

Understanding real-time battery state of health and



battery environmental conditions is paramount to network reliability and backup power system integrity. Without this information there is substantial risk to meeting run times, maximizing battery useful life as well as insuring batteries never reach thermal runaway.

The BatteryInformer Smart 501 onboard discrete battery monitoring device provides a new level of cost effective battery management whereby indicating a batteries true end of life.

The Smart 501 provides continuous measurement of battery state of health (SOH) for in-service, float charge, lead acid batteries used in a standby backup power application. The Smart 501 establishes a unique baseline Ohmic value for each battery that is hard coded into the device. This measured baseline value eliminates inaccuracies with generic averages and theoretical baseline values that can vary from battery to battery by as much as $\pm 10\%$. As a result the Smart 501 is one of the most accurate Ohmic battery predictive devices available.

The Smart 501 in addition to Ohmic value trend analysis measures **individual battery temperature**, and **battery voltage**. Utilizing temperature, Ohmic (SOH) change and voltage, the Smart 501 provides battery end of life and operational warning notification through the device visual display, LED illumination, and a dry contact alarm. These indications provide the necessary notification to access and replace batteries at the appropriate time the need for periodic review of data.

BI-Smart-501-12V-NC



Technical Features:

- Battery specific baseline Ohmic determination
- Ohmic testing every 60 seconds
- Discrete battery temperature measurement
- Standard Normally Closed (NC)
- Patented

Compliance and Safety:

- CE
- NEBS Version 4, Level 3
- Telcordia Technologies GR-1089-CORE, Issue 6, May 2011 Sections 2.1, 3, 7, and 9
- Telcordia Technologies GR-63-CORE, Issue 4, May 2012 Sections 4.1, 4.2, 4.3, and 4.4
- Telcordia Technologies Special report SR-3580, Issue 4, June 2011 NEBS - Level 3

Display Information

Scroll - 2 seconds between values



% SOH	Base Ohmic	Current Ohmic	Voltage	dy	Cd	Temp
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%SOH – Percent State of Health (100% - 0%)B

dy – Calendar days of operation

Cd – Adjusted days based on temperature exposure above 79°F/26°C

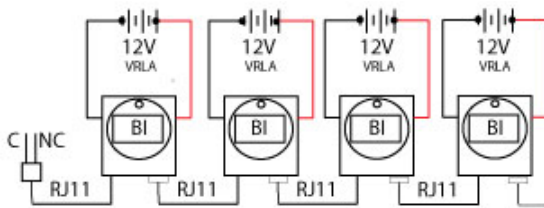
Alarm Table

Event	Alarm Value	Contact Closure	LED	Display Icon	Display Action
Replace SOH	<0% (80% Rated Capacity)	✓	Blink Red 4x (1 sec)		Icon On
Low SOH	<30%		Blink Red 2x (4 sec)		Icon On
Normal SOH	>30%				

Specifications

Nominal voltage	12V DC
Operational voltage range	9 - 16V DC
Power consumption	<4mAh (sensor)
Operating temp	-15°C to 60°C
Battery size / type	20 to 200 Ah / VRLA
Battery connection	8mm Ring Terminal Lead Length, 33cm or 88cm or 44mm
Communication connection	RJ11, 2 conductor, 30cm
Alarming	Voltage Free, Polarity sensitive opto-isolated diode contact closure / switch Normally closed (NC): 12V-24V 100 mA continuous Opto-isolated relay capable of voltage biases from 4-60VDC up to 60mA
Display	LED Red-Light and LCD - Digital, graphical, icons
Test frequency	Every minute
Test time	~0.03 sec.
Reverse wiring protection	Yes
Dimensions	55mm x 55mm x 19mm (sensor)
Case material	ABS Plastic (IEC 68-2-32)
Water resistance	IPX-5
Mounting	Surface mount (adhesive/mechanical)

Application – Example Installations (NO)



Simply connect to the battery (+) and (-) terminal, daisy chain the alarm leads to each unit and connect to a (NC) alarm contact. Multiple strings are chained together for a single alarm connection point

Method of Operation: (“How it works”)

The BatteryInformer measures battery conductance ($1/r$, Mho) every 60 seconds using a single DC pulse method. The largest consistent conductance value (maximum Mho) value is stored as the reference value to which subsequent measurements are compared. In addition to current Voltage and Mho value, the BatteryInformer displays calculated State of Health (SOH%) after each test interval. The current battery Voltage, Mho and SOH% scroll on the display continuously. When the measured conductance value drops to 50% of the reference value, the BatteryInformer will indicate end of life (SOH = 0%).

