

## **PowerCassette®: 1U HIGH RACK-MOUNT DC/DC CONVERTERS** 24VDC to 48VDC at 1,000 Watts with Hot Swap

### FEATURES

- Isolated 5V, ¼ A Standby Output
- Hot-Swap Operation
- 48 or 54.4 VDC Output
- Remote Output Adjustment
- 3,000 Watts System Output
- Wide Range 20 to 30VDC Input
- Integral LED Status Indicators
- -20°C to +70°C Operating
- I<sup>2</sup>C Serial Data Bus Option
- 12.5 Watts/Cubic Inch Power Density
- Low Profile: 1.6 Inches High
- Single Hot-Swappable Connector
- Staged Pin Engagement
- ORing Diode on Output
- 1U, 19" Rack/Shelf Holds 3 Units
- 19- or 23-Inch Rack Mounting
- Active Current Sharing
- Optimized Thermal Management
- No Minimum Load
- Control & Monitoring Features



TPCMQ24 Series

**1U High**  
**1.6" x 5" x 10"**  
(41 x 127 x 254 mm)



Three-Unit Rack/Shelf  
TPCMQR1U3-24



**TWO-YEAR WARRANTY**  
Patent Protected

### STANDARD MODULES

MAX. OUTPUT POWER	MAX. OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT VOLTAGE	MODEL NUMBER
1000W	54.4VDC	18.4A	20-30VDC	TPCMQ24-54/18
1000W	48VDC	20.8A	20-30VDC	TPCMQ24-48/20

**NOTE:** The table does not show the independent 5V, ¼A standby output which is standard on all models.

### SYSTEM RACK/SHELF (See page 3)

MODEL	WIDTH	HEIGHT	NO. OF MODULES
TPCMQR1U3-24	19" (483 mm)	1.72" (43.7 mm)	3

**NOTE:** System rack and hot-swap modules must be ordered separately. Brackets are available for mounting the 19-inch rack/shelf in 23 inches. Order no. 775-1451-0000 (set of two).

### OPTIONS

CODE	DESCRIPTION
Z	I <sup>2</sup> C Serial Data Bus

**NOTE:** Add Option Code as suffix to model no. on both module and rack/shelf. Contact factory on availability of Option Z.

### SAFETY STANDARDS

UL60950-1  
CSA22.2, No. 60950-1  
EN60950-1

## SPECIFICATIONS, TPCMQ24 SERIES DC/DC CONVERTERS

Typical at Nominal 24VDC Input, Full Load and 25°C Unless Otherwise Noted.

### OUTPUT SPECIFICATIONS

Total Output Power, Continuous, Max.	1,000 Watts
Voltage Adjustment Range, Min.	-25% to +10%
Total Regulation <sup>1</sup>	2.0%
Total Regulation, Standby Supply	5.0%
Ripple & Noise, Pk-Pk <sup>2</sup>	200mV
Voice Band Noise	<32dBmC
Dynamic Response <sup>3</sup>	300µS
Temperature Coefficient	±0.02%/°C
Minimum Load	0A
Current Limit	105% Rated Current
Overload Protection	Auto Recovery
Overvoltage Protection	Latched Shutdown
Remote Sense	Up to 0.25V Per Wire
Current Share	±10% Full Load Rating
Standby Output	+5V, 250mA
Output Power Good Signal	Logic Low
Input Power Fail Signal	Logic High
Inhibit	Logic Low
Enable	Logic Low
Thermal Warning	Logic High

### INPUT SPECIFICATIONS

Input Voltage Range	20-30VDC
Inrush Current Limiting	100A Peak
Input EMI Filter	Standard
Analog Voltage Adjust	0 to +5V
Input Immunity, Conducted	
Fast Transients, Line-Line	±500V (EN61000-4-4)
Surges, Line-Line	±500V (EN61000-4-5)
Surges, Input Ground	±500V (EN61000-4-5)
Input Protection	Internal Fuse, 100A

### GENERAL SPECIFICATIONS

Efficiency <sup>4</sup>	89% at Full Load
Switching Frequency	210kHz Nominal
Isolation, Class I, min. <sup>5</sup>	
Input-Output	2121VDC
Input-Ground	1000VDC
Output-Ground	100VDC
MTBF (Bellcore)	200,000 Hours
Safety Standards	EN60950, UL1950, CSA22.2 No.950

### ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to 70°C Ambient
Derating	2.5% / °C, 50°C to 70°C
Storage Temperature	-40°C to +85°C
Cooling	Integral Ball Bearing Fans

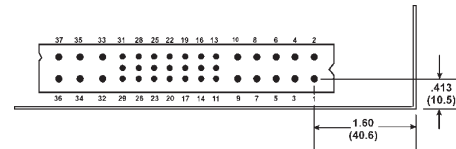
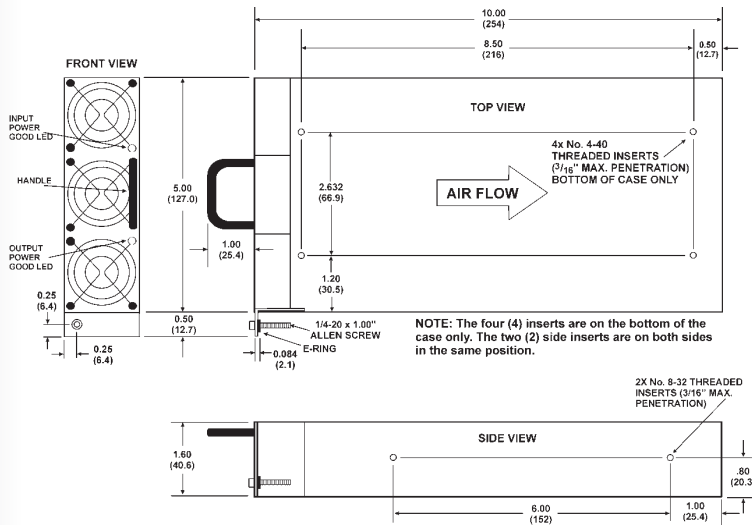
### PHYSICAL SPECIFICATIONS

Case Material, Module & Rack/Shelf	Aluminum
Dimensions, Inches(mm), Module	1.6 H x 5.0 W x 10.0 D (40.6 x 127 x 254)
Rack/Shelf	1.72H x 19.00 W x 11.56 D (44 x 483 x 294)
Weight, Module	3.15 lbs. (1.43 kg.)
Rack/Shelf	4.15 lbs. (1.88 kg.)

- NOTES:**
1. No load to full load, including line regulation and load regulation.
  2. Whichever is greater. 20MHz bandwidth. Measure with 0.1µF ceramic and 10µF tantalum capacitors in parallel across the output.
  3. <4% deviation recovering to within 1% for 25% load change. Typical efficiency is at low end of range for 12V output and at high end of range for 24V output.
  4. Input-output isolation figure is for isolation components only. 100% production Hipot tested input to ground.

**CONNECTOR: POSITRONICS PCIM37W16RM400A1  
MATE: PCIM37W16RF400A1**

### CASE OUTLINE



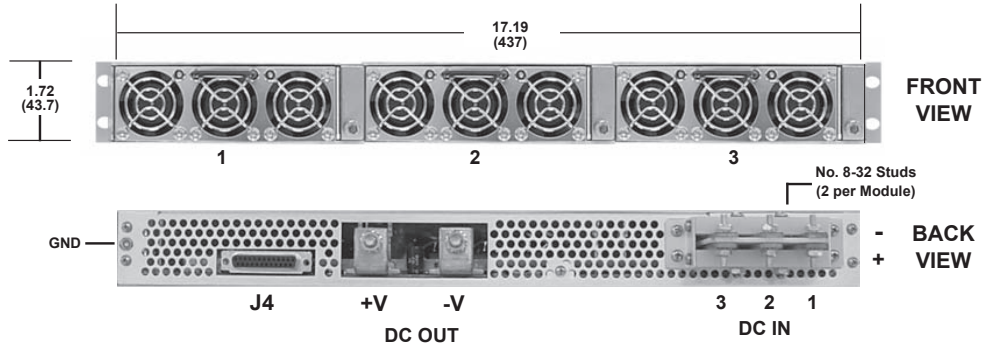
### PIN CONNECTIONS

PIN	FUNCTION	PIN	FUNCTION
1	-DC Input	20	Module Present
2	-DC Input	21	N.C.
3	-DC Input	22	Input Power Fail
4	-DC Input	23	N.C.
5	+DC Input	24	GA2
6	+DC Input	25	GA1
7	+DC Input	26	SCL
8	+DC Input	27	SDA
9	Chassis Ground	28	GAO
10	Chassis Ground	29	V. Adjust
11	N.C.	30	-Sense
12	Standby Return	31	+Sense
13	+5V Standby	32	-V Out
14	Output Power Good	33	-V Out
15	Overtemp. Warning	34	-V Out
16	Inhibit	35	+V Out
17	Enable	36	+V Out
18	Current Share	37	+V Out
19	Current Monitor		

**\*NOTES:** For unit to operate, pin 17 must be at logic LO or shorted to pin 30. For proper operation the following pins must be connected together: All +V Out pins (35-37); all -V Out pins (32-34). Pins 24-28 carry I<sup>2</sup>C functions when the I<sup>2</sup>C option is fitted.

ALL DIMENSIONS IN INCHES (mm).  
All specifications subject to change without notice.

**SPECIFICATIONS, TPCMQR1U3-24 RACKS/SHELVES**



**J4 SIGNAL CONNECTOR**



J4 PIN CONNECTIONS			
PIN	FUNCTION	PIN	FUNCTION
1	Inhibit	14	Input Power Fail - 1
2	Overtemp. Warning - 1*	15	Output Power Good - 1*
3	Current Monitor - 1*	16	Input Power Fail - 2
4	Overtemp. Warning -2*	17	Output Power Good - 2*
5	Current Monitor - 2*	18	Input Power Fail - 3
6	Overtemp. Warning - 3*	19	Output Power Good - 3*
7	Current Monitor - 3*	20	Module Present -1
8	+5V Standby	21	Module Present - 2
9	SDA	22	Module Present - 3
10	Current Share	23	- Sense
11	+Sense	24	Remote Adjust -1
12	Remote Adjust - 2	25	Remote Adjust - 3
13	SCL		

**NOTE:** Standby return is connected to -Sense lead. Current rating of +5V standby is 250mA. All signals are referenced to -Sense lead. Pins 9 and 13 are I<sup>2</sup>C outputs when that option is present.

**MAXIMUM RATED OUTPUT FOR 3 MODULES**

MODULES	NON-REDUNDANT	2+1 REDUNDANT
TPCMQ24-48/20	48VDC@ 62.4A	48VDC@ 41.6A
TPCMQ24-54/18	54.4VDC@ 55.2A	54.4VDC@ 36.8A

**RACK ACCESSORIES**

<b>Relay Alarm Adaptor:</b>	
Plugs into rear mounted signal connector and converts DC Good output for each module into Form-C relay contact output.	Pt. No. 009-1005-0000

**NOTES:**

1. All connections are made to the rear of the rack/shelf. The modules are 1, 2, 3, from left to right as seen from the front of the rack/shelf.
2. All module outputs are connected in parallel in the rack/shelf with active current sharing between them.
3. There is a separate DC input for each module, but the inputs may be paralleled by means of two shorting bars. Order kit no. 775-1462-0000 for the two bars.
4. The Module Present outputs (J4 pins 20, 21 & 22) are grounded (to -Sense) when the module is plugged in and open when the module is out.
5. For details on the I<sup>2</sup>C function (option Z), contact the factory.

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