Complete Quadcopter Design and Implementation

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Contents

1 Hardware Specification

This section outlines the main components for the design of the control board. Smaller parts like resistors or oscillators are omitted. This document is concerned with the functional capabilities of the design, not the electrical implementation. For more details on the electrical implementation of this design please reference the schematic.

1.1 Part List

The part list is of the following form:

Long Name (*ShortName*)
: Description

In general the short names of parts will be used for brevity. Long names specify the actual part, short names specify the functionality.

Atmel ATSAM4SD32CA (μC)
: This Atmel ARM Cortex-M4 Processor, serving as the main processing unit for the quadcopter.

InvenSense MPU-9250 (IMU)
: The second item

Bosch Sensortec BMP-183 (BMP)
: The third etc

SkyTraq Venus638FLPx (GPS)
: The third etc

XBee Pro 900 RPSMA (RF)
: The third etc

Turnigy Plush 25A Electronic Speed Controller (ESC)
: The third etc

1.2 Block Diagram

1.3 Part Descriptions

Aside from the datasheets, which should cover everything needed, this section outlines the most important information for each part. Some of the details in this section were discovered through testing.

1.3.1 Turnigy Plush 25A ESC

This part has no reliable electronic datasheet. The documentation is basically a manual. Some details about Voltage and Current are specified, but timings and operations are completely missing.

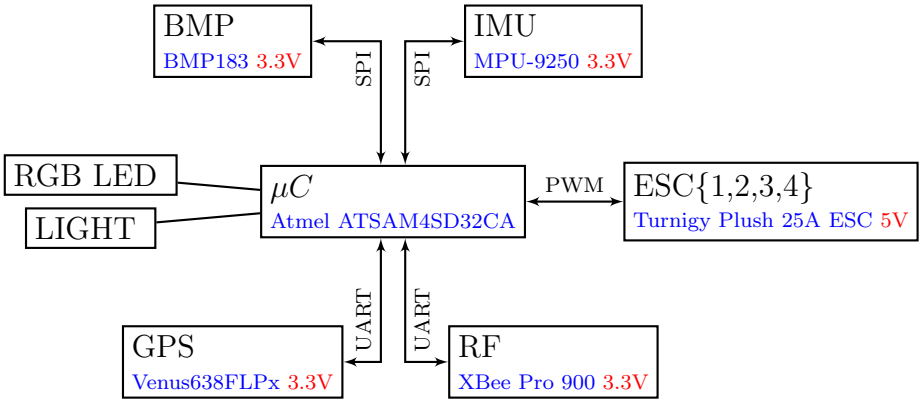

Figure 1: Functional Block Diagram