MPM-100 and BDS-256 Monitors

Product Description Guide

990 South Rogers Circle, Suite 11
Boca Raton, FL 33487
Tel: 561-997-2299 Fax: 561-997-5588
www.alber.com

MPM-100 and BDS-256 Monitors

Product Description Guide

990 South Rogers Circle, Suite 11
Boca Raton, FL 33487
Tel: 561-997-2299 Fax: 561-997-5588
www.alber.com

All specifications in this book are subject to change without notice.

MPM-100 and BDS-256 Monitors Product Description Guide, Book Revision 1.0
P/N 4200-039

Printed in the United States of America

TABLE OF CONTENTS

1. MPM and BDS General Description

The MPM is a low cost, stand-alone monitor for communication and power industry applications, while the BDS is specially designed for UPS applications. What sets these monitors apart from others is their ability to provide early warning of battery problems. The monitors check the state of health of each cell by performing a proactive resistance test, which is a reliable predictor of battery performance. In addition, to indicate immediate battery health and monitor status of a given location, the system reports to a Central computer (a generic PC) with easily read system status screens.

With its polling and data transfer algorithms, the Battery Monitoring Data Manager program lets a Central computer manage over one thousand monitor systems. Data is transmitted to the Central computer and stored in a database for later analysis and reporting. At any time, service personnel may call a battery location from the Central computer or a remote location (such as from home), or directly connect to the monitor without losing contact with the Central computer.

The Data Manager program string and monitor status indicators make central battery monitoring easier than ever. Terms such as Discharging, Alarm or Warning for string status or Active for monitor status quickly summarize an occurrence. After being reported to the Central computer, the condition is displayed on a tabular list for easy identification of trouble areas. The system also features several methods of automated reporting of alarm occurrences, such as contacting key personnel via a pager or faxing a message.

Flexibility was also a major design consideration. Because the monitors are stand-alone units with no external computer required, a primary protocol using MODBUS ASCII was selected to allow incorporation of the monitor into large-scale facility monitors. This allows third-party interfaces to be written to access all the stand-alone features of the monitor, while still having the advanced features of the Data Manager remote communication software available for service personnel.

1.1. Normal Operating Mode

In normal operating mode, the system scans all parameters in one to five seconds, depending on the configuration. As readings are taken, they are compared to the user-programmed alarm levels. The monitor can be programmed to call a Central computer and/or energize an alarm contact if a parameter exceeds preset levels. Front panel LEDs indicate scan and alarm status. All alarm events are stored in memory for future analysis. The BDS can be programmed for critical and maintenance alarms.

1.2. Discharge Mode

If a discharge is detected, the system triggers into a data-logging mode and stores battery voltages and discharge current into a discharge record.

1.3. Resistance Test Mode

A battery resistance test may be performed at user-set intervals. The test is similar to the measurement performed by the Albér Cellcorder. Up to eight intertiers on an MPM or fifteen on a BDS can be configured for inclusion in this measurement. Also, certain models are capable of separate intercell connection measurements.

1.4. Alarm Features

The monitor may be set to automatically call the Central computer to report an alarm condition when it is detected. You can program high and low alarm levels on all voltage and temperature parameters, and a high alarm level for resistance measurements. When any parameter goes outside the normal range, the monitor stores the event in memory, the Alarm LED lights, and an alarm relay with a Form C contact energizes. The alarms may be set for latching or nonlatching.

1.5. Controlled Run Down Test (MPM Only)

You can program time intervals (in days) and length of time (in minutes) to have a relay automatically shut down the charger. During this time, the system treats the condition as a discharge and saves the changing parameters to a discharge record for playback and analysis.

1.6. MPM and BDS Series Features

This section describes standard and optional MPM and BDS features.

- Scans all pertinent battery parameters, such as overall voltage, cell voltages, current, and temperature.
- Performs a scheduled resistance test of all cell/jars, intercells and intertiers, and stores results for trending analysis.
- Auto detects discharges based on Overall Volts or Discharge Current, and stores data for real time or accelerated time playback.
- Signals if any parameter is outside user-programmed limits, energizes a Form C relay contact, and calls a Central computer to report the alarm condition.
- Incorporates a Form C alarm contact for monitor hardware failure or power failure.
- Communicates with an external computer via RS-232 or remotely via modem or LAN.
- Performs a scheduled, user-programmed test of shutting down the charger and monitoring discharge, with real time or fast time playback. (MPM series only)
- Monitors up to sixteen digital inputs.
- Eight control outputs, triggerable on any alarm event. (BDS series only)
- Network compatible.

1.7. Data Manager Program Features

- Windows™ 95, 98, 2000, NT4.0 and XP compatible Central computer control software.
- Easy to read string and monitor status.
- Automatic polling for over 1000 monitor sites for monitor and string status reporting.
- Historical event list for complete string history.
- Automatically receive calls from monitors and update the central database for data analysis.
- Service mode for service personnel, and local RS-232 direct connect viewing of string details and system setup when loaded on a laptop computer.
- Microsoft Access™ database compatible, with management of all stored data.
- Playback of discharge rundown test and controlled rundown test data.
- Automatic paging and faxing of alarm events.
- Instant trend graphs of any selected parameter.
- Complete memo tracking down to the cell/module level.
- Status display can be customized for multi-customer monitoring.
- Network compatible.

1.8. Optional Accessories

- Shunt for measuring discharge current.
- Hall effect current transducer for measuring discharge and float current.
- Temperature sensor: Electrolyte Probe or Contact Ambient Probe.
- Fiber optic communication ports for connecting to a Serial Port Multiplexer. The customer may specify which port is used with the Multiplexer: a modem port, an RS-232 port, or both. (BDS uses switch settings; MPM has factory configured jumpers.)
- Serial Port Multiplexer for connecting one telephone line to up to sixteen monitors.
- Serial Port Multiplexer for connecting one Local computer via local RS-232 to up to sixteen monitors.
- Network interface.
- Digital I/O card for the BDS for monitoring 16 digital inputs or controlling eight control outputs.

2. Panel Controls and Indicators

This section describes the front and rear panels of the discreet components that comprise a typical MPM or BDS system. Additional descriptions may appear elsewhere in this manual or in related manuals. [Indicator colors (R)ed, (Y)ellow, (G)reen.]

MPM Front Panel Indicators

Scan (G)..... Blinks during normal operating conditions.
Alarm (R) ..... On when an alarm condition is detected.
Alarm Disable (R) ..... On when user has disabled alarm reporting using BMDM software.
Resistance Test (G)..... On when performing a manual or automatic resistance test.
Error (R) ..... On when a hardware failure is detected.

MPM Front Panel Connectors

Local Port ..... An RS-232 port for connecting to a portable computer for servicing purposes.

MPM Front Panel Controls

Local Port switch..... Enables the front RS-232 port or rear optional RS-232, fiber optic or network port. When the switch is lit, the front port is selected.
Alarm Reset switch..... During normal operation, resets alarms. If held during power up, clears existing names in the monitor, disables alarms, disables dial out, clears data memory, and resets password to `alber`.

MPM Rear Panel Connectors

Option Port ..... Top left rear panel. May be an RS-232 Local Port, an Rx / Tx fiber optic port, or an RJ-45 network port. The front panel Local Port switch enables this port. Use the RS-232 port for connecting to a permanent Local computer, Service computer, or on-site Central computer. For modem, RS-232 and network connections, refer to the BMDM manual. Use the upper fiber optic Tx and Rx port for connecting to a Serial Port Multiplexer that uses RS-232. For Tx and Rx descriptions, refer to *Serial Port Multiplexer User's Guide*.
Telco..... An RJ-11 jack for communicating with a remote computer via telephone.
Tx, Rx..... Use the lower fiber optic Tx and Rx port for connecting to a Telco Serial Port Multiplexer. Refer to *Serial Port Multiplexer User's Guide*.
J1, J3, J4, J6, J7 ..... Sense lead wiring to connectors J1, J3, J4, J6 and J7 depends on battery configuration. Cell/Jar voltage sense leads connect from J1 (and J3 on units with the expansion module) to the individual cells/jars. Refer to *MPM-100 Installation Instructions*.
J2 ..... Provides for alarm and digital connections on all MPM configurations. Two sets of dry Form C alarm contacts are also available. Do not use for current transducers if J5 is available. Refer to *MPM-100 Installation Instructions*.
J5 ..... Current Transducer connector (optional). Provides for signal connection and +15V and –15V power for up to four discharge current transducers (CTs) and signal connection for the float current sensor.
Load Connections 1 to 5... The most-positive battery connection must always be to Load Connection #1 on the MPM rear panel. The negative connection is determined by the battery configuration. Refer to *MPM-100 Installation Instructions*.
Load Connections 6 to 10, 11 to 15, 16 to 20..... See Load Connections 1 to 5.
Power Connector ..... Right side of rear panel. When the MPM requires AC power because of battery configuration, connect a 24VDC wall plug transformer to this connector. AC power must be from a UPS protected source.

BDS Controller Front Panel Indicators

DCM Tx (G)..... Blinks during fiber optic transmit.
DCM Rx (G)..... Blinks during fiber optic receive.
Status (G)..... Blinks during normal operating conditions.
Com Port (G)..... Blinks to indicate communication via LAN port or an incoming call.
Critical Alarm (R) ..... On when a critical alarm is detected.
Maintenance Alarm (Y).... On when a maintenance alarm is detected.
Resistance Test (G)..... On when performing a manual or automatic resistance test.

BDS Controller Front Panel Connectors

Local Port ..... An RS-232 port for connecting to a portable computer.

BDS Controller Front Panel Controls

Alarm Reset switch..... Clears latched alarms when unit already on. If pressed while powering up, clears names in the BDS, resets the password to `alber`, and disables dial out and alarms.
Local Port Select switch ... Enables the front or rear RS-232 port. When the switch is lit, front port is selected.

BDS Controller Rear Panel Connectors

F1, F2 ..... User replaceable fuses. Refer to *BDS Controller Specifications*.
AC Power ..... User replaceable fuse and receptacle for AC power cord. Refer to *BDS Controller Specifications*.
DCM Power
Output 1 to 4..... Four pairs of screw terminals that provide 24VAC.
Fiber Optic Repeaters
Tx 1 Rx 1 to Tx 7 Rx 7..... Input/output connectors for amplifying signals before a long fiber optic cable run.
Load Control..... For connecting to an Albér CLU Series load bank (<u>not</u> a DCM external load module).
Control Outputs 1 to 8 ..... Form C contacts for control of external devices.
Digital Inputs 1 to 16..... Optically isolated inputs for sensing contact closures.
Printer ..... A DB-9 port for connecting to a printer.
UPS..... A DB-9 port for monitoring the battery inside a UPS (uninterruptible power supply).
Configuration Settings..... A DIP switch for setting configurations when using an Albér Serial Port Multiplexer.
Local Tx/FO Rx/FO ..... Fiber optic transmit / receive ports for Serial Port Multiplexer communication.
Local port ..... An RS-232 port for connecting to a computer.
Telco Tx/FO Rx/FO ..... Fiber optic transmit / receive ports for Telco Serial Port Multiplexer communication.
Telco..... An RJ-11 jack for remote computer communication via telephone.
Critical Alarm..... Form C alarm contacts, software configurable.
Maint Alarm ..... Form C alarm contacts, software configurable.
Remote Alarm Reset..... Reads momentary contact closure. Requires a user-supplied 12V to 32V signal.
Fiber Optic
Tx/FO Rx/FO ..... Fiber optic transmit / receive ports for DCM communication.
LAN..... An RJ-45 port for remote computer communication via network.
LAN..... A DB-9 port for connecting to an external network conversion unit. This port is active only if the RJ-45 LAN connector is not installed.

DCM Front Panel Indicators

Rx (G)..... Blinks during fiber optic receive.
Tx (G)..... Blinks during fiber optic transmit.
Status (G)..... Blinks during normal operating conditions.

DCM Rear Panel Connectors

TX/FO Rx/FO..... Fiber optic transmit / receive ports for communicating with a BDS or other DCM's.
24VAC Power ..... A 4-pin connector for daisy-chaining 24VAC to other DCM's.
Load Control..... Port for External Load Module communication.
Sense Leads J1, J2, J3, J4 . For connecting voltage sense leads to the batteries.
Overall Volts ..... A DB-25 port for connecting overall voltage and discharge sense leads when connecting to a shunt.
Current Transducer..... A DB-9 port for sense and power supply connections for discharge and float sensors.

External Load Module Front Panel Indicators

Power (R) ..... When lit, indicates 24VAC power is applied.
Service (R)..... When lit, indicates the unit requires factory service, usually because internal temperature exceeded specifications.

External Load Module Rear Panel Connectors

DCM 1 to 6..... Port for DCM communication.
Power 24VAC ..... Power input connectors.
Load Connections..... Connectors that load the batteries when activated.

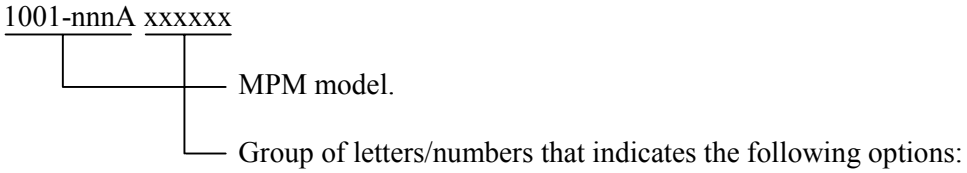
3. MPM and BDS Configurations

This section is an overview of the MPM and BDS monitor configurations.

3.1. MPM Configuration Options

The MPM can accommodate up to 30 different battery configurations, which may be modified for nonstandard battery configurations. (For example, a 1 x 60 configuration can only have 59 cells.)

The MPM-100 model numbers are structured as follows.



Position 1 (Xxxxxx): Power
A = Unit is powered by AC wall plug. (Available only on 120V units.)
D = Unit is powered by the DC bus.

Position 2 (xXxxxx): Communication options (fiber optic, Ethernet or RS-232). Refer to *Communication Options* in this manual for details.

Position 3 (xxXxxx): Method of sensing discharge current.
C = Current transducer.
S = Shunt.

Position 4 (xxxXxx): Float current transducer.
[blank] = No float current transducer.
F = Float current transducer.

Position 5 (xxxxXx): Main power line frequency.
5 = 50Hz.
6 = 60Hz.

Position 6 (xxxxxX): Brand labeling.
A = Albér.
S = OEM model.

The following list describes the standard MPM configurations supported. For special configurations or custom system integration for OEM applications, contact Albér.

	Configuration	Description
12V Batteries	MPM-100-1x10x1*	1 string of 10 – 1v cells in series.
	MPM-100-2x10x1	2 strings in parallel of 10 – 1v cells in series.
	MPM-100-3x10x1	3 strings in parallel of 10 – 1v cells in series.
	MPM-100-4x10x1	4 strings in parallel of 10 – 1v cells in series.
24V to 31V Batteries	MPM-100-1x26x1	1 string of 26 – 1v cells in series.
	MPM-100-2x26x1	2 strings in parallel of 26 – 1v cells in series.
	MPM-100-3x26x1	3 strings in parallel of 26 – 1v cells in series.
	MPM-100-1x25x1	1 string of 25 – 1v cells in series.
	MPM-100-2x25x1	2 strings in parallel of 25 – 1v cells in series.
	MPM-100-3x25x1	3 strings in parallel of 25 – 1v cells in series.
	MPM-100-4x25x1	4 strings in parallel of 25 – 1v cells in series.
	MPM-100-1x20x1	1 string of 20 – 1v cells in series.
	MPM-100-2x20x1	2 strings in parallel of 20 – 1v cells in series.
	MPM-100-3x20x1	3 strings in parallel of 20 – 1v cells in series.
	MPM-100-4x20x1	4 strings in parallel of 20 – 1v cells in series.
	MPM-100-1x13x2	1 string of 13 – 2v cells in series.
	MPM-100-2x13x2	2 strings in parallel of 13 – 2v cells in series.
	MPM-100-3x13x2	3 strings in parallel of 13 – 2v cells in series.
	MPM-100-4x13x2	4 strings in parallel of 13 – 2v cells in series.
	MPM-100-1x12x2	1 string of 12 – 2v cells in series.
	MPM-100-2x12x2	2 strings in parallel of 12 – 2v cells in series.
	MPM-100-3x12x2	3 strings in parallel of 12 – 2v cells in series.
	MPM-100-4x12x2	4 strings in parallel of 12 – 2v cells in series.
	MPM-100-1x6x4	1 string of 6 – 4v modules in series.
	MPM-100-2x6x4	2 strings in parallel of 6 – 4v modules in series.
	MPM-100-3x6x4	3 strings in parallel of 6 – 4v modules in series.
	MPM-100-4x6x4	4 strings in parallel of 6 – 4v modules in series.
	MPM-100-1x4x6	1 string of 4 – 6v modules in series.
	MPM-100-2x4x6	2 strings in parallel of 4 – 6v modules in series.
	MPM-100-3x4x6	3 strings in parallel of 4 – 6v modules in series.
	MPM-100-4x4x6	4 strings in parallel of 4 – 6v modules in series.
	MPM-100-1x3x8	1 string of 3 – 8v modules in series.
	MPM-100-2x3x8	2 strings in parallel of 3 – 8v modules in series.
	MPM-100-3x3x8	3 strings in parallel of 3 – 8v modules in series.
	MPM-100-4x3x8	4 strings in parallel of 3 – 8v modules in series.
	MPM-100-1x2x12	1 string of 2 – 12v modules in series.
	MPM-100-2x2x12	2 strings in parallel of 2 – 12v modules in series.
	MPM-100-3x2x12	3 strings in parallel of 2 – 12v modules in series.
	MPM-100-4x2x12	4 strings in parallel of 2 – 12v modules in series.

*1 volt cells are NiCd

	Configuration	Description
44V to 50V Batteries	MPM-100-1x41x1	1 string of 41 – 1v cells in series.
	MPM-100-2x41x1	2 strings in parallel of 41 – 1v cells in series.
	MPM-100-1x24x2	1 string of 24 – 2v cells in series.
	MPM-100-2x24x2	2 strings in parallel of 24 – 2v cells in series.
	MPM-100-3x24x2	3 strings in parallel of 24 – 2v cells in series.
	MPM-100-4x24x2	4 strings in parallel of 24 – 2v cells in series.
	MPM-100-1x22x2	1 string of 22 – 2v cells in series.
	MPM-100-2x22x2	2 strings in parallel of 22 – 2v cells in series.
	MPM-100-3x22x2	3 strings in parallel of 22 – 2v cells in series.
	MPM-100-4x22x2	4 strings in parallel of 22 – 2v cells in series.
	MPM-100-1x8x6	1 string of 8 – 6v modules in series.
	MPM-100-2x8x6	2 strings in parallel of 8 – 6v modules in series.
	MPM-100-3x8x6	3 strings in parallel of 8 – 6v modules in series.
	MPM-100-4x8x6	4 strings in parallel of 8 – 6v modules in series.
	MPM-100-1x4x12	1 string of 4 – 12v modules in series.
	MPM-100-2x4x12	2 strings in parallel of 4 – 12v modules in series.
	MPM-100-3x4x12	3 strings in parallel of 4 – 12v modules in series.
	MPM-100-4x4x12	4 strings in parallel of 4 – 12v modules in series.
96V to 120V Batteries	MPM-100-1x80x1	1 string of 80 – 1v cells in series.
	MPM-100-1x90x1	1 string of 90 – 1v cells in series.
	MPM-100-1x92x1	1 string of 92 – 1v cells in series.
	MPM-100-1x96x1	1 string of 96 – 1v cells in series.
	MPM-100-1x97x1	1 string of 97 – 1v cells in series.
	MPM-100-1x60x2	1 string of 60 – 2v cells.
	MPM-1x54x2	1 string of 54 – 2v cells in series.
	MPM-100-1x30x4	1 string of 30 – 4v modules in series.
	MPM-100-1x20x6	1 string of 20 – 6v modules in series.
	MPM-100-1x15x8	1 string of 15 – 8v modules in series.
	MPM-100-2x15x8	2 strings in parallel of 15 – 8v modules in series.
	MPM-100-1x10x12	1 string of 10 – 12v modules in series.

3.2. BDS Configuration Options

The BDS can accommodate virtually any battery configuration. The following list describes the more commonly used BDS configurations.

Configuration	Description
BDS-256-108x2	108 – 2v cells.
BDS-256-122x2	122 – 2v cells.
BDS-256-1x180x2	1 string of 180 – 2v cells.
BDS-256-1x182x2	1 string of 182 – 2v cells.
BDS-256-1x188x2	1 string of 188 – 2v cells.
BDS-256-1x192x2	1 string of 192 – 2v cells.
BDS-256-1x210x2	1 string of 210 – 2v cells.
BDS-256-1x216x2	1 string of 216 – 2v cells.
BDS-256-1x232x2	1 string of 232 – 2v cells.
BDS-256-1x234x2	1 string of 234 – 2v cells.
BDS-256-1x238x2	1 string of 238 – 2v cells.
BDS-256-1x239x2	1 string of 239 – 2v cells.
BDS-256-1x240x2	1 string of 240 – 2v cells.
BDS-256-1x241x2	1 string of 241 – 2v cells.
BDS-256-1x244x2	1 string of 244 – 2v cells.
BDS-256-1x246x2	1 string of 246 – 2v cells.
BDS-256-1x236x2	1 string of 236 – 2v cells.
BDS-256-1x252x2	1 string of 252 – 2v cells.
BDS-256-1x256x2	1 string of 256 – 2v cells.
BDS-256-1x6x4	1 string of 6 – 4v modules in series.
BDS-256-1x90x4	1 string of 90 – 4v modules in series.
BDS-256-1x120x4	1 string of 120 – 4v modules in series.
BDS-256-1x121x4	1 string of 121 – 4v modules in series.
BDS-256-1x122x4	1 string of 122 – 4v modules in series.
BDS-256-1x123x4	1 string of 123 – 4v modules in series.
BDS-256-1x60x6	1 string of 60 – 6v modules in series.
BDS-256-1x78x6	1 string of 78 – 6v modules in series.
BDS-256-1x80x6	1 string of 80 – 6v modules in series.
BDS-256-1x81x6	1 string of 81 – 6v modules in series.
BDS-256-1x60x8	1 string of 60 – 8v modules in series.
BDS-256-1x61x8	1 string of 61 – 8v modules in series.
BDS-256-1x27x12	1 string of 27 – 12v modules in series.
BDS-256-1x30x12	1 string of 30 – 12v modules in series.
BDS-256-1x31x12	1 string of 31 – 12v modules in series.
BDS-256-1x32x12	1 string of 32 – 12v modules in series.
BDS-256-1x33x12	1 string of 33 – 12v modules in series.
BDS-256-1x34x12	1 string of 34 – 12v modules in series.
BDS-256-1x36x12	1 string of 36 – 12v modules in series.
BDS-256-1x40x12	1 string of 40 – 12v modules in series.

4. MPM Specifications

Power

- Less than 15 watts. Operates directly from the bus when monitoring 24V to 48V batteries. When monitoring 120VDC batteries, requires a 120VDC to 24VDC internal converter or a wall plug transformer. The wall plug transformer must be used on a protected (uninterruptible power supply) 90VAC to 264VAC, 47Hz to 63Hz source.

  Wall Plug Transformer - Albér part number 4200-029.
  Input: 90 to 264VAC, 47Hz to 63Hz, 1.0A maximum.
  Output: 24VDC (nominal), 1.5A 36W maximum.

Fuses

- Fuse F1/F1A: 2A fast blow. On PC board. Not user replaceable.
- Fuse F2: 1A fast blow. On PC board. Not user replaceable.
- Fuse F3: 0.5A fast blow. On PC board. Not user replaceable.

Inputs	**Range**	**Tolerance**
• 100 voltage sense channels	0 to 15V	0.1% of reading ±LSD
• One overall voltage channel	0 to 150 volts	0.1% of reading ±0.10V
• Eight temperature channels*	-40°F to 160°F	±1°F
• Eight intertier resistance channels	0 to 5mΩ	0.1% of reading ±5μΩ
• Four discharge current channels*	0 to 4000A	±1A
• Four float current channels*	0 to 5000mA	±5mA

- 8 standard and 8 optional optically isolated contact closure inputs for normally-open or normally-closed.
- Alarm reset. Normally-open dry contact required.

  *Temperature and current transducers are optional.

Outputs

- Parameters alarm contact: one Form C alarm relay contact, 2A at 30VDC.
- Hardware failure or power failure alarm contact: one Form C alarm relay contact, 2A at 30VDC.
- Charger shutdown relay: one N/O dry contact, 2A at 30VDC.
- LEDs (one each): green status, red alarm, red alarm disable, green resistance test on, and red hardware error.

Communication

- One local RS-232 port or optional fiber optic port for connection to multiplexer or LAN.
- One remotely accessible modem port or optional fiber optic port for connection to multiplexer.

Data Storage

- E^2 nonvolatile memory for calibration constants, alarm levels, telephone numbers, and setup information.
- 100 alarm events in revolving nonvolatile memory.
- 20.5K bytes of discharge data in nonvolatile memory.
- 1.6K bytes resistance test records.
- 1.65K bytes historical data.
- Flash memory for firmware revision updates.

Operating Environment

- Temperature range: 5°C to 40°C (41°F to 104°F)
- Humidity range: 0% to 80% RH (non condensing) at 5°C to 31°C
  0% to 50% RH (non condensing) at 32°C to 40°C
- Indoor use only.
- Installation category II
- Pollution degree 2.
- Altitude 0 to 2000 meters above sea level.

Packaging

- Rack mount 19" or 23" and height of 1.75"
- Wall mount with optional mounting brackets.

© Specifications subject to change without notice.

5. BDS System Specifications

Parameters / Features

- Number of cell channels: Up to eight strings of 256 cells per string.
  Up to 6 DCM-480 units per string.

Input Range / Accuracy

- Cell voltage: 0 to 16V, 0.1% of reading ±1mV

- String voltage: 0 to 80.00V, 0.1% of reading ±0.02V
  0 to 400.0V, 0.1% of reading ±0.1V
  0 to 600.0V, 0.1% of reading ±0.5V

- Discharge Current: 0 to 4000A, 0.1% of reading ±1A
  Note: An optional current transducer is required.
  Transducer accuracy affects overall current reading accuracy.

- Float Current: 0 to 5000mA ±5mA
  Note: An optional current transducer is required.

Operating Environment

- Temperature range: 5°C to 40°C (41°F to 104°F)
- Humidity range: 0% to 80% RH (non condensing) at 5°C to 31°C
  0% to 50% RH (non condensing) at 32°C to 40°C
- Indoor use only.
- Installation category II
- Pollution degree 2.
- Altitude 0 to 2000 meters above sea level.

Notes

- Optional temperature transducer can be contact type or immersible.

WARNING: A BDS system, comprising a BDS Controller, DCM-480Rs, and External Load Modules may be mounted in a 19" or 23" wide rack enclosure. If using such rack enclosure, be certain that it is properly earth grounded and that adequate ventilation is provided to prevent equipment overheating. Refer to the respective installation manual for more information. The receptacle for the AC cord from the cabinet must have protective earth connection (three prong). You must not defeat the use of the earth connection prong.

6. BDS Cabinet Specifications

Cabinet Model

- 1100-262, in which the computer, monitor, UPS, Controller, DCM, and External Load Module may be mounted as required.

Power

- 115 VAC ±10% 60Hz, 12 amps maximum.

Maximum Dimensions

- 24" wide x 26" high x 37" deep with folding keyboard tray down.

Ventilation Requirements

- A minimum of 8" clearance must be maintained on all sides of the cabinet to allow for proper ventilation.

  NOTE: You must provide adequate ventilation to prevent equipment overheating. The cabinet has two ventilation fans that run when power is applied. The external load module has a fan that runs when required to cool internal circuitry. Do not block ventilation ports, and ensure that the equipment is operated only within the temperature and humidity ranges described in the specification sheets.

Installation Requirements

- Only equipment that is part of the BDS system should be installed in the BDS cabinet.
- The four corners of the cabinet must be securely bolted to the floor.

Operating Environment

- Temperature range: 5°C to 40°C (41°F to 104°F)
- Humidity range: 0% to 80% RH (non condensing) at 5°C to 31°C
  0% to 50% RH (non condensing) at 32°C to 40°C
- Indoor use only.
- Installation category II
- Pollution degree 2.
- Altitude 0 to 2000 meters above sea level.

WARNING: A BDS system, comprising a BDS Controller, DCM-480Rs, and External Load Modules may be mounted in a 19" or 23" wide rack enclosure. If using such rack enclosure, be certain that it is properly earth grounded and that adequate ventilation is provided to prevent equipment overheating. Refer to the respective installation manual for more information. The receptacle for the AC cord from the cabinet must have protective earth connection (three prong). You must not defeat the use of the earth connection prong.

7. BDS Controller Specifications

Power

- Less than 5 amps at 115 VAC ±10% 60Hz (for a configuration of 8 strings of 240 cells).

Fuses

- Two 250mA slow blow. On PC board. Not user replaceable.
- Fuse #1 and #2: 10 A slow blow, MDA or equivalent. Rear panel.
- One 5A fast blow, ABC or equivalent. AC power block. Rear panel.

Inputs

- Remote alarm reset: User-supplied 12 to 32V signal. (Current draw less than 50ma.) Momentarily applying voltage initiates the reset action.
- Digital input (certain models): Sixteen 12V to 32 V at less than 50mA.

Outputs

- 24 VAC power: Four for DCMs and External Load Modules.
- Alarm contacts Two Form C: 2A at 30VDC. (One for critical alarm; one for maintenance alarm.)
- Digital output (certain models): Eight Form C: 2A at 30VDC.
- LEDs (one each): green DCM Tx transmit, green DCM Rx receive, green status, green com port, amber maintenance alarm, green resistance test, and red port select switch.

Communication

- Modbus protocol, ASCII to PC, Albér proprietary to DCMs.
- Local port, RS-232 DB-9 connector (front panel).
- Local port, RS-232 DB-9 connector (rear panel).
- LAN port, RJ-45 (optional) (rear panel).
- RJ-11 Telco line, internal 14.4Kbs modem (rear panel).
- Fiber optic ports: 20 rear panel Agilent HFBR series connectors: two for DCM communications; four for optional serial port multiplexer communications; 14 for active repeater.

Data Storage

- SRAM (8 MB) nonvolatile memory for all configuration settings and data.
- Flash memory for firmware upgrades.

Control Switches

- Power on/off: Main DCM power switch on rear panel of BDS controller module. Rocker switch.
- Alarm reset: Alarm Reset switch on front panel of BDS controller module. Momentary push button.
- Local port select: Rocker switch (front panel).
- Configuration settings: DIP switch (rear panel).

Operating Environment

- Temperature range: 5°C to 40°C (41°F to 104°F)
- Humidity range: 0% to 80% RH (non condensing) at 5°C to 31°C
  0% to 50% RH (non condensing) at 32°C to 40°C
- Indoor use only.
- Installation category II
- Pollution degree 2.
- Altitude 0 to 2000 meters above sea level.

Packaging

- 19" rack mount. 19" width, 5.25" height, 8.15" depth.
- Optional brackets available for mounting in a 23” rack.

8. DCM-480R Specifications

Power

- Less than 0.5 amps at 24 VAC ±10%.

Fuses

- Two 0.5 A slow blow. On PC board. Not user replaceable.

Combined Input / Output Connectors (rear panel)

- 24VAC
- 2 fiber optic ports

Inputs (rear panel)

- 48 cell voltage channels
- 10 intertier channels
- 2 temperature channels
- 1 discharge current channel
- 1 overall voltage channel (certain models)
- 48 intercell channels (certain models)

Outputs (rear panel)

- +15VDC, -15VDC power output (certain models only)
- External load module control cable output.
- LEDs (one each): green DCM Tx transmit, green DCM Rx receive, and green status.

Communications

- Fiber optic, Albér proprietary.

Data Storage

- E^2 nonvolatile memory for setup.
- Flash memory for firmware upgrade.

Control Switches

- DCM addressing: PC board mounted DIP switches in DCM, accessible using cut-out in top panel

Operating Environment

- Temperature range: 5°C to 40°C (41°F to 104°F)
- Humidity range: 0% to 80% RH (non condensing) at 5°C to 31°C
  0% to 50% RH (non condensing) at 32°C to 40°C
- Indoor use only.
- Installation category I
- Pollution degree 2.
- Altitude 0 to 2000 meters above sea level.

Packaging

- 19" rack mount. 19" width, 1.75" height, 12.125" depth.
- Optional brackets available for mounting in a 23” rack.

9. External Load Module Specifications

Power

- Less than 1.0 amps at 24 VAC ±10%.

Fuses

- Two 0.5 A slow blow. On PC board. Not user replaceable.

Inputs / Outputs (rear panel)

- One 24VAC input
- 6 load control cable inputs
- 12 load connections

Outputs (front panel)

- LEDs (one each): red power.

Operating Environment

- Temperature range: 5°C to 40°C (41°F to 104°F)
- Humidity range: 0% to 80% RH (non condensing) at 5°C to 31°C
  0% to 50% RH (non condensing) at 32°C to 40°C
- Indoor use only.
- Installation category I
- Pollution degree 2.
- Altitude 0 to 2000 meters above sea level.

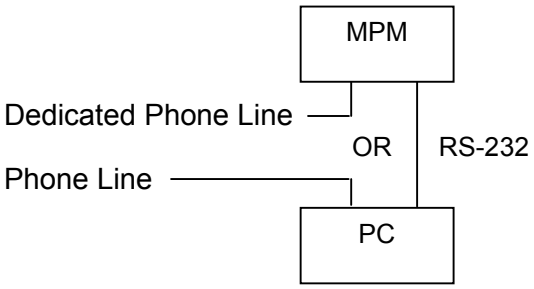
Packaging

- 19" rack mount. 19" width, 5.25" height, 12.156" depth.
- Optional brackets available for mounting in a 23” rack.

10. Communication Options

This section describes the letter used in the second position of the MPM model number. Refer to the *MPM and BDS Series Configurations* section for more details.

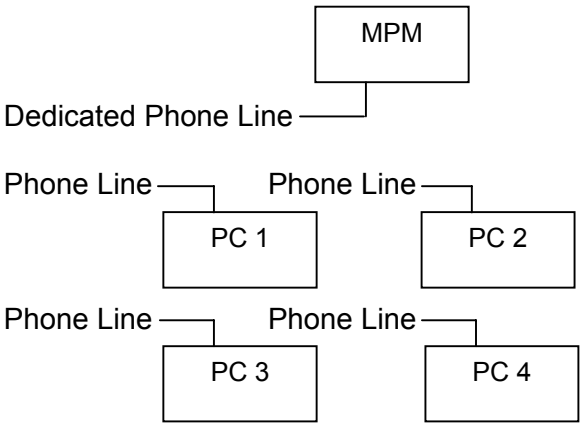
Communication Option A



Option A

- This is for one MPM that will be accessed by one PC, either locally with an RS-232 connection or via telephone connection.
- NOTE: For all features to operate, the phone line used for the MPM must be dedicated to the MPM.

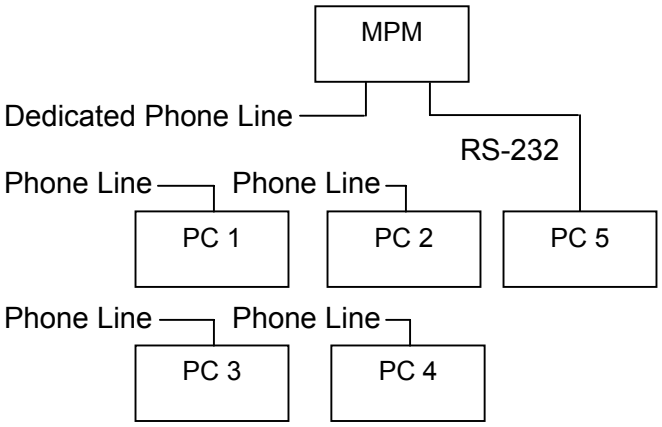
Communication Option B



Option B

- This is for one MPM that will be accessed by two or more PCs via a telephone connection.
- NOTE: For all features to operate, the phone line used for the MPM must be dedicated to the MPM.

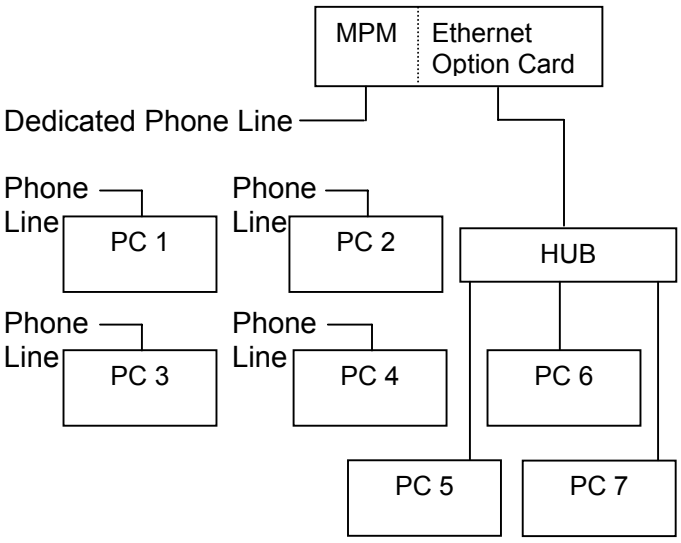
Communication Option C



Option C

- This is for one MPM that will be accessed locally by one PC via an RS-232 connection and
- That will also be accessed by additional PCs via a telephone connection.
- NOTE: If the locally RS-232 connected PC is not the Central computer, then for all features to operate, the phone line used for the MPM must be dedicated to the MPM.

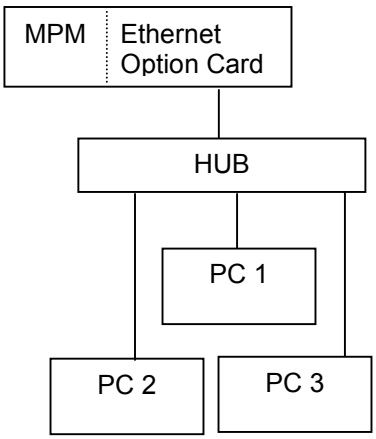
Communication Option D



Option D

- This is for one MPM that will be accessed by two or more PCs locally.
- This option requires installation of the LAN option in the MPM, and
- This option also requires connection of the MPM to an existing LAN or installation of a LAN.
- The MPM can also be accessed by PCs via a telephone connection.
- The LAN can be set up to allow MPM access via the Internet.
- NOTE: If one of the PCs connected via the LAN is not the Central computer, then for all features to operate, the phone line used for the MPM must be dedicated to the MPM.

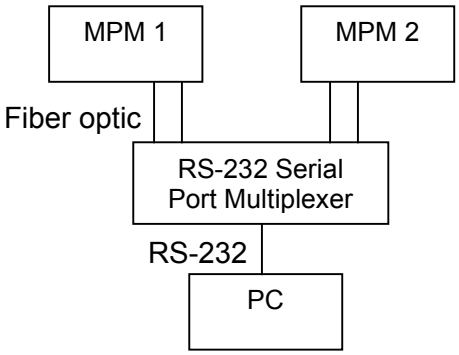
Communication Option E



Option E

- This is for one MPM that will be accessed by two or more PCs locally.
- This option requires installation of the LAN option in the MPM, and
- This option also requires connection of the MPM to an existing LAN or installation of a LAN.
- The LAN can be set up to allow MPM access via the Internet.

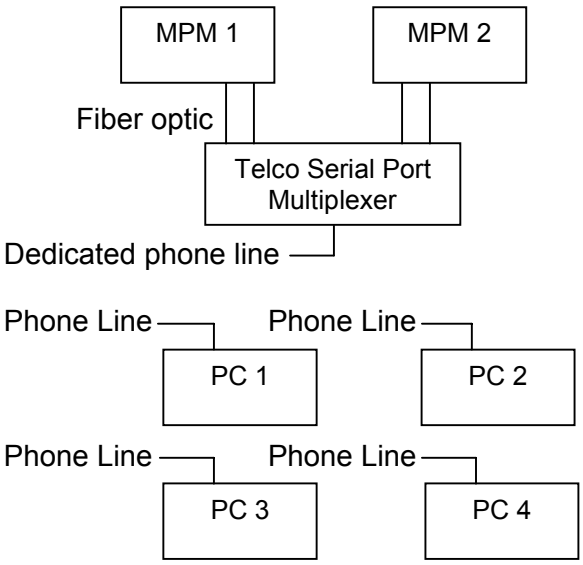
Communication Option F



Option F

- This is for two to 16 MPMs that will be accessed by one PC via a serial connection.
- An RS-232 Serial Port Multiplexer is required.
- NOTE: The MPMs must be within 500 meters (cable run) of the Serial Port Multiplexer.

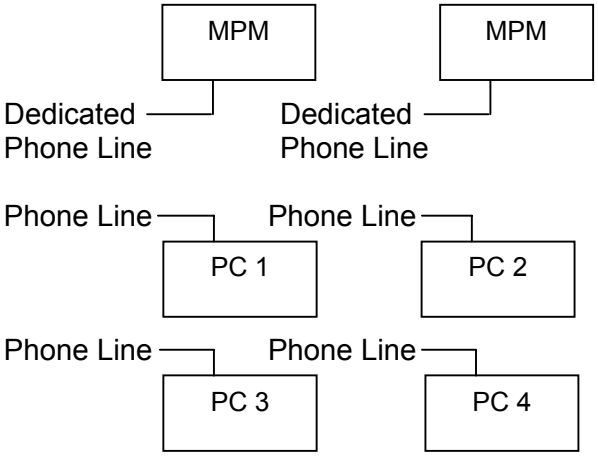
Communication Option G



Option G

- This is for two to 16 MPMs that will be accessed by one or more PCs via a phone line connection, and
- There will be one phone line for up to 16 MPMs.
- A Telco Serial Port Multiplexer is required.
- NOTE: The MPMs must be within 500 meters (cable run) of the Serial Port Multiplexer.

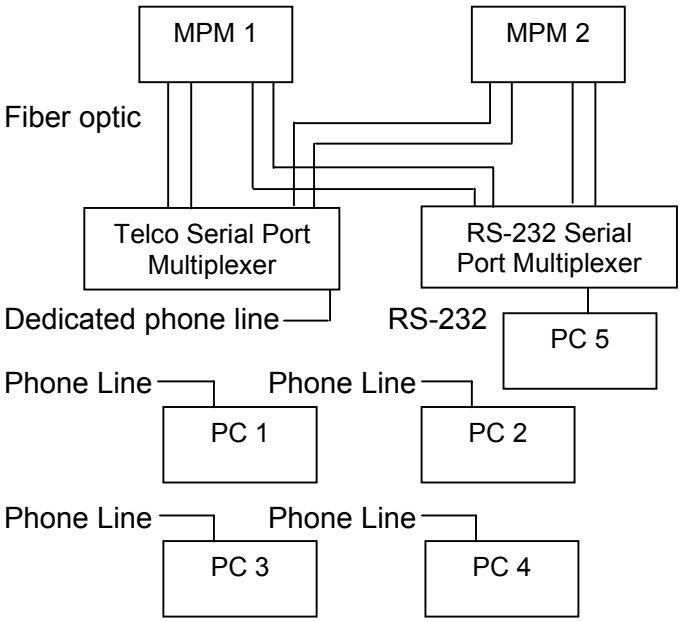
Communication Option H



Option H

- This is for two or more MPMs that will be accessed via phone line connection, and
- All MPMs must have their own dedicated phone line.

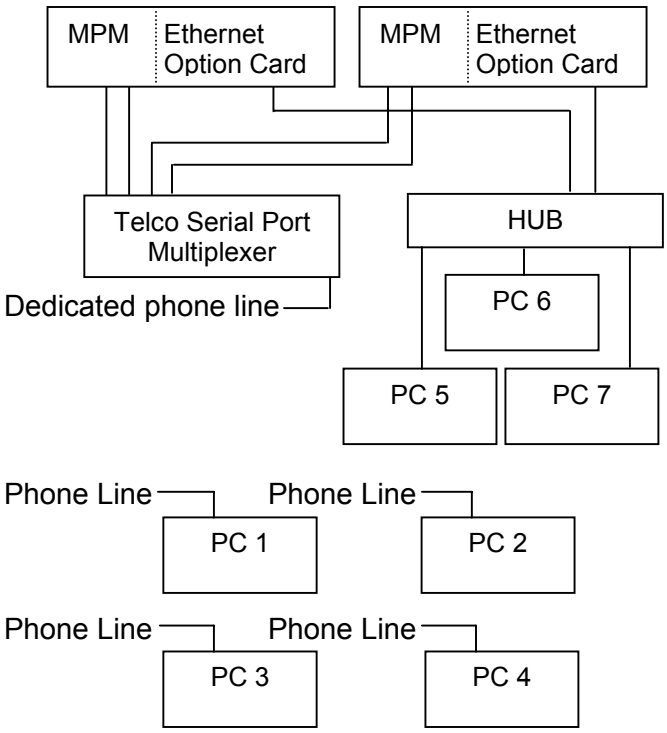
Communication Option J



Option J

- This is for two to 16 MPMs that will be accessed by one PC via a serial connection and other PCs via a phone line connection, and
- There will be one phone line for up to 16 MPMs.
- An RS-232 Serial Port Multiplexer is required.
- A Telco Serial Port Multiplexer is required.
- NOTE: The MPMs must be within 500 meters (cable run) of the Serial Port Multiplexers.

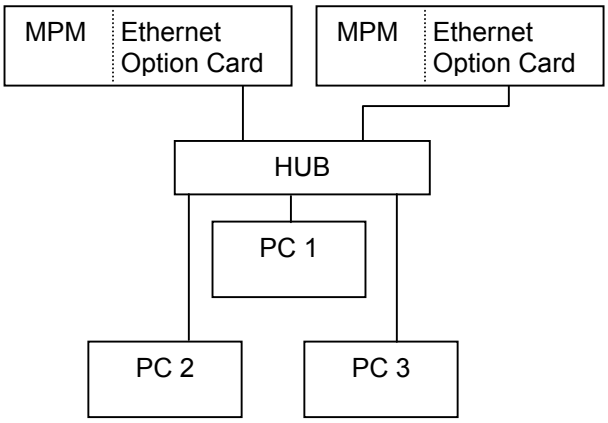
Communication Option K



Option K

- This is for two to 16 MPMs that will be accessed locally by two or more PCs and accessed via a phone line, and
- There will be one phone line for up to 16 MPMs, and
- This option also requires connection of each MPM to an existing LAN or installation of a LAN, and
- This option requires installation of the LAN option in each MPM.
- The LAN can be set up to allow MPM access via the Internet.
- NOTE: The MPMs must be within 500 meters (cable run) of the Serial Port Multiplexer.

Communication Option L



Option L

- This is for two or more MPMs that will be accessed via a LAN and/or an Internet connection.
- This option requires installation of the LAN option in the MPMs, and
- This option also requires connection of each MPM to an existing LAN or installation of a LAN.