Pin 4	+5 VDC Output
Pin 8	FIN Winding 1
Pin 9	Start Winding 2

# POWER SUPPLY ACCESSORIES

(Continued)

## SOCKETS



NOTE 1: For 2.2" AC pin spacing specify S-5/22

All Dimensions are in inches(mm)

## BENCH ADAPTER



Designed for all Single and Dual Linear Power Supplies in Cases A, B, C, D.

MODEL M-5 (2.0" AC Pin Spacing)  
M-5/22(2.2" AC PIN SPACING)