

Design of A Microprocessor-Based Device for Testing 18650 Batteries*

Jacek CZERNIAK, Anna GACEK and Olga HNATYSZAK

Krakow University of Economics, Krakow, Poland

Correspondence should be addressed to: Jacek CZERNIAK, czerniaj@uek.krakow

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Abstract

The paper presents the design and development of a custom-built measuring device specifically for testing small-size 18650 batteries. Both the device and its software were developed from scratch by the authors. The device allows for battery testing during discharge and charging processes with adjustable current levels. The custom software, also created by the authors, enables full control over the testing process and gathers high-frequency measurement data from sensors within the measurement system, which is managed by a single-chip microcomputer. A key advantage of the entire measuring station is its capability to program multiple measurement cycles, enabling quality assessment of batteries beyond just capacity testing. It also allows verification of whether the batteries meet the manufacturer's specified number of charging and discharging cycles. To ensure consistent and controlled testing conditions, the device includes a climate chamber that maintains a stable ambient temperature for the batteries under test.

Keywords: 18650 cells, microprocessor, lithium-ion batteries