

## PowerCassette®: 1U HIGH RACK-MOUNT DC/DC CONVERTERS 48VDC to 12 or 24VDC at 700 Watts with Hot Swap

### FEATURES

- Isolated 5V, ¼A Standby Output
- Hot-Swap Operation
- 12 or 24 VDC Output
- Up to 2100 Watts System Output
- Remote Output Adjustment
- Wide Range 40 to 60VDC Input
- Integral LED Status Indicators
- -20°C to +70°C Operating
- I<sup>2</sup>C Serial Data Bus Option
- Up to 8.8 Watts/Cubic Inch Power Density
- Low Profile: 1.6 Inches High
- Single Hot-Swappable Connector
- Reverse Air Flow Option
- 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



TPCMQ48 Series

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



**Three-Unit Rack/Shelf**  
TPCMQR1U3-48



LVD73/23/EEC

**TWO-YEAR WARRANTY**  
Patent Protected

### STANDARD MODULES

MAX. OUTPUT POWER	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT VOLTAGE	MODEL NUMBER
650W	12VDC	54.2A	40-60VDC	TPCMQ48-12/54
650W	13.6VDC	47.8A	40-60VDC	TPCMQ48-13/48
700W	24VDC	29.2A	40-60VDC	TPCMQ48-24/29
700W	27.2VDC	25.7A	40-60VDC	TPCMQ48-27/26

**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
TPCMQR1U3-48	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.

### OPTIONS

CODE	DESCRIPTION	OUTPUT DERATING
R	Reverse Air Flow (Back to Front)	20%
Z	I <sup>2</sup> C Serial Data Bus	N/A

**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, TPCMQ48 SERIES DC/DC CONVERTERS

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

## OUTPUT SPECIFICATIONS

Total Output Power, Continuous, Max. .... 650-700 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 ..... 40-60VDC  
 Inrush Current Limiting ..... 10A 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, 30A

## GENERAL SPECIFICATIONS

Efficiency<sup>4</sup> ..... 82-88% 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

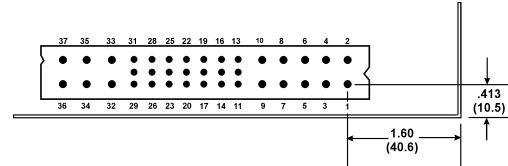
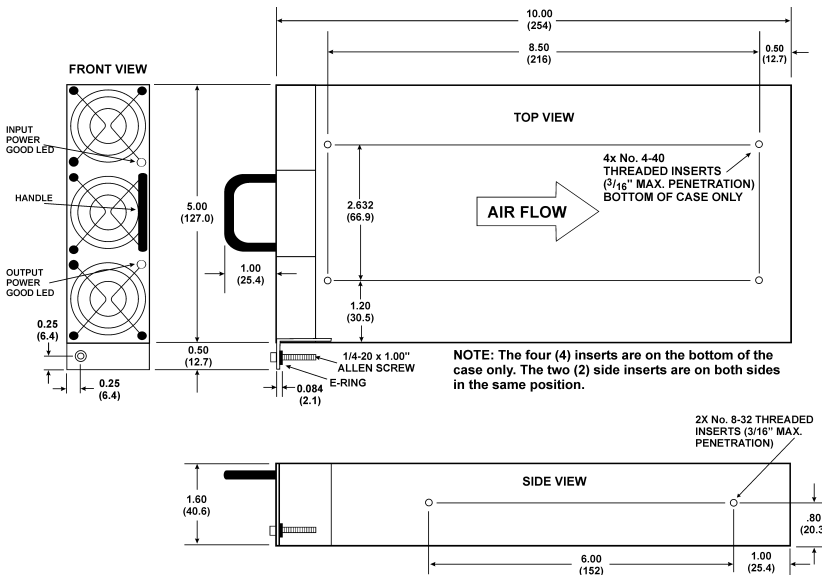
## PHYSICAL SPECIFICATIONS

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.
  4. Typical efficiency is at low end of range for 12V output and at high end of range for 24V output.
  5. 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	+V Out	14	Output Power Good/ADD GA1
2	+V Out	15	Input Power Fail
3	+V Out	16	V Trim
4	V Return	17	Overtemp. Warning/ADD GA0
5	V Return	18	Current Share
6	V Return	19	Current Monitor/ADD GA2
7	Enable	20	+ 5V Standby
8	+Sense	21	Standby Return
9	- Sense	22	Chassis Ground
10	Inhibit	23	Chassis Ground
11	Spare/SDA	24	- DC Input
12	Spare/SCL	25	- DC Input
13	- Sense	26	+ DC Input

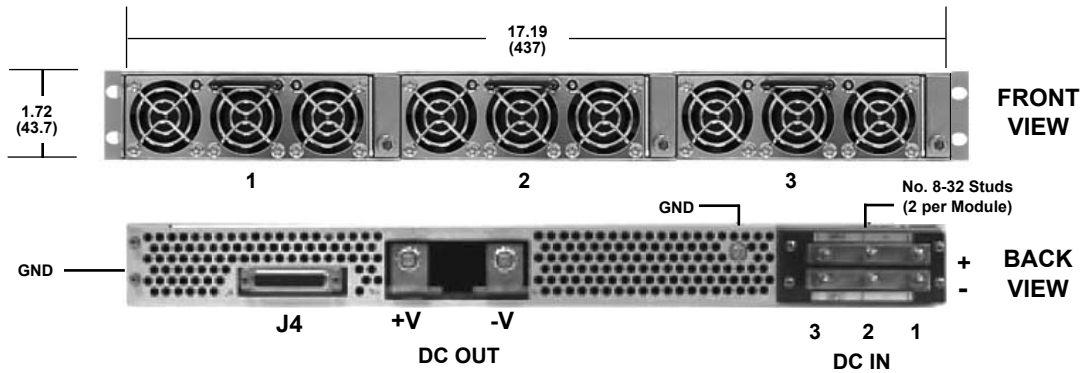
**\*NOTES:** For unit to operate, pin 7 must be at logic LO or shorted to pin 9. For proper operation the following pins must be connected together: All V Out pins (1-3); all V Return pins (4-6). Pins 11, 12, 14, 17 & 19 carry I<sup>2</sup>C functions when the I<sup>2</sup>C option is fitted.

## MATING INTERFACE BOARD

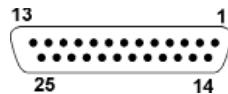
Order Kit Number  
 009-0280-0009

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

## SPECIFICATIONS, TPCMQR1U3-48 RACKS/SHELVES



### J4 SIGNAL CONNECTOR



Standard 25-Pin  
Subminiature D 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		

MODULES	MAXIMUM RATED OUTPUT FOR 3 MODULES	
	NON-REDUNDANT	2+1 REDUNDANT
TPCMQ48-12/24	12VDC @ 150.0A	12VDC @ 108.4A
TPCMQ48-13/48	13.6VDC @ 143.4A	13.6VDC @ 143.4A
TPCMQ48-24/29	24VDC @ 87.6A	24VDC @ 58.4A
TPCMQ48-27/26	27.2VDC @ 77.1A	27.2VDC @ 51.4A

**NOTE:** Standby return is connected to -Sense lead. Current rating of +5Vstandby 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.

RACK ADAPTOR MODULES & ACCESSORIES: Order by Part No.		
Type	Function	PART NO.
Relay Adaptor	Converts TTL level DC Good signal to Form-C dry contact. (See separate datasheet for details.)	009-1005-0000
SNMP Adaptor	Sends SNMP Alarm Traps over an TCP/IP Ethernet network on change of state of the DC Good signals. (See separate datasheet for details.)	009-1006-0000
I <sup>2</sup> C Adaptor	Required when using with DSC1000 Controller. Specify -Z option. (See DSC1000 Manual for full details.)	009-1001-0000
Blanking Kit	Used to blank off unused module slots. One fitted as standard.	775-1450-0010

### NOTES:

- 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.
- All module outputs are connected in parallel in the rack/shelf with active current sharing between them.
- There is a separate DC input for each module, but the inputs may be paralleled by means of two shorting bars. Order kit no. 775-1461-0000 for the two bars.
- 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.
- For details on the I<sup>2</sup>C function (option Z), contact the factory.