**CC**

STM32H750: ARM-Cortex M7-based generalized control computer. The necessary peripheral units for autonomous robotic systems are integrated. It carries 1 6DOF IMU, 1 3DOF magnetometer, 1 barometer, and 1 WIFI/Bluetooth ESP32-C3 module. It features 8 PWM outputs, usb, telemetry, gps, compass, PPM, and 2x20 GPIO pin outputs.

1. **SYSTEM**

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| **PROCESSOR SYSTEM** | | |
| **N** | **MCU Hierarchy** | **MCU Name** |
| MA | Main MCU | STM32H743VGT6 |

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| **CLOCK** | | | | |
| **N** | **Name** | **Name** | **Pin Name** | **MCU-N** |
| X1 | 25MHz External HSE Oscillator | RCC-IN  RCC-OUT | PH0  PH1 | MA |
| X2 | 40MHz External HSE  Oscillator | RCC-IN  RCC-OUT | XTAL\_P  XTAL\_N | ESP |

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| **COM CONNECTIONS** | | | | |
| **N** | **Connection Name** | **Label** | **Pin Name** | **MCU-N** |
| H1 | Serial Wire | SWCLK  SWDIO  NRST | PA14  PA13  NRST | MA |
| H2 | USB | USB\_DM  USB\_DP | PA11  PA12 | MA |
| H3 | USB | ESP\_USB\_DM  ESP\_USB\_DP | GPIO18  GPIO19 | ESP |
| H4 | UARST1 | UART1\_TX  UART1\_RX | PA9  PA10 | MA |
| H5 | UART1 | ESP\_UART1\_TX  ESP\_UART1\_RX | ???  ??? | ESP |
| H4 | UART2 | UART2\_TX  UART2\_RX | PA2  PA3 | MA |
| H5 | UART3 | UART3\_TX  UART3\_RX | PD8  PD9 | MA |
| H6 | UART4 | UART4\_TX  UART4\_RX | PB9  PB8 | MA |
| H7 | I2C1 | I2C1\_SCL  I2C1\_SDA  I2C1\_IRQ1  I2C1\_IRQ2 | PB6  PB7  PB0  PB1 | MA |
| H8 | I2C2 | I2C2\_SCL  I2C2\_SDA | PB10  PB11 | MA |
| H9 | SPI1 | SPI1\_SCK  SPI1\_MISO  SPI1\_MOSI  SPI1\_CS1  SPI1\_CS2 | PA5  PA6  PA7  PC4  PC5 | MA |

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| H10 | SPI3 | SPI3\_SCK  SPI3\_MISO  SPI3\_MOSI  SPI3\_CE  SPI3\_CSN  SPI3\_IRQ3 | PC10  PC11  PC12  PD0  PD1  PD2 | MA |
| H11 | CAN2 | CAN2\_H  CAN2\_L | PB12  PB13 | MA |
| H12 | PPM1 | PPM1 | PB14 | MA |

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| **PIN CONNECTIONS** | | | | |
| **N** | **Connection Name** | **Label** | **Pin Name** | **MCU-N** |
| P1 | TIM3 | TIM3\_CH1  TIM3\_CH2  TIM3\_CH3  TIM3\_CH4 | PC6  PC7  PC8  PC9 | MA |
| P2 | TIM4 | TIM4\_CH1  TIM4\_CH2  TIM4\_CH3  TIM4\_CH4 | PD12  PD13  PD14  PD15 | MA |
| P3 | TRX?? | ??RX  ??TX  ??M0  ??M1  ??AUX | PB8  PB9  PE0  PE1  PE2 | MA |
| P4 | ADC1 | ADC1 | PA4 | MA |
| P6 | LED0 | LED0 | PD3 | MA |
| P7 | LED1 | LED1 | PD4 | MA |
| P8 | LED2 | LED2 | PE10 | MA |
| P9 | LED3 | LED3 | PE11 | MA |

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| **POWER MANAGEMENT** | | | |
| **N** | **Regulator Voltage** | **Regulator Name** | **V out** |
| E1 | VIN – 5V | ??? | 5V |
| E2 | 5V – 3.3V | ME6211C33M5G | 3.3V |

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| **MODULES** | | | |
| **N** | **Module Name** | **Pinout** | **Peripheral** |
| U0 | ESP32-C3-MINI-1 |  |  |
|  |  |  |  |
| U2 | USB Connector | DM – DP | USB |
| U3 | GPS Connector | 5V – TX – RX – GND – GND | UART1 |
| U5 | 24AA64T | 3.3V – SCL – SDA – GND | I2C1 |
| U6 | BMI088 | 3.3V – SCK – MOSI – MISO – CS1 – CS2 – GND | SPI1 |
| U7 | BMP388 | 3.3V – SCL – SDA – IRQ1 – GND | I2C1 |
| U8 | BMM150 | 3.3V – SCL – SDA – IRQ2 – GND | I2C1 |
| U9 | CAN2 Connector | 5V – CAN\_H - CAN\_L - GND | CAN2 |
| U10 | PWM1 Connector | CH4 – 5V – GND | TIM3 |
| PWM2 Connector | CH3 – 5V – GND | TIM3 |
| PWM3 Connector | CH2 – 5V – GND | TIM3 |
| PWM4 Connector | CH1 – 5V – GND | TIM3 |
| PWM5 Connector | CH4 – 5V – GND | TIM4 |
| PWM6 Connector | CH3 – 5V – GND | TIM4 |
| PWM7 Connector | CH2 – 5V – GND | TIM4 |
| PWM8 Connector | CH1 – 5V – GND | TIM4 |
| U11 | 2x20 2.54 Connector | 2x20 | 2x20 |