BPM Series

Metered Rack Mount PDUs

Models Covered:

BPM-8HS20-1	BPM-16VS30-1	BPM-24VS30-1	BPM-24VS30-D
BPM-8HS20-2	BPM-16VS30-2	BPM-24VS30-2	BPM-24VS30-Y
BPM-16VS20-1	BPM-24VS20-1	BPM-24VS20-D	
BPM-16VS20-2	BPM-24VS20-2	BPM-24VS20-Y	

Quick Start Guide

**western™
telematic, inc.**

Warnings and Cautions:
Installation Instructions

Secure Racking

If Secure Racked units are installed in a closed or multi-unit rack assembly, they may require further evaluation by Certification Agencies. The following items must be considered.

1. The ambient within the rack may be greater than room ambient. Installation should be such that the amount of air flow required for safe operation is not compromised. The maximum temperature for the equipment in this environment is 55°C. Consideration should be given to the maximum rated ambient.

2. Installation should be such that a hazardous stability condition is not achieved due to uneven loading.

Input Supply

Check nameplate ratings to assure there is no overloading of supply circuits that could have an effect on overcurrent protection and supply wiring.

Grounding

Reliable earthing of this equipment must be maintained. Particular attention should be given to supply connections when connecting to power strips, rather than direct connections to the branch circuit.

No Serviceable Parts Inside; Authorized Service Personnel Only

Do not attempt to repair or service this device yourself. Internal components must be serviced by authorized personnel only.

- **Shock Hazard - Do Not Enter**

Disconnect Power

If any of the following events are noted, immediately disconnect the unit from the outlet and contact qualified service personnel:

1. If the power cord becomes frayed or damaged.

2. If liquid has been spilled into the device or if the device has been exposed to rain or water.

Units with Attached Power Supply Cable(s)

For BPM units that include attached power supply cable(s), the socket outlet(s) shall be installed near the equipment and shall be accessible.

1.   Introduction

BPM series Metered Rack Mount PDUs allow you to measure current consumption for your rack mount equipment. The BPM includes power branches with UL 489 breakers for branch circuit protection and features the ability to display current consumption at each branch separately, or display the combined total current consumption for both power branches. If current consumption exceeds 80% of the breaker rating, the BPM can also sound an audible alarm to notify the operator.

Refer to the table below for information concerning power requirements and maximum loads.

Model No.	Input Voltage	Input Feed	Max. Load per Input *
BPM-8HS20-1	100 to 120 VAC	20 Amps	16 Amps *
BPM-8HS20-2	100 to 240 VAC	20 Amps	16 Amps *
BPM-16VS20-1	100 to 120 VAC	20 Amps	16 Amps *
BPM-16VS20-2	100 to 240 VAC	20 Amps	16 Amps *
BPM-16VS30-1	100 to 120 VAC	30 Amps	24 Amps *
BPM-16VS30-2	100 to 240 VAC	30 Amps	24 Amps *
BPM-24VS20-1	100 to 120 VAC	20 Amps	16 Amps *
BPM-24VS20-2	100 to 240 VAC	20 Amps	16 Amps *
BPM-24VS30-1	100 to 120 VAC	30 Amps	24 Amps *
BPM-24VS30-2	100 to 240 VAC	30 Amps	24 Amps *
BPM-24VS20-D	208 VAC, 3 Phase Delta	20 Amps	16 Amps per Phase*
BPM-24VS20-Y	208 VAC, 3 Phase Wye	20 Amps	16 Amps per Phase*
BPM-24VS30-D	208 VAC, 3 Phase Delta	30 Amps	24 Amps per Phase*
BPM-24VS30-Y	208 VAC, 3 Phase Wye	30 Amps	24 Amps per Phase*

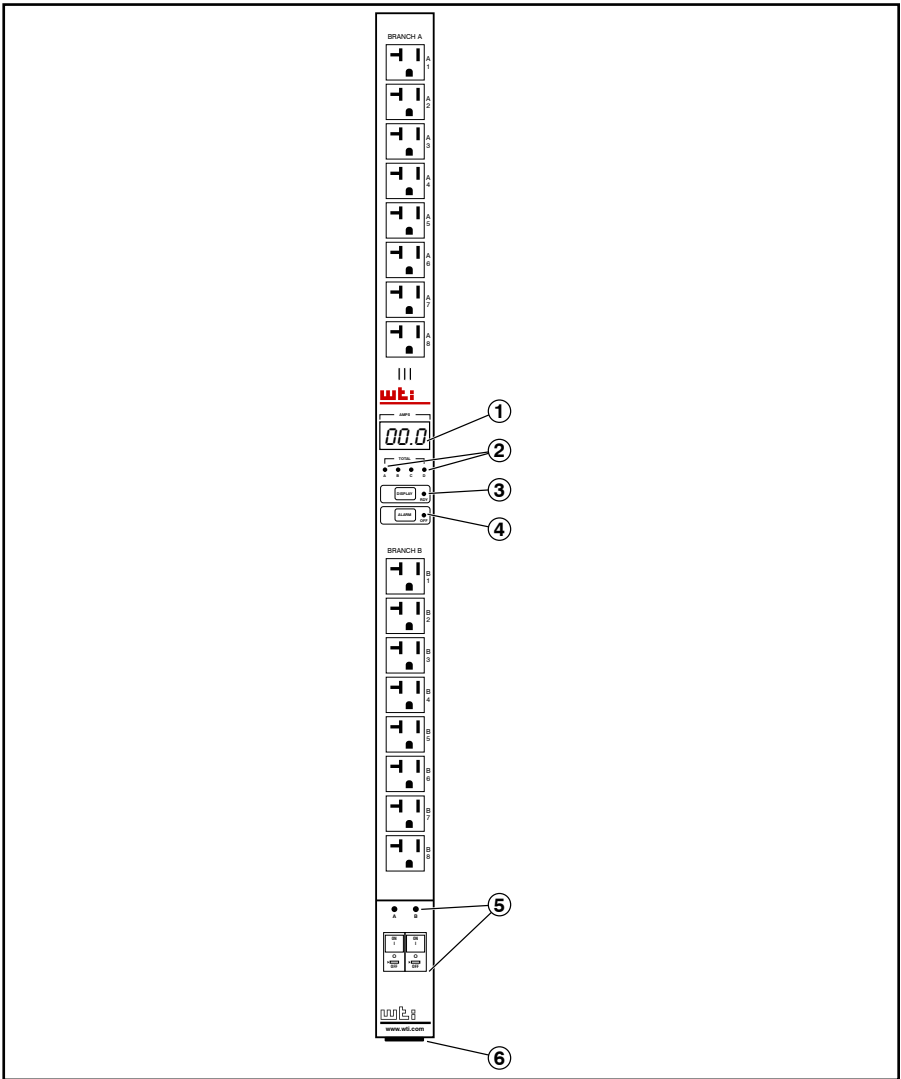* In accordance with UL requirements for branch circuits, this value has been de-rated to 80%.

Figure 1: BPM Series Front Panel Components

2.   Unit Description

As shown in Figure 1, the BPM includes the following components:

①   **Digital Display:** An LED digital readout, which can be used to display current consumption in Amps for an individual branch or the total Amps for all branches.

②   **Branch Indicators:** LEDs which light to indicate which branch(es) are currently shown on the Digital Display. When the BPM is monitoring total current consumption for all available branches, all applicable Indicators will light. Note that when an alarm is generated as described in Section 4.3, the Branch Indicators will blink to indicate which power branch has generated the alarm. For example, if the "A" indicator blinks, this indicates that the alarm was tripped due to excess current consumption at Branch A.

③   **Display Button and RDY Indicator:** The Display button determines which branch will be shown on the Digital Display. Each time the Display button is pressed, the BPM will toggle between the readings for each individual branch and the total current consumption for all branches. The RDY Indicator will blink to indicate that the unit is operational.

④   **Alarm Button and OFF Indicator:** The Alarm Button can be used to either cancel the current consumption alarm or disable the alarm entirely as described in Section 4.3. Normally, the alarm will be triggered when current consumption exceeds 80% of the breaker rating. The OFF Indicator will light when the alarm has been disabled.

⑤   **Power Breakers and LED Indicators:** UL 489 breakers; one for each power branch. The LED Indicators will light when Power is present at the corresponding branch and will go off when the breaker is tripped or power is interrupted.

⑥   **Power Inlet:** Supplies power to the BPM Unit.

⑦   **Serial Port:** (Not Shown) An RJ-45 connector, located on the top end of the BPM unit. The Serial Port can either be used to connect the BPM unit to an MPC unit (allowing monitoring of power outlets,) or used for connection to a local device. Use a straight RJ-45 cable to connect the BPM to a free AUX Port on your MPC unit or a local control device.

3.   Connecting the BPM to your Power Source

Refer to the power rating nameplate on the BPM unit, and then connect the unit to an appropriate power source. Connect the power cable to the BPM's Power Inlet and then snap the cable keeper into place.

Note that when the unit is first connected to power, the Digital display will briefly flash the number for the Eprom version.

4.   Operation

The Display Button and the Alarm Button can be used to perform a number of functions, as described in this section.

4.1.   Display Orientation

The BPM is normally installed with the Power Inlet facing towards the floor of your equipment rack. However, there may be circumstances where you wish to route the power supply cable from the top of the equipment rack. In this case, the Display button can be used to flip the display values "upside down" in order that they may be more easily read if the unit has been installed with the Power Inlet facing upwards.

To flip the display values upside down, press and hold the Display button for approximately five seconds; the display will flip. To flip the display back to the default position, press and hold the Display button for five seconds again.

4.2.   Total Mode

In the default state, the Total Mode is enabled and the Display button can be used to select either the current for each individual branch or the total current for all branches. When the Total Mode is active and an individual branch is selected, the Digital Display will always return to the total current reading after five seconds have elapsed. Note that when "Total" is selected, the Branch Indicators for all available branches will light.

To deactivate Total Mode and disable the five second total timeout, press and hold both the Display button and Alarm button for approximately five seconds. To reactivate the Total Mode, press and hold the Display button and Alarm button for five seconds again.

Note: The Total Mode is not available in 3-Phase BPM units.

4.3. Cancel/Disable Current Alarm

Normally, the alarm will be triggered whenever current consumption exceeds 80% of the Breaker rating. When an alarm is triggered, an audible alarm will sound and the corresponding Branch Indicator will begin to blink. If this becomes a nuisance, the Alarm button can be used to either temporarily cancel the alarm or disable the alarm entirely.

- **Cancel Alarm:** To cancel the current alarm, press and release the Alarm Button. The Audible Alarm will stop sounding. Note however that if current consumption again exceeds 80% of the Breaker rating, the audible alarm will sound again.

- **Disable Alarm:** To disable the current alarm entirely, press and hold the Alarm Button for approximately five seconds; the OFF indicator will light and the alarm will be disabled. When the alarm is disabled, the audible alarm will no longer sound when current consumption exceeds 80% of the Breaker rating. Note however, that the Branch Indicators will continue to flash to indicate high current consumption.

5.　　Serial Port Commands

When a local control device (such as a PC or laptop) has been connected to the BPM's serial port, this allows you to issue commands to the BPM unit in order to determine current unit status.

When connecting your control device, note that the BPM's serial port is configured as follows: 9600 Baud, 8 Data Bits, No Parity, 1 Stop Bit, No flow control. The Pin-out for the BPM Serial Port is as follows:

Pin	Signal	Direction (Relative to the BPM)
1	CTS	Input
2	(Not Used)	
3	RXD	Input
4	Ground	
5	Ground	
6	TXD	Output
7	(Not Used)	
8	RTS	Output

The BPM supports three status commands: /S1, /S2, and /S3. These commands are described below:

/S1　Static Parameters

When the **/S1** command is invoked, the BPM will respond with a status message, using the following format:

BPM,<Identifier>,<LineRating>,<BranchRating>,<Phase>,<BranchCount>,<Version>

Where:

BPM	Denotes that the status report was generated by a BPM unit.
<Identifier>	An alphanumeric string, which is generated by the BPM unit to provide a unique identification number (12 Characters.)
<LineRating>	The current rating for the input power line(s), listed in Amps (Two Characters).
<BranchRating>	The current rating for each power branch present, listed in Amps (Two Characters).
<Phase>	The power phase (One Character).
<BranchCount>	The number of power branches present on the BPM unit (One Character.)

Note: Commas are used to separate each item in the status message.

/S2 Current Consumption

When the **/S2** command is invoked, the BPM will report current consumption for each power branch, using the following format:

<Total>,<BranchA>,<BranchB>,<BranchC>,<BranchD>

Where:

<Total>	Total current consumption for all power branches present. (Three Characters.)
<BranchA>	Current consumption for Branch A. (Three Characters.)
<BranchB>	Current consumption for Branch B. (Three Characters.)
<BranchC>	Current consumption for Branch C. (Three Characters.)
<BranchD>	Current consumption for Branch D. (Three Characters.)

Notes:

- Current consumption is shown in "n.n" format.

- If a given branch is not present on your BPM unit, then the field(s) that are normally used to report current at that branch will read "0" (zero.)

- Commas are used to separate each item in the status message.

/S3   Alarm Status

When the **/S3** command is invoked, the BPM will return a status message that reports Alarm Status at each of the BPM's power branches. The /S3 status message uses the following format:

<Total>,<BranchA>,<BranchB>,<BranchC>,<BranchD>

Where:

<Total>	Indicates if an Alarm has been triggered at any of the BPM's power branches (One Character.)
<BranchA>	Indicates if an Alarm has been triggered at Branch A (One Character.)
<BranchB>	Indicates if an Alarm has been triggered at Branch B (One Character.)
<BranchC>	Indicates if an Alarm has been triggered at Branch C (One Character.)
<BranchD>	Indicates if an Alarm has been triggered at Branch D (One Character.)

Notes:

- A "0" (zero) indicates that no Alarms have been triggered at the unit or branch, a "1" indicates that an Alarm has been triggered at the unit or branch.
- If a given branch is not present on your BPM unit, then the field(s) that are normally used to report Alarm Status at that branch read "0" (zero.)
- Commas are used to separate each item in the status message.

If you have further questions regarding the BPM unit, please contact WTI Customer Support.

FCC Part 15 Regulation

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Plug the equipment into an outlet on a circuit that is different from the one used by the receiver.

- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules. Operation of this device is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference that may cause undesired operation.

> **WARNING:** **Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment**

Industry Canada - EMI Information

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.