





# **POPULAR OPTIONS**

Additional Labeling
Custom Silkscreening
Bar Codes



# CONTACT

1580 No. Kellogg Dr. Anaheim, California, 92807

(714) 917-0749

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# Model TC250-055-G AC Input / 132W DC and AC Outputs



TC250 SHOWN WITH OPTIONAL HANDLE

# **GENERAL OVERVIEW**

Jasper Electronics (JE) model TC250-055-G is a component power supply module designed to meet or exceed the requirements of NEMA TS 2-2016 V03.07, as required for TS-2 Type 1 and TS-2 Type 2 traffic control cabinets that incorporate Bus Interface Units. TC250-055-G is rack mounted and fully enclosed, providing up to 132 Watts to two regulated DC outputs and a single unregulated AC output, and include a line frequency reference for use in detector racks, load switches and auxiliary components of traffic control cabinets.

TC250 modules are convection cooled, with an extended operating temperature range. These units are designed for non-redundant "cold pluggable" installation in the end product. AC input, PE, DC power output and signal connections are via 12-circuit connector on the rear of the chassis. Line-side input fuse and individual output fuses are user accessible on the front panel, adjacent to I/O LED condition indicators. Changes affecting the form, fit, function or other features outlined in this document shall not be permitted without prior notification and approval of the user.







# **TECHNICAL SPECIFICATIONS**

INPUT			
Voltage/ Current	AC 90-135V, 47-63Hz, 2.3A max, Single Phase		
Power Factor	>0.98 line PFC typical at AC 115V, full load		
Fusing	AC 3.0A, 250V delayed (slow-blow) action 3AG 6.35x31.75mm glass cartridge type external line fuse provided, operator accessible		
Inrush Current	Soft start (~25°C cold start) 30Apk @ AC 115V		
Efficiency	At AC 115V: >84%.		
Under Voltage Protection	Auto output shutdown when AC input falls below safe operating limits (75V±4V AC). Automatic recovery when input rises to within normal operating range (85V±4V AC)		
OUTPUT			
Model TC250-055-G			
Voltage/Current (V/A)	V1 12.0V DC / 5.0A V2 24.0V DC / 3.0A V3 ~ 12.0V AC / 0.25A @ 120V AC nom. ~ 7.5V AC min. @ 89V AC input		
Total loading not to exceed 132 Watts			
Output Voltage Setpoint	Factory preset within ±2.0% of nominal voltage		
Line Regulation	<±2.0% at the output connection over the full AC input range		
Load Regulation	V1: 12V±1.0V; V2: 24V±2.0V		
Minimum Loading	V1: 0.5A; V2: 0.3A		
Output Turn-on Delay	< 1 Sec from AC turn on at 25°C		
Over/ Under Shoot	None at turn-on or turn-off		
Stability	<±0.2% output drift after 20 minute warm-up		
Temperature Coefficient	<±0.02%/°C, 0° - 50°C, after 20 minute warm-up		
Ripple and Noise (PARD)	1.0% max peak-to-peak at the output terminal with a 20 MHz bandwidth limit. May be measured with a $0.1\mu$ F ceramic capacitor in parallel with a $22\mu$ F tantalum capacitor connected between the measured output and its return		
Over Voltage Protection (OVP)	Non-crowbar type. V1_out rising to $125\% \pm 3\%$ of nominal will cause V1, V2 outputs to latch off		
Over Current/ Short Circuit Protection	Outputs fused		
Over Temperature Protection	Internal temperature sensing. Causes output to shut down. Automatic recovery		
Hold-Up Time	V1, V2 outputs remain in regulation 50mSec minimum following loss of AC power at low line, full load		
Output Transient Protection	Minimum 1500W voltage transient suppressor provided		
Output Fusing	AC 250V delayed (slow-blow) action 3AG 6.35x31.75mm glass cartridge type external fuse provided in the (+) outputs, operator accessible. V1: 7.0A; V2: 4.0A; V3: 0.50A		
SIGNALS, INDICATORS AND CONTROLS			
LED Indicators	Front panel mounted, single-color LEDs for input power, V1, V2, V3 outputs and line frequency ref. Green indicates input and outputs are functioning within specifications, off indicates a fault		
Output Test Points	Three "banana jack" type test sockets provided on the front panel, color coded red and black. Allows operator to verify V1, V2 output voltage		
Line Frequency Signal	A terminal on the I/O connector provides a 60Hz AC Line Frequency reference rated at 50mA		

\*Specifications subject to change without notice.





MECHANICAL			
(Refer to JE Outline Configuration Dwg, P/N 044266-000-G.)			
Weight	1.68Kg [3.70lbs]		
Size	Refer to the JE Outline Dwg or the Mechanical Outline in this data sheet		
OPERATING ENVIRONMENT			
Operating Temperature	-34.6° – +165.2°F (-37.0° – +74.0°C) ambient at full load		
Cooling	Convection only		
Relative Humidity	Up to 95% RH, non-condensing		
Operational Vibration	0.75G peak, 5 – 500Hz along three orthogonal axis		
Storage Temperature	-40° to +185°F (-40° to +85°C)		
Altitude	to 10,000 ft. Storage to 30,000 ft		
MTBF	Designed for 150,000 hrs at 25°C		
Calibration	Modules will maintain the output voltage and load capacity over the life of the equipment. Annual re-calibration or routine maintenance service is not specified or required		
Service Life	7 years, typical, before replacement should be considered		
INTERCONNECT			
Input/ Output Connector	Amphenol MS3102 A18-PW:10 Circuit, 16 6A Male Contacts (13 amps/pin)		
Note: Use of the specified	mating connector is recomme	nded. Refer to the Mechanical Outline Dwg. for pinout ID	
PIN		# FUNCTION	
А		AC Neutral	
В		Line Frequency Ref. Output	
c		AC Line Input	
D		+12VDC Output	
E		+24VDC Output	
F		Reserved	
G		Logic Ground	
Н		Earth Ground	
1		+12 VAC Output	
L		Reserved	
SAFETY, REGULATORY AND EMC			
EMC designed to comply with the relevant industry standards of the authorities having jurisdiction - typically UL 60950-1, CSA 22.2 and IEC 60950			
Touch Current		1.2mA max @ 50/60Hz, 264V AC per UL 60950 test procedures (Sec. 5.0).	
Routine Factor Tests		Di-electric strength (hi-pot) to 2121V DC input-tochassis and input-to-outputs; MegOhm to 500V output-to-chassis	

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## STANDARD MARKING AND LABELING

2.50"x1.00" (or smaller) adhesive label is applied to the rear panel. Imprinted with JE model identification data, including JE name, input/ output ratings, model name, JE part number, a 4-digit (week/ year) manufacturing date code and manufacturing facility identification code, and space to apply any future authorized product safety certification marks.

Space is available on labels for modified or custom models for a user specified part number or model description. Use of non-standard JE labels, or user required marking, such as bar codes, user revision codes, user name or logo, etc, is possible but may incur additional costs. Consult the factory.

# **ENVIRONMENTAL CONSIDERATIONS**

The model TC250 is fully compliant with the requirements of Directive 2002/95/EC Restrictions of Hazardous Substances (RoHS). RoHS compliant models are identified with the letter code "G" suffix added to the part number on the unit labels and related documents (sales orders, etc). All materials, processes and packaging used in the assembly and shipping of RoHS versions comply. A Certificate of Compliance is available on request. Contact the factory.

# **CUSTOM CONFIGURATION CODE**

-MXXXX: Indicates a Modified model, where XXXX is a factory assigned 4-digit number to identify a unique, user specified configuration. Such models may include special or non-standard features and/ or options, or be in a configuration differing sufficiently from the design of the approved similar standard model from which it is derived to require re-evaluation of all or part of the design to insure continuing compliance with all safety requirements. Configuration requirement generally defined in the user specification documentation on file with the factory. Consult the factory for exact requirements.

# **PACKAGING AND SHIPPING**

JE ships FOB Origin from the Anaheim, CA factory or our other subsidiary facilities.

# LIMITED WARRANTY POLICY

All Jasper Electronics (JE) standard model power supplies and products are guaranteed to be free of defects in workmanship and materials for a minimum of two (2) years from the date of original shipment, when operated within specification. Non-standard (custom) power supplies and products may be warranted on an individual basis. The unused portion of this warranty is fully transferable with the original equipment in which the power supply is installed. Please see our website for full warranty statement.







# **TC250 OUTLINE DRAWING**



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# 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

#### 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

Jasper

**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

#### **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



ASR ISO9001:2015

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