

BDSi Monitor

Product Description Guide



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Albér BDSI Monitor Product Description Guide

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1 BDSi General Description

The BDSi is a battery monitor for UPS applications and is designed for installation inside UPS battery cabinets. What sets Alber monitors apart from others is their ability to provide early warning of battery problems. The monitor checks the state of health of each cell by performing a proactive resistance test, 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 displaying status screens.

Using polling and data transfer algorithms, the Battery Monitor Data Manager program lets a Central computer manage over 1000 monitor systems. Data is stored in the computer 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 computer.

The Data Manager string and monitor status indicators make central battery monitoring easy. Terms such as Discharging, Alarm or Warning for string status or Active for monitor status quickly summarize events. Conditions reported to the Central computer are displayed as a list, to easily identify trouble spots. The system also features several methods of automated reporting of alarm occurrences, such as contacting key personnel via a pager, email or fax.

Flexibility was a major design consideration. Since the monitors can be installed without an external computer, a primary protocol using MODBUS ASCII was selected to let you incorporate the monitor into large-scale facility monitors. This allows third-party interfaces to access all the stand-alone features of the monitor, yet leaves the advanced features of the Data Manager remote communication software available for service personnel.

1.1 Normal Operating Mode

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

1.2 Discharge Mode

If a discharge is detected, the system goes 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 that performed by the Alber Cellcorder. On a BDSi, up to ten intertiers can be configured for this measurement.

1.4 Alarm Features

The monitor may be set to automatically call the Central computer to report an alarm condition when detected. You can program thresholds on all monitored thresholds and a maintenance or critical parameter can be delivered. When a parameter goes outside the normal range, the monitor stores the event in memory, then the Alarm LED lights, and maintenance and critical alarm relay with a Form C contact energizes. The alarms may be set for latching or non-latching.

1.5 BDSi Features

This section describes standard and optional BDSi features:

- ◆ Auto detects discharges based on Overall Volts or Discharge Current, and stores data for real time or accelerated time playback,
- ◆ Communicates with an external computer via USB, RS-232, modem, and LAN,
- ◆ Network compatible,
- ◆ Performs a scheduled resistance test of all cells/jars and intertiers, and stores results for trending analysis,
- ◆ Scans all pertinent battery parameters, such as overall voltage, cell voltages, current, temperature, float currents and string currents, and
- ◆ 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.

1.6 Battery Monitor Data Manager BMDM Program Features

- ◆ Automatic paging, emailing, and faxing of alarm events,
- ◆ Automatic polling for over 1000 sites for monitor and string status reporting,
- ◆ Automatically receives calls from monitors and updates the central database for data analysis,
- ◆ Complete memo tracking down to the cell/module level,
- ◆ Easy to read string and monitor status,
- ◆ Historical event list for complete string history,
- ◆ Instant trend graphs of any selected parameter,
- ◆ Microsoft Access™ database compatible, with management of all stored data,
- ◆ Network compatible,
- ◆ Playback of discharge rundown test and controlled rundown test data,
- ◆ Service mode for service personnel, and local RS-232 and USB direct connect viewing of string details and system setup when loaded on a laptop computer,
- ◆ SQL server compatible,
- ◆ Status display can be customized for multi-customer monitoring, and is
- ◆ Windows™ 2000, XP, 7 and 8 compatible Central computer control software.

1.7 Optional Accessories

- ◆ Hall effect current transducer for measuring discharge and float current,
- ◆ Temperature sensor or Contact Ambient Probe,
- ◆ Network interface,
- ◆ Modem

2 Panel Controls And Indicators

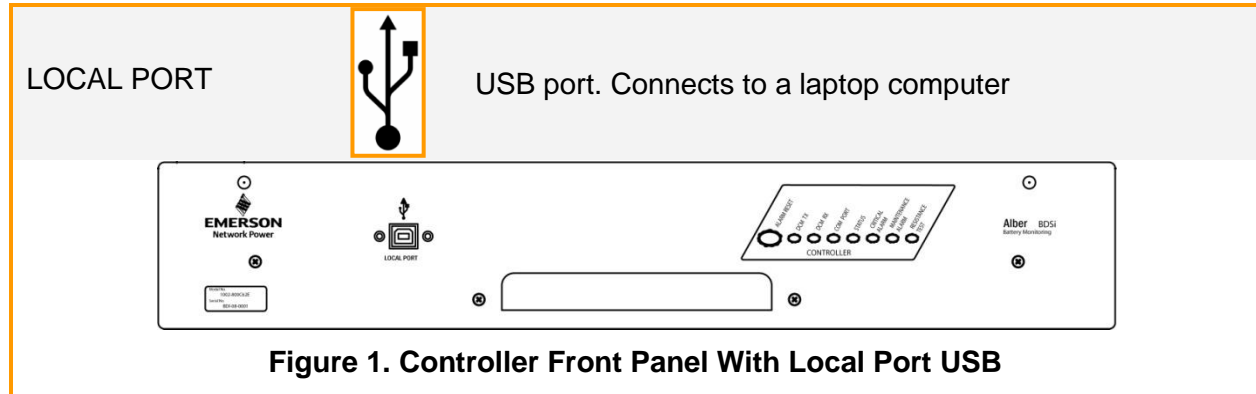
This section describes the front and rear panels of the discreet components that comprise a typical BDSi system. Additional descriptions may appear elsewhere in this manual or in related manuals.

Front Panel Indicator LED colors are (R)ED, (Y)ELLOW, and (G)REEN.

The BDSi system consists of a BDSi Controller and one or more Data Collection Modules.

2.1 BDSi Controller

2.1.1 Front Panel Connectors: USB Local Port



2.1.2 Front Panel Controls: Alarm Reset Switch

ALARM RESET Switch	During normal operation, clears latched alarms. If held during power up, clears existing names in the BDS, disables alarms, disables dial out, and resets the password to <i>alber</i> .
---------------------------	--

2.1.3 Front Panel Indicators: DCM TX, RX, COM, Status, Alarms And Test



Figure 2. Controller Front Panel Indicators LEDs Explained

DCM TX (G)	Flashes during fiber optic transmit.
DCM RX (G)	Flashes during fiber optic receive.
COM PORT (G)	Flashes to indicate communication via LAN port or an incoming call.
STATUS (G)	Flashes during normal operating conditions.
CRITICAL ALARM (R)	Critical alarm detected.
MAINTENANCE ALARM (Y)	Maintenance alarm detected.
RESISTANCE TEST (G)	Performing a manual or automatic resistance test.

2.1.4 Rear Panel Connectors: BDSi Controller

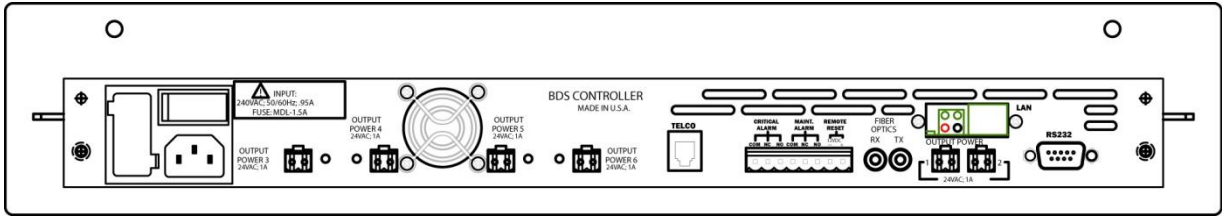


Figure 3. Controller Rear Panel

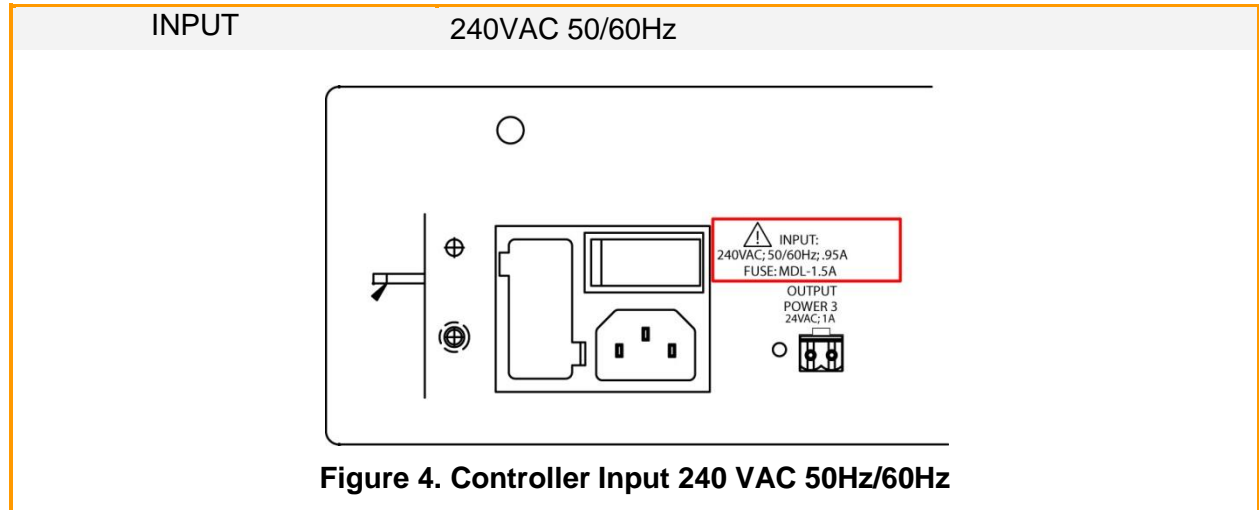


Figure 4. Controller Input 240 VAC 50Hz/60Hz

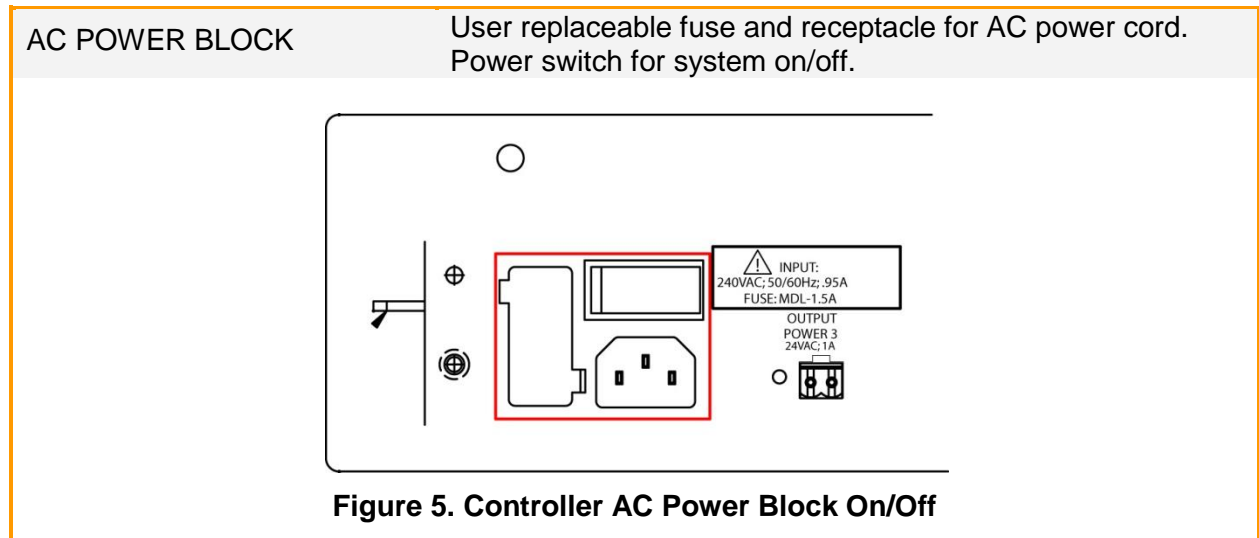


Figure 5. Controller AC Power Block On/Off

OUTPUT POWER 1 to 6

Up to six connectors providing DCM power 24VAC at 1A.
Configuration dependent

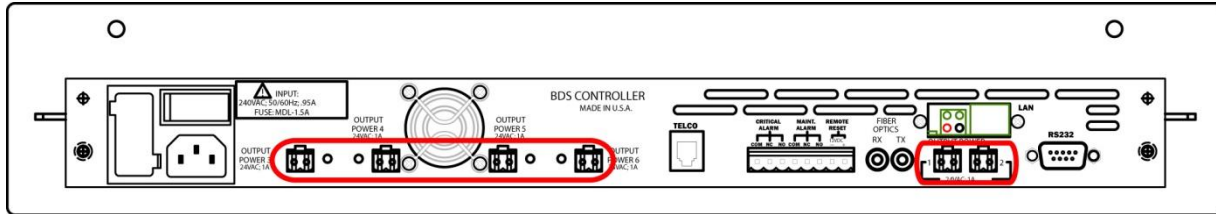


Figure 6. Controller Output Power

TELCO

RJ-11 jack. Communicates with a remote computer via telephone.

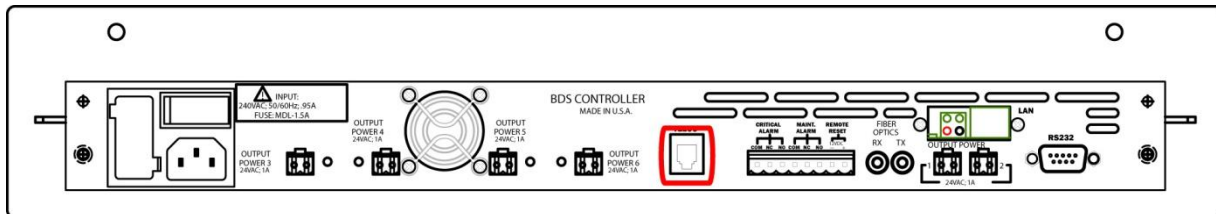


Figure 7. Controller TELCO

CRITICAL ALARM

Form C alarm contacts, software configurable

MAINT. ALARM

Form C alarm contacts, software configurable

REMOTE RESET

Reads momentary contact closure.
Requires a user-supplied 12V signal.

FIBER OPTICS RX and TX

Fiber optic receive / transmit ports for system communication.

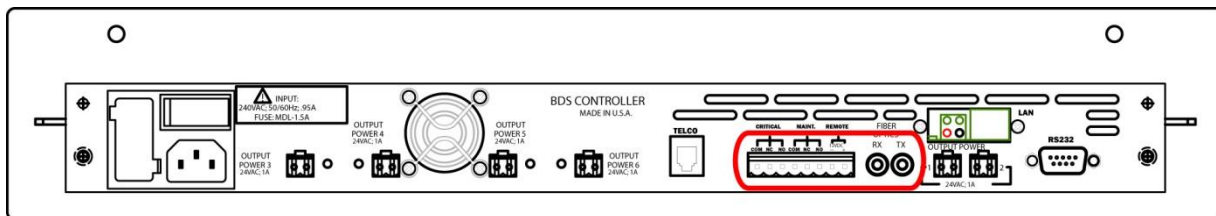


Figure 8. Controller Critical & Maintenance Alarms, Remote Reset And Fiber Optix Rx, Tx

LAN

Optional RJ-45 port.
Communicates with a remote computer via network.

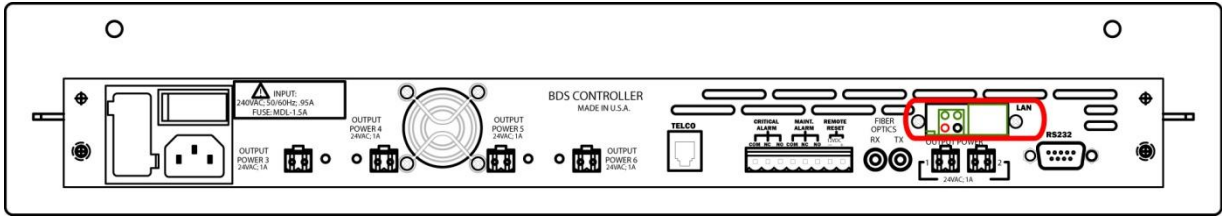


Figure 9. Controller LAN

LOCAL PORT

DB-9 RS-232 port.

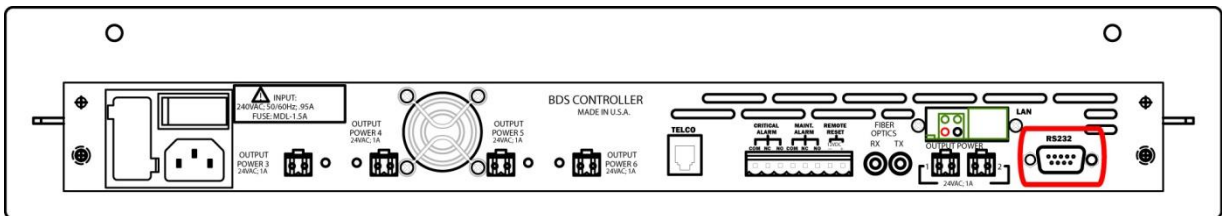


Figure 10. Controller Local RS232

2.2 BDSi Data Collection Module

2.2.1 Front Panel Indicators: Status, Tx, Rx, Service



Figure 11. DCM LED Explanation

STATUS (G)REEN

Flashes during normal DCM operating conditions

TX (G)REEN

Flashes during fiber optic transmit.

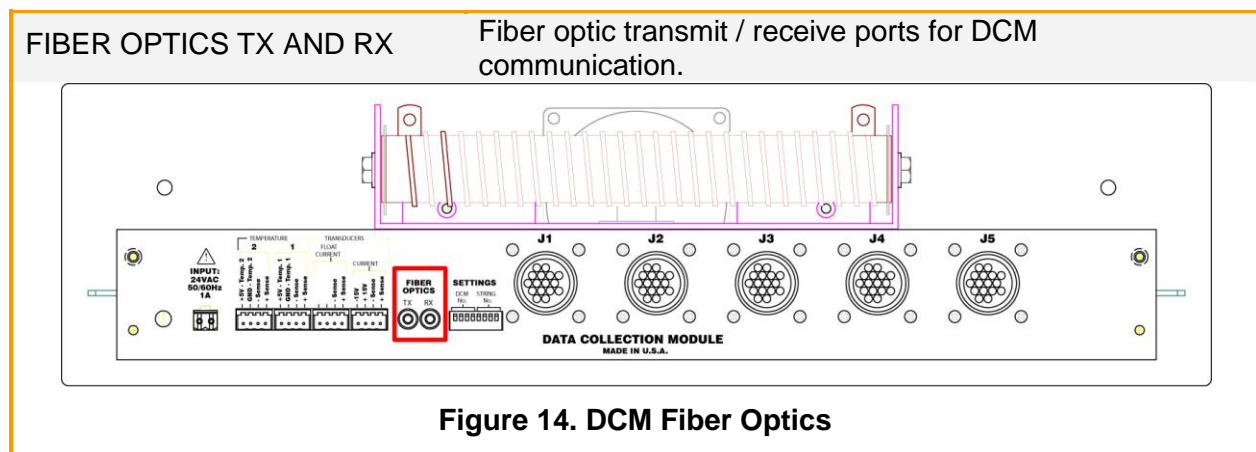
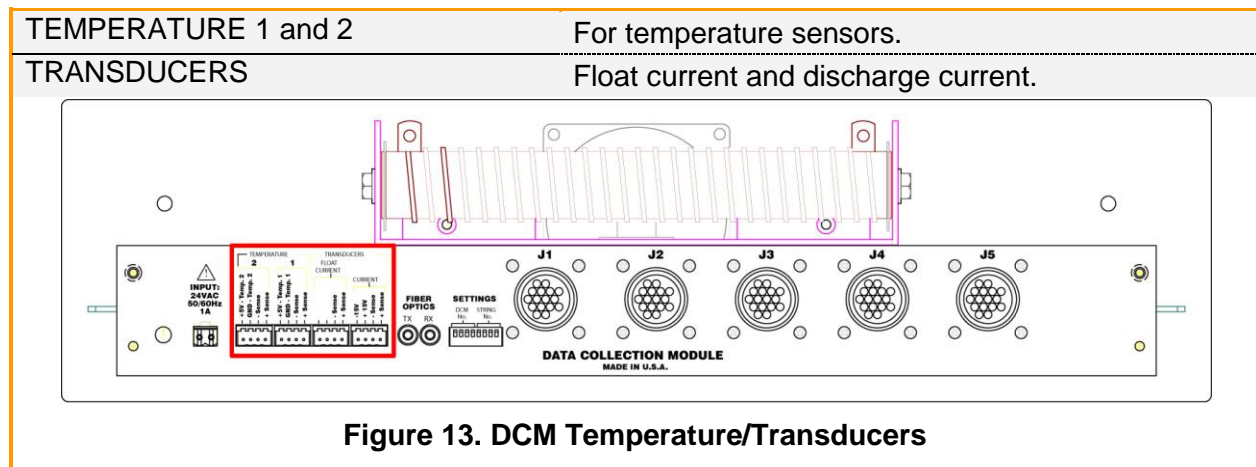
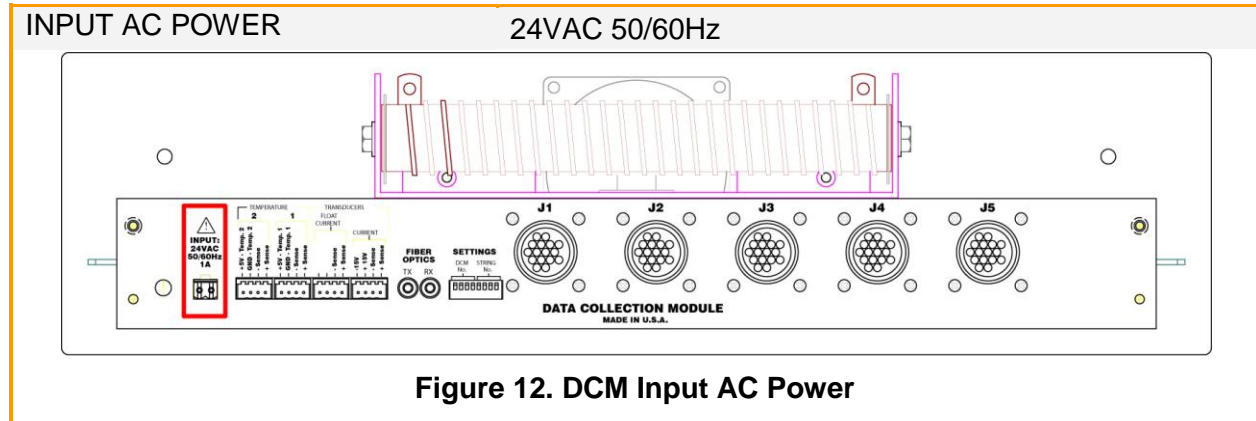
RX (G)REEN

Flashes during fiber optic receive.

SERVICE (R)ED

Unit requires factory service, please contact Alber at 954-623-6660.

2.2.2 Rear Panel Connectors: BDSi Data Collection Module



J1 to J5

Connects voltage sense leads to the batteries.

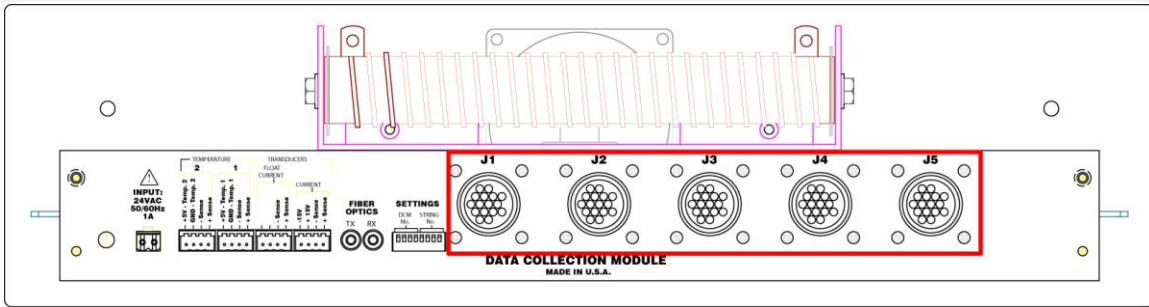


Figure 15. DCM J1-J5

J6

Optional shunt connector

2.2.3 Rear Panel Controls: Settings, DCM No. And String No.

SETTINGS

DCM NO AND STRING NO. DIP switches. Set string identification.

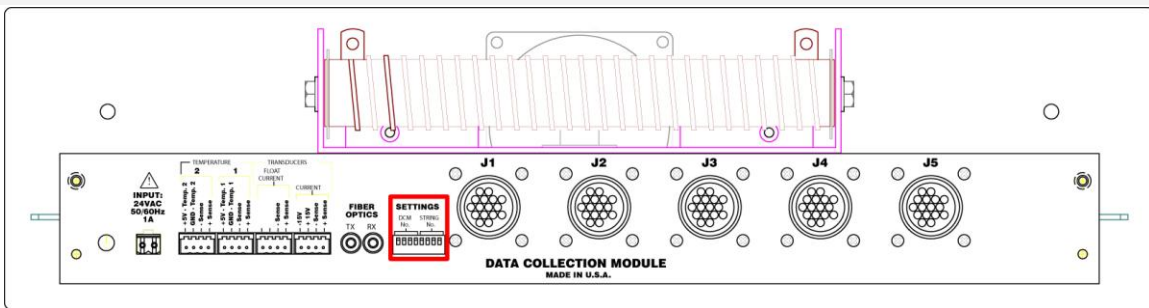


Figure 16. DCM Settings

3 BDSi Configurations, Model Number And Serial Number

3.1 Serial Number

The serial number will be displayed on a label on the front of the DCM for ease of use, service and installation purposes.



Figure 17. Serial/Model Number Label Example

3.2 Model Number/Configuration Information

This section is an overview of the BDSi monitor configurations. The model number will be displayed on a label on the front of the DCM with the serial number for ease of use, service and installation purposes. The BDSi model numbers are structured as follows.

A typical DCM model number might be **1002-801H0CRE**.

	1003	-801	X	X	X	X	X
DCM							
1X40X12V, 10 Shelves of 4 Jars	A	0					
1X40X12V, 4 Shelves of 10 Jars	B	0					
1X36X12V, 4 Shelves of 9 Jars	C	0					
1X36X12V, 3 Shelves of 12 Jars	D	0					
1X30X12V, 5 Shelves of 6 Jars	E	0					
1X30X12V, 10 Shelves of 3 Jars	F	0					
1X40X12V, 4 Shelves of 12, 12, 8 and 8 Jars	G	0					
1X40X12V, 8 Shelves of 5 Jars	H	0					
1X40X12V, 5 Shelves of 8 Jars	I	0					
1X24X12V, 6 Shelves of 4 Jars	0	1					
1X30X16V, 10 Shelves of 3 Jars	1	7					
1X24X12V, 4 Shelves of 6 Jars	2	7					
1X28X12V, 7 Shelves of 4 Jars	4	6					
1X24X12V, Open Rack	7	7					
Cabinet Configuration							
		Current Transducer			C		
		Shunt			S		
Discharge Current		None			N		
				Fuse	F		
Sense Lead Protection				Resistor	R		
				Alber		A	
				Emerson		E	
OEM (A-Z)				Emerson Container		C	

Figure 18. BDSi Configurations/DCM Model Numbers

A typical Controller model number might be **1002-800B62E**.

	1002	-800	X	X	X	X
Controller						
		Modem	A			
		Lan	B			
		Both	C			
		None	D			
Communications Options						
			1-2	2		
			3-4	4		
			5-6	6		
Number or Strings						
			120VAC	1		
			240VAC	2		
Power Input						
				Alber	A	
				Emerson	E	
OEM (A-Z)				Emerson Container	C	

Figure 19. Configurations Continued/Controller Model Numbers

4 BDSi Controller Specifications

4.1 Power

240VAC \pm 10% 60Hz, 1 amp maximum or 120 VAC \pm 10% 60Hz 2 Amps maximum for a maximum configuration of one Controller and six Data Collection Modules with a total of 40 jars.

4.2 Fuses

- ◆ One 1A MDL for each string.
On circuit board
Not user replaceable.
- ◆ One 1.5A, MDL (2A for 120 VAC configurations) or equivalent AC Power Block
Rear panel

4.3 Inputs

- ◆ Remote alarm reset. User-supplied 12V signal. (Current 50mA maximum.)
Momentarily applying voltage initiates the reset action.

4.4 Outputs

- ◆ 24VAC power for up to 6 Data Collection Modules.
- ◆ Alarm contacts:
Two Form C, 2A at 30VDC. (One for critical alarm; one for maintenance alarm.)
- ◆ LEDs (one each):
(G)reen DCM Tx transmit,
(G)reen DCM Rx receive,
(G)reen status,
(G)reen com port,
(Y)ellow critical alarm,
(Y)ellow maintenance alarm,
(G)reen resistance test,
(G)reen (DCM) status,
(G)reen Tx transmit,
(G)reen Rx receive, and
(R)ed service.

4.5 Parameters/Features

- ◆ Number of cell channels:
Up to six strings of 40 12-volt jars or 30 16-volt jars.

4.6 Communication

- ◆ Protocol: Modbus and SNMP
- ◆ Local port, USB connector on the front panel
- ◆ Local port, RS-232 DB-9 connector on the rear panel
- ◆ LAN port, RJ-45 on the rear panel (Optional)
- ◆ RJ-11 Telco line, internal 14.4Kbs modem on the rear panel (Optional)
- ◆ Fiber optic ports: 2 for system communications

4.7 Data Storage

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

4.8 Control Switches

- ◆ Power on/off:
Main 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.

4.9 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.
- ◆ Controller installation category II.
- ◆ Pollution degree 2.
- ◆ Altitude 0 to 2000 meters above sea level.

4.10 Dimensions

- ◆ 19.5"W x 11.8"D x 3.38"H
- ◆ 8 lbs.

4.11 Agencies

- ◆ UL recognized. File number E212234
- ◆ CE approved

5 BDSi Data Collection Module Specifications

5.1 Power

Less than 1 Amp at 24VAC $\pm 10\%$

5.2 Fuses

- ◆ Two 0.75A SB.
On circuit board
Not user replaceable

5.3 Inputs

- ◆ 24VAC
- ◆ 40 cell voltage channels
- ◆ 10 intertier resistance channels
- ◆ 2 temperature channels*
- ◆ One discharge current channel*
- ◆ One float current channel*

*Optional temperature and current transducers are required

5.4 Outputs

- ◆ +15VDC, -15VDC power output (optional) for discharge current transducer.
- ◆ LEDs (one each): green DCM status, green Tx transmit, green Rx receive, and red service.

5.5 Parameters / Features

- ◆ Number of cell channels:
40 12-volt jars or 30 16-volt jars.

5.6 Measurement Range / Tolerance

Cell voltage:	0 to 16V, 0.15% of reading $\pm 20\text{mV}$
Cell resistance:	0 to 32,000 $\mu\Omega$, 5% of reading $\pm 1\mu\Omega$
String voltage:	0 to 600.0V, 0.2% of reading $\pm 0.5\text{V}$
Intertier resistance:	0 to 5m Ω , 5% of reading $\pm 5\mu\Omega$.
Temperature:	0°C to 80°C (32°F to 176°F), $\pm 1^\circ\text{C}$. Optional temperature transducer required. Transducer accuracy affects overall temperature reading accuracy.
Discharge current:	0 to 4000A $\pm 5\%$ of full scale (using CT) 0 to 4000A 0.1% of reading $\pm 1\text{A}$ (using shunt) Optional current transducer required. Transducer accuracy affects overall current reading accuracy.

Float current:	0 to 5000mA \pm 50mA. Optional current transducer required. Transducer accuracy affects overall current reading accuracy.
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5.7 Communications

- ◆ Fiber optic, Alber proprietary

5.8 Data Storage

- ◆ E² nonvolatile memory for setup
- ◆ Flash memory for firmware upgrades

5.9 Control Switches

DIP switch (rear panel) for setting string identification

5.10 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 | |

5.11 Dimensions

- ◆ 19.5"W x 12.06"D x 5.09"H
- ◆ 12 lbs.

5.12 Agencies

- ◆ UL recognized. File number E212234
- ◆ CE approved