

[WireLock® 1.80mm for Automotive Battery Management System](#)

Batteries are the lifeline of any electric vehicle. Lithium-ion cell packs predominantly store energy in EVs, large battery-based unmanned aerial vehicles like drones, and portable devices that require reliable, compact, and high-power sources. [Battery Management System](#) (BMS) intelligently controls the battery charge and ensures safe operation, stable performance, and battery life under diverse conditions. It consistently monitors the battery pack during charge and discharge sessions and optimizes the performance by balancing the cells inside the pack, thus improving the battery life and capacity.

Evolution of the Battery

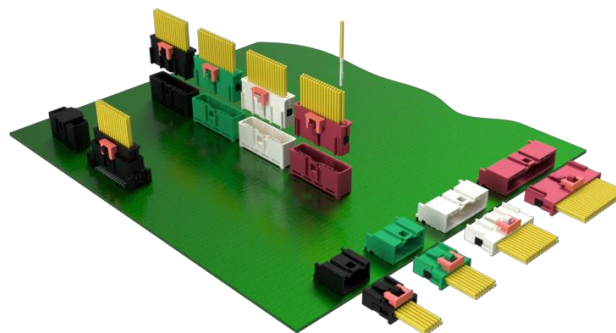
In earlier days, Lithium nickel manganese cobalt oxide (NMC) batteries were used in EVs. Though these were very good in performance, they raised many safety concerns at the same time. The overvoltage issues caused by these batteries even led to spontaneous combustion. To rectify this and provide a safer option, early electronic protection circuits were introduced. Known as primary protectors, the systems included discharge current tripping, but the process was unstable. More advanced secondary protectors were implemented at a later phase. The secondary protectors had a single short circuit that automatically got activated when cell voltage went beyond a preset value that was always set above the primary threshold. An in-line thermally activated fuse was driven by heaters from the activation circuit.

Working of BMS

The present-day [Battery Management Systems](#) are incorporated with electronic protection circuitry in addition to these protectors. They are capable of cell balancing, which prevents cell overvoltage due to unbalanced cells, as the charge circuit works on a common pack voltage. It avoids the activity of primary protectors caused due to the voltage of a single cell rising quicker than the average, causing premature charge termination.

Besides, automotive battery management systems also use battery fuel gauging to determine its state-of-charge (SOC). This area is under constant development, bringing innovative changes combined with modern data and communication technologies. There are many benefits of data collection from scheduled servicing to determining battery usage for warranties, and so on. With these changes, the battery management system continues to advance its ability to accurately and efficiently charge, measure, and use these batteries.

WireLock® 1.80mm Wire-To-Board Connector



With the improvements in BMS technology, it is essential to go for the right interconnect solution. Amphenol provides a wide range of products for automotive BMS. [WireLock® 1.80mm Wire-To-Board connector](#) has been one of the predominant choices of our customers for many reasons. These compact connectors address the growing demand for miniaturization in the automotive application market. WireLock® 1.8mm is USCAR-2 and QC-T1067.1-2017 qualified. These are offered in four different color codes, which avoid visual mismatching. TPA and CPA features ensure a secured connection, adding to the safety of the entire system. Read more about [WireLock® 1.8mm](#).

Apart from this we also have many of our [wire to board](#) and [FFC/FPC connectors](#) supporting automotive battery management systems. Check out our [application page](#) for further information