

# Lokon Gen 1 - AI Guidance Module User Manual

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## Index

1. [Lokon Gen 1 - AI Guidance Module User Manual](#)
  1. [Description](#)
  2. [Tech Specs](#)
    1. [Lokon Gen 1 - AI module](#)
    2. [ZWFC-405 - Fight Control](#)
  3. [Installation](#)
    1. [Flight control system pad pin definition](#)
      1. [L1](#)
      2. [L2](#)
    2. [AI module port pin definition](#)
    3. [FC & AI module connection](#)
  4. [Usage](#)
    1. [Remote Controll](#)
    2. [Remote Controller Function Description](#)
      1. [Unlock/Lock](#)
      2. [Stabilize Mode](#)
      3. [Altitude Hold Mode](#)
      4. [Lock & Track Mode](#)



## Description

This intelligent tracking module features FPV terminal image guidance (none GPS guidance); enabling automatic FPV drone tracking of targets until collision after manually locking the target with the remote controller.

The smart module includes a processing unit and a camera (replacing the original FPV system's own camera), requiring integration into the existing FPV drone system with flight control and video transmission connections.

## Tech Specs

### Lokon Gen 1 - AI module

Type	Parameter	Description
Tracking Range (Typical)	Person: 150m; Veichle: 300m	Based on manual targeting.
Minimum Tracking	16*16~128*125 pixels	
Accuracy	±3m	
Control Output	Mavlink	
Video Output	PAL	
AI Cam	Resolution: 1280*960 px; DFOV: 46°(H) * 35°(V)	Manual control assistance and automatic guidance module.
Image sensor	1/1.8 Inch Sensor	
LENS	6mm	
FOV	36.86° (H)*29.14° (V)	
Frame Rate	50Hz	
Wide Angle Cam (Optional)	Resolution: 1280*960 px; DFOV: 150°	Since the guidance camera FOV is small, increasing the wide-angle camera to expand the field of view facilitates manual flight control.
IR Cam (Optional)	Resolution: 256*192 px; DFOV: 60°	Assists in identifying people and vehicles at night and in complex background environments, and reduces smoke interference.
Power Source	4S~6S Wide Voltage Input	
Size	30mm*30mm*10mm	
Weight	20g	

### ZWFC-405 - Fight Control

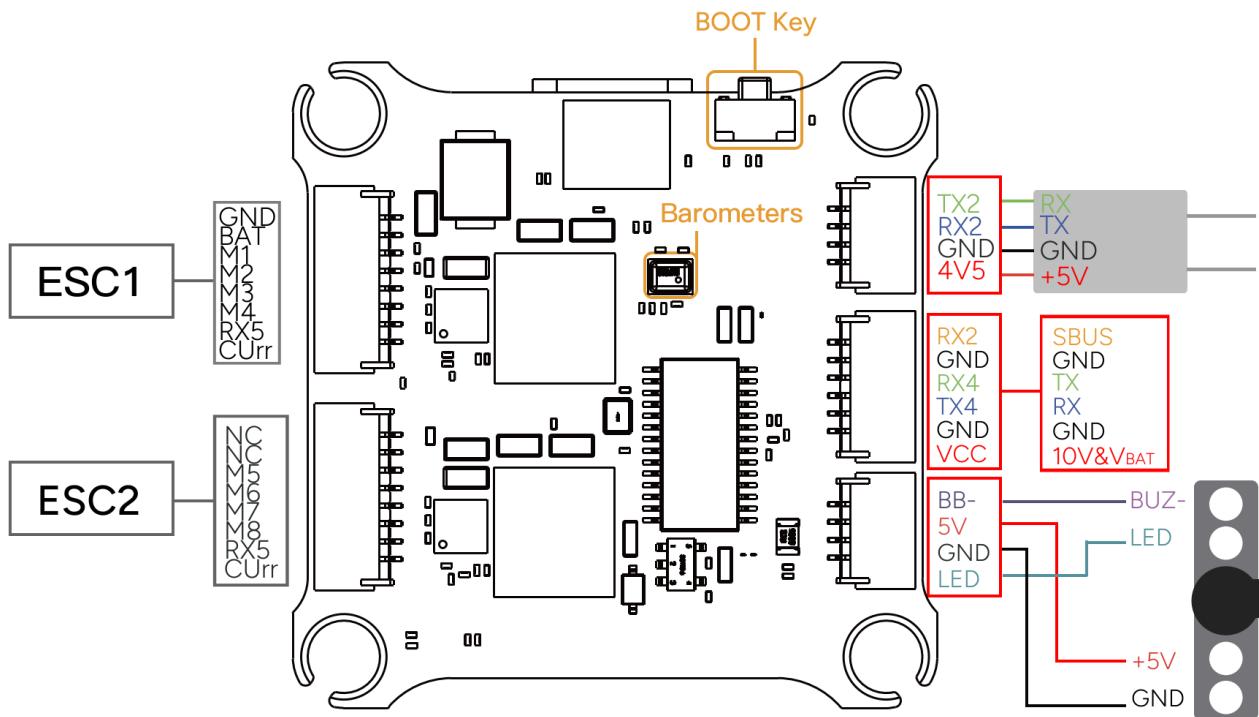
Type	Specs
Processor	STM32F405
Tourbillon	ICM42688
BEC	5V/3A; 10V/2.5A

Type	Specs
Memory	16MB
Firmware	ZWF4x
UART Serial Ports	5
LED Display Light	4
Input Voltage	2S~6S
Mounting	30.5*30.5mm φ4mm

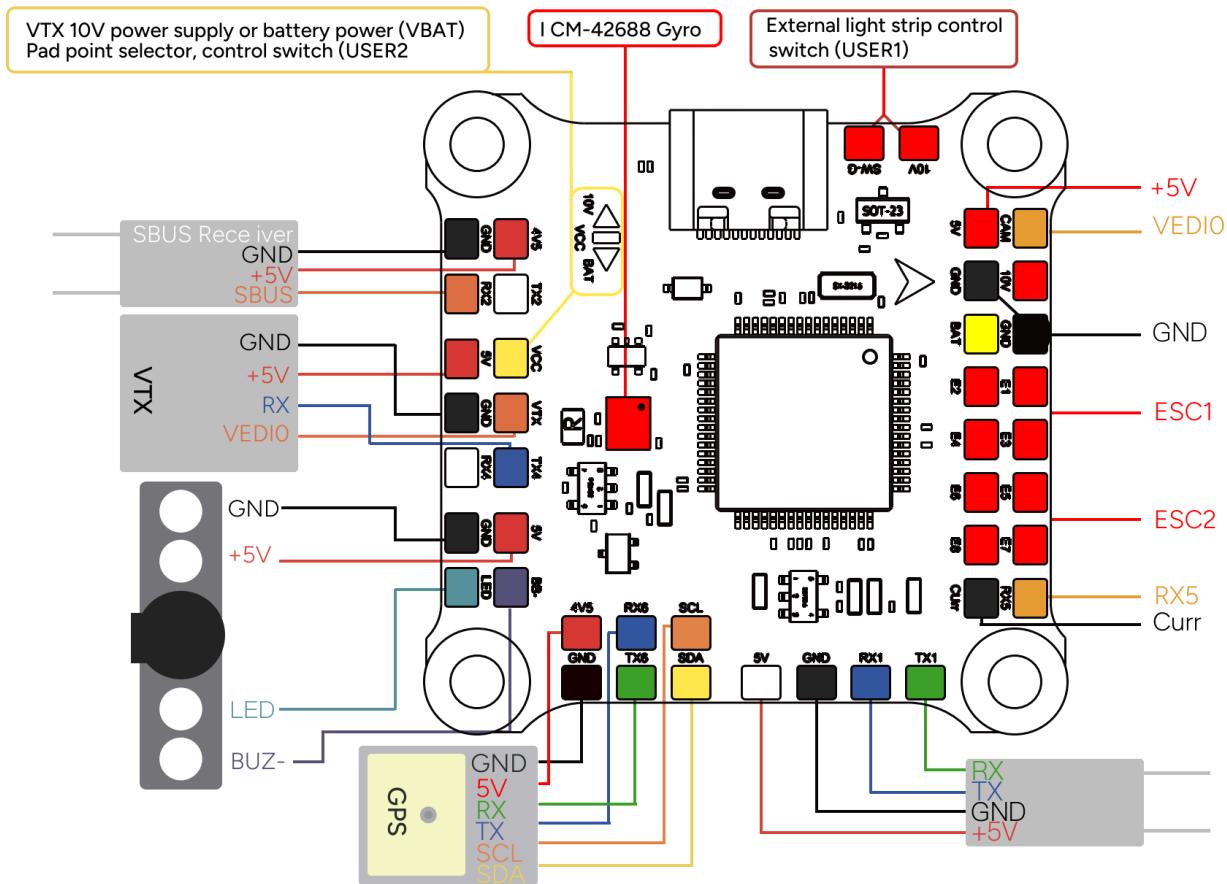
## Installation

Flight control system pad pin definition

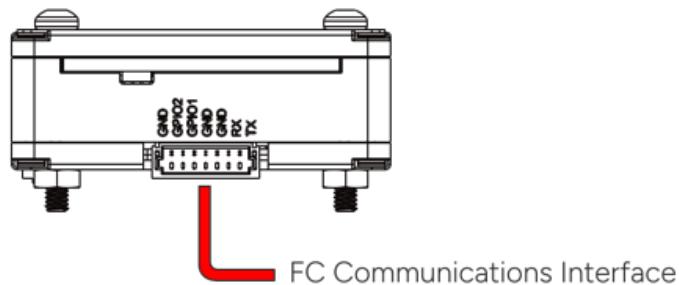
L1



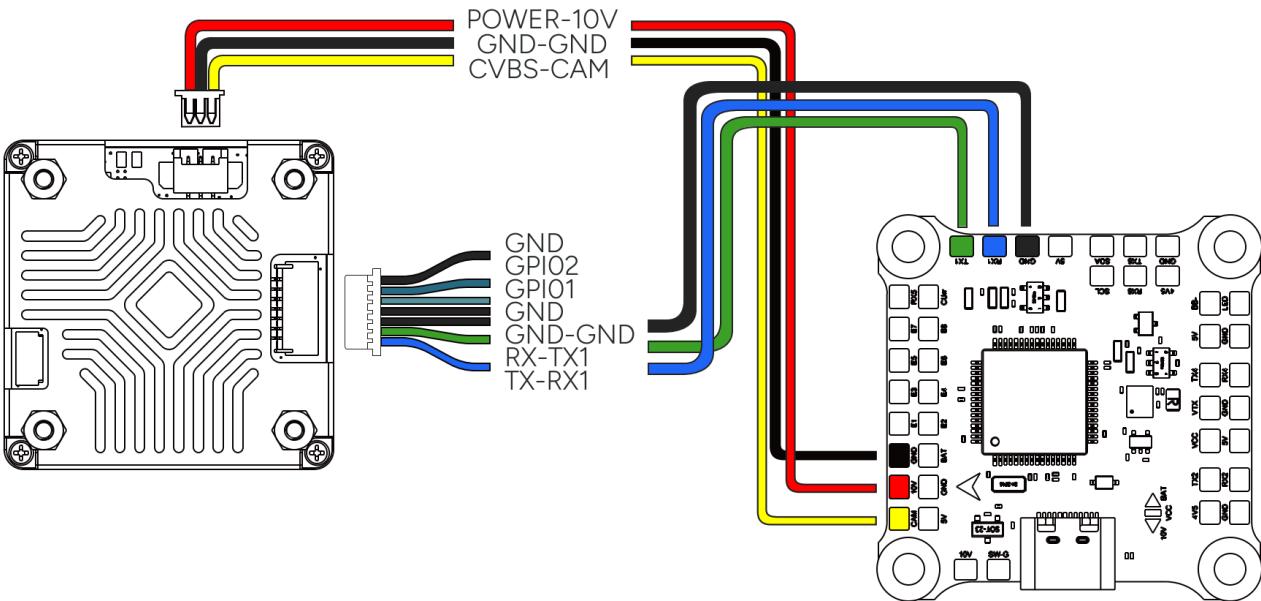
L2



AI module port pin definition



FC & AI module connection



\*Communication interface pin only requires welding three cables.

## Usage

### Remote Control

1. Configure custom functions on the remote controller: lock onto targets, etc.
2. Use the on-screen crosshair on the remote controller to roughly lock onto the target area and enable automatic cruising (suitable for situations where the aircraft is far from the target and can only see the approximate target area).



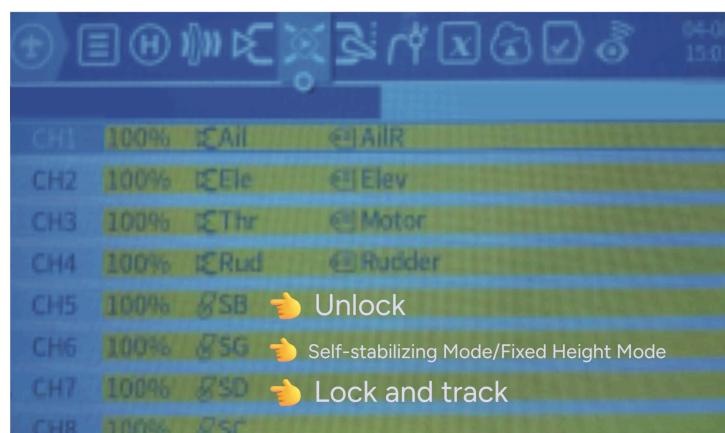
3. Use the on-screen crosshair on the remote controller to precisely lock onto the target area and enable automatic tracking and targeting (suitable for situations where the aircraft is close to the target and can clearly see the target).



In addition to the default 4 joystick channels (Yaw, Throttle, Pitch, Roll), there are 3 additional mapping channels to be set up, namely:

1. Unlock/Off Lock (CH5);
2. Self-stabilizing Mode/Fixed Height Mode (CH6);
3. Locked Tracking (CH7)

e.g. :



The additional mapping channels require a 3-pass toggle, also available define the other channels by user.

## Remote Controller Function Description

### **Unlock/Lock**

Control of Aircraft Propeller and Locking of Propeller

### **Stabilize Mode**

1. Users control the tilt angle of the aircraft through **pitch** and **roll**. When released, the aircraft will *automatically level*. In windy conditions, continuously adjusting **pitch** and **roll** keeps the aircraft stationary.
2. The **yaw** controls the aircraft's *turning rate*. Adjusting **yaw** changes the aircraft's orientation; when the **yaw** axis returns to center, the aircraft maintains its current direction.

3. The **throttle** controls the *average motor speed*. Throttle input is directly proportional to the aircraft's *speed* and *altitude*.

## Altitude Hold Mode

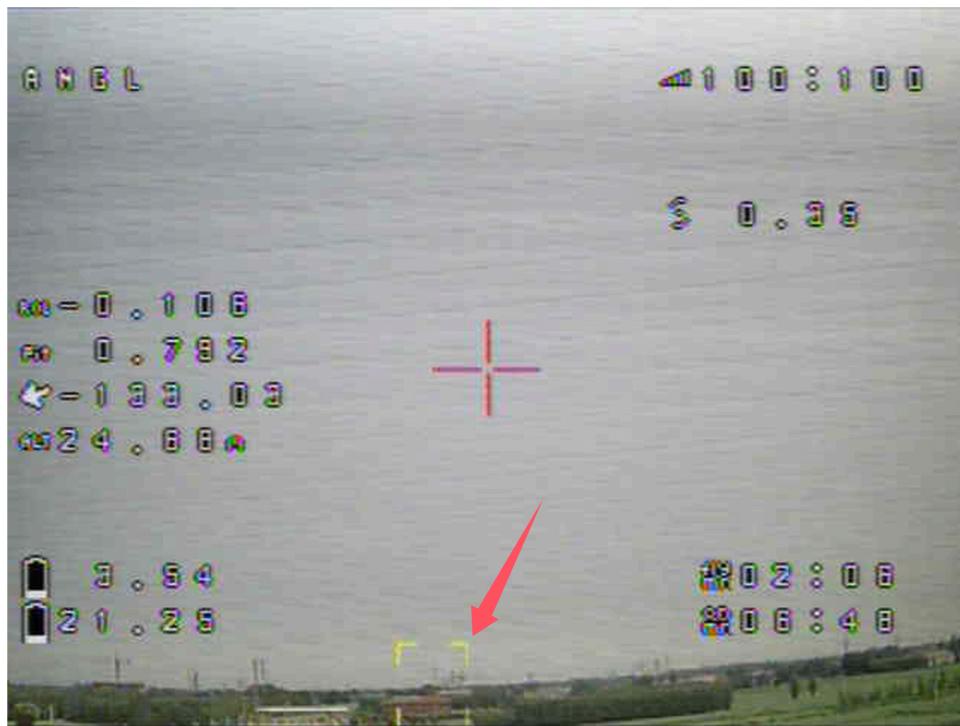
1. When the throttle joystick is centered, the aircraft maintains its current altitude. Wind will cause the aircraft position to fluctuate. The **pitch** and **roll** can adjust the *tilt angle of flight*, while **yaw** changes the flight direction.
2. When the aircraft continually adjusts its orientation, it is influenced by wind force. To counteract this, increase **yaw** and **roll** input values in the opposite direction.
3. The **throttle** controls the aircraft's *ascent* and *descent*, with maximum rates of **5m/s** each. Ascent and descent rates are set by parameters **MPC\_Z\_VEL\_MAX\_UP** and **MPC\_ZVEL\_MAX\_DN**.
4. When switching from **Stabilize Mode** to **Altitude Hold Mode**, ensure **throttle**, **yaw**, **pitch**, and **roll** joysticks are centered. Instantly switching modes with outputs on axes other than throttle can cause the aircraft to roll over. Wait for the OSD information to switch from **ANGL** to **ATK** before continuing operations.
5. To descend, switch from **Altitude Hold Mode** to **Stabilize Mode**. When switching from **Altitude Hold Mode** to **Stabilize Mode**, **throttle** input should be kept in low level; with **throttle** in mid-to-high positions, switching to **Stabilize Mode** can cause the aircraft to surge upward.
6. Flight control uses *barometric altimeters* as height references; changes in flight pressure affect the accuracy of the aircraft's displayed altitude.
7. Displayed altitude on the OSD is for reference only.

## Lock & Track Mode

1. By default, **lock & track** will show as a **red** box on the target:



2. When target lost, **lock & track** will turn to a **yellow** box hovering at the target's last position:



3. To activate **Lock & Track Mode**, enter **Altitude Hold Mode** first, and switch **ANGL** to **ATK**.
4. When the **Lock & Track Mode** joystick is at maximum input, it automatically identifies and locks onto targets within the central area of the crosshair cursor. The aircraft will then fly automatically to the *locked box* position.
5. If the locked target moves, the *locked box* will move accordingly; users cannot manually control the aircraft with the joystick but can observe the dynamic target through the video transmission screen.
6. If the tracked object and the locked target in the crosshair are aligned but in different positions, set the **track** joystick to *middle* position. The **pitch** and **roll** can then control the crosshair position. When the crosshair is over the *desired target*, set the **track** joystick to its maximum value to change targets. If the tracked box locks onto a target different from the one intended for tracking, exit the locking state by setting the **track** joystick to its minimum value, manually adjust the orientation, and then set it to its maximum value to relock the target.
7. When the **track** joystick is in the middle position, moving the crosshair can change the target locked by the *locked box*. It is not recommended for the crosshair to move more than half the aspect ratio of the video transmission screen from the center left or right. If the angle between the *locked box* and the target to be tracked is too large, it is recommended to exit tracking, manually adjust the direction, re-lock, and fine-tune the cursor.
8. In **Lock & Track Mode**, the ratio between the distance of the target object and the flight altitude of the aircraft is approximately 10:3. Therefore, to use **Lock & Track** at a distance of about 100 meters, the aircraft altitude must be above 30 meters.