



Max-Planck-Innovation

Technology Offer

Monitoring Battery Quality: A Handheld Readout Device (HRD) for Battery Management Systems

File no.: MI 0106-5092 MG

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Background

Rechargeable batteries are more and more dominating our modern daily life. We find them in our smartphones and notebooks, in e-bikes and e-cars but also in many toys and basically everywhere where wired power supply is absent. The charge state of these batteries is usually reported by highlighting a certain portion of a bar, representing full charge. But is this indication always correct and how can I check whether the full capacity of my battery is still available?

In many rechargeable batteries, technical parameters are controlled by a Battery Management System (BMS). This device monitors physical parameters like Voltage, Current, Temperature and State of Charge but also calculates useful values like "Total Number of Charge Cycles", "Total Operation Time since First Use" or "Energy Delivered since Last Charge".

In product manufacturing, this information is important for checking the battery quality before final assembly on the product. For battery-driven medical devices, reliable knowledge about the battery status can be crucial. For the end-user of a battery driven device, access to these data would be beneficial to allow for an informed decision whether the device could be repaired or needs to be replaced.

The efficient use of batteries is especially important, as batteries are difficult to recycle and thus constitute a burden for the environment. Unfortunately, common BMSs do not display the stored data by default.

Technology

Scientists of the Max Planck Institute for Ornithology in Seewiesen invented a handheld readout device (HRD) capable of accessing and displaying BMS-logged data. The standalone apparatus is flexible in its construction and can be adapted to connect to a BMS comprising an SMBus and/or an I2C "Integrated Circuit Interface" up to 100 kHz. These interfaces are widely used enabling the use of the HRD in manifold fields of application. Additionally, the HRD can be connected to external devices like personal computers or smartphones to transfer and store the extracted technical data. Thereby, the HRD enables long-term diagnostic observations and documentation of battery quality.

We are looking for a licensing partner for this technology and we will be pleased to share more detailed information.

Patent Information

European patent application was filed in 2016 (EP16020098.6):
"An apparatus and a method for the technical parameter extraction"