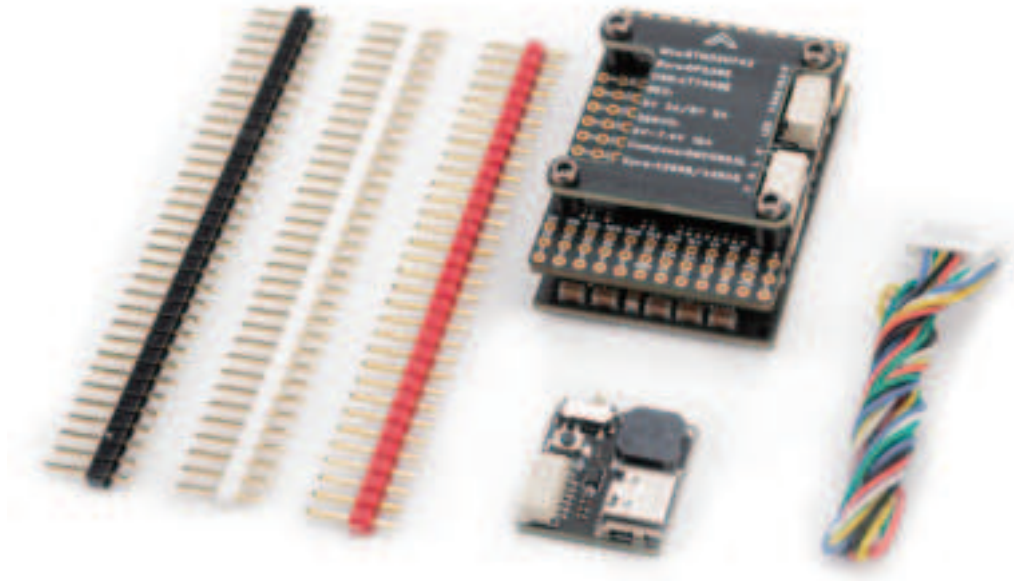
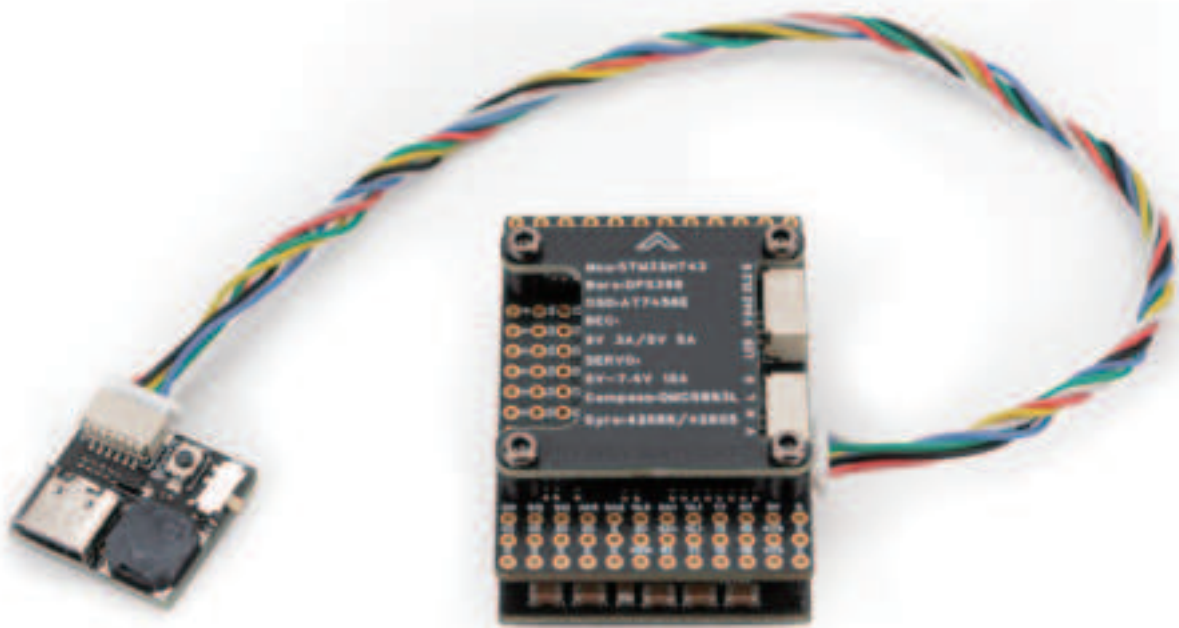


H743-WING FC user manual



Parameters:

- MCU:STM32H743VIH6
- Gyroscope: ICM-42688-P + ICM-42605 dual
- Barometer: DPS368
- Compass: QMC5883L
- OSD:Analog/HD OSD
- 7xUARTs, 13xPWMs, 2xI2C, 1xCAN, 4xADC (VLT2, CURR2, ASPD, RSSI),
- On-Board 9V BEC
- Video switch: On-Board Dual CAM Switch PinIO
- BLACKBOX:on board TF card slot, maximum storage 32GB
- Input Voltage: 12~28V DC(3~6S LiPo)
- BEC: 5V/6.2V/7.4V 12A (servo) & 5V 5A (other equipment) & 9V 3A (VTX and camera)
- Firmware: INAV: MATEKH743 Ardupilot: MATEKH743
- Dimensions and weight: 30.5mm*44.5mm*7.5mm
- Weight: 27g

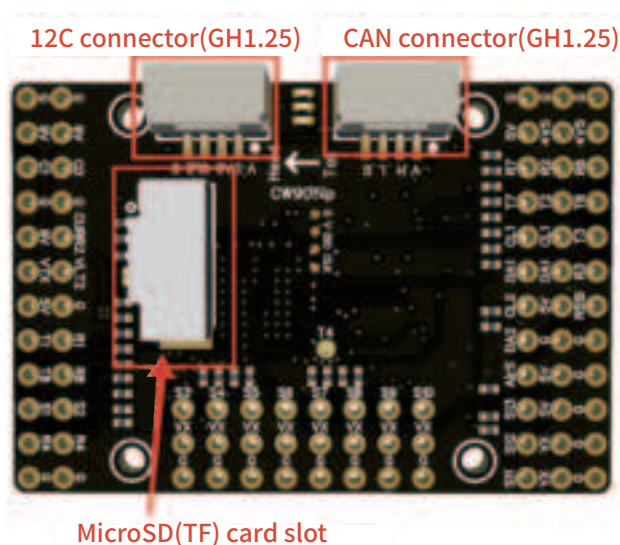


Features:

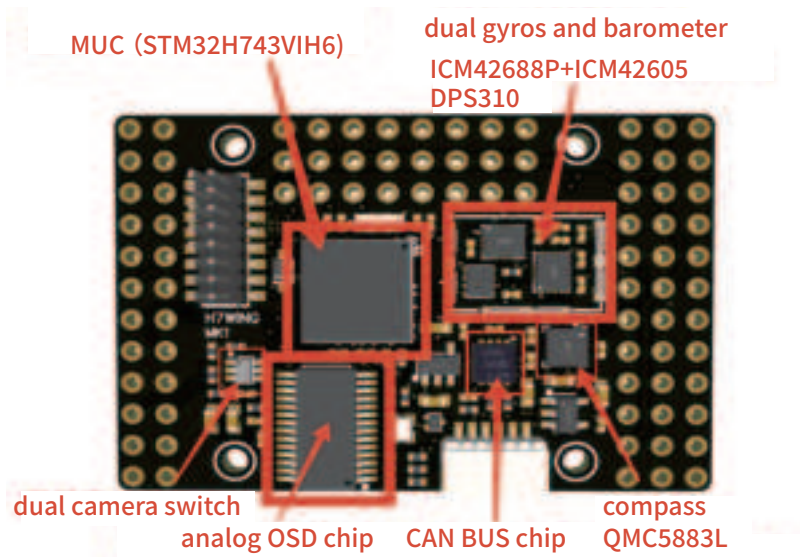
- STM32H743VIH6 MCU with 2MB Flash and 1MB RAM. The working frequency is 480MHz, strong performance, BGA encapsulation.
- ICM-42688-P & ICM-42605, dual InvenSense 3-generation (latest) gyros, both optimised for UAVs.
- DPS368 Barometer, Infineon Semiconductor's latest generation barometer, IPx8 waterproof (barometer sensor only), far more accurate than other barometer models (average accuracy >100% over DPS310).
- The strongest performance in the same volume (including arithmetic power, sensor capability, on-board BEC with load capability).
- Optimised size, smaller flight control suitable for use in various size carriers.
- 13 PWM output ports are also more than enough, you can use the CAN bus expansion board to extend the PWM additionally.

- Full pin design, ESC, servo, receiver, GPS, analog mapping, analog camera, HD mapping, LED strip can be connected to the flight control through the row of pins, or choose to directly solder to the row of pin pads, one more option.
- uses dual high-precision gyroscopes and high-precision barometers, compared with the stability of the same type of flight control greatly improved (the effect is obvious when using AP firmware).
- has the strongest BEC current output capability (up to 130W total output from three on-board buck supplies) among flight controllers of the same size.
- on-board 9V BEC can be switched by PINIO1 (User1 in BF firmware), no need to worry about overheating and burnt out of the VTX during ground debugging.
- onboard TF card slot, SDIO bus connection, high rate, maximum support for 32GB, storage capacity without worrying about, can save multiple flight data.

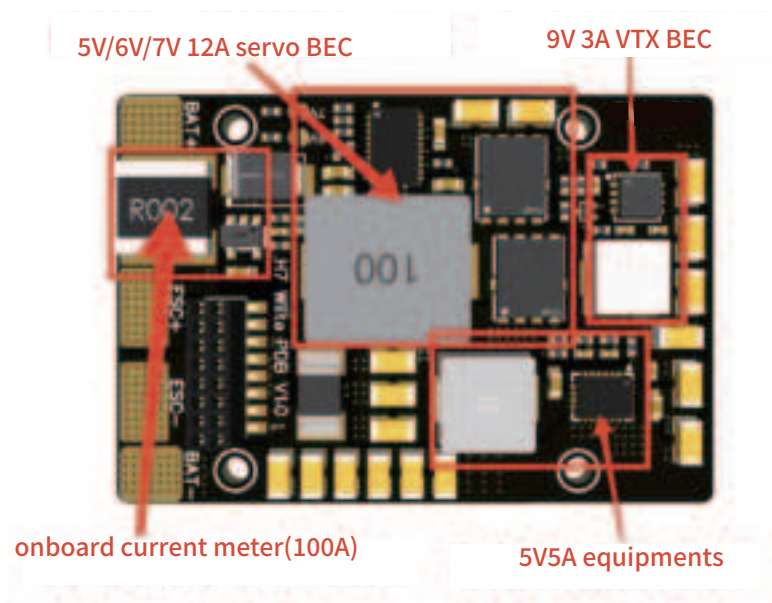
Board layout:



FC board(top layer)
layout diagram

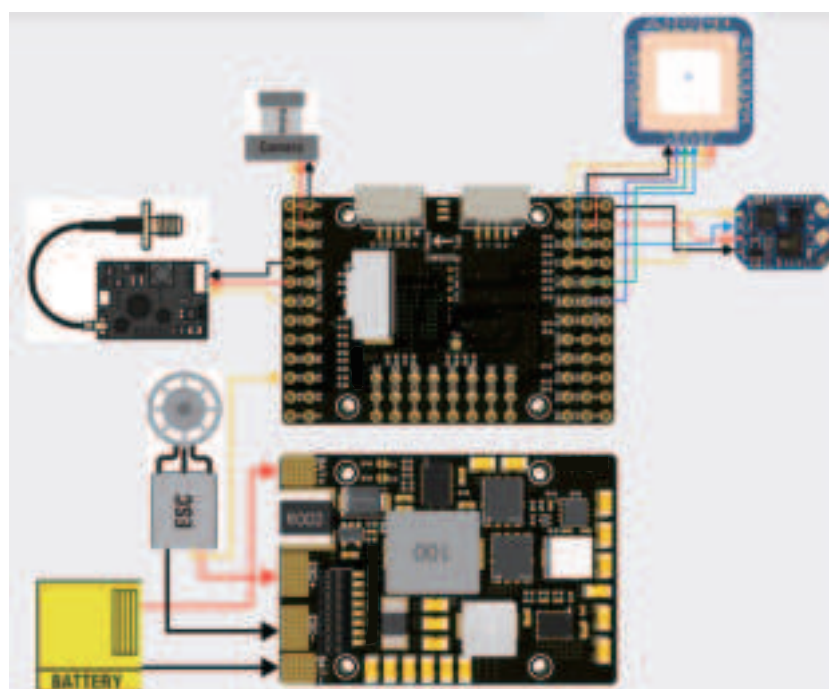


FC board(bottom layer)
layout diagram



Power board layout diagram

Wiring diagram:



Flight Control Ports/Ports:

PWM	31	PE0	5 V tolerant I/O	PWM0 (PWM0)	TRIM_CHAN	Group 1
	32	PE1	5 V tolerant I/O	PWM2 (PWM2)	TRIM_CHAN	
	33	PE2	5 V tolerant I/O	PWM3 (PWM3)	TRIM_CHAN	Group 2
	34	PE3	5 V tolerant I/O	PWM4 (PWM4)	TRIM_CHAN	
	35	PE4	5 V tolerant I/O	PWM5 (PWM5)	TRIM_CHAN	
	36	PE5	5 V tolerant I/O	PWM6 (PWM6)	TRIM_CHAN	
	37	PE12	5 V tolerant I/O	PWM7 (PWM7)	TRIM_CHAN	Group 3
	38	PE13	5 V tolerant I/O	PWM8 (PWM8)	TRIM_CHAN	
	39	PE14	5 V tolerant I/O	PWM9 (PWM9)	TRIM_CHAN	
	40	PE15	5 V tolerant I/O	PWM10 (PWM10)	TRIM_CHAN	
	41	PE5	5 V tolerant I/O	PWM11 (PWM11)	TRIM_CHAN	Group 4
	42	PE6	5 V tolerant I/O	PWM12 (PWM12)	TRIM_CHAN	
	43	PE8	5 V tolerant I/O	PWM13 (PWM13)	TRIM_CHAN	Group 5
SERVO_FUNCTION (0: 100, 101, 102, 103) reserved						
Note 1: PWM0 is an I/O pin that is not used for PWM output. However, using I/O pin and output I/O pin specifies the output to be used for I/O. This is why, setting I/O pin for an output in a group requires that all outputs in that group be configured and used as I/O, rather than PWM output.						
If servo and motor are mixed in some group, either use the group as I/O or PWM frequency according to the servo specification. That is to say, if servo supports Max. 500Hz, ESC must run at 500Hz in that group.						

PWM Output Correspondence Table

Attention! The PWM ports of the same TIM can't be used for Dshot protocol & PWM protocol at the same time, it is recommended that S1&S2 use Dshot protocol to connect to ESC, and the rest of the ports use PWM to connect to servo.

UART	USB	PA11/PA12	5 V tolerant I/O	USB	console	SERIAL0
	RXT TX7 RTS7 CTS7	PE7B/PE7G	3.3 V tolerant I/O	UART7	telem1	SERIAL1
	TX1 RX1	PA8/PA10	5 V tolerant I/O	USART1	telem2	SERIAL2
	TX2 RX2	PD5/PD6	5 V tolerant I/O	USART2	GPS1	SERIAL3
	TX3 RX3	PD8/PD9	5 V tolerant I/O	USART3	GPS2	SERIAL4
	TX8 RX8	PE1/PE0	5 V tolerant I/O	UART8	USER	SERIAL5
	TX4 RX4	PD8/PD8	5 V tolerant I/O	UART4	USER	SERIAL6
	TX6 RX6	PC6/PC7	5 V tolerant I/O	USART6	RC Input/Receiver	SERIAL7
				RX5	SBUS/IBUS/DSM/PPM	
				TX5	PPORT/SRX2	

UART Serial Port Correspondence Table and Default Functions

Attention!The number of UART ports in AP firmware ≠ the number of Serial ports, e.g. R7, T7 corresponds to Serial1 instead of Serial7.

I2C	I2C1	PERIPHY	5V tolerant IO	Compass	COMPASS_AUTODEC	1
	I2C1DMA					
	I2C2	PERIPHY1	5V tolerant IO	on-board QMC5883L	Address	0x7B
	I2C2DMA			Digital Angered I2C MS4525 DS18B20	ARSPD_SIU ARSPD_TYPE ARSPD_TYPE	0 1 0
CAN	CAN1	PERIPHY1	5V tolerant IO	CAN Node	CAN_ID_PROTOCOL CAN_ID_DEVID	1 1
				CAN GPS	GPS_TYPE	0
				CAN Compass	COMPASS_TYPENODE	0
				CAN Angered sensor	ARSPD_TYPE	0

I2C & CAN bus parameter setting table

Attention! The on-board QMC5883L compass is connected to I2C2, if you need an external compass of the same quality, please connect it to I2C1 port.

AP firmware other parameter settings:

BATT_VOLT_MULT 21

BATT_AMP_PERVLT 80

Firmware Flashing:

AP Firmware: Arduplane 4.5.4

INAV Firmware: INAV7.1.2