Clio Care/MPM View Operation Manual

3731 Northridge Dr. N.W. Suite 1 | Walker, MI 49544 | 888.537.1311 | www.altus-inc.com | A55-00042-00002_REV.B

POWERVAR
Solutions for Power Quality®

User Guide

MPM View

FOR MPM POWERED CARTS

POWER & BATTERY SYSTEM MONITORING FOR PC WORKSTATIONS

AGENT FOR CENTRAL MANAGEMENT VIA CIO: MPM FLEETVIEW EDITION

Version: 1.0 MPM ClinicView & Tech View

Controlled Document Number A55-00042-00002 Rev B 19 August 2014

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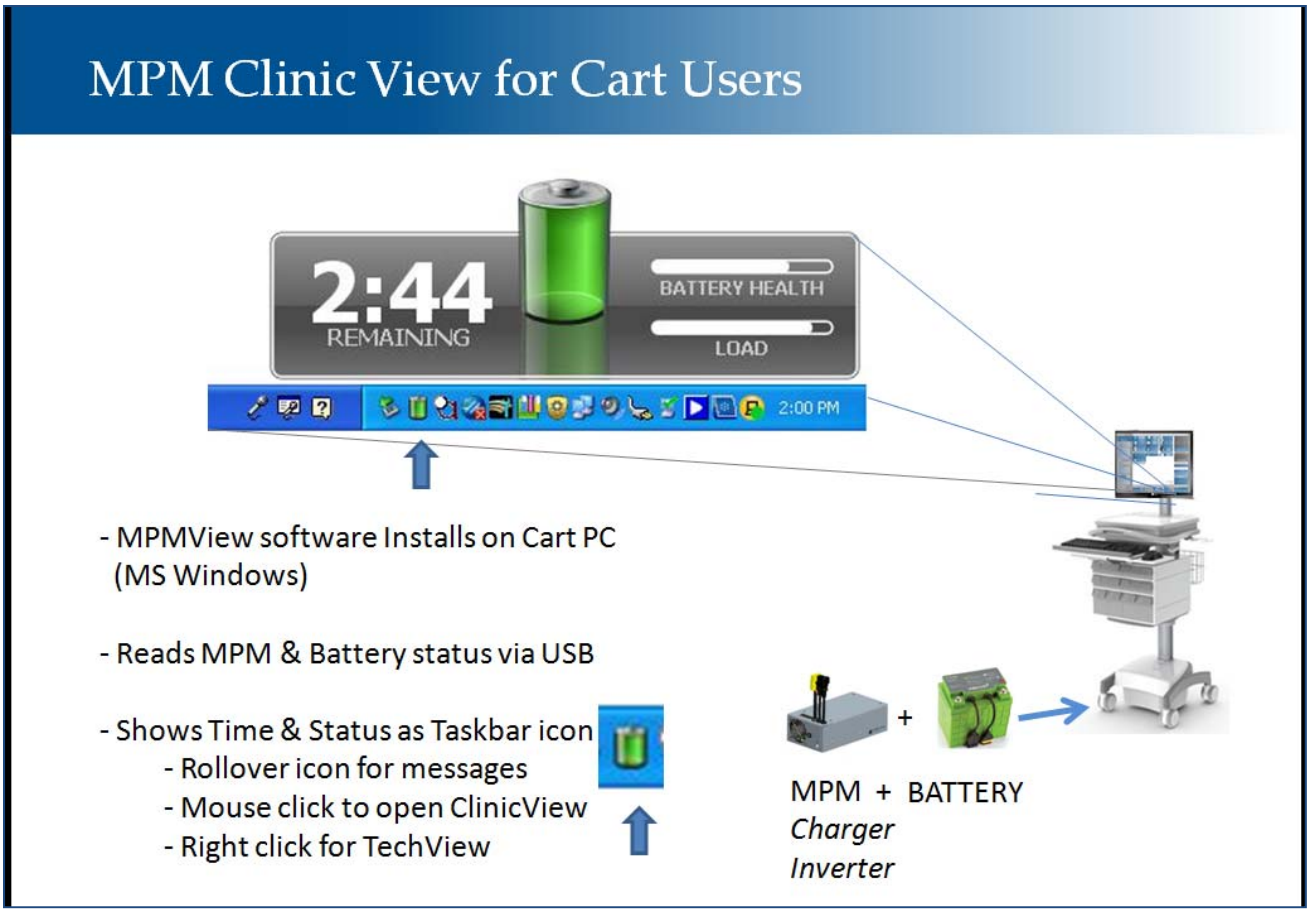
SECTION I: QUICK START & CLINIC VIEW

ABOUT MPM VIEW

ClinicView and *Tech View* are two views of the information collected and logged by the *MPM View* monitoring program that installs on the cart computer.

ClinicView – provides a simple and accessible view of time remaining in the battery in the cart. *ClinicView* is for users of PC workstations on carts.



Tech View – provides a view of specific alarms, event and data histories, and allows configuration of cart identity information and the cart power system. The information available in *Tech View* is most useful for technicians and cart servicers.

QUICK START

1. Make sure your cart workstation USB port is connected to the USB port on the MPM power unit installed in your cart.

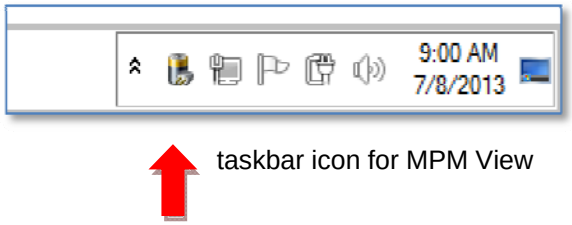
2. Download *MPM View* install package,
   and save it to the workstation desktop
   (or other convenient location):

   http://connectivity.powervar.com/mpm/download.asp

3. Double click the MPM View installer icon to start the install.
   MPM View will automatically detect the MPM power unit attached to the PC workstation USB port.

CLINIC VIEW

When *MPM View* software is installed on a PC workstation connected to an MPM power unit, a small battery icon will appear in the taskbar as shown below by the arrow.



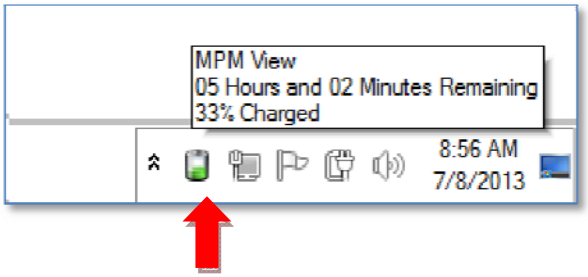
taskbar icon for MPM View

The taskbar icon can reflect four possible states:

	System is running from battery power.
	System is running from AC power
	MPM View Service has lost USB communication with the system.
	MPM GUI application is attempting to connect or has lost communication with the MPM Service on the local host.

The taskbar application provides system status and “fuel gauge” with estimated clock time remaining from the battery.

Rollover the taskbar icon (see arrow) to view the status message:

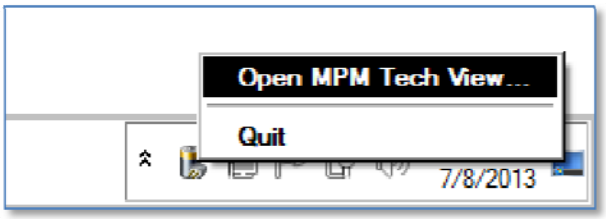


Click the taskbar icon to open the *“ClinicView”* dashboard.

The estimated time reported will adjust up or down, based on the actual electrical load of your workstation.

When your PC is running in energy saving mode, the estimated time available will increase. When your PC is running in full power mode, the estimated time available will decrease

Right-click the taskbar icon to *Quit* the taskbar application or to open the *Tech View* user interface.



TECH VIEW

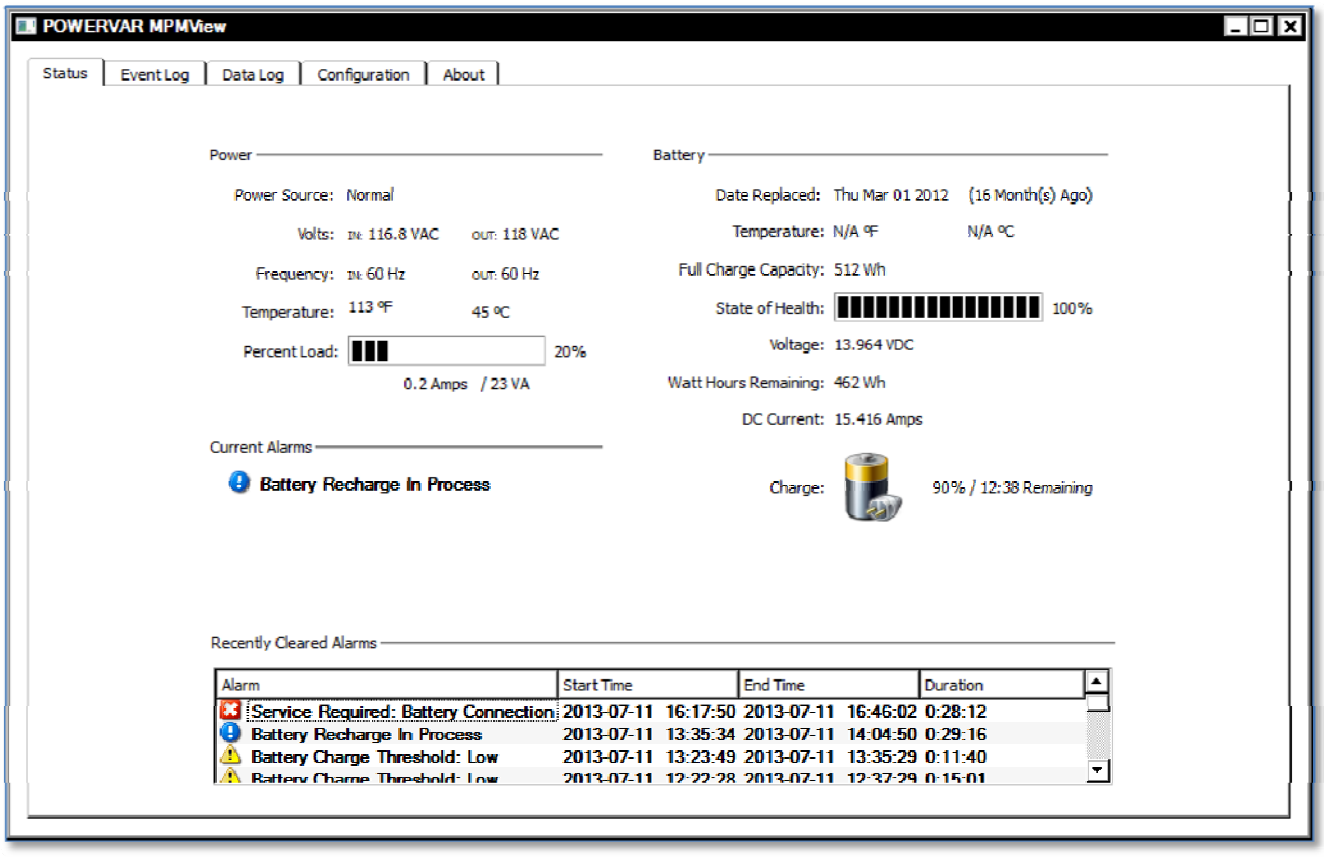
Use the MPM Tech View UI to configure MPM View with Cart identity information and the IP Address of the CIO MPM FleetView management server.

If you are upgrading your cart power system from Lead Acid (SLA) Battery to Lithium Phosphate, you can use *Tech View* to configure the MPM unit for the specific battery you are using.

Tech View also gives visibility to the Event and Data history logs.

Status

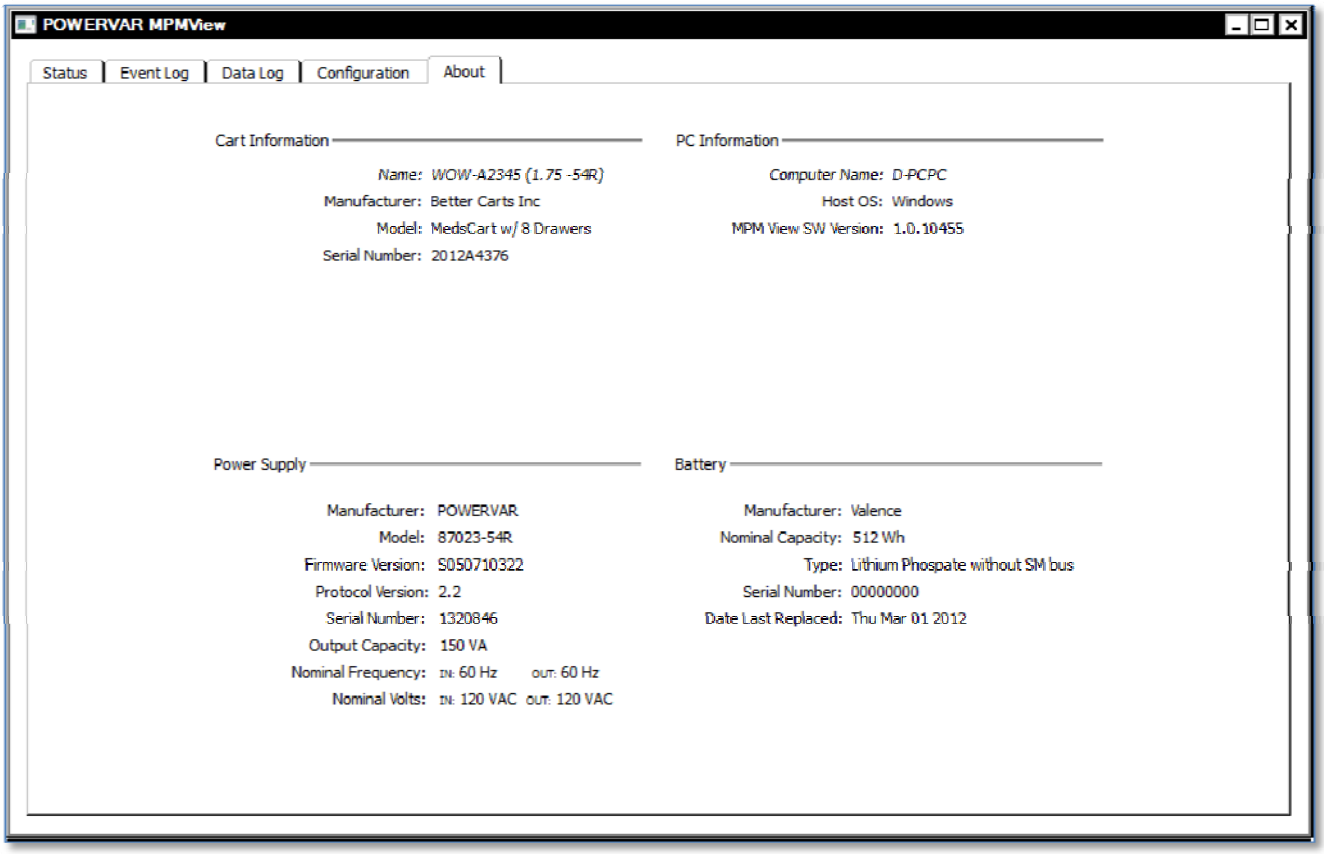
The *Status* tab provides active information reported from the unit and the attached battery. See Appendix A to learn more about the specific battery measures and power measures that are reported on the status page and in the data log.



About

The *About* tab lists all of the identity information for the system:

- Cart (entered manually via the Tech View Configuration tab)
- PC-workstation (read by MPM View from the host computer)
- Power Supply (read by MPM View from the MPM unit via USB)
- Battery (read from the battery by MPM unit, or configured in MPM unit via Tech View Configuration tab).



See the Dictionary of Properties in Appendix A for information on each of the Identity properties listed ojn the Status page.

Event Log

Events are logged by MPM View in a database on the localhost and presented in the event viewer in the time of the local host PC. The log includes conditions reported by the MPM unit, as well as configuration changes made through MPM Tech View.

Limit the disk space allowed for the log files in Configuration>LogFiles.

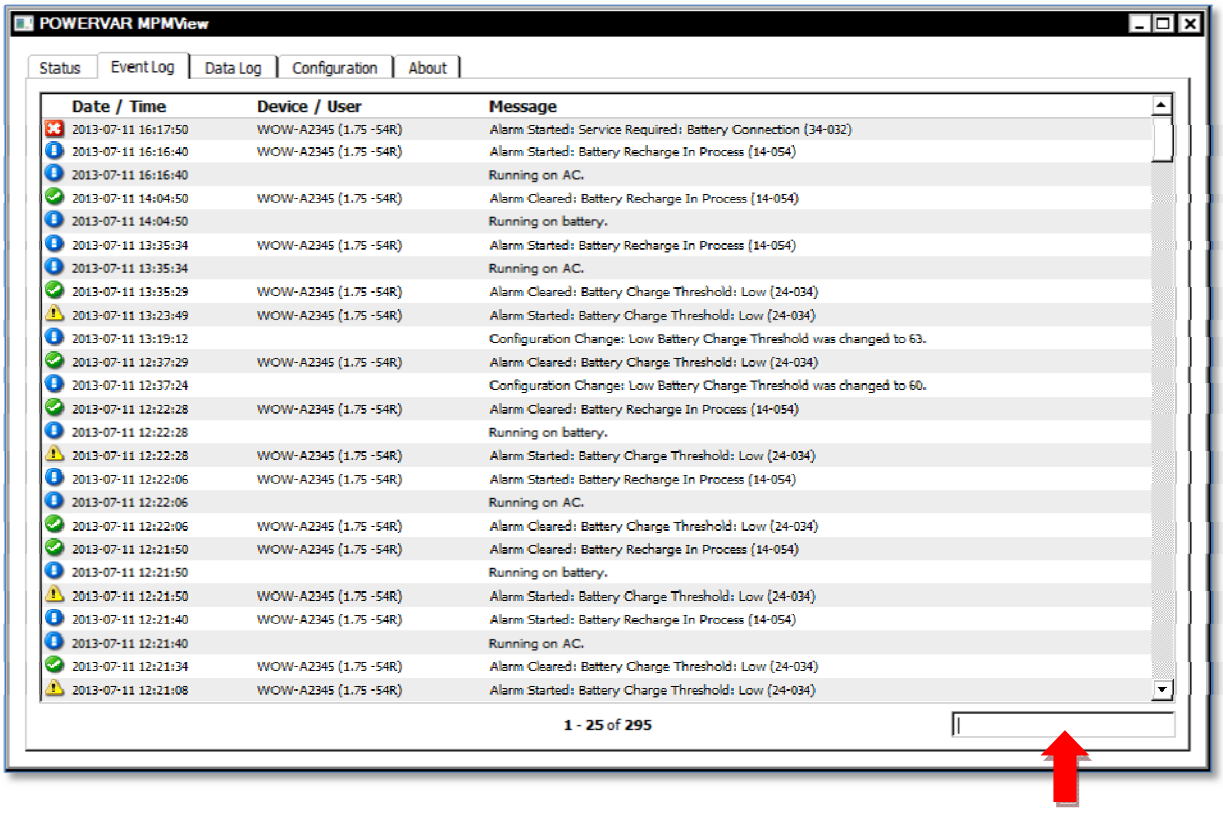
Conditions are recorded in MPM View as “Alarms” with an entry for the *Start* and *Clear* time of each condition.

Each alarm has an associated “severity” level:

- Informational (Blue)
- Warning (Yellow)
- Severe (Red)

Warning and Severe conditions will also activate the warning lights on the cart control panel (RUI).

Condition descriptions include a 5-digit integer code in (xx-xxxx)s at the end of the description. See the table of condition codes and what they mean in the *Diagnostics and Troubleshooting* section of this document.

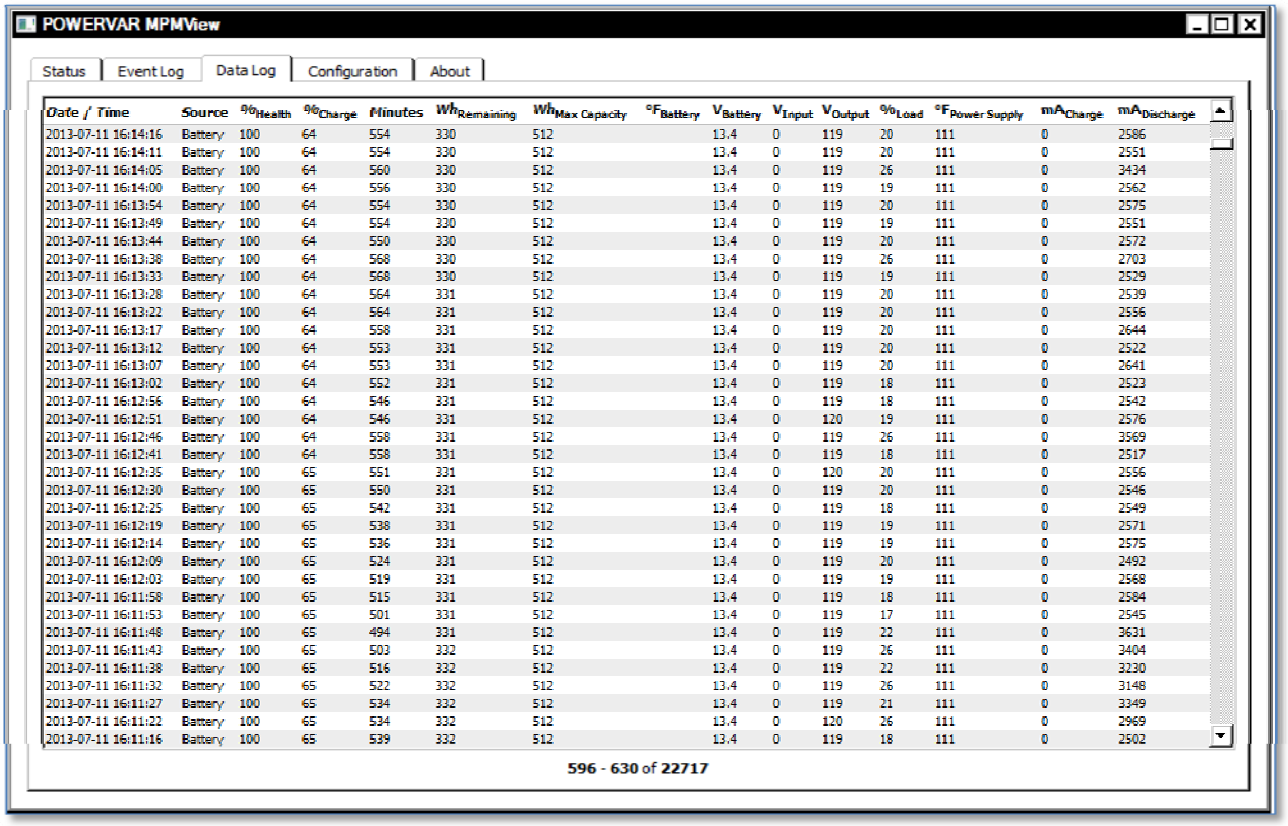


The entry box in the lower right of the event viewer is a search entry field that will filter the view to show only records with a match between the field entry and text strings within the Event Message.

Data Log

MPM View logs data reported by the MPM unit.

The data log view can be useful for technicians who may want to know specic measures during a time preceeding a warning or severe condition reported in the event log.



Date / Time	Source	%Health	%Charge	Minutes	Wh Remaining	Wh Max Capacity	°F Battery	V Battery	V Input	V Output	%Load	°F Power Supply	mA Charge	mA Discharge
2013-07-11 16:14:16	Battery	100	64	554	330	512		13.4	0	119	20	111	0	2586
2013-07-11 16:14:11	Battery	100	64	554	330	512		13.4	0	119	20	111	0	2551
2013-07-11 16:14:05	Battery	100	64	560	330	512		13.4	0	119	26	111	0	3434
2013-07-11 16:14:00	Battery	100	64	556	330	512		13.4	0	119	19	111	0	2562
2013-07-11 16:13:54	Battery	100	64	554	330	512		13.4	0	119	20	111	0	2575
2013-07-11 16:13:49	Battery	100	64	554	330	512		13.4	0	119	19	111	0	2551
2013-07-11 16:13:44	Battery	100	64	550	330	512		13.4	0	119	20	111	0	2572
2013-07-11 16:13:38	Battery	100	64	568	330	512		13.4	0	119	26	111	0	2703
2013-07-11 16:13:33	Battery	100	64	568	330	512		13.4	0	119	19	111	0	2529
2013-07-11 16:13:28	Battery	100	64	564	331	512		13.4	0	119	20	111	0	2539
2013-07-11 16:13:22	Battery	100	64	564	331	512		13.4	0	119	20	111	0	2556
2013-07-11 16:13:17	Battery	100	64	558	331	512		13.4	0	119	20	111	0	2644
2013-07-11 16:13:12	Battery	100	64	553	331	512		13.4	0	119	20	111	0	2522
2013-07-11 16:13:07	Battery	100	64	553	331	512		13.4	0	119	20	111	0	2641
2013-07-11 16:13:02	Battery	100	64	552	331	512		13.4	0	119	18	111	0	2523
2013-07-11 16:12:56	Battery	100	64	546	331	512		13.4	0	119	18	111	0	2542
2013-07-11 16:12:51	Battery	100	64	546	331	512		13.4	0	120	19	111	0	2576
2013-07-11 16:12:46	Battery	100	64	558	331	512		13.4	0	119	26	111	0	3569
2013-07-11 16:12:41	Battery	100	64	558	331	512		13.4	0	119	18	111	0	2517
2013-07-11 16:12:35	Battery	100	65	551	331	512		13.4	0	120	20	111	0	2556
2013-07-11 16:12:30	Battery	100	65	550	331	512		13.4	0	119	20	111	0	2546
2013-07-11 16:12:25	Battery	100	65	542	331	512		13.4	0	119	18	111	0	2549
2013-07-11 16:12:19	Battery	100	65	538	331	512		13.4	0	119	19	111	0	2571
2013-07-11 16:12:14	Battery	100	65	536	331	512		13.4	0	119	19	111	0	2575
2013-07-11 16:12:09	Battery	100	65	524	331	512		13.4	0	119	20	111	0	2492
2013-07-11 16:12:03	Battery	100	65	519	331	512		13.4	0	119	19	111	0	2568
2013-07-11 16:11:58	Battery	100	65	515	331	512		13.4	0	119	18	111	0	2584
2013-07-11 16:11:53	Battery	100	65	501	331	512		13.4	0	119	17	111	0	2545
2013-07-11 16:11:48	Battery	100	65	494	331	512		13.4	0	119	22	111	0	3631
2013-07-11 16:11:43	Battery	100	65	503	332	512		13.4	0	119	26	111	0	3404
2013-07-11 16:11:38	Battery	100	65	516	332	512		13.4	0	119	22	111	0	3230
2013-07-11 16:11:32	Battery	100	65	522	332	512		13.4	0	119	26	111	0	3148
2013-07-11 16:11:27	Battery	100	65	534	332	512		13.4	0	119	21	111	0	3349
2013-07-11 16:11:22	Battery	100	65	534	332	512		13.4	0	120	26	111	0	2969
2013-07-11 16:11:16	Battery	100	65	539	332	512		13.4	0	119	18	111	0	2502

See the Dictionary of Properties in Appendix A for an explanation of the various measures included in the data log.

Configuration

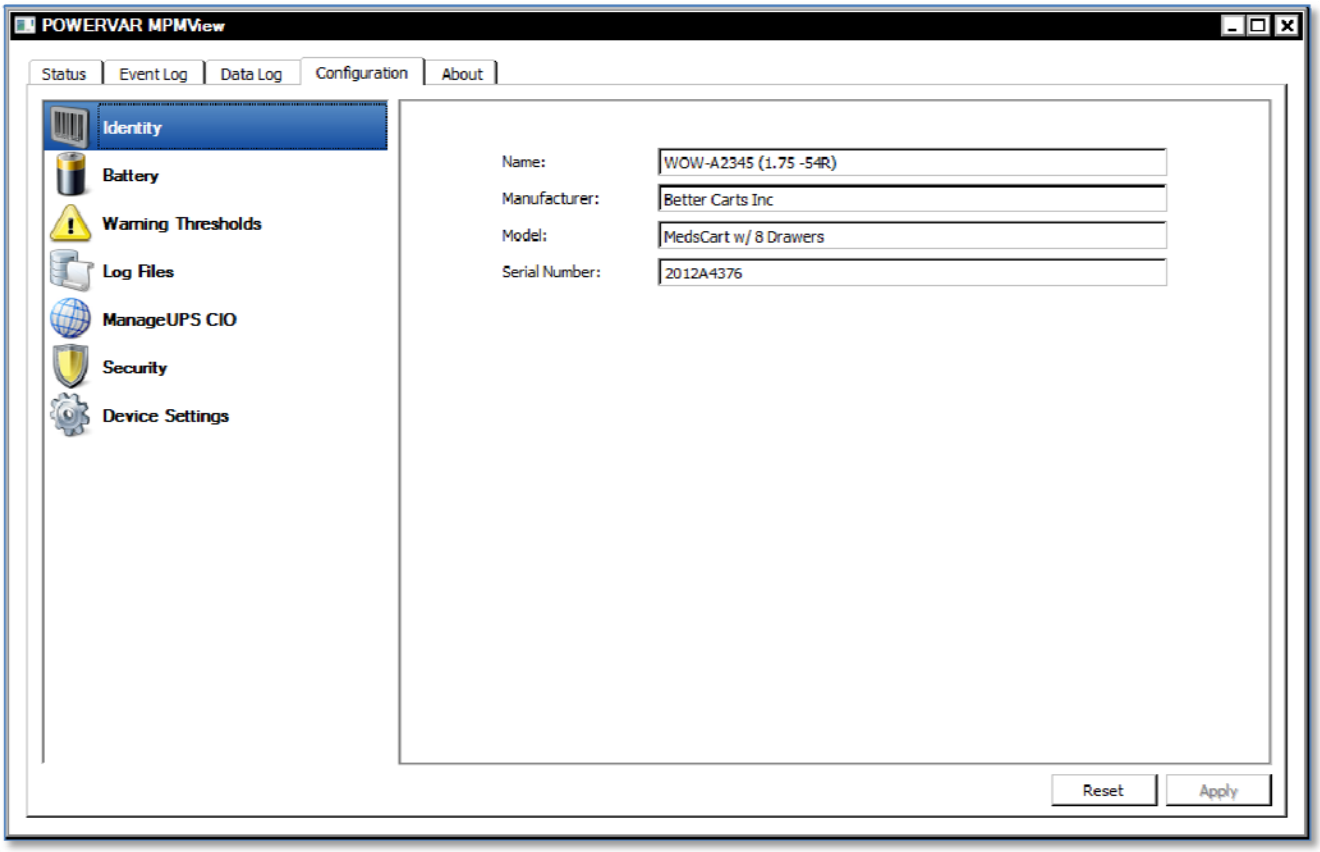
There are individual dialogs for each set of parameters that can be configured via *Tech View*. Click the icons at the left to open the individual configuration dialogs

IDENTITY (CART IDENTIY)

There are four fields for Cart identity properties.

Use these identity properties help organize the cart inventory when managed as a “fleet” via Powervar *ManageUPS CIO: MPM FleetView Edition*

The Identity properties will be forwarded to the CIO monitoring server to be used as sort fields in list views and as conditions SmartGroups.



Press ***Apply*** to save any changes to properties via the Configuration dialogs.

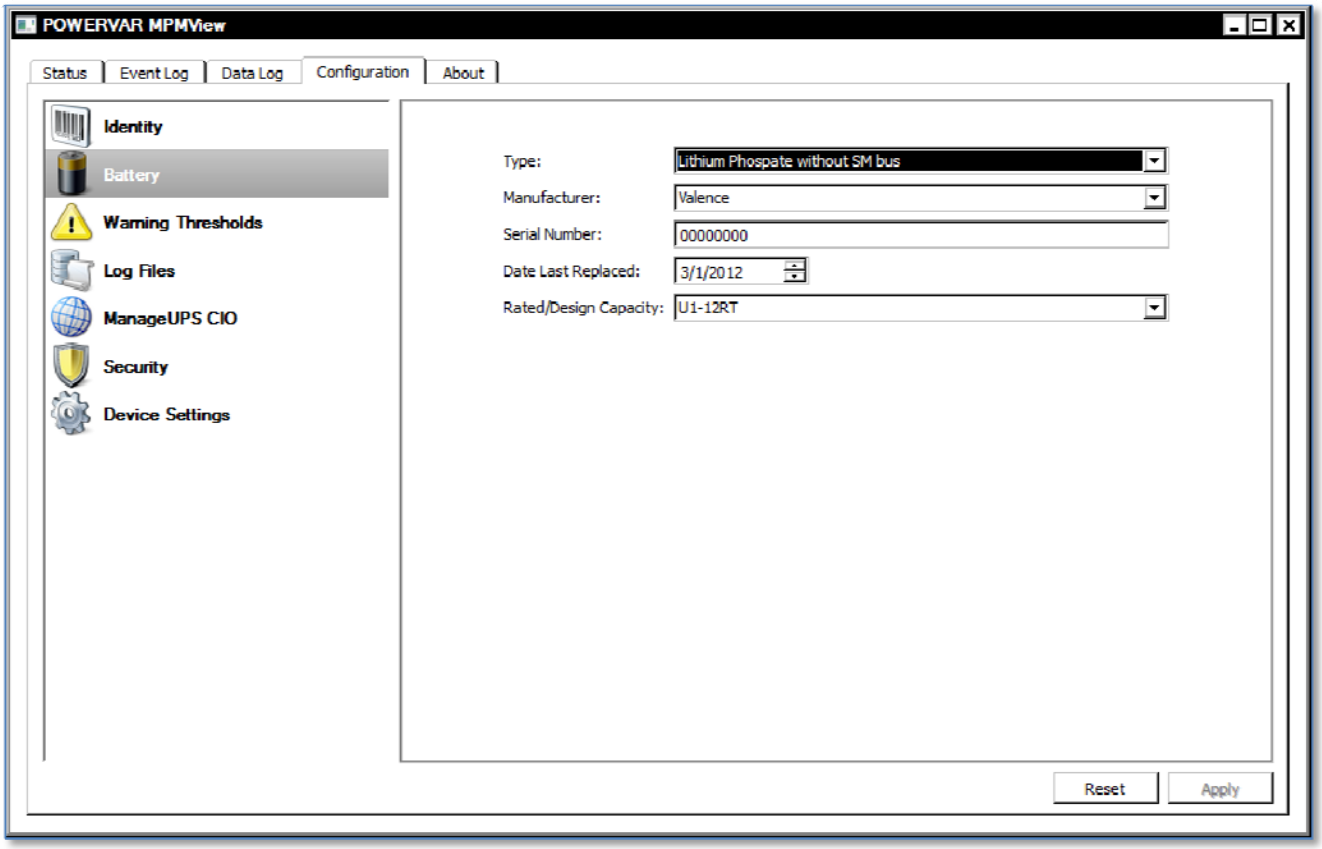
BATTERY

Your powered cart was most likely configured at the cart factory for the type and size of battery selected by the cart manufacturer.

Battery identity, date and size properties are auto-discovered by the MPM when powered up connected to a Smart Battery. If no Smart Battery is detected, these properties need to be entered manualy as part of the cart assembly and test process.

The parameters are stored in non-volatile memory within the MPM unit.

Read the section on Battery Configuration Guidance in Appendix before changing these settings.

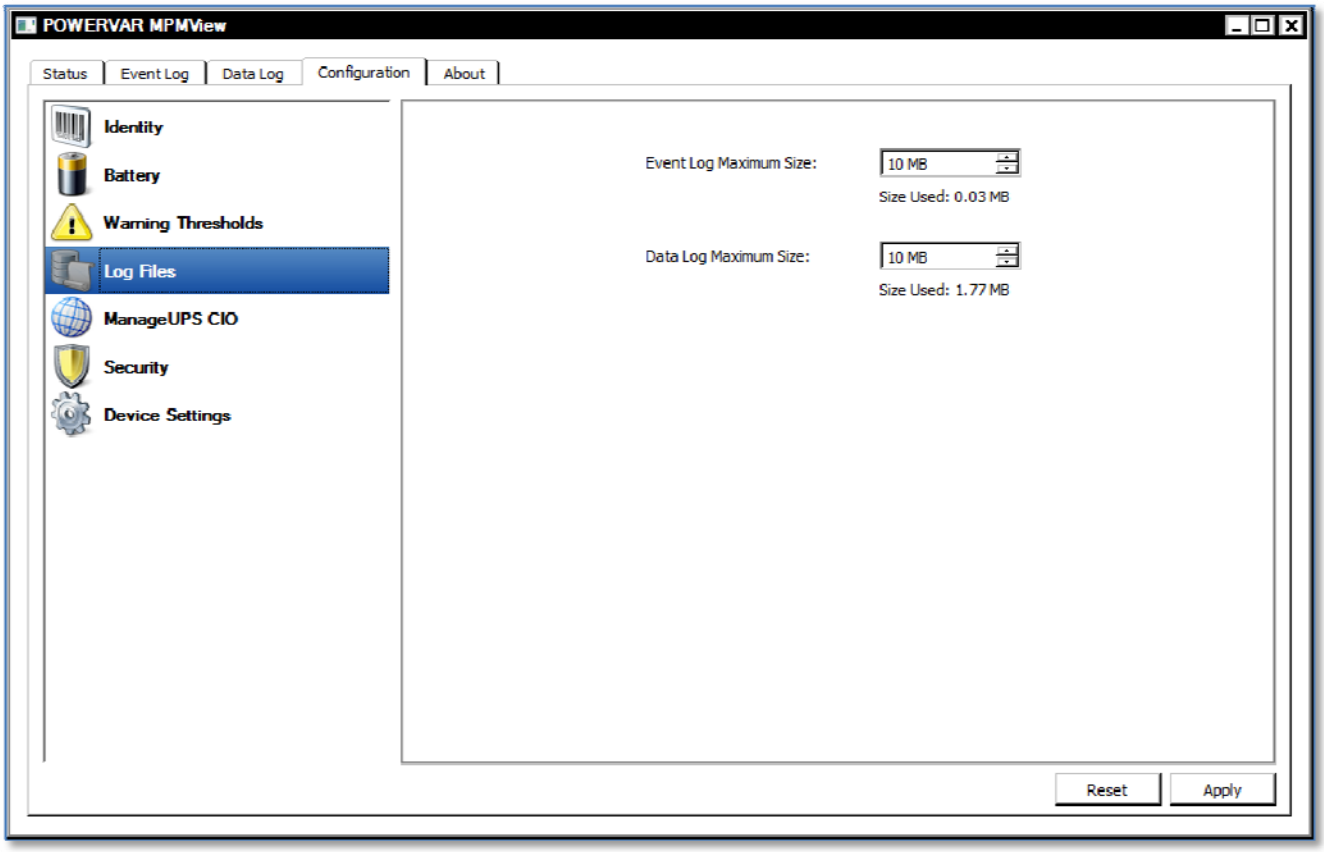


LOGGING

The Configuration>LogFiles dialog displays the default size limits and amount used by each of the logs created in MPM View.

Increase or decrease the file size limits based on workstation disk space limitations.

See Section III, MPM View Installation Details for information on where the log files are written.

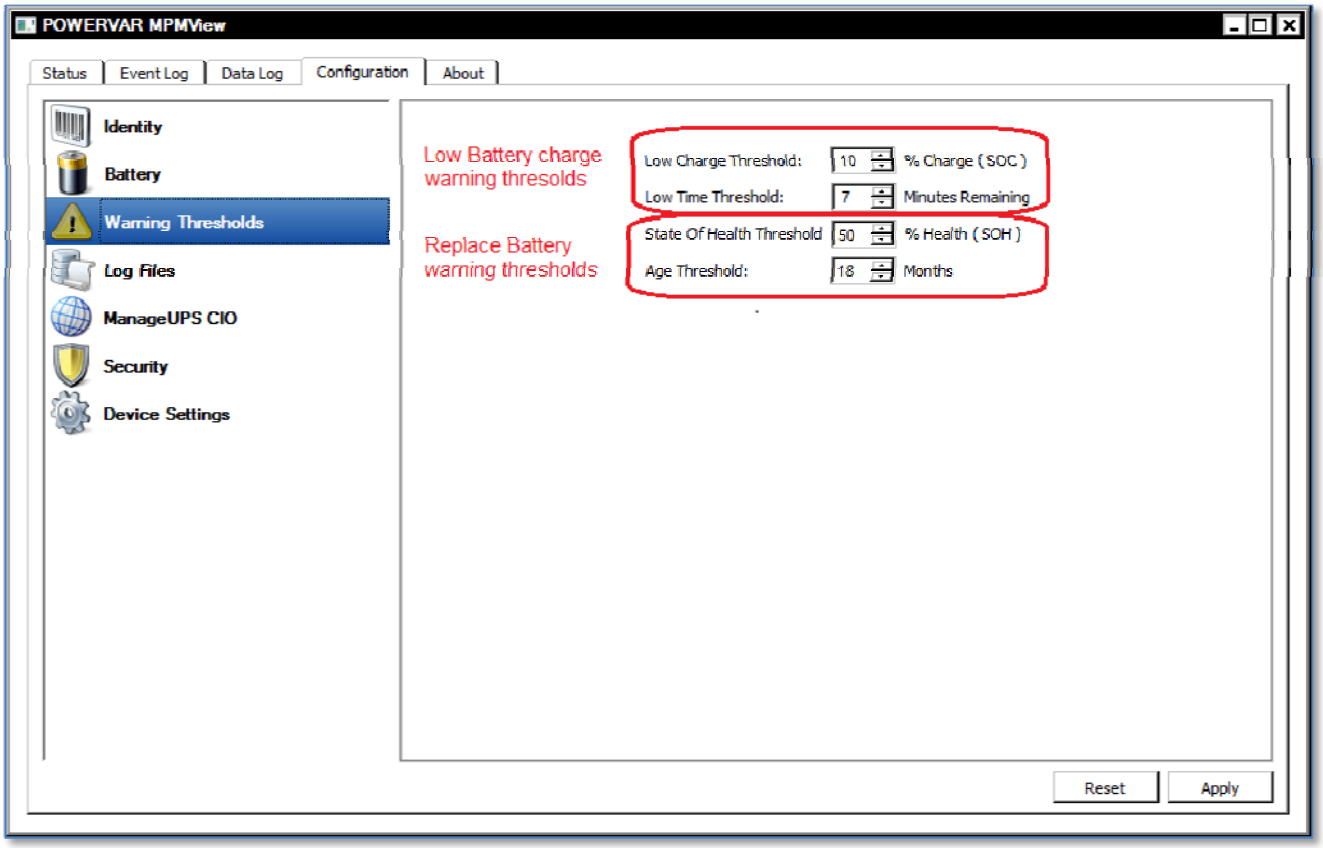


THRESHOLDS

Low Charge and Low Time thresholds let you define the 1st warning point for low battery charge . Whichever of these values is reached first during a discharge will trigger the Low Battery condition.

The Low battery warning (yellow) is a reminder for cart users to plug the cart to wall power soon.

The Low Battery warning threshold settings are pushed into the MPM unit by MPM View so that both the cart control panel LEDs controlled by MPM unit, and the MPM View ClinicView on-screen UI will indicate a reminder to the cart user.



Battery Health and Age Thresholds trigger the Replace Battery condition.

- *% Health* is an indication of the physical degradation of the battery capacity as it ages. A battery reporting 50% Health, has only half the capacity of a new battery. The *Health* threshold is pushed to the MPM device and will trigger a yellow warning light on the RUI LED.
- *Age* is a simple calendar evaluation that compares the present system date in the PC workstation to the Battery Replace Date in the MPM unit. The *Age* threshold is evaluated by MPM View and will not trigger a warning on the RUI LED.

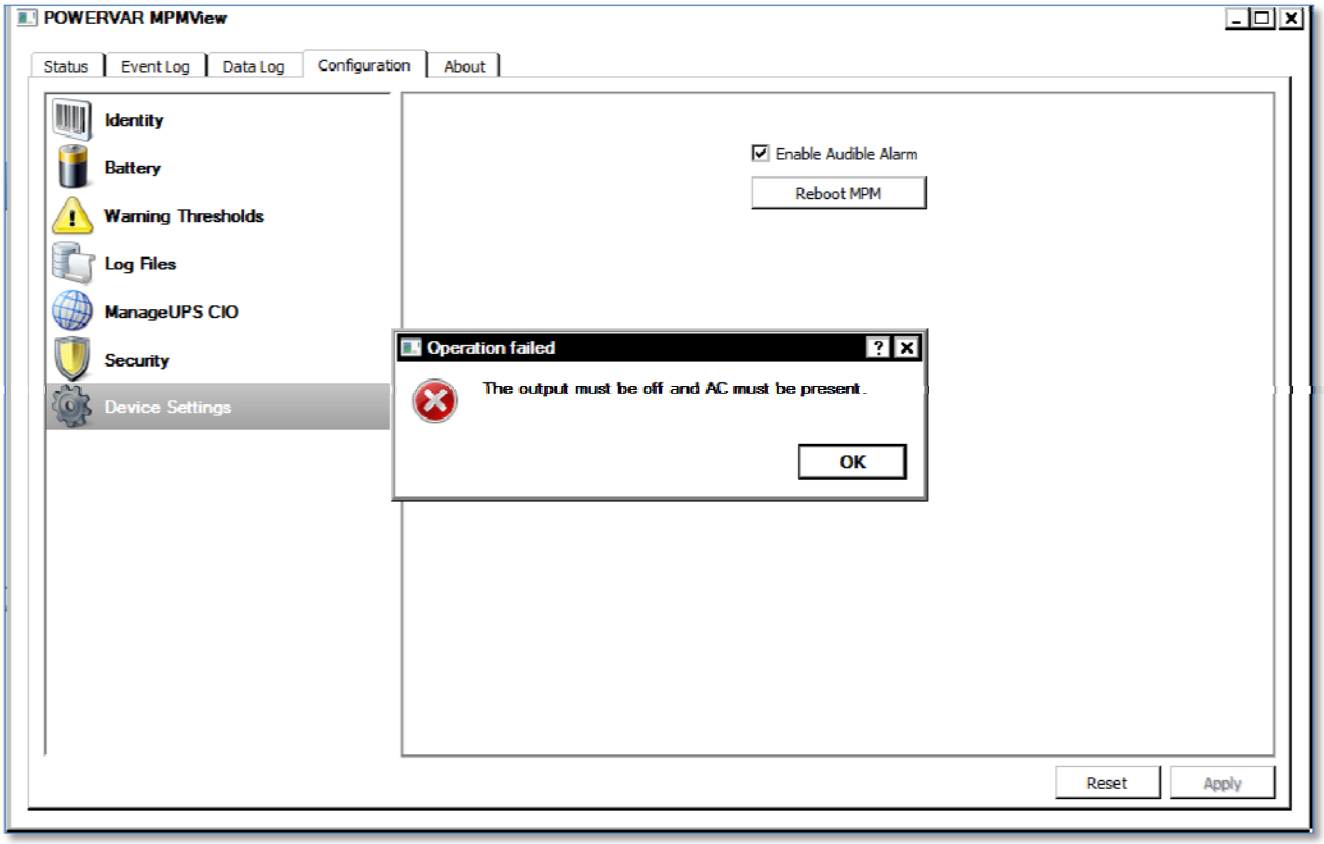
Both thresholds create alarm conditions that will be pushed to the CIO MPM FleetView Server to simplify battery service tracking for your cart inventory.

DEVICE SETTINGS

Device Settings dialog allows you to disable the audible beeper in the MPM unit so that alarm conditions will only trigger visual indications.

If you make a change to an MPM battery type configuration setting that requires the MPM unit to be restarted before the change is active, you can reboot the MPM unit from this dialog.

Since rebooting requires the MPM output to be off, this is normally only done by a Technician servicing the MPM from a workstation not powered by the MPM unit, or from a notebook computer with an internal battery that allows the PC to remain running when the MPM output is powered off.

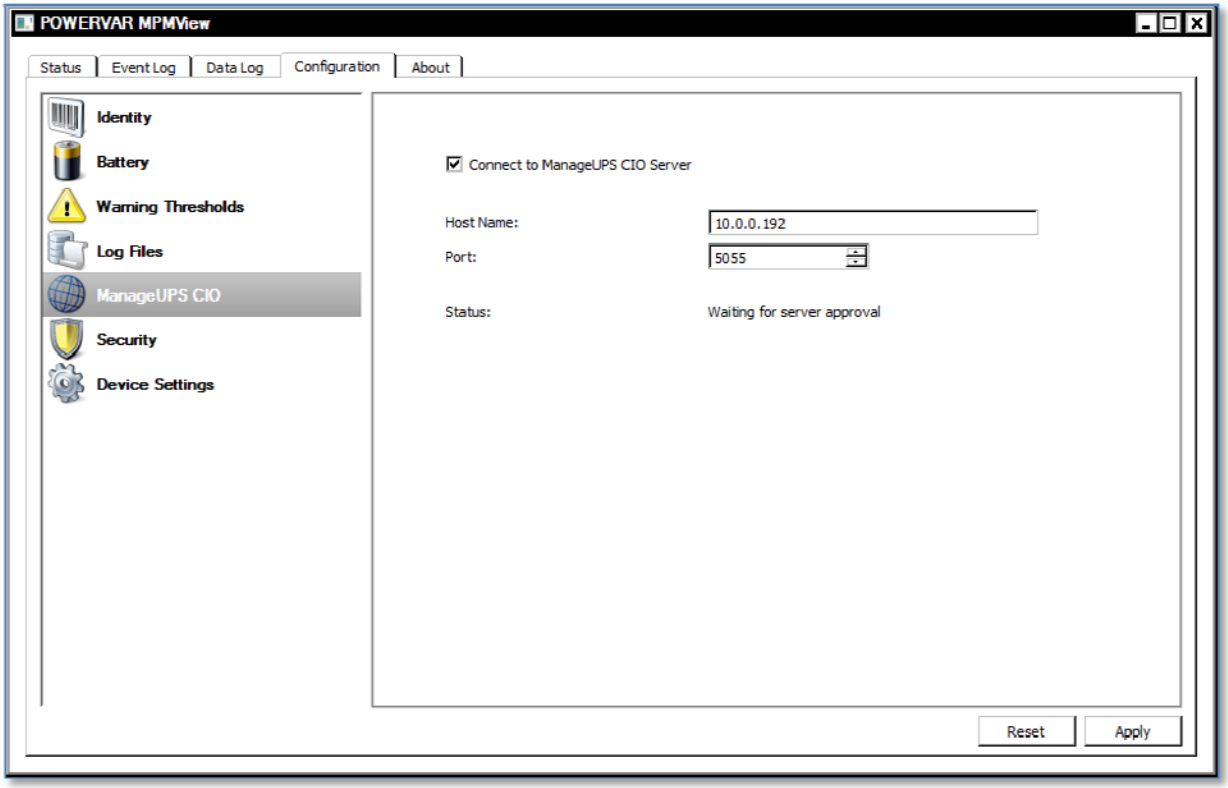


CIO AGENT

CIO Fleet View – is an enterprise application that installs on a central server and receives information via LAN/WAN from individual cart workstations running MPM View. Fleet View is covered in document A55-00049.

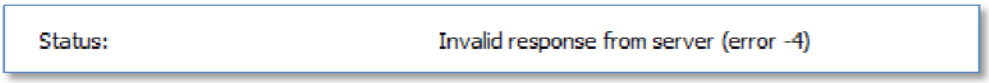
To use MPM View as an *Agent* for monitoring by CIO MPM FleetView Server , open the Tech View UI, then navigate to the Configuration tab>> ManageUPS CIO.

Check the box and enter the IP address (or DNS name) and TCP port of the CIO Server host. Then press Apply.



If MPM View is able to connect to the CIO server, the Status will indicate "Waiting for server approval."

If MPM View is not able to connect to the server, the Status will indicate an error message:



Once the MPM device is accepted at the CIO Server, the status message will change to "connected".

***NOTE**: the default port for network communications between MPM View and the CIO Server is TCP port 5055. Make sure the port is open on all firewalls between the MPM View hosts and the CIO host.*

DIAGNOSTICS & TROUBLESHOOTING

This section includes a brief troubleshooting table and the complete list of Events and Condition codes that are logged in *MPM View*

Troubleshooting

The troubleshooting information provided in this section should help you discover the cause of most commonly encountered difficulties.

Before following the troubleshooting steps provided, be certain that:

1. the MPM is connected to a properly working outlet
2. the line voltage to the MPM is within specified boundaries

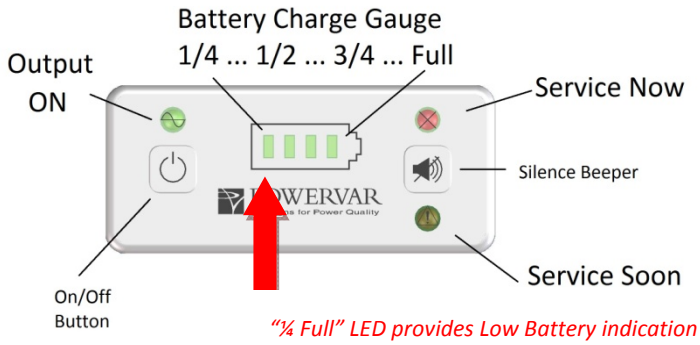
Problem	Possible Cause	Action you should take
MPM does not power up and has no audible alarm	On/Off button is not pressed long enough	Press and hold the On/Off switch for at least 3 seconds.
	Invalid Battery and Invalid Input AC.	Check wall socket and test for proper line voltage.
	MPM input power cord is not plugged in	Plug in input power cord
	Output fuse is open	Reduce load replace fuse and test
Backup time is less than expected	Battery is not fully charged or battery is worn out.	Recharge battery for at least 24 hours and retest backup time.
MPM seem normal, but the load will not turn on.	power cord is loose or not connected between MPM output and load.	Connect computer input power cord.

Events & Conditions

The MPM indicates the presence of Warning (yellow) and Severe (red) Alarms and Conditions via the RUI (Remote User Interface) and via the Clinic View taskbar application.

Low Battery Conditions

Low battery (yellow) Low-battery-critical (red) conditions will flash the LED in the "¼ tank" position, yellow or red according to the severity..



"¼ Full" LED provides Low Battery indication

Low battery threshold conditions will also cause the Clinic View application to open automatically to notify the cart user of the time remaining and charge level.

Service Related Conditions

Service related alarms, such as overload, over temperature, replace battery etc., will cause one of the RUI Service LEDs to flash.

The specific alarm that is raising the Yellow or Red status will be logged and displayed locally in the *Tech View* application.

Low Battery and Service related conditions can also be monitored remotely over the LAN/WAN via CIO/ Fleet View Server.

TABLE OF CONDITION CODES

The table below lists the specific conditions and what they mean. The "Code" is the number included in the Event Log alarm description.

Code	As displayed in MPMView	What it means
24-034	Battery Charge Threshold: Low	1st level warning for low battery charge level. Is triggered when either threshold for % charge or estimated minutes is reached. Default thresholds are 7% or 5 minutes. These can be modified using MPM TechView.
34-053	Battery Charge Threshold: Low-Critical	Final warning to recharge battery – shutdown imminent. Hard coded within MPM to be raised when charge level is less than 5%.
. 20-147	Lost Device Communications	MPMView is unable to communicate with MPM unit. This could be caused by the USB cable being disconnected, the USB port on the computer has failed or the MPM is off. It is not likely that the MPM will be off in normal usage, however it is possible in lab settings when PC running MPMView is not powered by MPM.
24-050	Service Check: Battery Parameters not Initialized	Alarm raised when the MPM is configured to detect a smart battery but is unable to establish communications to the battery. The MPM would then be operating in Smart Discovery Mode at reduced charger current. Remedy: Configure the unit for the actual battery attached using MPM Techview software.
24-051	Service Check: Replace Battery – Health Threshold	This alarm is raised when the measured battery capacity is less than 50% of original design capacity (measure of state of health). The defaujlt is 50%, this value can be modified using MPMView.
24-063	Service Check: Replace Battery – Date Threshold	This alarm is raised when the comparison of MPMView system date to Battery Replace Date indicates that the battery Age is older than the Battery Age Threshold. Default is 18 Months, configure via MPMView.
24-064	Service Check: Smart Batteries - Configuration	This alarm is raised when the number of Smart Batteries detected is different than expected by MPM configuration.
24-066	Service Check: Smart Batteries - Communication	This alarm is raised when MPM unit has lost communication with a SmartBattery. Could indicate Smart Battery has entered a Safe/Protect Mode from being left depleted and without charge for too long. The alarm may clear if the MPM unit is able to recover the battery. If the alarm persists, check SmartBattery cable connections.
20-134	Service Check: Temperature Warning	This is the 1st level warning that the MPM internal temperatures are nearing a level where immediate thermal shutdown could occur if temperatures continue to increase. Check that MPM ventilation is unobstructed. If no visible obstruction, MPM unit may need cleaning or other Service.

Code	As displayed in MPMView	What it means
24-032	Service Check: Battery Connection	The MPM unit detects no voltage across the battery terminals. Battery may be disconnected, or there may be a blown fuse. The MPM can still power up when connected to AC input line
30-189	Input Frequency Out Of Range	This alarm is raised if the frequency of the input AC power to the MPM unit is out of range and the output can only be supplied from battery power.
36-080	Output Overload	This alarm is raised if MPM detects its VA output is over 110%.
36-081	Output Overload	This alarm is raised if MPM detects its Watt output is over 110%.
33-037	Service Required: Charger	This alarm is raised if MPM charger delivers more than 110% of max charge current for more than 60 seconds.
33-038	Service Required: Charger	This alarm is raised when MPM is attached to a Smart battery and battery indicates an “OverCharged” alarm.
34-055	Service Warning: Smart Battery Over Temp	This alarm is raised when MPM is attached to a Smart battery and battery indicates its internal temperature has exceeded internal threshold.
30-190	Service Required: Output Bad	MPM detects a problem in inverter or output circuits; output relay is shorted, inverter voltage too high or too low, inverter failure or output fuse open.
30-192	Service Required: EEPROM failure	MPM detects a serious internal error. Return for Service.

SECTION III: INSTALLATION DETAILS

MPM VIEW SOFTWARE INSTALLATION DETAILS

MPM View installs on a Windows host computer (other OS by request) and communicates with the MPM via USB to monitor the health of the battery, state of charge of the battery and state of the MPM.

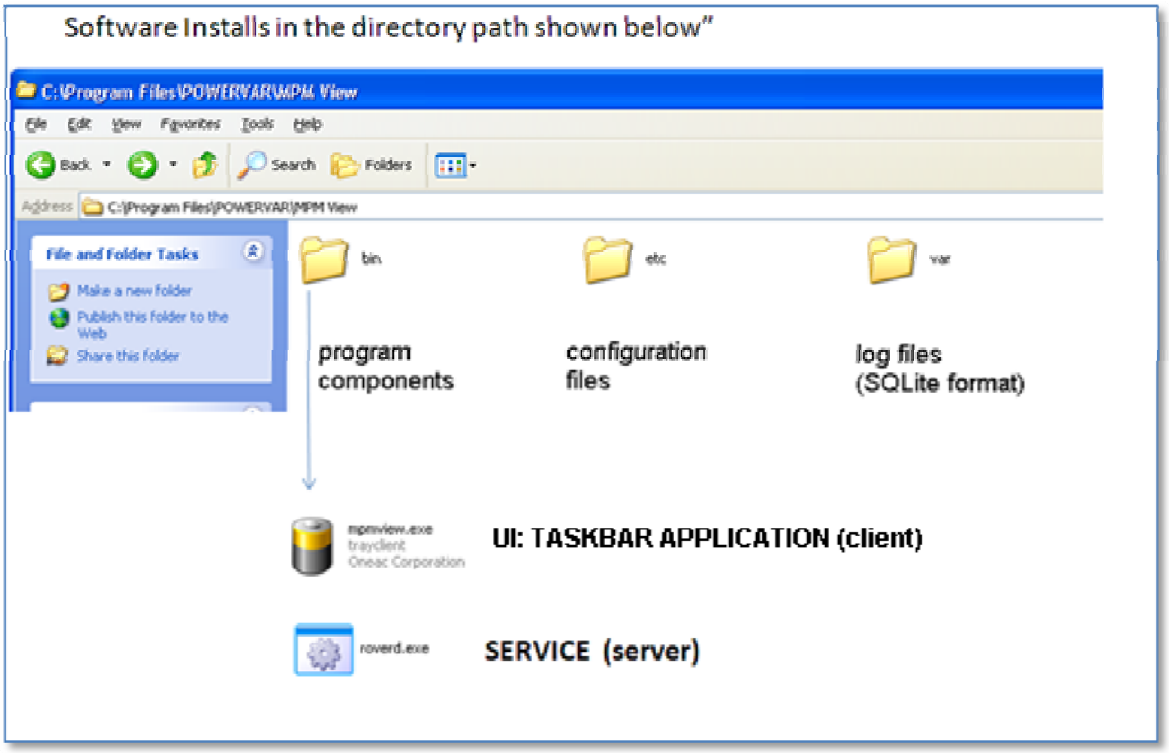
Components and Install Directory

MPM View software has two components – a "Service" and a "UI/GUI", installed in `c:\program files\powervar\mpm view\bin` directory.

See the following page for more details on the Service and UI components.

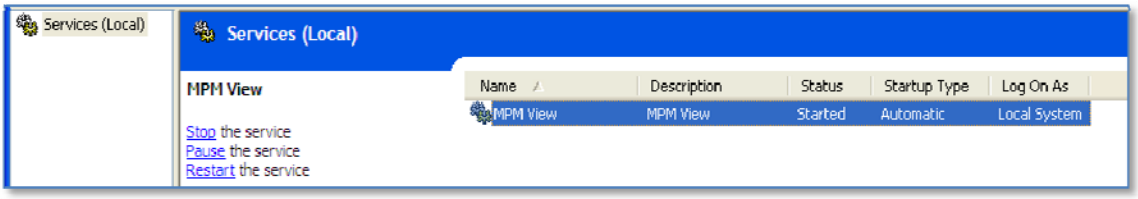
Files that store settings modified via the Tech View UI are stored in the `…\etc` directory

The data and event logs are stored in the `…\var` directory in SQLite database format.



SERVICE: (Server)

MPM View runs as a Service under control of the Windows service control manager. The default start configuration after install is Automatic.



The MPM View Service:

- Discovers and Monitors MPM on USB port
- Logs Events and Data on PC Hard drive
- Connects to UI (Client) and to CIO-Fleet View via TCP socket on default TCP port 5055
- Allows same UI for “local host” as for “remote” host on LAN/WAN via CIO Fleet View connection.

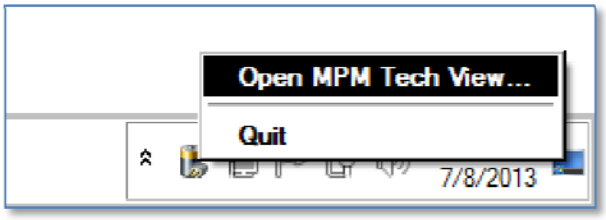
GUI / UI : TASKBAR APP (Client)

The default install will cause the taskbar app to load automatically and attempt to connect to the Service on localhost, via TCP on port 5055.

The UI will appear as a battery in the taskbar when the app is running. It will show as  or  if there is a communications problem

Click the taskbar icon to open Clinic View UI.

Right-click the taskbar icon to *Quit* the taskbar application or to open the *Tech View* user interface.



When you Quit the UI, you can reopen the MPM View UI Application from `Start> Programs> POWERVAR> MPM View>>`

Note: Quitting the UI application does not stop the Service.

APPENDIX A : THE MPM DEVICE

MPM DEVICE: "WHAT IT DOES" & "HOW IT WORKS"

What It Does: charger, inverter & Smart Battery interface

The **MPM** (Mobile Power Manager) has the same key components as a UPM or UPS device (Uninterruptible Power Supply):

- **Battery:** stores energy so that the device can continue to power the output when there is no input AC power.
- **Charger:** Input AC power passes to a Rectifier/Charger module that converts to DC power for internal circuits and to charge the battery.
- **Inverter:** converts DC power from within the device to provide AC power to the output of the device.
- **User Interface:** on/off control button and status indicators.

An MPM is different from a UPS device in how it handles battery related activities. MPM is optimized for powered cart applications:

Power from Battery is "Normal" for a powered cart.

A UPS typically provides 5-20 minutes of "emergency" battery run time to power computers, communications systems or critical instruments during a power outage. Running the output from battery source is considered an abnormal condition that raises an On-Battery alarm.

The MPM control system handles operation from battery as a "normal" part of daily activity. MPM power electronics are designed for "continuous" operation from battery.

Powered carts use Lithium-based battery technology for fast recharge and long-life.

MPM is designed to deliver optimum charge rates for specific sizes of SLA batteries and for each specific model of $LiFePO_4$ type of battery that has been compliance tested by Powervar.

A UPS device uses SLA (lead acid) batteries designed for high discharge rate for a short amount of time.

SLA batteries can last several years in "emergency standby" applications but only last a few months in powered cart applications with daily discharge cycles – even when charged carefully for optimum life.

Lithium-Iron-Phosphate ($LiFePO_4$) batteries can last for years in daily use applications and allow for much faster recharge than SLA type. MPM has a powerful charger to fully charge a typical 500-600 Wh $LiFePO_4$ battery in less than 3 hours.

Lithium-based battery technology is “smart”

$LiFePO_4$ batteries are “smart” batteries – with internal logic controls and circuits that manage energy flow in and out of the battery for reasons related primarily to safety.

Some $LiFePO_4$ batteries also provide a communications interface for better system management and status information for users.

Many $LiFePO_4$ manufacturers implement the IT industry standard SMBus (System Management Bus) communications scheme for smart batteries (sbs-forum.org) as part of the ACPI (Advanced Configuration & Power Interface) standard developed for PC and mobile computing devices.

MPM battery communications port supports the SMBus Smart Battery interface.

Battery information is read from the Smart Battery by the MPM and forwarded to MPM View to be presented as an integral part of the cart power system.

How It Works

The control system in the MPM unit monitors internal circuits and determines how it should operate – from battery or from AC line – or not at all.

Key measurements are reported to MPM View via USB communication.

If connected to an SMBus compliant Smart Battery, the MPM unit also monitors battery communications and reports this information to MPM View.

Internal logic within the MPM control system evaluates both MPM and Battery information and reports specific conditions as alarm/status codes that are classified as Informational, Warning (yellow) or Severe (red).

Warning and *Severe* conditions also drive the fault LEDs on the remote user interface (RUI) usually located near the cart work surface.

The RUI also has a “power” button for people to use when turning the output on or off and a “silence” button silencing the audible beeper during an active alarm condition.

Power-Up Behavior

Starting the cart “un plugged” from the AC wall power is referred to as **“cold start”.** The MPM relies on the energy in the battery to start internal control circuits as well as supply power to the output circuits.

Press the power button for 3-5 seconds to engage the output. If the battery does not have enough energy to power the load, the MPM unit will shut down its output and control circuits or may not start at all.

The power button controls only the output. Connecting the cart to live AC wall power will automatically turn on the internal control circuits, and engage the battery charge circuits.

If the battery VDC is too low, the MPM will attempt to recover the battery using a specific pre-charge recovery profile **(jump start**) for the last known battery it was connected to. If there is no battery connected, or the battery is not recoverable (will not accept charge), the MPM will provide output power only as long as the AC input source is valid and a yellow alarm condition will appear on RIU and in MPMView.

Guidance on MPM Battery Configuration Options

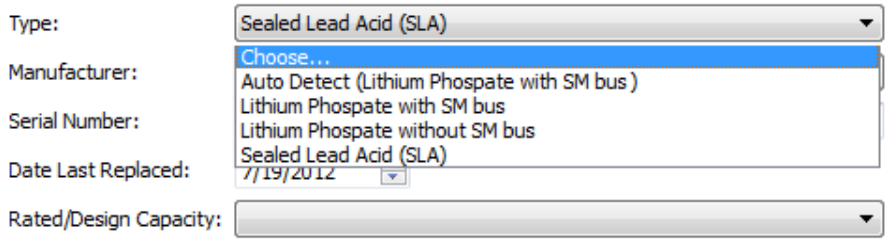
The MPM is designed to work with various sizes of SLA batteries and $LiFePO_4$ batteries. If you change batteries on your powered cart, you may need to configure your MPM for the new batteries.

If you select ***Auto Detect***, MPM will seek to detect a battery on the SMBus connection on power up. If an SMBus battery is NOT recognized, the MPM unit will fall back to a default battery configuration. The default battery for fallback configuration is determined by the cart OEM.

There are two configuration options for batteries that do not support SMBus communications.

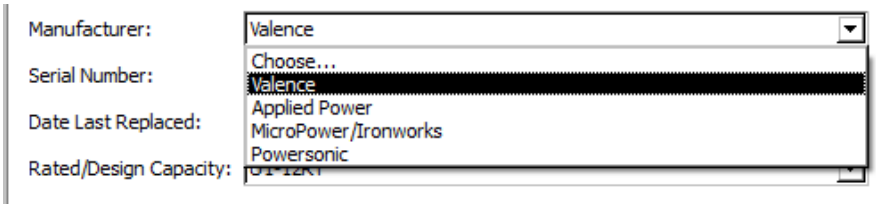
- Lithium Phosphate without SMBus
- Sealed Lead Acid

Select one of these options in the battery Type dropdown list.



If you change battery type, you should save the change, and reboot the MPM (see page 9) for the new type to be set in the MPM eprom before changing other battery parameters.

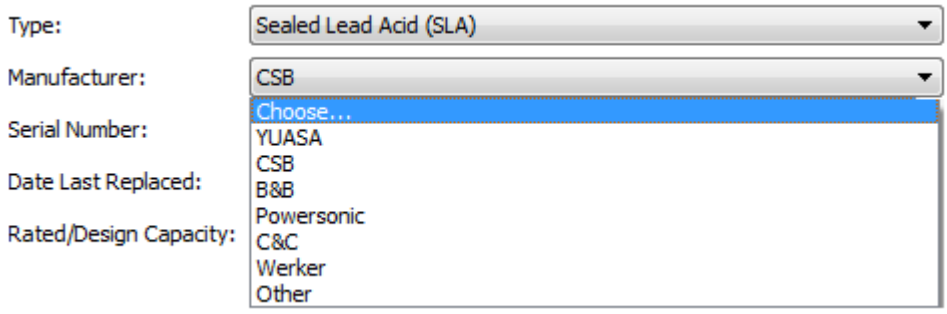
If you select “Lithium without SMBus”, check the list of known manufacturers and models that will appear in MPM View option lists. If your battery make and model is not on the list, you should contact POWERVAR to determine if your battery is supported by the MPM.



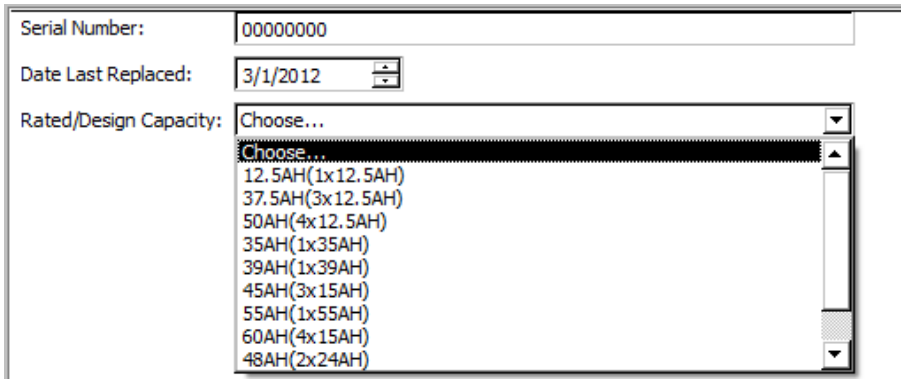
If you select SLA, ber aware that the MPM charger behavior is determined by the specific brand and size of SLA battery.

Selecting the wrong brand and size could result in premature wearout of an SLA battery

Select the brand of SLA battery you are using in your cart.



Then, select the specific size brand of your battery if listed.



You should also the date the batteries that batteries are replaced.

Battery replace date will be stored in the MPM unit memory.

MPMView will compare battery date to the present system date and will remind you when the battery is older than the date threshold

(See page 8).

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MPM Properties in MPM View & What They Mean

CART PROPERTIES

Name, Manufacturer, Model & Serial Number

Cart properties are set on the Configuration>Identity dialog and appear on the **About** tab.

The **Name** property is also included in the *Event Log*.

These properties are variable length read/write text fields provided for cart fleet managers to identify attributes of individual carts in MPM View. These properties are stored in MPM View (not pushed into the MPM unit memory).

These attributes can be used to organize the inventory of the cart fleet when monitored via CIO: MPM FleetView Edition.

MPM PROPERTIES

Manufacturer – (About) Powervar is the manufacturer of MPM units.

Model – (About) This field reports the part number of the MPM unit.

Serial Number – (About) the unique serial number of the MPM unit.

Firmware Version – (About) The version of MPM internal control software

Protocol Version – (About) The version of the protocol

Output Capacity – (About) The power capacity of the unit in Volt-Amps

Nominal Frequency – (About) will be either 60Hz or 50Hz AC power norm

Nominal Volts – (About) will be 120VAC or 230VAC AC power norm

Power Source – (Status & DataLog) source of power to the output (load) will be Normal/AC, Battery, or “None” (when output is off).

Volts – (Status & DataLog) input/output VAC as measured by the MPM

Frequency – (Status & DataLog) input /output AC frequency as measured by the MPM

Temperature – (Status & DataLog) The temperature measured within the MPM unit.

Percent Load – (Status & DataLog) The load measured on the output of the MPM relative to the Output Capacity of the unit.

BATTERY PROPERTIES

Type – (About) SLA, $LiFePO_4$ with SMBus communications or $LiFePO_4$ without SMBus . read from a Smart Battery during “Discover” mode - or selected from list box on Configuration>Battery dialog.

Manufacturer – (About) Name of battery manufacturer, read from a Smart Battery or selected from list box on Configuration>Battery dialog.

Serial Number – (About) Read from a Smart Battery or entered in form on Configuration>Battery dialog.

Date Last Replaced – (Status & About) Read from a Smart Battery as (manufacture date) or entered via form on Configuration>Battery dialog.

Nominal Capacity – (About) Read from a Smart Battery or entered via form on Configuration>Battery dialog., This value represents the specified design capacity of the battery presented is watt-hours (Wh).

Full Charge Capacity – (Status) This value represents the actual capacity of the battery as measured by the MPM unit during charge and discharge cycles. Logged in Data Log as “Wh (max capacity)”

State Of Health – (Status) The ratio of Full Charge Capacity to Nominal Capacity. Logged in Data Log as “% Health”. Available in Configuration>Thresholds as a battery replacement reminder.

Battery Age – (Status) The difference between the present date in the system hosting MPM View, compared to the Date Last Replaced. Available in Configuration>Thresholds as a battery replacement reminder.

State Of Charge – (Status) a ratio of the Wh in the battery relative to the Full Charge Capacity of the battery. This value may be computed within the MPM or read from a Smart Battery. Logged in Data Log as “% Charge”. Available in Configuration>Thresholds as a “yellow” low battery warning level.

Battery Temperature – (Status) this value is read from a Smart Battery. Logged in Data Log as “Degrees F battery”.

VDC – (Status) this is the voltage of the battery as measured within the MPM unit. Logged in Data Log as “V battery”

DC Current – (Status) this is the amperes in or out of the battery the battery as measured within the MPM unit. Logged in Data Log in milliamps as “mA charge” and mA discharge.”

Wh Remaining – (Status) the estimated watt-hours of energy remaining in the battery. This value is computed by the MPM unit or read from a Smart Battery. Logged in Data Log as “Wh remaining”

“Time” Remaining – (Status) the estimated time the battery can support the present power draw on the MPM. This value is computed by the MPM unit based on Wh remaining and output power draw. Logged in Data Log as “minutes”. Available in Configuration>Thresholds as a “yellow” low battery warning level.