



# LaMARCHE®

ISO 9001 CERTIFIED

**TPM SYSTEMS**  
**SWITCHMODE RECTIFIER SYSTEMS**



19" and/or 23" TPM Cage shown above with (4) TPM Rectifiers

## **TOTAL POWER MODULE SWITCHMODE RECTIFIER SYSTEMS**

The LaMarche TPM (Total Power Module) Switchmode Rectifier Systems are compact self contained Power Systems that provide the Modular Power that today's Telecommunications, Process Control and Utility Substation applications require. The TPM Switchmode Rectifier is the building block of these reliable systems utilizing advanced switching technology. Its filtered output provides the clean power required for sensitive loads.

The TPM is rated at 750 watts and available in 24V (30 amps) and 48V (15 amps) versions. A 12V TPM module is also offered and rated at 375 watts (30 amps). The Rectifier modules are hot-swappable plug-in type. Replacement is swift and simple, and achieved without affecting the integrity of the system.

The universal input voltage range of 102-264VAC and frequency of 47-63Hz is ideal for power demands throughout the world. The AC input and DC output wiring of the Rectifiers can be done either in pairs from the same side of the cage or as a complete system. A convenient AC input cord (6 ft long, 20A rated) is supplied to power each pair of TPMs Rectifiers per cage. The DC output wiring is done by hardwiring to the provided busbar.

Flexibility is given to hardwire a single connection for all Rectifiers or for each pair of Rectifiers per cage. This allows for custom field installations and gives greater system flexibility to suit the customer needs and preferences.

TPM Systems are factory configured with one to four Modules in a single Cage. Distribution Modules consisting of either GMT Fuses or Breakers can share a Cage with the Rectifiers to form a complete Power System.

A wall mounting configuration is offered for smaller load requirements or when rack mounting is not available. One or two TPM's can be fitted in our TPW cage. A separate Distribution Module can also be provided.

Rely on LaMarche quality, reliability and performance to power your present and future system needs.

### **Standard Features**

- High Frequency Switchmode Circuitry provides High Power Density
- Hot Plug-In feature provides easy replacement without disturbing System operation
- 24 and 48VDC Versions—750 Watts Output Power
- 12VDC Version—375 Watts Output Power
- 19" and 23" Rack Mounting (using TPC cages)
- Wall Mounting Configurations (using TPW cages)
- Universal Input Voltage Range from 102-264VAC and Frequency Range of 47-63Hz
- AC Input Breaker Mounted on Cage for each TPM
- Output Voltage Adjustment Potentiometer
- Test Points for Measuring Output Current and Voltage using a Precision Multi-Meter
- Current Limiting Circuitry of 105% maximum (factory adjusted)
- Power Factor Correction better than 0.95 within 20-100% of rated load
- Filtered/Battery Eliminator Design—less than 150mVp-p, 32dB RN "C" message weighted with or without Batteries
- 82% Efficiency within 50 to 100% of rated load
- Forced Load Sharing Circuitry (10% of rated load)
- Soft Walk-in Circuit
- Over Temperature and Voltage Protection
- Rectifier Failure Alarm with (1) set of Form "C" contacts with Light (Alarm will initiate for either Low Voltage, High Voltage Shutdown, Low DC Current, Rectifier Failure or AC Power Failure/AC Breaker Tripped)
- 6ft (1.83m) 20Amp Power Cord supplied with Cage for every (2) TPM modules
- 2-year Warranty

**LaMarche Manufacturing Company**  
106 Bradrock Drive, Des Plaines, IL 60018-1967  
Tel: 847-299-1188 Toll Free Fax: 888-232-9562  
sales@lamarchemfg.com www.lamarchemfg.com

## SPECIFICATIONS

### ELECTRICAL

#### AC INPUT

##### Voltage Range

102-264VAC, single phase

##### Frequency Range

47-63Hz

##### Power Factor Correction

Better than 0.95 within 20 to 100% of rated load

##### Protection

AC Breaker provided on Cage for each unit

#### DC OUTPUT

##### Adjustable Output Voltage Range

12 to 14.5VDC on 12V models

24 to 29VDC on 24V models

48 to 58VDC on 48V models

##### Power

375W per 12VDC module, 1500 Watts per Cage

750W per 24 & 48VDC module, 3000 Watts per Cage

##### Voltage Regulation

± 0.6% Total DC Voltage Regulation (Measured at Rectifier side of blocking diode)

##### Current Limit

105% of rated output maximum (factory adjusted)

##### Load Sharing

Forced Load Sharing Circuitry

(10% of rated load)

##### Protection

Over Voltage, Over Temperature

##### Efficiency

82% within 50-100% of rated load

##### Ripple and Noise

Less than 150mV peak to peak, 32dB<sub>RNC</sub> "C" message weighted, with or without batteries

##### Test Points

For output current and output voltage using a precision digital voltmeter

### ENVIRONMENTAL

FCC Approved Part 15, Subpart B, Class A

IEC-555-2 Compliant

Operating Temperature: 0 to 50° C (32 to 122° F)

Storage Temperature: -40 to 85° C (-40 to 185° F)

Relative Humidity: 0 to 95% (non-condensing)

Altitude: 0 to 3,000 meters (10,000 ft)

### ENCLOSURES

#### TPM Rectifiers

##### Dimensions

3.25"W x 11.0"D x 5.25"H (83 x 279 x 133 mm)

##### Weight

4 lbs each (1.8 kgs)

##### Mounting

19"/23" Rack Mount TPC Cages or TPW Wall Mount Cages

#### TPC Cages

##### Dimensions for 19" Rack

18.25"W x 15.29"D x 7"H (464 x 388 x 178 mm)

##### Dimensions for 23" Rack

18.25"W x 15.00"D x 5.25"H (464 x 381 x 133 mm)

##### Weight

23lbs to 26 lbs (10.5kgs to 11.8 kgs)

TPC23: 36 lbs (16.4kgs)

##### Mounting

TPC = 3 RU's

TPC23 = 4 RU's

### AGENCY APPROVALS

U.L. Recognized Component

### TPM Modules

| Model Number  | DC Amps | DC Volts | AC Input Voltage Range | Typical AC Input Current Draw @ 100% Load* (Amps) |
|---------------|---------|----------|------------------------|---|
| TPM-30-12V-U1 | 30      | 12       | 102-264                | 5   |
| TPM-30-24V-U1 | 30      | 24       | 102-264                | 9   |
| TPM-15-48V-U1 | 15      | 48       | 102-264                | 8.5   |

### TPC Cages

| Model Number    | Description                     | No of Available Bays | DC Amps | DC Volts | No of Input Cords | Rack Mounting |
|-----------------|---------------------------------|----------------------|---------|----------|-------------------|---------------|
| TPC-120-12V-U1  | 1-4 modules                     | 4                    | 120     | 12       | 2                 | 19"/23"       |
| TPC-120-24V-U1  |                                 |                      | 120     | 24       | 2                 | 19"/23"       |
| TPC-60-48V-U1   |                                 |                      | 60      | 48       | 2                 | 19"/23"       |
| TPC-60-12V-U1   | 1-2 modules with TPCD or TPCDB1 | 2 + 1                | 60      | 12       | 1                 | 19"/23"       |
| TPC-60-24V-U1   |                                 |                      | 60      | 24       | 1                 | 19"/23"       |
| TPC-30-48V-U1   |                                 |                      | 30      | 48       | 1                 | 19"/23"       |
| TPC23-60-48V-U1 | 1-4 modules with TPCD or TPCDB1 | 4 + 1                | 60      | 48       | 2                 | 23"           |

Units can be mounted flush with the rack or moved forward 5 inches (127mm).

Allow an additional .75 inches (19mm) for handles.



TPC cage 19.0" or 23.0" mounting reversible flange provided

TPC Rectifier Cage with (2) TPM Rectifiers and TPCD Fuse Distribution Module



TPC23 cage 23.0" mounting only

TPC23 Rectifier Cage with (4) TPM Rectifiers and TPCDB1 Breaker Distribution Module

## TPCD (GMT Fuses) / TPCDB1 (Breakers) Distribution Modules

| Model Number   | DC Volts | DC Amps Rating | Battery Disconnect Breaker | GMT Fuses Qty (12) 0-10A | 1-Pole Breakers Qty (7) 10A | LVLD Low Voltage Load Disconnect | Digital Meter & Alarm | Shipping Weight (Approximate) |     |
|----------------|----------|----------------|----------------------------|--------------------------|-----------------------------|----------------------------------|-----------------------|-------------------------------|-----|
|                |          |                |                            |                          |                             |                                  |                       | lbs                           | kgs |
| TPCD-30-12V    | 12       | 30             | 40A                        | ✓                        | ---                         | ✓                                | ---                   | 7                             | 3.2 |
| TPCD-30-24VN   | 24       | 30             | 40A                        | ✓                        | ---                         | ✓                                | ---                   | 7                             | 3.2 |
| TPCD-30-48V    | 48       | 30             | 40A                        | ✓                        | ---                         | ✓                                | ---                   | 7                             | 3.2 |
| TPCDB1-60-12V  | 12       | 60             | 70A                        | ---                      | ✓                           | ✓                                | ✓                     | 9                             | 4.1 |
| TPCDB1-60-24VN | 24       | 60             | 70A                        | ---                      | ✓                           | ✓                                | ✓                     | 9                             | 4.1 |
| TPCDB1-60-48V  | 48       | 60             | 70A                        | ---                      | ✓                           | ✓                                | ✓                     | 9                             | 4.1 |

Above 12V & 48V Distribution Modules are configured for Positive Ground System as standard. For Negative Ground System order part number with "N" following voltage. Above 24V Distribution Modules are configured for Negative Ground System - delete "N" in part number to order Positive Ground. Please consult factory for other available Distribution Module configurations should above not meet your requirement.

### TPCD Distribution Module - GMT Fuses

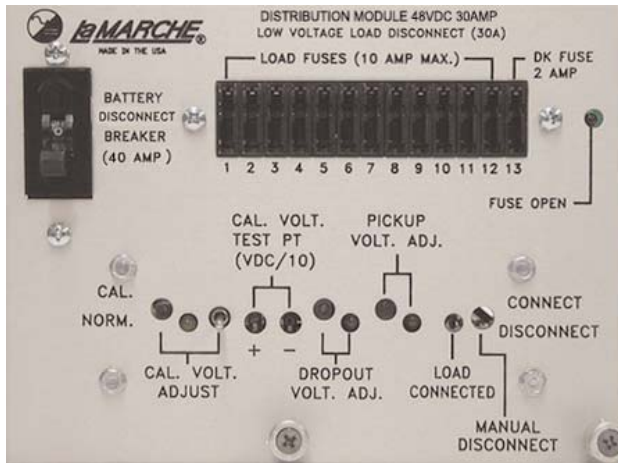
#### Features

- 12, 24 & 48VDC versions
- Maximum system current rating of 30A
- Low Voltage Disconnect w/field adjustable calibration mode and Alarm with (1) set of Form "C" contacts
- 40 Amp battery Disconnect Breaker
- (12) 0-10 GMT type Fuses
- Fuse open Alarm with (1) set of Form "C" contacts & LED indicator
- Low Voltage Alarm with (1) set of Form "C" contacts
- Front panel adjustments for all Alarm set points

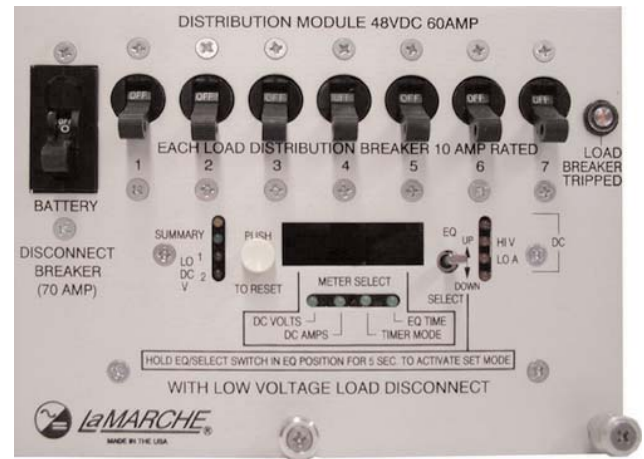
### TPCDB1 Distribution Module - Breakers

#### Features

- 12, 24 & 48VDC
- Maximum system current rating of 60Amp
- Switch selectable 1% Load Digital Ammeter/Voltmeter
- Low Voltage Disconnect w/field adjustable calibration mode
- 70 Amp Battery Disconnect Breaker
- (7) 10 Amp single pole Breakers
- Summary Alarm with (2) sets of Form "C" contacts indicating Low DC Current, Low DC Voltage, Low Voltage Disconnect, High Voltage, Rectifier Failure, Breaker Tripped
- Low DC Current, Low DC Voltage, Critical (2nd) Low DC Voltage, High DC Voltage and Summary Alarm LED's



The TPCD GMT Fuse Distribution Modules are rated at 30A of maximum capacity and occupy (2) bay positions within our TPC cages. The TPCD Modules incorporate the most common features required to distribute your loads without having to resort to a larger chassis. The TPCD's are equipped with (12) GMT type Fuses for distribution of supervisory equipment. A 40 Amp Battery Disconnect allows the user to manually disconnect the battery bank for servicing or for replacement purposes. A Fuse Open Alarm consisting of a set of Form "C" contacts is provided to remotely report this Alarm condition along with an LED on the front panel for local supervision. An LVLD (Low Voltage Load Disconnect) is included to automatically disconnect the load from the system to prevent the battery from being overly discharged. A Bus return and terminal strip connector for the load side connection (#12 AWG wire) and a 70A Battery terminal strip to accommodate #6 AWG wire is provided for the battery connection.



The TPCDB1 Breaker Distribution Modules are rated at 60A of maximum capacity. Like the TPCD Fuse version, (2) bay positions are required within our TPC Cages. The TPCDB1's feature a digital switch selectable 1% accuracy Ammeter/Voltmeter. The TPCDB1's are equipped with (7) single pole 10 Amp Breakers for distribution of loads. A 70 Amp Battery Disconnect allows the user to manually disconnect the Battery Bank for servicing or for replacement purposes. A Breaker Tripped Alarm consisting of a set of Form "C" contacts is provided to remotely report this Alarm condition along with an LED on the front panel for local supervision. An LVLD (Low Voltage Load Disconnect) is included to automatically disconnect the load from the system to prevent the Battery from being overly discharged. A Bus return and terminal strip connector for the load side connection (#12AWG wire) and a 70A Battery terminal strip to accommodate #6 AWG wire is provided for the battery connection.

# TPM SYSTEMS

## SWITCHMODE RECTIFIER SYSTEMS

### TPW Wall Mounted Systems

| Model Number    | Mounting Type | No of Available Bays | DC Volts | DC Amps Rating | Overall Dimensions<br>Width x Depth x Height |             | Shipping Weight<br>(Approximate) |     |
|-----------------|---------------|----------------------|----------|----------------|--|-------------|----------------------------------|-----|
|                 |               |                      |          |                | in   | mm          | lbs                              | kgs |
| TPWH1-30-12V-U1 | Hinge         | 1                    | 12       | 30             | 15.08x6.38x7.00                              | 383x162x133 | 16                               | 7.3 |
| TPWH1-30-24V-U1 | Hinge         | 1                    | 24       | 30             |  |             | 16                               | 7.3 |
| TPWH1-15-48V-U1 | Hinge         | 1                    | 48       | 15             |  |             | 16                               | 7.3 |
| TPWH2-60-12V-U1 | Hinge         | 2                    | 12       | 60             | 15.08x9.30x5.22                              | 383x236x133 | 17                               | 7.7 |
| TPWH2-60-24V-U1 | Hinge         | 2                    | 24       | 60             |  |             | 17                               | 7.7 |
| TPWH2-30-48V-U1 | Hinge         | 2                    | 48       | 30             |  |             | 17                               | 7.7 |
| TPW2-60-12V-U1  | Standard      | 2                    | 12       | 60             | 17.78x9.30x7.72                              | 451x236x196 | 10                               | 4.5 |
| TPW2-60-24V-U1  | Standard      | 2                    | 24       | 60             |  |             | 10                               | 4.5 |
| TPW2-30-48V-U1  | Standard      | 2                    | 48       | 30             |  |             | 10                               | 4.5 |
| TPWD-60-12V     | Standard      | Distribution         | 12       | 60             | 13.70x6.50x7.00                              | 348x165x178 | 12                               | 5.5 |
| TPWD-60-24V     | Standard      | Distribution         | 24       | 60             |  |             | 12                               | 5.5 |
| TPWD-60-48V     | Standard      | Distribution         | 48       | 60             |  |             | 12                               | 5.5 |

Above TPWD 12V & 48V Distribution Modules are configured for Positive Ground System as standard. For Negative Ground System order part number with "N" following voltage. Above TPWD 24V Distribution Module is configured for Negative Ground System—delete "N" in part number to order Positive Ground.

The LaMarche TPW (Wall Mounted Systems) offers an alternative solution to relay rack mounting for applications requiring a small and highly compact DC Power System. Designed to contain LaMarche TPM Rectifiers, the TPW enclosure's versatility can be used in a wide variety of applications, including Process Control, Utility Substation, and Telecommunications.

The TPWH1 (single TPM) and TPWH2 (dual TPM capability) features a hinged wall mounted bracket for either right or left swing out. This allows for front accessibility and simplifies the installation and removal of TPM units in tight quarters.

The TPW2 version is a fixed wall mounted enclosure for use where space is not restrictive. With dual Rectifier capability—(2) TPM Rectifiers can be installed to provide redundancy or to simply increase the system's capacity.

The TPWD is a wall mounted Distribution system offered in conjunction with a TPW enclosure to form a complete DC Power System. Standard features include (9) 10A GMT Load Fuses, Battery and Rectifier Terminal Connections, Single Form "C" Blown Load Fuse Alarm Contacts and LED, and Load and Common Return Terminal Strip Connections. The front panel of the TPWD enclosure has a hinged front door which allows easy access for wiring connections in the field.

A Low Voltage Load Disconnect Relay with factory settings and LED's indicating Connect/Disconnect and Single Form "C" Low Voltage Alarm Contacts is offered as an option. The maximum rating of the TPWD Distribution system is 60 Amps.

### TPW Enclosures



TPWH1 Hinged Single Rectifier Bay shown above with hinge on left hand side



TPW2 Standard (non-hinged) Dual Rectifier Bay shown above

### TPWD Distribution Module



Specifications subject to change without notice

P25-DSTPM-1  
ECN 15551  
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106 Bradrock Drive, Des Plaines, IL 60018-1967  
Tel: 847-299-1188 Toll Free Fax: 888-232-9562  
sales@lamarchemfg.com www.lamarchemfg.com