Software documentation - Command-line tools

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Chapter 1

Command line tools

Those functions allows to use the board through a serial port

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Centro "E.Piaggio"

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Date

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This is a set of functions that allows to use the boards via a serial port.

Chapter 2

Data Structure Index

2.1 Data Structures

Here are the data structures with brief descriptions:

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Chapter 3

File Index

3.1 File List

Here is a list of all documented files with brief descriptions:

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nmmi_param_imu.c
Command line tools file 12
qbadmin.c
Command line tools file 14
qbparam.c
Command line tools file 16

Chapter 4

Data Structure Documentation

4.1 global_args Struct Reference

Data Fields

- int **device_id**
- int **flag_set_inputs**

  ./qbadmin -s option
- int **flag_get_measurements**

  ./qbadmin -g option
- int **flag_activate**

  ./qbadmin -a option
- int **flag_deactivate**

  ./qbadmin -d option
- int **flag_ping**

  ./qbadmin -p option
- int **flag_reading_ping**

  ./qbmove -r option
- int **flag_serial_port**

  ./qbadmin -t option
- int **flag_verbose**

  ./qbadmin -v option
- int **flag_file**

  ./qbadmin -f option
- int **flag_log**

  ./qbadmin -l option
- int **flag_get_emg**

  ./qbadmin -q option to get the EMG sensors measurements
- int **flag_set_zeros**

  ./qbadmin -z option
- int **flag_use_gen_sin**

  ./qbadmin -y option
- int **flag_calibration**

  ./qbadmin -k option to start a series of hand closures and openings
- int **flag_get_currents**

  ./qbadmin -c option

- int **flag_bootloader_mode**
  ./qbadmin -b option
- int **flag_set_pos_stiff**
  ./qbadmin -e option
- int **flag_get_velocities**
  ./qbadmin -i option
- int **flag_get_accelerations**
  ./qbadmin -o option
- int **flag_set_cuff_inputs**
  ./qbadmin -u option
- int **flag_set_baudrate**
  ./qbadmin -R option
- int **flag_set_watchdog**
  ./qbadmin -W option
- int **flag_polling**
  ./qbadmin -P option
- int **flag_baudrate**
  ./qbadmin -B option
- int **flag_get_joystick**
  ./qbadmin -j option
- int **flag_ext_drive**
  ./qbadmin -x option
- int **flag_get_imu_readings**
  Additional -Q option.
- int **flag_get_adc_raw**
  Additional -A option.
- int **flag_get_encoder_raw**
  Additional -E option.
- int **flag_get_SD_files**
  Additional -S option.
- short int **inputs** [NUM_OF_MOTORS]
- short int **measurements** [4]
- short int **velocities** [4]
- short int **accelerations** [4]
- short int **measurement_offset** [4]
- short int **currents** [NUM_OF_MOTORS]
- char **filename** [255]
- char **log_file** [255]
- short int **calib_speed**
  Calibration speed.
- short int **calib_repetitions**
  Calibration repetitions.
- short int **emg** [NUM_OF_EMGS]
  Emg sensors values read from the device.
- short int **joystick** [2]
  Analog joystick measurements.
- short int **ext_drive**
- int **n_imu**
- uint8_t * **ids**
- uint8_t * **imu_table**
- uint8_t * **mag_cal**
- short int **BaudRate**

- int **save_baurate**
- short int **WDT**
- short int * **adc_raw**
- FILE * **SD_param_file**
- FILE * **SD_data_file**
- FILE * **emg_file**
- FILE * **log_file_fd**

The documentation for this struct was generated from the following file:

- **qbadmin.c**

4.2 position Struct Reference

Data Fields

- float **prec**
- float **act**

The documentation for this struct was generated from the following file:

- **qbadmin.c**

Chapter 5

File Documentation

5.1 definitions.h File Reference

Definitions for board commands, parameters and packages.

```
#include <math.h>
```
Include dependency graph for definitions.h:

5.2 nmmi_param.c File Reference

Command line tools file.

```
#include "../../qbAPI/src/qbmove_communications.h"
#include "definitions.h"
#include <assert.h>
#include <stdio.h>
#include <string.h>
#include <unistd.h>
#include <getopt.h>
#include <stdlib.h>
```
Include dependency graph for nmmi_param.c:

Macros

- #define **NUM_OF_MAX_PARAMS** 100

Functions

- int **port_selection** ()
- int **open_port** ()
- int **initMemory** ()
- void **printMainMenu** ()
- void **printVersion** ()
- void **sort_params_asc** (int ∗, int ∗, int ∗, int)
- void **retrieve_section_str** (int, char ∗)
- int **baudrate_reader** ()
- int **main** (int argc, char ∗∗argv)
- static int **compar** (const void ∗a, const void ∗b)

Variables

- char **get_or_set**
- comm_settings **comm_settings_t**
- uint8_t **device_id** = BROADCAST_ID
- int * **base_arr**
- int * **param_idx_arr**

5.2.1 Detailed Description

Command line tools file.

Author

Centro "E.Piaggio"

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With this file is possible to get or set firmware parameters with a new interface based on old qbparam tool.

5.2.2 Function Documentation

5.2.2.1 baudrate_reader()

```
int baudrate_reader ( )
```

Baudrate functions

5.3 nmmi_param_imu.c File Reference

Command line tools file.

```
#include "../../qbAPI/src/qbmove_communications.h"
#include "../../qbAPI/src/cp_communications.h"
#include "definitions.h"
#include <assert.h>
#include <stdio.h>
#include <string.h>
#include <unistd.h>
#include <getopt.h>
#include <stdint.h>
```

Include dependency graph for nmmi_param_imu.c:

Functions

- int **port_selection** ()
- int **open_port** ()
- int **initMemory** ()
- void **printMainMenu** ()
- void **printVersion** ()
- int **calibrate** ()
- int **baudrate_reader** ()
- int **main** (int argc, char ∗∗argv)

Variables

- char **get_or_set**
- comm_settings **comm_settings_t**
- uint8_t **device_id** = BROADCAST_ID

5.3.1 Detailed Description

Command line tools file.

Author

Centro "E.Piaggio"

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With this file is possible to get or set IMU parameters.

5.3.2 Function Documentation

5.3.2.1 baudrate_reader()

```
int baudrate_reader ( )
```

Baudrate functions

5.4 qbadmin.c File Reference

Command line tools file.

```
#include "../../qbAPI/src/qbmove_communications.h"
#include "../../qbAPI/src/cp_communications.h"
#include "definitions.h"
#include <stdio.h>
#include <stdint.h>
#include <stdlib.h>
#include <unistd.h>
#include <getopt.h>
#include <string.h>
#include <sys/time.h>
#include <math.h>
#include <signal.h>
#include <assert.h>
```

Include dependency graph for qbadmin.c:

Data Structures

- struct **global_args**
- struct **position**

Functions

- int **open_port** ()
- int **port_selection** ()
- int **polling** ()
- void **display_usage** (void)
- float ** **file_parser** (char *, int *, int *)
- void **int_handler** (int sig)
- void **int_handler_2** (int sig)
- void **int_handler_3** (int sig)
- int **baudrate_reader** ()
- int **baudrate_writer** (const int)
- int **main** (int argc, char **argv)

Variables

- static const struct option **longOpts** [ ]
- static const char * **optString** = "s:adgprtvh?f:ljqxzkycbe:uoiW:PB:QAES"
- struct **global_args global_args**
- struct **position p1**
- struct **position p2**
- uint8_t **resolution** [4]
- int **ret**
- int **aux_int**
- comm_settings **comm_settings_1**

5.4.1 Detailed Description

Command line tools file.

Author

Centro "E.Piaggio"

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With this file is possible to command a terminal device.

5.4.2 Function Documentation

5.4.2.1 baudrate_reader()

```
int baudrate_reader ( )
```

Baudrate functions

5.4.2.2 display_usage()

```
void display_usage (
            void  )
```

Display program usage, and exit.

5.4.2.3 file_parser()

```
float ** file_parser (
            char * filename,
            int * deltat,
            int * num_values )
```

Parse csv input file with values to be sent to the motors

Parse CSV file and return a pointer to a matrix of float dinamically allocated. Remember to use free(pointer) in the caller

5.4.2.4 int_handler()

```
void int_handler (
            int sig )
```

CTRL-c handler 1

handle CTRL-C interruption 1

5.4.2.5 int_handler_2()

```
void int_handler_2 (
            int sig )
```

CTRL-c handler 2

handle CTRL-C interruption 2

5.4.2.6 int_handler_3()

```
void int_handler_3 (
            int sig )
```

CTRL-c handler 3

Handles the ctrl+c interruption to save the emg sensors measurements into a file

5.4.2.7 main()

```
int main (
            int argc,
            char ** argv )
```

main loop

5.5 qbparam.c File Reference

Command line tools file.

```
#include "../../qbAPI/src/qbmove_communications.h"
#include "definitions.h"
#include <assert.h>
#include <stdio.h>
#include <string.h>
#include <unistd.h>
#include <getopt.h>
#include <stdint.h>
```

Include dependency graph for qbparam.c:

Macros

- #define **NUM_OF_MAX_PARAMS** 100

Functions

- int **port_selection** ()
- int **open_port** ()
- int **initMemory** ()
- void **printMainMenu** ()
- void **printVersion** ()
- int **calibrate** ()
- int **baudrate_reader** ()
- int **main** (int argc, char ∗∗argv)

Variables

- char **get_or_set**
- comm_settings **comm_settings_t**
- uint8_t **device_id** = BROADCAST_ID

5.5.1 Detailed Description

Command line tools file.

Author

Centro "E.Piaggio"

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With this file is possible to get or set firmware parameters.

5.5.2 Function Documentation

5.5.2.1 baudrate_reader()

```
int baudrate_reader ( )
```

Baudrate functions

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