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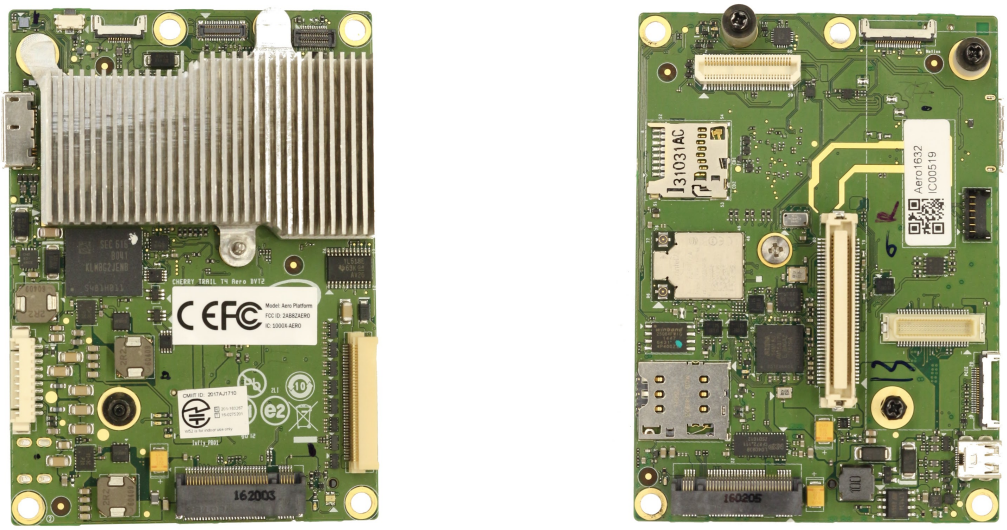
Guides and Resources: Hardware - QDrone

Embedded Compute Module

This document provides information on the QDrone's Embedded Compute module and expansion board.

Embedded Computer - Intel Aero Compute

The QDrone features the Intel Aero Compute board (Figure 1) with specifications/components as outlined in Table 1.



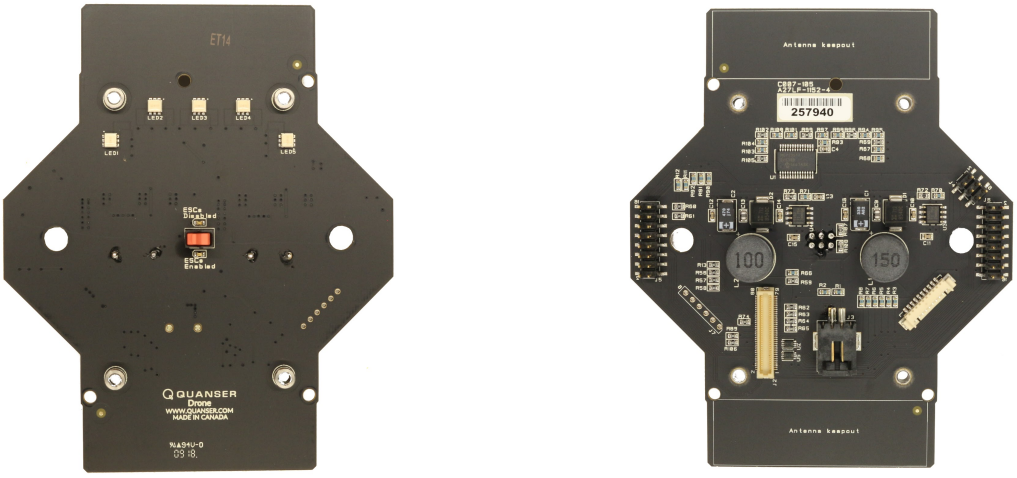
a. top view b. bottom view

Figure 1: The QDrone's embedded computer - Intel Aero Compute board

Table 1: Intel Aero Compute Specifications		
Item	**Description**	
Processor	Intel Atom x7-Z8750 quad-core 64-bit 2.56 GHz	
Memory	4-GB LPDDR3-1600 RAM	
Storage	32-GB eMMC	
FPGA	Altera Max 10 (Preconfigured for expandable IO)	
Sensors	BMI160 IMU	6-DOF 16-bit triaxial accelerometer and gyroscope
	BMM150 Magnetometer	3-axis geo-magnetic sensor
	MS5611 Barometer	24-bit pressure and temperature sensor
Wifi	IEEE 802.11 b,g,n,ac - Intel Dual Band Wireless - AC 8620 2x2 MIMO	
LEDs	1 tricolor and 1 orange user-programmable LED indicator	

Expansion Board

The QDrone's expansion board (Figure 2) provides additional features which are summarized in Table 2.



a. top view

b. bottom view

Figure 2: The QDrone's Expansion Board

Table 2: QDrone Expansion Board Specifications	
Item	**Description**
Expandable IO (see Figure 3 for the pinout diagram)	PWM (8x) (3.3V)
	UART (2x) (3.3V)
	SPI (3x SS pins) (3.3V)
	I^2C (3.3V)
	ADC (5x with 1 reserved for battery voltage reading) (3.3V)
	Encoder Inputs (3x) (3.3V or 5.0V)
	CPU GPIO (5x) (3.3V)
Battery voltage	Built-in voltage divider circuit to provide battery voltage measurement (via reserved ADC channel)
Regulated power supply	5V and 3.3V with 5A maximum current limit (each)
ESC Disable Switch	Disables PWM commands from the FPGA to the ESCs
LEDs	5x user programmable tri-color LED indicators

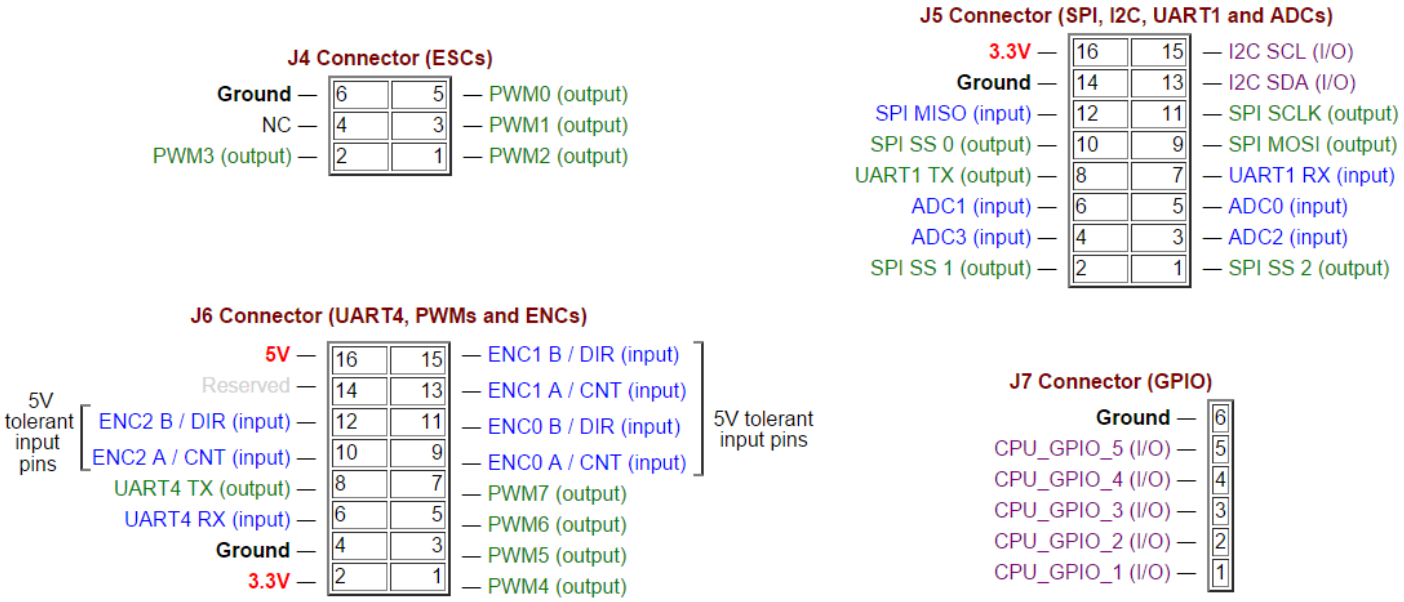


Figure 3: Pinout diagram for the QDrone Expansion Board