

**JASPER  
ELECTRONICS**



### POPULAR OPTIONS

- Additional Labeling
- Custom Silkscreening
- Bar Codes



### CONTACT

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# Model TC301 High Density Power Supplies

**100-240 VAC Input / 5V @ 60A DC Output**



### GENERAL OVERVIEW

Jasper's TC301 is designed for LED Road Sign and Traffic Control applications where high power density and high reliability are required. This unit converts universal 100-240 VAC input to 5V @ 60A output, with the ability to operate over a wide temperature range. It can be customized to nearly any applicable transportation application. Please contact us with your specifications so we can offer a solution!

Jasper Electronics designs and manufactures Traffic Control Power Supplies which are in use by various state DOTs, including California (CalTrans / TEES-Compliant), NYSDOT, CODOT, and other states primarily for use in Caltrans TEES 332, 334, 336, 342, 344, and 346 Series cabinets. Jasper offers smaller, lighter, more efficient, and much more reliable units than legacy supplies. Custom power supplies are our specialty!

## TECHNICAL SPECIFICATIONS

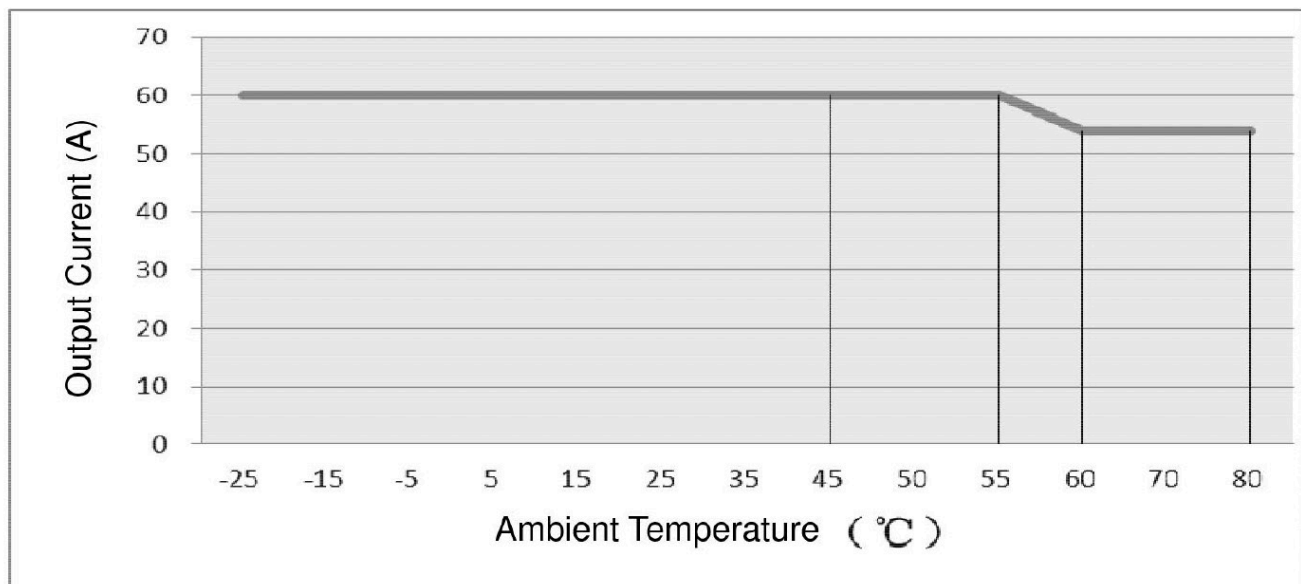
ENVIRONMENTAL					
Parameter	Min	Typ	Max	Unit	Remark
Operating Temperature	-37	25	74	°C	
Storage Temperature	-40	25	85	°C	
Relative Humidity	5		95	%	Non-condensing
Altitude	0		5000	m	3000-4000m normal operating temperature. Decrease 1°C for every 200m increase
Cooling					Natural conduction (The bottom of the case needs to be mounted to a heatsink with minimum size: 320mm x 320mm x 22mm)
INPUT CHARACTERISTICS					
Parameter	Min	Typ	Max	Unit	Remark
Input Voltage Range	100	110/220	240	VAC	
Input Frequency Range	47	50/60	63	Hz	
Power Factor	0.95				220VAC rated load
Input Current, max			4	A	
Inrush Current			19	A	100VAC, rated load, cold start
OUTPUT CHARACTERISTICS					
Parameter	Min	Typ	Max	Unit	Remark
Output Voltage Range	4.9	5.1	5.25	VDC	
Output Current	0	30	60	A	All input range
Load Regulation			±2	%	Rated input, all load condition
Accuracy			±3	%	All input and load condition
Line Regulation			±1	%	Rated load and all input range
Ripple & Noise (Peak-Peak)			200	mV	Rated input and load range. Output is decoupled by a high frequency 0.1 µF cap and a 10µF cap. Bandwidth set at 20MHz
Output Power		252	300	W	
Efficiency	88			%	220Vac input, full load, room ambient
Dynamic Response Overshoot			±10	%	25%-75%-25% load change, rate: 1A/us, Freq: 100-10kHz.
Temperature Coefficient			±0.02	%/°C	Rated input and output
Start-up Time			3	S	25°C, 220VAC, rated load
			10	S	-25°C, 220VAC, rated load
AC On / Off Overshoot			±10	%	All input and load conditions
PROTECTION					
Parameter	Min	Typ	Max	Unit	Remark
Output Overvoltage	5.6		6.5	V	Self recovery after fault removed
Output Overcurrent	66		90	A	Hiccup mode, self recovery after fault removed
Short Circuit					Can withstand continuous short, self recover after fault removed
Over Temperature	80		90	°C	Shutdown due to overtemp self-recovers. Max temperature point at 70mm from output connector of the chassis

\*Specifications subject to change without notice.

EMC		
Parameter	Standard Requirement	
Conducted Emission (CE)	EN55022 - Class B	
Radiated Emission (RE)	EN55022 - Class B	
Surge	EN61000-4-5    Line - Line: 1 KV (2.Q), Line - Earth: 2KV (12.Q)	
ESD	EN61000-4-2    Contact Discharge: ±4KV, Air Discharge: ±8KVo    ( Criterion B)	
Radiated RF Field, 80-1 000MHz (RS)	EN61000-4-3    LEVEL 3: Field Strength: 1 0V/m (Criterion A)	
Immunity to Conducted Disturbance (CS)	EN61000-4-6 LEVEL 3: Field Strength: 1 0V/m (Criterion A)	
Fast Transient / Burst (EFT/B)	EN61000-4-4 LEVEL 3: 2KV (Criterion B)	
Vibration	Sinusoidal vibration: 1-4Hz, Acceleration: 0.0001 g²/Hz; 4-1 00Hz, Acceleration: 0.01 g²/Hz; 100-200Hz, Acceleration: 0.001 g²/Hz. 3-Axial, Each axis 30 Min	
Shock	Half sine, Acceleration: 300m/s²; Pulse Width:6 mS, Axis: 6 Directions, 3 time/direction.	
Voltage fluctuation and flicker	Psts;1.o dcs;3% P1ts;0.65 dmaxs;4%    d(t)≥3.3% for period ≤200ms	
Harmonic Current	CLASS A    IEC61000-3-2 [6]	
Audible Noise	≤55dB: 25°C Full Load, Distance:100cm	
MTBF	MTBF≥150,000h	
SAFETY AND INSULATION CLASS		
Parameter	Standard Requirement	Remark
Input - Output	3000VAC/10mA//1 min	No insulation breakdown, no damage of component and no arcing
Input - Protective Earth	1500VAC/10mA//1 min	
Output - Protective Earth	500VDC/10mA//1 min	
Insulation Resistance	≥10MΩ	500Vdc, insulation resistance for Input-Output, Input-Earth, Output-Earth, 10Mohm at ambient humidity of <90%.
Touch Current	<1.5mA	220VAC Input
Ground Continuity	<0.1Ω	Test Current: 32A, Duration: 2S
MECHANICAL		
Dimensions	165 x 85 x 26	
Weight	≤0.8Kg	

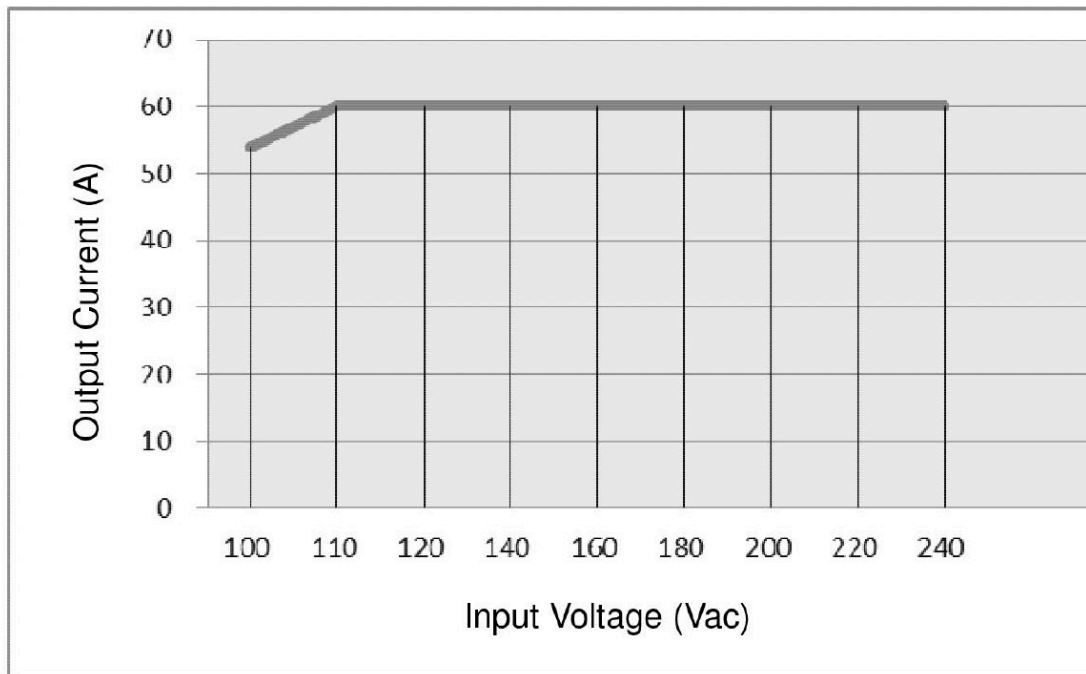
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## AMBIENT TEMPERATURE - DERATING CURVE



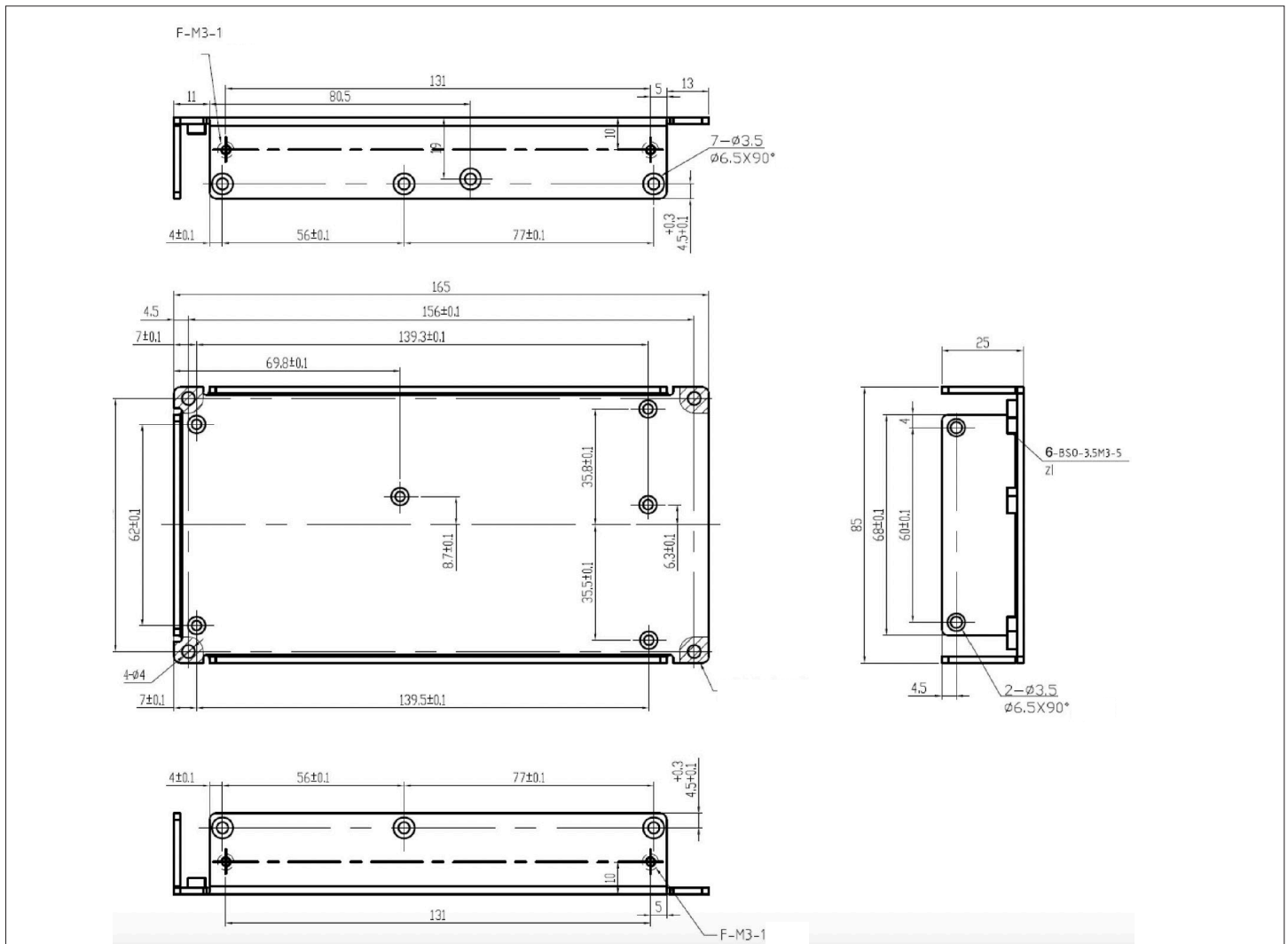
Ambient Temperature-Output Loading Derating Curve (Reduce to 90% Load when temperature higher than 60°C)

## INPUT VOLTAGE - DERATING CURVE

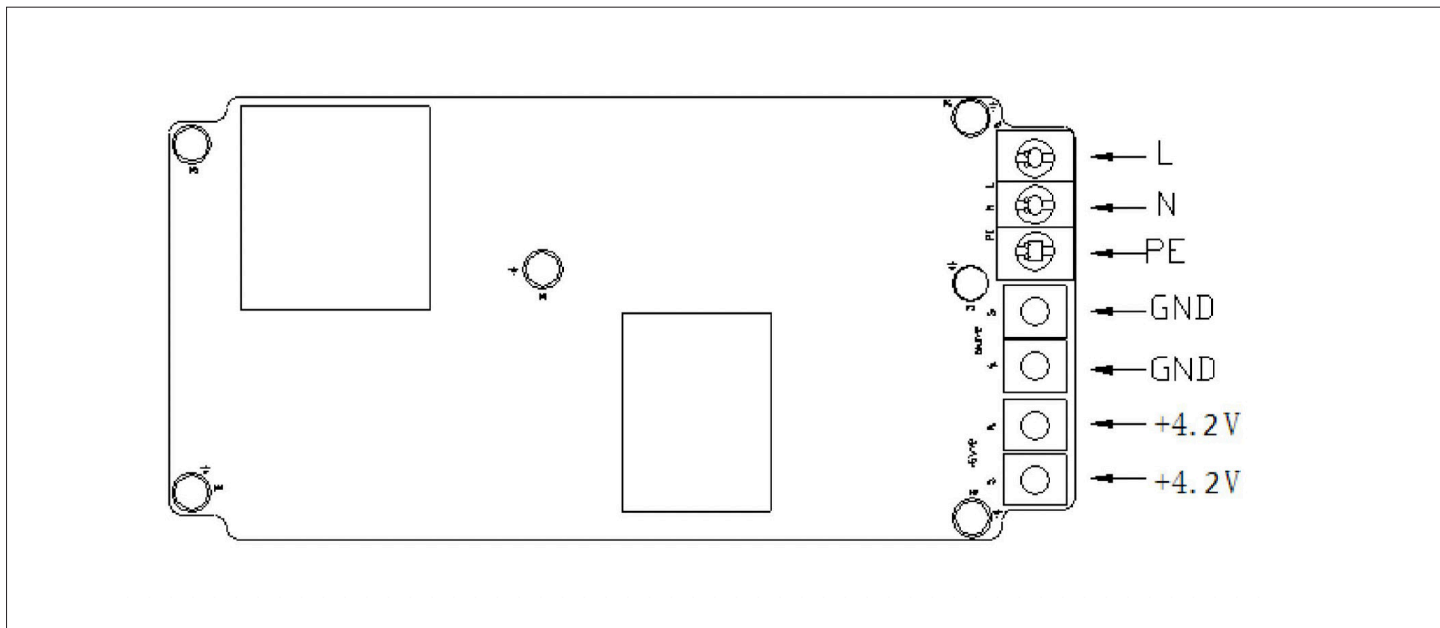


Input Voltage -Output Loading Derating Curve (Reduce to 90% Load at 100VAC)

## MECHANICAL DRAWING



## SIGNAL



# INNOVATIVE SPECIALTY DC POWER SYSTEMS

*Standard and Custom Power Supplies from 5W to 10KW*

## TRAFFIC CONTROL POWER SUPPLIES



- 70-400+ Watts / 120 and 220 VAC Models Available
- CALTRANS TEES, NYSDOT, CDOT, GDOT Compliant for 332, 334, 336, 342, 344, and 346 Series cabinets
- RoHS and NEMA Compliant
- Custom labeling and barcoding available
- Ruggedization against shock / vibration / humidity available

## CUSTOM POWER DISTRIBUTION ASSEMBLIES (PDAs)



- Compliant with TEES 2020
- 1U smaller than the PDA2-LX and PDA3-LX
- User accessible slots as specified
- Custom labeling and barcoding available
- Ruggedization against shock / vibration / humidity available

## COMPACT PCI



- AC or DC input, 175W - 500W DC output, active PFC
- 3U x 8HP, 6U x 8HP sizes
- PICMG 2.11 compliant, UL/CSA, NEMKO/TUV/CE certified, ROHS compliant
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Industrial Computing, Military, Satellite Comm, Test, Transportation, Telecom, Aerospace**

## SPECIALTY HOT-SWAPPABLE POWER SUPPLIES



- 200-1500W, Universal Input, 5-54VDC Output
- Hot Swap. N+1, 90+% Efficiency
- 1U Form Factors
- 30+ Variations for Various Applications Including Nuclear
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics**

## RACK POWER SYSTEMS



- 200W-1500W, 2-8 slots, single or mixed output voltages, up to 10KW total
- Single, dual, or individual unit AC or DC input
- Internally or externally redundant DC outputs
- Standard 19" and 23" size or user-specified configurations also available
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics**

## CUSTOMS & MODIFIED STANDARDS



- 75W-2KW
- Single to 7 outputs
- Designed and built to custom or semi-custom specifications
- Ruggedization against shock/ vibration/ humidity optional
- Custom electrical specs, chassis, paint, labeling, connectors, interface all available

**Primary Applications: Medical Equipment, Military, Test, Automotive, Computing, Audio, Sensitive Electronics**

## LOW NOISE CONVECTION / CONDUCTION COOLED POWER SUPPLIES



- 200W-500W, 90—264VAC full range input with 12-54 VDC Output
- Wide operating temperature range / high efficiency
- Small form factors
- Ruggedization against shock/ vibration/ humidity optional

**Primary Applications: Medical Equipment, Military, IT, Sensitive Electronics**

## MEDICAL ADAPTERS



- 6W-250W, Efficiency levels V & VI
- Desktop, Wall-mount, and Interchangeable AC plug types
- Large selection of output connectors – additional cable lengths available
- UL60601 (medical) approved adapters available
- Ruggedization against shock/ vibration/ humidity optional

