

SUPPORTED MAVLINK PARAMETERS

Note: Many parameters are deprecated as of version 39 and will be removed in the future. Read-only parameters marked as deprecated should not be relied upon to have informative values. They are present primarily for legacy GCS support and will be removed in future releases. These updates should not remove any functionality, as any writable parameter updates have been limited to name changes.

Parameter	Permission	Type	Description	Default Value	Range	Units
BAT_CRIT_THR (Deprecated, no replacement)	Read-Only	Float	Sets the threshold when the battery will be reported as critically low.	0.07	[0.05, 0.25] (0.01)	percent
BAT_EMERGEN_THR (Deprecated, no replacement)	Read-Only	Float	Emergency threshold Comment: Sets the threshold when the battery will be reported as dangerously low.	0.05	This has to be lower than the critical threshold. This threshold commonly will trigger landing.	percent
BAT_LOW_THR (Deprecated, no replacement)	Read-Only	Float	Sets the threshold when the battery will be reported as low.	0.15		percent
BAT_N_CELLS (Deprecated, no replacement)	Read-Only	Int	Number of cells for battery 1 Comment: Defines the number of cells the attached battery consists of. Values: 0: Unknown 1: 1S Battery 2: 2S Battery 3: 3S Battery 4: 4S Battery 5: 5S Battery 6: 6S Battery 7: 7S Battery 8: 8S Battery 9: 9S Battery 10: 10S Battery 11: 11S Battery 12: 12S Battery 13: 13S Battery 14: 14S Battery 15: 15S Battery 16: 16S Battery	0		
BAT_V_CHARGED (Deprecated, no replacement)	Read-Only	Float	Full cell voltage (5C load) Comment: Defines the voltage where a single cell of battery 1 is considered full under a mild load. This will never be the nominal voltage of 4.2V	4.05	-0.01	volts
BAT_V_EMPTY (Deprecated, no replacement)	Read-Only	Float	Empty cell voltage (5C load) Comment: Defines the voltage where a single cell of battery 1 is considered empty. The voltage should be chosen before the steep drop off to 2.8V. A typical lithium battery can only be discharged down to 10% before it drops off to a voltage level damaging the cells.	3.5	-0.01	volts

SUPPORTED MAVLINK PARAMETERS

CAL_ACC0_EN (Deprecated, no replacement)	Read-Only	Int	Accelerometer Calibration	0		
CAL_ACC0_ID (Deprecated, no replacement)	Read-Only	Int	Accelerometer Calibration	1		
CAL_GYRO0_EN (Deprecated, no replacement)	Read-Only	Int	Gyro Calibration	0		
CAL_GYRO0_ID (Deprecated, no replacement)	Read-Only	Int	Gyro Calibration	1		
CAL_MAG0_EN (Deprecated, no replacement)	Read-Only	Int	Magnetometer Calibration	1		
CAL_MAG0_ID (Deprecated, no replacement)	Read-Only	Int	Magnetometer Calibration	1		
CAL_MAG0_ROT (Deprecated, no replacement)	Read-Only	Int	Magnetometer Calibration	-1		
CAL_MAG1_EN (Deprecated, no replacement)	Read-Only	Int	Magnetometer Calibration	0		
CAL_MAG1_ID (Deprecated, no replacement)	Read-Only	Int	Magnetometer Calibration	1		
CAL_MAG1_ROT (Deprecated, no replacement)	Read-Only	Int	Magnetometer Calibration	-1		
CAL_MAG2_EN (Deprecated, no replacement)	Read-Only	Int	Magnetometer Calibration	0		
CAL_MAG2_ID (Deprecated, no replacement)	Read-Only	Int	Magnetometer Calibration	1		
CAL_MAG2_ROT (Deprecated, no replacement)	Read-Only	Int	Magnetometer Calibration	-1		

SUPPORTED MAVLINK PARAMETERS

COM_DISARM_LAND	Read-Only	Float	Time-out (in seconds) for auto disarm after landing Comment: A non-zero, positive value specifies the time-out period in seconds after which the vehicle will be automatically disarmed in case a landing situation has been detected during this period. A zero or negative value means that automatic disarming triggered by landing detection is disabled.	0.5	-0.1	sec
COM_DL_LOSS_T <i>(Deprecated, replaced by GCS_LOSS_T)</i>	Read-Write	Int	Datalink loss time threshold. After this amount of seconds without datalink the data link lost mode triggers	10	[5, 300] (1)	sec
COM_LOW_BAT_ACT <i>(Deprecated, replaced by LOW_BAT_ACT)</i>	Read-Only	Int	Battery failsafe mode; Action the system takes at critical battery. Supported values: 0: Warning 2: Land mode 3: Return at critical level, land at emergency level	3		
COM_OBS_AVOID	Read-Write	Int	Defines the obstacle avoidance level. The level of obstacle avoidance is platform specific, i.e. the definition of what represents this level depends on how the vehicle platform implements it (proximity to obstacles, speed, etc.). Values: 0: Off; 1: Low; 2: Medium; 3: High.	3		
COM_RC_IN_MODE <i>(Deprecated, no replacement)</i>	Read-Only	Int	RC control input mode Comment: A value of 0 enables RC transmitter control (only). A valid RC transmitter calibration is required. A value of 1 allows joystick control only. RC input handling and the associated checks are disabled. A value of 2 allows either RC Transmitter or Joystick input. The first valid input is used and will fall back to other sources if the input stream becomes invalid. A value of 3 allows either input from RC or the joystick. The first available source is selected and used until reboot. A value of 4 ignores any stick input. Values: 0: RC Transmitter only 1: Joystick only 2: RC and Joystick with fallback 3: RC or Joystick keep first 4: Stick input disabled	1		
COM_RC_LOSS_T <i>(Deprecated, replaced by GCS_LOSS_T)</i>	Read-Only	Float	Manual control loss timeout. The time in seconds without a new setpoint from RC or Joystick, after which the connection is considered lost. This must be kept short as the vehicle will use the last supplied setpoint until the timeout triggers.	0.5		seconds

SUPPORTED MAVLINK PARAMETERS

CP_DIST (Deprecated, use COM_OBS_AVOID)	Read-Only	Float	Minimum distance the vehicle should keep to all obstacles. Only used in Position mode. Collision avoidance is disabled by setting this parameter to a negative value	0		
GF_ACTION	Read-Write	Int	Geofence violation action . Supported values: 0: None 2: Hold mode	1	[0, 5] (1)	
GF_MAX_HOR_DIST (enforced equal to MAX_DIST_RTX)	Read-Write	Float	Maximum horizontal distance in meters the vehicle can be from home before triggering a geofence action. Disabled if 0.	0		meters
GF_MAX_VER_DIST	Read-Write	Float	Maximum vertical distance in meters the vehicle can be from home before triggering a geofence action. Disabled if 0.	0		meters
HP_LED_STATE (Deprecated, replaced by LED_ILLUM_MODE)	Read-Only	Int	Deprecated: Use LED_ILLUM_MODE instead	0		
LED_ILLUM_MODE	Read-Write	Int	Defines the illumination mode. Uses the following BIT Flags: Navigation lights on: 0x1; Navigation lights strobe: 0x2; IR on: 0x4; IR strobe: 0x8; White strobe: 0x20 NOTE: White on (0x10) is unsupported	1	[0, 33]	
MAG_CAL_MODE (Deprecated, no replacement)	Read-Write	Int	X10D only supports hand wave calibration	1	[0,1] (1)	
MAV_SYS_ID	Read-Write	Int	MAVLink system ID	1	[1, 250] (1)	
NAV_AH_ALT (Deprecated, no replacement)	Read-Only	Float	Altitude of airfield home waypoint	600	[50, ?] (0.5)	meters
NAV_DLL_ACT (Deprecated, replaced by GCS_LOSS_ACT)	Read-Write	Int	Set datalink loss failsafe mode. The data link loss failsafe will only be entered after a timeout, set by COM_DL_LOSS_T in seconds. Once the timeout occurs the selected action will be executed. Supported values: 0: Disabled; 2: Return mode;	2	[0, 6] (1)	
NAV_DLL_AH_T	Read-Only	Int	Airfield home wait time The amount of time in seconds the system should wait at the airfield home waypoint	120	[0, 3600] (1)	sec

SUPPORTED MAVLINK PARAMETERS

(Deprecated, partially replaced by RTX_LAND_DELAY)						
NAV_RCL_ACT (Deprecated, replaced by GCS_LOSS_ACT)	Read-Only	Int	Set RC loss failsafe mode Comment: The RC loss failsafe will only be entered after a timeout, set by COM_RC_LOSS_T in seconds. If RC input checks have been disabled by setting the COM_RC_IN_MODE param it will not be triggered. Supported values: 0: Disabled; 2: Return mode;	2	[0, 6] (1)	
OBJ_DET_SRC_FEE D	Read-Write	Int	Selects the video source used for detecting objects 0: Off 1: EO 2: IR	1	[0, 2] (1)	
RGB_LED_STATE (Deprecated, replaced by LED_ILLUM_MODE)	Read-Only	Int	Enable or disable the RGB lights 0: Disable 1: Enable	1	[0, 1] (1)	
RTL_DESCEND_ALT (Deprecated, no replacement)	Read-Only	Float	Return mode loiter altitude Comment: Descend to this altitude (above destination position) after return, and wait for time defined in RTL_LAND_DELAY. Land (i.e. slowly descend) from this altitude if autoland is allowed.	30	[0, ?] (0.5)	meters
RTL_LAND_DELAY (Deprecated, replaced by RTX_LAND_DELAY)	Read-Only	Float	Return mode delay Comment: Delay before landing (after initial descent) in Return mode. If set to -1 the system will not land but loiter at RTL_DESCEND_ALT.	-1	[-1, ?] (0.5)	sec
RTL_MIN_DIST (Deprecated, no replacement)	Read-Only	Float	Horizontal radius from return point within which special rules for return mode apply Comment: The return altitude will be calculated based on RTL_CONE_ANG parameter. The yaw setpoint will switch to the one defined by the corresponding waypoint.	5	[0.5, ?] (0.5)	meters
RTL_RETURN_ALT (Deprecated, replaced by RTX_RETURN_ALT)	Read-Write	Float	Return mode return altitude Default minimum altitude above destination (e.g. home, safe point, landing pattern) for return flight. The vehicle will climb to this altitude when Return mode is engaged, unless it is currently flying higher already. This is affected by RTL_MIN_DIST and RTL_CONE_ANG.	20	[0, ?] (0.5)	

SUPPORTED MAVLINK PARAMETERS

RTL_TYPE (Deprecated, replaced by RTX_TYPE)	Read-Only	Int	Return type Comment: Return mode destination and flight path (home location, rally point, mission landing pattern, reverse mission)Values:0: Return to closest safe point (home or rally point) via direct path.1: Return to closest safe point other than home (mission landing pattern or rally point), via direct path. If no mission landing or rally points are defined return home via direct path. Always chose closest safe landing point if vehicle is a VTOL in hover mode.2: Return to a planned mission landing, if available, using the mission path, else return to home via the reverse mission path. Do not consider rally points.3: Return via direct path to closest destination: home, start of mission landing pattern or safe point. If the destination is a mission landing pattern, follow the pattern to land.	0		
SDLOG_MODE (Deprecated, no replacement)	Read-Only	Int	Logging Mode Comment: Determines when to start and stop logging. By default, logging is started when arming the system, and stopped when disarming.Values: 0: when armed until disarm (default) 1: from boot until disarm 2: from boot until shutdown 3: depending on AUX1 RC channel 4: from 1st armed until shutdown Reboot required: true	0		
SECURITY_STATE	Read-Only	Int	Vehicle Security Status 0: Unknown 1: Not Provisioned 2: Not Encrypting 3: Encrypting 4: Unlocked 5: Error	0		
SENS_BOARD_ROT (Deprecated, no replacement)	Read-Only	Int	Board rotation Comment: This parameter defines the rotation of the FMU board relative to the platform.	0		
SENS_BOARD_X_OFF (Deprecated, no replacement)	Read-Only	Float	Board rotation X (Roll) offset Comment: This parameter defines a rotational offset in degrees around the X (Roll) axis It allows the user to fine tune the board offset in the event of misalignment.	1		degrees
SENS_BOARD_Y_OFF (Deprecated, no replacement)	Read-Only	Float	Board rotation Y (Pitch) offset Comment: This parameter defines a rotational offset in degrees around the Y (Pitch) axis. It allows the user to fine tune the board offset in the event of misalignment.	0		degrees
SENS_BOARD_Z_OFF (Deprecated, no replacement)	Read-Only	Float	Board rotation Z (YAW) offset Comment: This parameter defines a rotational offset in degrees around the Z (Yaw) axis. It allows the user to fine tune the board offset in the event of misalignment.	0		degrees
SENS_DPRES_OFF	Read-Only	Float	Differential pressure sensor offset Comment: The offset (zero-reading) in Pascal	0		pascals

SUPPORTED MAVLINK PARAMETERS

(Deprecated, no replacement)						
SYSID_OVERRIDE (Deprecated, replaced by MAV_SYS_ID)	Read-Write	Int	Used to set the MAV_SYS_ID MAVLink system ID	1	[1, 250] (1)	
SYS_AUTOCONFIG (Deprecated, no replacement)	Read-Only	Int	Automatically configure default values Comment: Set to 1 to reset parameters on next system startup (setting defaults). Platform-specific values are used if available. RC* parameters are preserved. 0: Keep parameters 1: Reset parameters to airframe defaults	0		
SYS_AUTOSTART (Deprecated, no replacement)	Read-Only	Int	Auto-start script index	18	[0, 9999999]	
GPS	Read-Write	Int	Toggles X10D GPS on or off. Turning GPS off prior to takeoff may require a "handwave" calibration to complete arming. 0: Off 1: On	1		
LOW_LAUNCH	Read-Write	Int	Sets the vehicle default launch altitude 0: disabled, X10D will launch to 3m 1: enabled, X10D will launch to 1m	0		
LOW_BAT_ACT (v40+ only)	Read-Write	Int	Battery failsafe mode; Action the system takes at critical battery. Supported values: 0: Warning 3: Return at critical level, land at emergency level	3		
RTX_TYPE (v40+ only)	Read-Only	Int	Return mode destination and flight path (direct if not specified). Supported values: 2: Rally or Home	2		
MAX_DIST_GCS (v40+ only)	Read-Only	Float	Maximum slant range to GCS. Value < 0 indicates disabled	-1	[0, Inf]	
MAX_DIST_RTX (v40+ only, enforced equal to GF_MAX_HOR_DIST)	Read-Write	Float	Maximum slant range to RTX point specified by RTX_TYPE. Value < 0 indicates disabled	-1	[0, Inf]	
MAX_HAGL (v40+ only)	Read-Write	Float	Maximum Height AGL. Vehicles who cannot compute HAGL, will use height above home. Values less than 0 indicates unlimited	-1	[0, Inf]	
RTX_RETURN_ALT (v40+ only)	Read-Write	Float	Minimum traversal altitude above RTX destination (defined by RTX_TYPE). The vehicle will ascend to this altitude when Return mode is engaged, unless currently flying higher.	60	[0, MAX_HAGL]	m

SUPPORTED MAVLINK PARAMETERS

RTX_LAND_DELAY (v40+ only)	Read-Write	Float	Return mode delay Comment: Delay before landing (after initial descent) in Return mode. If set to -1 the system will not land but loiter at RTL_DESCEND_ALT.	-1	[-1, Inf]	sec
GCS_LOSS_ACT (v40+ only)	Read-Write	Int	Set link loss failsafe mode. The link loss failsafe will only be entered after a timeout, set by GCS_LOSS_T in seconds. Once the timeout occurs the selected action will be executed. Supported values: 0: Disabled; 2: Return mode	2	[0, 6] (1)	
GCS_LOSS_T (v40+ only)	Read-Write	Int	GCS connection loss time threshold. After this amount of seconds without link, the GCS_LOSS_ACT mode triggers	10	[5, 30] (1)	
ENCRYPT	Read-Write	Int	Enables/disables encryption on the vehicle. Supported values: 0: Disabled; 1: Enabled	0	[0,1]	
NIGHTSENSE_ON	Read-Write	Int	Enables/disables nightsense attachment on the vehicle. Supported values: 0: Off; 1: On	0	[0,1]	
AUTO_NAV_MODE	Read-Write	Int	Sets the desired navigation mode. Supported values: 0: Default Navigation; 2: Autonomy Off; 5: Night Autonomy	0	[0,5]	