

Sentry-6002NEMA is a proven battery monitoring system for power plants and substations with vented (flooded) or valve regulated lead acid, or Nickel Cadmium batteries. The core measurement unit has continuously evolved from our first generation BM6500 model in 1996 (many are still in service), due to our focused effort to make it precise, reliable, and easy to install and use. Our rich experiences with IT security, data management, SCADA integration and NERC report generation ensures a smooth implementation, at any scale.

Sentry-6002NEMA has been installed into many utility companies across North America and worldwide to meet the IEEE standards and latest NERC PRC-005 compliance requirements. (*Contact BatteryDAQ for references.*)



IEEE Std. 1188 - 2005: Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications ([IEEE Link](#))

IEEE Std. 450 - 2010: Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications ([IEEE Link](#))

Standard PRC-005-2 — Protection System Maintenance ([NERC Link](#) or [BatteryDAQ Fulfillment Link](#))

Distinguishing Features

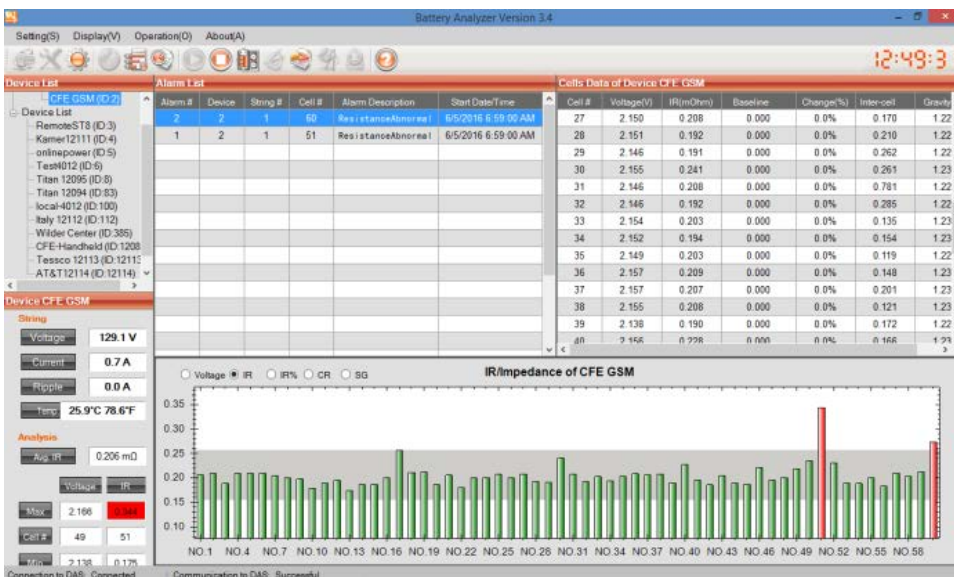
- Ultra precise Internal Resistance for each cell detects dry-out, electrolyte level low and deterioration, as well as capacity loss long before a problem occurs.
- Discriminate inter-cell resistance to identify connection problems without a discharge.
- IP65 (NEMA4) grade protection allows unit(s) to be installed inside the battery room, without concern of corrosive environment. Compact design allows for easy installation on a rack or wall.
- Automatic discharge capture to record cell level data for planned load test and unplanned power outage.
- No mechanical scanning relays, resulting in high reliability.
- Plug & play HMI (optional) allows field service without a computer.
- Industry standard Modbus-RTU, Modbus-TCP and SNMP communication.
- Powerful Battery Analyzer software and 1-click Excel “Auto-fill” NERC report generation.
- Designed, manufactured, and supported by BatteryDAQ in Maryland USA.



Maintenance Activity	BatteryDAQ Monitoring Solution	Coverage
Check Charger Output and Environment	Continuous monitoring of DC supply voltage (Bus Voltage), float charge current, ripple current, charge/discharge current, ambient temperature, and pilot battery temperature.	√
Verify Cell Float Voltage	Voltage monitoring for each cell. Color-coded bar graph display to easily identify cells with low/high voltage.	√
Measure Internal Ohmic Value for Each Cell	Precise internal resistance online measurement for each cell. Data is more consistent than manual measurement.	√
Inspect Electrolyte Level	Low electrolyte cell will be identified/indicated with high Internal Resistance.	√
Verify Battery Terminal Connection Resistance	Precise connection resistance monitoring can identify connection/corrosion problems, without a discharge. More reliable than visual inspection.	√
Verify Battery Continuity	Active load to test string continuity. Any continuity issue will be identified even when the voltage and internal resistance may appear normal.	√
Prepare NERC Report	“1-Click” to prepare NERC report on Excel sheet filled with realtime data Full history archive for trending and audit	√

Alarm Settings and Events

- String/Bus voltage high and low alarm
- Temperature high
- Individual battery voltage high and low alarm during floating charge
- Individual battery voltage low alarm during discharge
- Individual cell resistance (including connection resistance) high alarm
- Individual cell resistance warning as a percentage of alarm threshold



Specifications

<p>Battery Bank Working Range</p> <p>Compatible with Vented Lead Acid/VRLA/NiCad</p> <p>System Voltage</p> <p>Sentry-6002NEMA-120: 90 – 150V</p> <p>Sentry-6002NEMA-240: 180 – 300V</p> <p>Powered by battery bank, 90 – 300V</p> <p>Maximum power consumption: 10W</p> <p>Cell/Block Voltage: 2V, 4V and 1.2V NiCad</p> <p>Factory set for 60x2V, 30x4V, 100x1.2V per unit (User can change the number of batteries with the HMI tool.)</p> <p>Battery Capacity: 10 to 6,000Ah</p> <p>Current Range: +/- 10,000A (with proper CT)</p>
<p>Measurement and Accuracy/Resolution</p> <p>String Voltage: 0 – 300V, 0.1% / 0.1V</p> <p>DC Current: 0.1% / 0.1A + sensor accuracy</p> <p>Ripple Current: RMS ripple current, 0.1A resolution</p> <p>Cell/Unit Voltage: +/- 3V (+/-6V for 4V) 0.1% / 0.001V</p> <p>Temperature: 1 ambient temperature sensor, 2 pilot sensors</p> <p>Range: -40 to 85°C (-40 to 185°F) Accuracy: 1°C</p> <p>Internal Resistance: 0 to 3mΩ, 0.005 mΩ resolution</p> <p>Contact Resistance: 0 to 3mΩ, 0.005 mΩ resolution</p>
<p>Current Transducer Size</p> <p>Default CT: SCKT-300A, measurement range +/- 450A, window size D-35mm.</p> <p>Optional split core CT: CY5-300A 64mmx16mm, CY10-300A 104mmx40mm</p>
<p>Operating Environment</p> <p>Temperature: -20C to 65°C (-4 – 149°F)</p> <p>Humidity: 0 – 90% RH</p>
<p>Enclosure Dimensions and Unit Weight</p> <p>NEMA 4/4X/12/13, EN/IEC60204-1 and 60529 Type IP66</p> <p>13.50" (H) x 11.27" (W) x 7.18" (D)</p> <p>343mm (H) x 286mm (W) x 182mm (D)</p> <p>10 lbs per unit (about 4.5kg)</p>

<p>Communication and Networking</p> <p>Serial Ports:</p> <p>Isolated RS-232C and RS-485 interface</p> <p>MODBUS RTU, 9600-8-1-None</p> <p>RS232C port supports Plug & Play HMI touch screen display</p> <p>Ethernet:</p> <p>Onboard DTU, embedded web page with battery data and graph, compatible with Battery Analyzer software</p> <p>Modbus-TCP for SCADA integration</p> <p>Wi-Fi (Optional)</p>
<p>Alarm Outputs and LED indication</p> <p>Dry Contacts:</p> <p>Service Alarm (Normal Close, 0.1A capacity)</p> <p>Urgent Alarm (Normal Close, 0.1A capacity)</p> <p>LED Indication:</p> <p>Dual-color LEDs for status</p> <p>Orange LED for service alarm</p> <p>Red LED for urgent alarm</p>
<p>Battery Analyzer Software</p> <ol style="list-style-type: none"> 1) Display battery data from remote sites 2) Analyze data and manage alarms 3) Achieve historical data for trending and tracing 4) Capture discharge events
<p>Excel NERC Report Workbook Features</p> <ol style="list-style-type: none"> 1) To manage hundreds of battery banks remotely in one Excel workbook 2) To automatically analyze battery data with set thresholds and highlight rows with an alarm 3) To automatically prepare NERC report with real-time battery data and date/time stamp 4) To highlight weak cells on the NERC report 5) To archive historical battery data 6) No database required 7) Transparent code for IT security inspection 8) Easy to add/remove/enable/disable a battery bank 9) Easy to set alarm thresholds for different battery types without tedious setting on each bank. 10) To utilize convenient Excel functions such as sorting with any column.


*Specifications subject to change without notice



Ordering information

Model	Sentry-6002NEMA-120	Sentry-6002NEMA-240	Sentry-6002NiCad-120	Sentry-6002NiCad-240
Battery Configuration (Specify cell number in order)	60 x 2V (56 to 60 cells)	120 x 2V (100 to 120 cells)	Up to 100 cells per unit	Up to 200 cells Monitoring every two cell
Sentry units	ST-6002 x 1	ST-6002 x 2 (Unit A + Unit B)	ST-6002-NC120 x 1	ST-6002-NC240 x 1
Connection Kit	1) Full set of terminal plugs 2) 10A QDC leads (5) 3) (3) Temperature sensors, (3) stainless steel tape. 4) (1) CT cable with 6FT cable.			
Current Transducer	SCK12T-300A D35mm default, or split core CT: CY5-300A 64mmx16mm, CY10-300A 104mmx40mm			
Tab washer	130 pcs per unit (specified size 6mm/8mm/10mm)			
Sensing leads	130 pcs fused QDC leads per unit			
Harness (Optional)	Pre-assembled 12-conductor cable with plug, default 30FT each (x12), labeled #1 to #12. Sampling plugs and ferrules are assembled with cables.			
HMI (Optional)	HMI touch screen for onsite display, or as a service tool			
Electrolyte Level Monitor (Optional)	ELM-Series Electrolyte level low or temperature high alarm. Signal can be fetched from ELM controller or Sentry-6002 via Modbus-TCP.			
Ground Fault Detector (Optional)	GF-100 Ground Fault Detector Intelligent ground fault detection, 100 to 300V range, default sensitivity 5K ohm.			

Site Survey for Power Plants and Substations



Please complete this survey in a Word Document, replacing or attaching photos, and forward to BatteryDAQ for accurate job preparation. (tech@batterydaq.com)

<https://batterydaq.com/site-survey-power-plants-substations/>

