LI-ION TAMER
RACK MONITOR

Lithium Ion Battery Rack Monitoring System

The Li-ion Tamer Rack Monitoring system is a device that monitors lithium-ion battery off-gas events. Off-gas events occur early in the failure mode of lithium-ion batteries and very early detection of these events allow proper mitigation steps to be taken to avoid a catastrophic thermal runaway failure.

The Li-ion Tamer Rack Monitoring system is designed to be plug-and –play, easy to install and consists of two primary components, (i) off-gas sensors, (ii) controller.

- Off-gas sensors comprise on-board detection algorithms making them acutely sensitive to lithium-ion battery off-gassing compounds, do not require calibration, are compatible with all forms of lithium-ion battery form factors and chemistries and have a lifetime comparable to a typical lithium-ion battery system.
- Off-gas sensors are connected to the controller that contains proprietary logic to diagnose when and where battery off-gas events have occurred. It has digital and Modbus serial outputs that can be used to electrically isolate the battery system and activate the ventilation system.

SYSTEM CONFIGURATION

The Li-ion Tamer Rack Monitoring system is a versatile solution that accommodates the vast range of lithium-ion battery systems.

In a typical setup, system configuration will consist of the following:

- Monitoring sensors installed at the battery racks – downstream convective airstreams – to monitor off-gas events
- Reference sensors installed to monitor the ambient environment and air inlets to cancel common mode signals
- Controllers for aggregating sensor signals
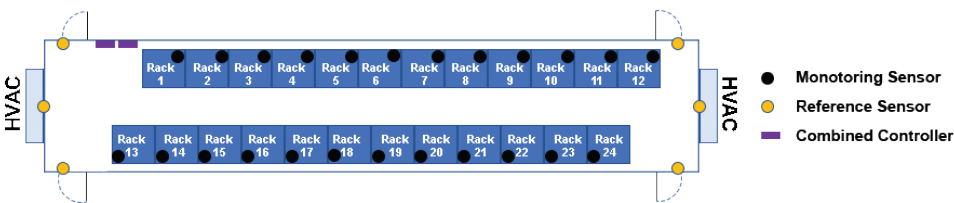
The Li-ion Tamer Rack Monitor system requires minimal operation and maintenance procedures as the sensors are designed to be calibration-free and have comparable lifetime to that of the ESS battery system. The gas sensors response can be easily verified with a bump test. To confirm operation, sensors can be activated with a bottle of battery off-gassing compounds (diethyl carbonate) which is supplied by Xtralis.

Important Note: This device detects off-gas from lithium-ion batteries. It does not prevent fires or thermal runaway. This device is not a stand alone safety device and should be incorporated into a proper safety system. If device responds, there is a risk of battery fault which could lead to thermal runaway. To avoid injury, leave area immediately.

KEY FEATURES

- Early warning of lithium-ion battery failures
- Enable thermal runaway prevention with proper mitigation actions
- Single cell failure detection without electrical or mechanical contact of cells
- Extended product lifetime
- Calibration-free product
- Highly reliable output signal
- Low power consumption
- Compatible with all lithium-ion battery form factors and chemistries
- Easy installation
- Independent and redundant perspective on battery health
- Auto diagnostic capabilities
- Reduction/removal of false positive signals
- Several communication protocols including digital outputs and Modbus serial communication
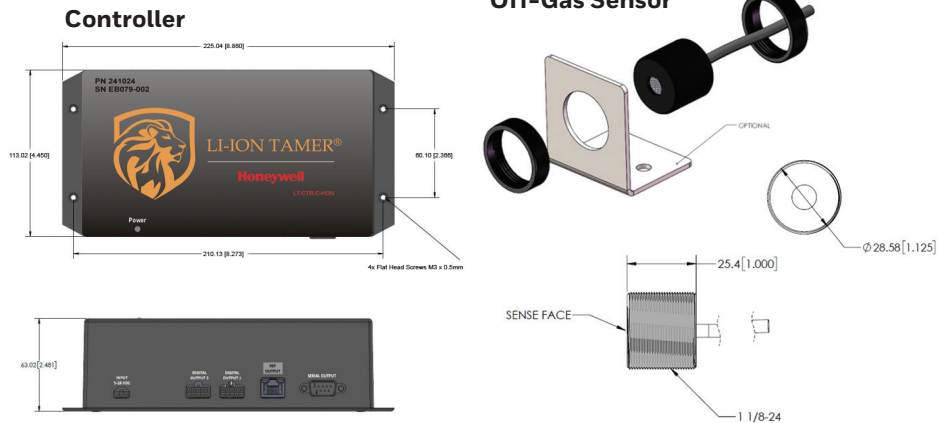
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LI-ION TAMER®

Li-ion Tamer Rack Monitor Lithium Ion Battery Rack Monitoring System

SPECIFICATIONS

CONTROLLER SPECIFICATIONS	
Dimensions [mm]	210 (W) x 113 (L) x 63 (H)
Input power range	12 – 28 VDC
Max sensors per controller	15
System outputs	Digital outputs/MODBUS
POWER CONSUMPTION SPECIFICATIONS	
Controller (no sensors)	2.4 W (@ 24VDC) 1.4 W (@ 12 VDC)
Sensor	275 mW (@ 5 VDC)
Controller (fully populated, 15 sensors)	6.6 W (@ 24 VDC) 5.6 W (@ 12 VDC)
Fuse Rating	3.5 A
MODBUS COMMUNICATION SPECIFICATIONS	
Baud rate	9600
Parity	None
Stop bit	One
Hardware	RS232 3-wire (TX, RX, ground)
PRODUCT LIFE SPECIFICATIONS	
Target lifetime	> 10 years
Warranty	1 year
GAS DETECTION SPECIFICATIONS	
Target gases	Lithium ion battery off-gassing compounds
Min. detection threshold	< 1 ppm/sec
Response time	5 seconds
Fault detection	Single cell failure
ENVIRONMENTAL SPECIFICATIONS	
Temperature	-10 to +60°C
Humidity	5 to 95% RH
Max temperature change	8.6°C/min
DIGITAL OUTPUT SPECIFICATIONS	
Connector type	2x 10-pin Molex
Signal type	Digital
Signal level, normal	HIGH, 12 – 28 VDC (Input voltage) 100mA max per channel
Signal level, alarm	LOW, ~0 VDC

HARDWARE DETAILS

Controller

Off-Gas Sensor

ORDERING INFORMATION

ORDERING CODE	DESCRIPTION
LT-SEN-M	Monitoring sensor
LT-SEN-R	Reference sensor
LT-CTR-C-HON	Combined controller Honeywell
LT-ACC-PCL	10' Power Cable
LT-ACC-DCL	10' Digital Output Cable
LT-ACC-MCL-25	25' Monitoring Sensor Cable (RJ45 Black)
LT-ACC-MCL-50	50' Monitoring Sensor Cable (RJ45 Black)
LT-ACC-MCL-100	100' Monitoring Sensor Cable (RJ45 Black)
LT-ACC-RCL-25	25' Reference Sensor Cable (RJ45 Blue)
LT-ACC-RCL-50	50' Reference Sensor Cable (RJ45 Blue)
LT-ACC-RCL-100	100' Reference Sensor Cable (RJ45 Blue)
LT-ACC-CCL-1	1' Controller Daisy Chain Cable (RJ45 Grey)
LT-ACC-CCL-3	3' Controller Daisy Chain Cable (RJ45 Grey)
LT-ACC-CCL-25	25' Controller Daisy Chain Cable (RJ45 Grey)
LT-ACC-CCL-50	50' Ctrl Daisy Chain Cable (RJ45 Grey)
LT-ACC-CCL-100	100' Ctrl Daisy Chain Cable (RJ45 Grey)
LT-ACC-IPA	MODBUS TCP/IP Adapter
LT-ACC-SCL-MF	6' MODBUS Serial Cable Male to Female
LT-ACC-RLY	Form C Relay
LT-ACC-TST	DEC Bump Test Bottle
LT-ACC-BKTPK5	Sensor Mount Kit Spare - 5BKT 10NUT

PRODUCT CERTIFICATION

- ETL listed to UL 61010 and CSA 22.2 NO. 61010 for product safety
- EN 61326 for EU Directive (2014/30/EU)
- RoHS 3 EU 2015/863

Intertek
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For more information:
Contact your local Honeywell representative.

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