EAGLE EYE
POWER SOLUTIONS

Battery Monitoring Solutions for NERC PRC-005-02

EE-NERC-BMS Cabinet Solution

Product Overview

An all-in-one battery monitoring solution designed to meet **NERC Standard PRC-005-2 - Protection System Maintenance.** This standard requires utilities to document and implement programs for the maintenance of all protection systems affecting the reliability of the BES. Battery systems are a critical part of the BES and within Standard PRC-005-2, battery maintenance compliance falls under *Table 1-4(f) "Exclusions for Protection System Station DC Supply Monitoring Devices and Systems" with no maximum maintenance interval.* This table outlines that "no periodic maintenance" is required if **monitoring and alarming** occures for the following component attributes:

- *High and low battery charger voltage*
- *Electrolyte level in every cell*
- *Unintentional DC ground*
- *Float voltage*
- *Battery string continuity*
- *Intercell and/or terminal resistance of the entire battery*
- *Internal ohmic value against relative baseline*
- *Cell/unit internal ohmic value of every cell*

The EE-NERC-BMS satisfies each of these component attributes by monitoring alarming all of the parameters listed in *Table 1-4(f)*.

Key Benefits

- Real-time monitoring eliminates required on-site maintenance activities such as routine manual battery testing.
- Included battery management software allows remote monitoring and alarming of all battery systems. Generate reports and view historical measurement data at any time, such as during a NERC audit.
- Designed for use in utility environments, the EE-NERC-BMS is available in an industrial enclosure.
- Installation can be performed while the system is online, eliminating the need to disconnect battery hardware or use a backup system.
- Ripple removing algorithm to filter out noise and produce accurate results.

Electrolyte Level Sensors Installed on VLA Utility Battery
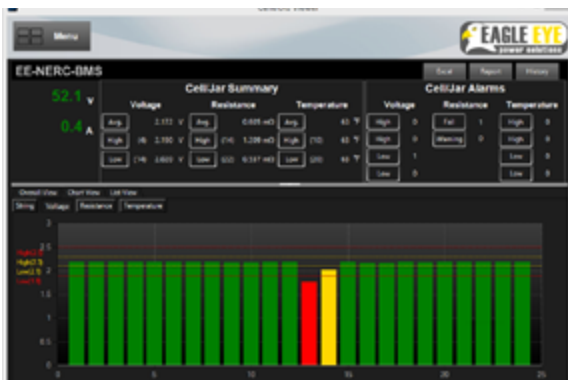
Battery Management Software

- Displays and records string voltage, current, cell/unit voltage, internal/connection resistance, cell/unit & ambient temperature
- Alarming for all measured parameters as well as electrolyte level, electrolyte temperature, positive & negative grounds
- Trending analysis of measured parameters on a string and cell/unit level with colored, easy to read graphs
- PDF and Excel reporting
- Automatically record, save, & playback discharge events

EE-NERC-BMS System Composition

BQMS Battery Monitoring System

Measures the following parameters: string voltage, string current, cell voltage, cell/connection resistance, cell/unit temperature and ambient temperature. Communicates to server.

ELM-Series Electrolyte Level & Temperature Monitor (Optional)

Provides per-cell electrolyte level and temperature monitoring. Sensors are attached to each cell by a non-harmful adhesive. In the event of a low level or high temperature alarm, the contact closures on the ELM controller will communicate to the BQMS and the alarm condition will be displayed in the software.

GFM-100 Ground Fault Monitor (Optional)

Displays the ground offset and the positive and negative voltage of a battery system. In the event that a ground is detected, the contact closures will communicate to the BQMS and the alarm condition will be displayed in the software.

Technical Specifications	
Measurement Range	Battery Capacity: 5 – 6,000 Ah System Voltage: 0 – 576 VDC Cell/Unit Voltage: 2, 4, 12 Volts Current: ±10,000 A Temperature: 0 – 80°C (32 – 176°F)
Accuracy / Resolution	System Voltage: ±0.5% / 0.1 V Current: ±2% / 0.1 A Cell/Unit Voltage: ±0.5% / 0.01 V Internal/Conn. Resistance: ±2% / 0.001 mΩ Unit Temperature: ±2% / 0.01 ° Electrolyte Level: ±2 mm (± 0.08") above or below line
Communication	• TCP/IP to Proprietary Software • TCP/IP Modbus
External Alarming	Form C Contact
Operating Environment	Temperature: 0 – 55°C (32 – 131°F) Humidity: 0 – 80% RH
Power Requirements	Input: 43 – 250 VDC / 110 – 220 VAC
Enclosure Specifications	NEMA 4/12/13, 20 x 20 x 6in (HxWxD), wall mount, carbon steel, ANSI 61 gray, light-textured polyester powder finish, single-door, 1/4-turn semi-flush oil-tight latch, polycarbonate window

System Includes
- BQMS, ELM, and GFM monitors
- Electrolyte level monitoring sensors
- All installation cabling & hardware
- Centroid Snet 2 battery management software
- Print installation instructions
- Free training on operation
- **Optional:** Pre-wired enclosure for BQMS, ELM, & GFM monitors

Ordering Information

Model No.	Description
EE-NERC-BMS	Battery Monitoring Solution for NERC PRC-005-2