

# Explosion proof Battery Management System

Safety + Performance



# ExBMS

## Ex d IIC T6



## Ex Battery Management System

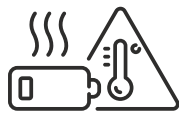
### Key System Features



Battery Voltage



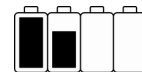
Ohmic Value



Battery Temperature



String Current



String Voltage

and more...

### Reporting service



01.

Complete awareness of the overall condition of your batteries



02.

Assurance any battery issues will be identified to enable a timely response



03.

Reduce the internal effort required for monitoring battery performance data

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Capeserve Energy's Explosion proof battery management system (ExBMS) devices measures and monitoring of the following:

- Individual Cell Voltage
- Cell Impedance (Ohmic value)
- Cell Temperature
- String Current
- String Voltage
- Ripple Voltage
- Ripple Current
- Ambient Temperature
- Humidity

### Controller

ExBMS Controller is an intelligent hardware device that at four second intervals captures, processes and stores all relevant data collected from batteries and the operating environment. The Controller captures, processes and stores data from the Sensors.

### Key Features

Simple installation, minimal cabling and the capability to monitor UPS batteries that are up to 8 strings per system.

A user-friendly web interface with smartphone/tablet friendly status screens.

Dry contact inputs can be utilised for monitoring battery breaker status, door status, electrolyte level sensors or other 3rd party devices.

Battery behaviour captured accurately through non-latching alarms, providing high resolution record of battery readings that cross two level alarm limits. Also captures the extreme values recorded during alarms

Integration with infrastructure management systems enabled with built-in protocols like SNMP, ModbusTCP, HTTP, DNP3 (Optional).

Access options for non-networked sites, including LCD version of the Controller LX with keypad access, and simplified data collection option with USB port.



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### Explosion Proof Sensor

#### Ex Sensor, BMS-624S

Ex Sensors are able to quickly and accurately record data from every cell block and gathers individual cell voltage (DC and ripple), impedance (Ohmic value) and temperature for VRLA, VLA and Ni-Cd batteries. Intelligent circuits in the Ex Sensor drive fast data sampling and powerful measurement algorithms. 750Vdc optical isolation inside the mSensor keeps the dangerous voltages at the battery and away from the operator, while still ensuring battery data is passed to the monitoring system at speed. Designed for use with batteries in racks or cabinets.

#### Key Features

- Lead Acid batteries 2V, 4V, 6V, 8V, 12V, 16V
- Ni-Cd 1.2V batteries
- Simultaneous voltage sampling across all batteries.
- Each Ex Sensors measures 4 cells at a time.
- Cell Temperature measured at negative terminal as per IEEE guidelines.
- 750Vdc optical isolation.
- Cabinet or rack compatible.
- On-board high precision reference for impedance self-calibration.



#### CERTIFICATION

IECEX	EX db IIC T6 Gb IP66 Tamb: -20°C < Ta < +60°C	IECEX: IECEX ITS 23.0010X
ATEX	II 2 G Ex db IIC T6 Gb IP66 -20°C ≤ Ta ≤ +60°C	ATEX: ETL23ATEX0305X



# ExBMS

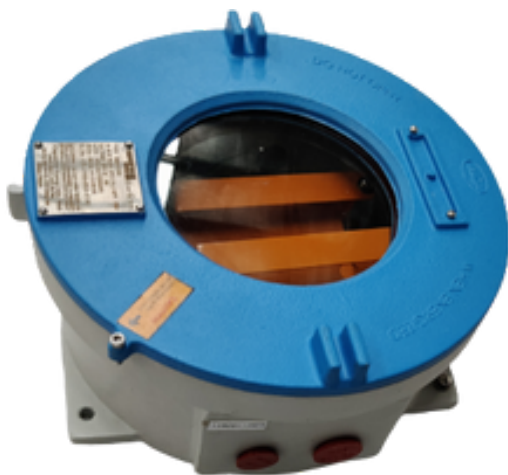
## Ex d IIC T6



### Explosion Proof Hub

#### Ex Hub, BMS-270H

Ex Hub on each battery string connects the various data points required to provide an accurate picture of battery bank's current and future state. The Ex Hub reduces the need for excessive cabling. It allows for more batteries to be added to every cable as well as being able to hold two roles (e.g. ambient temperature and current transducer). This reduces the clutter of a system and streamlines the configuration.



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# ExBMS

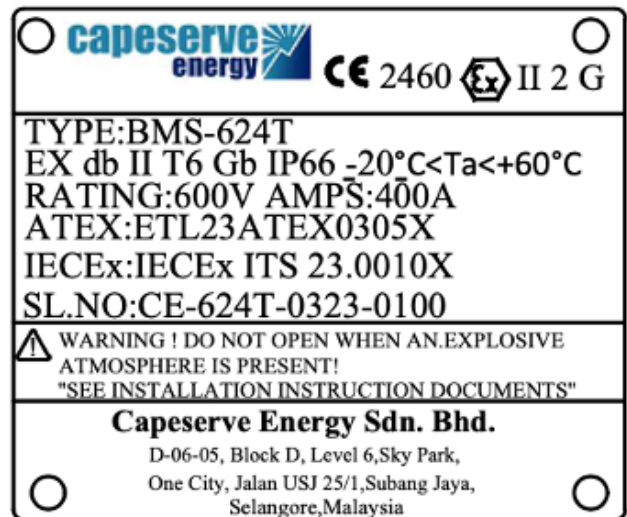
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### Explosion Proof Current Transducer

Ex CT, BMS-624T

Ex CT gathers string current from the series of batteries. This parameters are communicated to Ex Hub and further transferred to controller.



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### Battery Management Software

Battery management software is a window into the health and performance of the battery systems. It enables you to make informed decisions quickly and proactively. The software application manages the Controller and records all battery readings in its database for viewing, trending and reporting.

Data is turned into actionable information in the form of alerts and dashboards. Link also sends key information to control room and facility management systems.



#### Key Features

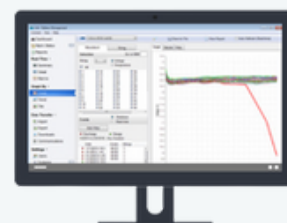
- Reduce the cost of manual monitoring and intervention (and the associated health and safety risk).
- Live discharge data.
- Permanent connection to multiple sites: for unlimited number of batteries.
- Real time battery status.
- Remote access via LAN.
- Alarm and activity log.
- Graphing and analysis tools.
- Discharge – individual events in detailed activity summary.
- Trending – impedance change, end- of- life, charge voltage, temperature



**24/7 REAL  
MONITORING**



**SERVICE  
ACCESS**



**REMOTE  
ANALYSIS &  
REPORTING**

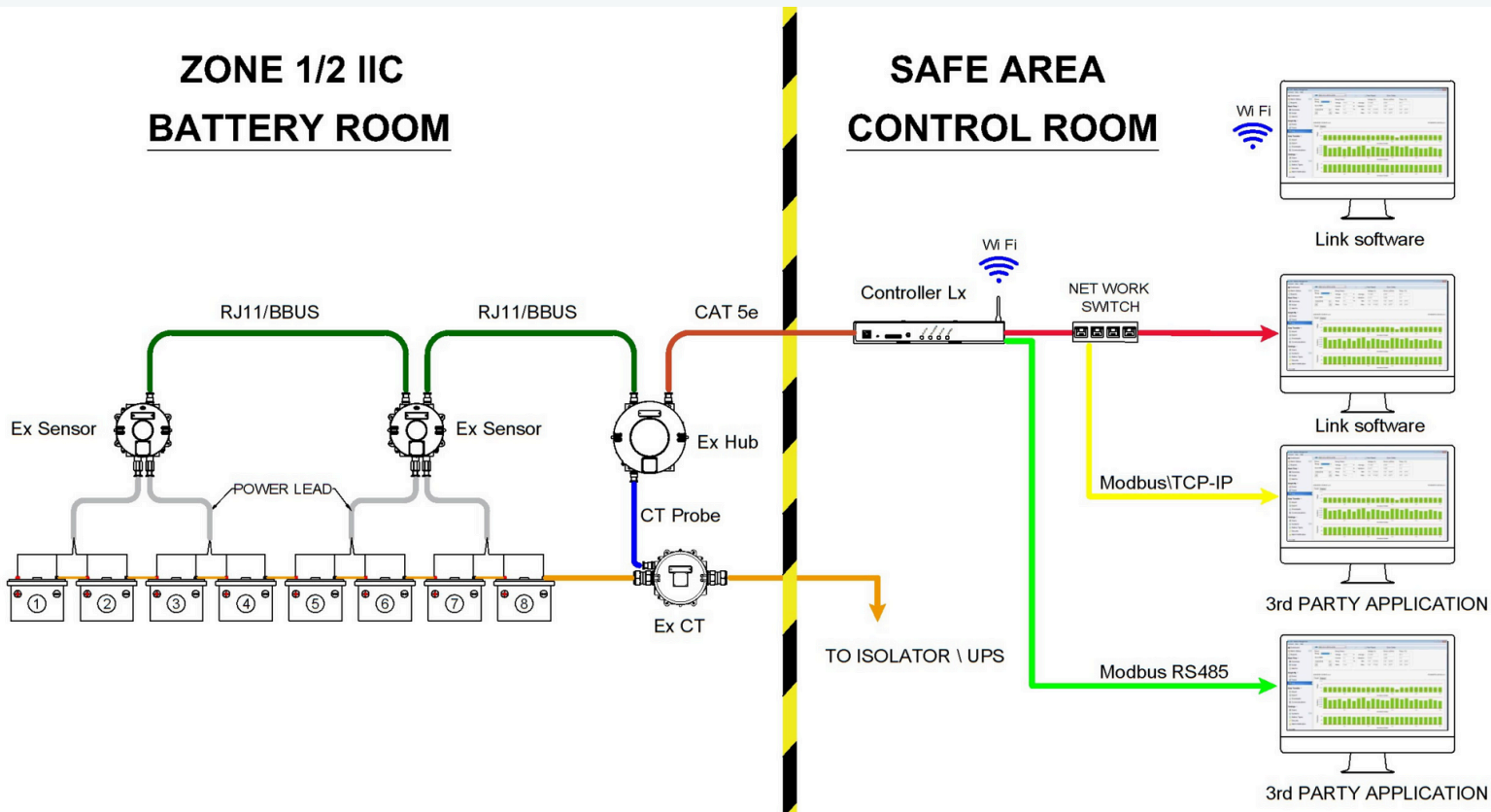
# ExBMS

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# Powering Performance, Eliminating Hazard

## Ex Battery Management System Layout





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### Thermal Runaway Protection



### TRP Detection & Protection

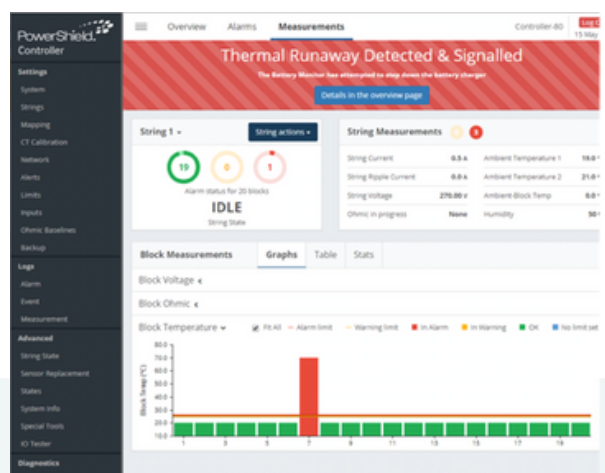
The ExBMS system detects thermal runaway by monitoring the temperature difference between the individual batteries and the ambient. When a notable difference is detected, ExBMS raises an alarm and starts a countdown timer. If no action is taken by the operator before the end of the countdown period, the ExBMS system sends a control signal via volt free relay output at controller.

Depending on the installed equipment, a battery string breaker may be tripped or the charger directed to step down its voltage. These actions remove the energy source and breaks the thermal runaway cycle.

Effective battery monitoring means keeping a close watch on the status of your batteries at all times. With the ExBMS TRP feature, thermal runaway is automatically detected, giving you the time you need to take corrective action.

### TRP Features

The Explosion proof battery monitoring system (ExBMS) comes with a Thermal Runaway Protection (TRP) option. It is designed to detect when one or more blocks in a string go into thermal runaway, and provide a method to mitigate it.



## Contact Us

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