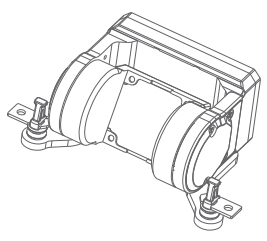
AVATAR GM1 V2-19

QUICK START GUIDE

V1.2



Introduction

This mechanical stabilization gimbal provides real-time camera image stabilization and camera angle adjustment functions. It supports Walksnail Avatar/Ascent and CADDXFPV analog cameras with a 19mm mounting width, enabling stabilization and adjustment of the camera's pitch angle. Users are required to design mounting holes on their carrier independently to fit the gimbal mounting bracket. The gimbal can automatically recognize upright and inverted mounting modes.

Product Precautions

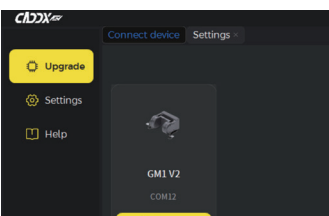
1.Ensure the external power supply to the gimbal is within the specified range (9~25.2V DC, 3S–6S LiPo battery). Operating outside this range may cause malfunction or damage.
2.Do not short-circuit the power and GND wires, as this will damage the device.
3.Make sure the coaxial cable connected to the gimbal is not fastened too tightly. Leave enough slack to allow free movement during the gimbal's damping and operation. The gimbal must not collide or interfere with other objects during self-check or movement after powering on.
4.When using the gimbal with the Moonlight camera, it must be paired with the Moonlight VTX.
5.When using the gimbal head-tracking feature, some Avatar/Ascent VTX units may not support it. Please refer to the corresponding VTX product manual for details.
6.The gimbal bracket must be securely mounted to the vehicle using the included damping balls or compatible third-party damping balls. Ensure the installation is stable.
7.The head-tracking UART cannot be controlled simultaneously by other protocols.

Camera Installation



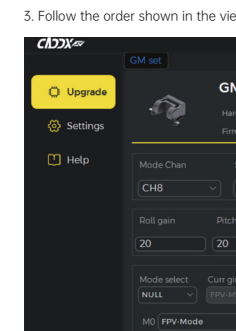
1. Remove the rear cover of the Ratel 2 or Ratel Pro camera.
2. Plug the gimbal 3-pin power cable into the camera power port.
3. Install the 3D printed rear cover onto the camera. Route the power cable inside the printed part and lead it out through the side cutout.
4. Mount the camera together with the printed part into the gimbal. Fasten two diagonal PM1.4×14mm machine screws; the screws pass through the gimbal and printed part, then thread into the tapped holes on the camera front housing.
5. Tighten the two screws fully, then check if the camera tilts smoothly across its full pitch rotation range. If noticeable binding or resistance occurs during movement, disassemble and re-install the camera.
6. Assembly completed.

Installation Dimensions



Unit: mm

Connection and Use



CRSF receiver

PWM1
The channel is used to select the gimbal's working mode. There are three modes available:
1.Translation Mode: Pitch and roll remain level, while the yaw axis follows.
2.Translation Roll Mode: Pitch remains level, while roll and yaw axes follow.
3.Three-Axis Follow Mode: Pitch, roll, and yaw axes all follow.

PWM2
The channel is used to adjust the gimbal follow sensitivity, controlling how fast or slow the gimbal responds. Please use the dial channel on the remote controller to make the adjustments.

PWM3
This channel controls the gimbal's pitch axis. Please use the dial switch on the remote controller to operate it. You can adjust the gimbal's rotation angle range by modifying the channel travel settings on the remote controller.

PWM4
This channel controls the gimbal's yaw axis. Please use the dial switch on the remote controller to operate it. You can adjust the gimbal's rotation angle range by modifying the channel travel settings on the remote controller.

It is also possible to control the gimbal via a third-party head-tracking module by assigning the control channels to PWM3 and PWM4, enabling head-tracking control of the gimbal.

Control Method

Gimbal supports the following four control methods: direct head-tracking connection/ S.BUS/ CRSF control, PWM control, and Mavlink control. The priority of these control methods decreases in the order listed.。

Remote Gimbal Control

1.UART Control: Connect the gimbal's UART_Rx and UART_Tx to a UART port's Tx and Rx on the flight controller. The gimbal function can be enabled in the INAV firmware by selecting "gimbal" as the peripheral for that port. In the configuration, assign remote control channels for sensitivity, pitch, roll, and yaw. In the mode settings, find "gimbal" and assign remote control channels for the gimbal's three modes.

2.CRSF/S.BUS Control: Connect the gimbal's PWM1 to the receiver's S.BUS signal, or connect the gimbal's RX to CRSF_TX. Five channels are required to control the gimbal mode, follow sensitivity, pitch, roll, and yaw. Channel mapping can be configured using the gimbal tuning software CADDX PC Tool.

3.PWM Control: PWM1 to PWM4 correspond to the gimbal mode, three-axis follow sensitivity, gimbal pitch, and gimbal yaw control channels, respectively.

4.Mavlink Control: Connect the gimbal's UART_Rx and UART_Tx to a UART port's Tx and Rx on the flight controller. This method uses 5 channels to control gimbal mode, follow sensitivity, pitch, roll, and yaw. Channel mapping can be done via the CADDX PC Tool software. (Mavlink control is only supported on PX4/ArduPilot firmware).

The ArduPilot configuration is as follows:

SERIAL1	
SERIAL1_BAUD	115
SERIAL1_OPTIONS	1024
SERIAL1_PROTOCOL	2

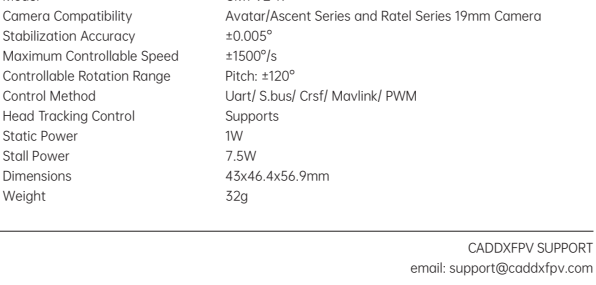
The PX4 configuration is as follows:

MavLink	
MAV_1_CONFIG	TELEM2
MAV_1_MODE	Custom/Gimbal
MAV_1_CONFIG	115200B/S
Serial	
SER_TEL2_BAUD	115200 8N1

Upgrade and Controller Setup



1. Connect the upgrade cable to the upgrade port, and connect the other end to your computer. Open the upgrade tool Caddx_PC_Tool.
2. Click the GM1 V2 connection option.



3. Follow the order shown in the view, select the corresponding version of the firmware to upgrade.

4. Click Start Upgrade and wait for the progress bar to finish. Upgrade completed successfully. (Do not restart or power off during the upgrade to avoid upgrade failure.)

5. When using CRSF/SBUS/MAVLink, in the remote control channel assignment settings, select the corresponding channels for the five functions in sequence: Mode, Sensitivity, Roll, Pitch, and Yaw.

6. Click Flash Parameters and wait for the progress bar to complete.

Specifications

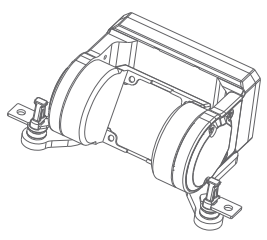
Model	GM1 V2-19
Camera Compatibility	Avatar/Ascent Series and Ratel Series 19mm Camera
Stabilization Accuracy	±0.005°
Maximum Controllable Speed	±1500°/s
Controllable Rotation Range	Pitch: ±120°
Control Method	Uart/ S.bus/ Crsf/ Mavlink/ PWM
Head Tracking Control	Supports
Static Power	1W
Stall Power	7.5W
Dimensions	43x46.4x56.9mm
Weight	32g

CADDXFPV SUPPORT
email: support@caddxfpv.com

AVATAR GM1 V2-19

快速入门指南

V1.2



简介

该产品为机械增稳云台，可实现相机画面实时防抖与相机角度调整，适配安装宽度为 19mm 的 Walksnail Avatar/ Ascent 与 CADDXFPV 模拟系列相机，可实现相机俯仰角度的防抖和调整。用户需自行设计载具的安装孔位、与云台安装支架做适配。云台可自动识别正装、倒置安装。

产品注意事项

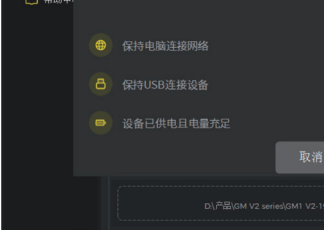
1. 确保云台的外接电源在规格范围内（9~25.2V DC，3S~6S 锂电池），否则可能导致设备工作异常或损坏。
2. 切勿短接电源及 GND 线，否则会导致设备损坏。
3. 注意同轴线束与云台连接的部分不能固定过紧，要留有一定的活动长度，确保云台减震行程下线束都可以自由活动，云台通电自检与运动过程不能与其他物体产生碰撞或干涉。
4. 当云台安装月光Moonlight相机时，需搭配月光Moonlight VTX使用。
5. 使用云台头追功能时，个别 Avatar/ Ascent VTX 不支持，请查看对应 VTX产品说明书。
6. 云台支架必须使用包装附带或第三方减震球与载具固定，并确保安装牢固。
7. 头追uart与其他协议不能同时控制。

相机安装



1. 拆卸平头哥2或平头哥pro相机后盖
2. 将云台3pin电源线插入相机电源端口
3. 将打印后盖安装在相机上（电源线埋在打印件内部, 从侧边开孔处出线）
4. 相机与打印件安装在云台中,锁付两颗对角PM1.4*14mm螺丝(螺丝穿过云台,打印件,锁付在相机前壳螺纹中)。
5. 锁上2颗螺丝，检查相机俯仰最大转动角度是否顺畅，如果转动有明显阻力，请重新安装相机。
6. 安装完成。

安装尺寸



单位: mm

连接及使用



PWM1
通道为云台工作模式选择，共有三个工作模式
1.平移模式：俯仰横滚保持水平，方向轴跟随
2.平移横滚模式：俯仰保持水平，横滚方向轴跟随
3.三轴跟随模式:俯仰、横滚、方向轴跟随

PWM2
通道为云台跟随灵敏度设置，调整云台跟随的响应快慢，请使用遥控器上的旋钮通道来控制。

PWM3
通道为云台云台俯仰轴通道，请使用遥控器上的波轮开关控制，可通过修改遥控器通道行程来改变云台转动角度范围。

PWM4
通道为云台云台方向轴通道，请使用遥控器上的波轮开关控制，可通过修改遥控器通道行程来改变云台转动角度范围。

也可以通过第三方头追模块，将控制通道对应至 PWM3 及 PWM4，可以实现通过头追的方式控制云台。

控制方式

支持以下四种控制方式：头追直连/S.BUS/CRSF控制、PWM控制及Mavlink控制,以上四种控制方式的优先级依次减小。

通过遥控器控制云台

1. Uart控制： 云台 UART_Rx 与 UART_Tx 连接至飞控某一组串口的 Tx 与 Rx，可在inav固件中使用串口云台功能，端口外设选择gimbal，配置里找到串口云台，为灵敏度、俯仰、横滚与指向分配遥控通道，在模式里找到gimbal，为云台三个模式分配遥控通道。

2. CRSF/S.BUS控制： 将云台的PWM1连接至接收机的S.BUS信号或者将云台的RX连接至CRSF_TX，需占用5个通道，分别控制云台模式、跟随灵敏度、俯仰、横滚与指向，可使用调试软件 CADDX PC Tool 进行通道映射。

3. PWM控制： PWM1~PWM4分别为云台模式、三轴跟随灵敏度、云台俯仰与云台指向控制通道。

4. Mavlink控制： 云台 UART_Rx 与 UART_Tx 连接至飞控某一组串口的 Tx 与 Rx，需占用5个通道，分别控制云台模式、跟随灵敏度、俯仰、横滚与指向，可使用调试软件 CADDX PC Tool 进行通道映射。（Mavlink仅支持PX4/ardupilot固件）。

Ardupilot 配置如下：

SERIAL1	
SERIAL1_BAUD	115
SERIAL1_OPTIONS	1024
SERIAL1_PROTOCOL	2

PX4 配置如下：

MavLink	
MAV_1_CONFIG	TELEM2
MAV_1_MODE	Custom/Gimbal
MAV_1_CONFIG	115200B/S
Serial	
SER_TEL2_BAUD	115200 8N1

云台固件升级及遥控配置

1. 使用升级线连接升级口，另一端连接电脑端并打开升级工具Caddx_PC_Tool。
2. 点击GM1 V2连接选项。

3. 按照视图顺序操作，选择对应版本固件进行升级。

4. 点击开始升级，并等待进度条完成后升级成功 (升级过程中请勿重启或关闭电源，避免升级失败)。

5. 当使用CRSF/SBUS/Mavlink时，遥控控制分配控制通道设置，按顺序从模式，灵敏度，滚转，俯仰，指向分别五个功能中选择相对应通道。

6. 点击烧写参数，等待进度条完成后即可。

参数规格

名称	GM1 V2-19
相机兼容性	Avatar/Asent系列与Ratel系列 19mm 相机
稳像精度	±0.005°
最大可控转速	±1500°/s
可控转动范围	俯仰: ±120°
控制方式	Uart/ S.bus/ Crsf/ Mavlink/ PWM
头追控制	支持
静态功耗	1W
堵转功耗	7.5W
尺寸	43x46.4x56.9mm
重量	32g

CADDXFPV SUPPORT
email: support@caddxfpv.com