



长弓飞控

LongBowF405-WING

HardWare

- MCU: STM32F405RGT6, 168MHz , 1MB Flash
- IMU: ICM42688-P
- Baro: SPL06
- OSD: AT7456E
- Blackbox: MicroSD card slot
- 6x UARTs
- 12x PWM outputs
- 1x I2C
- 2x ADC (VBAT, Current)
- Built in inverter for SBUS input
- USB Type-C(USB2.0)

FirmWare

- ArduPilot: LongBowF405WING (ArduPlane 4.5 or newer)
- INAV: LongBowF405WING (INAV 6.0 or newer)

PMU

- Input voltage range: 9~30V(3~6S) w/TVS protection
- Current Sensor: 160A, 3.3V ADC(Ardupilot 50A/V)
- Sense resistor: 120A continuous, 160A peak

BEC 5V output

- Designed for Flight controller, Receiver, OSD, Camera, Buzzer, 2812 LED_Strip, Buzzer, GPS module, AirSpeed
- Continuous current: 2 Amps

BEC 9V /12V output

- Designed for Video Transmitter, Camera, Gimbal ect.
- Continuous current: 2 Amps
- 12V option with Jumper pad
- for stable 9V/12V output, input voltage should > output voltage +1V

BEC Vx output

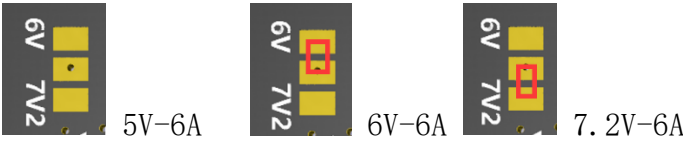
- Designed for Servos
- Voltage adjustable, 5V Default, 6V or 7.2V options
- Continuous current: 6 Amps, 8A Peak
- for stable Vx output, input voltage should > Vx voltage +1V

➤ **PMU**

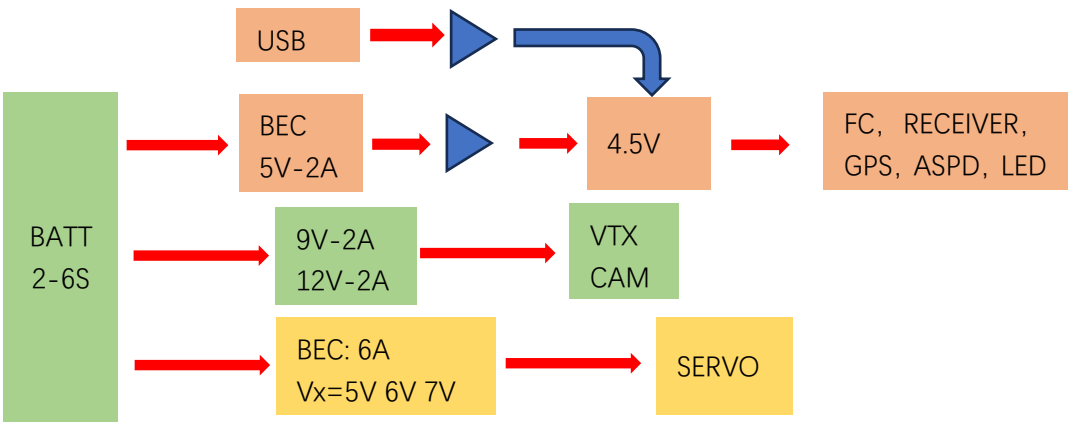
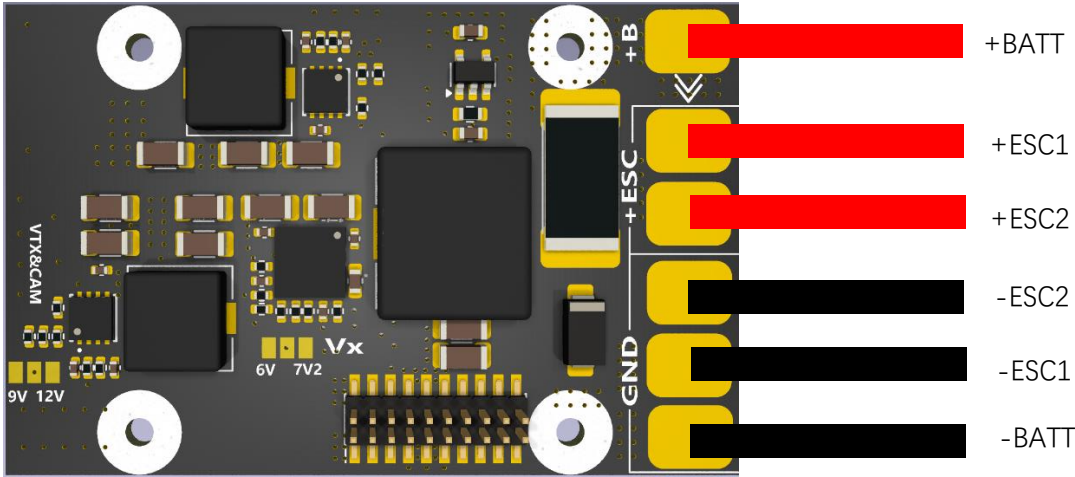
① Select VTX Voltage



② Select Servo Voltage



③ Battery and ESC Wiring



➤ FC PORT

① Front

T5/R5: UART5, Serial5

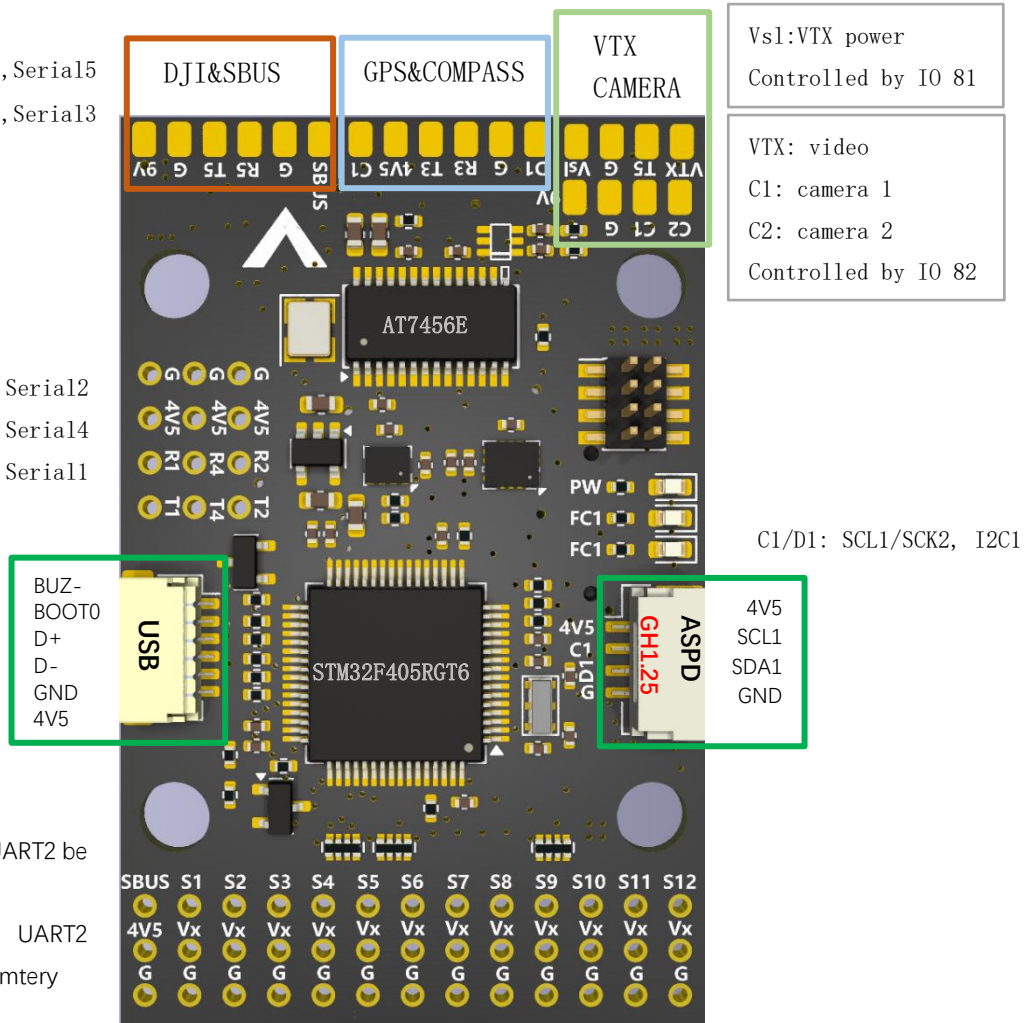
T3/R3: UART3, Serial3

G: GND

T2/R2: UART2, Serial2

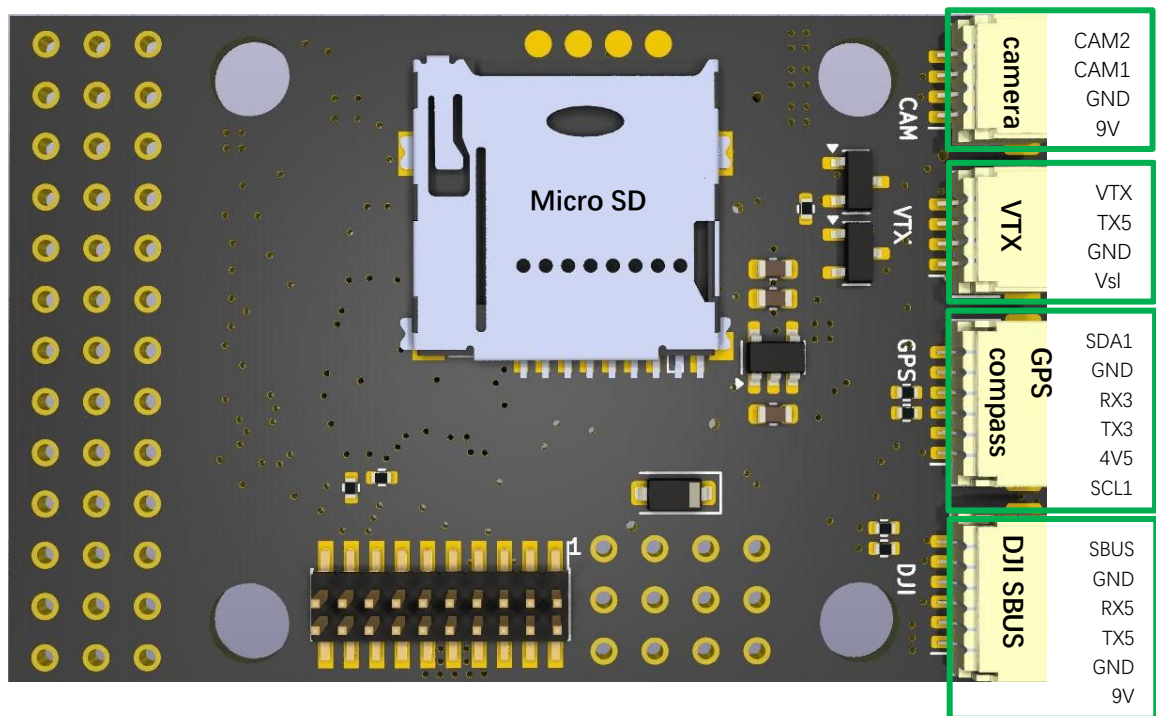
T4/R4: UART4, Serial4

T1/R1: UART1, Serial1



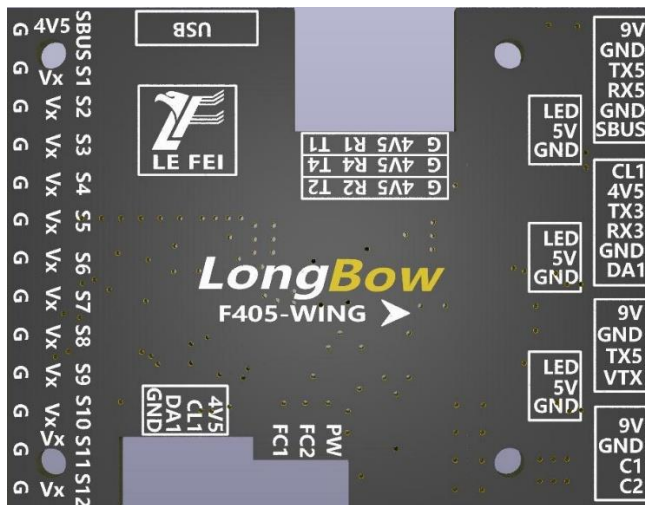
1. Default use SBUS, UART2 be closed
2. Set UART1 as CRSF, UART2 can be used as telemetry

② Back

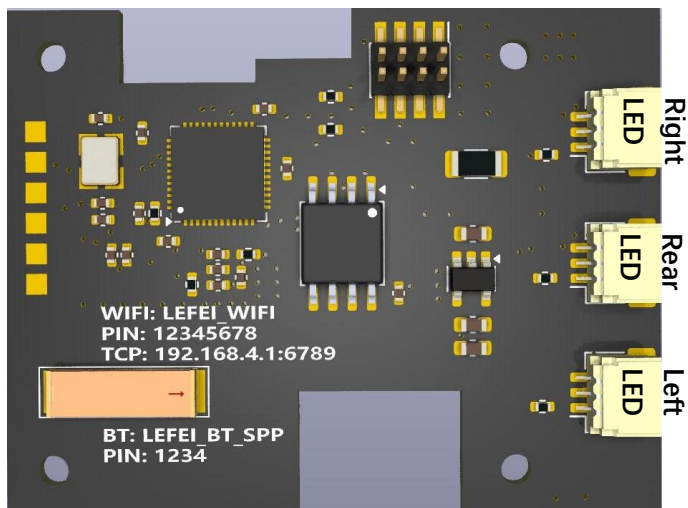


③ BT & WIFI

Front



Back



WIFI: LEFEI_WIFI
PIN: 12345678
TCP: 192.168.4.1:6789

BT: LEFEI_BT_SPP
PIN: 1234

3 * WS2812, each with 6 lights.

	COLOR	ON	FLICKER
Right LED	GREEN	ARM	DISARM
Left LED	RED	ARM	DISARM

GPS	Rear LED
Disconnect	RED Flicker
Connect no fix	Yellow
Fixed	Green

1. Bluetooth is in low-power mode when not connected, and try to keep the FC as close to the GCS as possible when connecting. Bluetooth is in normal working mode after connection.
2. If WiFi is not connected after 5 minutes of startup, it will automatically turn off.

➤ **ArduPilot pin map**

PWM 5v Tolerant I/O	S1	PWM1 GPIO50	TIM8_CH4	DMA/Dshot	Group1
	S2	PWM2 GPIO51	TIM8_CH3	DMA/Dshot	
	S3	PWM3 GPIO52	TIM3_CH4	DMA/Dshot	Group2
	S4	PWM4 GPIO53	TIM3_CH3	DMA/Dshot	
	S5	PWM5 GPIO54	TIM4_CH1	DMA/Dshot	Group3
	S6	PWM6 GPIO55	TIM4_CH2	DMA/Dshot	
	S7	PWM7 GPIO56	TIM1_CH1	DMA/Dshot	Group4
	S8	PWM8 GPIO57	TIM1_CH3N	DMA/Dshot	
	S9	PWM9 GPIO58	TIM1_CH2N	DMA/Dshot	
	S10	PWM10 GPIO59	TIM2_CH1	DMA/Dshot	Group5
	S11	PWM11 GPIO60	TIM2_CH4	DMA/Dshot	
	S12	PWM12 GPIO61	TIM2_CH3	DMA/Dshot	
Mixing Dshot and normal PWM operation for outputs is restricted into groups, ie. enabling Dshot for an output in a group requires that ALL outputs in that group be configured and used as Dshot, rather than PWM outputs. If servo and motor are mixed in same group, make sure this group run lowest PWM frequency according to the servo specification. ie. Servo supports Max. 50Hz, ESC must run at 50Hz in this group.					
ADC	Vbat ADC	onboard battery voltage	1K:10K 0~30V	BATT_MONITOR BATT_VOLT_PIN BATT_VOLT_MULT	4 10 11.0
	Current ADC	onBoard current sense	0~3.3V	BATT_CURR_PIN BATT_AMP_PERVLT	11 50

I2C	I2C1 DA1 CL1	5V tolerant I/O	SPL06 DigitalAirSpeed Magnetometer	Address ARSPD_BUS COMPASEE_AUTODEC	0x76 0 1
UART 5v Tolerant I/O	USB	USB		console	SERIAL0
	TX1 RX1	USART1	With DMA	Telem1	SERIAL1
	TX2 RX2	USART2	NO DMA	RC input/Receiver	SERIAL2
		RX2	IBUS/DSM	BRD_ALT_CONFIG 0 default	
		SBUS	SBUS		
	TX3 RX3	USART3	NO DMA	GPS	SERIAL3
	TX4 RX4	UART4	NO DMA	USER	SERIAL4
	TX5 RX5	UART5	NO DMA	DJI/VTX	SERIAL5
	TX6 RX6	USART6	NO DMA	Onboard telem	SERIAL6

➤ **INAV**

PWM		TIMER	INAV Plane	INAV MultiRotor
S1	5v Tolerant I/O	TIM8 CH4	Motor	Motor
S2	5v Tolerant I/O	TIM8 CH3	Motor	Motor
S3	5v Tolerant I/O	TIM3 CH4	Servo	Motor
S4	5v Tolerant I/O	TIM3 CH3	Servo	Motor
S5	5v Tolerant I/O	TIM4 CH1	Servo	Motor
S6	5v Tolerant I/O	TIM4 CH2	Servo	Motor
S7	5v Tolerant I/O	TIM1 CH1	Servo	Servo
S8	5v Tolerant I/O	TIM1 CH3N	Servo	Servo
S9	5v Tolerant I/O	TIM1 CH2N	Servo	Servo
S10	5v Tolerant I/O	TIM2 CH1	Servo	Servo
S11	5v Tolerant I/O	TIM2 CH4	Servo	Servo
S12	5v Tolerant I/O	TIM2 CH3	Servo	Servo

ADC			
Voltage	1K: 10K ratio 0~30V	Voltage ADC ADC_Channel_1	Voltage scalew 1100
Current	0~3.3V	Current ADC ADC_Channel_2	Current scale 195

I2C			
I2C1	5v Tolerant I/O	On Board Baro	SPL06-001
		Compass	QMC5883L/HMC5883/ MAG3110/LIS3MDL
		AirSpeed	MS4525
		OLED	0.96 寸

UART			
USB		USB	
TX1 RX1	5v Tolerant I/O	UART1	ELRS/TBS
TX2 RX2 SBUS	5v Tolerant I/O	SBUS	SBUS with invert
		TX2	SmartPort telem, open Softserial_Tx2
TX3 RX3	5v Tolerant I/O	UART3	GPS
TX4 RX4	5v Tolerant I/O	UART4	cuntom
TX5 RX5	5v Tolerant I/O	UART5	DJI OSD/ VTX
TX6 RX6	5v Tolerant I/O	UART6	On board telem

Plane 4.5.0+

➤ Vsl for VTX and Dual Camera

① Vsl for VTX

RELAY2_FUNCTION	1	Relay
RELAY1_PIN	81	IO number
RCx_OPTION	34	Set RC_x as relay2 on/off

*Vsl default is ON

② Dual Camera

RELAY1_FUNCTION	1	Relay
RELAY1_PIN	82	IO number
RCx_OPTION	28	Set RC_x relay1 on/off

*Default is Camera1

➤ Receiver

① SBUS with built in inverter

Connect to SBUS port

BRD_ALT_CONFIG	0	Close uart2
SERIAL2_PROTOCOL	-1	Close uart2

② CRSF, uart1 can be used as other function

BRD_ALT_CONFIG	1	Open uart1
SERIAL1_PROTOCOL	23	Set uart1 as RC_IN

➤ **Use Digital OSD**

Use UART5

① DJI goggles2, WalkSnail

SERIAL5_PROTOCOL	42	Display Port
OSD_TYPE	5	MSP_DISPLAYPORT
MSP_OPTIONS	0	close

② DJI V2

SERIAL5_PROTOCOL	33	DJI FPV
OSD_TYPE	3	MSP
MSP_OPTIONS	0	close

➤ **Use AirSpeed**

ie: use MS4525D0

ARSPD_BUS	0	Use I2C1
ARSPD_TYPE	1	I2C-MS4525D0
ARSPD_USE	0	0: only show 1: work with speed control 2: only work when throttle is 0

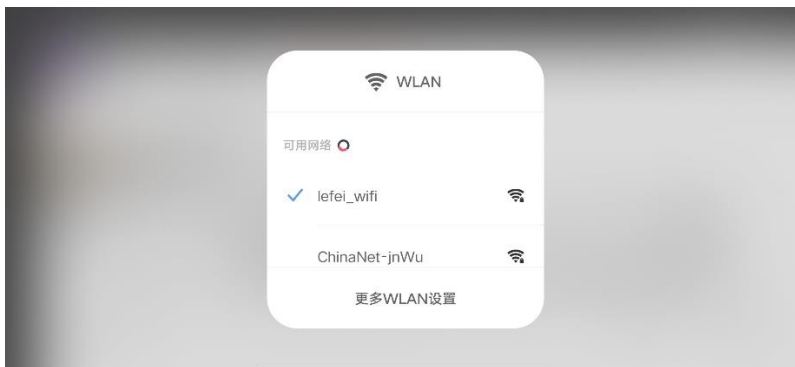
➤ How to Connect GCS



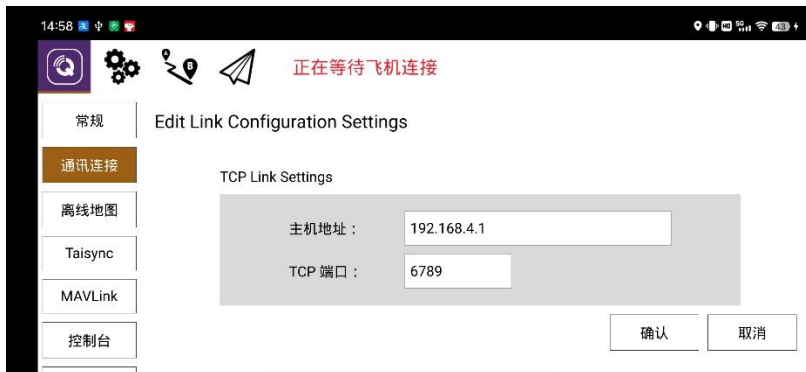
DOWNLOAD

① Connect Qground with wifi

Step1: select lefei_wifi



Step2: open Qground, select TCP

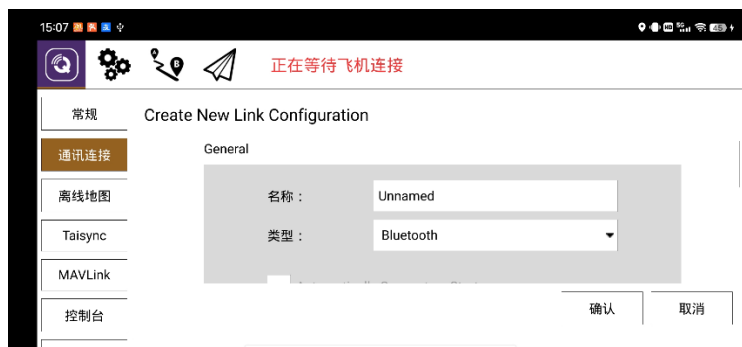


② Connect Qground with BlueTooth

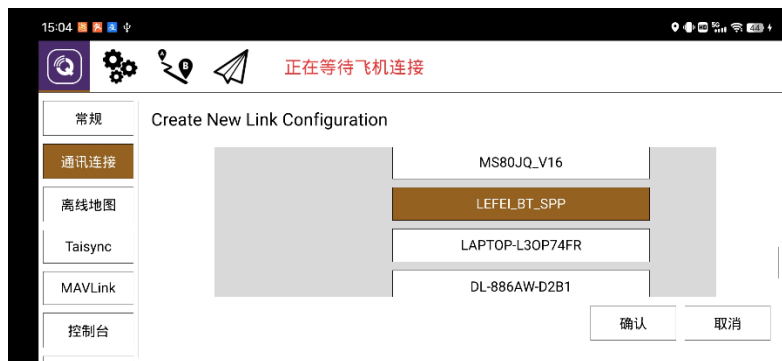
Step1: need open position and bluetooth



Step2: select bluetooth

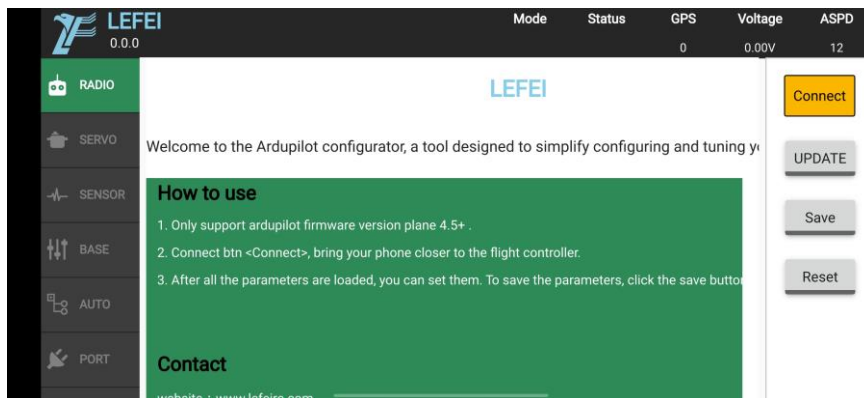


Step3: select LEFEI_BT_SPP

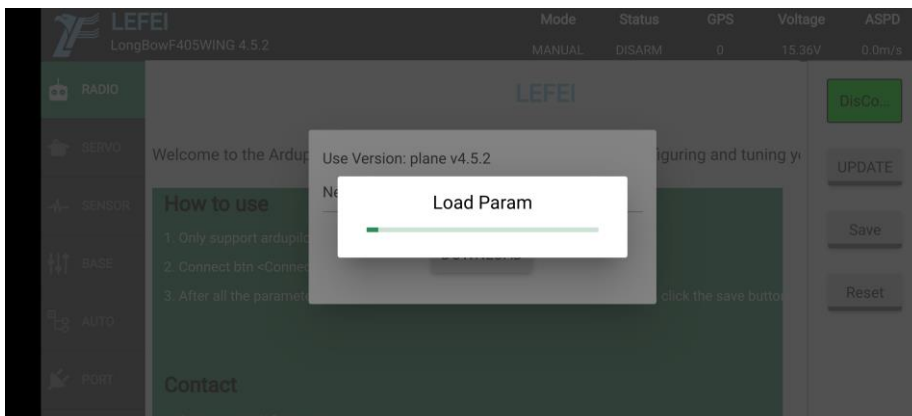


➤ How to use LongBow APP

First click <connect>



Move phone close to FC



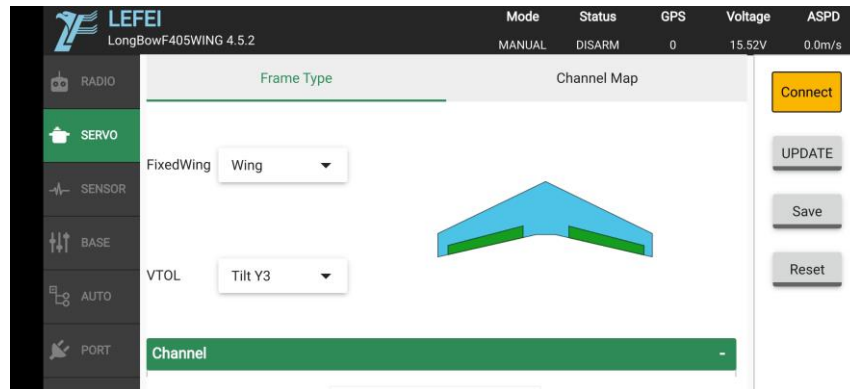
➤ **Tips**

- **How to save parameters**

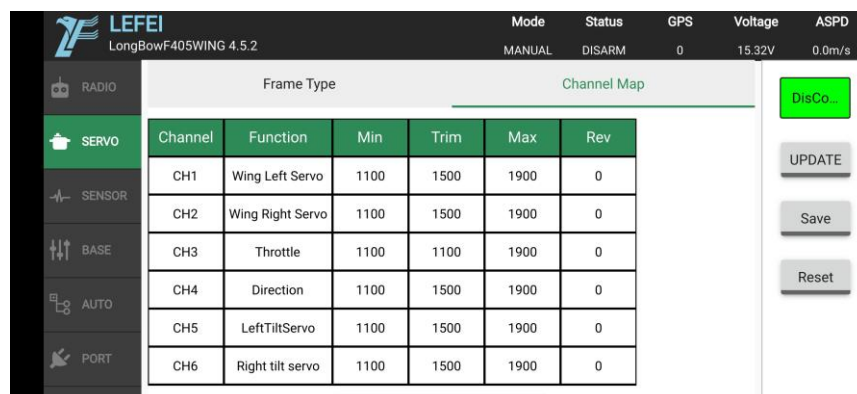
Long click <SAVE> button.

- **How to set servo parameters**

Select air frame type



It will automatic generate channel map.



You can click any channel to edit.

