

LIFELINK® SPECIFICATIONS

SYSTEM LEVEL MEASUREMENTS

DC System Voltage:

Range: 18V DC – 600V DC
Accuracy (System): +/- 0.05%
Full range: +/-0.1%

DC System Input Protection:

2 mOhm min.
0.5W Flame-Proof Series Resistor
Rated to 1,000V

Ambient Temperature:

Range (ambient): -30°C to +75°C (-22°F to +167°F)
Accuracy: +/-0.5 Degree C (@ ambient temperature probe)

Charge/Discharge:

Current Range: 0 to 5,000 Amps
Accuracy: +/-0.5%, plus clamp accuracy

SYSTEM FEATURES

Discharge Detection:

Via system negative current

Discharge Categories:

Short Discharges - Customer Defined Duration
(in 1.0 minute increments)
Long Discharges - Duration Exceeding Short Discharge

Discharge Record:

Separately logs long and short discharges
Cumulative energy from all discharges (in kWh)
Discharge Event Log (up to 4000 entries) consisting of:
- Discharge Number
- Discharge Date/Time Stamp
- Maximum Discharge Current
- Discharge Duration

Short discharge definition:

Customer defined interval (in 1 minute increments)

Total discharge energy:

Cumulative Energy from all discharges (KWH)

Local Alarm Indicators:

- Major Alarm
- Minor Alarm
- High Temperature
- Equipment Failure

Alarm Priorities:

Major; Minor (Customer Defined)

Other System Alarms:

- Impedance Alarm
- Equipment Failure

Custom Alarm Inputs:

Up to 6 discrete inputs with customer defined priority

System & Battery Performance Sampling:

- System Voltage
- String(s) and Total System Current
- Ambient Temperature
- Battery Voltage

ELECTRICAL PARAMETERS

Server supply power requirements:

15V AC - 24V AC (AC/AC adapter provided)
15V DC - 58V DC (customer source)

DC power consumption from monitoring system:

Less than 0.1 Watt/battery probe (Maximum 200 probes)

ENVIRONMENTAL SPECIFICATIONS

Operating temperature:

-30°C to +45°C (-22°F to +113°F)

Storage temperature:

Server: -40°C to +75°C (-40°F to +167°F)
Probes: -40°C to + 85°C (-40°F to +185°F)

Humidity (probes):

Relative Humidity 5% - 100%

Humidity (server):

Relative Humidity 5% - 90% (no condensation)

REGULATORY AND TESTING STATUS

Enersafe products are designed to meet the following:

- UL1778
- UL1950
- UL94V0
- CSA 22.2
- Telcordia GR-1515-CORE
- NEBS, Level 3.GR-1089, CORE (FCC level)
- CE for Safety and Emission Directives

Regulatory Approval:

EN61326 Class A, FCC Part15 Class A, EN61000

FOR ADDITIONAL INFORMATION

Detailed documentation is available at the Enersafe web site:

www.enersafe.com

Documentation available on the Enersafe web site includes:

- LifeLink® System Modular Structure
- LifeLink® System Manual
- LifeLink® Terminal Software Manual
- LifeLink® QuickStart Guide
- LifeLink® System Frequently Asked Questions (FAQs)

White Papers available on the Enersafe web site include:

- VRLA Battery Reliability through Effective Monitoring
- Faulty and Aged Battery Detection Criteria
- Emerging Issues and Solutions in Battery Monitoring System Design and Application

Additional resources available on the web site:

- Site Survey/Quote Request
- Distribution Channels
- Customer Support
- Sales Channel Secure Area

Specifications are subject to change



LifeLink® Battery Monitor

- Do you utilize batteries as an integral part of your Emergency Power Plan?
- Have you checked those batteries lately?
- Will your backup batteries provide the power you need, when you need it?
- **REMEMBER:** The time to answer these questions is **BEFORE** that critical moment when the lights start to blink!

A battery's ability to take or maintain a charge, and/or to provide optimal runtime during a discharge, depends on many factors, including: *Impedance, Voltage, Temperature, Current* and *Total Energy Discharged*.

ENERSAFE's **LifeLink®** battery monitoring technology continuously measures these factors, and gives you an up-to-the-minute picture of your battery backup system's ability to perform when you need it most. And all ENERSAFE **LifeLink®** servers can be accessed remotely, using TCP/IP, or dial-up Modem links.

The **LifeLink® 48T** is designed to monitor batteries within the 48 Volt operating environment found in the Telecom Industry. The **LifeLink® 600** is designed to monitor batteries found in large data centers and utility generation/substation environments serviced by an Uninterruptible Power System (UPS). All **LifeLink®** servers are able to monitor *System, String* and *Individual Battery* parameters. Float Current can also be monitored with optional equipment.

World Class Remote Battery Monitoring Systems

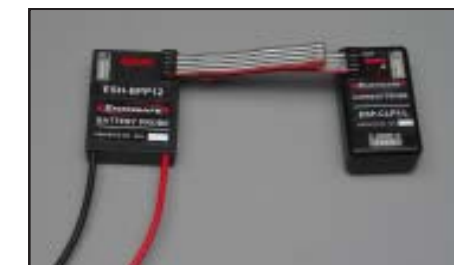


Applications

Telecom
Emergency 911
Cellular Towers
Electric Utilities
Tollway Systems
Railway Systems
UPS Systems

MEASURE...

- Cell Impedance
- Cell Temperature
- Cell Voltage
- System Voltage
- System Current
- String Current
- Total Number of Discharges
- Total Energy Removed
- Ambient Temperature



Benefits

Prevents Dangerous Overcharge Situations
Cost-Effective for Large Deployments
Eliminates Needless Truck Rolls
Remotely Accessible
Verifies Operating Environment
EASY TO INSTALL

***Make Sure
You Have
The Power
You Need,
When You
Need It!***

Florida Office: 3118 Gulf to Bay Blvd., • Suite 102, • Clearwater, FL, 33759 • Tel: (727)-793-9710 • Fax: (727)-793-9711
Eastern Office: 2000 Highland Avenue, • Bethlehem, PA, 18020 • Tel: (610)-868-3500 • Fax: (610) 868-8686

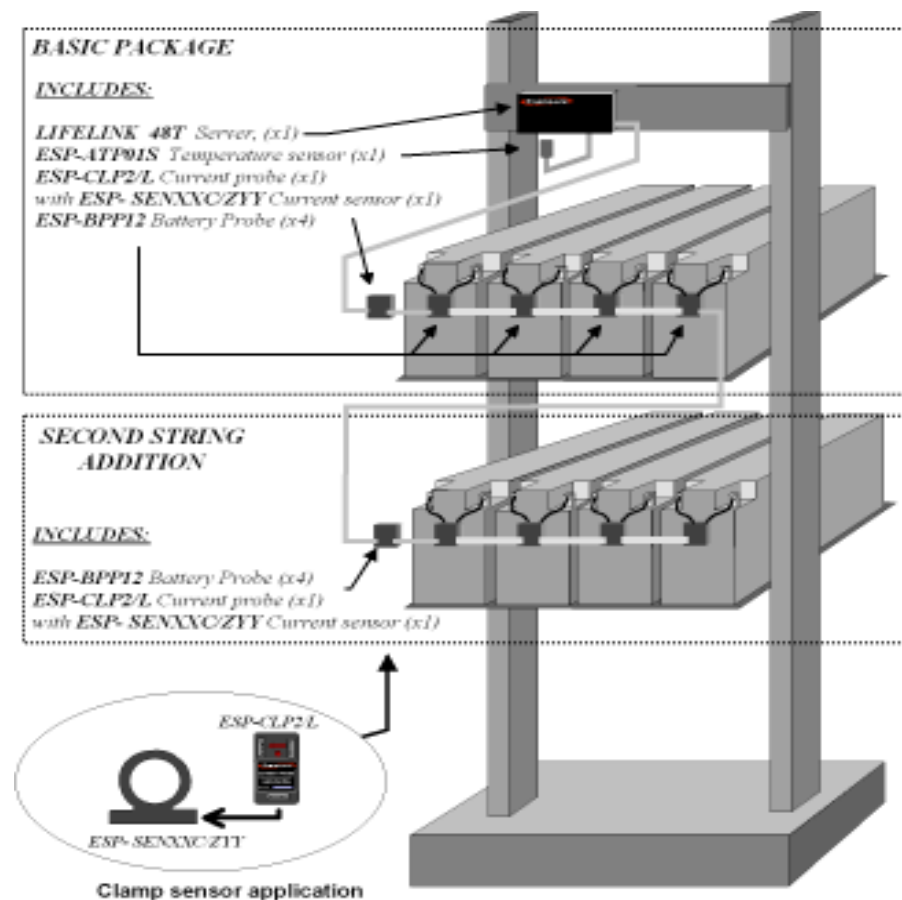
Sample Telecommunications (48V) Application

The illustration at right depicts a sample installation of a **LifeLink®** 48T Battery Monitoring System in a common telecommunication (48V) application in an indoor, climate-controlled environment. Batteries in this kind of application are commonly configured to allow front or top access.

The system at top right consists of the following items:

- 1 **LifeLink®** 48T Server
- 1 Ambient Temperature Probe
- 1 Enersafe Current Probe, with Current Sensor attached
- 4 Enersafe Battery Probes, with built-in battery temperature sensors

The illustration also shows a second string of probes connected to the same **LifeLink®** 48T Server. Note: The second string includes only the Current Probe with Current Sensor and 4 Battery Probes. Each **LifeLink®** 48T server can monitor up to 10 strings of batteries, or up to 72 individual battery jars.



LifeLink® Terminal Management Software

System Status Report

Alarm Status | Battery Status | System Status

Cell Overcharge: [Indicator]

Cell Undercharge: [Indicator]

Cell Discharge: [Indicator]

System Overcharge: [Indicator]

System Undercharge: [Indicator]

System Discharge: [Indicator]

Site Configuration

General Information | System Setup | Thresholds | Custom Alarms | Alarm Profiles/Activation

System Configuration

Cells/Battery: [4] Batteries/String: [4]

Battery Probes: [8] Current Probe: [2]

System Voltage Probe Current Transmitter FDC Probe: [0]

Ambient Temperature Probe

Auto Call

Terminal Phone Number: [0] Auto Call Out Enabled

Measurement Log

Terminal Status

Major Alarm: [Indicator] Current Site Name: **GTB Engineering**

Minor Alarm: [Indicator] Site Time: **13:23** Site Date: **03/29/2006**

No Alarm: [Indicator] Server Version: **T.3.07** Site Serial ID: **000008ABDEAB**

Connection Mode: **TCP/IP** Connection Status: **CONNECTED**

Data: **RECEIVING** Status: **OPEN** Incoming Data: [Indicator] Outgoing Data: [Indicator]

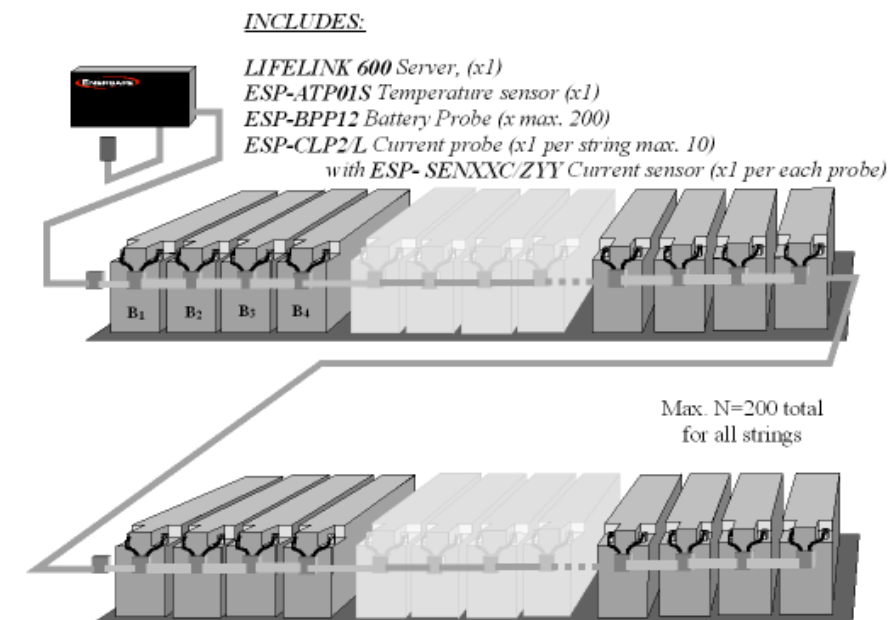
The **LifeLink®** Series of Battery Monitors ships with **LifeLink® Terminal Management Software** (shown above). This software works with **LifeLink®** Battery Monitoring systems to monitor your battery plant. The **LifeLink®** software communicates with any number of remote **LifeLink®** Servers through your choice of Direct Connect, Modem, TCP/IP, Cellular or Satellite Communications. The **LifeLink® Terminal Management Software** can function as a stand-alone management platform for your battery backup system; it can also forward any alarms and all measurement data to a higher-level management system (*i.e.*, SCADA/MOSCAD).

Sample Uninterruptible Power Supply (UPS) Application

This illustration depicts a sample installation of a **LifeLink®** 600 Battery Monitoring System in a common UPS application in an indoor, climate-controlled environment. Batteries in this kind of application are commonly configured to allow front or top access. Systems such as the one pictured consist of the following items:

- 1 **LifeLink®** 600 Server
- 1 Ambient Temperature Probe
- (x) Enersafe Current Probes, with Current Sensor attached (*Maximum of 10*)
- (x) Enersafe Battery Probes, with built-in battery temperature sensors (*Maximum of 200*)

Additional strings of probes (not shown) can be connected to the same **LifeLink®** 600 Server. Note: Additional strings include only the Current Probe with Current Sensor and Battery Probes. Each **LifeLink®** server can monitor up to 10 strings of batteries, or up to 200 individual battery jars.

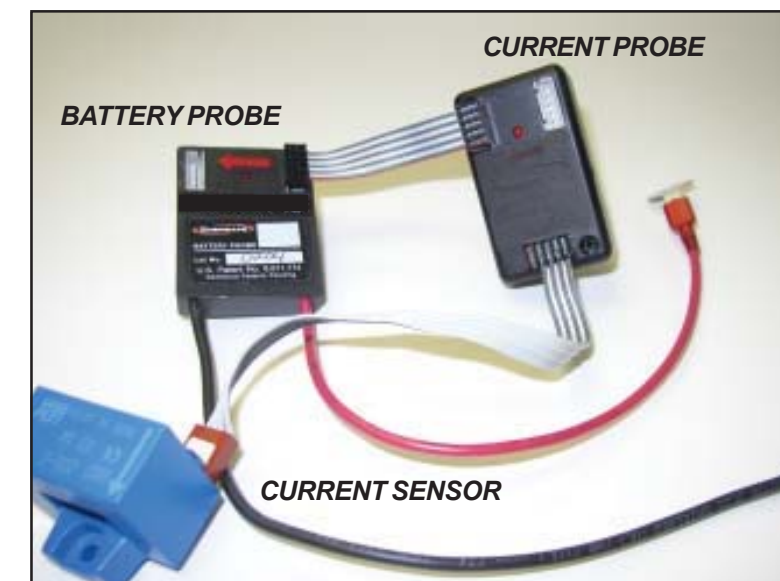


Notes:

- Server can be fastened to battery rack or wall
- Battery probes are fastened to battery jars
- Server can monitor up to 10 strings of batteries
- Server can monitor up to 200 individual batteries

LifeLink® Battery and Current Probes

Remote battery probes attach to each battery jar monitored.



String current probes collect data from each string in the system.

These probes are used in all **LifeLink®** Battery Monitoring Systems.