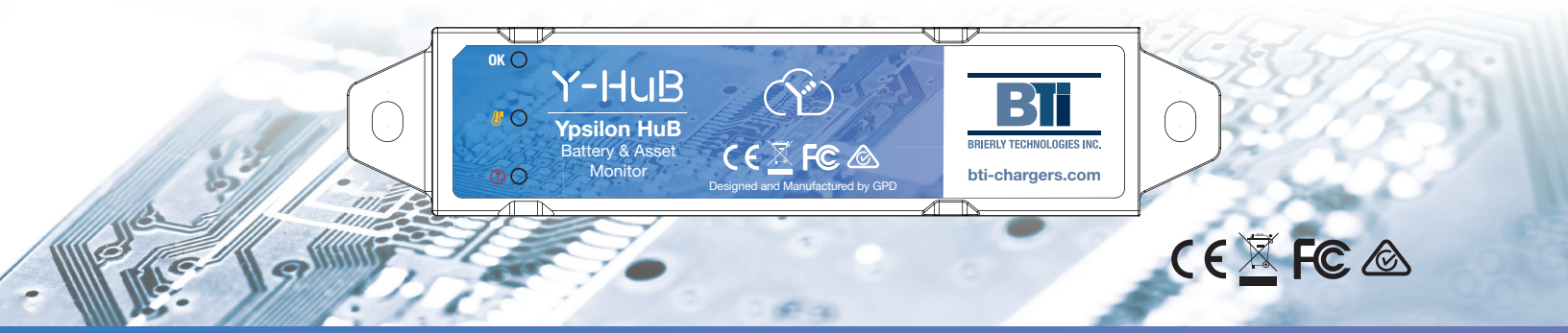
Ypsilon HuB

Battery & Asset Monitor



In chemistry, Ypsilon (symbol -Y) represents degrees of freedom: each of a number of independent factors required to specify a system at equilibrium.

There are a number of factors affecting the performance and cycle life of lead-acid batteries which need to be optimized to achieve the maximum return on your investment.

The Ypsilon HuB (Y-HuB) measures and records voltages, currents, temperatures and electrolyte levels of a battery pack.

It allows service technicians and supervisors to view real-time data, check battery and charging performance, see battery loads and voltages during use, drill down into time stamped hourly usage and receive alerts on low or high voltages, thermal issues, electrolyte levels or battery pack imbalances.

Why do we need it?

Batteries that are over discharged, underwatered, undercharged, incorrectly opportunity charged, left stored for extended periods without maintanance and used in abnormal temperature situations will not last as long as batteries used in the optimum way.

Batteries are an expensive component of any DC powered equipment. Battery issues can be reported to user level management to enable corrective action that can extend battery life by 30-50%.

How do you check the data?

Data can be viewed locally on our Y-HuB APP via Bluetooth or via cellular networks using our web portal.

Warnings, such as low voltage, low electrolyte level and over temperature can be configured to be sent out via e-mail. These warnings are tracked for overall analysis of battery use/abuse.

Who checks the data?

Administrator and user accounts can be set-up to suit the needs of service managers, service technicians or area managers with controlled access to devices by account name and passwords.

The Y-HuB will:

Monitor	Calculate	Report
State of Charge (SOC)	Internal Resistance	Low SOC
Charging and Load Currents	Charge Factor	Low SOH
Voltage	State of Health (SOH)	Low electrolyte level
Electrolyte Level		Abnormal temperatures (3 levels)
Temperature		Abnormal voltages (3 levels)
Geo Location		Geographic Location
Geo-Fence Area		Movements out of area

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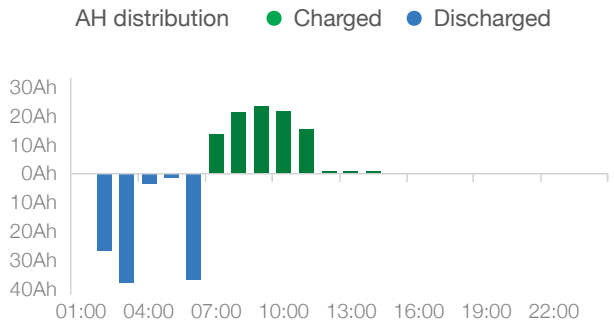
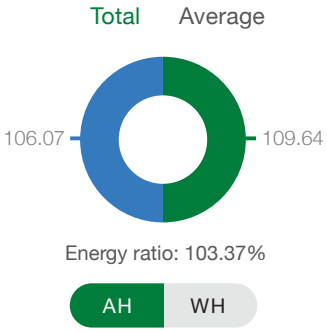
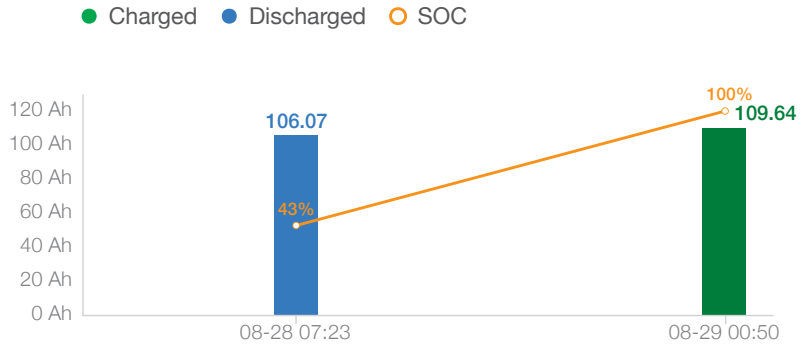
How is the data interpreted?

Data by itself is useless. It needs to be sorted, arranged and presented visually for it to be interpreted and conclusions drawn.

The web portal shows a simple overview current status, recent use history as well calculated values, statistics, graphs and histograms. Issues are easily identified and you can then drill down further into the time stamped data around an event or problem area.







What are the applications for use?

New User Training

Often you encounter customers that are first time users of battery powered equipment. These users should be be trained on how to properly use and maintain the equipment and its' batteries. By installing a Y-Hub you can remotely monitor, for some initial time period, whether they are following correct battery use and maintenance protocols and also see the actual usage pattern of the equipment. If any issues arise, the operators can be corrected before causing any permanent damage.

Service Device

The Y-HuB is the ideal tool for service technicians to solve field issues remotely by monitoring problem installations during use to find solutions where users are experiencing sub-optimal perfomance. Typically, on site evaluations are problematic as battery testing is limited to voltage measurements and load tests which may or may not reveal issues. As well, charger testing is limited to a simple "works or doesn't work" evaluation without being able to assess performance. Other information such as equipment load profiles, battery voltage drop during use and available battery capacity cannot be determined on a service call.

Monitoring Device

When permanently installed on equipment, it provides service professionals information to enable proactive care for the batteries and equipment and avoid premature failures. This service can lead to increased equipment uptime and save customers money in the long run leading to greater satisfaction and customer retention. Installing a Y-HuB adds value to your equipment.

Fleet Management Device

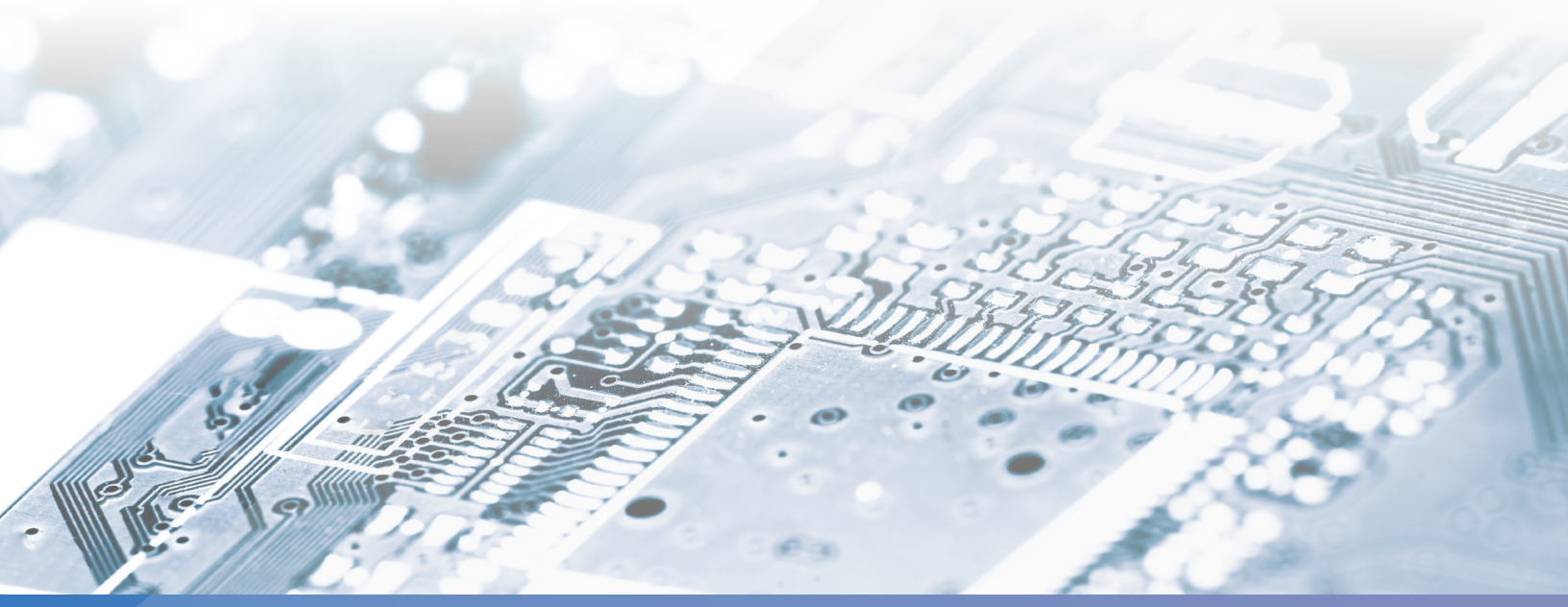
The Y-HuB also offers solutions for fleet monitoring. Batteries can be difficult to monitor manually and multiple battteries/locations is problematic. The Y-HuB allows monitoring all batteries on a single platform. As they are a substantial capital cost component of your machinery, maximizing their cycle life can boost your efficiency and lower your operating costs.

Specifications

Hardware	Electronics with a SIM card and modem protected in an acid-resistant sealed housing
	Red positive voltage sense wire, 1m/39” with M10 / 3/8” terminal and 2A inline fuse
	Black negative voltage sense wire, 1m/39” with M10 / 3/8” terminal and temperature sensor
	Red half-voltage sense wire, 1m/39” with M10 / 3/8” terminal
	Hall effect sensor, 1m/39” with 20mm / 0.79” hinged opening
	External antenna, 1m/39” with magnetic back
	Electrolyte level level sensor, 1m/39” with 2A inline fuse
System Voltages	24-36-48-60V
Voltage Resolution	+/- 0.1V
Current Range	up to 300A
Current Resolution	+/- 0.5A
Temperature Resolution	+/- 1 OC
Power Consumption	Max 3W / Typical 0.5-2W
Device Enclosure Rating	IP66
Cellular Network	4G + GPS
Bluetooth	BLE 5.0
APP OS	Android or iOS

**Specifications subject to change without notice.*

Other versions are available on special order with 800A current shunts, 12V or 60-72-80V range, remote thermal sensors and other features.



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