PayloadSDK Functions

Version history

Version	Publish date	Description
v1.0.0	05/23/2025	Add format SD card function

Connection functions

sdkInitConnection

- Brief: Initialize the connection to the payload via UDP or UART.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: True if connection successful, False otherwise (bool)

checkPayloadConnection

- Brief: Check the connection to the payload within a specified timeout period.

Param	Type	Range	Default Value	Description
timeout	float	> 0	5.0	Timeout in seconds

- Return: True if connection successful, False otherwise (bool)

sdkQuit

- Brief: Close the connection and stop the data receiving thread.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

Camera Control functions

setPayloadCameraParam

- Brief: Set the parameter value for the payload's camera.

Param	Type	Range	Default Value	Description
param_id	str	None	None	Parameter ID
param_value	int	None	None	Parameter value
param_type	int	(1) MAV_PARAM_TYPE_UINT8 (2) MAV_PARAM_TYPE_INT8 (3) MAV_PARAM_TYPE_UINT16 (4) MAV_PARAM_TYPE_INT16 (5) MAV_PARAM_TYPE_UINT32 (6) MAV_PARAM_TYPE_INT32 (7) MAV_PARAM_TYPE_UINT64 (8) MAV_PARAM_TYPE_INT64 (9) MAV_PARAM_TYPE_REAL32 (10)MAV_PARAM_TYPE_REAL64	None	Data type of the parameter

- Return: None

setPayloadCameraMode

- Brief: Set the operating mode for the camera

Param	Type	Range	Default Value	Description
mode	int	(0) CAMERA_MODE_IMAGE (1) CAMERA_MODE_VIDEO	None	Camera mode

- Return: None

setPayloadCameraCaptureImage

- Brief: Request the camera to capture an image.

Param	Type	Range	Default Value	Description
interval_s	int	>= 0	0	Interval between captures in seconds

- Return: None

setPayloadCameraStopImage

- Brief: Stop the interval image capturing process.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

setPayloadCameraRecordVideoStart

- Brief: Start video recording.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

setPayloadCameraRecordVideoStop

- Brief: Stop video recording.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

setCameraZoom

- Brief: Adjust the camera's zoom level.

Param	Type	Range	Default Value	Description
zoom_type	float	(0) ZOOM_TYPE_STEP (1) ZOOM_TYPE_CONTINUOUS (2) ZOOM_TYPE_RANGE	None	Type of zoom
zoom_value	float	zoom_type equal ZOOM_TYPE_STEP and equal ZOOM_TYPE_CONTINUOUS (-1) ZOOM_OUT (0) ZOOM_STOP (1) ZOOM_IN	None	Zoom value
zoom_value	float	zoom_type equal ZOOM_TYPE_RANGE from 0.0% to 100.00%	None	Zoom value

- Return: None

setCameraFocus

- Brief: Adjust the camera's focus.

Param	Type	Range	Default Value	Description
focus_type	float	(1) ZOOM_TYPE_CONTINUOUS (4) FOCUS_TYPE_AUTO	None	Type of focus
focus_value	float	zoom_type equal ZOOM_TYPE_CONTINUOUS (-1) FOCUS_OUT (0) FOCUS_STOP (1) FOCUS_IN (2) FOCUS_AUTO	0	Focus value

- Return: None

getPayloadCameraSettingList

- Brief: Request the list of all camera parameters.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

getPayloadCameraSettingByID

- Brief: Request the value of a specific camera parameter by ID.

Param	Type	Range	Default Value	Description
param_id	str	None	None	Parameter ID

- Return: None

getPayloadCameraSettingByIndex

- Brief: Request the value of a camera parameter by index.

Param	Type	Range	Default Value	Description
idx	int	None	None	Parameter index

- Return: None

getPayloadCameraMode

- Brief: Request the current mode of the camera.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

getPayloadCameraInformation

- Brief: Request detailed information about the camera.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

getPayloadCameraStreamingInformation

- Brief: Request information about the camera's video stream.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

getPayloadStorage

- Brief: Request information about the camera's storage (SD card).

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

getPayloadCaptureStatus

- Brief: Request the current capture status of the camera.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

setParamRate

- Brief: Set the message rate for a specific parameter.

Param	Type	Range	Default Value	Description
param_index	int	None	Valid indices from PAYLOAD_PARAMS	Index of the parameter
time_ms	int	None	≥ 0	Time interval between messages in milliseconds

- Return: None

Gimbal Control functions

setPayloadGimbalParamByID

- Brief: Set the value of a gimbal parameter by ID.

Param	Type	Range	Default Value	Description
param_id	str	None	None	Parameter ID
param_value	float	None	None	Parameter value

- Return: None

setGimbalSpeed

- Brief: Set the speed or angle for move gimbal

Param	Type	Range	Default Value	Description
spd_pitch	float	-90 to 90	None	Pitch speed/angle in degrees
spd_roll	float	-180 to 180	None	Roll speed/angle in degrees
spd_yaw	float	-180 to 180	None	Yaw speed/angle in degrees
mode	input_mode_t	(1)INPUT_ANGLE (2)INPUT_SPEED	None	Input mode

- Return: None

getPayloadGimbalSettingList

- Brief: Request the list of all gimbal parameters

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

getPayloadGimbalSettingByID

- Brief: Request the value of a specific gimbal parameter by ID.

Param	Type	Range	Default Value	Description
param_id	str	None	None	Parameter ID

- Return: None

getPayloadGimbalSettingByIndex

- Brief: Request the value of a gimbal parameter by index.

Param	Type	Range	Default Value	Description
idx	int	None	None	Parameter index

- Return: None

sendPayloadGimbalCalibGyro

- Brief: Send command to calibrate the gimbal's gyro.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

sendPayloadGimbalCalibAccel

- Brief: Send command to calibrate the gimbal's accelerometer.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

sendPayloadGimbalCalibMotor

- Brief: Send command to calibrate the gimbal's motor.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

sendPayloadGimbalSearchHome

- Brief: Send command to search for the gimbal's home position.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

sendPayloadGimbalAutoTune

- Brief: Send command to auto-tune the gimbal.

Param	Type	Range	Default Value	Description
status	bool	True/False	None	True to enable, False to disable

- Return: None

FFC Control Functions

setPayloadCameraFFCMode

- Brief: Set the FFC mode for the camera.

Param	Type	Range	Default Value	Description
mode	int	0-1	None	FFC mode (0: Manual, 1: Auto)

- Return: None

setPayloadCameraFFCTrigg

- Brief: Trigger FFC calibration for the camera.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

GPS function

sendPayloadGPSPosition

- Brief: Send GPS position information to the payload.

Param	Type	Range	Default Value	Description
gps_data	mavlink_global_position_int_t	None	None	GPS position data structure

- Return: None

System Time function

sendPayloadSystemTime

- Brief: Send system time information to the payload.

Param	Type	Range	Default Value	Description
sys_time_data	mavlink_system_time_t	None	None	System time data structure

- Return: None

SD Card function

setFormatSDCard

- Brief: Format the camera's SD card.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

Object Tracking function

setPayloadObjectTrackingParams

- Brief: Set parameters for object tracking functionality.

Param	Type	Range	Default Value	Description
cmd	float	(0)TRACK_IDLE (1)TRACK_ACT (2)TRACK_LOST	None	Tracking command
pos_x	float	None	960	X position
pos_y	float	None	540	Y position

- Return: None

Parameter Request functions

requestParamValue

- Brief: Request the value of a specific parameter.

Param	Type	Range	Default Value	Description
param_index	int	None	None	Parameter index

- Return: None

sendPayloadRequestStreamRate

- Brief: Send a request for the message rate of a parameter.

Param	Type	Range	Default Value	Description
index	int	None	None	Parameter index
time_ms	int	None	None	Time interval in milliseconds

- Return: None

requestMessageStreamInterval

- Brief: Request the message rate for all parameters with a set msg_rate.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

Message Handler functions

payload_recv_handle

- Brief: Main loop to receive and process MAVLink messages.

Param	Type	Range	Default Value	Description
None	None	None	None	None

- Return: None

_handle_msg_param_ext_value

- Brief: Handle the PARAM_EXT_VALUE message from MAVLink.

Param	Type	Range	Default Value	Description
msg	MAVLink_param_ext_value_message	None	None	MAVLink message

- Return: None

_handle_msg_command_ack

- Brief: Handle the COMMAND_ACK message from MAVLink.

Param	Type	Range	Default Value	Description
msg	MAVLink_command_ack_message	None	None	MAVLink message

- Return: None

_handle_msg_camera_information

- Brief: Handle the CAMERA_INFORMATION message from MAVLink.

Param	Type	Range	Default Value	Description
msg	MAVLink_camera_information_message	None	None	MAVLink message

- Return: None

_handle_msg_camera_stream_information

- Brief: Handle the CAMERA_STREAM_INFORMATION message from MAVLink.

Param	Type	Range	Default Value	Description
msg	MAVLink_video_stream_information_message	None	None	MAVLink message

- Return: None

_handle_msg_storage_information

- Brief: Handle the STORAGE_INFORMATION message from MAVLink.

Param	Type	Range	Default Value	Description
msg	MAVLink_storage_information_message	None	None	MAVLink message

- Return: None

_handle_msg_camera_capture_status

- Brief: Handle the CAMERA_CAPTURE_STATUS message from MAVLink.

Param	Type	Range	Default Value	Description
msg	MAVLink_camera_capture_status_message	None	None	MAVLink message

- Return: None

_handle_msg_camera_settings

- Brief: Handle the CAMERA_SETTINGS message from MAVLink.

Param	Type	Range	Default Value	Description
msg	MAVLink_camera_settings_message	None	None	MAVLink message

- Return: None

_handle_msg_mount_orientation

- Brief: Handle the MOUNT_ORIENTATION message from MAVLink.

Param	Type	Range	Default Value	Description
msg	MAVLink_mount_orientation_message	None	None	MAVLink message

- Return: None

_handle_msg_param_value

- Brief: Handle the PARAM_VALUE message from MAVLink.k.

Param	Type	Range	Default Value	Description
msg	MAVLink_param_value_message	None	None	MAVLink message

- Return: None

_handle_msg_command_ext_ack

- Brief: Handle the COMMAND_EXT_ACK message from MAVLink.

Param	Type	Range	Default Value	Description
msg	MAVLink_param_ext_ack_message	None	None	MAVLink message

- Return: None

Helper functions

to_rad

- Brief: Convert angle from degrees to radians.

Param	Type	Range	Default Value	Description
deg	float	None	None	Angle in degrees

- Return: Angle in radians (float)

to_deg

- Brief: Convert angle from radians to degrees.

Param	Type	Range	Default Value	Description
rad	float	None	None	Angle in radians

- Return: Angle in degrees (float)

mavlink_euler_to_quaternion

- Brief: Convert Euler angles to quaternion.

Param	Type	Range	Default Value	Description
roll	float	None	None	Roll angle in radians
pitch	float	None	None	Pitch angle in radians
yaw	float	None	None	Yaw angle in radians

- Return: Quaternion [w, x, y, z] (list)

Callback functions

regPayloadStatusChanged

- Brief: Register a callback to receive notifications when the payload status changes.

Param	Type	Range	Default Value	Description
callback	Callable	None	None	Function that takes payload_status_event_t and List[float] as parameters

- Return: None

regPayloadParamChanged

- Brief: Register a callback to receive notifications when a payload parameter changes.

Param	Type	Range	Default Value	Description
callback	Callable	None	None	Function that takes payload_status_event_t, str, and List[float] as parameters

- Return: None

regPayloadStreamChanged

- Brief: Register a callback to receive notifications when the payload's video stream information changes.

Param	Type	Range	Default Value	Description
callback	Callable	None	None	Function that takes payload_status_event_t, str, and List[float] as parameters

- Return: None