

#### Features

- Miniature AC/DC Switching Power Modules
- PCB Mounting with Solder Pins or Chassis Mounting with Screw Terminals
- Single, Dual and Triple Output Models
- Universal Input 85-264 VAC, 47–400 Hz
- High Efficiency
- EMI meets EN 55022, Class B and FCC, Level B
- Low Ripple and Noise
- Short Circuit and Overload Protection
- Safety Class II Product
- 2 Year Product Warranty



The TPM Series switching power supplies, comprising 51 (!) standard models, offer highest power density in a full encapsulated module. This feature makes these modules an ideal solution for all space critical applications in commercial and industrial electronic equipment. Full compliance to European low voltage and EMC directive, UL and cUL safety approval qualifies this product for worldwide markets. SMD-technology and a high efficiency guarantees a high reliability of these MiniSwitcher.

Models						
Ordercode		Output Power max.	Output 1 Inom	Output 2 Inom	Output 3 Inom	
PCB-mounting with solder pins	Chassis mounting with screw terminals					
TPM 05105 TPM 05112 TPM 05124 TPM 05212 TPM 05215		5 Watt	5 VDC / 1000 mA 12 VDC / 420 mA 24 VDC / 210 mA			
			+12 VDC / 250 mA +15 VDC / 150 mA	-12 VDC / 150 mA -15 VDC / 150 mA		
TPM 10105 TPM 10112 TPM 10124 TPM 10212 TPM 10215 TPM 10512 TPM 10515	TPM 10105C TPM 10112C TPM 10124C TPM 10212C TPM 10215C TPM 10512C TPM 10515C		10 Watt	5 VDC / 2000 mA 12 VDC / 840 mA 24 VDC / 420 mA		
				+12 VDC / 400 mA +15 VDC / 300 mA	-12 VDC / 400 mA -15 VDC / 300 mA	
				*5 VDC / 1200 mA *5 VDC / 1200 mA	+12 VDC / 120 mA +15 VDC / 100 mA	-12 VDC / 120 mA -15 VDC / 100 mA

DC input (18 – 72 VDC) and other output voltages on request

\* Output floating

<b>Models</b>							
Ordercode		Output Power max.	Output 1 Inom	Output 2 Inom	Output 3 Inom		
PCB-mounting with solder pins	Chassis mounting with screw terminals						
TPM 15105	TPM 15105C	<b>15 Watt</b>	5 VDC / 3000 mA				
TPM 15112	TPM 15112C		12 VDC / 1300 mA				
TPM 15124	TPM 15124C		24 VDC / 600 mA				
TPM 15212	TPM 15212C		+12 VDC / 600 mA			-12 VDC / 400 mA	
TPM 15215	TPM 15215C		+15 VDC / 500 mA			-15 VDC / 400 mA	
TPM 15512	TPM 15512C		*5 VDC / 1600 mA			+12 VDC / 150 mA	-12 VDC / 150 mA
TPM 15515	TPM 15515C		*5 VDC / 1600 mA			+15 VDC / 150 mA	-15 VDC / 150 mA
TPM 30105	TPM 30105C		<b>30 Watt</b>			5 VDC / 6000 mA	
TPM 30112	TPM 30112C	12 VDC / 2500 mA					
TPM 30124	TPM 30124C	24 VDC / 1300 mA					
TPM 30212	TPM 30212C	+12 VDC / 1200 mA		-12 VDC / 1200 mA			
TPM 30215	TPM 30215C	+15 VDC / 1000 mA		-15 VDC / 1000 mA			
TPM 30252	TPM 30252C	*5 VDC / 3000 mA		*12 VDC / 1200 mA			
TPM 30254	TPM 30254C	*5 VDC / 3000 mA		*24 VDC / 600 mA			
TPM 30512	TPM 30512C	*5 VDC / 3000 mA		+12 VDC / 600 mA	-12 VDC / 600 mA		
TPM 30515	TPM 30515C	*5 VDC / 3000 mA		+15 VDC / 500 mA	-15 VDC / 500 mA		

DC input (18 – 72 VDC) and other output voltages on request \* Output floating

**Input Specifications**

Input voltage range	85 – 264 VAC (100 – 375 VDC)
Input frequency	47 – 400 Hz
Input current no load	115 VAC / 230 VAC
– TPM 05 models	18 mA / 13 mA typ.
– TPM 10 models	18 mA / 18 mA typ.
– TPM 15 models	18 mA / 18 mA typ.
– TPM 30 models	25 mA / 20 mA typ.
Input current full load	115 VAC / 230 VAC
– TPM 05 models	100 mA / 60 mA typ.
– TPM 10 models	150 mA / 90 mA typ.
– TPM 15 models	220 mA / 118 mA typ.
– TPM 30 models	430 mA / 240 mA typ.
Inrush current (< 2 ms)	115 VAC / 230 VAC
– TPM 05 models	8 A / 16 A max.
– TPM 10 models	9 A / 18 A max.
– TPM 15 models	9 A / 20 A max.
– TPM 30 models	10 A / 20 A max.
External fuse (recommended)	
– TPM 05 models	0.5 A slow blow type
– TPM 10 models	1.0 A slow blow type
– TPM 15 models	1.0 A slow blow type
– TPM 30 models	2.0 A slow blow type

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

## Output Specifications

Voltage set accuracy	– Output 1 (main output)	± 1 %
	– Output 2/3 (aux. outputs)	± 4 %
Regulation	– Input variation	± 0.5 % max.
	– Load variation (10 – 90%)	
	– Single output models	± 0.5 % max.
	– Dual/ triple output models	± 2 % typ. / ± 5 % max. (symmetric load)
Minimum load	– Dual/ triple output models	5 % (main output)
Ripple and noise (20 Mhz Bandwidth)		100 mV pk-pk max.
Current limitation		105 – 130 % of I <sub>out</sub> max., constant current
Short circuit protection		hiccup mode, indefinite (automatic recovery)
Capacitive load		1000 µF (each output) TPM 05xxx only 4700 µF (each output) all other models

## General Specifications

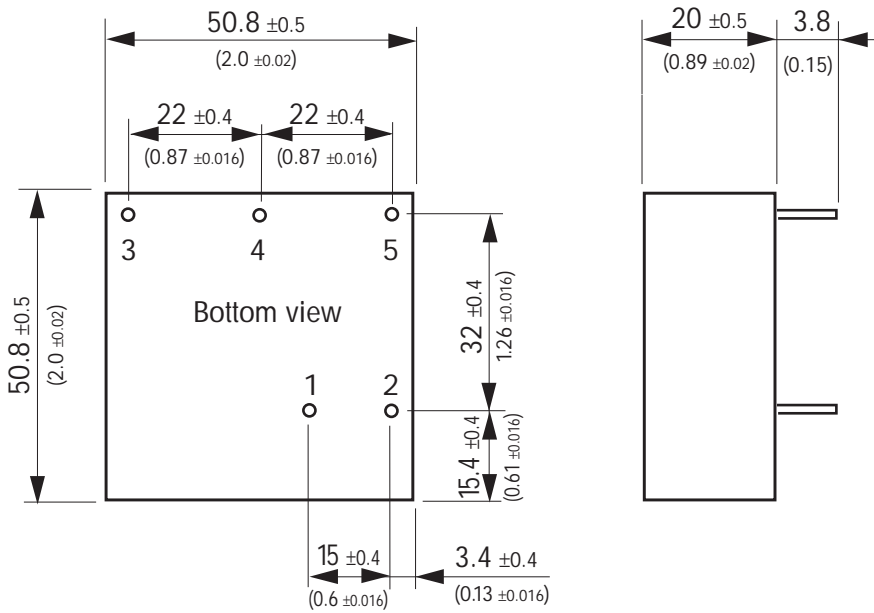
Temperature ranges	– Operating	– 25 °C...+70 °C ambient temp. max.
	– Case	95 °C (over temp. protected)
	– Derating 5 % / °C above	55 °C (TPM 5/ 10 models) 50 °C (TPM 15/30 models)
	– Storage (non operating)	– 40 °C...+100 °C
Temperature coefficient		0.01 % / °C
Efficiency		70 – 80 % (depending on model)
Humidity (non condensing)		95 % rel max.
Switching frequency		100 kHz typ. (Puls width modulation PWM)
Hold-up time	– Vin = 115 VAC	50 ms min.
	– Vin = 230 VAC	50 ms min.
Isolation voltage	– Input/ Output	3'300 VAC
Reliability /calculated MTBF (MIL-HDBK-217E)		> 150'000 h @ 40°C
EMI / RFI conducted		EN 55022, class B, FCC part 15, level B
EMC compliance	– Electrostatic discharge ESD	IEC / EN 61000-4-2 4 kV / 8 kV
	– RF field susceptibility	IEC / EN 61000-4-3 10 V/m
	– Electrical fast transients/bursts on mainsline	IEC / EN 61000-4-4 2 kV
	– Surge	IEC / EN 61000-4-5 2 kV sym.
Safety Class II		to IEC / EN 60536
Safety standards		UL 1950, IEC 60950, EN 60950
Safety approval		cUL /UL (E172055)
Case material		CELANEX 2360 FL (flammability to UL 94-V0)

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

**Outline Dimensions mm (inches)**

**PCB-mounting with solder pins**

**TPM 5 W**



Weight TPM 5 90 g (0.02 lb)

Pin-Out		
Pin	Single	Dual
1	AC in	AC in
2	AC in	AC in
3	-V out	-V out
4	no pin	Common
5	+V out	+V out

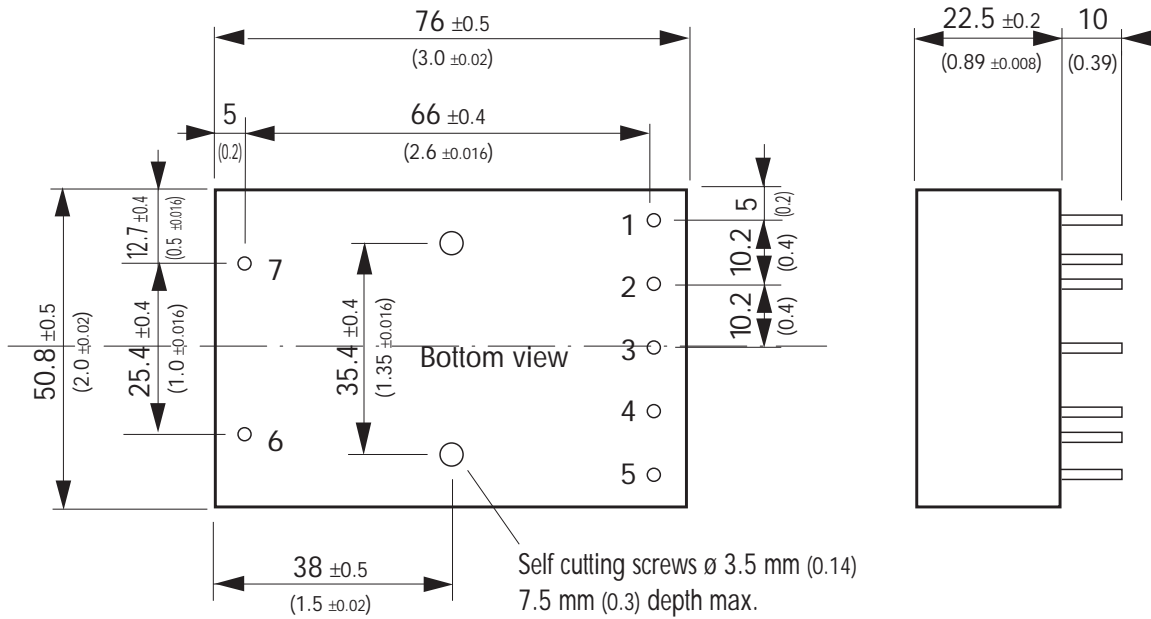
Pin diameter  $\varnothing$  1.0  $\pm$ 0.1 (0.04  $\pm$ 0.004)

Specifications can be changed without notice

**Outline Dimensions mm (inches)**

**PCB-mounting with solder pins**

**TPM 10/15 W**



Pin diameter  $\varnothing 1.1 \pm 0.1$  (0.043  $\pm$  0.004)

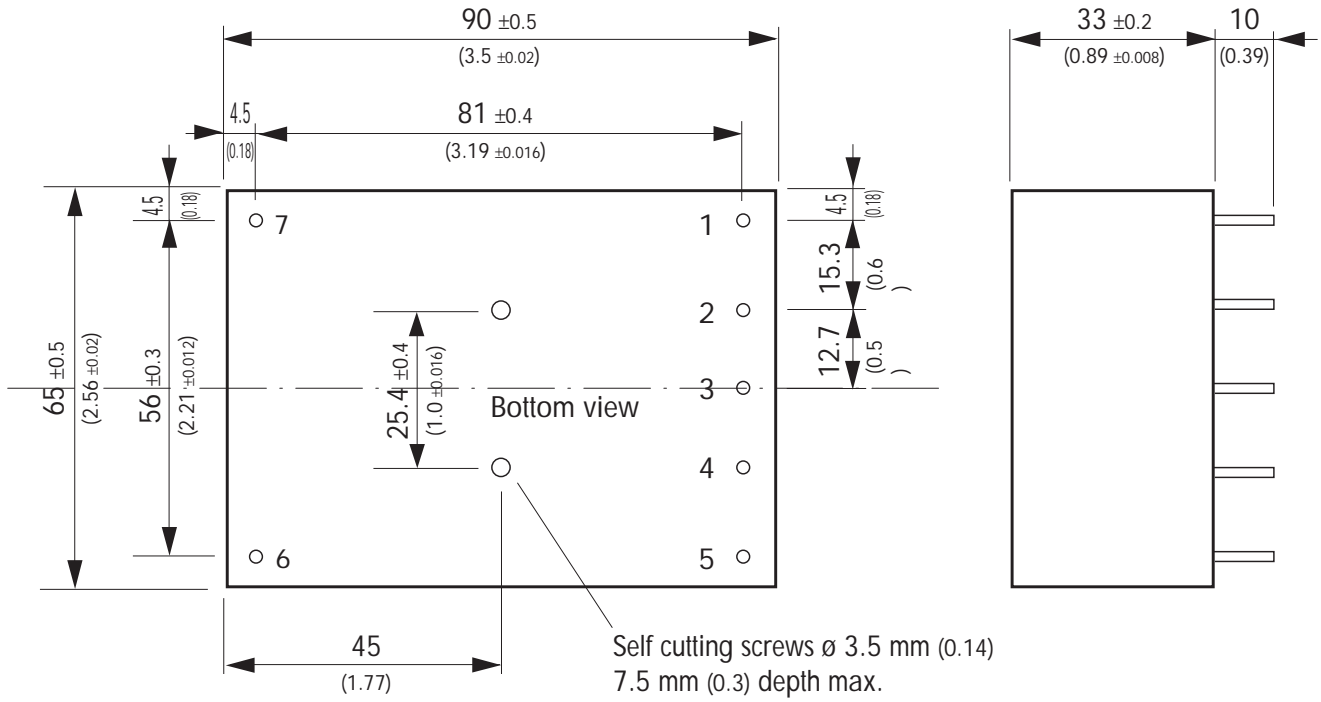
**Weight** TPM 10 150 g (0.33 lb)  
TPM 15 150 g (0.33 lb)

Pin-Out			
Pin	Single	Dual	Triple
1	-V out	-V out	-V out 3
2	No Pin	No Pin	-V out 1
3	No Pin	Common	Com. 2/3
4	No Pin	No Pin	+V out 1
5	+V out	+V out	+V out 2
6	AC in	AC in	AC in
7	AC in	AC in	AC in

### Outline Dimensions mm (inches)

#### PCB-mounting with solder pins

#### TPM 30 W



Pin diameter  $\varnothing 1.2 \pm 0.1$  (0.05  $\pm$  0.004)

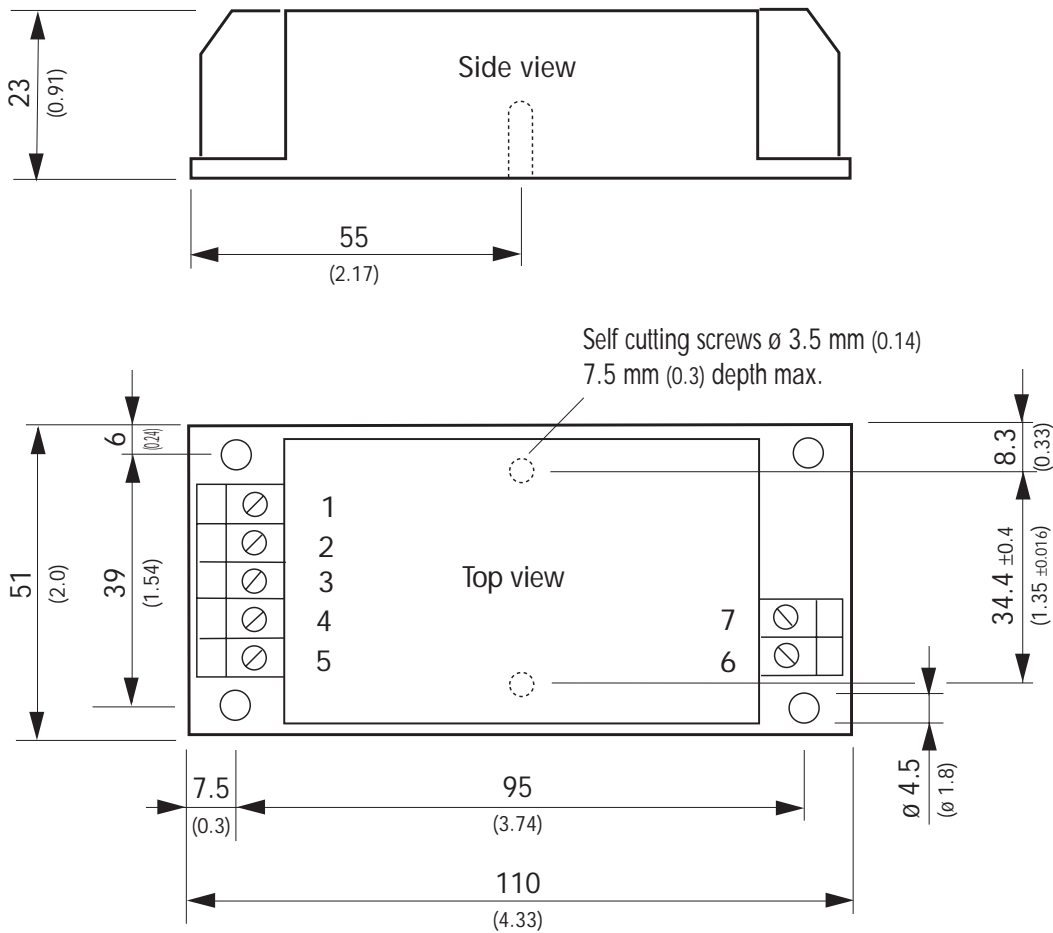
Weight TPM 30 340 g (0.75 lb)

Pin-Out				
Pin	Single	Dual sym.	Dual asym.	Triple
1	No Pin	-V out	-V out 1	-V out 3
2	No Pin	No Pin	+V out 1	-V out 1
3	-V out	Common	No Pin	Com. 2/3
4	No Pin	No Pin	-V out 2	+V out 1
5	+V out	+V out	+V out 2	+V out 2
6	AC in	AC in	AC in	AC in
7	AC in	AC in	AC in	AC in

**Outline Dimensions mm (inches)**

**Chassis mounting with screw terminals**

**TPM 10/15 W C**



Connection: wire diameter  $\varnothing$  0.2 – 4.0 mm<sup>2</sup> (AWG 24 – 12)

**Weight** TPM 10 C 200 g (0.44 lb)  
TPM 15 C 220 g (0.44 lb)

**Pin-Out**

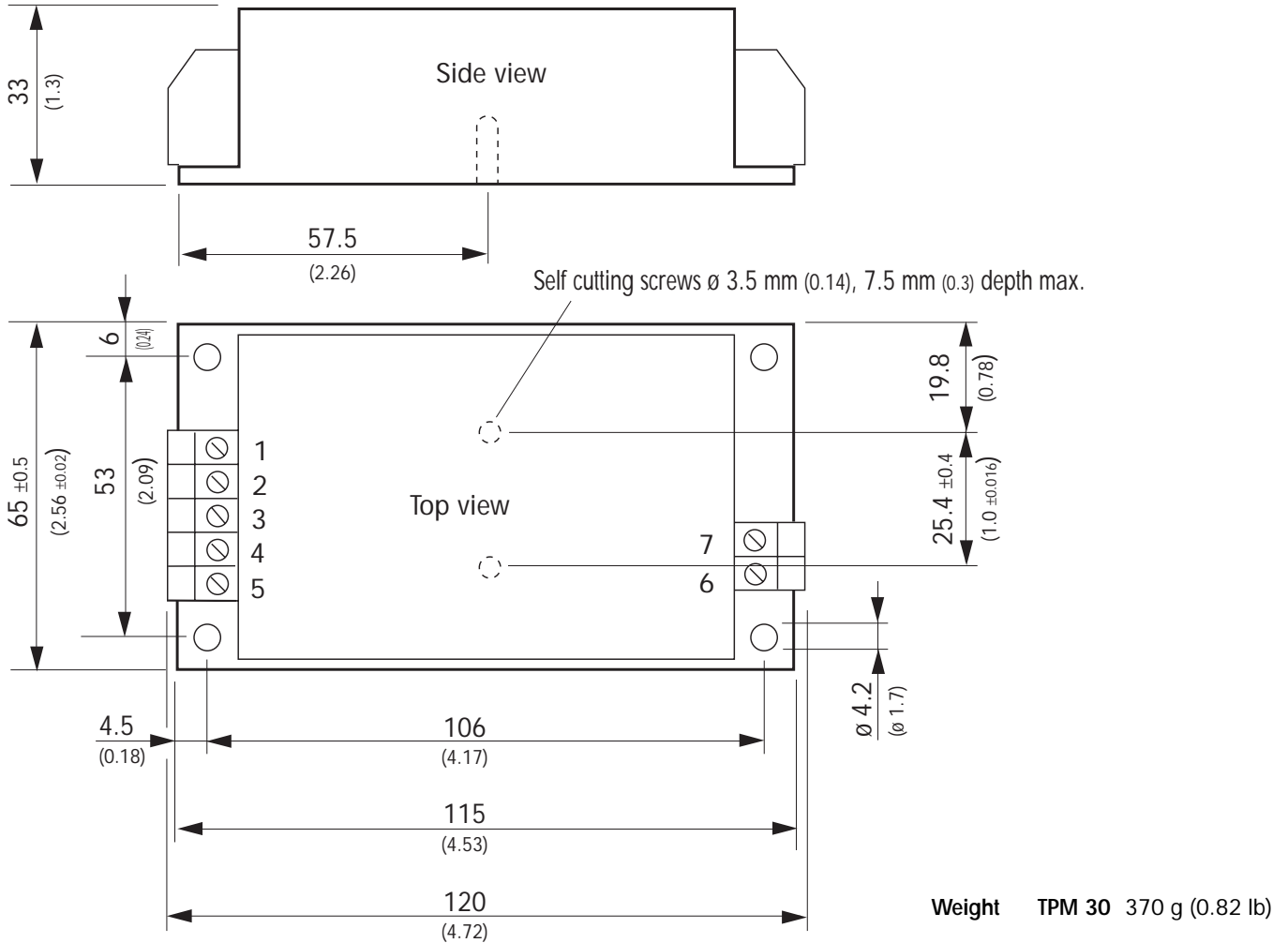
Pin	Single	Dual	Triple
1	No Terminal	No Terminal	-V out 3
2	No Terminal	No Terminal	-V out 1
3	No Terminal	-V out	Com. 2/3
4	-V out	Common	+V out 1
5	+V out	+V out	+V out 2
6	AC in	AC in	AC in
7	AC in	AC in	AC in

Specifications can be changed without notice

**Outline Dimensions mm (inches)**

**Chassis mounting with screw terminals**

**TPM 30 W C**



Connection: wire diameter  $\varnothing$  0.2 – 4.0 mm<sup>2</sup> (AWG 24 – 12)

Pin-Out				
Pin	Single	Dual sym.	Dual asym.	Triple
1	No Terminal	No Terminal	No Terminal	-V out 3
2	No Terminal	No Terminal	-V out 1	-V out 1
3	No Terminal	-V out	+V out 1	Com. 2/3
4	-V out	Common	-V out 2	+V out 1
5	+V out	+V out	+V out 2	+V out 2
6	AC in	AC in	AC in	AC in
7	AC in	AC in	AC in	AC in

Specifications can be changed without notice