

Supported MSP Commands

May 27, 2021

The firmware supports parts of the betafight MSP API Version 1.42 we marked all data corresponded to unsupported features with red, features which are only static and not configure able with yellow. Fully supported feature are not highlighted.

Here an example:

0	8	16	24
not supported feature <i>value</i>	read only feature <i>value</i>	fully supported feature <i>value</i>	

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1 Request Commands

Commands requesting data from the flight controller.

1.1 MSP_API_VERSION

- description: MSP API version of flight controller
- code: 1
- command data: none
- reply data:

0	8	16	24
MSP PROTOCOL VERSION <i>0</i>	API VERSION MAJOR <i>1</i>	API VERSION MAJOR <i>42</i>	

1.2 MSP_BATTERY_CONFIG

- description: Get information about the battery configuration used.
- code: 32
- command data: none
- reply data:

0	8	16	24	40
minCv minimal cell voltage <i>0</i>	maxCv maximal cell voltage <i>0</i>	warCv warning cell voltage <i>0</i>	capacity capacity of battery in mAh	
40	48	56	72	
voltageMeter Source	currentMeter Source	vbatmincellvoltage minimal cell voltage in milli Volt		
72	88	104		
vbatmaxcellvoltage maximal cell voltage in milli Volt	vbatwarningcellvoltage warning cell voltage in milli Volt			

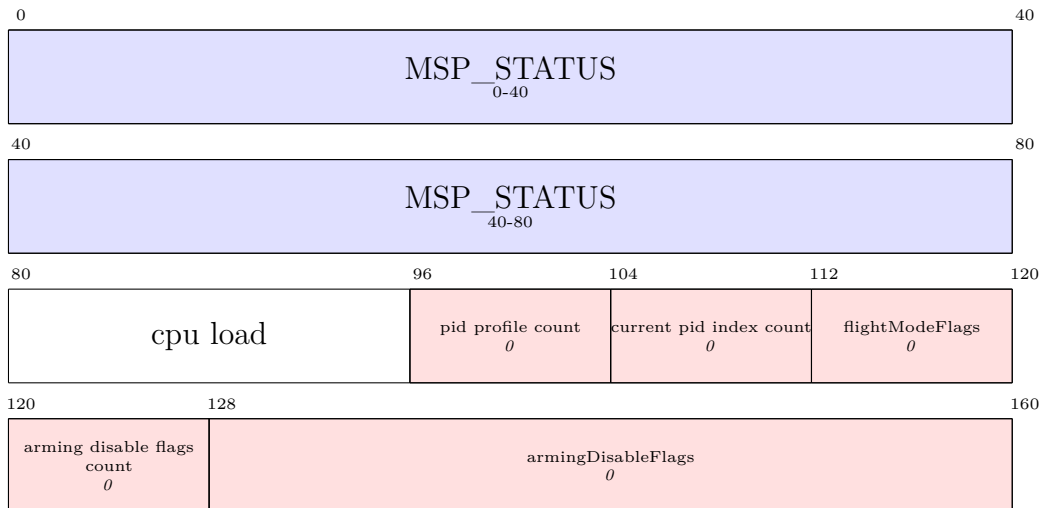
1.3 MSP_STATUS

- description: Get status information of the flight controller
- code: 101
- command data: none
- reply data:

0	16	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
cycleTime latest delta time of task TASK_LOOP	i2cError errors on i2c interface <i>0</i>	ACC	BARO	MAG	GPS	RANGE	GYRO												
40	48	56	64	72	80														
flight mode <i>0</i> box interface																		pid profile <i>0</i>	

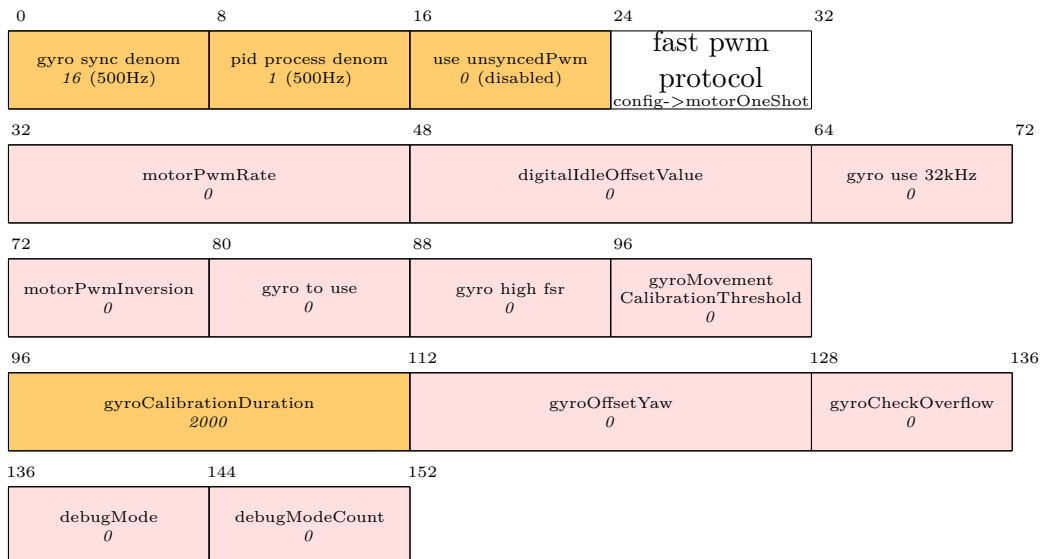
1.4 MSP_STATUS_EX

- description: Get extended status information of the flight controller
- code: 150
- command data: none
- reply data:



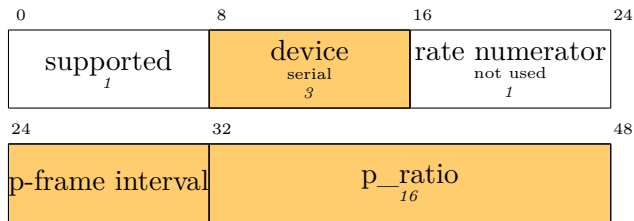
1.5 MSP_ADVANCED_CONFIG

- description: get advanced information about the configuration of the flight controller
- code: 90
- command data: none
- reply data:



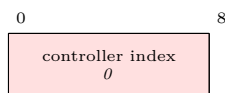
1.6 MSP_BLACKBOX_CONFIG

- description: information about the blackbox (only if enabled in the build)
- code: 80
- command data: none
- reply data:



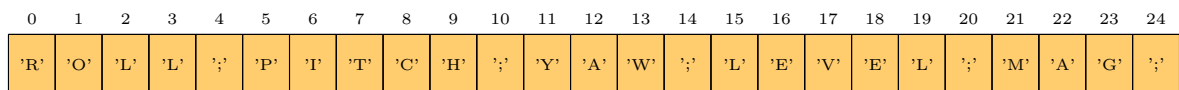
1.7 MSP_PID_CONTROLLER

- description: information about the used pid controller
- code: 59
- command data: none
- reply data:



1.8 MSP_PIDNAMES

- description: names of the supported pid controllers as ';' separated list
- code: 117
- command data: none
- reply data:



1.9 MSP_PID

- description: information about pid settings
- code: 112
- command data: none
- reply data:

0	8	16	24
Kp-ROLL <i>rate_controller_config</i> <i>Kp[ROLL]*100</i>	Ki-ROLL <i>rate_controller_config</i> <i>Ki[ROLL]*100</i>	Kd-ROLL <i>rate_controller_config</i> <i>Kd[ROLL]*100</i>	
24	32	40	48
Kp-PITCH <i>rate_controller_config</i> <i>Kp[PITCH]*100</i>	Ki-PITCH <i>rate_controller_config</i> <i>Ki[PITCH]*100</i>	Kd-PITCH <i>rate_controller_config</i> <i>Kd[PITCH]*100</i>	
48	56	64	72
Kp-YAW <i>rate_controller_config</i> <i>Kp[YAW]*100</i>	Ki-YAW <i>rate_controller_config</i> <i>Ki[YAW]*100</i>	Kd-YAW <i>rate_controller_config</i> <i>Kd[YAW]*100</i>	
72	80	88	96
Att-levelGain <i>config->levelGain * 10</i>	not used <i>0</i>	not used <i>0</i>	

1.10 MSP_PID_ADVANCED

- description: get advanced pid information
- code: 94
- command data: none
- reply data:

0		16		32					
0		0							
32		48		56		64		72	
0		reserved 0		vbatPidCompensation 0		feedForwardTransition 0			
72		80		88		96		104	
reserved 0		reserved 0		reserved 0		reserved 0			
104		120		136		144			
rateAccelLimit		yawRateAccelLimit		levelAngleLimit config-deciLevelAngleLimit					
144		152		168		184			
0		itemThrottleThreshold 0		itemAcceleratorGain 0					
184		200		208					
dtermSetpointWeight 0		item rotation 0							

1.11 MSP_RC_DEADBAND

- description: deadband of controller
- code: 125
- command data: none
- reply data:

0	8	16	24	40
deadband 0	yaw deadband 0	alt hold deadband 0	deadband3d throttle 0	

1.12 MSP_RC_TUNING

- description: rc tuning
- code: 111
- command data: none
- reply data:

0	8	16	24	32	40
rcRates Roll <i>config-RC_RATES[X]</i>	rcExpo Roll 0	super rate Roll 0	super rate Pitch 0	super rate Yaw 0	
40	48	56	64	72	80
dynThrPID 0	thrMid8 0	thrExpo8 0	tpa breakpoint 0	rcExpo Yaw 0	
80	88	96	104	112	120
rcRates Pitch <i>config-RC_RATES[X]</i>	rcRates Yaw <i>config-RC_RATES[Z]</i>	rcExpo Pitch 0	throttle limit type 0	throttle limit percent 0	

1.13 MSP_ACC_TRIM

- description: trims for accelerometer
- code: 240
- command data: none
- reply data:

0	8	16	24
Acc Trim PITCH <i>config-ACC_TRIM[PITCH]</i>	Acc Trim ROLL <i>config-ACC_TRIM[ROLL]</i>	Acc Trim YAW <i>config-ACC_TRIM[YAW]</i>	

1.14 MSP_FC_VARIANT

- description: flight controller variant
- code: 2
- command data: none
- reply data:

0	1	2	3
'B'	'T'	'F'	'L'

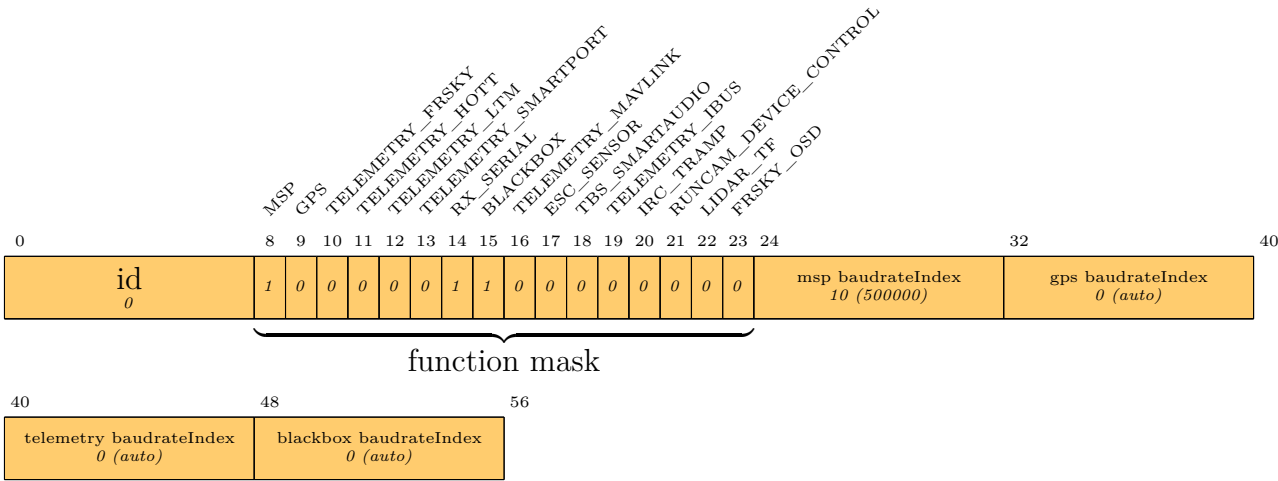
1.15 MSP_FC_VERSION

- description: version of flight controller
- code: 3
- command data: none
- reply data:



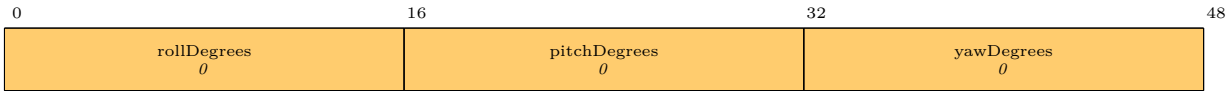
1.16 MSP_CF_SERIAL_CONFIG

- description: configuration of serial interfaces
- code: 54
- command data: none
- reply data:



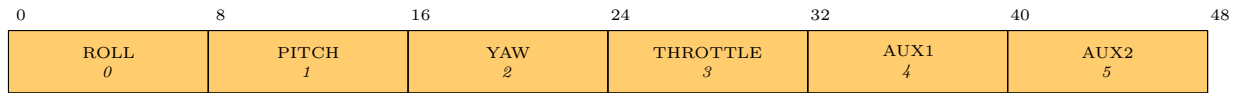
1.17 MSP_BOARD_ALIGNMENT_CONFIG

- description: alignment of sensors
- code: 38
- command data: none
- reply data:



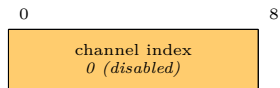
1.18 MSP_RX_MAP

- description: return mapping of channels default mapping = [ROLL, PITCH, YAW, THROTTLE, AUX1,...]
- code: 64
- command data: none
- reply data:



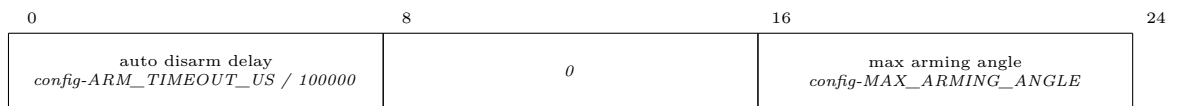
1.19 MSP_RSSI_CONFIG

- description: channel index of rssi
- code: 50
- command data: none
- reply data:



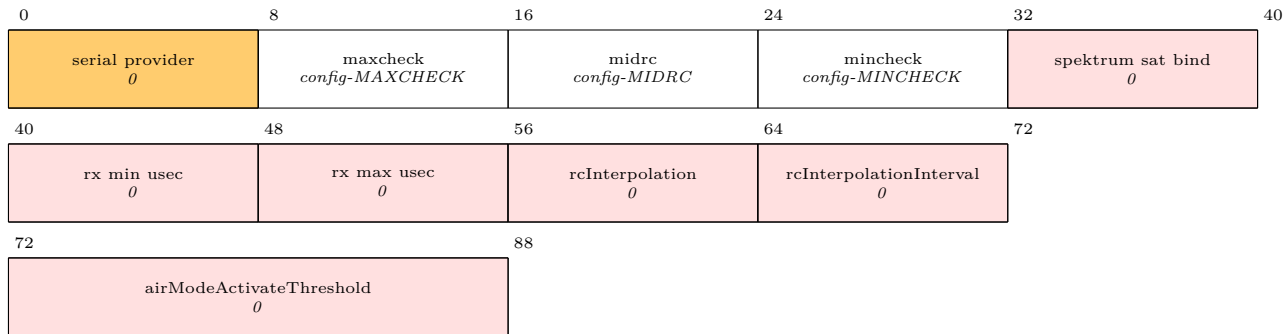
1.20 MSP_ARMING_CONFIG

- description: information about arming
- code: 61
- command data: none
- reply data:



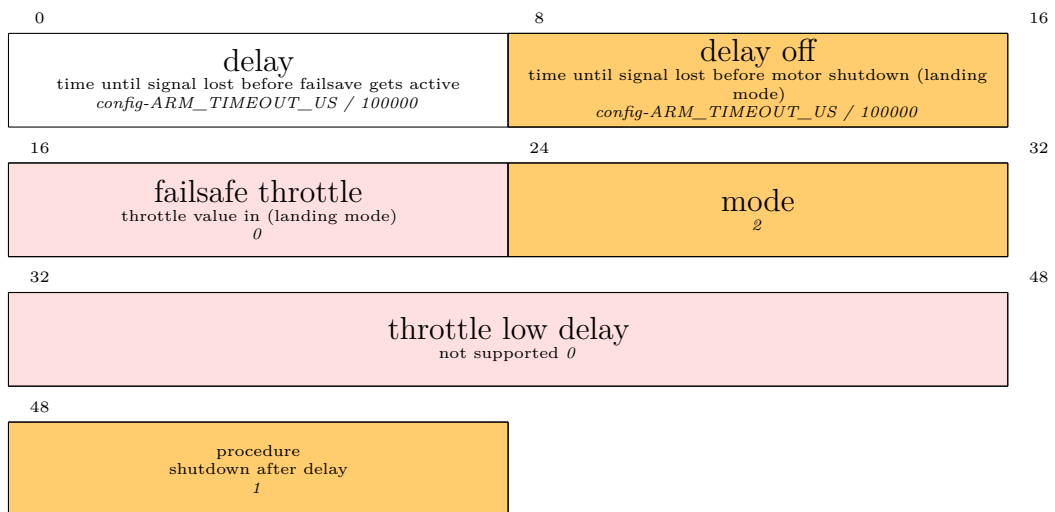
1.21 MSP_RX_CONFIG

- description: information about rx configuration
- code: 44
- command data: none
- reply data:



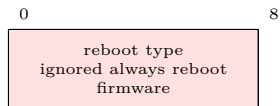
1.22 MSP_FAILSAFE_CONFIG

- description: information about failsave configuration
- code: 75
- command data: none
- reply data:

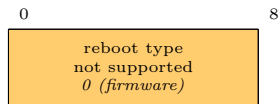


1.23 MSP_REBOOT

- description: reboot the firmware
- code: 68
- command data:

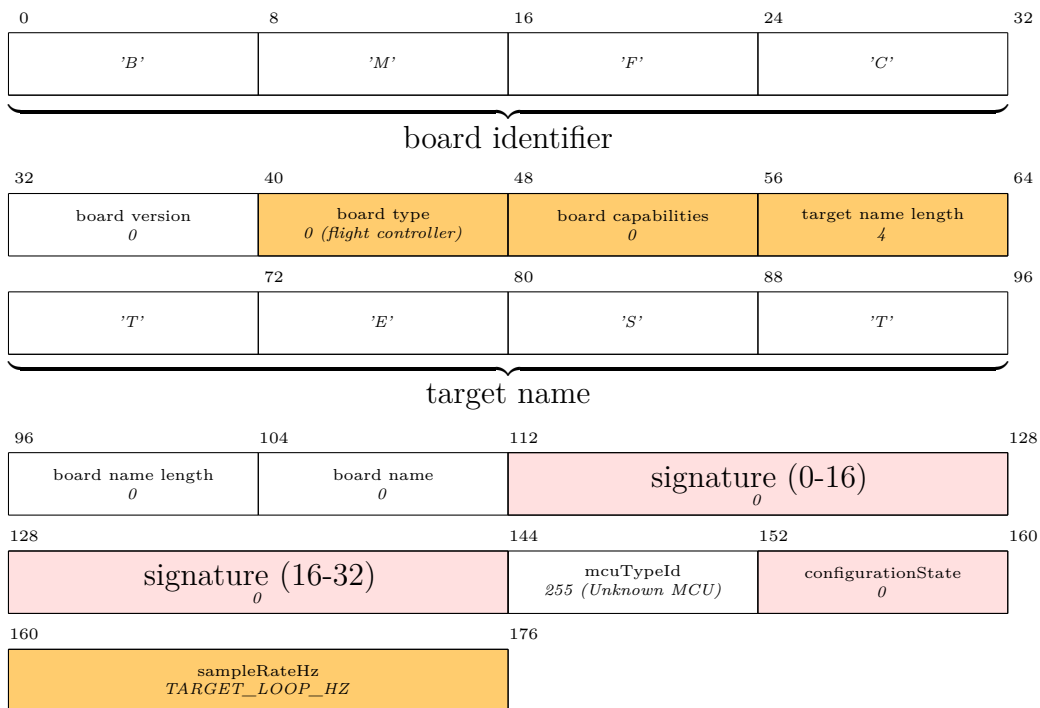


- reply data:



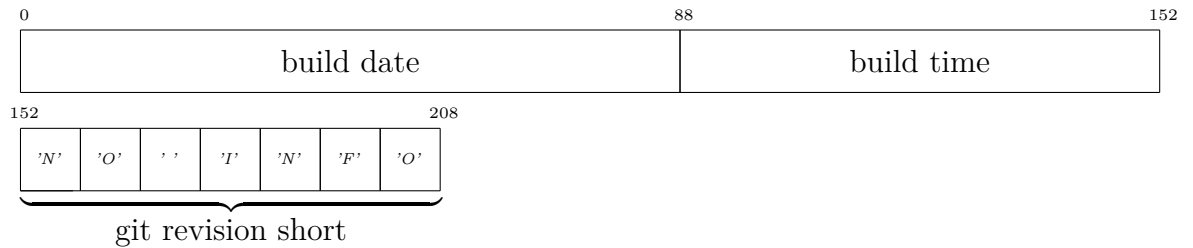
1.24 MSP_BOARD_INFO

- description: information about the used board
- code: 4
- command data: none
- reply data:



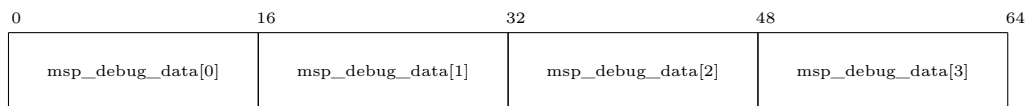
1.25 MSP_BUILD_INFO

- description: information about build date
- code: 5
- command data:
- reply data:



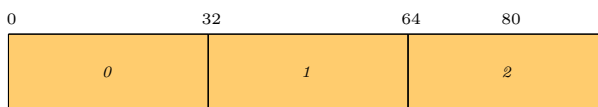
1.26 MSP_DEBUG

- description: print debug information
- code: 254
- command data:
- reply data:



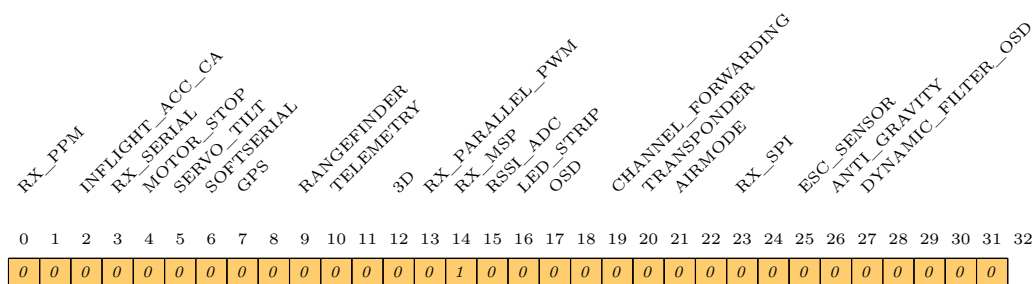
1.27 MSP_UID

- description: unique device identifier
- code: 160
- command data:
- reply data:



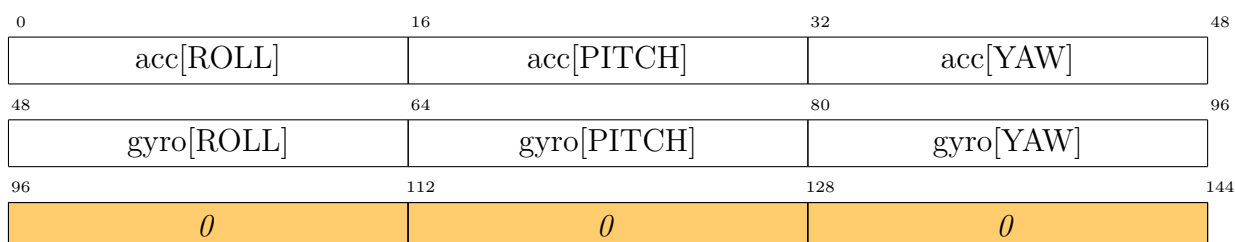
1.28 MSP_FEATURE_CONFIG

- description: get feature mask of fc
- code: 36
- command data:
- reply data:



1.29 MSP_RAW_IMU

- description: get data from the imu input. Here the *Betaflight Configurator* does some scaling we have to take into account.
 - $acc * (1/512)$
 - $gyro * (4/16.4)$
 - $mag * (1/1090)$
- code: 102
- command data: none
- reply data:



1.30 MSP_MOTOR_CONFIG

- description: get information motor module
- code: 131
- command data: none
- reply data:



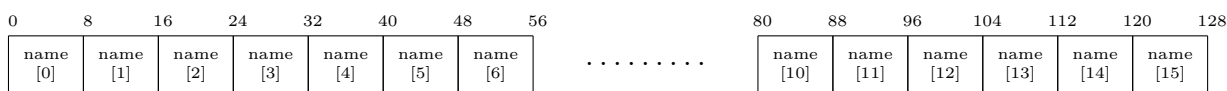
1.31 MSP_ATTITUDE

- description: get information about attitude
- code: 108
- command data: none
- reply data:



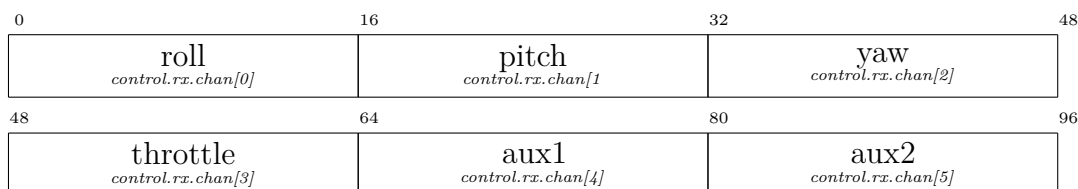
1.32 MSP_NAME

- description: get name of pilot (0-16Bytes), defined with config-PILOTNAME
- code: 10
- command data: none
- reply data:



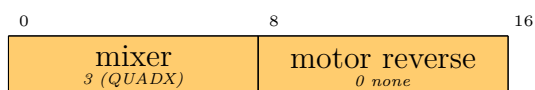
1.33 MSP_RC

- description: get current rx values
- code: 105
- command data: none
- reply data:



1.34 MSP_MIXER_CONFIG

- description: get mixer config
- code: 42
- command data: none
- reply data:



2 Input Commands

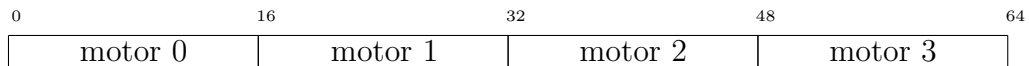
Commands sending data to the flight controller.

2.1 MSP_ACC_CALIBRATION

- description: start accelerometer calibration if flight controller is not armed
- code: 205
- command data: none
- reply data: none

2.2 MSP_SET_MOTOR

- description: set motor command (only for testing => flight controller needs to be disarmed)
- code: 214
- command data:



- reply data: none

2.3 MSP_SET_MOTOR_CONFIG

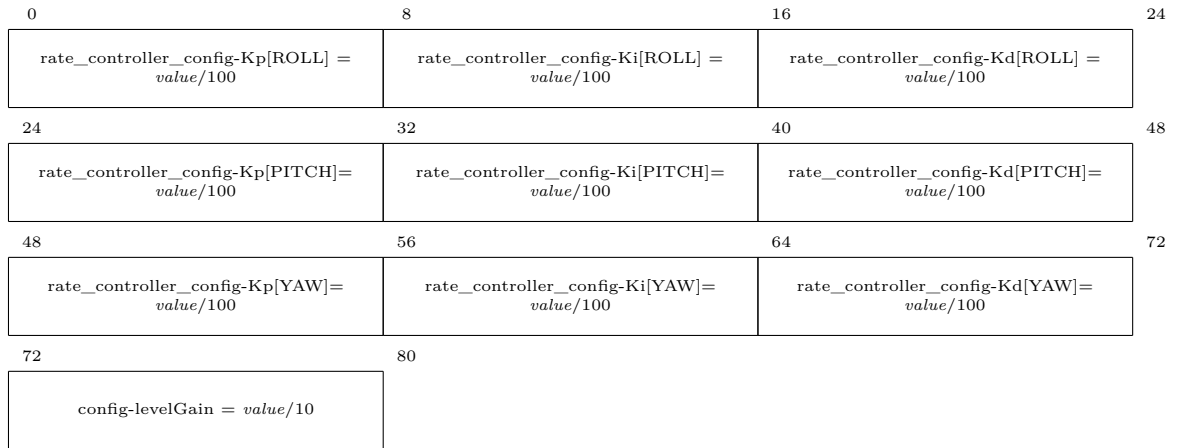
- description: set motor module values
- code: 222
- command data:



- reply data: none

2.4 MSP_SET_PID

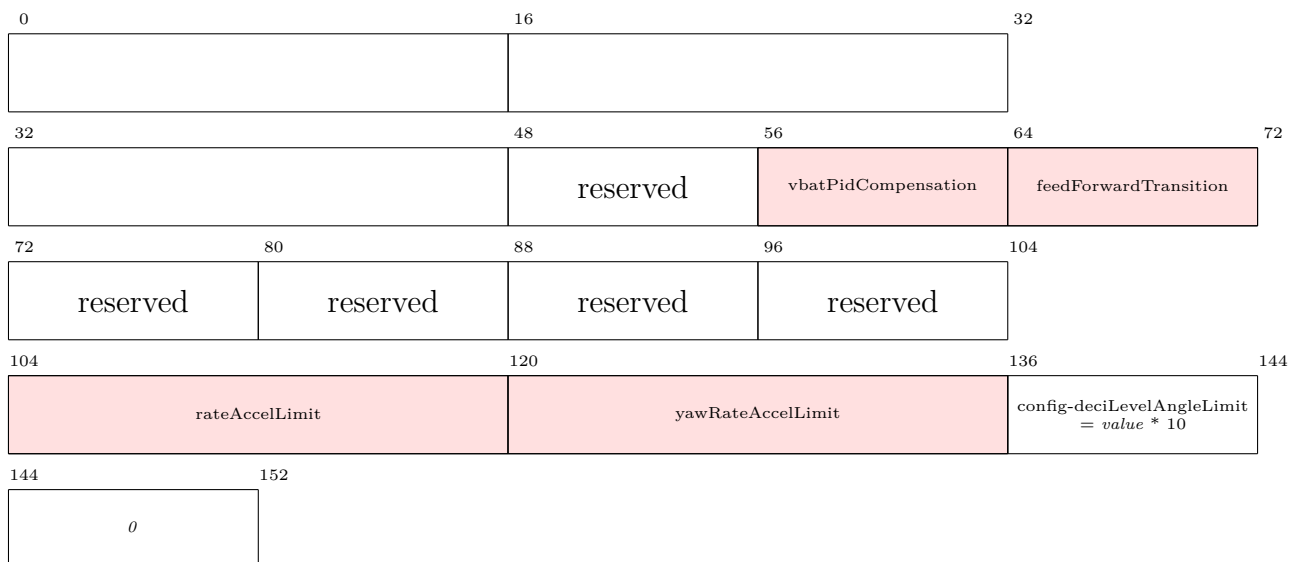
- description: set pid values
- code: 202
- command data:



- reply data: none

2.5 MSP_SET_PID_ADVANCED

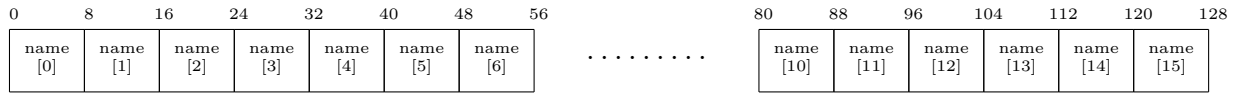
- description: set pid values
- code: 95
- command data:



- reply data: none

2.6 MSP_SET_NAME

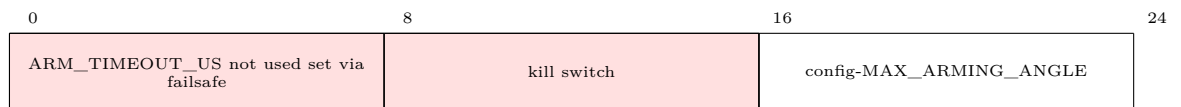
- description: set name of pilot (stored in config-PILOTNAME)
- code: 11
- command data:



- reply data: none

2.7 MSP_SET_ARMING_CONFIG

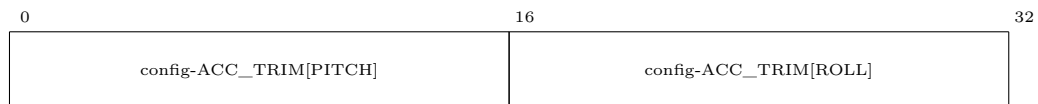
- description: set arming config
- code: 62
- command data:



- reply data: none

2.8 MSP_SET_ACC_TRIM

- description: set accelerometer offset
- code: 239
- command data:



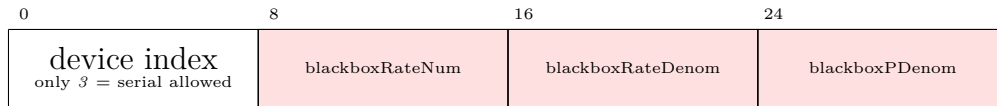
- reply data: none

2.9 MSP_EEPROM_WRITE

- description: save current settings to eeprom
- code: 250
- command data: none
- reply data: none

2.10 MSP_SET_BLACKBOX_CONFIG

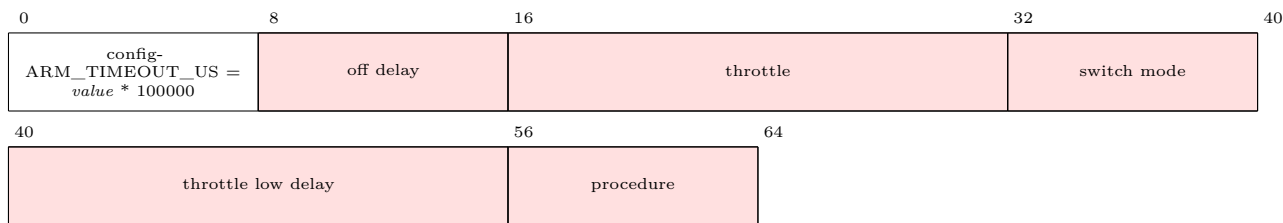
- description: enable/disable blackbox logging
- code: 81
- command data:



- reply data: none

2.11 MSP_SET_FAILSAFE_CONFIG

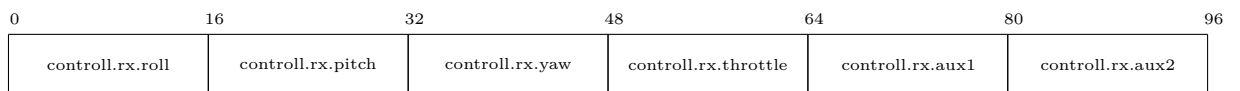
- description: set failsafe config
- code: 76
- command data:



- reply data: none

2.12 MSP_SET_RAW_RC

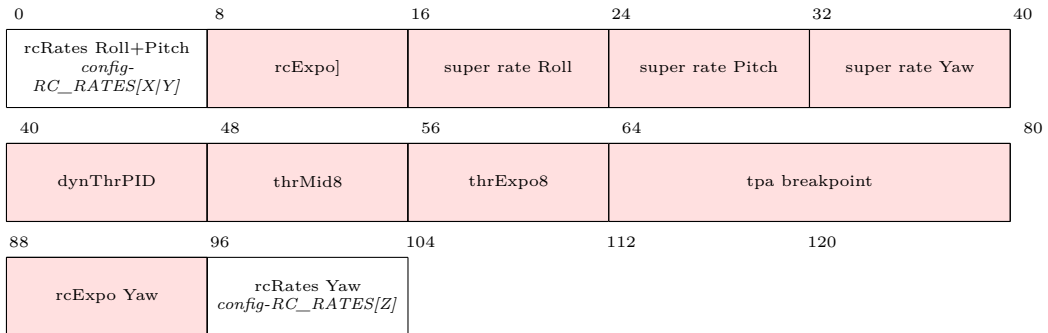
- description: set raw rc values
- code: 200
- command data:



- reply data: none

2.13 MSP_SET_RC_TUNING

- description: set rc tuning
- code: 204
- command data:



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3 Additional commands

Additional commands that are not compatible with MultiWii

3.1 MSP_BLACKBOX_START

- description: start blackbox logging
- code: 143
- command data: none
- reply data: none

3.2 MSP_BLACKBOX_STOP

- description: stop blackbox logging
- code: 144
- command data: none
- reply data: none