

## For Battery Discharge Curve Logging and Battery Monitoring Alarm System

5<sup>th</sup> February 2009

Model No. DLM - 09

Product Datasheet

### Introduction

The Data Logger/Monitor has been designed to operate on 12V, 24V, 48V and 110V battery systems, with optional inputs for higher input Voltages, up to 550V. The Data Logger/Monitor is completely powered from the Batteries, and therefore a mains supply is *not* required. Therefore tests are not terminated part way through by a temporary mains power outage. The unit is lightweight and is completely portable. The Data Logger/Monitor may be left on site, unattended, for extended periods of time for data collection. Or used permanently as a Monitor / Alarm system.

The standard Data Logger/Monitor is built to accept up to 9 inputs from Cell / blocs and comes complete with a Master Input Module. (There are options to increase the number of channels up to a total of 127 Channels at the time of ordering). These can all be logged together with "Temperature", "Battery Discharge Current", "Overall Battery Voltage" and "Total Interconnection Voltage". As well as recording all of the inputs, the relative time is also logged, e.g. 1 minute, 30 minutes, 60 minutes etc..

The Data Logger/Monitor has two modes of operation, Battery Discharge and Monitor Mode. In Battery Discharge mode the unit will log all cell/bloc Voltages at programmed intervals as well as "Temperature", "Battery Discharge Current" and "Overall Battery Voltage" and "Total Interconnection Voltage".

The logger is initially set up via a local or remote Laptop / PC, after which the Laptop may be disconnected and the logger will continue to function in its present mode. In discharge test a Laptop may be reconnected after the test has finished and the data collected downloaded to the laptop. In Monitor mode the logger will continue to activate its alarm output contacts should an alarm condition occur. The Laptop may be reconnected at any time for real time updates of all readings and alarm status.

The Logger is housed in a light weight 19 inch Rack mountable, 1U size case (for up to 79 cells) and is very

Cost effective. The unit has been made to be very portable and is a Rugged and Reliable Design. The unit is ideal for the standard 3 and 5 hour discharge tests and long term monitoring.



### Benefits

- Easy to set up.
- Intuitive to use Application software.
- Selectable "End Voltage" from 1.55V to 1.90V per Cell, (or equivalent for blocs), which effectively becomes a LVD function with output to disable a Manatronics Electronic Load. Every Cell / bloc is monitored for "End Voltage", which prevents deep discharge and possible battery damage.
- Common input modules for 2V, 4V, 6V and 12V blocs. (i.e. no need to buy/change/store modules).
- Designed for 12V, 24V, 48V and 110V Battery Systems.



## Features

- Fully programmable Full and Pre alarm conditions with Voltage free outputs, suitable for connection to a **SCADA** (Supervisory Control and Data Acquisition) system.
- Alarm log to view previous alarm conditions with time/date stamp.
- A USB or RS232 Port for connection to a Laptop or PC.
- Option for Ethernet connection can be connected via a Router to the web for remote control / access. May also be fully controlled remotely from anywhere in the world via a dial up modem and either land line or mobile phone. All parameters may be set / monitored. Even a full discharge test carried out with full data download.
- Selectable sample rates from 10 seconds to several hours.

## Logger inputs

- Standard model Records up to 9 Cells/blocs, with an option to expand up to 127 Cells/blocs.
- Temperature probe included to measure either Battery or Ambient Temperature (specify on order).
- Overall Battery Voltage.
- Battery Charge/Discharge Current.
- Optional "Battery Current Transducer" this is a Hall Effect device for measuring Battery discharge or charge currents. Alternatively the discharge current information from a Manatronics Load may be selected.
- Optional Inputs for higher Voltage Battery systems.

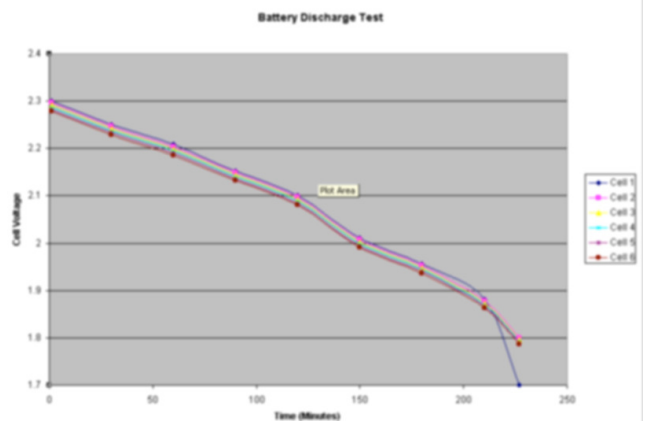
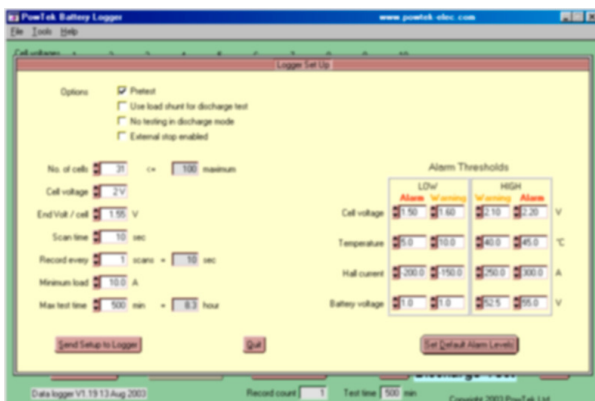
## Hardware

- Non volatile memory (i.e. data is retained even when disconnected from the Batteries).
- Completely powered from batteries, 5W drain, (7W with Ethernet). No mains supply required.
- ESD protection on all inputs.
- OverVoltage Protection on all channel inputs.
- Protected against accidental mis-wiring, (i.e. no high fault currents).
- Remote enable / disable (suitable for UPS control).

## Software

- Supplied complete with all software necessary for control and comms, i.e. National Instruments® front end operating in Windows®. (Installation from CD ROM).
- Real time Alarm status displayed on the Application software.
- Alarms may be reset or armed remotely.
- Reports in Tabular or Graphical using the supplied software Auto Graphing facility.
- Simple output format suitable for "Excel"® spreadsheet or similar.
- Battery Discharge Data and Alarm logs may be saved to HDD or FDD, after download to Laptop or PC.
- The standard unit can store about 10,000 cell/bloc readings with an option to expand this to about 40,000 readings.

Date	Time	Channel	Value
26 Aug	10:15	Cell 84	0.010
26 Aug	10:15	Cell 85	0.010
26 Aug	10:15	Cell 86	0.010
26 Aug	10:15	Cell 87	0.010
26 Aug	10:15	Cell 88	0.010
26 Aug	10:15	Cell 89	0.007
26 Aug	10:15	Cell 90	0.010
26 Aug	10:15	Cell 91	0.010
26 Aug	10:15	Cell 92	0.007
26 Aug	10:15	Cell 93	0.010
26 Aug	10:15	Cell 94	0.010
26 Aug	10:15	Cell 95	0.010
26 Aug	10:15	Cell 96	0.010
26 Aug	10:15	Cell 97	0.010
26 Aug	10:15	Cell 98	0.010
26 Aug	10:15	Cell 99	0.007
26 Aug	10:15	Cell 100	0.010
26 Aug	10:15	Cell 81	0.010
26 Aug	10:15	Cell 82	0.010
26 Aug	10:15	Cell 83	0.010



## DLM – 09 Model Specifications

### Hardware

Standard No. of inputs for cells/blocs 9  
Optional Max No. of cells/blocs 127  
Number of strings Limited only by # channels.  
Logger supply Voltage range: 9.3V – 150V (standard  
Logger) from battery under test.  
Option up to 550V max. The Voltage range for the  
550V model is 37V – 550V.  
Logger power drain: 5W typ. (8W typ. With LAN).  
Operating ambient temp range 0C to +50C  
Front panel indication 7 LED's for Status  
indication

Alarm outputs Full and Pre alarm with Voltage  
free change over contacts. N.O.  
and N.C. provided, suitable for  
connection to a **SCADA** system.

Internal sounder Provided to indicate Full alarm  
condition and other fault  
conditions.

Protection The Logger is protected against  
accidental mis-wiring, (i.e. no  
high fault currents), normal  
operation of the Logger should  
resume when connected correctly.  
All inputs have ESD protection.

Alarm log review Previous 20 full alarm conditions  
including description, reading,  
time/date stamp.

Digital input Remote enable / disable (suitable  
for UPS control), may be  
controlled via Voltage free  
contacts.

Case size 19 inch Rack mountable, 1U case  
size for up to 79 cells/blocs. For  
80 to 127 cell/blocs the case size  
is 2U. Depth 315mm, all models.

Weight 3 kg (for up to 31 cells/blocs).

### Input Modules

Standard Module suitable for 2V, 4V, 6V, 12V  
cells/blocs

Measurement range 0 - 2.5V  
Resolution 3mV

Measurement range 0 - 7.5V  
Resolution 8mV

Measurement range 0 - 15V  
Resolution 15mV

Accuracy +/-0.17% from 10C to 30C  
All Module outputs have short-circuit protection, non-  
destructive.

### Current Transducer (Hall Effect Sensor).

Measurement range -400A to +400A  
Resolution 0.8A  
Accuracy 0.55% from 10C to 30C

### Overall Battery (String) Voltage

Measurement range 0.1V to 150V (standard  
Logger). Option up to 550V.  
Resolution 0.15V  
Accuracy 0.11% from 0C to 40C

### Temperature probe.

Measurement range 0C to 50C  
Resolution 0.05C  
Accuracy +/- 0.5C from 10C to 30C

Discharge Current from Manatronics Load e.g. BD12  
Series or EL12 Series (where selected from the  
software application).

Measurement range 0A to 500A  
Resolution 0.5A  
Accuracy 0.26% from 10C to 30C

### Charge / Discharge Test Data Storage.

With the standard non-volatile memory.  
about 10,000 readings total.  
With the optional extra non-volatile memory.  
Option 2 memories about 20,000 readings total.  
Option 3 memories about 30,000 readings total.  
Option 4 memories about 40,000 readings total.

Sample rate 10 Sec to several hours  
(selectable in 10 and 20 sec increments etc.)  
Max Test time 8.3 hours / infinite.

### Control Comms

Interface USB mini or RS232  
Baud rate 9600.  
Isolation Optically coupled/isolated  
Optional Ethernet (LAN)

### Application software for Data Logger Control

Application written in National Instruments ®  
Operating Environment Windows ®

Specifications herein, are subject to change without notice. This  
publication supercedes and replaces all information previously  
supplied.

## **Options:**

- Ethernet (LAN) port / RS232 / USB.
- Option for higher Voltage, up to a max of 550V. The standard Logger operates up to 150V.

## **Ordering Information**

**Model number: DLM –XXX – RS/E/USB – 150V      (for 150V DC version)**

**Model number: DLM –XXX – RS/E/USB – 250V      (for 250V DC version)**

**Model number: DLM –XXX – RS/E/USB – 550V      (for 550V DC version)**

XXX = the number of channels or inputs

RS = RS232    E = Ethernet(LAN)      USB = USB

\* Please be sure to specify the max Operating Voltage that you require.

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## **Valid options for connection type:**

**Model number: DLM –XXX – RS – ???V**

**Model number: DLM –XXX – USB – ???V**

**Model number: DLM –XXX – RS-E – ???V**

**Model number: DLM–XXX – USB-E – ???V**

**Quality Assured Company by AS/NZS    ISO9001:2000**

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