



Vigilant Battery Monitoring System



Product Overview

The Vigilant is a next generation battery monitoring system designed to continuously measure, record, and trend key parameters of critical backup battery systems. Automated measurements stored daily can reduce the need for site visits and manual testing of battery systems.

Vigilant systems include advanced sensors that measure voltage, resistance, interconnection resistance, and temperature of each cell without any adverse effects to the battery. Optional electrolyte level sensors can be added to identify low electrolyte level on a per-cell basis.

The components of the Vigilant system are widely compatible with most flooded (VRLA), sealed (VRLA), and nickel-cadmium (Ni-Cad) battery types.

Key Features

- **One-click reporting:** Quickly create reports with a single click from the web-interface.
- **Built in web-interface:** Data is recorded and stored on the Vigilant monitor, eliminating the need for a 24/7 network connection.
- **Unobtrusive:** System does not affect battery performance in any way.
- **Battery alarming:** Alarm against user-defined battery thresholds, available via Modbus and dry contacts.
- **Watchdog alarming:** Dedicate watchdog circuit will restart the CPU upon hangup with a secondary circuit for alarming.
- **Fleet management software:** Aggregate a fleet of systems in a single interface with a bird's eye view of systems in alarm.



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Monitor Report

Battery Alarm Summary

Battery Voltage	Warning	Cell Voltage	Fail
Continuity	Pass	Cell Resistance	Pass
Post Temperature	Pass	Electrolyte Level	Pass
Ground Fault	Pass	Unexpected Restarts	0

Summary Data

Battery Voltage (V)	Battery Current (A)	Ambient Temp (°F)
25.07	-1.12	74.1

Battery & Strap Data

Min	1.26 (Cell 2)	0.17 (Cell 2)	0.17 (Cell 2)	68.05 (Cell 15)	11.98 (Cell 3)
Average	1.26	0.30	0.30	70.59	55.80
Max	1.26 (Cell 19)	0.42 (Cell 18)	0.41 (Cell 18)	73.65 (Cell 20)	211.38 (Cell 6)
Cell ID	Cell Voltage (V)	Cell Resistance (mΩ)	Baseline Cell Resistance (mΩ)	Post Temperature (°F)	Strap Resistance (μΩ)
1	1.26	0.34	0.33	72.47	cable connection
2	1.26	0.17	0.17	70.90	49.02

Vigilant Web-Interface



Vigilant Installation to Flooded (VLA) Cells

Measured Parameters

- Float voltage
- Float, charge, & discharge current
- Cell/unit voltage
- Cell/unit resistance (mΩ)
- Interconnection resistance (μΩ)
- Cell/unit temperature
- Electrolyte level
- Ground fault status
- Ripple voltage

Vigilant System Components

Each Vigilant has the following main components:

- **Monitor:** 1 per battery bank. Records and stores measurement data, interfaces with network. Powered by the charger or external supply.
- **Sensors:** 1 per cell/unit. Pulses battery to record voltage, resistance, and temperature. Powered by the monitor.
- **Wiring harness:** 2 per cell/unit. Wired connection from sensor to battery posts.
- **Connection hardware:** 2 per cell/unit. Tab washer or clamp for physical connection of wiring harness to battery posts.
- **Electrolyte level sensor (optional):** 1 per cell. Measures electrolyte level.



Vigilant Installation to Sealed (VRLA) Cells



Monitor



Sensor



Wiring Harness



Connection Hardware



Electrolyte Sensor

Technical Specifications

Sensor Performance	
Voltage Measurement Range	0.05 – 18.5VDC
Voltage Resolution	± 1mV
Post Temperature Resolution	± 1°C
Cell Resistance Resolution	± 7μΩ
Strap Resistance Resolution	At 100μΩ strap r: ± 2μΩ
Float Current Resolution	At 100μΩ strap r: ± 1mA

Communication	
Onboard Storage	SSD
Memory Capacity	20 years of battery data average for 60-cell battery
Local Data Download	Via RJ45 network connection
External Protocols	Modbus TCP, DNP3 (in development)
Alarm Relays	(2) Dry contact output (300V, 1A)
Network Interface	RJ45 Ethernet

Electrical Data	
Monitor Electrical Supply (from DC supply)	36 – 72VDC 90 – 300VDC 280 – 580VDC
Other Power Options	24VDC mains input (for other voltages w/adaptor)
Sensor Electrical Supply	From Monitor (via comms)
Sensor Supply Current	Operating: 6mA With ELM: 10mA
Isolation I/P to O/P	1,000VDC
Test current @ 2.5V	20A

General	
Dimensions (W x H x D)	Sensor: 2 x 2 x 1 in. (50 x 50 x 25 mm) Monitor: 10 x 8.3 x 3.2 in. (255 x 210 x 80 mm)
Operating Temp. Range	-4 – 70 °C (25 – 158°F)