Here is a list of all modules:

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<tr>
<td>MOTION_AC_Exported_Functions</td>
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<tr>
<td>MOTION_AC</td>
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Data Structures | Enumerations

MOTION_AC_Exported_Types

MIDDLEWARES » MOTION_AC
Data Structures

<table>
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<tr>
<th>struct</th>
<th>MAC_input_t</th>
</tr>
</thead>
<tbody>
<tr>
<td>struct</td>
<td>MAC_output_t</td>
</tr>
</tbody>
</table>
Enumerations

```c
enum MAC_CalQuality_t {
    MAC_CALQSTATUSUNKNOWN = 0,
    MAC_CALQSTATUSPOOR, MAC_CALQSTATUSOK,
    MAC_CALQSTATUSGOOD
};
```
Detailed Description

Enumeration Type Documentation

```
enum MAC_CalQuality_t

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<tbody>
<tr>
<td>MAC_CALQSTATUSUNKNOWN</td>
</tr>
<tr>
<td>MAC_CALQSTATUSPOOR</td>
</tr>
<tr>
<td>MAC_CALQSTATUSOK</td>
</tr>
<tr>
<td>MAC_CALQSTATUSGOOD</td>
</tr>
</tbody>
</table>

Definition at line 64 of file motion_ac.h.
```
MAC_input_t Struct
Reference

MIDDLEWARES » MOTION_AC »
MOTION_AC_Exported_Types

#include <motion_ac.h>
# Data Fields

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>float</td>
<td>Acc [3]</td>
</tr>
<tr>
<td>int</td>
<td>TimeStamp</td>
</tr>
</tbody>
</table>
Detailed Description

Definition at line 72 of file motion_ac.h.
Field Documentation

float Acc[3]

Definition at line 74 of file motion_ac.h.

int TimeStamp

Definition at line 75 of file motion_ac.h.

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

- algorithms/Middlewares/ST/STM32_MotionAC_Library/Inc/motion_ac.h

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MAC_output_t Struct
Reference

MIDDLEWARES » MOTION_AC »
MOTION_AC_Exported_Types

#include <motion_ac.h>
## Data Fields

<table>
<thead>
<tr>
<th>Type</th>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>float</td>
<td>AccBias [3]</td>
<td></td>
</tr>
<tr>
<td>float</td>
<td>SF_Matrix [3][3]</td>
<td></td>
</tr>
<tr>
<td>MAC_CalQuality_t</td>
<td>CalQuality</td>
<td></td>
</tr>
</tbody>
</table>
Detailed Description

Definition at line 78 of file `motion_ac.h`.
Field Documentation

**float AccBias[3]**

Definition at line 80 of file `motion_ac.h`.

**MAC_CalQuality_t CalQuality**

Definition at line 82 of file `motion_ac.h`.

**float SF_Matrix[3][3]**

Definition at line 81 of file `motion_ac.h`.

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

- algorithms/Middlewares/ST/STM32_MotionAC_Library/Inc/motion_ac.h

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**MOTION_AC_Exported_Functions**

[MIDDLEWARES » MOTION_AC](#)
### Functions

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<tr>
<th>Return Type</th>
<th>Function Name</th>
<th>Parameters</th>
<th>Description</th>
<th>More...</th>
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</thead>
<tbody>
<tr>
<td>void</td>
<td>MotionAC_Initialize</td>
<td>(int sampletime, unsigned short int enable)</td>
<td>Initialize the MotionAC engine.</td>
<td></td>
</tr>
<tr>
<td>void</td>
<td>MotionAC_Update</td>
<td>(MAC_input_t *data_in)</td>
<td>Run accelerometer calibration algorithm.</td>
<td></td>
</tr>
<tr>
<td>void</td>
<td>MotionAC_GetCalParams</td>
<td>(MAC_output_t *data_out)</td>
<td>Get the accelerometer compensation parameters.</td>
<td></td>
</tr>
<tr>
<td>uint8_t</td>
<td>MotionAC_GetLibVersion</td>
<td>(char *version)</td>
<td>Get the library version.</td>
<td></td>
</tr>
</tbody>
</table>
Detailed Description

Function Documentation

```c
void MotionAC_GetCalParams ( MAC_output_t * data_out )
```

Get the accelerometer compensation parameters.

**Parameters**
- `data_out` pointer to actual accelerometer offset [g], scale factor correction matrix [-] and quality factor

**Return values**
- `none`

```c
uint8_t MotionAC_GetLibVersion ( char * version )
```

Get the library version.

**Parameters**
- `version` pointer to an array of 35 char

**Return values**
- `Number` of characters in the version string

```c
void MotionAC_Initialize ( int sampletime, unsigned short int enable )
```
Initialize the MotionAC engine.

**Parameters**

- `sampletime` period in [ms] between the update function call
- `enable` enable or disable the library

**Return values**

- `none`

```c
void MotionAC_Update ( MAC_input_t * data_in )
```

Run accelerometer calibration algorithm.

**Parameters**

- `data_in` pointer to acceleration [g] and timestamp values [ms]

**Return values**

- `none`
Data Structures

Here are the data structures with brief descriptions:

- `MAC_input_t`
- `MAC_output_t`
Data Structure Index

MAC_output_t

MAC_input_t
Here is a list of all struct and union fields with links to the structures/unions they belong to:

- Acc : MAC_input_t
- AccBias : MAC_output_t
- CalQuality : MAC_output_t
- SF_Matrix : MAC_output_t
- TimeStamp : MAC_input_t
## Data Structures

- **Acc** : `MAC_input_t`
- **AccBias** : `MAC_output_t`
- **CalQuality** : `MAC_output_t`
- **SF_Matrix** : `MAC_output_t`
- **TimeStamp** : `MAC_input_t`
Here is a list of all files with brief descriptions:

- **algorithms**
- **Middlewares**
- **ST**
  - **STM32_MotionAC_Library**
  - **Inc**
    - **motion_ac.h**  
      Header for `motion_ac` module

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**algorithms Directory Reference**
Directories

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**Middlewares Directory Reference**
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## ST Directory Reference
Directories

directory  STM32_MotionAC_Library

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# MotionAC Software Library

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<td>Middlewares</td>
<td>ST</td>
<td>STM32_MotionAC_Library</td>
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</table>

STM32_MotionAC_Library Directory Reference
Directories

directory Inc

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## Inc Directory Reference
### Files

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<th>motion_ac.h [code]</th>
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<tbody>
<tr>
<td></td>
<td>Header for motion_ac module.</td>
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motion_ac.h File
Reference

Header for motion_ac module. More...

#include <stdint.h>

Go to the source code of this file.
Data Structures

```c
struct MAC_input_t

struct MAC_output_t
```
## Enumerations

```c
enum MAC_CalQuality_t { MAC_CALQSTATUSUNKNOWN = 0,
MAC_CALQSTATUSPOOR, MAC_CALQSTATUSOK,
MAC_CALQSTATUSGOOD }
```
## Functions

<table>
<thead>
<tr>
<th>void</th>
<th><strong>MotionAC_Initialize</strong> (int sampletime, unsigned short int enable)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initialize the MotionAC engine. <a href="#">More...</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>void</th>
<th><strong>MotionAC_Update</strong> (MAC_input_t *data_in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Run accelerometer calibration algorithm. <a href="#">More...</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>void</th>
<th><strong>MotionAC_GetCalParams</strong> (MAC_output_t *data_out)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Get the accelerometer compensation parameters. <a href="#">More...</a></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>uint8_t</th>
<th><strong>MotionAC_GetLibVersion</strong> (char *version)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Get the library version. <a href="#">More...</a></td>
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</table>
Detailed Description

Header for motion_ac module.

Author
MEMS Application Team

Version
V2.0.0

Date
01-May-2017

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Definition in file motion_ac.h.
Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- `MAC_CALQSTATUSGOOD` : `motion_ac.h`
- `MAC_CALQSTATUSOK` : `motion_ac.h`
- `MAC_CALQSTATUSPOOR` : `motion_ac.h`
- `MAC_CALQSTATUSUNKNOWN` : `motion_ac.h`
- `MAC_CalQuality_t` : `motion_ac.h`
- `MotionAC_GetCalParams()` : `motion_ac.h`
- `MotionAC_GetLibVersion()` : `motion_ac.h`
- `MotionAC_Initialize()` : `motion_ac.h`
- `MotionAC_Update()` : `motion_ac.h`
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- MotionAC_GetCalParams() : `motion_ac.h`
- MotionAC_GetLibVersion() : `motion_ac.h`
- MotionAC_Initialize() : `motion_ac.h`
- MotionAC_Update() : `motion_ac.h`

---

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- MAC_CalQuality_t : `motion_ac.h`
- MAC_CALQSTATUSGOOD : motion_ac.h
- MAC_CALQSTATUSOK : motion_ac.h
- MAC_CALQSTATUSPOOR : motion_ac.h
- MAC_CALQSTATUSUNKNOWN : motion_ac.h
motion_ac.h

Go to the documentation of this file.

```
1 /* Define to prevent recursive inclusion ----------------------------------*/
38 /* Define to prevent recursive inclusion ----------------------------------*/
39 #ifndef _MOTION_AC_H_
40 #define _MOTION_AC_H_
41
42 #ifdef __cplusplus
43 extern "C"
44 {
45 #endif
46
47 /* Includes -----------------------------------------------*/
48 #include <stdint.h>
49
58 /* Exported types -----------------------------------------------*/
59
typedef enum
60 {
61    MAC_CALQSTATUSUNKNOWN = 0,
62    MAC_CALQSTATUSPOOR,
63    MAC_CALQSTATUSOK,
64    MAC_CALQSTATUSGOOD
65 } MAC_CalQuality_t;
```
typedef struct {
    float Acc[3]; /* Acceleration in X, Y, Z axis in [g] */
    int TimeStamp; /* Time stamp for accelerometer sensor output in [ms] */
} MAC_input_t;

typedef struct {
    float AccBias[3]; /* Accelerometer offset value in [g] */
    float SF_Matrix[3][3]; /* Scale factor correction matrix (diagonal matrix) */
    MAC_CalQuality_t CalQuality; /* Quality factor */
} MAC_output_t;

/* Exported constants ----------------------
----------------------------------*/

/* Exported variables ----------------------
----------------------------------*/

/* Exported macro --------------------------
----------------------------------*/

/* Exported functions ----------------------
----------------------------------*/

void MotionAC_Initialize(int sampletime, unsigned short int enable);

void MotionAC_Update(MAC_input_t *data_in);

void MotionAC_GetCalParams(MAC_output_t *data_out);
uint8_t MotionAC_GetLibVersion(char *version);

#ifdef __cplusplus
}
#endif
#endif /* _MOTION_AC_H_ */

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