

Battery Monitor Data Manager Report Generator Software

User's Guide



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Battery Monitor Data Manager Report Generator Software User's Guide, Book Revision 1.0
P/N 4200-010

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- Do not allow liquids or moisture to get into the equipment. If liquid does get into the equipment, unplug it immediately and contact your nearest authorized service center or Albécorp directly.
- Ensure equipment is provided adequate ventilation. Do not block equipment ventilation openings.
- Do not exceed equipment voltage or power ratings and capabilities.
- Make sure that equipment is properly grounded.
- Do not let unauthorized persons operate the equipment.

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1. System Requirements

The following are the minimum system requirements for Battery Monitor Data Manager (BMDM) Report Generator software.

- Microsoft Windows™ 95, 98 or NT4.0.
- Personal computer using a Pentium™ 100MHz or higher microprocessor.
- 32M of memory.
- 20M of hard disk space available.
- 3.5" high-density (1.44MB) disk drive.
- SVGA monitor.
- Mouse or compatible pointing device.

2. General Description

The Battery Monitor Data Manager (BMDM) Report Generator program is designed to read the data files generated by the Data Manager program and create customized reports. After a Data Manager controlled system reads voltage or resistance, the data is saved to a file, and it is this data, presented in report format, that battery monitoring personnel rely on to analyze battery system performance.

The Report Generator can display and print pages of text and graphs, and save reports in an archive format that protects against changes and ensures the integrity of the information.

2.1. Accessing a Different Database

The Report Generator opens the database file that was opened last using the Data Manager program. To access a different database, close the Report Generator, open the new database using the Data Manager program, then exit the Data Manager and restart the Report Generator.

2.2. Sample Data

The Data Manager program has a sample database file you may use to explore the features in the Report Generator program. The sample database has data for two strings of a 1x24x2 configuration, plus one other configuration. The Report Generator opens the database opened last by the Data Manager. To access the sample database, close the Report Generator and start the Data Manager program. To open the sample database, select **File|Open** from the String Status screen and select the file **sample3.mdb**. The path is:

C:\Program Files\Alber\MPM Manager\database.

Exit the Data Manager and restart the Report Generator. The sample database is now accessible.

3. Starting the Report Generator

To create a report from the data saved by a Data Manager controlled system, double-click the Report Generator icon on the desktop to start the Report Generator. The program starts and the main screen appears.

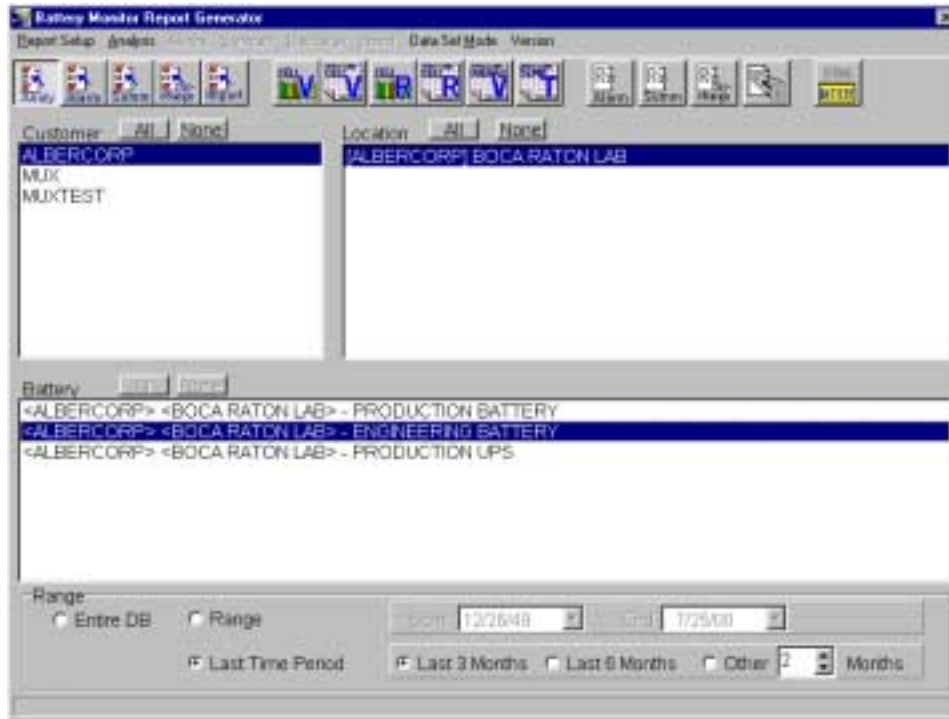


Figure 1. Report Generator Main Screen

Use the toolbar or the menu bar along the top of the main screen to access all Report Generator functions. When you select an item, other items on the toolbar or menu bar are enabled. To exit the Report Generator, click the x in the upper right corner of the main screen.

4. Selecting a Battery or String

At the Report Generator main screen, select a report type by clicking one of the five setup buttons on the left of the toolbar or by selecting an item under **Report Setup** on the menu bar.



Figure 2. Toolbar on Main Screen

When you select a report type, other items on the toolbar or menu bar are enabled.



Toggle String/Battery Mode

Click the Toggle String/Battery Mode button on the toolbar to switch between battery and string modes, or select **Data Set Mode|Battery** or **Data Set Mode|String** on the menu bar. Select Battery to create a report for all strings in the battery. Select String to create a report for only one string.

Select a battery or string before generating a report. If you select a report without selecting a battery or string, an error message appears. In the Customer area, click a customer name to select it, or click the All button to select all names. In the Location area, click a location name or click All. Depending on the Battery/String mode, the lower screen area displays Battery or String. Click a battery or string name. The All button is active only if Summary report is selected.

The following items are on the bottom of the main screen.

Entire DB - Click Entire DB to sample the entire database for report data.

Range, Start and End - Click Range to sample a specific range of dates for report data, then type the new dates in the Start and End boxes, or click the down arrows to display calendars from which you may select dates.

Last Time Period, Last 3 Months, Last 6 Months and Other - Click Last Time Period to select a range of dates of either the last three months, the last six months, or a user-selected number of months.

5. Analysis Setup



Analysis Setup

Click the Analysis Setup button or select **Report Setup|Analysis** on the menu bar to activate six toolbar buttons: Run Detail Cell Voltage Setup, Run Trend Cell Voltage Setup, Run Detail Cell Resistance Setup, Run Trend Cell Resistance Setup, Run Trend Overall Voltage Setup, and Run Trend Temperature Setup. The following sections describe how to use these buttons to create detail and trend reports.

Choose a Detail report when you want to generate a report on an entire string by date. Choose a Trend report to generate a report on an individual cell or cells, temperature, or overall voltage over a range of dates.

If you select Battery mode and a cell voltage or resistance setup screen, multiple tabs appear in the Data Sets area for batteries with multiple strings. (See Figure 3.) If you are manually selecting data sets, as described below, click a tab to select a string, then select the data sets to include in the report.

Options selected on the Analysis Setup screens are saved by the battery name.

5.1. Detail Cell Voltage Report



Run Detail Cell Voltage Setup

To create a Detail Cell Voltage report, select a battery or string, then click Detail Cell Voltage Setup or select **Analysis|Voltage|Detail**. The Detail Cell Voltage Setup dialog box appears.

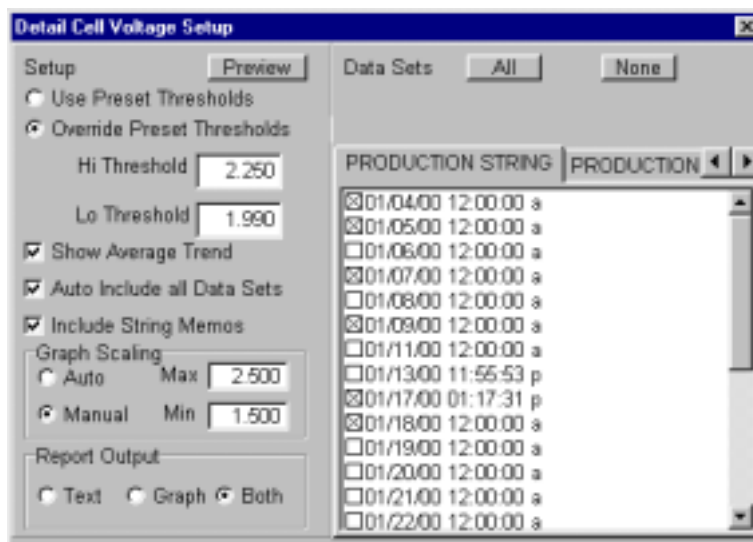


Figure 3. Detail Cell Voltage Setup

The following items are on the Detail Cell Voltage Setup dialog box.

Use Preset Thresholds - Click this button to use values set in the Data Manager (BMDM) program when the test was run.

Override Preset Thresholds - To ignore Data Manager program thresholds, click this button and type values in the Hi Threshold and Lo Threshold boxes.

Show Average Trend - Select this box to generate a graph that shows the average voltage of all the cells in the string for each date selected.

Auto Include All Data Sets - Select this box to automatically select battery or string data sets (listed on the right side of the dialog box) that violate high or low threshold values. If you change the threshold values, data sets that meet the new criteria are selected. You may add data sets to the report by selecting additional check boxes in the list.

Include String Memos - Select this box to include string memos written with the Data Manager program.

Graph Scaling - Click Auto to default to automatic graph scaling, or click Manual and type the maximum and minimum graph scale values. Manual scaling is useful when you want to maintain scaling to make it easier to compare several graphs.

Report Output - Click Text to create a report with text only. Click Graph to create a report with graphs only. Click Both to include both text and graphs in the report.

Data Sets - To manually select battery or string data sets, click the data sets in the list to include in the report, or click All to select all items. If Auto Include All Data Sets is selected, batteries or strings that violate thresholds are already selected. To clear all selected items, click None. If more than one subdirectory of battery or string data is available, tabs for each subdirectory appear above the list of battery or string names.

NOTE: If the selected range contains no data, no dates appear in the Data Sets area.

Preview - Click the Preview button to create a report and display it on the Preview screen. Refer to the *Preview Screen* section.

5.2. Trend Cell Voltage Report



Run Trend Cell Voltage Setup

To create a Trend Cell Voltage report, select a battery or string, then click Trend Cell Voltage Setup or select **Analysis|Voltage|Trend**. The Trend Cell Voltage Setup dialog box appears.

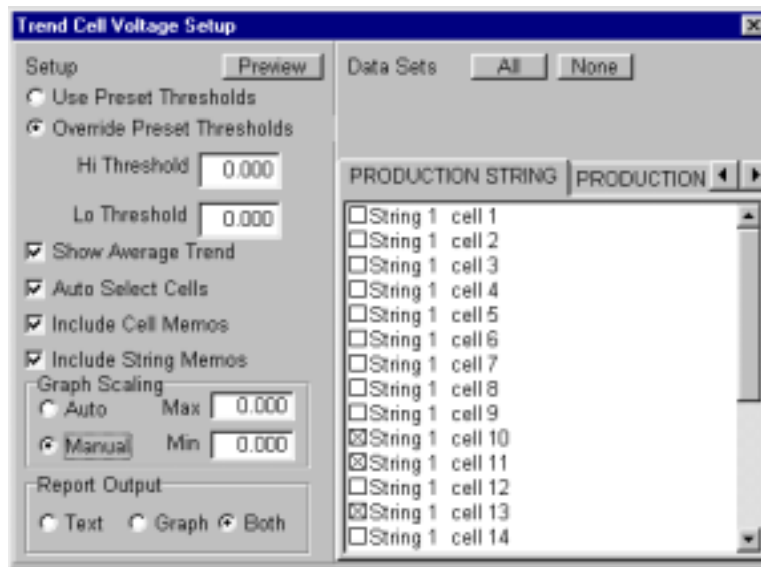


Figure 4. Trend Cell Voltage Setup

The following items are on the Trend Cell Voltage Setup dialog box.

Use Preset Thresholds - Click this button to use values set in the Data Manager (BMDM) program when the test was run.

Override Preset Thresholds - To ignore Data Manager program thresholds, click this button and type values in the Hi Threshold and Lo Threshold boxes.

Show Average Trend - Select this box to generate a graph that shows the average cell voltage over the range of dates.

Auto Select Cells - Select this box to automatically select battery cells (listed on the right side of the dialog box) that violate high or low threshold values. If you change the threshold values, cells that meet the new criteria are selected. You may add cells to the report by selecting additional check boxes in the list.

Include Cell Memos and **Include String Memos** - Select these boxes to include cell and string memos written with the Data Manager program.

Graph Scaling - Click Auto to default to automatic graph scaling, or click Manual and type maximum and minimum graph scale values. Manual scaling is useful when you want to maintain scaling to make it easier to compare several graphs.

Report Output - Click Text to create a report with text only. Click Graph to create a report with graphs only. Click Both to include both text and graphs in the report.

Data Sets - To manually select cells, click the cells in the list to include in the report, or click All to select all items. If Auto Select Cells is selected, cells that violate thresholds are already selected. To clear all selected items, click None. If the Data Manager (BMDM) program was used with an MPM monitor, the list shows string and cell. If a BDS monitor was used, the list shows cell only.

NOTE: If the selected range contains no data, no cells appear in the Data Sets area.

Preview - Click the Preview button to create a report and display it on the Preview screen. Refer to the *Preview Screen* section.

5.3. Detail Cell Resistance Report



Run Detail Cell Resistance Setup

To create a Detail Cell Resistance report, select a battery or string, then click Detail Cell Resistance Setup or select **Analysis|Resistance|Detail**. The Detail Cell Resistance Setup dialog box appears.

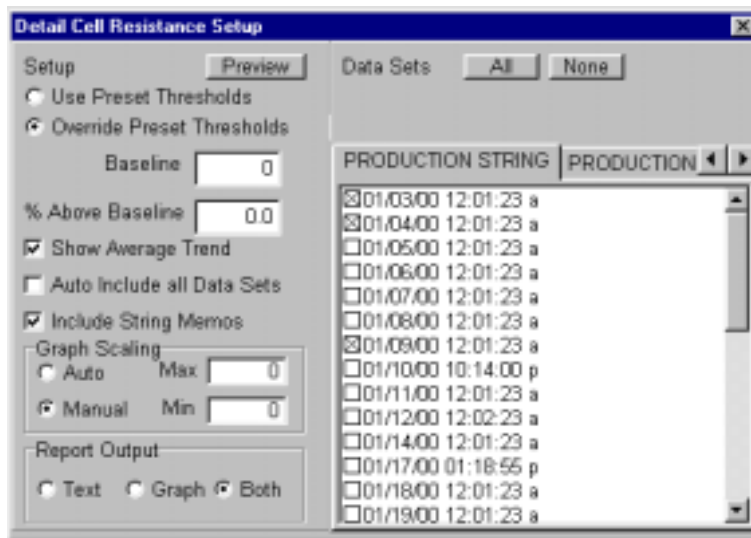


Figure 5. Detail Cell Resistance Setup

The items on the Detail Cell Resistance Setup dialog box are the same as those described in the *Detail Cell Voltage Report* section, with the following exceptions:

Override Preset Thresholds, Baseline and % Above Baseline - To ignore Data Manager program thresholds, click Override Preset Thresholds. In the Baseline box, type the resistance value in microhms. In the % Above Baseline box, type the percentage above which a measurement will be in violation. For example, if the baseline resistance is 300 microhms and the percentage is 10%, any data above 330 microhms violates threshold.

Show Average Trend - Select this box to generate a graph that shows the average resistance of all the cells in the string for each date selected.

After all options are selected, click the Preview button to create a report and display it on the Preview screen. Refer to the *Preview Screen* section.

5.4. Trend Cell Resistance Report



Run Trend Cell Resistance Setup

To create a Trend Cell Resistance report, select a battery or string, then click Trend Cell Resistance Setup or select **Analysis|Resistance|Trend**. The Trend Cell Resistance Setup dialog box appears.

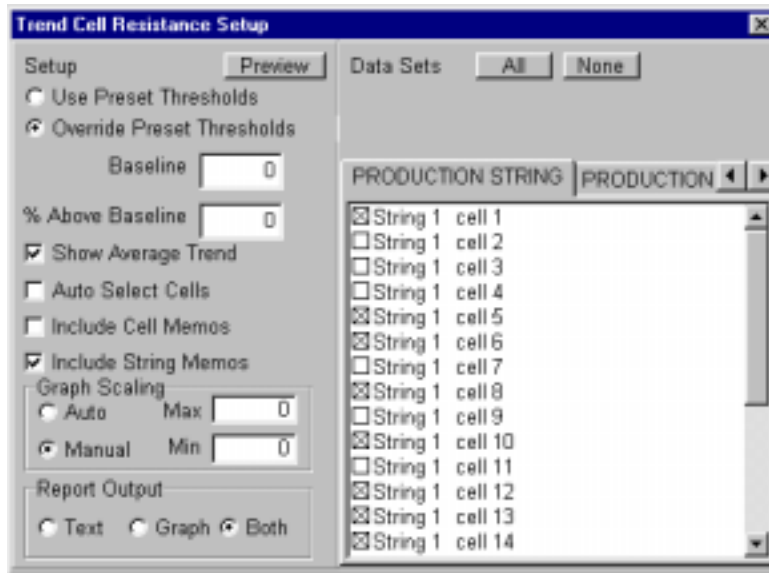


Figure 6. Trend Cell Resistance Setup

The items on the Trend Cell Resistance Setup dialog box are the same as those described in the *Trend Cell Voltage Report* section, with the following exceptions:

Override Preset Thresholds - To ignore Data Manager program thresholds, click Override Preset Thresholds. In the Baseline box, type the resistance value in microhms. In the % Above Baseline box, type the percentage above which a measurement will be in violation. For example, if the baseline resistance is 300 microhms and the percentage is 10%, any data above 330 microhms violates threshold.

Show Average Trend - Select this box to generate a graph that shows the average cell resistance over the range of dates.

After all options are selected, click the Preview button to create a report and display it on the Preview screen. Refer to the *Preview Screen* section.

5.5. Trend Overall Voltage Report



Run Trend Overall Voltage Setup

To create a Trend Overall Voltage report, select a battery or string, then click Trend Overall Voltage Setup or select **Analysis|Overall Voltage**. The Trend Overall Voltage Setup dialog box appears.

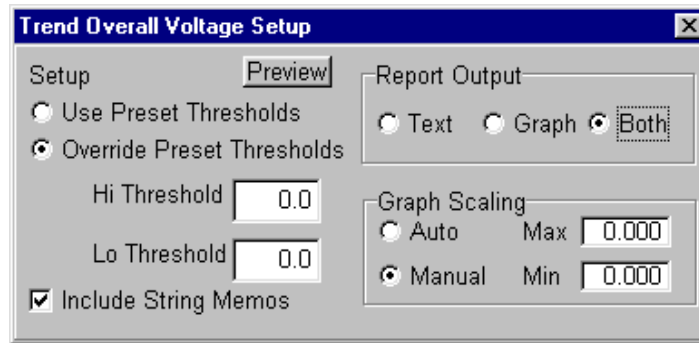


Figure 7. Trend Overall Voltage Setup

The following items are on the Trend Overall Voltage Setup dialog box.

Use Preset Thresholds - Click this button to use values set in the Data Manager program when the test was run.

Override Preset Thresholds - To ignore Data Manager program thresholds, click this button and type values in the Hi Threshold and Lo Threshold boxes.

Include String Memos - Select this box to include string memos written with the Data Manager program.

Report Output - Click Text to create a report with text only. Click Graph to create a report with graphs only. Click Both to include both text and graphs in the report.

Graph Scaling - Click Auto to default to automatic graph scaling, or click Manual and type maximum and minimum graph scale values. Manual scaling is useful when you want to maintain scaling to make it easier to compare several graphs.

Preview - Click the Preview button to create a report and display it on the Preview screen. Refer to the *Preview Screen* section.

5.6. Trend Temperature Report



Run Trend Temperature Setup

To create a Trend Temperature report, select a battery or string, then click Trend Temperature Setup or select **Analysis|Temperature**. The Trend Temperature Setup dialog box appears.

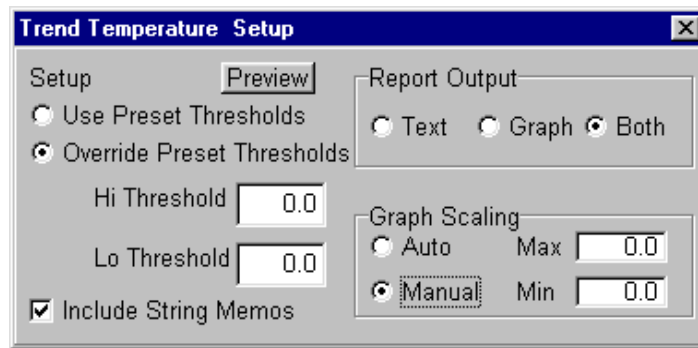


Figure 8. Trend Temperature Setup

The items on the Trend Temperature Setup dialog box are the same as those described in the *Trend Overall Voltage Report* section.

6. Alarm Setup



Alarm Setup

Click the Alarm Setup button or select **Report Setup|Alarms** to activate the Run Alarms Setup toolbar button.

6.1. Alarm Report



Run Alarms Setup

To create an Alarm report, select a battery or string, then click Run Alarms Setup or select **Alarms**. The Alarms Setup dialog box appears.

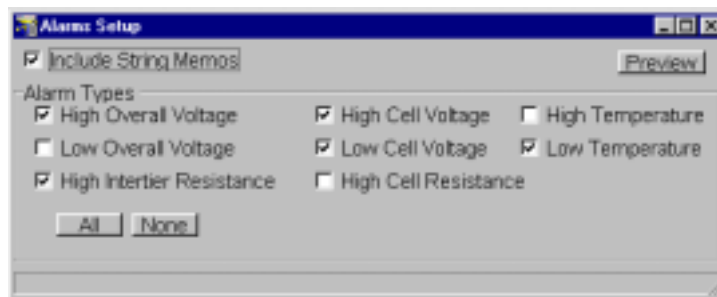


Figure 9. Alarms Setup

The following items are on the Alarms Setup dialog box.

Include String Memos - Select this box to include string memos written with the Data Manager program.

Alarm Types - Alarm types that you may include in the report are high and low overall voltage, high intertier resistance, high and low cell voltage, high cell resistance, and high and low temperature. Select these items to include full details of each alarm, not just a summary.

Preview - Click the Preview button to create a report and display it on the Preview screen. Refer to the *Preview Screen* section.

Options selected on the Alarm Setup screen are saved by the battery name.

7. Summary Setup



Summary Setup

Click the Summary Setup button or select **Report Setup|Summary** from the menu bar to activate the Run Summary Setup toolbar button.

7.1. Summary Report



Run Summary Setup

To create a Summary report, select a battery or string, then click Run Summary Setup or select **Summary**. The Summary Setup dialog box appears.

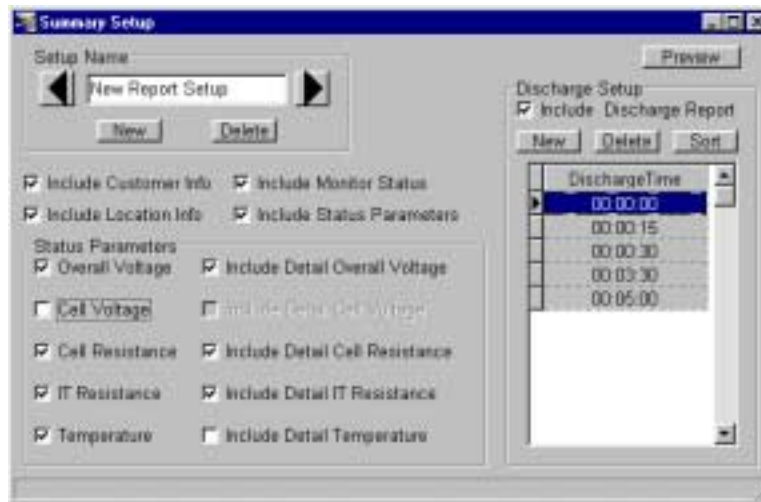


Figure 10. Summary Setup

The following items are on the Summary Setup dialog box.

Setup Name - You can save the options and discharge times you select on this screen as a template so you do not have to choose them each time you generate a report. After choosing the options, type a name in the Setup Name box and click New in the Setup Name area to save the template. To view existing templates, click the arrows. To delete a template, display it and click Delete in the Setup Name area. NOTE: Although the same name can be used for different templates, you may want to use a unique name for each template.

Include Customer Info - Include the customer name, address, and contact information.

Include Location Info - Include the location name, address, and contact information.

Include Monitor Status - Include the last known monitor status.

Include Status Parameters - Select this option to enable items in the Status Parameters area.

Overall Voltage and Include Detail Overall Voltage - Select Overall Voltage to include status, date and time, and overall voltage in the report. Overall Voltage must be enabled to select Include Detail Overall Voltage, which displays a graph of all values that violate threshold levels.

Cell Voltage and Include Detail Cell Voltage - Select Cell Voltage to include status, date and time, and average cell voltage in the report. Cell Voltage must be enabled to select Include Detail Cell Voltage, which displays a graph of all values that violate threshold levels.

Cell Resistance and Include Detail Cell Resistance - Select Cell Resistance to include status, date and time, and average cell resistance in the report. Cell Resistance must be enabled to select Include Detail Cell Resistance, which displays a graph of all values that violate threshold levels.

IT Resistance and Include Detail IT Resistance - Select IT (Intertier) Resistance to include status, date and time, and highest intertier resistance reading in the report. IT Resistance must be enabled to select Include Detail IT Resistance, which displays a graph of all values that violate threshold levels.

Temperature and Include Detail Temperature - Select Temperature to include status, date and time, and average temperature reading in the report. Temperature must be enabled to select Include Detail Temperature, which displays a graph of all values that violate threshold levels.

Include Discharge Report - Select Include Discharge Report to include a list of discharges with cumulative time. Refer to the *Discharge Time* item below.

New, Delete and Sort - In the Discharge Setup area, click New to add a new time, then double-click on the time to change it. To delete a time, click on it then click Delete. To sort the times in the list, click Sort.

Discharge Time - In this area, type discharge times. These times determine test intervals. Any discharges that occur between these intervals are listed on the report. A pie chart on the report displays the percentage of discharge duration between the intervals.

Preview - Click the Preview button to create a report and display it on the Preview screen. Refer to the *Preview Screen* section.

8. Discharge Setup



Discharge Setup

Click the Discharge Setup button or select **Report Setup|Discharge** to activate the Run Discharge Setup toolbar button.

8.1. Discharge Report



Run Discharge Setup

To create a Discharge report, select a battery or string, then click Run Discharge Setup or select **Discharge**. The Discharge Setup dialog box appears.

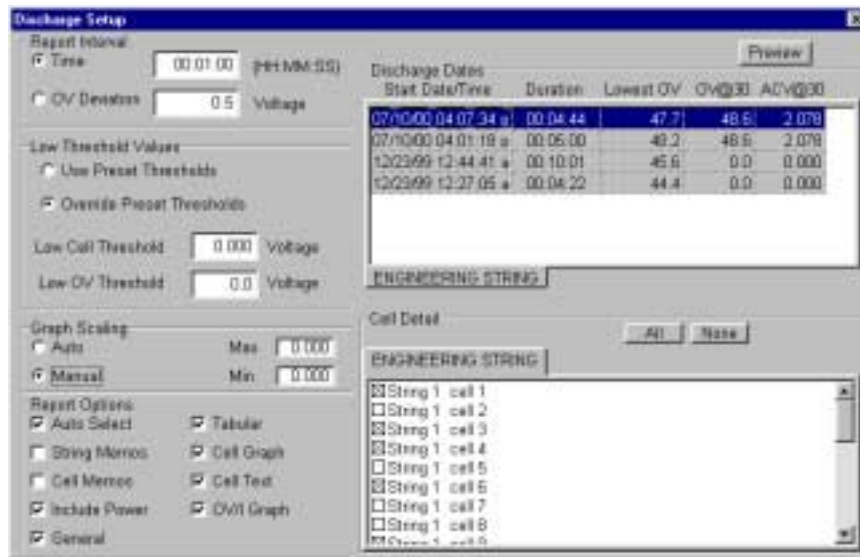


Figure 11. Discharge Setup

The following items are on the Discharge Setup dialog box.

Time and OV Deviation - Click the Time or OV Deviation button in the Report Interval area, and type a value in the box. The Report Interval determines the frequency of report sampling. Specify time in hours, minutes, and seconds (10 second minimum) or OV (overall voltage) deviation in volts (0.2 volt minimum).

Use Preset Thresholds - Click this button to use values set in the Data Manager program when the test was run.

Override Preset Thresholds - To ignore Data Manager program thresholds, click this button and type values in the Low Cell Threshold and Low OV Threshold boxes. Any measurement below these values will be in violation.

Graph Scaling - Click Auto to default to automatic graph scaling, or click Manual and type maximum and minimum graph scale values. Manual scaling is useful when you want to maintain scaling to make it easier to compare several graphs.

Auto Select - Select this box to automatically select battery cells (listed on the right side of the dialog box) that violate the threshold values. If you change the cell or OV threshold values, cells that meet the new criteria are selected. You may add cells to the report by selecting additional check boxes in the list.

String Memos and Cell Memos - Select this box to include string memos and cell memos written with the Data Manager program.

Include Power - Select Include Power to list power in reports, in addition to voltage and current.

General - General report. Cells are listed by string, and strings are listed by time in a Cell = Value format.

Tabular - Tabular general report. Contains the same information as a general report, but in a spreadsheet format, with Cells vs. Time.

Cell Graph - Click to create a report that includes a cell graph.

Cell Text - Click to create a report that includes cell text.

OV/I Graph - Click to create a report that includes Overall Voltage and Load Current graphs.

Discharge Dates - This area lists the start date and time, duration, lowest OV, OV@30, and ACV@30 of all discharges. The Lowest OV column lists the lowest value reached during the discharge. OV@30 lists the overall voltage 30 seconds into the discharge, and ACV@30 lists the average cell voltage 30 seconds into the discharge. Click on the discharge for which the report will be generated. Only one discharge date can be selected for a report.

Cell Detail - To manually select cells, click the cells in the list to include in the report, or click All to select all items. If Auto Select is selected, cells that violate thresholds are already selected. To clear all selected items, click None. If more than one subdirectory of cell data is available, tabs for each subdirectory appear above the list of cell names.

Preview - Click the Preview button to create a report and display it on the Preview screen. Refer to the *Preview Screen* section.

Options selected on the Discharge Setup screen are saved by the battery name.

9. Import Setup



Import Setup

Use the Import feature to add readings to the database that were made using a BDS DOS-based system. Click the Import Setup button or select **Report Setup|Import** to activate the Import BDS DOS Files toolbar button. The String/Battery Mode button defaults to String.

9.1. Import BDS DOS Files



Import BDS DOS Files

Use this feature to import data created using a DOS system into a Windows-based database. First, select the database into which data will be imported (refer to *Accessing a Different Database*), then click Import BDS DOS Files or select **Import**. The DOS Import dialog box appears.

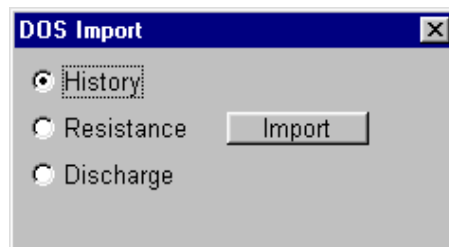


Figure 12. DOS Import

The following items are on the DOS Import dialog box.

History - Select History to add DOS float voltage readings to the database.

Resistance - Select Resistance to add DOS resistance readings to the database.

Discharge - Select Discharge to add DOS discharge readings to the database.

Import - Click Import to display the Windows Open box, and select the file names to import. You may select more than one file name by holding the Control key down while clicking on the file names. After the files are selected, click Open. The data in the files is added to the database currently open.

NOTE: If you import data while the Data Manager program is open, the program may not display the new data. To refresh the screen, restart the Data Manager program.

10. Preview Screen

After all report parameters are selected, to view the report on the screen, click Preview. To change the size of the page display, click Page, Width or Full. To view different pages, click the first, previous, next or last page arrows on the toolbar.

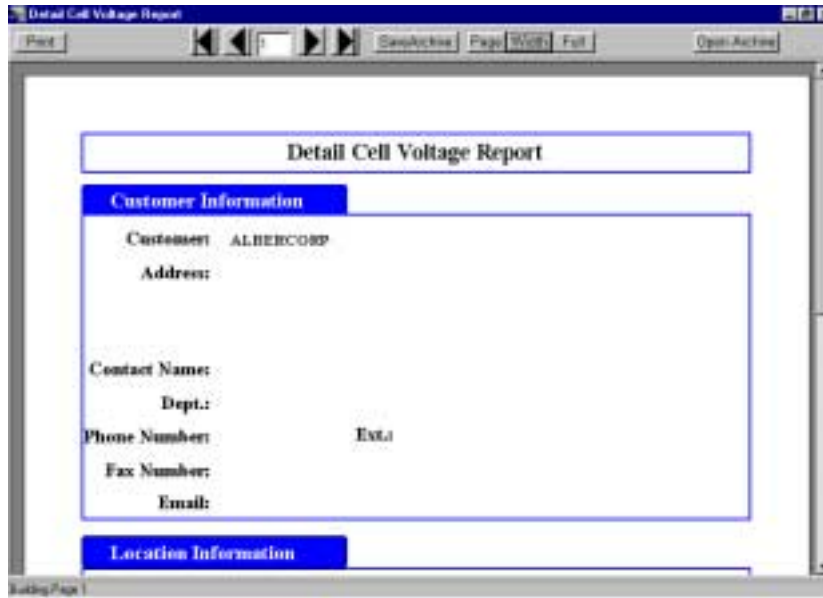


Figure 13. Preview (Typical Screen)

The Discharge Report preview screen is different from the other preview screens. This screen has tabs along the top that let you select different sections of the report. These tabs are labeled Battery Info, Cell Summary, Standard, Cell Detail, Tabular, Detail Graph, and Battery Graph.

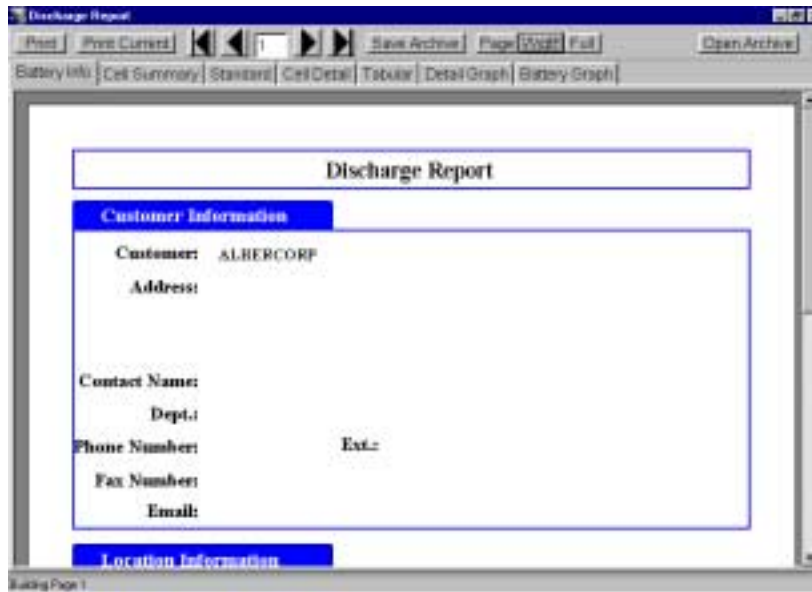


Figure 14. Preview (Discharge Report)

To view a section of the report, click a tab. To view different pages in one section, click the first, previous, next or last page arrows on the toolbar.

10.1. Saving a Report in Archive (.ZRF) Format

The Report Generator can save a report as an archive (.ZRF) file, which cannot be changed after it is saved. Archive format lets you distribute the report file while ensuring the integrity of the data. The file can be opened by the Report Generator or the Archive Reader and viewed or printed. To save a report in archive format from the Preview dialog box, click Save Archive. In the Save Archive dialog box, select the subdirectory, type the file name, then click Save. Reports are saved by default in the folder last opened, unless a different folder is selected.

10.2. Printing a Report

To print the report displayed, click Print from the Preview screen. In reports with more than one section, to print only the currently selected tab, click Print Current or, to print the entire report, click Print. When the print dialog box appears, select the pages to print, the number of copies, and the printer setup. NOTE: To print a single page, do not select Print Current Page. Instead, select Pages and type the page number in the box.

10.3. Opening an Archive File

You can open an archive (.ZRF) file to compare data before saving a currently open report. To open and display an archive file, click Open Archive from the Preview screen, select the subdirectory and file name, then click Open. Use the toolbar buttons to change the page size and view different pages. To print the report, click Print. To close the file, click the Close button. Archive files cannot be changed.

10.4. Archive Reader Program

The Archive Reader is distributed with the Report Generator and is used to view and print archive files when the Report Generator program is not available. The Archive Reader is usually distributed with archive files when these files are sent to locations that do not have the Report Generator program. You may freely copy and distribute the Archive Reader with archive files when required. NOTE: The Report Generator is a licensed product and may not be duplicated for multiple site use.

You may copy the Archive Reader from the Report Generator program disk to a 3.5"-inch disk for distribution with .ZRF files.

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