The CellMetrix battery monitoring system is a breakthrough in management of remote battery-based power systems. Based on PBT’s more than 10 years of field experience, with over 300,000 batteries in over 75,000 sites, this new system offers the combined advantages of performance prediction, easy installation and low cost.

VRLA batteries are prone to a phenomenon called thermal runaway. If the battery is subjected to stresses that cause it to become abnormally warm, or sometimes due simply to normal aging, the charge current can rise dramatically. This triggers a regenerative electrochemical process that causes the battery to heat up even more, raising the temperature even higher. If left unattended, this process can ruin the battery, or worse, can cause an acid leak or battery explosion. In addition, VRLA batteries draw more float charge current as they age naturally. This increase in float current can also trigger a thermal runaway.

The CellMetrix system continuously monitors float charging current, ambient temperature and battery temperatures, at multiple points. If any battery temperature rises above the ambient temperature by an amount that exceeds user-defined thresholds, an alarm condition is generated, SNMP traps are sent and a contact closure on the control unit is activated. If any float current exceeds user-defined thresholds, an alarm is also signaled, in a similar manner.

The real power of the CellMetrix system is in its intelligent correlation algorithms. There are three special alarms that are generated algorithmically. If, at any time, any battery’s ambient-referenced temperature exceeds a user-defined value AND the string’s float current exceeds a user-defined value, a “critical event” alarm is generated. If the time since a recent discharge or recharge event is more than a user-defined interval AND any battery’s ambient-referenced temperature exceeds a user-defined limit AND the associated float current has risen a user-defined amount from the user-defined baseline, a “thermal runaway” alarm is generated. If the time since a recent discharge or recharge event exceeds a user-defined interval AND the float current exceeds a user-defined value, BUT the temperature is below a user-defined value, a “battery aging” warning alarm is generated.

CellMetrix
Non-intrusive Battery Monitoring

- Monitors up to six float current sensors
- Monitors ripple current
- Monitors up to 48 temperature points
- Generates alarms on any current measurement and any temperature measurement
- Uses intelligent algorithms to detect critical temperature problems, thermal runaway and battery aging
- Is non-intrusive – No electrical connections to the battery plant
- Uses SNMP management interface
- Has programmable alarm contact outputs
- Accessed through a comprehensive web interface – no software required!
- Offers e-mail alarm signaling, internal data logging, Telnet remote configuration and much, much more
- Patent applied for technology
CellMetrix
System Components

Site Control Unit
Model PBT-PA-SC3B-CM

- The “intelligence” of the CellMetrix system
- Collects measurements from the sensors, makes alarm decisions and sends SNMP traps and local contact closure alarms
- Built-in web system, e-mail, Telnet and more.

Temperature Sensors
Model PBT-TS-1

- Precision temperature measurements
- Up to 48 temperature sensors per CellMetrix system
- Allows measurement of temperature relative to room temperature

Float Current Sensor System
Model PBT-PA-CCS-1

- Precision current measurements to below 10 mA with 1.0 mA resolution
- Can monitor one string per sensor or multiple strings
- Up to six current sensors per CellMetrix system

Temperature Sensor Aggregator
Model PBT-PA-RIM-4

- Interfaces between site control unit and up to six precision temperature sensors
- Up to eight RIMs per site control unit for a total of 48 sensors

Preliminary data subject to change. Rev 1.0