

Motive Power Management Systems

Motive Power Manager™

for Express Fast Chargers and DC Power Loggers



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Note

This document is based on information available at the time of its publication. While efforts have been made to be accurate, the information contained herein does not purport to cover all details or variations in hardware or software, nor to provide for every possible contingency in connection with installation, operation, or maintenance. Features may be described herein which are not present in all systems.

Note

This manual is based on Motive Power Manager version 2.4.0.0.

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FAST Ware FAST Reports FAST Merge Motive Power Manager DC Power Logger

UniMAX TwinMAX

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Chapter 1: Introduction

What is Motive Power Manager™?

Motive Power Manager (MPM) is a comprehensive electric-vehicle fleet energymanagement system designed for use with Express fast chargers or Power Logger battery modules. MPM software collects battery data using Bluetooth, wireless technology then merges and analyzes this data to paint a complete picture of vehicle energy usage and battery performance.

MPM can be purchased preloaded on an MPM Netbook computer with software and Bluetooth® wireless capability installed and ready to go out of the box, but MPM software can also be purchased separately for use with a personal computer.



⑧ Bluetooth is a registered trademark of Bluetooth SIG, Inc. ™Motive Power Manager is a trademark of Aker Wade Power Technologies, LLC.

Features

Motive Power Manager is a powerful, energy-management system designed for all types of charging applications including conventional, opportunity, and fast charging.

Communications

- Charger and battery data automatically aggregated using wireless technology.
- Information distributed by PC, local network, or through the Internet.

User-Defined Exceptions

- Exceptions defined either for an entire fleet or per battery/truck.
- All important battery variables monitored: voltage, temperature, electrolyte level, energy throughput, and charging compliance.

Powerful Reporting Tools

- Over 30 reports predefined for big-picture fleet monitoring.
- Powerful graphical reports for quick analysis.
- Relative workload reported by battery, truck, or the fleet as a whole.
- Reports scalable, for all dates or a range of dates, by battery, truck, or fleet.
- Works with DC Power Logger wireless battery monitoring devices and Express fast chargers.

Getting Started

Note: See "Appendix A. Installing Motive Power Manager on a User-Supplied Computer" if you did not purchase MPM on an MPM Netbook from Aker Wade Power Technologies.

Starting-Up Motive Power Manager

If you purchased a Motive Power Manager Netbook, all necessary software will be installed ready to run out of the box. The MPM Netbook is also shipped with a Bluetooth adapter ready to plug in and start communicating with Express Fast Chargers and DC Power Logger battery modules.



To startup Motive Power Manager:

- 1. Remove the MPM Netbook, power cord, and Bluetooth adapter from the box.
- 2. Connect the power cable to the MPM Netbook and power it up
- 3. Once Windows® has started, insert the Bluetooth adapter into one of the USB ports. The LED on the adapter should illuminate indicating it is ready to communicate.

Note: See "Chapter 2. Setting-Up Your Fleet Management System" for details on creating and managing an MPM Database and configuring exception parameters. 4. Start up Motive Power Manager by double-clicking the icon 🔼 on the Windows Desktop. The MPM software will open as shown below.

Quick Tour of the MPM User Interface

The MPM user interface is similar in appearance and operation to the most recent Microsoft Office programs.

Quick Start Button



Usually, the first task you perform when beginning a session with Motive Power Manager is to create or open a database. The MPM Quick Start button provides quick access to available databases in your system and is the starting point for creating, opening, and importing databases. Transferring data from chargers and battery modules can also be initiated here.

Quick Access Toolbar



The Quick Access toolbar is a user-configurable collection of MPM commands for often-performed tasks. Most MPM commands can be added to the toolbar giving you the flexibility to work the way that is most convenient for you. The toolbar can also be placed above or below the tab area.

Setup and Home Tabs



The full collection of MPM commands are divided into two categories and grouped onto the tabs: Setup and Home. The tab area, referred to as the ribbon, can be minimized to allow for more viewing area in the Exceptions, Batteries, Chargers, and Trucks panes.

The **Setup** tab is where you configure exceptions, program Power Logger battery modules, and perform database and system tasks.

The Home tab contains a complete set of options for often-used tasks such as "discovering" chargers and battery modules through the Bluetooth wireless system, transferring data from them, and merging the data into a database. In addition, the Home tab provides a comprehensive suite of reports and graphs that can be printed

Note: Motive Power Manager with a blank database showing no charger, battery, or exception data.

command to the toolbar: Right-click the desired command residing on the Home, or Setup tab and choose Add to Quick Access Toolbar from the pop-up menu.

Note: To add an MPM

Note: To move the toolbar above or below the ribbon: Right-click on the text of one of the tabs and choose Show Quick Access Toolbar Below (Above) the Ribbon from the pop-up menu.

To minimize the ribbon tab area: Right-click on the text of one of the tabs and choose Minimize the Ribbon from the pop-up menu.

Note: See "Chapter 3. Transferring and Merging Data" to learn how to collect data from Express Fast Chargers and DC Power Logger modules and merge it into an MPM Database.

Note: See "Chapter 2. Setting-Up Your Fleet Management System" to learn how to customize MPM software for your particular charging and monitoring operation.

Note: See "Chapter 4. Viewing Exceptions and Generating Reports" for complete instructions on controlling the view of the **Chargers**, **Batteries**, and **Exceptions** panes. or exported. Also, there is a set of controls for viewing the data that is displayed in the viewing panes for **Exceptions**, **Batteries**, **Chargers**, and **Trucks** below the tabs.

Custom Program Settings

MPM software allows you to select only the features of the program that are needed for your particular charging and monitoring operation. MPM software is designed to work with all types of battery charging and monitoring applications (fast charging, opportunity charging, and conventional charging) and to collect data from both Express fast chargers and Power Logger battery modules. Because of this power and flexibility some of the screens and reports and other functionality of the software might not be needed for your application and can be hidden from view if desired.

The **Settings** command on the **Home** tab allows you to configure MPM software to show only the features and information you need for transfer operations; for viewing battery, charger, exception, or truck data in the viewing panes; and for reports.

Chargers, Batteries, and Exceptions Viewing Panes

If your operation uses Express Fast Chargers, a list of chargers and batteries will appear in their respective panes once you have transferred and merged log files from the chargers. If your operation uses Power Logger modules to collect battery data, a list of these batteries will appear in the **Batteries** pane once you have transferred and merged log files from those modules.

The exceptions that appear in the **Exceptions** pane are controlled in three ways:

- 1. The setting of exception parameters in the **Setup** tab.
- 2. The setting of the date parameters in the **Setup** or **Reports** tab. This establishes a time window for which exceptions are displayed.
- 3. The selection of a specific charger and/or battery in the **Chargers** and **Batteries** panes (or multiple chargers and/or batteries). This limits the exceptions displayed to only those specific chargers and batteries.

B	atteries									
	Battery ID	Serial #	Model	Voltage	Capacity	Svc Entry	Name	Description	Powerl	.ogge 🔺
Þ	BAT0000001	S000001347	0000000	36	1100	000000				
	BAT000002	S00006082	0000000	36	1100	000000				
	BAT000003	S000003411	0000000	36	1120	000000				
	BAT0000004	S000001975	0000000	36	1120	000000				•
Ŀ										•
(Thargers									
	ChargerID		Model		Name			Description		_
Þ	CHARGER001		Other							
	CHARGER002		Other							
	CHARGER003		Other							-
L	1									•
E	xceptions									
	State Exception Ty	/pe		Category				Date/Time	Battery ID	-
E	Date: Apr-200	6								
	Truck ended	charge cycle at l	ow State of Charge	Battery Statu	s		Monday, J	April 03, 2006 2:05 PM	BAT0000001	
E	Date: May-200	06								
	🜡 High Temper	ature at Start of C	harge	Battery Statu	s		Monday,	May 01, 2006 3:46 PM	BAT000007	-
•										•

Trucks Viewing Pane

If your operation uses Power Loggers for battery monitoring, the addition of a Truck ID module mounted on the electric vehicle allows you to monitor truck utilization. From the **Trucks** viewing pane in the MPM software you can enter descriptive information about your trucks and also assign trucks to a truck group and shift schedule for greater flexibility in monitoring truck utilization through the **Fleet** reports.

Note: Batteries are listed in the **Batteries** pane whether battery data is collected through Express fast chargers or Power Logger modules. Those listed from Power Loggers are distinguished by a checked box in the Power Logger column.

Note: See "Chapter 4. Viewing Exceptions and Generating Reports" and "Chapter 5. Power Logger Analysis Tools" for more information.

Ba	atteries											
	Battery ID	Serial #	Model	Voltage	Capacity	Svc Entry	Name	Description	PowerLogger	Start of Data	End of Data	•
	AWPL000410	S000410	Not Set	48	1000	070707			V	6/8/2010	6/25/2010	
	AWPL000438	S000438	Not Set	48	1000	070707				6/8/2010	6/24/2010	
	AWPL000569	S000569	Not Set	48	1000	070707			V	6/8/2010	6/25/2010	-
Tr	rucks											
	Truck	Model	Entered Servic	e Name		Description			Schedule	Group		•
Þ	Truck1	Lift	010205							Lift001		
	Truck2	Lift	020408							Lift001		
	Truck3	Lift	040506							Lift001		-
Б	cceptions											
	State Exception Typ	e		Category			Da	ite/Time	Battery ID		Charger ID	•
-	Date: Nov-2009	9										
	26 Daily Finish m	nissed		Conventional	Charge A	pplications	Wednesday, Nove	mber 04, 2009 12:00 AM	1 eBat#16017			
	26 Daily Finish m	nissed		Conventional	Charge A	pplications	Friday, Novemb	er 06, 2009 12:00 AM	eBat#16017			
	26 Daily Finish m	nissed		Conventional	Charge A	pplications	Tuesday, Novem	ber 10, 2009 12:00 AM	eBat#16017			-
4											•	

Reports, Graphs, and Power Logger Data Analysis

The viewing panes allow you to keep track of exceptions as soon as data from chargers or Power Logger battery modules have been transferred and merged. If you want to create a permanent record of battery data or perform more in depth analysis, you can choose one of the many formats for generating a report or graph. For indepth power discharge analysis of your operation you can use the Power Logger Analysis tools.

Sample Exception Report

A K E R W A D E [~]	Exception Details by Battery ID						
Battery ID BAT0000001	4/2/2006 to 8/24/20 Battery SN S000001347 Capacity 1100	Voltage 36					
Category Exceptions reported	d from Express charger data						
Exception Type Truck end	ded charge cycle at low State of Charge						
Recorded Date 04/03/2006 14:05	Description Truck ended charge cycle at low State of Charge	Measured Value 25					
Battery ID BAT0000003	Battery SN S000003411 Capacity 1120	Voltage 36					
Category Exceptions for inst	allations using a single battery/vehicle						
Exception Type Equalize	Charge missed						
Recorded Date 06/30/2006 00:00	Description Equalize Charge missed	Measured Value 5					
Exception Type Finish Ch	arge missed						
Recorded Date 06/30/2006 00:00	Description Finish Charge missed	Measured Value 5					

Discharge comparison of Two Batteries Using the Power Logger Analysis Tools



Chapter 2: Setting-Up Your Fleet Management System

Setting-up a fleet management system using Motive Power Manager is done essentially the same way whether your operation uses Express Fast Chargers or DC Power Logger battery modules as the source for battery data.

The basic steps described in this chapter for setting-up your management system are:

- Step 1. Starting Motive Power Manager
- Step 2. Obtaining a License
- Step 3. Customizing MPM Software for your Operation
- Step 4. Creating an MPM Database
- Step 5. Configuring Power Logger Battery Modules (Power Logger applications only)
- Step 6. Performing an Initial Transfer and Merge from Express Fast Chargers or Power Logger Battery Modules
- Step 7. Editing Charger and Battery Details
- Step 8. Configuring Exception Parameters
- Step 9. Creating Shift Schedules and Truck Groups (Conventional charging applications only)

Other Setup operations described in this chapter include:

- Setting Exception View Parameters
- Performing Database Tasks
- Transferring MPM Software to a Different Computer or Recovering from Corrupted Software
- MPM Software Version and Resetting the Software

Step 1. Starting Motive Power Manager

To get started you must first start Motive Power Manager and get a license from Aker Wade.

To start Motive Power Manager:

Start Motive Power Manager by double-clicking the icon $\underbrace{\blacksquare}$ on the Windows Desktop.

NOTE: Any time you intend to transfer data from a Fast Charger or Power Logger you must insert the Bluetooth adapter securely into one of the USB ports before starting Motive Power Manager. The LED on the adapter should illuminate indicating it is ready to communicate.

Or,

Click the **Windows Start** button and navigate to the Motive Power Manager program as shown below.



The Motive Power Manager program will open with a reminder that this is an unlicensed version and that you need to contact Aker Wade for a license.

ense Wa	arning	
i	This is an unlicensed version of softwar Contact Aker Wade Power Technologie	e. It will expire on 8/30/2010. Is to acquire a license.
		ОК

Upon clicking **OK** a blank database will open.

Kotive Power Manager Full Edition							X
V V V V V V V V V V V V V V V V V V V							
Exceptions * Power Logger * Power Logger Analysis * Power Logger Analysis * Revet *	Transfer	Image: All Data * From: 08/18/2010 \$ To: 08/18/2010 \$	Check	Show Exceptions Latest Exception	Exceptions Start: 08/18/2010 C * Prefesh View	Show Batteries Show Trucks Show Chargers	Clear Charger Clear Battery
11004018	(GASIG)	roport date Hange	Conditions		View		
Database: Batteries: 0 Chargers: 0 Records: 0							

Step 2. Obtaining a License



Basic and Full license versions of MPM software are available. Unlicensed software has the same functionality as the Basic license version but will operate only 5 days. The Basic Edition, which is free, supports the most recent 60 days of Fast Charge data, the most recent 7 days of fixed-install Power Logger data, and unlimited split-core Power Logger data. The Full Edition, which must be purchased initially and renewed annually, supports unlimited days on all Fast Charger and Power Logger data.

See Appendix B. MPM Features List, for a complete list of features available in MPM software.

To obtain a license for the Basic or Full Edition of MPM:

1. From the Setup tab click R License. The MPM License Details dialog box opens.

MPM License Details
License Code
PC Key E3E88 PC Key Unlock Code:
License Info
Unlicensed Edition expires: Sep-10-2010
Apply Remove License OK Cancel

- 2. Email the following information to service@akerwade.com :
 - The 5-digit PC Key located on the MPM License Details screen.
 - Your first and last name.
 - Reference number (found on the envelope for the CD containing MPM software). This is for those who have purchase the software on CD-ROM only.
 - Your email address.
 - Your phone number.
 - Your company name.

A License Code good for one year will be generated and e-mailed to you. The start date begins on the day your license code was sent to you.

- 3. Copy and paste the code into the License Code box
- 4. Verify that the code matches exactly and click **Apply** then **OK**.

Step 3. Customizing MPM Software for your Operation

MPM software provides a comprehensive set of features for all types of charging applications: fast, opportunity, and conventional. In order to tailor the software to your particular application's requirements, however, you can select and display only the features of the program that are needed for your particular charging and monitoring operation.

To configure program settings:

Once the MPM program is running, from the Setup tab click the Info command
 Settings. The Program Settings screen will open.

NOTE: After clicking **Apply** you should see either Basic Edition or Full Edition in the description text box along with the features included. Or,

Immediately after initiating the startup of the MPM software, click the **Settings** button on the MPM startup screen. In this case the **Program Settings** screen will open before the MPM program starts running.



MPM Startup Screen

Program Settings Screen

Program Settings	
Reports View Transfer	
Show Chargers on Transfer Screen	
Show Power Loggers on Transfer Screen	
Show Remote Bluetooth Gateways on Transfer dialogs	
Enable Japan CSV Output	
OK Cancel	

- 2. Check or uncheck the boxes on each of the tabs of the **Program Settings** screen: **Transfer**, **View**, and **Reports**. See the table below for typical settings for different charging operations.
- 3. Click OK.
- 4. If you accessed the **Program Settings** screen from the **Setup** tab, close and restart Motive Power Manager.

NOTE: The **Program Settings** option, **Enable Japan CSV Output**, is for special applications only and should not be checked unless authorized by Aker Wade.

Program Setting	Express Fast Charging	Opportunity Charging with Power Loggers	Conventional Charging with Power Loggers	Gateway
Transfer Tab Show Chargers on Transfer Screen Show Power Loggers on Transfer Screen Show Remote Bluetooth Gateways ¹ on Transfer dialogs				
View Tab Hide Batteries Hide Chargers Hide Exceptions Hide Trucks		□ or ☑ ☑ □	□ or ☑ ☑ □ or ☑²	\mathbf{V}
Reports Tab Hide Fast Charge Reports Hide Conventional Charge Reports Hide Power Logger Reports Hide Power Logger Analysis Hide Fleet Management Reports	N N N N N N	5 5 7 7	☑ □ ☑ □ or ☑²	K K K K

Typical Program Settings for MPM Software by Application Type

¹Remote Bluetooth Gateways is a term used for a legacy product and is not used in any current installation. ² Viewing data by truck in the Trucks viewing pane and viewing Fleet Management Reports require the installation of an Aker Wade Truck ID module to identify the electric vehicle to the Power Logger.

Step 4. Creating an MPM Database for the First Time

To create a new Motive Power Manager database:

1. With MPM Software running, click the Motive Power Manager **Quick Start** button



Also, a name that includes a number within parentheses, such as (1), is not permitted.



- 2. Type the name of the database in the name box.
- 3. Click **OK**. Motive Power Manager will create and open a new database. The name of the database will appear in the lower, left corner of the MPM window.

Step 5. Configuring Power Logger Battery Modules

Home Setup

Note: Skip this step if you are not using Power Logger Battery Modules.

Note: For instructions on installing the Bluetooth adapter and software on your computer, see "Appendix A. Installing Motive Power Manager to a User-Provided Computer. "

NOTE: Any time you intend to transfer data from a Fast Charger or Power Logger you must insert the Bluetooth adapter securely into one of the USB ports before starting Motive Power Manager. The LED on the adapter should illuminate indicating it is ready to communicate. This step is for Power Logger users only.

Configuring Power Logger battery modules requires Bluetooth communications capability on the computer used to run Motive Power Manager. The Motive Power Manager Netbook is shipped ready to go out of the box with all needed software installed and the Bluetooth adapter included. The Bluetooth adapter shipped with the product is the only adapter that is currently supported by Motive Power Manager. If you are running Motive Power Manager on a user-supplied computer, you will need to purchase the adapter from your supplier separately from the Motive Power Manager software itself.

The Power Logger battery module collects important battery data including voltage, temperature, electrolyte level, energy throughput, and charging compliance. To ensure the data retrieved from the Power Logger modules is accurate, it is important to perform a basic setup for the modules and synchronize the clock of the modules with the PC running Motive Power Manager.

Before configuring Power Logger modules you must first verify that Bluetooth communications is operating and then "discover" the modules.

To verify Bluetooth communications is operating:

In order for the Bluetooth adapter to operate properly with Motive Power Manager, you must install the Bluetooth adapter while the Motive Power Manager program is closed.

1. Before starting up Motive Power Manager, insert the Bluetooth adapter into a USB port on your computer. In a few seconds a Bluetooth icon will appear in the Windows System tray.



And, the LED on the adapter will be ON.

2. Start Motive Power Manager.

To "Discover" Power Logger Battery Modules:

1. From the **Setup** tab click the Configure command **Power Logger**. The **Power Loggers** setup screen will open.

Note: To set the Transfer screen to display Power Loggers only, make sure Chargers is not checked.

Note: The "Discover" operation will take several seconds or longer in a noisy environment where there is a lot of electromagnetic interference, either from plant operations or other wireless devices.

You may need to initiate the "Discover" operation more than once in a noisy environment to make sure all devices are discovered.

Note: For a description of all Power Logger battery module commands, see Aker Wade publication, "DC Power Logger Installation and Operation Manual, 3-3005-20".

8 Power	Loggers	;				
Discover	r Togg	gle Transfer	Options Mer	ge to Database	Cancel Comm	5
Charg	jers 🖡	Power Loggers	D	evices		
Read ?	Name	Address	Device	e ID Last I	Read	Status

2. Click **Discover**. After a few seconds all battery modules within Bluetooth range will appear in a list similar to that shown below.

😣 Power	Loggers						
Discover	Toggle	Transfer	Options	Merge to Databas	se 🙁	Cancel Comms	
Charg	ers 🔽 Pov	ver Loggers		Devices			
Read ?	Name	Address		Device ID	Last Read		Status
	AWPB000430	(00:06:66	:02:C8:1E)				Available
	AW/PB000670	(00:06:66	6:02:C8:50)				Available
Database:						- Ready	

To synchronize date/time with the PC:

1. Right-click the name of a Power Logger and choose Set Time/Date.



The Update Time dialog box will appear.

Update Tin	ne 🔀
?	Update battery module date and time with current PC data and time (17-08-2010 04:57:11)?
	<u>Y</u> es <u>N</u> o

2. Click **Yes**. The synchronized time and date will appear in the status field for the updated Power Logger.

8 Power	r Loggers						X
Discove	er 🗵 Cance	el Comms					
Charg	gers 🔽 Powe	er Loggers	Devices				
Read ?	Name	Address	Device ID	Last Read	:	Status	
	AWPB000430	(00:06:66:02:C8:1E)				23 Aug 2010 10	0:30:46
	AWPB000670	(00:06:66:02:C8:50)				Available	
Database:	Fleet Batteries: 6	Chargers: 0 Record	s: 1733		🛶 Ready		.::

To set the basic configuration:

1. Right-click the name of a Power Logger and choose Set Configuration.



The Battery Module Setup dialog box opens.

Battery Module Setu	Battery Module Setup							
Device: AWPB000430 (00:06:66:02:C8:1E)								
Module ID	AWPB000430	Manufacturer	GS Yuasa 🗨					
Battery ID	AWPB000430	Voltage	36 💌					
Serial Number	S1234567	Capacity	925 🕂					
Model Number	Modula2	Service Entry Date	12/29/2009					
Charge Cycle Number 0								
Battery Type	Sealed	•						
Cable Configuration	n Single	Truck N	ame LoadDock4					
Charger Type	Conventional Charge	e 💌 Truck Tr	ype Toyota					
Tag								
Read configuration complete								
Read			Apply Close					

2. Type in the correct configuration information for the battery and click **Apply**. The **Warning** dialog box then opens.

Note: Synchronize the clocks and perform basic setup for each Power Logger battery module in your operation.



3. Click Yes. Then click Close on the Battery Module Setup dialog box.

Synchronize the clocks and perform basic setup for each Power Logger battery module in your operation.

Step 6. Performing an Initial Transfer and Merge from Express Fast Chargers or Power Logger Battery Modules



In order to add descriptive information into the database for each fast charger or battery in your operation, you must first perform an initial transfer and merge from the Express Fast Chargers or Power Logger battery modules. This transfer and merge will automatically identify each of the devices in your operation, within Bluetooth communications range (~300ft), and each will be listed in the **Batteries** and/or **Chargers** panes.

To transfer data from Power Logger battery modules:

If you have performed Step 5. "Configuring Power Logger Battery Modules" you will have already discovered the Power Loggers and will only need to perform an initial transfer and merge.

1. From the **Home** tab click **Transfer**. The Power Loggers transfer screen will open with the previously discovered modules appearing in the list.

8 Power Loggers	Power Loggers							
Discover Toggle 1	Transfer Options	Merge to Databas	se 🗵 🤇	Cancel Comms				
Chargers V Pow	er Loggers	Devices						
Read ? Name	Address	Device ID	Last Read		Status			
AWPB000430	(00:06:66:02:C8:1E)				Available			
AWPB000670	(00:06:66:02:C8:50)				Available			
Database:				📥 Ready	.::			

 Check the Power Logger(s) you want to include in the transfer from the list of discovered Power Loggers and click **Transfer**. The status of each transfer is indicated in the **Status** field for each device.

Note: To set the Transfer screen to display Power Loggers only, make sure Chargers is not checked. 3. Once the transfer for all modules is complete, click **Merge to Database**. The **Merge to Database** screen opens.

🛃 Merge Files to Database			
<u>File M</u> erge <u>R</u> eport			
Elie Merge File Name Ø AV/PB000430_Aug-17-2010-16-18-48.FLG Ø AV/PB000570_Aug-17-2010-15-25-03.FLG	Device ID	Status	
Click 'OK' to merge all checked files and then close di Click 'Cancel' to close dialog with no further changes.	alog.		OK Cancel
🚰 Database Merge Test Batteries: 0 Chargers: 0 Records: 0 👘			

- 4. Check the Power Logger(s) you want to include in the merge and click **Merge**. The status will be updated for each checked Power Logger until the merge is complete.
- 5. Click **OK** to close the **Merge to Database** screen.

Successful completion of the initial transfer results in a list of batteries appearing in the **Batteries** pane as shown below.

K Motive Powe	er Manager Full Edition								• ×
9	÷								
Home	Setup								
🔹 - 🐼 -		I All Data	+	Ray		Exceptions Start:	Show Batteries	Clear I	Charger
🎲 - 🗐 -	ranster	From: 06/11/2010	0 -	Uneck	Show Exceptions	06/11/2010 🗘 🝷	Show Trucks	K Clear I	Battery
∄ • ⇔ •	Merge Existing Files	To: 08/30/2010	÷ •	2 Clear	Latest Exception	I Refresh	Show Charger	Clear	Truck
Reports	Transfer	Report Date Range	e	Exceptions		View			
Batteries			~			10			
Battery ID	Serial #	Model Volt	age Capac	ity Svc Entry	y Name	Description	PowerLogger	Start of Data	End of Data
AWPB00043	0 S1234567	Modula2 3	6 925	122909			V	6/11/2010	8/17/2010
AWPB00067	0 \$000670	Not Set 4	8 100	0 070710			$\mathbf{\nabla}$	6/15/2010	8/17/2010
Exceptions									
State Except	ion Type	Category	/		Date/Time Batt	tery ID	Charger ID		
Database: Merge	Test Batteries: 2 Chargers	: 0 Records: 89							.;;

To transfer data from Fast Chargers:

1. From the **Home** tab click Transfer. The **Chargers** transfer screen will open with previously discovered modules appearing in the list or blank if no chargers have been discovered.

Note: To set the Transfer screen to display Fast Chargers only, make sure Power Loggers is not checked. NOTE: Any time you intend to transfer data from a Fast Charger or Power Logger you must insert the

Bluetooth adapter securely into one of the USB ports before starting Motive Power Manager. The LED on the adapter should illuminate indicating it is ready to communicate.

Note: The "Discover" operation will take several seconds or longer in a noisy environment where there is a lot of electromagnetic interference, either from plant operations or other wireless devices.

You may need to initiate the "Discover" operation more than once in a noisy environment to make sure all devices are discovered.

👌 Chargers								x
Discover	Toggle	Transfer	Options	Merge to Databa	se 🙁	Cancel Comms		
Chargers	E Po	wer Loggers	1	Devices				
Read ? Na	me	Address		Device ID	Last Read		Status	
Database:						- Ready		

2. From the **Chargers** transfer screen click **Discover**. After a few moments any discovered chargers will appear in the **Chargers** transfer screen as shown below.

🕴 Chargers	5						
Discover	Toggle	Transfer	Options	Merge to Databas	se 🙁	Cancel Comms	
Charger	s 🗖 Pow	ver Loggers		Devices			
Read ? Na	ame	Address		Device ID	Last Read		Status
AV	V T20 99990	(00:A0:96	5:27:D1:D7)				Available
Database:						- Ready	

- 3. Check the charger(s) you want to include in the transfer from the list of discovered chargers and click **Transfer**. The status of each transfer is indicated in the **Status** field for each device.
- 4. Once the transfer for all modules is complete, click **Merge to Database**. The **Merge to Database** screen opens.

🙀 Mer	rge Files t	to Database					
<u>F</u> ile	<u>M</u> erge	<u>R</u> eport					
Merge	File N	ame		Device I) Status		
v	08171	0_155619_0000099990.CLC		j			
Click	'OK' to	merge all checked files a	and then close dialog.			OK	Canad
Click	Cancel	l' to close dialog with no l	urther changes.				Cancel
🚰 Data	abase Tes	st Batteries: 2 Chargers: 1 R	ecords: 247				

- 6. Check the charger(s) you want to include in the merge and click **Merge**. The status will be updated for each checked charger until the merge is complete.
- 7. Click **OK** to close the **Merge to Database** screen.

Successful completion of the initial transfer results in a list of chargers and batteries appearing in their respective viewing panes similar to that shown below.

🙀 Motive Power Manager Full Edition								
<i>∞ 9</i> ,								
Home Setup								
♦ • ۞ •	All D From: 04/02/20 To: 08/30/20 Report D	lata * 006 ‡ 010 ‡ ate Range	• • •	Check	Show Exceptions	Exceptions Start: 04/02/2006 Carteria Carteria	Show Batter Show Truck Show Charg	es 9 Gear Charger s 1 Clear Battery ers 2 Clear Truck
Batteries								
Battery ID Serial #	Model	Voltage (Capacit	y Svc Entry	Name	Description	PowerLogge	r Start of Data End of Data
BAT0000001 \$000001347	00000000	36	1100	000000				4/2/2006 4/18/2006
BAT0000002 S00006082	00000000	36	1100	000000				4/2/2006 4/7/2006
BAT0000003 S00003411	00000000	36	1120	000000				6/22/2006 7/7/2006
BAT0000004 S000001975	0000000	36	1120	000000				6/22/2006 7/7/2006 -
Chargers								
ChargerID	Model		Name			Description		First Data L 🗕
CHARGER001	Other							4/2/2006 4
CHARGER002	Other							6/22/2006 7
CHARGER003	Other							5/1/2006 5 -
4								•
Exceptions								
State Exception Type		Category			0	Date/Time	Battery ID	Charger ID
🗆 Date: Apr-2006								
Truck ended charge cycle at low	State of Charge	Battery Status			Monday, Ap	oril 03, 2006 2:05 PM	BAT000001	CHARGER001
🗉 Date: May-2006								
🛔 High Temperature at Start of Cha	rge	Battery Status			Monday, Ma	ay 01, 2006 3:46 PM	BAT000007	CHARGER003
🜡 High Temperature at End of Char	ge	Battery Status			Wednesday,	May 03, 2006 8:26 PM	M BAT000007	CHARGER003
High Temperature at End of Char	ne -	Rattery Status	8		Wednesday I	May 03, 2006 10-54 P	M RAT000007	CHARGER003
Database: MPM Database1 Batteries: 7 Cha	argers: 3 Records:	508						

Step 7. Configuring Charger or Battery Details

Home	Setup

Once the initial transfer and merge has been performed you can add descriptive information referred to as charger and battery details. This descriptive information makes it easier to identify the elements of your operation in MPM reports and when viewing exceptions.

To edit charger details:

1. From the **Setup** tab select a charger from the list in the **Chargers** pane. To do this move the cursor into the vertical band next to the charger you want to select. Once the cursor changes into a horizontal arrow, click the mouse. A selected charger is indicated by its row turning yellow.



2. Click the Configure command **G** Charger Details. The Edit Charger Details dialog box opens.

Edit Charger De	etails
Charger ID	CHARGER001
Model	Other •
Name	
Description	
	OK Cancel

3. Enter charger details that make it easier for you to identify the elements of your operation and click **OK**. The updated charger information will appear in the **Chargers** pane.

To edit battery details:

1. From the **Setup** tab select a charger from the list in the **Batteries** pane. To do this move the cursor into the vertical band next to the battery you want to select. Once the cursor changes into a horizontal arrow, click the mouse. A selected battery is indicated by its row turning yellow.



 Click the Configure command Free Battery Details. The Edit Battery Details dialog box opens.

Edit Battery Deta	ils	
Battery ID	TRUCK00002	
Serial #	S000006082	
Model	0000000	
Voltage	36 🚔	
Capacity	1100 🚔	
Name	1	
Description		
Schedule	<not configured=""></not>	
		OK Cancel

3. Enter battery details that make it easier for you to identify the elements of your operation and click **OK**. The updated information for the battery will then appear in the **Batteries** pane.

Step 8. Configuring Exception Parameters

Home Setup

This section explains how to configure exception parameters for all batteries or individual batteries in the database.

To access the Configure Exceptions screen:

From the **Setup** tab and click the Configure command $\mathbb{Z}_{\mathbb{P}}$ Exceptions. The **Configure Exceptions** screen will open.

Configure Exceptions						
Settings for: Default						
 Battery Status Battery Usage Fast/Opportunity Charge Applications Conventional Charge Applications 	Setting	Value				
Schedule	Save	Close				

From the **Configure Exceptions** screen you can configure exception parameters and define the scope of those parameters to encompass all batteries or selected batteries.

Choosing the Scope of the Settings

The **Settings for** combo box allows you to choose the scope of the exception parameter settings. The setting, **Default**, establishes the scope of the settings to all batteries in the database.

Settings for:	Default 🔹

To limit the scope of parameter values to a specific battery:

If you want to set unique parameter values for a specific battery, click the **Settings for** text box, choose the battery you want to set those values for, and then change the desired values(s) as explained under "Setting Exception Parameter Values" below.

Settings for:	Default 💌
	Default
⊕ Battery S	0000LINDE1 0000LINDE2
	0000LINDE3
. East/Opp	0000LINDE4
	onal Charge Applications

Expanding and Collapsing the Exception Categories

The exception categories **Battery Status**, **Battery Usage**, **Fast/Opportunity Charge Applications**, and **Conventional Charge Applications** appear with expansion buttons beside each category. The 🖅 symbol indicates the collapsed state and the 🖃 symbol indicates the expanded state as shown in the screen below.



Each category can be expanded to list all exception parameters by clicking \blacksquare beside it. Clicking \blacksquare beside **Battery Status** will cause the list to collapse. Clicking an exception parameter such as **High Temperature at Start of Charge** will cause the settings of the parameter to appear.

Setting Exception Parameter Values

There are two steps in setting each exception parameter. First, decide whether or not you want to include the exception parameter in exception reports, which is done by *enabling* or *disabling* it. Second, if you want to enable the exception parameter, set the *value(s)* of its parameter(s). If the actual value falls outside the set value, the exception will be reported.

Note: Any parameter that has a different value than that set under the **Default** scope is identified by the **Setting** and the **Value** appearing in bold type.

Note: See also "Appendix C. Exception Parameter Definitions and Defaults" for a description of each Exception Parameter, its default settings, and its range of values.

Enabling and Disabling an Exception Parameter

To enable or disable an exception parameter:

- 1. Select an exception parameter, such as High Temperature at Start of Charge.
- 2. Right-click the value (**True** or **False**) for the **Enabled** setting. A pop-up menu will appear.

X Configure Exceptions			
Settings for: Default			
Battery Status	*	Setting	Value
High Temperature at Start of Charge Critical Temperature at Start of Charge		Enabled Temp	Default
- High Temperature at End of Charge	=	Repeat Interval	True
Truck began charge cycle at low State of			False
Truck ended charge cycle at low State of Low Electronic level detected (requires Pr			
···· Temperature exceeds limit (requires Power			
 Temperature exceeds Critical limit(requires Voltage below minimum limit(requires Power 	÷		
Schedule		Save	Close

3. Choose **True** to include the parameter, or **False** to exclude it. This procedure is the same to enable or disable all exception parameters.

Changing the Value of a Parameter Setting

Nearly all exception parameters have settings in addition to **Enabled/Disabled**. Some values for these settings are numerical, some are True/False, and some consist of a selection of a schedule type (such as in the **Equalize Charge missed** and **Finish Charge missed** parameters).

To change numerical values of a parameter:

- 1. Select an exception parameter such as High Temperature at Start of Charge.
- 2. Right-click the numerical value for the **Temp** setting. A pop-up menu will appear.

Configure Exceptions			
Battery Status High Temperature at Start of Charge Critical Temperature at End of Charge Critical Temperature at End of Charge Critical Temperature at End of Charge	•	Setting Enabled Temp Repeat Interval	Value True Default Edit
Inuck began charge cycle at low State of Truck ended charge cycle at low State of Low Electrolyte level detected(requires Pc Schedule	Ŧ	Save	Close

Choose Edit. A New Value for ... box will appear.

New Value for Temp	×
Temperature limit	
OK Cancel	

4. Type in a new value and click **OK**.

To change True/False values for a parameter:

- 1. Select an exception parameter, such as **Truck was not on charger for prescribed time**.
- 2. Right-click the value (**True** or **False**) for any of the settings **Ignore Monday**-**Ignore Sunday**. A pop-up menu will appear.

Settings for: Default			
Battery Usage Truck was not on charger for prescribed time Charge ended in error condition(requires Expres Truck was off charger longer than time limit Amp Hours returned exceeds daily limit Amp Hours returned exceeds weekly limit Amp Hours discharged exceeds daily limit(requir Amp Hours discharged exceeds weekly limit(requir Amp Hours discharged exceeds weekly limit(requir Amp Hours discharged exceeds weekly limit Amp Hours discharged exceeds weekly limit(requir Amp Hours discharged exceeds weekly limit Amp Hours discharged exceeds weekly limit Amp Hours discharged exceeds weekly limit	* H	Setting Enabled Charge Time Ignore Monday Ignore Tuesday Ignore Thursday Ignore Friday Ignore Saturday Ignore Sunday	Value False 120 Default True False False
Schedule		Save	e Close

3. Choose **True** to include that day, or **False** to exclude it.

Note: The parameter setting, **Repeat Interval**, which is included in all

occurrence of this event

Battery Status parameters, is the minimum wait time, expressed in minutes, before another

is reported

Note: See also "Appendix C. Exception Parameter Definitions and Defaults" for a description of each Exception Parameter, its default settings, and its range of values.

To change the selection of a schedule type (for Equalize Charge missed and Finish Charge missed)

- 1. Select either the **Equalize Charge missed** or **Finish Charge missed** exception parameter.
- 2. Right-click the value for the **Method** setting. The **Method** setting selects the type of schedule desired for the **Equalize Charge missed** or **Finish Charge missed** exception parameter. A pop-up menu will appear.



3. Choose Number of Days or Day of Week.

Step 9. Defining Shift Schedules and Groups for Conventional Charging Applications

Home Setup

Perform this step only if you are setting-up a fleet management system for a conventional charging application that is monitoring truck utilization over multiple shifts.

The **Shift Schedule** and **Groups** features are used to monitor truck utilization by shift and by groups. Use of these features requires the installation of a Truck ID module on each truck to be monitored. The Truck ID module identifies the truck to the Power Logger module mounted on the battery. Once you have defined a schedule and /or group and associated your trucks to them, the **Fleet** reports will monitor truck utilization on a shift and group basis.

This step includes three parts:

- 1. Defining a Shift Schedule that corresponds to your operation.
- 2. Defining a Group or Group(s) of trucks you wish to monitor together if desired.
- 3. Adding truck details and assigning the trucks to a **Schedule** and **Group** in the **Trucks** pane.

Defining a Shift Schedule

To Create or Edit a Shift Schedule:

1. From the Setup tab click the Configure command 🕒 Schedules

The Select Schedule dialog box will open.

Select Sche	dule			x
Default				•
New	Edit	Delete	OK Car	icel

2. Choose **New** to create a new schedule or select an existing schedule from the combo box and choose **Edit**. The **Schedule** configuration box will open.

Beginni Work	ing of Day	Grid are defining	ea for shifts	Name box	End of Work Day
Schedule					×
•	Shift Schedu	ule		▼	▼
12:00 AN	M <u>~</u>				»> 11:45 PM
Shift 1		*			
Shift 2					
Remove	Finish I	Description			
Remove	Finish I	Description			
Remove	Finish I	Description			

Up to three shifts can be defined in the shift grid area, including break times. Each cell of the grid represents a 15-minute segment. As you mouse over the grid a pop-up window will identify the beginning and end times of each cell.

To Set Up Shifts and Breaks:

1. To define Shift 1, click and hold in the cell whose begin time matches the beginning time of Shift 1 in your operation and drag to the right until you reach the cell whose end time matches the end of Shift 1 in your operation. The cells defined for Shift 1 will automatically shift to the left resetting the beginning of the work day to the beginning of Shift 1. Also, a description of Shift 1 appears below the grid area. The example below shows Shift 1 defined from 6 am to 4 pm.

Note: If you don't have room to define Shift 1 in your operation (for example if Shift 1 is from 11 pm - 7 pm), you can shift the beginning of the work day by repeatedly clicking

until the beginning of the work day corresponds to the beginning of Shift 1 in your operation.

🔀 Schedule						×
	Shift Sch	edule				
6:00 AM	<<			>>	5:45 AM	
Shift 1						
Shift 2						
Shift 3						
Remove	Finish	Description Shift 1 starts at 6:00 AM ar	nd ends at 4:00 PM.			
					ОК	Cancel

2. To identify breaks for Shift 1, within the cells defined for Shift 1 select the cell or cells that correspond to the breaks in your operation.

Shift 1		
Shift 2		
Shift 3		
Remove	Finish	Description
Remove	Finish	Description Shift 1 starts at 6:00 AM and ends at 4:00 PM.
Remove	Finish	Description Shift 1 starts at 6:00 AM and ends at 4:00 PM. Break 1 starts at 9:00 AM and lasts 30 minutes.
Remove	Finish	Description Shift 1 starts at 6:00 AM and ends at 4:00 PM. Break 1 starts at 9:00 AM and lasts 30 minutes. Break 2 starts at 11:00 AM and lasts 45 minutes.

- 3. Set up the second and third shifts as desired.
- 4. Name the schedule by typing a name in the **Name** box and click **OK**.

To Remove a Shift:

Check the box in the **Remove** column, in the shift description area below the grid, for the shift you want to remove.

To Delete an Existing Schedule:

1. From the Setup tab click 🕒 Schedules.

The Select Schedule dialog box will open.

Select Schedule		×
Default		•
New Edit	Delete	OK Cancel

2. Select an existing schedule from the combo box and choose **Delete**.

Defining Truck Groups

To Create or Edit a Truck Group:

1. From the **Setup** tab click the Configure command **Groups**.

The Select Group dialog box will open.



2. Choose **New** to create a new group or select an existing group from the combo box and choose **Edit**. The **Group** configuration box will open.

	garation			_	-			
Group <	New Group>							
eription								
scription								
elements not in	n the selected group				Elements include	ed in <new group=""></new>		
Туре	Name	Description	Group	>>>	Туре	Name	Description	Group
Truck	Truck1							
Truck	Truck2							
Truck	Truck3							
Truck	Truck4							
Truck	Truck5							
Truck	Truck6							
Battery	000000069							
Battery	AWPL000410							
Battery	AWPL000438							
Battery	AWPL000569							
Battery	eBat#16125							
Battery	eBat#16208							
	al communication in the	A	1		L			
								OK Car

- 3. Select a truck or trucks to move. To do this move the cursor into the column to the left of the charger you want to select. Once the cursor changes into a horizontal arrow, click the mouse. A selected truck is indicated by its row turning blue.
- 4. Click \longrightarrow to move the truck into the new group.
- 5. Repeat this process until you have added all the trucks. For example if you wanted to add Trucks1-3 to the new group, the **Configure** box would appear as follows.

Туре	Name	Description	Group	>>>	Туре	Name	Description	Group
Fruck	Truck4				Truck	Truck1		<new group=""></new>
Truck	Truck5				Truck	Truck2		<new group=""></new>
Truck	Truck6				Truck	Truck3		<new group=""></new>
Battery	000000069							
Battery	AWPL000410							
Battery	AWPL000438							
Battery	AWPL000569							
Battery	eBat#16125							
Battery	eBat#16208							

6. Type in a name and description for the group in the **Group** and **Description** boxes.

Group	Lift001
cription	Lift trucks in building 001

7. Click **OK**. The truck/group assignment will appear in the **Group** column in the **Trucks** pane.

To Delete an Existing Group:

Des

1. From the **Setup** tab click **Groups**.

The Select Group dialog box will open.

Selecting a block of trucks: Select the first truck in the range, press and hold the Shift key, then select the last in the range.

Selecting multiple trucks

not in a block: Select a truck, press and hold the **Ctrl** key, then select other trucks as desired.

Note: Trucks can be removed from a group by selecting the truck in the **Elements included** box then clicking ______.

Select Group			x
<new group=""></new>		-	
New Edit	Delete	ОК С	ancel

2. Select an existing group from the combo box and choose **Delete**.

Adding Truck Details and Assigning Trucks to a Schedule

To add truck details and assign a truck to a Schedule:

1. From the **Setup** tab select a truck from the list in the **Trucks** pane. To do this move the cursor into the vertical band next to the charger you want to select. Once the cursor changes into a horizontal arrow, click the mouse. A selected truck is indicated by its row turning yellow.



2. Right-click the truck you want to configure and choose **Configure** from the popup menu. The **Truck Configuration** dialog box opens.

Truck1 Configurat	tion
Truck	Truck 1
Model	Lift
Entered Service	010205
Name	
Description	
Schedule	Default Edit</td
Group	Lift001

- 3. Enter truck details for **Model**, **Entered Service**, **Name**, and **Description** that make it easier for you to identify the elements of your operation.
- 4. If you defined a schedule previously you can choose it from the **Schedule** combo box. If you defined a group for the truck previously, the name of the group will appear in the **Group** combo box. You can reassign the truck to another group, if desired, using the **Group** combo box. You can also edit the current schedule or group by clicking **Combo Box**.
- 5. Click **OK**. The updated truck information will appear in the **Trucks** pane.

Setting Up Auto-Log

Home Setup

[This feature is not yet implemented.]

Setting Exception View Parameters

Home

Note: See "Chapter 4. Viewing Exceptions and Generating Reports" for more viewing options.

Setup

Setting Maximum Out-Of-Sync Days

Maximum Out-Of-Sync Days sets the maximum number of days allowed from the most recent date recorded in the battery data residing in the database. If it has been longer than the number-of-days setting, the following reminder will appear when you initiate the **Check Exceptions** command.

Exception Generation	×
One or more batteries are not up-to-	date. Continue with generation?
	Yes <u>N</u> o

To set the Maximum Out-Of-Sync days:

From the **Setup** tab click the up arrow or down arrow of the **Max Out-Of-Sync Days** spin box to set the number of days.

Viewing Exceptions in the Exceptions Pane

To check for exceptions:

From the **Setup** tab click **Check Exceptions**. Any exceptions that are detected appear in the **Exceptions** pane.

To clear exceptions:

From the **Setup** tab click \bigcirc Clear Exceptions. Any exceptions that are displayed in the **Exceptions** pane are cleared leaving the pane blank.

To view exceptions within a range of dates:

- 1. From the **Setup** tab set the Exceptions **Start Date** and **End Date** to define the time window for which exceptions are displayed.
- 2. Click **Check Exceptions**. The exceptions displayed in the **Exceptions** pane will only include those that fall within the time window.

Note: The Check Exceptions command automatically performs the Clear Charger, the Clear Battery, and the Clear Trucks commands found on the Home tab.

The **Check** command displays only exceptions within the range of dates set in the **Start Date** and **End Date** boxes.

Note: Setting a range of dates does not delete any data in the database, but only affects the reporting of exception and log data. Only exceptions that fall within the time span are displayed or reported.

Performing Database Tasks

Home Setup

Opening the Database Maintenance Screen

To open the Database Maintenance screen:

Click Database Tasks on the **Setup** tab. When the screen opens, all MPM databases that have been created on your MPM Netbook or personal computer, as well as databases that have been imported, will appear on the list.

🚆 Database Main	tenance									×
Select Database	Import [Database Maintena	ince Database	e Edit						
Name	Customer	Description	DateCreated	LastUpdate	BatteryCount	ChargerCount	TruckCount	Version		
AWPB000430	1		6/10/2010	6/10/2010	1	0	0	3.51		
Carpenter			2/19/2010	2/19/2010	4	1	0	3.53		
Fleet			7/20/2010	8/25/2010	6	0	6	3.53		
Merge Test			8/24/2010	8/24/2010	2	0	3	3.53		
MPM Database0			4/12/2010	4/12/2010	16	6	0	3.53		
MPM Database1			4/12/2010	8/24/2010	7	3	0	3.53		
MPMTest			10/28/2008	1/1/2000	11	7	0	3.51		
PowerLoggerTest			4/15/2010	4/15/2010	4	0	0	3.53		
sample03			8/25/2010	8/25/2010	7	0	5	3.53		
									Select	Cancel
Active Database: Sa	mple02									

From the Database Maintenance screen you can:

- Change the active database.
- Import a database.
- Perform database maintenance operations.
- Edit (trim) a database.

Selecting (Activating) a Database

To activate a database from the list of databases:

- 1. From the **Database Maintenance** screen choose a database from the list by clicking it.
- 2. Click **Select Database** or the command button **Select**. The **Database Selected** dialog box will open.
- 3. Click **Yes** to activate the selected database.

Note: Double-clicking a database in the list will also select it.
Importing a Database

To import a PC database from Data Manager:

- 1. From the Database Maintenance screen click Import and choose Import PC Database. The Select Existing FASTWare Database dialog box opens.
- 2. Navigate to the location you have stored the database and click Open.
- 3. Once the **Confirm Database Name** dialog box opens, click **OK**.

After a moment the database will appear in the list on the **Database Maintenance** screen.

Adding a Description for the Database

This feature is primarily used if you are managing multiple databases. You can add a user-friendly customer name and description for each database.

To add a customer name and database description:

- 1. From the **Database Maintenance** screen double-click the **Customer** or **Description** field for the database. The blinking cursor will indicate that you can edit the field.
- 2. Type in a customer name or description.
- 3. Press Enter.

Performing Other Database Maintenance Operations

The following operations can be performed from the **Database Maintenance** menu.

- Create and delete a database.
- Detach or attach a database to an Aker Wade server.
- Edit SQL Server parameters.
- Move a database or email a database.

Creating a New Database

To create a new database:

1. Click Database Maintenance from the Database Maintenance screen, then choose New Database. The Create Database dialog box will open.

NOTE: The following characters are not permitted as part of a database name: ' " : < > ? []] | *

Also, a name that includes a number within parentheses, such as (1), is not permitted.

Create Database: Name	×
Enter the name for the new database	OK Cancel

NOTE: Once a database is deleted it cannot be retrieved.

2. Type a name for the database and click **OK**.

Permanently Deleting a Database

To delete a database:

- 1. Choose a database from the list by clicking it.
- 2. Click Database Maintenance then choose Permanently Delete Database. The Delete Database dialog box will open.
- 3. Click Yes.

Detaching a Database from a Server

Detaching a database from a server is a means of removing a database from Motive Power Manager. Detached databases are stored where indicated by the MPM **Database File Path** which is discussed in the section below, "Editing SQL Server Parameters".

To detach a database:

- 1. Select a database in the list by clicking it.
- 2. Click Database Maintenance then choose Detach Database from Server. The Detach Database dialog box will open.
- 3. Click OK.

Attaching a Database to a Server

Attaching a database allows you to re-attach a detached database.

To attach a Motive Power Manager database:

- 1. Click Database Maintenance and choose Attach Database to Server ► From Database File. The Existing FASTWare PC Databases dialog box opens.
- 2. Navigate to the location you have stored the database and click **Open**.
- 3. Once the **Success** information box opens, click **OK**.

After a moment the database will appear in the list on the **Database Maintenance** screen.

To attach a zipped Motive Power Manager database:

When a database is emailed using the **Move Database** operation described below, it is automatically zipped by MPM and attached to the email. The **Attach Database to Server** ► **From Zip File** operation described here is how you attach that zipped database to the server on your computer.

- 1. Click Database Maintenance and choose Attach Database to Server ► From Zip File. The Open dialog box opens.
- 2. Navigate to the location you have stored the zipped database and click **Open**.
- 3. Once the **Success** information box opens, click **OK**.

After a moment the database will appear in the list on the **Database Maintenance** screen.

NOTE: Motive Power Manager databases are identified by the file type .MDF.

NOTE: Zipped files are identified by the file type .ZIP.

Editing SQL Server Parameters

The file paths for the location of database files and charge logs can be altered if needed.

To change the path for files:

1. Click Database Maintenance and choose Edit SQL Server Parameters. The SQL Database Server Parameters dialog box opens.

Transfer Log File Path: C:\MPM Data\Log Files\ Do not change server, user or password parameters unless authorized to do so. Database Server: (local)\SQLEXPRESS Database User: akwadmin Database Pasaward:	C:\MPM Data\	
C:\MPM Data\Log Files\ Do not change server, user or password parameters unless authorized to do so. Database Server: (local)\SQLEXPRESS Database User: akwadmin Database Resourced:	, Transfer Log File Path:	
Do not change server, user or password parameters unless authorized to do so. Database Server: (local)\SQLEXPRESS Database User: akwadmin Database Resourced:	C:\MPM Data\Log Files\	
Database User: akwadmin	Detahara Carrier	
Dalabase rassword.	Database Server:	(local)\SQLEXPRESS

- 2. To change the path, either type-in a new path in the file path or click and navigate to a new location.
- 3. After editing the parameters, click **OK**.

To return server parameters to their defaults:

From the SQL Database Server Parameters dialog box click Use Defaults.

Moving a Database

To move a database to the Aker Wade server:

This operation is done in cooperation with Aker Wade for troubleshooting purposes only and requires an active internet connection.

- 1. From the **Database Maintenance** screen choose a database from the list by clicking it.
- 2. Click Database Maintenance and choose Move Database ► To Server.

To attach a database to an email:

- 1. From the **Database Maintenance** screen choose a database from the list by clicking it.
- 2. Click **Database Maintenance** and choose **Move Database** ► **To email.** An email client window opens with the database attached as a zipped file.
- 3. Send the email as you would any other email.

NOTE: Do *not* edit the Database Server, Database User, or Database Password parameters without authorization from Aker Wade Power Technologies.

NOTE: Attaching a database to an email works

only if you have an email client such as Outlook, Outlook Express, or Windows Live Mail setup on your computer.

Editing a Database

The database edit operation allows you to trim the database to include only data that falls within a specific time span for the entire database or for selected chargers and/or batteries.

To access the Edit Database screen:

From the **Database Maintenance** screen click **Database Edit**. The **Edit Database** screen opens.

Database hies " Data C. within Data within Database his (400 kB) Eug. C. within Data within Database_rog.cb) (100 kB) Version: 3.51 Created: 4/12/2010 5:04:18 PM Last Modified:						
Date Range for entire Oldest Sunday, Ap	ril 02, 2006		Newest Frid	lay, July 1	21, 2006 Trim	
Chargers						
Charger ID		Oldest [Data	Newest	t Data	
CHARGER001 CHARGER002 CHARGER003			, April 02, 2006 ay, June 22, 2006 r, May 01, 2006	Tuesday, April 18, 2006 Friday, July 21, 2006 Wednesday, May 10, 2006		
Batteries		Oldest Data			Newest Data	
BAT0000001	S00000134	17	Sunday, April 02, 2006	Tuesday, April 18, 2006		
BAT0000002	S00000608	32	Sunday, April 02, 2006		Friday, April 07, 2006	
BAT0000003 S0000341		75	Thursday, June 22, 2006 Thursday, June 22, 2006		Friday, July 07, 2006	
BAT0000004	\$00000433	38	Friday, July 07, 2006		Friday, July 21, 2006	
BAT0000004 BAT0000005	BAT0000006 S0000850 BAT0000007 S0000991		Friday, July 07, 2006 Monday, May 01, 2006		Friday, July 21, 2006 Wednesday, May 10, 2006	
BAT0000004 BAT0000005 BAT0000006 BAT0000007	5000055					

Note: Trimming is a means of removing old data from a database. It does not delete or remove a battery or charger from the list.

To trim the entire database for a range of dates:

1. From the Edit Database screen click Trim. The Trim Date Range for Database dialog box opens.

Trim Date Range for Database	×
Start of Data 3/10/2009 🚔 💌	End of Data 6/1/2009
Remove Data	
Outside Date Range	
Inside Date Range	OK Cancel

- 2. Set the Start of Data and End of Data dates.
- 3. Choose either of the trim options, **Outside Date Range** or **Inside Date Range**.
- 4. Click OK.

Selecting a block of

chargers or batteries: Select the first charger or battery in the range, press and hold the **Shift** key, then select the last charger or battery in the range.

Selecting multiple chargers or batteries not

in a block: Select a charger or battery, press and hold the Ctrl key, then select other chargers or batteries as desired.

To remove a charger or battery from the database:

- 1. From the **Edit Database** screen right-click the ID of the battery or charger. See notes for selecting multiple chargers or batteries.
- 2. Choose **Remove**.

To rename a Charger ID or Battery ID:

- 1. From the **Edit Database** screen right-click the ID of the battery or charger.
- 2. Choose Rename. The New Value for Charger/Battery ID dialog box will open.

New V	alue for Battery ID	×
I		
	OK Cancel	

3. Type the new ID and click **OK**.

To merge the data from a charger/battery to another charger/battery:

- 1. From the Edit Database screen right-click the ID of the battery or charger.
- 2. Choose Merge To ▶ [name of charger or battery]. The Merge dialog box opens.

Merge		<u> </u>
This will merge BAT0000001 into BAT0000002	and remove BAT0000001. Continue?	
	OK Cancel	

3. Click OK.

To trim the data for a battery or charger:

- 1. From the Edit Database screen right-click the ID of the battery or charger.
- 2. Click Trim Data. The Trim Date Range for... dialog box opens.

Trim Date Range for Battery: BAT0000	007
Start of Data 5/1/2006	End of Data 5/10/2006
Remove Data	
Outside Date Range	
C Inside Date Range	OK Cancel

- 3. Set the Start of Data and End of Data dates.
- 4. Choose either of the trim options, **Outside Date Range** or **Inside Date Range**.
- 5. Click OK.

Note: Trimming is a means of removing old data from a database. It does not delete or remove a battery or charger from the list.

Transferring MPM Software to a Different Computer or Recovering from Corrupted Software

Home Setup

If you need to transfer MPM software to a different computer or if you are recovering from a problem where you cannot run the MPM software, perform the following steps.

To transfer MPM software to a different computer:

- 1. On the original computer click the **Setup** tab and then **Setup** License. The **MPM** License Details dialog box opens.
- 2. Click Remove License.
- 3. Install MPM Software on a new computer.
- 4. Contact Aker Wade (have the information for your MPM purchase available).
- 5. An Aker Wade agent will provide you with a PC Key Unlock Code.
- 6. Open the MPM License Details dialog box on the new computer.
- 7. Type in the **PC Key Unlock Code** and click **Unlock**. Your original **PC Key** will appear in the PC Key field.
- 8. Provide the **PC Key** to the Aker Wade agent. Your original **License Code** will be sent to you via e-mail.
- 9. Copy and paste the code into the License Code field.
- 10. Verify that the code matches exactly and click **Apply** then **OK**.

To recover from corrupted software:

Once you have resolved any problem, such as a bad hard drive, for your computer, reinstall all required MPM software. Then perform steps 4-9 above.

MPM Software Version and Resetting the Software



To find the MPM software version number:

Click About from the Setup tab. The About Motive Power Manager screen opens.

About Motive Power Mana	iger 🗾	
a k e r 🔆 w a d e "	Motive Power Manager Full Edition Version 2.4.0.0 (c) 2006-2010 Aker Wade Power Technologies, LLC Aker Wade Power Technologies, LLC	
Click on 'Reset' to restore original MPM Program settings. Use if MPM becomes unresponsive.	Performance data for motive power applications	
<u>R</u> eset	<u> </u>]
<u>S</u> ettings		

To reset the MPM Software:

Click **Reset** from the **About Motive Power Manager** screen to reset the MPM software if it becomes unresponsive.

Chapter 3: Transferring and Merging Data

Whether your operation uses Express Fast Chargers or DC Power Logger battery modules, the process of getting battery data into the Motive Power Manager database is essentially the same. You will need to:

- 1. Transfer charger or Power Logger data via log files to the computer running Motive Power Manager software.
- 2. Merge the data from the log files into the MPM database.

Transferring and Merging Fast Charger Data

Home Setup

Note: To set the Transfer screen to display Fast Chargers only, make sure Power Loggers is not checked.

NOTE: Any time you intend to transfer data from a Fast Charger or Power Logger you must insert the Bluetooth adapter securely into one of the USB ports before starting Motive Power Manager. The LED on the adapter should illuminate indicating it is ready to communicate. The **Transfer** command on the **Home** tab opens a screen from which you initiate the transfer of data from Fast Chargers or Power Loggers and merge the data into the active database.

Fast Chargers Transfer Screen

To access the Fast Chargers screen:

From the **Home** tab click **Transfer**. All **Charger** transfer commands are available from this screen.



To "Discover" all chargers within range:

Before transferring data from chargers, you need to initiate a search for all chargers within Bluetooth communications range.

From the Chargers transfer screen click Discover.

After a few moments any discovered chargers will appear in the **Chargers** transfer screen as shown below.

Note: The "Discover" operation will take several seconds or longer in a noisy environment where there is a lot of electromagnetic interference, either from plant operations or other wireless devices.

You may need to initiate the "Discover" operation more than once in a noisy environment to make sure all devices are discovered.

Note: A selected charger is indicated by a check in the box next to the charger name.

Note: It is recommended to merge Charger log files immediately after they are transferred to Motive Power Manager. Log files can, however, be collected over a period of time and then merged later.

See the section "Merging Existing Data Files" later in this chapter for more information.

🚯 Charg	jers						
Discove	er Toggle	Transfer	Options	Merge to Databas	se 🗵	Cancel Comms	
Char	gers 🗖 Po	wer Loggers		Devices			
Read ?	Name	Address		Device ID	Last Read		Status
	AW T20 99990) (00:A0:96	5:27:D1:D7)				Available
Database						- Ready	
Database							.::

To toggle the selection of chargers:

A charger can be selected or deselected individually by clicking the box next to its name. If you have a large number of chargers this can be a time-consuming process. Deselecting all selected chargers in the list and selecting all deselected charges in the list can be performed all at once by toggling the selection.

From the **Chargers** transfer screen click **Toggle**. For example, if no charger in the list is selected, clicking **Toggle** will select all the chargers.

To transfer data from chargers:

- 1. Check the charger(s) you want to include in the transfer from the list of discovered chargers.
- 2. From the **Chargers** transfer screen click **Transfer**.

After the transfer is complete the **Last Read** and **Status** fields of each charger will be updated with a time/date stamp and the name of the .CLG log file created containing data from the charger.

Last Read	Status
08-25-10 10:40	Created - 082510_104026_0000099990.CLG records- 200

To merge charger data into the database:

1. From the **Chargers** screen click **Merge to Database**. The **Merge Files to Database** screen will open. This screen contains a list of charger log files that have been transferred previously.

Merge Files to Database			X
<u>File M</u> erge <u>R</u> eport			
Merge File Name	Device ID	Status	
081710_145243_0000099990.CLG	0000099990	200 Recs. Added: 0 Failed: 0 Skipped: 200	
Click 'Cancel' to close dialog with no further changes		ОК	Cancel
Shok Sancer to close analog within faither changes.			
Database Test Batteries: 2 Chargers: 1 Records: 247			

- 2. Check the charger log file(s) you want to include in the merge.
- 3. Click Merge.
- 4. If you wish to generate a merge report, click **Report**.

AKER)	WADE			Me	erge Sum	nmary	
File Name File Path	0817 C:\MF	10_145243_00000 PM Data\Log Files\2	99990. CLG 2010-08-17\				
Device Na 00000999	ame)90	Device Type Charger	Records 200	Added 0	Skipped 200	Failed O	Merge Date 08/17/10 07:07

Merge Options

To access the merge options click **Options** from the **Chargers** transfer screen.

Opt	ons				
	Load Pick List				
	Save Pick List				
	Use Smart Mode: Off				
	Change Transfer Log Folder				
	Use Date Folders: On				
	Use Demo Data: Off				
	Use Version 1 Protocol: Off				

Note: A Pick List is a file containing a list of previously "discovered" chargers and Power Logger modules. Saving and loading a Pick List can save time in an environment where electromagnetic interference slows down the "discover" operation.

Note: The Smart Mode

communications protocol is used to save time when transferring large log files. It will only transfer new data, data that has not already been transferred and merged into the database.

To load a Pick List:

Choose **Load Pick List** to navigate to and open a saved list of "discovered" chargers. Pick List files have the extension .CSX.

To save a Pick List:

Choose **Save Pick List** to save the list of "discovered" chargers that are currently displayed in the **Chargers** screen.

To turn Smart Mode On or Off:

Choose Use Smart Mode. Smart Mode will toggle between On and Off.

To change the Transfer Log Folder:

1. Choose Change Transfer Log Folder.

Browse Fo	r Folder				×
	My DocsToGo My Scans				*
	My Stationery New folder				
	Scanned Docur Documents	ments			=
Make I	New Folder		ОК	Cano	el

- 2. Navigate to a new folder to which log files will be transferred.
- 3. Click OK.

To turn Use Date Folders On or Off:

Choose Use Date Folders. Use Date Folders will toggle between On and Off.

When **Use Date Folders** is turned **On**. Transferred log files will be placed in dated folders.

To turn Use Demo Data On or Off:

Choose Use Demo Data. Use Demo Data will toggle between On and Off.

Demo data is available only from older devices.

To turn Use Version 1 Protocol On or Off:

Choose Use Version 1 Protocol. Use Version 1 Protocol will toggle between On and Off.

Use Version 1 protocol only if you are unable to transfer data from an older device.

Transferring and Merging Power Logger Data



Note: To set the Transfer screen to display Power Loggers only, make sure Chargers is not checked.

NOTE: Any time you intend to transfer data from a Fast Charger or Power Logger you must insert the Bluetooth adapter securely into one of the USB ports before starting Motive Power Manager. The LED on the adapter should illuminate indicating it is ready to communicate. The **Transfer** command on the **Home** tab opens a screen from which you initiate the transfer of data from Fast Chargers or Power Loggers and merge the data into the active database.

Power Loggers Transfer Screen

To access the Power Loggers Screen:

From the **Home** tab click **Transfer**. All **Power Logger** transfer commands are available from this screen.

Power Loggers				
Discover Togo	gle Transfer Options	Merge to Databa	ise 🛛 🙆 Cancel Com	ms
Chargers	Power Loggers	Devices		
Read ? Name	Address	Device ID	Last Read	Status
Database: Fleet Bat	teries: 6 Chargers: 0 Record	ds: 1733 Discovering	- Ver : 1.2.1.818 Msc	

To "Discover" all Power Loggers within range:

Before transferring data from Power Logger battery modules, you need to initiate a search for all modules within Bluetooth communications range

From the **Power Loggers** transfer screen click **Discover**.

Any discovered battery module will appear in the **Power Loggers** transfer screen as shown below.

Note: The "Discover" operation will take several seconds or longer in a noisy environment where there is a lot of electromagnetic interference, either from plant operations or other wireless devices.

You may need to initiate the "Discover" operation more than once in a noisy environment to make sure all devices are discovered.

Note: A selected Power Logger is indicated by a check in the box next to the Power Logger name.

Note: It is recommended to merge Charger and Power Logger log files immediately after they are transferred to the Motive Power Manager. Log files can, however, be collected over a period of time and then merged later.

See the section "Merging Existing Data Files" later in this chapter for more information.

🚯 Power	r Loggers						
Discove	r Toggle	Transfer	Options	Merge to Databas	se 🗵	Cancel Comms	
Charg	gers 🔽 Po	wer Loggers		Devices			
Read ?	Name	Address		Device ID	Last Read		Status
	AWPB000430	(00:06:66	6:02:C8:1E)				Available
	AWPB000670	(00:06:66	6:02:C8:50)				Available
Database:						📥 Ready	

To toggle the selection of Power Loggers:

A Power Logger module can be selected or deselected individually by clicking the box next to its name. If you have a large number of modules this can be a time-consuming process. Deselecting all selected modules in the list and selecting all deselected modules in the list can be performed all at once by toggling the selection.

From the **Power Loggers** transfer screen click **Toggle**. For example, if no Power Logger module in the list is selected, clicking **Toggle** will select all the modules.

To transfer data from Power Loggers:

- 1. Check the Power Logger(s) you want to include in the transfer from the list of discovered Power Loggers.
- 2. From the **Power Loggers** transfer screen click **Transfer**.

After the transfer is complete the **Status** field of each Power Logger will be updated with a time/date stamp and the name of the .FLG log file created containing data from the Power Logger.

Status Created - C:\MPM Data\Log Files\2010-08-25\A\/PB000430_Aug-25-2010-10-53-18.FLG records- 51 Created - C:\MPM Data\Log Files\2010-08-25\A\/PB000670_Aug-25-2010-10-53-23.FLG records- 46

To merge Power Logger data to the database:

1. From the **Power Loggers** screen click **Merge to Database**. The **Merge Files to Database** screen will open. This screen contains a list of Power Logger log files that have been transferred previously.

Merge Files to Database			
Eile <u>M</u> erge <u>R</u> eport			
Merge File Name	Device ID	Status	
AWPB000430_Aug-25-2010-10-53-18.FLG			
AWPB000670_Aug-25-2010-10-53-23.FLG			
Click 'OK' to merge all checked files and then close dialog.		OK	Cancel
lick 'Cancel' to close dialog with no further changes.		One	Candor
Database Sample Batteries: 0. Chargers: 0. Records: 0.			
Database Sample Batteries, V Chargers, V necurus, V			

2. Check the Power Logger log file(s) you want to include in the merge.

3. Click Merge.

4. If you wish to generate a merge report, click **Report**.

A K E R W A D E					Me	rge Su	mmary
File Name	AWPB	3000430_Aug-25-20	10-10-53-18				
File Path	C:\MPM Data\Log Files\2010-08-25\						
Device Na AWPB00	ame 0430	Device Type Battery Module	Records 51	Added 51	Skipped 0	Failed 0	Merge Date 08/25/10 10:57
File Name	AWPE	000670_Aug-25-20	10-10-53-23	FLG			
File Path	C:\MPM Data\Log Files\2010-08-25\						
Device Na AWPB000	ame 0670	Device Type Battery Module	Records 46	Added 46	Skipped 0	Failed 0	Merge Date 08/25/10 10:57

Merge Options

To access the merge options click **Options** from the **Power Loggers** screen.

Opt	ions			
	Load	l Pick List		
	Save	Pick List		
	Use Smart Mode: Off			
	Change Transfer Log Folder			
	Use Date Folders: On			
	Use	Demo Data: Off		
	Use	Version 1 Protocol: Off		

Note: A Pick List is a file containing a list of previously "discovered" chargers and Power Logger modules. Saving and loading a Pick List can save time in an environment where electromagnetic interference slows down the "discover" operation.

Note: The Smart Mode

communications protocol is used to save time when transferring large log files. It will only transfer new data, data that has not already been transferred and merged into the database.

To load a Pick List:

Choose **Load Pick List** to navigate to and open a saved list of discovered Power Loggers. Pick List files have the extension .CSX.

To save a Pick List:

Choose **Save Pick List** to save the list of discovered Power Loggers that are currently displayed in the **Power Loggers** screen.

To turn Smart Mode On or Off:

Choose Use Smart Mode. Smart Mode will toggle between On and Off.

To change the Transfer Log Folder:

1. Choose Change Transfer Log Folder.

Browse For Folder	×
My DocsToGo	A
▷ ↓ My Scans	
My Stationery	
New folder	
Scanned Documents	
Jocuments	-
	T
Make New Folder OK	Cancel

- 2. Navigate to a new folder to which log files will be transferred.
- 3. Click OK.

To turn Use Date Folders On or Off:

Choose Use Date Folders. Use Date Folders will toggle between On and Off.

When **Use Date Folders** is turned **On**. Transferred log files will be placed in dated folders.

To turn Use Demo Data On or Off:

Choose Use Demo Data. Use Demo Data will toggle between On and Off.

Demo data is available only from older devices.

To turn Use Version 1 Protocol On or Off:

Choose Use Version 1 Protocol. Use Version 1 Protocol will toggle between On and Off.

Use Version 1 protocol only if you are unable to transfer data from an older device.

Merging Existing Log Files



Note: Merging large numbers of log files at one time can slow computer operation.

Aker Wade recommends limiting the number of log files merged at one time to around 10. Although it is recommended to merge Fast Charger or Power Logger log files immediately after transfer, they can be collected over a period of time and then merged later. For example, if your operation requires a battery to be charged by more than one Fast Charger (shared charger), then to avoid incomplete data that could lead to false exception alarms, it is important to transfer charger log files from all chargers before merging them into the database.

To add and merge existing log files:

 From the Home tab click the Transfer command Merge Existing Files. The Merge Files to Database screen will open.

🧏 Merge Files to Database		
<u>F</u> ile <u>M</u> erge <u>R</u> eport		
Merge File Name	Device ID Status	s

2. Click **File** and choose **Add Files**. The **Open** screen opens allowing you to navigate to the folder where transferred log files are stored.

Organize 💌 New	folder		8== •	
J Music	▲ Inter	Name	Date modified	
Pictures		길 Log Files	3/31/2010 12:06 PM	
Videos				
🍓 Homegroup				No previe
👰 Computer	ш			available
🚰 OS (C:)				
S (C:) Local Disk (D:)				
 OS (C:) Local Disk (D:) My Book (F:) 				

3. Navigate to the folder designated to store log files. If you are adding Charger log files, make sure the file type option next to the **File name** box is set as follows:

Charger Logs (*.clg;*.cex) 👻						
Open 🚽	Cancel					

If you are adding Power Logger log files, make sure the file type option is set as follows:

Battery Module Log (*.flg)						
Open	Cancel					

- 4. Choose the log file or files you want to add and click **Open**. The files will be added to the **Merge Files to Database** screen.
- 5. Make sure the file(s) you want to merge are checked, then click **Merge**. After the merge is complete the Device ID and Status fields will be updated



To remove files from the merge list:

From the **Merge Files to Database** screen, right-click the name of the file you want to remove from the list and choose **Remove File**.

Note: Charger log files have the extension .CLG. Power Logger log files have the extension .FLG.

The default path for log files is: C:\MPM Data\Log Files\.

Selecting a block of files: Select the first file you want to add, press and hold the Shift key, then select the last file you want to add.

Selecting multiple files

not in a block: Select a file, press and hold the **Ctrl** key, then select other files as desired.

¥ Mer	ge Files t	o Database					X
<u>F</u> ile	<u>M</u> erge	<u>R</u> eport					
Merge	File N	ame		Device ID	Status		
V	04180	6_2105_CHARGER	01.01.0				
V	07210	6_2231_CHARGEF	Remove File				
			<u>I</u> oggle Merge				

Note: The Merge Summary report must be generated before closing the Merge Files to Database screen.

To generate a Merge Summary report:

This operation must be done directly after the files have been merged.

From the Merge Files to Database screen, click Report.

AKER WADE			Me	rge Su	mmary		
File Name File Path	04180 C:\MPI	6_2105_CHARGE M Data\Log Files\2	R01.CLG				
Device Na Charge	ame R001	Device Type Charger	Records 97	Added 96	Skipped 1	Failed 0	Merge Date 04/02/10 05:59
File Name File Path	07210 C:\MPI	6_2231_CHARGE M Data\Log Files\2	R02.CLG				
Device Na Charge	ame R002	Device Type Charger	Records 337	Added 337	Skipped 0	Failed 0	Merge Date 04/02/10 05:59

Chapter 4: Viewing Exceptions and Generating Reports

Once you have established communications with Fast Chargers or Power Logger battery modules, transferred and merged data from them into the MPM database, and configured exception parameters for batteries, you are ready to use the broad array of tools available from the **Home** tab to analyze the data you have collected.

Exceptions can be viewed either in the **Exceptions** pane or in a report form for printing and saving as a file. A variety of additional reports and graphs can be generated from either Express Fast Charger data or Power Logger battery module data, depending on your application.

Viewing Exceptions

Home Setup

Note: The Check command automatically performs the Clear Charger, the Clear Battery, and the Clear Truck command.

The **Check** command displays only exceptions within the range of dates set in the **Start/End** boxes. If your operation uses Express Fast Chargers, a list of chargers and batteries will appear in their respective panes once you have transferred and merged log files from the chargers. If your operation uses Power Logger modules to collect battery data, a list of those batteries will appear in the **Batteries** pane once you have transferred and merged log files from those modules.

The exceptions that appear in the **Exceptions** pane are controlled in three ways:

- 1. The setting of exception parameters in the **Setup** tab.
- 2. The setting of the date parameters in the **Setup** or **Home** tab. This establishes a time window for which exceptions are displayed.
- 3. The selection of a specific charger and/or battery in the **Chargers** and **Batteries** panes (or multiple chargers and/or batteries. This limits the exceptions displayed to only those specific chargers and/or batteries.

Checking for and Clearing Exceptions

To check for exceptions:

From the **Home** tab click \checkmark Check. Any exceptions that are detected appear in the **Exceptions** pane.

To clear exceptions:

From the **Home** tab click \bigcirc Clear. Any exceptions that are displayed in the **Exceptions** pane are cleared leaving the pane blank.

Controlling How Exceptions are Displayed

To view the latest exceptions:

From the **Report** tab check **Latest Exception**. Only the most recent exception of each exception type for each battery is displayed in the **Exceptions** pane.

Uncheck Latest Exception to view all exceptions.

To view exceptions for select chargers, batteries and/or trucks:

Select a charger by clicking in the vertical bar just to the left of a charger. Only exceptions associated with that charger will be displayed in the **Exceptions** pane.

Chargers				
	ChargerID			
₽	CHARGER001			
	CHARGER002			

Select a battery by clicking in the vertical bar just to the left of a battery. Only exceptions associated with that battery will be displayed in the **Exceptions** pane.

Batteries					
	Battery ID				
Ť	BAT0000001				
	BAT000002				

See the side notes for how to select multiple chargers or batteries for displaying exceptions associated only with those devices.

To view exceptions within a time window:

- 1. From the **Home** tab set the **Exceptions Start** date to define the time window for which exceptions are displayed. Exceptions will be shown from the **Exceptions Start** date until the current date.
- Click V Refresh. This command filters the view of exceptions displayed based on the time window you have set. It does not perform a Clear Charger, Clear Battery, or Clear Truck command as the Check command does.

To clear charger selections:

From the **Home** tab click **O Clear Charger**. This command deselects any charger that was selected, so exceptions for all chargers are displayed in the **Exceptions** pane.

To clear battery selections:

From the **Home** tab click **K** Clear Battery. This command deselects any battery that was selected, so exceptions for all batteries are displayed in the **Exceptions** pane.

Selecting a block of chargers or batteries:

Select the first device in the range, press and hold the **Shift** key, then select the last device in the range.

Selecting multiple chargers or batteries not

in a block: Select a device, press and hold the Ctrl key, then select other devices as desired.

Note: Setting a range of dates does not delete any data in the database, but only affects the reporting of exception and charger log data. Only exceptions that fall within the time span are displayed or reported.

Note: To make sure exceptions for all batteries and chargers are displayed in the Exceptions pane, click Clear Charger and Clear Battery.

Maximizing the Viewing Area

Home Setup

You can maximize the viewing area for data within a pane by increasing the size of a pane or by hiding a pane not currently being used.

To size the panes:

- 1. Move the cursor to the gray horizontal bar separating any two panes.
- 2. Click and hold while adjusting the height of the pane up or down.

To show/hide a pane: :

From the **Home** tab check or uncheck **Show Exceptions**, **Show Chargers**, **Show Batteries**, or **Show Trucks**.

Generating Reports



Exception reports are available for all charging applications. In addition, a variety of reports and graphs have been designed and grouped specifically for fast, opportunity, and conventional charging applications. Furthermore, fleet reports can be generated for monitoring battery performance on a truck basis for conventional charging applications where multiple batteries are used in a given truck.

Viewing Complete Data in a Report

If a charger, battery, or truck in their viewing panes is selected, data used to generate a report will be limited to those selections. To make sure you are viewing all data in the database you must clear any selections of chargers, batteries, or trucks. If Clear Charger, K Clear Battery, or Clear Truck on the Home tab is *not* grayed out, that indicates that a device is selected.

To view reports for all data in the database:

- 1. From the **Home** tab clear any selections of chargers, batteries, or trucks by clicking in Clear Charger, K Clear Battery, and Clear Truck.
- 2. Choose a report.

Limiting the Content of a Report

The scope of data displayed in a report can be limited in two ways:

- 1. Setting report date parameters using the preset selection box or using the **From** *I* **To** boxes establishes a time window for the content of a report.
- The selection of a specific charger, battery, and/or truck in the Chargers, Batteries, and/or Trucks panes (or multiple chargers, batteries, and/or trucks) limits the content of a report to only those chargers, batteries, and/or trucks.

To view reports within a range of dates:

1. From the **Home** tab choose a preset range by clicking the selection box located in the Report Date Range group above the **From** date box and choosing one of the preset date ranges:

Note: To make sure your reports include all the data in the database, click Clear Charger, Clear Battery, and Clear Truck.



Or,

Set the **From / To** dates to define the time window for which the reports will be generated.

2. Choose a report.

To view reports for select chargers, batteries, and/or trucks:

Before choosing a report, select a charger by clicking in the vertical bar just to the left of a charger to display data associated only with that charger in a report.



Before choosing a report, select a battery by clicking in the vertical bar just to the left of a battery to display data associated only with that battery in a report.



Before choosing a report, select a truck by clicking in the vertical bar just to the left of a truck to display data associated only with that truck in a report.

Trucks				
	Truck			
⊨	Truck1			
	Truck2			

See the side notes for how to select multiple chargers, batteries, and/or trucks for generating reports for only those devices.

Selecting a block of chargers, batteries, or trucks: Select the first device in the range, press and hold the Shift key, then select the last device in the range.

Selecting multiple chargers, batteries, or trucks not in a block: Select a device, press and hold the Ctrl key, then select other devices as desired.

Generating a Report

To generate a report:

 To generate a complete report including all data in the database, make sure All Data is selected in the preset date selection box. Or limit the scope of the report by a date range, or selected chargers, batteries, or trucks as described in the section "Limiting the Content of a Report" as described above.

2. From the **Home** tab click a report category and choose a report or graph.

Exception Reports



Fast Charge Reports and Graphs

A 🔄	🆄 Fast Charge 🔻				
	Charge Summary				
٩	Fin/Eq Charges				
	Charge Details				
	Charger Activity				
2	Battery Overview				
<u></u>	Finish/Equalization				
* ≣	SOC Min/Max				
L	Charge Temperature				
ılı	State of Charge Graph				
⊒+	Daily AHRs				

Note: For examples of the reports and graphs, see "Appendix D. Sample Reports and Graphs."

Power Logger Reports and Graphs

🎲 F	🎲 Power Logger 👻					
	Event Summary					
	Event Detail					
ľ	Event Detail - Enhanced					
۲	Power Logger Overview					
↓ ↑	Power Flow					
<u>nila</u>	Battery Usage					
≹≣	Daily Charge/Discharge Graph					
2	Low Electrolyte Summary					
~	Daily Temperature					
	Daily Voltage					

Conventional Charge Reports



Fleet Reports and Graphs

ab	Fleet *		
0	Time Discharging - Cumulative by Week		
0	Time Discharging - Cumulative by Month		
6	AHRs - Cumulative by Week		
6	AHRs - Cumulative by Month		
<u>a0+</u>	Truck Utilization		
	Shift Reports	0	Shift 1 - Weekly Usage
<u></u>		\bigcirc	Shift 1 - Monthly Usage
		۰	Shift 1 - Weekly Energy Usage
		۰	Shift 1 - Monthly Energy Usage
		Q	Shift 2 - Weekly Usage
		Q	Shift 2 - Monthly Usage
		۰	Shift 2 - Weekly Energy Usage
		۰	Shift 2 - Monthly Energy Usage
		0	Shift 3 - Weekly Usage
		\bigcirc	Shift 3 - Monthly Usage
		۰	Shift 3 - Weekly Energy Usage
		6	Shift 3 - Monthly Energy Usage

Chapter 5: Using Power Logger Analysis Tools



The Power Logger Analysis tools are designed primarily for use by sales engineers to study actual power usage of batteries on site. Portable versions of DC Power Logger battery modules are temporarily installed on batteries or trucks in use and data pertinent to the operation is collected and analysed using the analysis tools.

These tools can also be used by customers using DC Power Logger battery modules who would like to do more analysis of their operation than the Power Logger reports provide.

Not only do these tools allow you to analyze key data on screen, but you can also save, print, and export profiles of interest.

Discharge Profile Tool

Home	Setup
------	-------

To open the Discharge Profile tool:

From the **Home** tab click the Reports command \bigcirc Power Logger Analysis and choose Sincharge Profile. The **Discharge Profile** screen opens.



This screen is divided into three main sections: Usage Overview, Summary, and Discharge Profile.

The **Usage Overview** section provides a graphical look at all the discharge data recorded by a Power Logger or data for a range of dates. The **Summary** section contains the same information as the **Usage Overview** section, but in tabular form. The **Discharge Profile** section provides a graphical look at the discharge data from a Power Logger for a specific day, or an average of all days logged, or the days within a range of dates.

To select a battery to view:

From the **Discharge Profile** screen click the **Battery** field and choose from the list of batteries.



To view the Discharge Profile of a specific day:

From the **Discharge Profile** screen click in the **Summary** table on the day desired.

To the compare Discharge Profile of a selected day to the average of all days:

- 1. From the **Discharge Profile** screen select a day in the **Summary** table.
- 2. Click **Add All**. The **Discharge Profile** will show a graph of both the selected day and the average of all the days for a specific battery.

To clear the average-of-all-days selection:

From the **Discharge Profile** screen click **Remove All**. The days selected by the **Add All** command are deselected and the average-of-all-days discharge profile is not shown.

To view the Worst Case discharge day:

From the **Discharge Profile** screen click **Worst Case**. The **Discharge Profile** of the worst discharge day for the selected battery is displayed.

To deselect a selected day in the Summary Table:

From the **Discharge Profile** screen click **De-Select**.

To limit the range of dates:

1. From the **Discharge Profile** screen set the **Period Start** and the **Period End** dates.



2. Click Update.

To only on sureful

To save a profile:

1. From the Discharge Profile screen click Profile ► Save. The Save Discharge Profile box opens.

Note: Profiles that have been saved can be printed and exported using the **Discharge View** tool.

ave Discharge Profile Name Description		
Name	Description	Modified
AWPL000036	Worst 4/10/2009	4/15/2010 7:27:47
		Cancel OK

2. Type in a name and description then click **OK**.

To load a profile:

- 1. From the Discharge Profile screen click Profile ► Load. The Load Discharge Profile box opens
- 2. Select a profile and click **OK**.

To delete the current profile:

- 1. From the **Discharge Profile** screen click **Profile** ► **Delete**. The **Delete Profile** box opens
- 2. Click OK.

To switch from Day view to Week view:

Click either the **Day** tab or the **Week** tab.

Discharge View Tool

Home Setup

Selecting a block of

batteries: Select the first battery in the range, press and hold the **Shift** key, then select the battery in the range.

To open the Discharge View tool:

- 1. From the **Home** tab select a battery in the **Batteries** pane by clicking in the vertical bar just to the left of it. You may select up to 10 batteries to view at one time. At least one battery must be selected to open the **Discharge View** tool.
- From the Home tab click the Reports command Power Logger Analysis and
 Discharge View. The Discharge View tool opens.

Selecting multiple

batteries not in a block: Select a battery, press and hold the **Ctrl** key, then select other batteries as desired.



To select or deselect a battery for viewing:

This function assumes you selected multiple batteries before entering the **Discharge View** screen.

From the **Discharge View** screen click **Batteries** and choose a battery to select or deselect.

To view all data:

From the **Discharge View** screen click **View** ► **All Data**.

To view profiles:

From the **Discharge View** screen click **View** ▶ **Profiles**.

To select a profile saved using the Discharge Profile tool:

To select a profile **View** ► **Profiles** must be selected.

- 1. From the **Discharge View** screen click **Profile**. The **Assigned Discharge Profiles** screen opens.
- 2. Choose a profile and click **OK**.

To print/save/export discharge data:

From the **Discharge View** screen click **Print**. This opens the standard Report/Graph window from which you can print or save the file in various file formats.

To limit the range of dates:

1. From the **Discharge Profile** screen set the **Period Start** and the **Period End** dates.

Period Start 4/10/2009 \$ T Period End 4/30/2009 \$ T

2. Click Update.

Note: See "Appendix D. Sample Reports and Graphs" for instructions on how to print or save a report or graph.

To view battery throughput:

From the **Discharge View** screen check **View**.

To Select the 3D Chart view:

From the **Discharge View** screen check **Z** 3D Chart.

To switch from Day view to Week view:

Click either the **Day** tab or the **Week** tab.

Appendix A: Installing Motive Power Manager to a User-Provided Computer

Compatibility and Prerequisites

Note: Most users will already have Microsoft .NET Framework 2.0 installed on their computer. If the installation of SQL Server Custom Install described below fails, .NET 2.0 might not be installed.

Microsoft .NET 2.0 is available for download at www.akerwadesoftware.com. Motive Power Manager is compatible with the following operating systems:

- Windows 7
- Windows XP (with Service Pack 3 and Microsoft .NET Framework 2.0 installed). Service Pack 3 can be downloaded and installed from the following location.

http://www.microsoft.com/windows/products/windowsxp/sp3/default.mspx

Motive Power Manager requires at least 20 G-bytes of disk space and 1 G-byte of RAM.

Installation Overview

Note: Due to large file sizes of the MPM and required supporting software, it is important to secure a high-speed internet connection for downloading the files.

Important: You must

disable any other Bluetooth devices installed on your computer, including internal Bluetooth that may have come with the computer, in order for the Bluetooth adapter to work properly with Motive Power Manager. Motive Power Manager requires installation of the following software available at <u>www.akerwadesoftware.com</u>. CD-ROM disks are also available for purchase from Aker Wade.

- SQL Server Custom Install (32-bit or 64-bit version depending on your operating system)
- Motive Power Manager
- **Bluetooth Adapter Software** for communication with Express Fast Chargers and Power Logger battery modules. The Bluetooth Adapter must be purchased from Aker Wade. If you purchase an adapter from another source, we cannot guarantee that Bluetooth communications will work. If you experience problems with Bluetooth communications after inserting the adapter, you might need to download installation software from the manufacturer.

The installation instructions will explain how to download and install SQL Server and Motive Power Manager from the Aker Wade software download website <u>www.akerwadesoftware.com</u> shown below.

	Aker Wade Software
Motiv	e Power Manager
	Motive Power Manager (Version 2.4) Release Notes Note: You must install the SQL Server software shown below to use MPM.
SQL S	erver
	SQL Server Custom Install for Windows 32 bit systems (required for Motive Power Manager) SQL Server x64 Custom Install for Windows 64 bit systems (required for Motive Power Manager)
Blueto	ooth Adapter Software
	Bluetooth Adapter Software for Windows 32 bit systems (required for supported Aker Wade Bluetooth adapters used with MPM or FASTware)
FASTV	vare PC
	FASTware PC (Version 1.2.8.10) This version requires a SUPPORTED Bluetooth adapter and a license code.
FASTIC	ook Sales Support Software
	FASTlook Sales Support (Version 4.2.0.5) This software requires a license key. Contact Aker Wade for further Information
	FASTLook Release Notes
FAST I	Reports for the PDA
	FASTreports PDA (Version 1.2.1m) Download to your PC; Copy to PDA; Click to install
	Microsoft ActiveSync Required to transfer data from the PDA to FASTware Data Manager for reporting
	SQL Server Mobile Edition for the PDA (Use only as directed) Download to your PC; Copy to PDA; Click to install
	NET Compact Framework for the PDA (Use only as directed) Download to your PC; Copy to PDA; Click to install
Suppo	ort Files
	Microsoft .NET Framework 2.0 Required by Motive Power Manager, FASTware PC and FASTlook

Installing the Custom SQL Server

To download and install SQL Server Custom:

1. From <u>www.akerwadesoftware.com</u> click the link:

SQL Server Custom Install if your computer has a 32-bit operating system or,

SQL Server x64 Custom Install if your computer has a 64-bit operating system.

This will start the download. The File Download box opens.



Note: Download and installation is essentially the same for both 32-bit and 64-bit systems. The screen captures and instructions illustrate download and installation on a 32-bit system.

- 2. Click **Save**. A standard **Save As** box will open allowing you to navigate to the location you want to save the downloaded file. Once you have done this click **Save**.
- 3. The **Download Progress** box will open and the download will begin. The download will take a few minutes and once completed the **Download Complete** box will open.

Download comp	olete 💶 🖬 🔀				
Download Complete					
SQLLauncher.exe	from www.akerwadesoftware.com				
Downloaded:	36.5MB in 32 min 50 sec				
Download to:	C:\Documents a\SQLLauncher.exe				
Transfer rate:	18.9KB/Sec				
Gose this dialog box when download completes					
	Run Open <u>F</u> older Close				

4. Click **Run** to begin the installation of SQL. The **Zip Extractor** box will open.

Aker Wade SQL Server Installation	×
Aker Wade SQL Server Install	Unzip
Unzip to dir:	Close
c:\tempSQLInstal Browse	

5. Click **Unzip**. Allow for the installation process to automatically install SQL Server. This may take several minutes.

As the Microsoft SQL Server 2005 installation proceeds, a Setup box will open.

Microsoft SQL Server 2005 Setup	$\overline{\mathbf{X}}$
Setup Progress The selected components are being config	ured
Product	Status
	Satura facilitad
SOL Setup Support Files	Setup finished
SOL Native Client	Setup finished
SOL VSS Writer	Setup finished
SOL Server Database Services	Setup finished
Workstation Components, Books Onlin	Configuring components
0	
1	
Status	
Validating install	
Diagona wait	
Please Walt	
Help	<< Back Next >> Cancel

As the installation progresses a green check Should appear next to each product being installed. If a red appears next to a product, uninstall all SQL Server components from your machine and re-install them. If the red continues to appear on this screen, contact Aker Wade Power Technologies directly. When error free installation is complete the **Setup** box will close automatically.

Note: Installation failure of SQL might indicate that .NET Framework 2.0 has not been installed on your computer. You can download .NET 2.0 from www.akerwadesoftware.com.

Installing Motive Power Manager

Note: SQL Server must be installed before downloading and installing Motive Power Manager software.

To download and install Motive Power Manager:

1. From <u>www.akerwadesoftware.com</u> click the link:

Motive Power Manager

This will start the download. The download procedure for Motive Power Manager is the same as that for SQL Server. Once Motive Power Manager finishes downloading, the **Download Complete** box opens.

Download complet	ie 💶 🗷	
Download Complete		
MPM.exe from www.a	akerwadesoftware.com	
Downloaded: 9.	36MB in 6 min 38 sec	
Download to: C:\Documents and Sett\MPM.exe		
Transfer rate: 24.0KB/Sec		
Close this dialog bo	ox when download completes	
	Run Open Folder Close	

2. Click **Run** to begin installation of Motive Power Manager. The **Zip Extractor** box will open.

Motive Power Manager		X
Installing Motive Power Manager Version 2.3.2		Unzip Close
Unzip to dir: c:\tempMPMInstall	Browse	

3. Click Unzip. The Motive Power Manager Setup Wizard will open.

🛱 Motive Power Manager	
Welcome to the Motive Power Wizard	Manager Setup A K E R W A D E
The installer will guide you through the steps require computer.	ed to install Motive Power Manager on your
WARNING: This computer program is protected by Unauthorized duplication or distribution of this progr or criminal penalties, and will be prosecuted to the r	copyright law and international treaties. am, or any portion of it, may result in severe civil naximum extent possible under the law.
Car	ncel < <u>B</u> ack Next>

4. Click Next. The Select Installation Folder box opens.

🖟 Motive Power Manager	
Select Installation Folder	WADE"
The installer will install Motive Power Manager to the following folder. To install in this folder, click "Next". To install to a different folder, enter it below <u>Folder:</u> c:\Program Files\Aker Wade Power Technologies\Motive Power Mar	v or click "Browse". Browse
	<u>D</u> isk Cost
Cancel < <u>B</u> ack	<u>N</u> ext >

- 5. Aker Wade recommends using the default location. Click Next.
- 6. When the **Confirm Installation** box opens, click **Next**. When the installation has finished the **Installation Complete** box will open.

B Motive Power Manager			
Installation Complete		A K E R	WADE"
Motive Power Manager has been succe	essfully installed.		
Click "Close" to exit.			
Please use Windows Update to check I for installing FAST ware Data Manager.	ior any critical update:	s to the .NET Frame	work. Thank you
	Cancel	< <u>B</u> ack	
for installing FAST ware Data Manager.	Cancel	< <u>B</u> ack	

7. Click Close.

Appendix B: MPM Features List

Home Tab Functions

Reports		
	Exceptions	
		Summary
		Detail
		Fin/EQ
		1
	Power Logger	
		Event Summary
		Event Detail
		Event Detail Enhanced
		Power Logger Overview
		Power Flow
		Battery Usage
		Daily Charge/Discharge Graph
		Low Electrolyte Summary
		Daily Temperature
		Daily Voltage
		1
	Power Logger Analysis	
		Discharge Profile
		Discharge View
	Fast Charge	
		Charge Summary
		Fin/Eq Charges
		Charge Details
		Charger Activity
		Battery Overview
		Finish/Equalization
		SOC Min/Max
		Charge Temperature
		State of Charge Graph
		Daily AHRs
---	---------------------	--
0	Conventional Charge	
		Cycles
		Depth of Discharge
		Depth of Discharge - By Battery
F	Fleet	
		Time Discharging - Cumulative by Week
		Time Discharging - Cumulative by Month
		AHRs - Cumulative by Week
		AHRs - Cumulative by Month
		Truck Utilization

Transfer		
	Merge Existing Files	

Report Data Range			
	From/To Functions		

Exceptions

Lyceptions		
	Check	
	Clear	

View

VICV		-
	Show Exceptions	
	Latest Exceptions	
	Exceptions Start	
	Refresh	
	Show Batteries	
	Show Trucks	
	Show Chargers	
	Clear Charger	
	Clear Battery	
	Clear Truck	

Setup Tab Functions

Г

Configure		1	
	Charger Details		1
		Edit Charger Details	
		1	
	Battery Details		
		Edit Battery Details	
	Power Logger		
		Get Time/Date	
		Get Current Values	
		Get Configuration	
		Hard Rest	
		Set Time/Date	
		Set Configuration	
		Clear Event Log	
		Calibrate Voltage	
		Zero Current Calibration	
	Exceptions		_
		Battery Status	
			High Temperature at Start of Charge
			Critical Temperature at Start of Charge
			High Temperature at End of Charge
			Critical Temperature at End of Charge
			Truck Began Charge Cycle at Low State of
			Truck Ended Charge Cycle at Low State of
			Charge (Requires Express Charger)
			Low Electrolyte level detected (Requires
			Temperature exceeds limit (Requires Power
			Logger)
			Temperature exceeds Critical limit (Requires
			Power Logger) Voltage below minimum limit (requires Power
			Logger)
			· · · · · ·
		Battery Usage	
			Truck was not on charger for prescribed time
			Charge ended in error condition (requires Express charger)
			Truck was off charger longer than time limit

	Amp Hours returned exceeds daily limit
	Amp Hours returned exceeds weekly limit
	Amp Hours discharged exceeds daily limit
	(requires Power Logger)
	Amp Hours discharged exceeds weekly limit
	(requires Power Logger)
	_
Fat/Opportunity Charge Applications	
	Equalize Charge missed(requires Express Charger)
	Finish Charge missed (requires Expres
	Charger)
	Daily Plug in count below limit
Convetntional Charge Applications	
	Depth of Discharge below limit (requires Power
	Logger)
	Power Logger)
	EL Level reported low after completion of cylce
	charge (requires Power Logger)
	Battery Temperature exceeds limit at start of
	discharge cycle (requires Power Logger)
	Voltage measured as 10 second minimum is
	below limit (requires Power Logger)
	below limit (requires Power Logger)
	Daily EO missed (requires Power Logger)
<u> </u>	
Sabadulaa	
Schedules	
Groups	
Auto-Log	

Exceptions	
	Start Date
	End Date
	Max Out of
	Sync Days
	Check
	Exceptions
	Clear
	Exceptions

Info		
	License	
	About	
	Settings	

Database		7	
	Database Tasks		
		Select Database	
		Import	
		Database Maintenance	
			New Database
			Permanently Delete Database
			Detach Database from Server
			Attach Database to Server
			Edit SQL Parameters
			Move Database
			Database Edit

Appendix C: Exception Parameter Definitions and Default Settings

This section lists the default settings for all Motive Power Manager configurable exception parameters. Also provided is a brief explanation of each exception parameter.

Note: "Repeat Interval" is the minimum wait time, expressed in minutes, before another occurrence of this event is reported

Battery Status

Settings / Values	Parameter Name / Description
Enabled: True Temp: 125 Repeat Interval: 0	High Temperature at Start of Charge The exception is reported if Temp is exceeded. Temp is expressed as degrees Fahrenheit ranging from 50-250. See note on Repeat Interval.
	Critical Temperature at Start Charge
Enabled: False Temp: 135 Repeat Interval: 0	The exception is reported if Temp is exceeded. Typically it would be a higher value than High Temperature at Start of Charge. Temp is expressed as degrees Fahrenheit ranging from 50-250. See note on Repeat Interval.
Enabled: True	High Temperature at End of Charge
Temp: 135 Repeat Interval: 0	The exception is reported if Temp is exceeded. Temp is expressed as degrees Fahrenheit ranging from 50-250. See note on Repeat Interval.
	Critical Temperature at End of Charge
Enabled: False Temp: 140 Repeat Interval: 0	The exception is reported if Temp is exceeded. Typically it would be a higher value than High Temperature at End of Charge. Temp is expressed as degrees Fahrenheit ranging from 50-250. See note on Repeat Interval.
Enchlady True	Truck began charge cycle at low State of Charge
SOC%: 20 Repeat Interval: 0	Requires Express charger. An exception is reported if SOC% falls below this value. SOC% is expressed as a percentage from 0% -100%. See note on Repeat Interval.
Enabled: True	Truck ended charge cycle at low State of Charge
SOC%: 30 Repeat Interval: 0	Requires Express charger. An exception is reported if SOC% falls below this value. SOC% is expressed as a percentage from 0% -100%. See note on Repeat Interval.
	Low Electrolyte level detected
Enabled: False Repeat Interval: 0	Requires Power Logger. An exception is reported if Low Electrolyte Level is detected by Power Logger. See note on Repeat Interval.
Enabled: Ealer	Temperature exceeds limit
Temp: 150 Repeat Interval: 0	Requires Power Logger. The exception is reported if Temp is exceeded. Temp is expressed as degrees Fahrenheit. See note on Repeat Interval.

Note: "Repeat Interval" is the minimum wait time, expressed in minutes, before another occurrence of this event is reported

Battery Status

Settings / Values	Parameter Name / Description
Enabled: False Temp: 160 Repeat Interval: 0	Temperature exceeds Critical limit Requires Power Logger. The exception is reported if Temp is exceeded. Temp is expressed as degrees Fahrenheit. See note on Repeat Interval.
Enabled: False Voltage: 36 Repeat Interval: 0	Voltage below minimum limit Requires Power Logger. The exception is reported if Voltage is exceeded. Voltage is expressed in Volts. See note on Repeat Interval.

Battery Usage

Settings / Values	Parameter Name / Description
Enabled: False Charge Time: 120 Ignore Monday: False Ignore Tuesday: False Ignore Wednesday: False Ignore Thursday: False Ignore Friday: False Ignore Saturday: False Ignore Sunday: False	Truck was not on charger for prescribed time An exception is reported if Charge Time is exceeded. Charge time is expressed in minutes. To exclude days from exception checking, set Ignore to True.
Enabled: False	Charge ended in error condition Requires Express charger. An exception is reported if error is detected by Express charger.
Enabled: False Charge Time: 240 Ignore Monday: False Ignore Tuesday: False Ignore Wednesday: False Ignore Thursday: False Ignore Friday: False Ignore Saturday: False Ignore Sunday: False	Truck was off charger longer than time limit An exception is reported if Charge Time is exceeded. Charge time is expressed in minutes. To exclude days from exception checking, set Ignore to True.
Enabled: False AHRLimit: 1600	Amp Hours returned exceeds daily limit An exception is reported if AHRLimit is exceeded. Expressed in Ampere Hours.
Enabled: False AHRLimit: 8000	Amp Hours returned exceeds weekly limit An exception is reported if AHRLimit is exceeded. Expressed in Ampere Hours.
Enabled: False AHRLimit: 1600	Amp Hours discharged exceeds daily limit Requires Power Logger. An exception is reported if this number is exceeded. Expressed in Ampere Hours.
Enabled: False AHRLimit: 8000	Amp Hours discharged exceeds weekly limit Requires Power Logger. An exception is reported if AHRLimit is exceeded. Expressed in Ampere Hours.

Settings / Values	Parameter Name / Description
Enabled: True Method: Number of Days Report Multiple Misses: True Days: 7 (Number of Days Only) EQ On Monday: False EQ On Tuesday: False EQ On Wednesday: False EQ On Wednesday: False EQ On Friday: False EQ On Friday: False EQ On Saturday: False EQ On Sunday: False EQ On Sunday: False EQ Time: 120	Equalize Charge missed Requires Express charger. Method of calculating the Equalize exception. The options are either "Number of Days" or "Day of Week". If "Number of Days" is selected the "Days" value indicates the number of days within which Equalize must be done or an exception will be reported. If "Day of Week" is selected the "Day of Week" value indicates which day of the week on which Equalize must be done or an exception will be reported.
Enabled: True Method: Number of Days Report Multiple Misses: True Days: 7 (Number of Days Only) Finish On Monday: False Finish On Tuesday: False Finish On Wednesday: False Finish On Thursday: False Finish On Friday: False Finish On Saturday: False Finish On Sunday: False Finish Time: 120	Finish Charge missed Requires Express charger. Method of calculating the Finish exception. The options are either "Number of Days" or "Day of Week" If "Number of Days" is selected the "Days" value indicates the number of days within which Finish must be done or an exception will be reported. If "Day of Week" is selected the "Day of Week" value indicates which day of the week on which Finish must be done or an exception will be reported.
Enabled: False Count: 2 Minimum AHRs: 0 Minimum Time: 5 Ignore Monday: False Ignore Tuesday: False Ignore Thursday: False Ignore Friday: False Ignore Saturday: False Ignore Sunday: False	Daily Plug-In count below limit An exception is reported if Count is less than this value. A Plug-In must exceed Minimum AHRs AND Minimum Time. Minimum AHRs is expressed in Ampere Hours and Minimum Time is express in minutes. To exclude days from exception checking, set Ignore to True.

Fast/Opportunity Charge Applications

Conventional Charge Applications

Settings / Values	Parameter Name / Description
Enabled: False Discharge %: 40	Depth of Discharge below limit Requires Power Logger. An exception is reported if Discharge % is too great. Expressed as a percentage.
Enabled: False Discharge %: 80	Depth of Discharge exceeds limit Requires Power Logger. An exception is reported if Discharge % insufficient. Expressed as a percentage.
Enabled: False	EL Level reported low after completion of cycle charge Requires Power Logger. An exception is reported if the electrolyte level detected by the

	Settings / Values	Parameter Name / Description			
		Power Logger is too low.			
		Battery Temperature exceeds limit at start of discharge			
	Enabled: False Temperature: 125	Requires Power Logger. The exception is reported if Temperature is exceeded. Temperature is expressed as degrees Fahrenheit.			
Note: "Repeat Interval"	Enabled: False	Voltage measured as 10 second minimum is below limit			
is the minimum wait time, expressed in minutes, before another occurrence of this event	Cell Voltage: 2.22000002861023 Repeat Interval: 0	Requires Power Logger. The exception is reported if Cell Voltage is below the set limit. Cell Voltage is expressed in Volts. See note on Repeat Interval.			
is reported	Freeblash Feler	Voltage measured as 2 second minimum is below limit			
	Cell Voltage:2.22000002861023 Repeat Interval: 0	Requires Power Logger. The exception is reported if Cell Voltage is below the set limit. Cell Voltage is expressed in Volts. See note on Repeat Interval.			
	Enabled: False Ignore Monday: False Ignore Tuesday: False Ignore Wednesday: False Ignore Thursday: False Ignore Friday: False Ignore Saturday: True Ignore Sunday: True	Daily EQ missed Requires Power Logger. The exception is reported if Daily EQ is missed. To exclude days from exception checking, set Ignore to True.			

Conventional Charge Applications

Appendix D: Sample Reports and Graphs

View and Export Options for Reports and Graphs

As the sample report shows below there are many viewing options available for reports and graphs. In addition the Save command 🛃 provides options for exporting reports and graphs into different file formats.

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16S Outline	1						5						8		
	i i i	-													
							1		1.5						
	1	WART.				POW	eru	ogger u	etall						
	0.0										Start D	ate - 3	/10/2009	End Date -	6/1/200
	AWPLOOD	025					lenp	rature				W	athige		
2-72	Sart Time	Duration	AHRs	Event	Degin	End	Ma	cat:	Mr	at:	Segin	End	Max at:	Min at :	
	07:16	012	0	id e	85	84	25	07:16	84	07:19	26.6	26.6	27.2 07:27	22.8 07:27	
1 ··· · · · · · · · · · · · · · · · · ·	07:27	005	10	Discharge	84	84	84	07:27		07:30	35.7	25.9	37.3 07:30	22.0 07:29	
	07:22	010	•	d.	84	85	85	07:26	84	07:22	266	26.5	27.1 07:41	24.4 07:42	
	07:42	022		Discharge				07:42		08:05	424		41.3 08:09	##. / OBOS	
Page 1		0.10			-	-		000.10	-	18.10	400		27.2 UK 25	24.4 08.20	
	00.13	000	2	u acriarge		-	-	00.40	-	08.00	266	24.4	27.0 00.48	25.1 00.50	
	1 09.52	001	ě.	Clark area	-		-	09-52		00.52	257	25.4	27 1 09 53	24.4 00.52	
	09-53	000		in a		-	-	10.53	-	10.54	266	25.4	27.0 09-17	25.0 00-21	
	09-21	028	24	Decharge		-	-	09-21	- 65	09:22	262	25.4	27.1 09:22	22.5 09:59	
	09:59	017	0	id e	85	87	87	10:09	85	09:59	264	26.2	26.9 10:16	22.9 10.16	
Fare rillion control	10:16	007	6	Decharge	86	85		10:16	85	10:22	257	25.0	27.0 10:17	22.5 10:22	
	10:22	198	0	id e	86	87	87	10:31	85	10:22	262	25.6	36.9 11:24	25.7 12:01	
	12:01	0.42	26	Discharge	87	85	87	12:01	85	12:02	255	25.1	27.6 12:27	22.2 12:28	
TTTE TIME CAR	12:42	0.47	110	Charge	85	91	91	01:23	85	12:42	27.4	40.0	40.1 01:29	27.4 12:42	
	12:29	005	6	Discharge	91	91	91	01:29	90	01:31	37.8	25.4	38.3 01:30	24.9 01:22	
2 11 F 10000 F 4 6	12:34	0:1.4	0	ld e	90	90	91	01:24	90	01:24	27.2	27.1	27.7 01:48	25.2 01:49	
	12:42	020	22	Discharge	90	89	91	01:48	89	01:52	262	25.0	28.2 02:17	22.2 02:17	
	14:18	058	٥	id e		90	90	02:24	89	02:18	26.9	36.9	27.2 02:16	25.1 02.16	
Page 2	13:16	0.2.0	22	Dischlarge	90	-	90	02:16	-	02:29	361	26.5	37.4 02:25	22.9 02.22	
	15:46	017	•	d.				02:46		02:46	26.7	26.9	27.0 D4:02	25.5 02.45	
-							-	anas.	-			- 24 1	37.0 46.48		

Key to commands for viewing and saving a report or graph:

- Open File Open an existing report
- Save Save the report. Can be saved as a .PDF, a Word or Excel document, or a .JPG
- Page Setup Button (currently not active)
- Print Button Print the report
- Q Zoom-In/Out Tool Choose whether you want to zoom in or out with the report
- Zoom-Out Button Zooms the page out at 25% intervals
- 50% Zoom Percentage Manually enter in the zoom percentage
- Zoom-In Button Zooms the page in at 25% intervals
- Q Page 1 Button Goes directly to the first page in the report



Exceptions

Summary

AKER WADE Exception Summary by Type	
4/2/2006 to 8/24/2010	
Battery ID BAT0000001 Battery SN S000001347 Capacity 1100	Voltage 36
Exceptions reported from Express charger data Truck ended charge cycle at low State of Charge	1 Exceptions
Battery ID BAT0000003 Battery SN S000003411 Capacity 1120	Voltage 36
Exceptions for installations using a single battery/vehicle Equalize Charge missed	1 Exceptions
Finish Charge missed	1 Exceptions
Battery ID BAT0000004 Battery SN S000001975 Capacity 1120	Voltage 36
Exceptions reported from Express charger data Truck ended charge cycle at low State of Charge	3 Exceptions
Exceptions for installations using a single battery/vehicle Equalize Charge missed	1 Exceptions

Detail



Finish/Equalize

	Finish/Equalize Exceptions	
	4/2/2006 to 8/24/2010	
Battery ID BAT0000003 Battery SN	S000003411 Capacity 1120	Voltage 36
Exceptions for installations using a single	Equalize Charge missed	
Friday, Jun 30, 2006		
Exceptions for installations using a single	Finish Charge missed	
Friday, Jun 30, 2006		
Battery ID BAT0000004 Battery SN	S000001975 Capacity 1120	Voltage 36
Exceptions for installations using a single	Equalize Charge missed	
Friday, Jun 30, 2006		
Exceptions for installations using a single	Finish Charge missed	

Fast Charge

Charge Summary

АКЕ R W A D E	Ba	attery Cha	rge Da	ily S	umi	mary	/	
					4/2/20	06 to 8/2	4/2010	
Battery ID BAT000001	Battery SN	S00001347	Capacity	1100)	Voltag	je 36	5
							-	
		AHKS	SOC	2	Vol	tage	Ie	emp
Date	Plug Ins	s Returned	Min	Max	Min	Max	Min	Max
Sun Apr 02, 2006	2	342	74	90	36.8	45.9	69	95
Mon Apr 03, 2006	15	1628	12	90	35.7	45.9	58	106
Tue Apr 04, 2006	9	1378	47	91	36.5	45.1	80	124
Wed Apr 05, 2006	12	1670	51	87	36.3	44.9	92	130
Thu Apr 06, 2006	11	1045	40	90	36.8	46.0	88	117
Fri Apr 07, 2006	2	229	80	90	38.4	44.7	87	98
Tue Apr 18, 2006	1	3						

Finish/Equalize Charges

AKER 🗱 WADE Finish	and E	qualize	e Charg	e Report
			4/2	2/2006 to 8/24/2010
Battery ID BAT0000001 Battery SNS0	00001347	Capac	ity 1100	Voltage 36
Charge	AHRs	SOC	Temp	Time in Stage
Start Dur. Charger Termination Code	Returned	Start End	Start End	CC CV Fin EQ Tk Mix
Thu Apr 06, 2006				
01:09 282 CHARGER00 Error: Unknown	386	72 100	117 123	0 42 240 0 0 0
Battery ID BAT0000002 Battery SNS0	00006082	Capad	c ity 1100	Voltage 36
Charge	AHRs	SOC	Temp	Time in Stage
Start Dur. Charger Termination Code	Returned	Start End	Start End	CC CV Fin EQ Tk Mix
Thu Apr 06, 2006				
00:29 322 CHARGER00 Error: Unknown	487	65 100	111 123	0 82 240 0 0 0

Charge Details

AI	K E R 🙀	(WA	D E "					Ba	ttery	/ Ch	arg	ge [Dai	ly	Deta	ail	
															4/2/	'2006 to 8/24/2010	
Ba	ttery ID	BAT	0000	001 E	Batte	ry SN	S 0	000	0134	7	Са	pac	ity	1	100	Voltage 36	
Sun	Apr 02 200	06		Plug In	s	2			SOC	1in M	lax	74		90		Temp. Min Max 69	95
Jun	Apr 02, 200			AHR	s	342											
	Start	Charge	AHRs	Max	Temp	erature	Volt	age	End		Time	in St	age				
	Time	Time	Ret.	Amps	Begin	End	Begin	Max	SOC	СС	CV	Fin	Eq	Tr	Mix	Termination	
	12:07	30	118	505	69	80	37.3	45.9	90	0	29	0	0	0	0	Auto: End of CV Cycle	
	14:03	53	224	506	80	95	36.8	45.8	90	0	52	0	0	0	0	Auto: End of CV Cycle	
				Plug In	s	15			SOC N	1in M	lax	12		90		Temp. Min Max 58	106
Mon	Apr 03, 20	06		AHR	s	1628											
	Start	Charge	AHRs	Max	Temp	erature	Volt	age	End		Time	in St	age				
	Time	Time	Ret.	Amps	Begin	End	Begin	Max	SOC	СС	CV	Fin	Eq	Tr	Mix	Termination	
	01:06	6	17	505	64	67	38.1	43.7	90	0	6	0	0	0	0	Auto: End of CV Cycle	
	03:31	22	143	505	64	79	36.9	45.1	70	0	0	0	0	0	0	Auto: Disconnected	
	05:19	18	114	508	73	85	36.5	45.1	69	0	17	0	0	0	0	Auto: Disconnected	

Charger Activity

АКЕ	R 🗰 W A	DE		Charg	ger	Activ	vity	Daily	y Summary
									4/2/2006 to 8/24/2010
Charge	er ID CH/	ARGER001	Oth	er					
				AUD-			Та		
Time	Batte	ery	Dur.	Returned	St	Fin	St	mp Fin	Termination Code
Sun A	Apr 02, 2006	5							
11:53	BAT000002	S000006082	00:56	206	76	90	66	80	Auto: End of CV Cycle
12:07	BAT0000001	S000001347	00:30	118	82	90	69	80	Auto: End of CV Cycle
13:57	BAT000002	S000006082	00:39	139	80	90	76	85	Auto: End of CV Cycle
14:03	BAT0000001	S000001347	00:53	224	74	90	80	95	Auto: End of CV Cycle
Mon /	Apr 03, 200	6							
00:48	BAT000002	S000006082	00:18	105	68	75	57	68	Auto: Disconnected
01:06	BAT000001	S000001347	00:06	17	89	90	64	67	Auto: End of CV Cycle
01:53	BAT000002	S000006082	00:02	3	90	90	61	65	Auto: End of CV Cycle
03:31	BAT000001	S000001347	00:22	143	60	70	64	79	Auto: Disconnected
04:16	BAT000002	S000006082	00:02	1	90	90	58	61	Auto: End of CV Cycle

Battery Overview



Finish/Equalization





State of Charge, Minimum/Maximum

Charge Temperature



State of Charge Graph



Daily Ampere Hours



Power Logger

Event Summary

A K E R 🗰 W A D E	Power Logger Daily Summary									
	Tir	009 to 8/24/2010								
Date	Charging	In Use	Idle	AHRs In	AHRs Out					
Battery: AWPL000025	Not Set									
Capacity: 935 Ahrs Voltage: 36V	Model: 8204	Ļ	Entered Service: 07-07-07	Manufacturer:	Enersys					
Date	Charging	In Use	Idle	AHRs In	AHRs Out					
Tue Mar-17-2009	1:01	0:00	22:59	55	0					
Tue Mar-24-2009	3:01	0:00	20:59	163	0					
Mon Apr-06-2009	0:00	2:05	21:55	0	119					
Tue Apr-07-2009	1:23	8:52	13:45	210	515					
Wed Apr-08-2009	6:09	3:49	14:02	741	217					
Thu Apr-09-2009	0:00	5:49	18:11	0	351					
Fri Apr-10-2009	0:00	1:53	22:07	0	105					
Tue Apr-14-2009	6:25	0:48	16:47	741	58					
Wed Apr-15-2009	0:40	0:00	23:20	44	0					
Thu Apr-16-2009	0:40	0:00	23:20	41	0					

Event Detail

-

A K E R 🕇	WADE"			Power Logger Detail													
												3/10/2	2009 to 8/2	4/2010			
					1	empe	erature				Voltage						
Start Time	Duration	AHRs	Event	Begi	n End	Map	cat:	Min	Min at :		End	Max at :	Min at:				
13:56	0:14	10	Disch arge	85	86	87	14:08	85	13:56	33.9	34.0	36.3 14:01	32.6	14:07			
14:11	0:24	0	Idle	86	87	87	14:11	86	14:11	35.9	36.1	36.4 14:29	34.5	14:32			
14:35	0:03	5	Disch arge	87	87	87	14:35	87	14:35	36.1	35.7	36.5 14:35	31.8	14:36			
14:38	88:47	0	Idle	87	79	88	14:48	75	04:42	35.9	35.6	36.4 16:45	32.6	07:25			
Summ	nary for 04	0:00 1:53 22:07) AHRs In: 0 3 AHRs Out: 105														
Tuesda	y	09															
07:25	0:48	58	Disch arge	79	79	80	07:59	76	07:30	34.5	35.2	36.9 07:26	30.6	08:09			
08:13	6:25	741	Charge	80	87	87	13:48	79	08:16	36.1	45.3	45.4 14:36	36.0	08:13			
14:37	12:04	0	Idle	87	82	87	14:37	82	23:17	43.5	38.5	43.5 14:37	38.5	01:50			
Summ	Summary for 04.14.2000 Time On Charges							AH	IRs In: 7	41							
Summary for 04-14-2009 Time on charge.					0.48	8 AHRs Out: 58											
	Idle:	16:47															
Wedne	esday	04-15-20	09														
02:42	0:20	23	Charge	82	83	83	02:49	82	02:42	38.7	44.9	46.0 02:57	38.7	02:42			
03:02	12:04	0	Idle	83	85	85	14:30	80	06:49	43.5	38.5	43.5 03:02	38.4	12:40			
15:07	0:20	21	Charge	85	86	86	15:22	85	15:07	38.9	46.2	46.3 15:24	38.9	15:07			
15:27	12:04	0	Idle	86	80	86	15:27	80	02:26	44.8	38.5	44.8 15:27	38.4	02:13			
Summ	Summary for 04-15-2009 Time On Charge: In Use: Idle:							AH	IRsin: 4 IsOut: 0	4							

Event Detail - Advanced

ДК	. E R 样	WAD	р Е ⁻	F	ower Logger Enh							
							3/10/2009 to 8/24/2010					
AWPL000025				Temperature	Vol	tage		Current			Finish Minutes	
Start	rt Dur. AHRs Event Begin/End/Max		Begin/End/Max	Begin/End/Max Min 2 Sec Min 10 Sec				Equalize?	Total/Continuous			
1	luesday		03-24-200	9								
08:19	03:01	163	Charge	77 / 86 / 86	39.59/45.57/4608.0	0		0	False	False	0/0	
11:20	319:0	0	Idle	86 / 83 / 91	43.79/37.74/4379.0	0		0				
	Summai	ry for	03-24-2009	Time On Charge: In Use: Idle:	3:01 0:00 20:59	AHI AHR9	Rs In: 163 Out: 0					
1	Monday		04-06-200	9								
18:27	00:13	12	Discharge	83 / 83 / 83	37.45/37.14/3775.0	0.00	0.00	0				
18:41	00:09	0	Idle	83 / 83 / 83	37.24/37.25/3795.0	0		0				
18:49	00:07	8	Discharge	83 / 83 / 83	36.48/37.25/3758.0	0 0.00	0.00	0				
18:56	00:54	0	Idle	83 / 82 / 83	37.34/37.68/3810.0	0		0				
19:51	00:01	3	Discharge	82 / 82 / 82	36.26/37.02/3724.0	0 0.00	0.00	0				
19:52	00:14	0	Idle	82 / 83 / 83	37.29/37.50/3804.0	0		0				
20:06	00:12	13	Discharge	83 / 83 / 83	36.11/37.38/3795.0	0 0.00	0.00	0				
20:19	00:38	0	Idle	83 / 81 / 83	37.44/37.36/3806.0	0		0				
20:56	00:04	5	Discharge	81/81/82	37.34/37.04/3788.0	0.00	0.00	0				
21:00	00:52	0	Idle	81/84/84	37.40/37.32/3807.0	0		0				
21:53	00:51	43	Discharge	84 / 83 / 85	37.26/37.35/3837.0	0.00	0.00	0				
22:44	00:39	0	Idle	83 / 82 / 83	37.58/37.45/3792.0	0		0				
23:22	00:44	42	Discharge	82 / 84 / 85	36.96/37.09/3815.0	0 0.00	0.00	0				
	Summary for 04-06-2009		Time On Charge:	0:00	AH	Rs In: 0						
				In Use:	2:05	AHR	Out: 119					
				Idle:	21:55							

Power Logger Overview



Power Flow



Battery Usage



Daily Charge/Discharge Graph



Low Electrolyte Summary



Daily Temperature



Daily Voltage



Conventional Charge

Cycles

a k e r 🗰 w	A D E				Cycle Report 6/11/2010 to 8/31/2010											
Battery ID Ba			Batte	ry SN	Bat	t_1A		Capacity 1000				Voltage		48		
		Ch	arge									Disch	arge			
Date	Dur	Ahrs	Te Start	mp End	Cell V Start	oltage End	En?	Mirs.		Dur.	Ahrs	Te Start	mp Fod	Cell Start	Voltage End	Dis. Denth
03 Aug 17:23	7:53	920	100	116	1.56	1.78	False	0.00	04 Aug 14:31	22:54	764	103	100	1.78	1.46	76%
04 Aug 05:56	1:14	52	107	108	1.74	1.77	False	0.00	04 Aug 14:31	22:54	764	103	100	1.77	1.46	76%
5 Aug 13:26	6:55	940	100	114	1.55	1.78	False	0.00	06 Aug 13:04	92:22	724	98	95	1.78	1.44	72%
0 Aug 09:27	6:55	934	95	117	1.56	1.77	False	0.00	11 Aug 05:06	24:26	678	101	99	1.77	1.48	68%
2 Aug 05 :43	6:27	863	98	118	1.62	1.78	False	0.00	13 Aug 09:43	66:38	724	99	92	1.78	1.46	72%

Depth of Discharge





Depth of Discharge - by Battery

Fleet

Time Discharging - Cumulative by Week





Time Discharging - Cumulative by Month

AHRs – Cumulative by Week





AHRs – Cumulative by Month

Truck Utilization





Shift "n" - Weekly Usage

Shift "n" - Monthly Usage





Shift "n" – Weekly Energy Usage

Shift "n" – Monthly Energy Usage



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