

## CELLGUARD GEN-III Telco Battery Management Sensor System

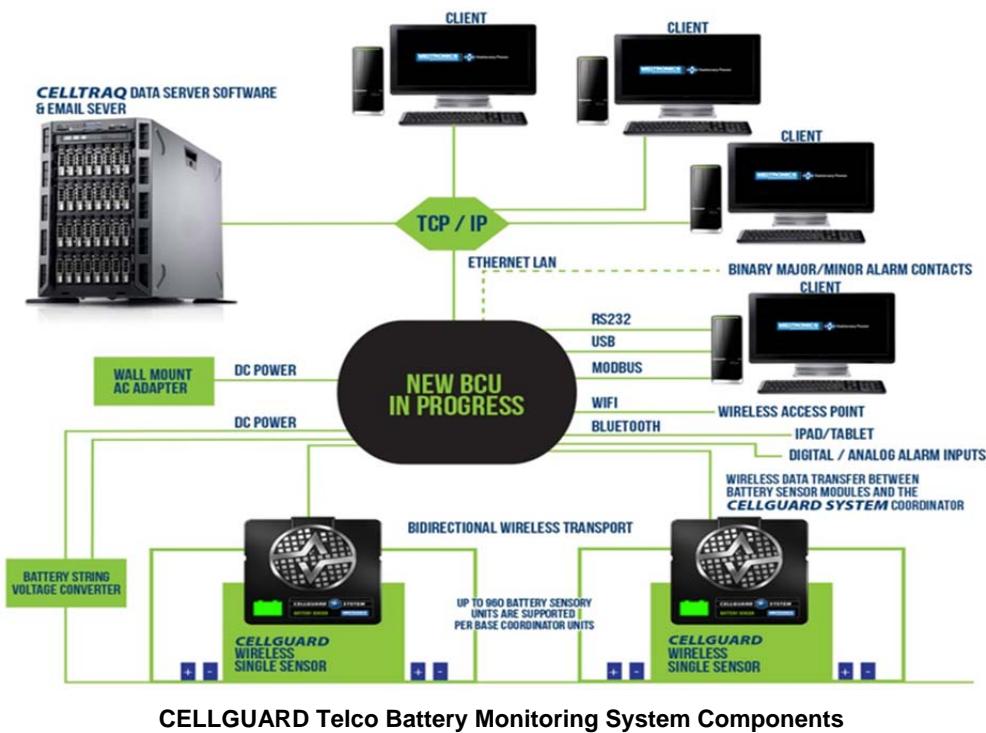
The CELLGUARD Telco Battery Monitoring System is a next generation Battery Management System (BMS) that integrates wireless communication technology with Internet networking to provide a complete monitoring, battery health analysis, and alarm reporting solution.

CELLGUARD deploys wireless communication technology within a Private Area Network (PAN) to monitor key parameters from sensors that are connected to each battery in the string. A battery string voltage converter, which connects to the battery string, converts battery string voltage to power the Base Coordinator with protective power.

All sensors communicate wirelessly and are managed by a central Base Coordinator Unit (BCU), which manages testing and collects data for state of health battery analysis. This data is posted via email to the CELLTRAQ server, which analyzes data and provides warning and alarms to WEB/Intranet based users.

### Features and Benefits

- Provides accurate and reliable indication of battery state of health through monitoring and analysis of battery voltage, temperature, and conductance.
- Detects specific battery deterioration and battery string failures, and provides automatic alarms via dry alarm contacts.
- Collects and analyzes battery and battery string health indicators to provide detailed battery health status reports.
- Eliminates the manual time and cost consuming maintenance programs with programmed battery performance testing and reporting through the WEB/Intranet. In addition, CELLGUARD provides local application access with real-time testing control and immediate battery health information
- Battery state of health indicators are reported to a remote server with one way outgoing email, without compromising security of the local area network
- Battery state of health indicators and battery measurement data are accessible via a 4-wire MODBUS interface
- Lowers cost of ownership from installation to its product life cycle. Wireless sensors reduce time and cost of installation and maintenance. CELLGUARD also eliminates the need for dedicated computers to monitor each battery cabinet.



**Base Coordinator Unit (BCU)**

- Manages battery sensor test activities
- BCU monitors up to 10 battery strings, with 2400 total batteries, and supports up to 240 batteries per string
- Collects test data and communicates with CELLTRAQ server via TCIP/IP
- Captures battery voltage and temperature when battery string
- Powered by the battery string voltage converter via battery string power

**Single Battery Sensor Module**

- Battery level monitoring module includes Conductance, Voltage, and Temperature for each mono-block/cell /jar
- Sensors compatible with 2V & 12V batteries
- Test circuitry utilizes patented Conductance technology to provide the most accurate, efficient, and non-invasive method possible for monitoring a battery's state of health
- Designed to work within telecommunications, power utility, and other reserve power applications
- Connects to and is powered from the monitored battery, minimizing wiring, installation costs and maintenance

<u><b>Battery Level Measurements</b></u>	<u><b>Wireless Architecture</b></u>	<u><b>System</b></u>
<b>Conductance</b> <b>2V Sensor Range:</b> 100 to 15,000 Siemens ( Mhos)	Communication between BCU, and Sensors is IEEE 802.15.4 Compliant RF transport @ 2.4 GHz	Number of Batteries: 2400 Max Number of Batteries per String: 240 Max Maximum Number of Strings: 10 Max
<b>12V Sensor Range:</b> 100 to 4,200 Cell Mhos	Sensor/BCU Transmit Pwr: +8dBm (6.3 milli-Watts)	
<b>Test current:</b> 2V Sensor, Approx. 1.5 Amps RMS 12V Sensor, Approx. 0.6 Amps RMS	<b>Power Requirements</b> Base Coordinator Unit Module Powered by Battery String Voltage Converter, or 9 V DC wall plug adapter (optional)	<b>Environmental</b> Regulatory Compliance FCC, CE, RoHS, WEEE compliant
<b>Voltage</b> 2V Battery Accuracy: +/- 20 mv 12V Battery Accuracy: +/- 20 mv	<b>Battery String Voltage Converter</b> Powered from the battery string	<b>Operating Temperature</b> ( 0° C to +65° C )
<b>Temperature (negative post)</b> Range: 0° C to +65° C Accuracy: +/- 2° C	<b>Sensor Power</b> Powered from the monitored mono-block / cell / jar	<b>Storage Temperature</b> ( -10° C to +80° C )
<b>Communication Interfaces</b> Ethernet-TCP/IP @ 100 Mbps  4x USB-A USB-B virtual comport (57.6 kps) w/ cable adapter  USB Virtual Communications Port	<b>Protection</b> <b>Sensor ( 2 V, 12V )</b> Test load and power paths are fused	<b>Physical Dimensions</b> <b>BCU - Base Coordinator Unit</b> 7.802 in L, 4.472 in W, 1.443 in H 191.18 mm L, 113.6 mm W, 36.65 mm H
<b>Alarms</b> Major & Minor Form C binary/dry contact with alarm inputs and outputs	<b>Battery String Voltage Converter</b> Power leads fuse protected	<b>Battery String Voltage Converter</b> 4.006 in L, 2.5000 in W, 1.094 in H 101.6 mm L, 63.5 mm W, 27.79 mm H
		<b>Battery Sensors</b> 2.635 in L, 2.646 in W, 1.066 in H 66.92 mm L, 67.21 mm W, 27.08 mm H



Pursuant to FCC 15.21 of the FCC rules, changes not expressly approved by Midtronics Inc. might cause harmful interference and void the FCC authorization to operate this product.

This product complies with FCC OET Bulletin 65 & Industry Canada's RSS-102 radiation exposure limits set forth for an uncontrolled environment. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

This device complies with Part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause harmful interference. and (2) this device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à des règlements d'Industrie Canada exempts de licence standard RSS (s). Son fonctionnement est soumis aux deux conditions suivantes: (1) Ce dispositif ne doit pas causer d'interférences nuisibles, et (2) cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant entraîner un fonctionnement indésirable.

**The module shall only be installed on a sensor or BCU directly to the circuit board with no wires from the circuit board to the module.**

**When installed in the BCU, there shall be a label on the BCU as follows:**

Contains Transmitter Module  
Model: MDX-ZIGB-G3 FCC ID: Y6O-MDX-ZIGB-G3 IC: 9453A-MDXZIGBG3

**FCC ID: Y6O-MDX-ZIGB-G3**

**IC: 9453A-MDXZIGBG3**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

**S/N:**

**MAC:**





When installed in the Sensor, there shall be a label on the sensor as follows:



The following Label Shall be on the Module

