DragonShield_v1.0

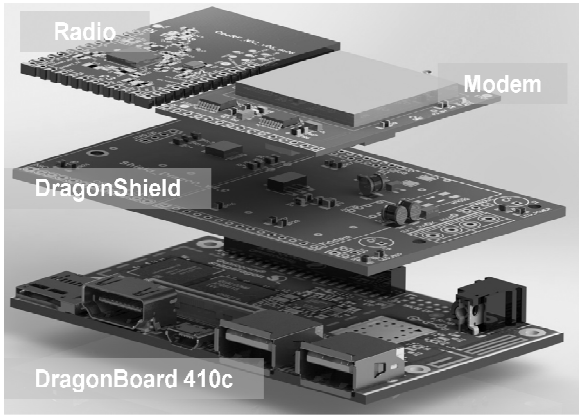
Shield to connect 3G Modem and Radio Module to DragonBoard 410C™

1 Features

- Low Speed Expansion Connector to attach to DragonBoard 410C
- 15 pins header to attach OneRF_Modem (3G) module
- 11 pins header to attach OneRF_NIC (Sub-1GHz Radio) module
- Ultra-low power 16 bits MCU (MSP430G2231)
- Voltage regulator for 3.25V rail
- Power supply ORing for AC Adapter or battery
- Voltage monitoring for AC Adapeter and battery
- Screw terminals for power supplies
- Target board shutdown with relay
- LED power on indicator

2 Applications

- IoT gateway
- Sensor networks
- Home and Building Automation
- Industrial monitoring and automation



3 Description

The DragonShield_v1.0 was designed to connect OneRF_Modem (3G) and OneRF_NIC (Sub-1GHz Radio) to a DragonBoard 410C. It features a circuitry for automatic and uninterrupted switch between AC Adapter power supply and backup battery. A regulator will supply a 3.25V power rail to the radio module and for the shield circuitry including the MCU. A low cost ultra-low power 16 bits microcontroller manages the shield, monitor voltage rails, and works as an external watchdog with capability to reset the DragonBoard in case of error. The MCU also communicates with the modem and is able to send alerts in case of system misoperation. The power supply or battery is expected to have a nominal voltage of 12V, but it will support 8V to 15V. The DragonBoard is powered from the SYS_DCIN pins and is attached by the Low Speed Expansion Connector.

4 Reference

[1] 1A LOW DROPOUT LINEAR REGULATOR
https://www.diodes.com/assets/Datasheets/AZ1117.pdf

[2] MSP430G2231 MIXED SIGNAL MICROCONTROLLER
http://www.ti.com/lit/ds/symlink/msp430g2231-ep.pdf

[3] DragonBoard 410C

https://github.com/96boards/documentation/raw/master/ConsumerEdition/DragonBoard-410c/HardwareDocs/HardwareManual_DragonBoard.pdf

DragonShield v1.0 - Schematics