



The diagram illustrates a system architecture centered around a Microcontroller Unit (MCU). The MCU is connected to a Battery Connector via a BMS (Battery Management System) and a 3V7 line. It also interfaces with a Keypad and a 3-pos switch. Power is supplied to the MCU from a USB-C port (5V) and a 3.3V Buck converter (3V3). The MCU controls a 5V regulator and a 3V3 Buck converter. It also manages data flow between various sensors and actuators: Ambient Light Sensor, LCD Connector, Motor Driver, Magnetic Encoder, and Strain Sensor. Two multiplexers (Mux) are used to route data and power signals between the MCU, the 3.3V Buck, the 5V regulator, and the sensors/actuators.

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graph TD
    MCU[MCU]
    BMS[BMS]
    Battery[Battery Connector]
    Keypad[Keypad]
    USB_C[USB-C]
    Buck33[3.3V Buck]
    Reg5V[5V]
    Mux1[Mux]
    Mux2[Mux]
    ALS[Ambient Light Sensor]
    LCD[LCD Connector]
    MD[Motor Driver]
    ME[Magnetic Encoder]
    SS[Strain Sensor]

    USB_C -- 5V --> MCU
    USB_C -- 5V --> Mux1
    USB_C -- 5V --> Mux2
    USB_C -- 5V --> MD
    Buck33 -- 3V3 --> MCU
    Buck33 -- 3V3 --> ALS
    Buck33 -- 3V3 --> LCD
    Reg5V -- 5V --> MCU
    Reg5V -- 5V --> MD
    Mux1 -- Data --> MCU
    Mux1 -- Data --> Buck33
    Mux2 -- Data --> MCU
    Mux2 -- Data --> Reg5V
    BMS <--> MCU
    BMS <--> Battery
    Keypad <--> MCU
    MD <--> MCU
    ME <--> MCU
    SS <--> MCU
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File: biro-1-rev-0.kicad_sch

Title: Block Diagram

Size: C

Date: 2025-04-20

Rev: 0

KiCad E.D.A. 8.0.9

Id: 1/4





