

Master 2010

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Design and development of a power management system for the modular robot system RIMRES

ABSTRACT - Masterthesis

This master thesis describes the developed power management for heterogeneous modules in RIMRES (Reconfigurable Integrated Multi Robot Exploration System). RIMRES consists as well as of a main system which supplies energy, various mobile and immobile modules. Immobile modules are accumulator modules, energy harvesting modules and sensor modules etc. Mobile modules are active modules, e.g. rover. These modules can be connected mechanically and electrically with each other and share the power in an established system. Therefore in each module an intelligent power management is needed, which supervises and changes the energy supply between the individual sources.

The power management system not only guarantees safe switching between different energy sources and controls the power consumption inside the modules, but also provides modularity and energy savings mechanisms. This thesis presents the hardware development of the power management and the corresponding software development based on the ATmega128 μ C.