

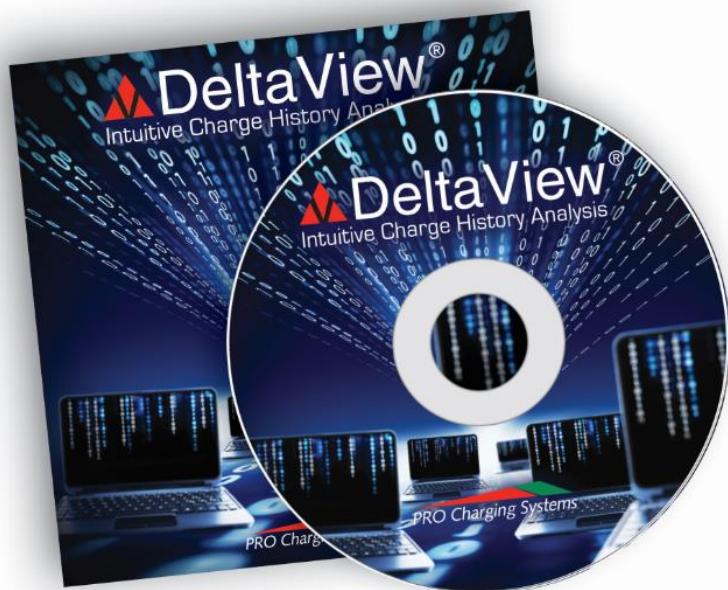


# PRO Charging Systems

**Safety, Installation and Operating Instructions**

**Manual for the following DeltaView® Reader model:**

**DVR001**



 **DeltaView®**  
Intuitive Charge History Analysis

Made in the  


 **DeltaVolt®**  
Intuitive Charging Technology

040713

**IMPORTANT NOTICE:**

Please save and read these safety, operating and installation instructions before installing or using your Pro Charging Systems (PCS) product. Contact technical support at PCS with any product, installation, or service questions (800.742.2740).

Pro Charging Systems, LLC  
LaVergne, TN 37086-3539

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*Your DeltaView® Reader (Reader):*

*Before you go any further, you must understand a couple of things about this device:*

- 1) This is **NOT** a “memory” stick, “Thumb/Flash Drive” or “Storage Device”. This is a highly sophisticated and technologically advanced data acquisition device. The ability to collect this data without having to make a physical connection to a battery charger is truly unique and requires unique hardware and customer care.*
- 2) This device is powered by a Lithium-Ion battery and can only perform properly if it is properly maintained by the user. It is critically important that the user read and understand the instructions within, and that the user follow these instructions.*

## IMPORTANT SAFETY INSTRUCTIONS

**SAVE THESE INSTRUCTIONS.** This manual contains important safety and operating instructions for future reference.

**Understand and relate the Hazard Levels and Signal Words utilized in this manual with the following definitions:**



This symbol means: Immediate hazards, which will result in severe personal injury or death.



This symbol means: Hazards or unsafe practices, which could result in severe personal injury or death.



This symbol means: Hazards or unsafe practices, which may result in minor personal injury, product or property damage.



This symbol means BE ALERT! Your safety, or the safety of others, is involved!

## PERSONAL SAFETY PRECAUTIONS



**Always read all instructions before using your product!**

## General Safety Considerations

The Reader is a small low voltage device compatible with computer equipment and USB voltages at five (5) volts or less. The battery used in this device is very sophisticated and is not to be replaced by the user. If there is a need to have the battery replaced in the future, please contact PCS to arrange for potential service of the device by the factory.



If any leakage from the Reader is present it should be disconnected from any device it may be connected to so it will not charge. Put the Reader in a zip-lock type bag with most of the air removed and seal it to prevent spreading the leaking material. Do not discard the Reader in any residential or commercial waste system. Take it to a recycling center for proper disposal.

Do not drop the reader. If it is dropped, it will likely be undamaged but watch it closely during use for any leakage or higher than usual temperatures. If either are noticed disconnect the Reader and stop using it.

## **IMPORTANT BATTERY CARE INSTRUCTIONS**

### Battery

A rechargeable Lithium-Ion battery powers the Reader and is recharged only when the Reader is connected to a computer or other USB capable charging device. There is no external 'wall type' charger available. The battery capacity is 85 mAh at a working voltage of 3.7 Volts.

An internal charge management device controls the batteries rate of charge and monitors its temperature to limit all charging to the batteries safe operating range.

***The Reader is designed to be used over a long period of time (years if properly maintained). When the Reader is not in use, it will go into a "Sleep" in order to conserve the amount current draw. However, there is still enough draw, combined with self discharge characteristics of the battery, to require that the Reader should be charged at least once every thirty (30) days if it is not used for long periods of time. This will greatly increase the battery life. The battery may be damaged if its charge is not maintained.***



### Disposal

The Reader should be taken to a recycling center for proper disposal as electronic equipment containing a Li-ion polymer battery.



### Maximum Temperatures

The storage temperature range of the Reader is defined by the batteries storage range of -4° to 113°F (-20° to +45°C). The Reader may be charged between 32° to 113°F (0° to +45°C).

The Reader may be discharged (not connected to a charging device) between 14° to 140°F (-10° to +60°C).

Storage humidity range is 0 to 95% Rh non-condensing.

The Reader housing is ABS.

### Service Temperatures and Humidity

The Reader is intended to be carried in the users pocket and used in a typical office environment or outdoors. This makes the practical environmental limits for operation between 32° and 113°F (0° and 45°C) with relative humidity between 5 and 95% non-condensing. The Reader is not a sealed device and will be damaged if dropped into water or other solvent. The

photodiode aperture is not sealed so water splashes may enter the Reader. If this happens the Reader should be wrapped in a paper towel and packed in a container of Rice or other desiccant material and left for a minimum of forty-eight (48) hours to dry out. This should remove the moisture but may not prevent premature failure due to ionic contamination of the internal parts.



#### Repair

The Reader is not designed to be user-repairable but its internal battery is replaceable with the exact type originally installed.



**Please follow the cautionary advice below:**

**Do not operate product with damaged electrical wiring or connections.** If damaged, replace the electrical wiring or connections immediately.

**Store idle Reader.** When not in use, store the Reader in a dry location to inhibit rust.

**Maintain Reader with care.** Inspect periodically and, if it has received a sharp blow, been dropped, or otherwise damaged in any way, have it repaired by an authorized technician. Do not disassemble the Reader; contact PCS technical support when service or repair is required (800.742.2740). Incorrect reassembly may result in risk of electrical shock or fire.

**Check for damaged parts.** Before using any PCS product, carefully check any part that appears damaged to determine that it will operate properly and perform its intended function. Check for broken parts and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified PCS technician. Do not use the product if any part does not operate properly.

**Replacement parts and accessories.** When maintaining, only use accessories intended for use with this product. Approved accessories are available from PCS (800.742.2740).

## **OPERATING INSTRUCTIONS**

### **SAVE THESE INSTRUCTIONS!**

The DeltaView® Reader was designed to be extremely user friendly. Below are the simple steps required collect the data from your charger and how to view that data.

- 1) It is recommended that the device be plugged into a computer before use in order to insure that the device has a full charge. The charge indicator LED will illuminate when the Reader is connected to the USB port of the computer. Yellow indicates that the device cannot be charged. Red indicates that it is accepting a charge. Green indicates that the device has been fully charged and is ready to use. **To avoid the possibility of a dead battery or a damaged battery, it is highly recommended that the Reader be connected to a charger every thirty (30) days.**
- 2) To collect data:
  - a) Collect data while the Reader is not connected to a host computer.
  - b) First be sure that one of the D/C leads is disconnected from the battery pack and then plug the charger into A/C. The Charge Status Display for the charger will begin sending a signal out thru its pulsing GREEN LED.
  - c) Press the Reader against the solid surface of the Charge Status Display for the Charger in order to activate a collection cycle.
  - d) The LED status indicator will start off RED indicating there is no optical signal received by the Reader. During this mode is important to leave the Reader against the solid surface of the Charge Status Display.
  - e) Slide the Reader over the Green LED of the charger aligning the optical aperture described in the figure below.

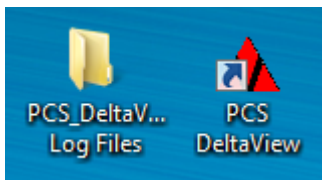


The USB connector without its cap is to the upper left. The small button activates a read cycle when pressed. The round aperture allows light from the charger's Green LED to enter the unit and be received on the surface of the PIN photodiode.

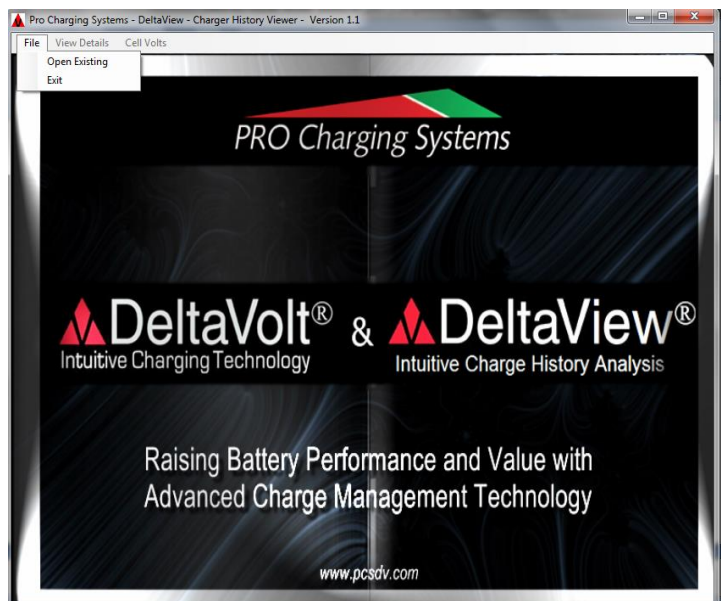
A clear film may be placed over the aperture on the inside surface to prevent ingress of dust and liquids. The aperture is left uncovered from the outside of the Reader to help align the aperture to the domed feature of the charger's LED.

When used on chargers with flat surfaces, the user will need to make the best alignment they can without the aid of physical registration features. In these cases, the state of the LED assists the user in aligning the Reader with the charger.

- f) The Reader will start flashing GREEN indicating the Reader is receiving an acceptable data signal.
- g) When the Reader completes its data collection (which should only take a few seconds), the GREEN LED should stop flashing and turn SOLID GREEN indicating a charge log file has been stored from the charger.
- h) The LED will turn off when the Reader is removed from the surface of the charger.
- i) Now the Reader is ready to use as a Memory Device by following these steps:
  - i) When connected to a host computer a solid GREEN LED indicates the Reader is powered by the computer and the battery is charged.
  - ii) Solid RED indicates the battery is charging.
  - iii) Solid YELLOW indicates the battery is not able to properly hold a charge.
  - iv) Any of these colors flashing indicates the Reader files are being accessed.
- j) Simply insert the Reader into a USB port on a computer that has the DeltaView® Reader software and follow the prompts. An icon "labeled" PCS DeltaView® Log Files will appear on the desktop and will hold the latest data files collected on the Reader. These can be renamed as you wish and can be saved in another location on your computer as you so desire.

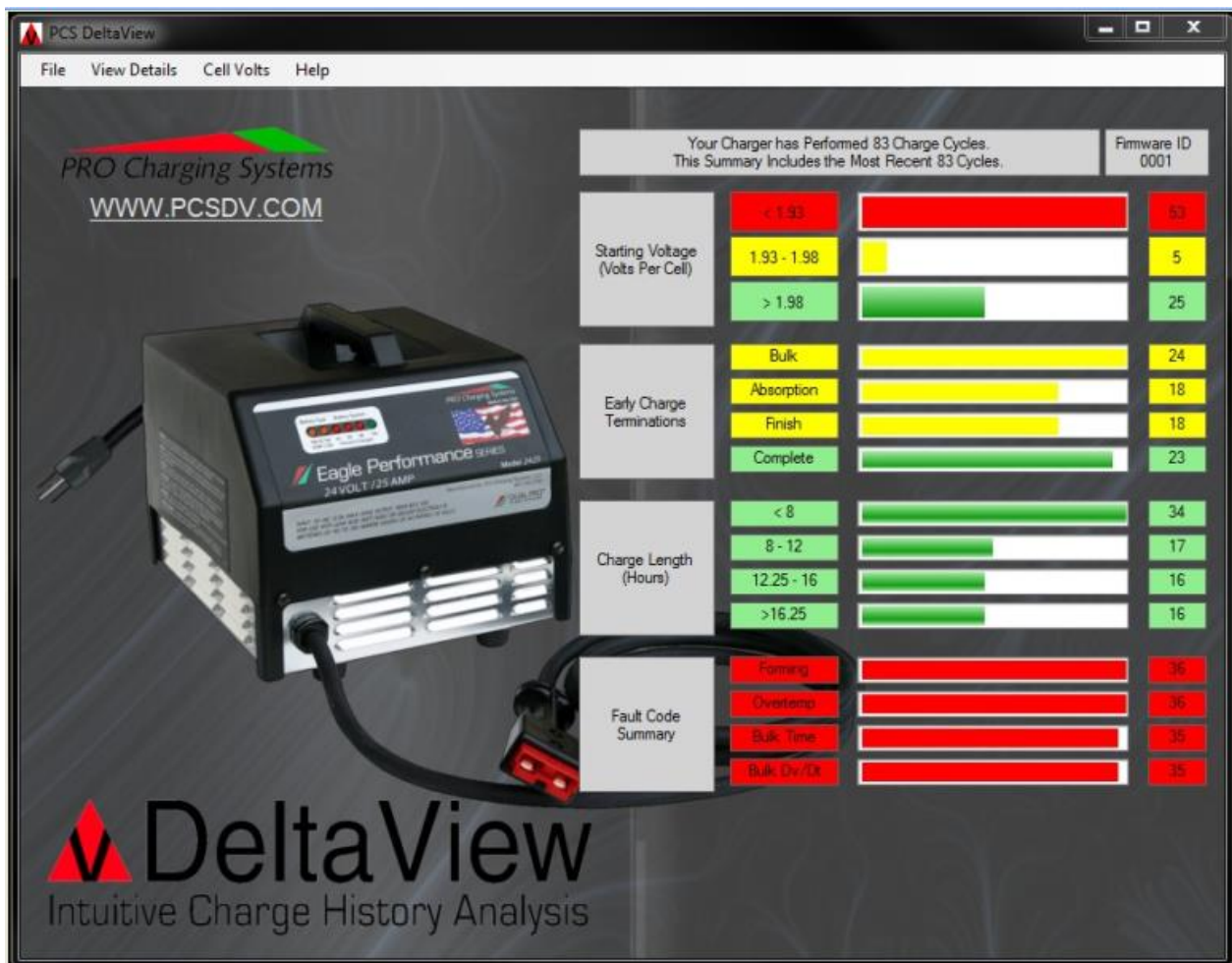


After opening, select "File" and then choose the existing file you want to view from your Reader.



**IMPORTANT NOTE:** The Reader will store approximately 14 different logs. Each separate log will allow the user to view the detail of the last 83 charge cycles. When the reader is inserted into the USB port of your host computer, the reader will “shake hands” with the computer, a DeltaView® Log Files icon will appear on your desktop showing that a folder has been created and the data that has been collected will be transferred and saved to this folder. As long as this folder remains on the desktop with its original name, future files will automatically be downloaded to this location when the Reader is connected. If you wish to delete this folder after saving the files to another location, this folder will be recreated the next time the DeltaView® Reader is connected and a “handshake takes place”. Once the Reader is removed from the USB port, ALL of that information will be automatically cleared from the Reader in preparation for use to retrieve information from more chargers. If the “handshake” did not take place, the data will remain on the Reader.

Software was included with the purchase of your DeltaView® Reader, the same software, or newer version, is available by visiting our website, [www.pcsdv.com](http://www.pcsdv.com). To download new versions, go to our products page and select DeltaView® Software and follow the instructions. We upgrade this software periodically and we recommend you check to see if you are using our latest versions. Always uninstall the previous version before upgrading to the newest. To be on the safe side, please check our website for the latest version and compare to the version noted on your CD, or at the top of the DeltaView® Reader home page if the software has previously been installed on your computer.



File Charge Ports View Summary System Voltage = 24 Help															
Cycle #	System Volts VV	1	2	3	4	5	6	7	8	9	10	11	Charge Hours	Charge Finish State	Battery Type
1204	21.22	[Red bar]										6.00	[B] OverTemp	WET/AGM	
1233	22.46	[Green bar]										10.00	[N]	WET/AGM	
1254	22.46	[Green bar]										9.00	[N]	WET/AGM	
1206	22.46	[Green bar]										10.25	[N]	WET/AGM	
1226	23.24	[Green bar]										8.50	[N]	WET/AGM	
1228	23.56	[Green bar]										8.25	[N]	WET/AGM	
1269	23.56	[Green bar]										8.25	[N]	WET/AGM	
1243	23.56	[Green bar]										8.50	[N]	WET/AGM	
1200	23.71	[Yellow bar]										7.25	[A]	WET/AGM	
1225	23.71	[Green bar]										9.00	[N]	WET/AGM	
1253	23.71	[Green bar]										8.25	[N]	WET/AGM	
1261	23.71	[Green bar]										8.25	[N]	WET/AGM	
1236	23.71	[Yellow bar]	[Grey bar]										0.75	[B]	WET/AGM
1267	23.87	[Green bar]										9.00	[N]	WET/AGM	
1196	23.87	[Green bar]										8.00	[N]	WET/AGM	
1197	23.87	[Green bar]										9.00	[N]	WET/AGM	
1213	23.87	[Green bar]										9.00	[N]	WET/AGM	
1248	23.87	[Green bar]										9.00	[N]	WET/AGM	
1211	23.87	[Green bar]										9.00	[N]	WET/AGM	
1256	23.87	[Green bar]										9.00	[N]	WET/AGM	
1203	23.87	[Green bar]										8.00	[N]	WET/AGM	
1205	23.87	[Green bar]										9.00	[N]	WET/AGM	

Starting Voltage = 1.87 VPC

File Charge Ports View Summary System Voltage = 24 Help															
Cycle #	System Volts VV	1	2	3	4	5	6	7	8	9	10	11	Charge Hours	Charge Finish State	Battery Type
1204	21.22	[Red bar]										6.00	[B] OverTemp	WET/AGM	
1236	23.71	[Yellow bar]	[Grey bar]										0.75	[B]	WET/AGM
1200	23.71	[Yellow bar]										7.25	[A]	WET/AGM	
1250	24.80	[Yellow bar]										4.00	[A]	WET/AGM	
1220	24.34	[Yellow bar]										7.75	[F]	WET/AGM	
1211	23.87	[Green bar]										9.00	[N]	WET/AGM	
1256	23.87	[Green bar]										9.00	[N]	WET/AGM	
1197	23.87	[Green bar]										9.00	[N]	WET/AGM	
1225	23.71	[Green bar]										9.00	[N]	WET/AGM	
1199	24.02	[Green bar]										9.00	[N]	WET/AGM	
1267	23.87	[Green bar]										9.00	[N]	WET/AGM	
1213	23.87	[Green bar]										9.00	[N]	WET/AGM	
1248	23.87	[Green bar]										9.00	[N]	WET/AGM	
1205	23.87	[Green bar]										9.00	[N]	WET/AGM	
1243	23.56	[Green bar]										8.50	[N]	WET/AGM	
1233	22.46	[Green bar]										10.00	[N]	WET/AGM	
1226	23.24	[Green bar]										8.50	[N]	WET/AGM	
1257	24.80	[Green bar]										8.75	[N]	WET/AGM	
1228	23.56	[Green bar]										8.25	[N]	WET/AGM	
1202	25.12	[Green bar]										8.25	[N]	WET/AGM	
1254	22.46	[Green bar]										9.00	[N]	WET/AGM	
1261	23.71	[Green bar]										8.25	[N]	WET/AGM	

Profile terminated in Absorption by end user

## DeltaView Reader LED Indications

### Operational Features

- 1) File Structure – Connecting the unit to a host computer enables the user to access collected charger log data as a collection of files. The unit appears to the operating system as an external storage device. It will hold about 16 log files. Each log file will show the last 83 charge cycles. The Reader will also show the total number of charge cycles.
- 2) Power Management – the Reader remains in a low power sleep mode until activated by pressing it against a charger to take a reading. Remember to charge the reader every thirty (30) days and to charge before use.
- 3) Status LED – Operates in two modes:
  - a) Data Collection
    - i) When collecting data, the Reader is not connected to a host computer.
    - ii) Pressing the Reader against a solid surface activates a collection cycle.
    - iii) Flashing RED indicates there is no optical signal received by the Reader.
    - iv) Flashing YELLOW indicates an optical signal can be seen by the Reader.
    - v) Flashing GREEN indicates the Reader is receiving an acceptable data signal.
    - vi) Solid GREEN indicates a charge log file has been stored from the charger.
    - vii) The LED is off when the Reader is removed from the surface of the charger.
  - b) Memory Device
    - i) When connected to a host computer...
    - ii) Solid GREEN indicates the Reader is powered by the computer and the battery is charged.
    - iii) Solid RED indicates the battery is charging.
    - iv) Solid YELLOW indicates the battery is not able to properly hold a charge.
    - v) Any of these colors flashing indicates the Reader files are being accessed.
    - vi) EVERY time the Reader is removed from the USB port of a computer the charge profile history data is cleared and the Reader is reinitialized, ready for its next use.

### LIMITED WARRANTY

Pro Charging Systems, LLC (PCS) makes this Limited Warranty only to the original retail purchaser.

PCS warrants this DeltaView® Reader (Reader) for ninety (90) days from the date of retail purchase against defective materials and/or workmanship. If such defects should occur, this unit will either be repaired or replaced at the discretion of the manufacturer. It is the responsibility of the original purchaser to return the Reader along with proof of purchase, transportation, and/or any mailing or handling charges prepaid to the manufacturer or its authorized representative.

This limited warranty is void if the product is misused, improperly maintained, handled carelessly or incorrectly operated. Additionally, this warranty is void if the Reader is disassembled, altered without authorization from PCS, the serial number is removed, or repair is attempted by anyone other than an authorized representative.

PCS makes no other warranty other than this limited warranty and expressly excludes any implied warranty, including warranty for any incidental or consequential damages.

This is the only expressed limited ninety (90) day warranty authorized by PCS and does not authorize anyone to assume or make any other obligation towards the product other than this ninety (90) day limited warranty. Some states do not allow limitation of incidental or consequential damages.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Please call Pro Charging Systems, LLC for full warranty information and/or service please call (800.742.2740).