

Gimbal MAVLink Integration Guide - V1.0

1) Supported Camera Types

- K11
- G640T-V2
- K40T

2) Recommended Environment

- QGroundControl (QGC) version - 5.0.8
- MissionPlanner version - 1.3.83
- ArduPilot (APM) version - 4.6.3
- PX4 version - 1.17.0
- Example flight controller - HEQ Flight Controller / CUAV V5+
- Example data link - HEQ SCEPTER-15

3) Supported Functions

Function	PX4	APM
Gimbal control	Supported	Supported (QGC recommended: tap-to-point on screen)
SBUS to MAVLink gimbal control	Supported	Supported
Switch photo/video mode	Supported	<i>Not-supported-yet</i>
Take photo / record video	Supported (some QGC versions)	Supported (MissionPlanner recommended)
Tracking	K11/K40T only	K11/K40T only
Display SD card capacity	Supported (QGC)	<i>Not-supported-yet</i>
Format SD card	Supported (QGC)	Supported (QGC)

4) PX4 / ArduPilot (APM) Flight Controller Parameter Configuration

PX4

- Serial port side
 - Connect the gimbal payload to a TELEM port; the baud rate must match the payload (default 115200)
 - Set the corresponding instance to Gimbal channel (the example below uses MAV_X_*):
 - MAV_1_CONFIG = TELEMx (set to match the actual wiring)
 - MAV_1_MODE = Gimbal
 - MAV_1_FORWARD = Enabled
 - SER_TELx_BAUD = 115200

- Mount/Gimbal side
 - MNT_MODE_IN = 0/4 (Auto / MAVLink gimbal protocol v2); Auto recommended
 - MNT_MODE_OUT = 2 (MAVLink gimbal protocol v2)
 - MNT_MAV_COMPID = 154 (default gimbal component ID)
 - MNT_MAN_PITCH = AUX1
 - MNT_MAN_YAW = AUX2
 - MNT_RC_IN_MODE = Angular rate
 - MNT_RATE_PITCH = 30.00 (adjusts SBUS gimbal control speed)
 - MNT_RATE_YAW = 30.00 (adjusts SBUS gimbal control speed)
- RC transmitter side
 - Required when MNT_MODE_IN = AUTO is enabled; enables SBUS to MAVLink gimbal control
 - RC_MAP_AUX1 = Channel14 (channel can be customized)
 - RC_MAP_AUX2 = Channel15 (channel can be customized)
- Important notes
 - Restart the flight controller after changing the parameters above.
 - Additional parameters only appear after MNT_MODE_IN has been modified first.

ArduPilot (APM)

- Serial port side
 - SERIALx_PROTOCOL = MAVLink2
 - SERIALx_BAUD = 115
- Mount/Camera side
 - MNT1_TYPE = 6 (Gremsy)
 - CAM1_TYPE = 6 (MAVLink Camera)
 - RC14_OPTION = Mount1 Pitch (channel can be customized)
 - RC14_MAX = 1950 (set the actual value to match your transmitter)
 - RC14_MIN = 1050 (set the actual value to match your transmitter)
 - RC15_OPTION = Mount1 Yaw (channel can be customized)
 - RC15_MAX = 1950 (set the actual value to match your transmitter)
 - RC15_MIN = 1050 (set the actual value to match your transmitter)
 - RC12_OPTION = Retract Mount1 (channel can be customized; can be assigned to center-return or one-click-look-down; the two are mutually exclusive)
 - RC12_MAX = 1950 (set the actual value to match your transmitter)
 - RC12_MIN = 1050 (set the actual value to match your transmitter)
 - MNT1_DEFLT_MODE = 4
 - MNT1_RC_RATE = 30 (0 = angle control; > 0 = speed control)