

## Series TPCM

### AC/DC and DC/DC Power Supply up to 800W AC and 700W DC, 1000W DC

Includes Isolated 5V, ¼ A Standby Output  
Hot-Swap or Chassis Mount Versions  
12, 24, 48 or 54,4 VDC Outputs  
Integral LED Status Indicators  
I<sup>2</sup>C Serial Data Bus Option  
Low Profile: 1.6 Inches High  
Single Hot-Swappable Connector  
Staged Pin Engagement  
ORing Diode on Output  
1U, 19" Racks Hold 2 or 3 Units\*  
Active Current Sharing  
Optimized Thermal Management  
No Minimum Load  
Control & Monitoring Features



Three-Unit Rack

#### AC/DC Version

#### OUTPUT SPECIFICATIONS

Total Output Power, Continuous, Max	480-800 Watts
Voltage Adjustment Range, Min.	±5%
Total Regulation <sup>1</sup>	2.0%
Total Regulation, Standby Supply	5.0%
Ripple & Noise, Pk-Pk <sup>2</sup>	1%
Holdup Time	20mS
Dynamic Response <sup>3</sup>	300µS
Temperature Coefficient	±0.02%/°C
Minimum Load	0A
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
DC Power Good Signal	Logic Low
AC Power Fail Signal	Logic High
Global Inhibit	Logic Low
Enable	Logic Low
Thermal Warning	Logic High

#### INPUT SPECIFICATIONS

Input Voltage Range	85-264VAC
Power Factor	0.99
Input Frequency	47-63Hz
Inrush Current Limiting	30A Peak
Input EMI Filter	EN55022 Curve B FCC20780 pt. 15J Curve B EN61000-3-2
Harmonic Distortion	
Input Immunity, Conducted	
Fast Transients, Line-Line	±2kV (EN61000-4-4 Level 3)
Surges, Line-Line	±2kV (EN61000-4-5 Level 3)
Surges, Line-Ground	±4kV (EN61000-4-5 Level 4)
Input Protection	Internal Fuse, 20A

#### GENERAL SPECIFICATIONS

Efficiency <sup>4</sup>	80-87% at Full Load
Switching Frequency, PFC Converter	48-110kHz
Output Converter	275kHz Nominal
Isolation, Class I, min. <sup>5</sup>	
Input-Output	3000VAC
Input-Ground	1500VAC
Output-Ground	50VDC
MTBF (Bellcore)	200,000 Hours
Safety Standards	EN60950, UL1950, CSA22.2 No.950

#### ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	0° 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	Aluminum
Dimensions, Inches(mm)	1.6 H x 5.0 W x 10.0 D (40.6 x 127 x 254)
Weight	2.9 lbs. (1.3 kg.)

#### NOTES:

1. No load to full load, including line regulation and load regulation.
2. 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 48V output.
5. Input-output isolation figure is for isolation components only. 100% production Hipot tested.

Typical at Nominal 115/230VAC Line, Full Load and 25°C Unless Otherwise Noted.

DC/DC Version

### OUTPUT SPECIFICATIONS

Total Output Power, Continuous	see model table
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	see model table
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	TPCMQ24: Internal Fuse, 20A TPCMQ48: Internal Fuse, 30A

### 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)	1.6 H x 5.0 W x 10.0 D (40.6 x 127 x 254)
Rack/Shelf	1.72H x 19.00W x 11.56D (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.

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

### STANDARD & OPTIONAL MODELS "AC/DC"

Delete "T" prefix to model no. for chassis mount version.

CONFIGURATION	MAX. OUTPUT POWER	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT VOLTAGE	PFC	MODEL NUMBER
 Standard Rear Input/Output	650W 700W 800W	12VDC 24VDC 48VDC	54.2A 29.2A 16.7A	85-264VAC 85-264VAC 85-264VAC	YES YES YES	TPCM3000 TPCM5000 TPCM7000
 Optional Front IEC Input	480W 525W 600W	12VDC 24VDC 48VDC	40.0A 21.9A 12.5A	85-264VAC 85-264VAC 85-264VAC	YES YES YES	TPCM3000E TPCM5000E TPCM7000E

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

### STANDARD MODULES "DC/DC"

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
1000W	54.4VDC	18.4A	20-30VDC	TPCMQ24-54/18
1000W	48VDC	20.8A	20-30VDC	TPCMQ24-48/20

### Options

CODE	OPTION	OUTPUT DERATING
R <sup>1)</sup>	Reverse Air Flow (Back to Front) on Standard Models	20%
R <sup>2)</sup>	Reverse Air Flow on "E" Suffix Models	16.6%
Z	I <sup>2</sup> C Serial Data Bus	N/A

**NOTE:** Add Option Code as suffix to model no. See picture of Option E on next page. Contact factory on availability of Option Z.

1) Only for TPCMQ48.

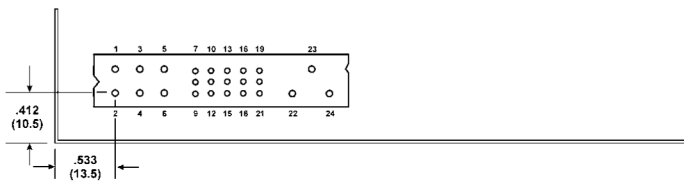
2) Only for AC/DC IEC Input version.

### Rack Mount Ordering:

Please contact Zentro-Elektrik

# AC/DC Einbaunetzgeräte

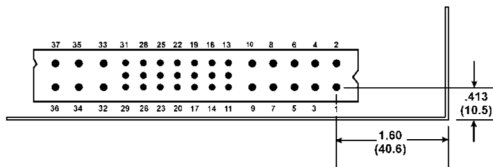
CONNECTOR:  
PCM/TPCM Series (AC/DC)  
POSITRONICS PCIB24W9M400A1  
MATE: PCIB24W9F400A1



PIN CONNECTIONS			
PIN	FUNCTION	PIN	FUNCTION
1	+V Out*	13	Module Present
2	+V Out*	14	DC Power Good/ADD GA1*
3	+V Out*	15	AC Power Fail
4	V Return*	16	V Trim
5	V Return*	17	Overtemp. Warning/ADD GA0*
6	V Return*	18	Current Share
7	Enable*	19	Current Monitor/ADD GA2*
8	+ Sense	20	+5V Standby
9	- Sense	21	Standby Return
10	Inhibit	22	Chassis Ground
11	Spare/SDA*	23	AC Line
12	Spare/SCL*	24	AC Neutral

**\*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 function as I<sup>2</sup>C outputs when that option is present. For I<sup>2</sup>C operation pin 21 must be connected to pin 9.

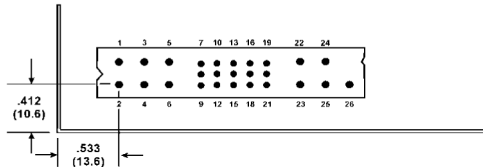
CONNECTOR:  
TPCMQ24Series (DC/DC)  
POSITRONICS PCIM37W16RM400A1  
MATE: PCIM37W16RF400A1



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	GA0
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.

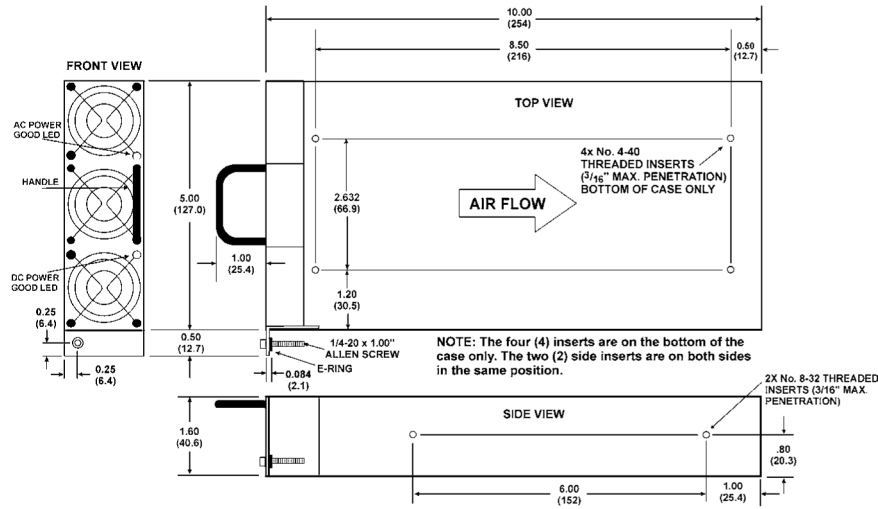
CONNECTOR:  
TPCMQ48Series (DC/DC)  
POSITRONICS PCIB26W11M400A1  
MATE: PCIB26W11F400A1



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

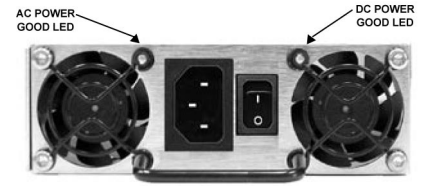
**\*NOTES:** For unit to operate, pin 7 must be at logic LO or shorted to pin 9. For proper operation the following pins must be connected together: All V Out pins (1-3); all V Return pins (4-6). Pins 11, 12, 14, 17 & 19 carry I<sup>2</sup>C functions when the I<sup>2</sup>C option is fitted.

**CASE OUTLINE:**

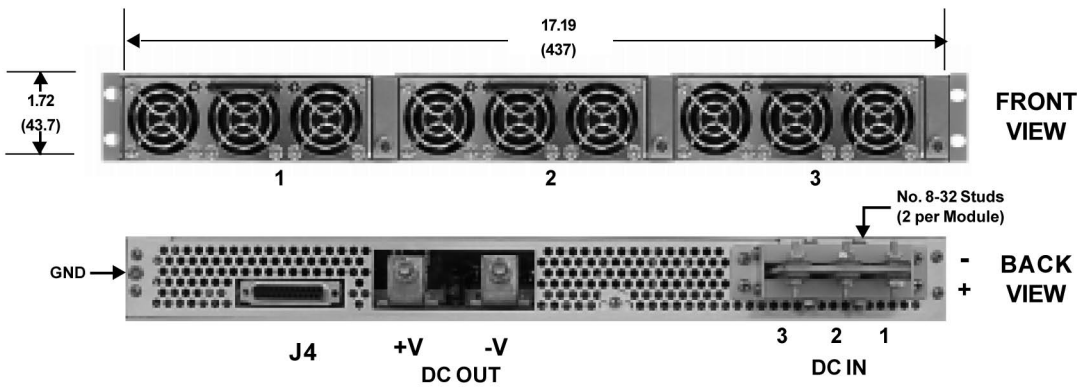


ALL DIMENSIONS IN INCHES (mm).

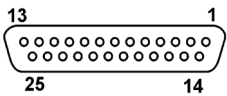
**IEC Input Version (Option E)**



**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.

All specifications subject to change without notice.

**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
TPCMQ48-12/54	12VDC@150.0A	12VDC @108.4A
TPCMQ48-13/48	13.6VDC@143.4A	13.6VDC@ 95.6A
TPCMQ48-24/29	24VDC@ 87.6A	24VDC@ 58.4A
TPCMQ48-27/26	27.2VDC@ 77.1A	27.2VDC@ 51.4A

**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.