SWC_STEPPER

Version v1.0
10/16/2023 5:30:00 PM

Table of Contents

Data Structure Index

Data Structures

Here are the data structures with brief descriptions:

File Index

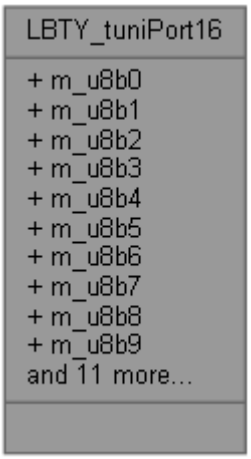
File List

Here is a list of all files with brief descriptions:

Data Structure Documentation

LBTY_tuniPort16 Union Reference

`#include <LBTY_int.h>`
Collaboration diagram for LBTY_tuniPort16:



Data Fields

- struct {
- u8 m_u8b0:1
- u8 m_u8b1:1
- u8 m_u8b2:1
- u8 m_u8b3:1
- u8 m_u8b4:1
- u8 m_u8b5:1
- u8 m_u8b6:1
- u8 m_u8b7:1
- u8 m_u8b8:1
- u8 m_u8b9:1
- u8 m_u8b10:1
- u8 m_u8b11:1
- u8 m_u8b12:1
- u8 m_u8b13:1
- u8 m_u8b14:1
- u8 m_u8b15:1
- } sBits
- struct {
- u8 m_u8low
- u8 m_u8high
- } sBytes
- u16 u_u16Word

Field Documentation

u8 m_u8b0

u8 m_u8b1

u8 m_u8b10

u8 m_u8b11

u8 m_u8b12

u8 m_u8b13

u8 m_u8b14

u8 m_u8b15

u8 m_u8b2

u8 m_u8b3

u8 m_u8b4

u8 m_u8b5

u8 m_u8b6

u8 m_u8b7

u8 m_u8b8

u8 m_u8b9

u8 m_u8high

u8 m_u8low

struct { ... } sBits

struct { ... } sBytes

u16 u_u16Word

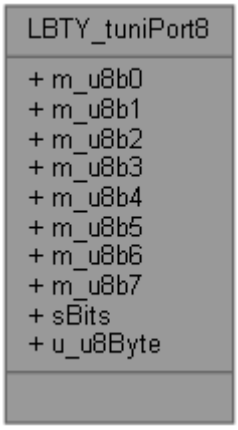
The documentation for this union was generated from the following file:

- H:/0/Workspaces/MCU Drivers/ATmega32/MCAL/SWC_BSW/LBTY_int.h

LBTY_tuniPort8 Union Reference

`#include <LBTY_int.h>`

Collaboration diagram for LBTY_tuniPort8:



Data Fields

- struct {
- u8 m_u8b0:1
- u8 m_u8b1:1
- u8 m_u8b2:1
- u8 m_u8b3:1
- u8 m_u8b4:1
- u8 m_u8b5:1
- u8 m_u8b6:1
- u8 m_u8b7:1
- } sBits
- u8 u_u8Byte

Detailed Description

Union Byte bit by bit

Field Documentation

u8 m_u8b0

u8 m_u8b1

u8 m_u8b2

u8 m_u8b3

u8 m_u8b4

u8 m_u8b5

u8 m_u8b6

u8 m_u8b7

struct { ... } sBits

u8 u_u8Byte

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

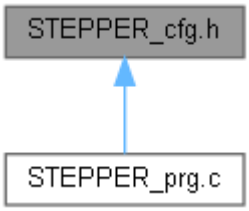
- H:/0/Workspaces/MCU Drivers/ATmega32/MCAL/SWC_BSW/LBTY_int.h

File Documentation

main.c File Reference

STEPPER_cfg.h File Reference

This graph shows which files directly or indirectly include this file:



Macros

- #define STEPPER_COIL_STEP STEPPER_Full_Step
- #define STEPPER_COIL_NORMAL PIN_Low
- #define STEPPER_COIL_MAX 4u
- #define STEPPER_PORT_COIL0 C
- #define STEPPER_PIN_COIL0 0u
- #define STEPPER_PORT_COIL1 C
- #define STEPPER_PIN_COIL1 1u
- #define STEPPER_PORT_COIL2 C
- #define STEPPER_PIN_COIL2 2u
- #define STEPPER_PORT_COIL3 C
- #define STEPPER_PIN_COIL3 3u
- #define STEPPER_STEP_ANGLE 10.0f
- #define STEPPER_MIN_STEP_DELAY 125u
- #define STEPPER_NUM_DELAY 130u

Macro Definition Documentation

#define STEPPER_COIL_MAX 4u

#define STEPPER_COIL_NORMAL PIN_Low

#define STEPPER_COIL_STEP STEPPER_Full_Step

#define STEPPER_MIN_STEP_DELAY 125u

#define STEPPER_NUM_DELAY 130u

#define STEPPER_PIN_COIL0 0u

#define STEPPER_PIN_COIL1 1u

#define STEPPER_PIN_COIL2 2u

#define STEPPER_PIN_COIL3 3u

#define STEPPER_PORT_COIL0 C

#define STEPPER_PORT_COIL1 C

#define STEPPER_PORT_COIL2 C

#define STEPPER_PORT_COIL3 C

#define STEPPER_STEP_ANGLE 10.0f

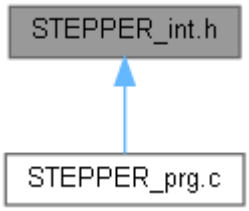
STEPPER_cfg.h

Go to the documentation of this file.

```
1 /*
2 /* ********************** FILE DEFINITION SECTION ************************** */
3 /* ************************************************************************** */
4 /* File Name    : STEPPER_cfg.h                                              */
5 /* Author       : MAAM                                                       */
6 /* Version      : v01.2                                                      */
7 /* date         : Mar 25, 2023                                               */
8 /* ************************************************************************** */
9 /* ************************ HEADER FILES INCLUDES ************************  */
10 /* ************************************************************************** */
11
12 #ifndef STEPPER_CFG_H_
13 #define STEPPER_CFG_H_
14
15 /* ************************************************************************** */
16 /* ********************** TYPE_DEF/STRUCT/ENUM SECTION ********************** */
17 /* ************************************************************************** */
18
19 /* ************************************************************************** */
20 /* ************************** MACRO/DEFINE SECTION ************************** */
21 /* ************************************************************************** */
22
23 #define STEPPER_COIL_STEP       STEPPER_Full_Step
24 #define STEPPER_COIL_NORMAL     PIN_Low
25 #define STEPPER_COIL_MAX        4u
26
27 #define STEPPER_PORT_COIL0      C
28 #define STEPPER_PIN_COIL0       0u
29
30 #define STEPPER_PORT_COIL1      C
31 #define STEPPER_PIN_COIL1       1u
32
33 #define STEPPER_PORT_COIL2      C
34 #define STEPPER_PIN_COIL2       2u
35
36 #define STEPPER_PORT_COIL3      C
37 #define STEPPER PIN COIL3       3u
38
39 #define STEPPER_STEP_ANGLE      10.0f   //1.8f
40 #define STEPPER_MIN_STEP_DELAY  125u
41 #define STEPPER_NUM_DELAY       130u
42
43 /* ************************************************************************** */
44 /* ***************************** CONST SECTION ****************************** */
45 /* ************************************************************************** */
46
47 /* ************************************************************************** */
48 /* ***************************** VARIABLE SECTION *************************** */
49 /* ************************************************************************** */
50
51 /* ************************************************************************** */
52 /* ***************************** FUNCTION SECTION *************************** */
53 /* ************************************************************************** */
54
55
56 #endif /* STEPPER_CFG_H_ */
57 /***************************** E N D (STEPPER_cfg.h) ******************************/
```

STEPPER_int.h File Reference

This graph shows which files directly or indirectly include this file:



Enumerations

- enum STEPPER_tenuDirection { STEPPER_WithClockWise = (u8)0u, STEPPER_OppositClockWise, STEPPER_Stop }

Functions

- void STEPPER_vidInit (void)
- void STEPPER_vidCycle (u16 u16DelayValue, u8 u8Direction)
- void STEPPER_vidStep (u16 u16DelayValue, u8 u8Direction)

Enumeration Type Documentation

enum STEPPER_tenuDirection

Enumerator:

STEPPER_WithClockWise	
STEPPER_OppositClockWise	
STEPPER_Stop	

```
19              {
20      STEPPER_WithClockWise = (u8)0u,
21      STEPPER_OppositClockWise,
22      STEPPER_Stop
23  }STEPPER_tenuDirection;
```

Function Documentation

void STEPPER_vidCycle (u16 *u16DelayValue*, u8 *u8Direction*)

```
72                                                      {
73      switch (u8Direction){
74          case STEPPER_WithClockWise :
75          case STEPPER_OppositClockWise :
76              for(u16 i = (360u / STEPPER_STEP_ANGLE) ; i-- ; ){
77                  STEPPER_vidStep(u16DelayValue, u8Direction);
78              }
79              break;
80          case STEPPER_Stop :
81          default:
82              return;
83      }
84  }
```

Here is the call graph for this function:

void STEPPER_vidInit (void)

```
59                                  {
60      for(u8 i = STEPPER_NUM ; i-- ; ){
61          GPIO_tstrPinConfig* pTemp =
(GPIO_tstrPinConfig*)&kau8STEPPERConfiguration_LGB[i];
62          GPIO_u8PinInit(*pTemp);
63          GPIO_u8SetPinValue(pTemp->m_Port, pTemp->m_Pin, pTemp->m_Value);
64      }
65  }
```

void STEPPER_vidStep (u16 *u16DelayValue*, u8 *u8Direction*)

```
91                                                                  {
92      static u8 u8Coil;
93
94      switch (u8Direction){
95          case STEPPER_WithClockWise :
96              u8Coil = (u8Coil + 1) % ku8StepperNum;
97              break;
98          case STEPPER_OppositClockWise :
99              u8Coil = u8Coil ? (u8Coil - 1) : (ku8StepperNum - 1);
100              break;
101          case STEPPER_Stop :
102          default:
103              u8Coil = LBTY_u8ZERO;
104              return;
105      }
106
107      u8 u8Temp = kau8StepperStep[u8Coil];
108      GPIO_tstrPinConfig* pTemp =
(GPIO_tstrPinConfig*)kau8STEPPERConfiguration_LGB;
109      for(u8 i = STEPPER_NUM ; i-- ; pTemp++){
110          GPIO_u8SetPinValue(pTemp->m_Port, pTemp->m_Pin, ((u8Temp & (1<<i)) ?
STEPPER_COIL_Set : STEPPER_COIL_Reset));
111      }
112
113      vidMyDelay_ms(u16DelayValue);
114  }
```

Here is the caller graph for this function:

STEPPER_int.h

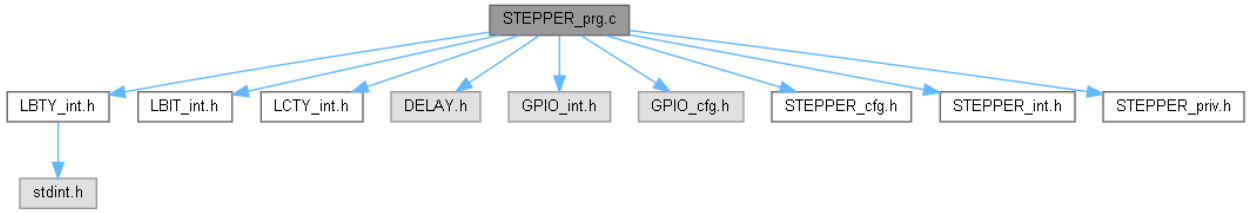
Go to the documentation of this file.

```c
/*
/* ********************************************************************************** */
/* ********************** FILE DEFINITION SECTION ************************************ */
/* ********************************************************************************** */
/* File Name    : STEPPER_int.h                                                       */
/* Author       : MAAM                                                                */
/* Version      : v01.2                                                               */
/* date         : Mar 25, 2023                                                        */
/* ********************************************************************************** */
/* ************************* HEADER FILES INCLUDES ********************************  */
/* ********************************************************************************** */

#ifndef STEPPER_INT_H_
#define STEPPER_INT_H_

/* ********************************************************************************** */
/* ********************** TYPE_DEF/STRUCT/ENUM SECTION ****************************** */
/* ********************************************************************************** */

typedef enum{
    STEPPER_WithClockWise = (u8)0u,
    STEPPER_OppositClockWise,
    STEPPER_Stop
}STEPPER_tenuDirection;

/* ********************************************************************************** */
/* ************************** MACRO/DEFINE SECTION ********************************** */
/* ********************************************************************************** */

/* ********************************************************************************** */
/* ***************************** CONST SECTION ************************************** */
/* ********************************************************************************** */

/* ********************************************************************************** */
/* ***************************** VARIABLE SECTION *********************************** */
/* ********************************************************************************** */

/* ********************************************************************************** */
/* ***************************** FUNCTION SECTION *********************************** */
/* ********************************************************************************** */

/* ********************************************************************************** */
/* Description :    Stepper initialization                                            */
/* Input       :    void                                                              */
/* Return      :    void                                                              */
/* ********************************************************************************** */
extern void STEPPER_vidInit(void);

/* ********************************************************************************** */
/* Description :    Stepper Run One Cycle                                             */
/* Input       :    u16DelayValue, u8Direction                                        */
/* Return      :    void                                                              */
/* ********************************************************************************** */
extern void STEPPER_vidCycle(u16 u16DelayValue, u8 u8Direction);

/* ********************************************************************************** */
/* Description :    Stepper Run Value                                                 */
/* Input       :    u16DelayValue, u8Direction                                        */
/* Return      :    void                                                              */
/* ********************************************************************************** */
extern void STEPPER_vidStep(u16 u16DelayValue, u8 u8Direction);


#endif /* STEPPER_INT_H_ */
/*************************** E N D (STEPPER_int.h) ******************************/
```

STEPPER_prg.c File Reference

```
#include "LBTY_int.h"
#include "LBIT_int.h"
#include "LCTY_int.h"
#include "DELAY.h"
#include "GPIO_int.h"
#include "GPIO_cfg.h"
#include "STEPPER_cfg.h"
#include "STEPPER_int.h"
#include "STEPPER_priv.h"
```

Include dependency graph for STEPPER_prg.c:



Functions

- void STEPPER_vidInit (void)
- void STEPPER_vidCycle (u16 u16DelayValue, u8 u8Direction)
- void STEPPER_vidStep (u16 u16DelayValue, u8 u8Direction)

Variables

- const GPIO_tstrPinConfig kau8STEPPERConfiguration_LGB [STEPPER_NUM]
- const u8 kau8StepperStep [STEPPER_NUM *2u]
- const u8 ku8StepperNum

Function Documentation

void STEPPER_vidCycle (u16 *u16DelayValue*, u8 *u8Direction*)

```
72                                                          {
73     switch (u8Direction){
74         case STEPPER_WithClockWise :
75         case STEPPER_OppositClockWise :
76             for(u16 i = (360u / STEPPER_STEP_ANGLE) ; i-- ; ){
77                 STEPPER_vidStep(u16DelayValue, u8Direction);
78             }
79             break;
80         case STEPPER_Stop :
81         default:
82             return;
83     }
84 }
```

Here is the call graph for this function:

void STEPPER_vidInit (void)

```
59                              {
60     for(u8 i = STEPPER_NUM ; i-- ; ){
61         GPIO_tstrPinConfig* pTemp =
(GPIO_tstrPinConfig*)&kau8STEPPERConfiguration_LGB[i];
62         GPIO_u8PinInit(*pTemp);
63         GPIO_u8SetPinValue(pTemp->m_Port, pTemp->m_Pin, pTemp->m_Value);
```

```
64      }
65  }
```

void STEPPER_vidStep (u16 *u16DelayValue*, u8 *u8Direction*)

```
91                                                          {
92      static u8 u8Coil;
93
94      switch (u8Direction){
95          case STEPPER_WithClockWise :
96              u8Coil = (u8Coil + 1) % ku8StepperNum;
97              break;
98          case STEPPER_OppositClockWise :
99              u8Coil = u8Coil ? (u8Coil - 1) : (ku8StepperNum - 1);
100              break;
101           case STEPPER_Stop :
102           default:
103               u8Coil = LBTY_u8ZERO;
104               return;
105       }
106
107       u8 u8Temp = kau8StepperStep[u8Coil];
108       GPIO_tstrPinConfig* pTemp =
(GPIO_tstrPinConfig*)kau8STEPPERConfiguration_LGB;
109       for(u8 i = STEPPER_NUM ; i-- ; pTemp++){
110           GPIO_u8SetPinValue(pTemp->m_Port, pTemp->m_Pin, ((u8Temp & (1<<i)) ?
STEPPER_COIL_Set : STEPPER_COIL_Reset));
111       }
112
113       vidMyDelay_ms(u16DelayValue);
114   }
```

Here is the caller graph for this function:

Variable Documentation

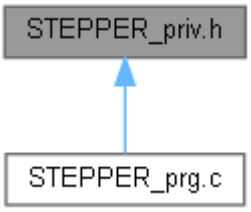
const GPIO_tstrPinConfig kau8STEPPERConfiguration_LGB[STEPPER_NUM] [extern]

const u8 kau8StepperStep[STEPPER_NUM *2u] [extern]

const u8 ku8StepperNum [extern]

STEPPER_priv.h File Reference

This graph shows which files directly or indirectly include this file:



Macros

- #define STEPPER_NUM 4u
- #define STEPPER_Half_Step 0u
- #define STEPPER_Full_Step 1u

Enumerations

- enum STEPPER_tenuState { STEPPER_COIL_Reset = STEPPER_COIL_NORMAL, STEPPER_COIL_Set = !STEPPER_COIL_Reset }

Macro Definition Documentation

#define STEPPER_Full_Step 1u

#define STEPPER_Half_Step 0u

#define STEPPER_NUM 4u

Enumeration Type Documentation

enum STEPPER_tenuState

Enumerator:

STEPPER_COIL_Reset	
STEPPER_COIL_Set	

```
19              {
20      STEPPER_COIL_Reset = STEPPER_COIL_NORMAL,
21      STEPPER_COIL_Set = !STEPPER_COIL_Reset
22  }STEPPER_tenuState;
```

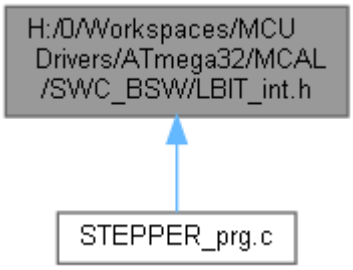
STEPPER_priv.h

Go to the documentation of this file.

```c
/*
 ****************************************************************************** */
/* ********************** FILE DEFINITION SECTION ************************** */
/* ****************************************************************************** */
/* File Name   : STEPPER_priv.h                                                 */
/* Author      : MAAM                                                           */
/* Version     : v01.2                                                          */
/* date        : Mar 25, 2023                                                   */
/* ****************************************************************************** */
/* ************************ HEADER FILES INCLUDES ***************************  */
/* ****************************************************************************** */

#ifndef STEPPER_PRIV_H_
#define STEPPER_PRIV_H_

/* ****************************************************************************** */
/* ********************** TYPE_DEF/STRUCT/ENUM SECTION ********************** */
/* ****************************************************************************** */

typedef enum{
    STEPPER_COIL_Reset = STEPPER_COIL_NORMAL,
    STEPPER_COIL_Set = !STEPPER_COIL_Reset
}STEPPER_tenuState;

#define STEPPER_NUM             4u
#define STEPPER_Half_Step       0u
#define STEPPER_Full_Step       1u

/* ****************************************************************************** */
/* ************************** MACRO/DEFINE SECTION ************************** */
/* ****************************************************************************** */

/* ****************************************************************************** */
/* ***************************** CONST SECTION ********************************** */
/* ****************************************************************************** */

/* ****************************************************************************** */
/* ***************************** VARIABLE SECTION ******************************* */
/* ****************************************************************************** */

/* ****************************************************************************** */
/* ***************************** FUNCTION SECTION ******************************* */
/* ****************************************************************************** */

#endif /* STEPPER_PRIV_H_ */
/***************************** E N D (STEPPER_priv.h) ****************************/
```

H:/0/Workspaces/MCU Drivers/ATmega32/MCAL/SWC_BSW/LBIT_int.h File Reference

This graph shows which files directly or indirectly include this file:



Macros

- #define _BV(bit) (1u<<(bit))
- #define SET_BIT(REG, bit) ((REG) |= (1u<<(bit)))
- #define CLR_BIT(REG, bit) ((REG) &= ~(1u<<(bit)))
- #define TOG_BIT(REG, bit) ((REG) ^= (1u<<(bit)))
- #define SET_BYTE(REG, bit) ((REG) |= (0xFFu<<(bit)))
- #define CLR_BYTE(REG, bit) ((REG) &= ~(0xFFu<<(bit)))
- #define TOG_BYTE(REG, bit) ((REG) ^= (0xFFu<<(bit)))
- #define SET_MASK(REG, MASK) ((REG) |= (MASK))
- #define CLR_MASK(REG, MASK) ((REG) &= ~(MASK))
- #define TOG_MASK(REG, MASK) ((REG) ^= (MASK))
- #define GET_MASK(REG, MASK) ((REG) & (MASK))
- #define SET_REG(REG) ((REG) = ~(0u))
- #define CLR_REG(REG) ((REG) = (0u))
- #define TOG_REG(REG) ((REG) ^= ~(0u))
- #define GET_BIT(REG, bit) (((REG)>>(bit)) & 0x01u)
- #define GET_NIB(REG, bit) (((REG)>>(bit)) & 0x0Fu)
- #define GET_BYTE(REG, bit) (((REG)>>(bit)) & 0xFFu)
- #define ASSIGN_BIT(REG, bit, value) ((REG) = ((REG) & ~(0x01u<<(bit))) | (((value) & 0x01u)<<(bit)))
- #define ASSIGN_NIB(REG, bit, value) ((REG) = ((REG) & ~(0x0Fu<<(bit))) | (((value) & 0x0Fu)<<(bit)))
- #define ASSIGN_BYTE(REG, bit, value) ((REG) = ((REG) & ~(0xFFu<<(bit))) | (((value) & 0xFFu)<<(bit)))
- #define CON_u8Bits(b7, b6, b5, b4, b3, b2, b1, b0)

  (0b##b7##b6##b5##b4##b3##b2##b1##b0)
- #define CON_u16Bits(b15, b14, b13, b12, b11, b10, b9, b8, b7, b6, b5, b4, b3, b2, b1, b0)

  (0b##b15##b14##b13##b12##b11##b10##b9##b8##b7##b6##b5##b4##b3##b2##b1##b0)

Macro Definition Documentation

#define _BV(bit) (1u<<(bit))

#define ASSIGN_BIT(REG, bit, value) ((REG) = ((REG) & ~(0x01u<<(bit))) | (((value) & 0x01u)<<(bit)))

#define ASSIGN_BYTE(REG, bit, value) ((REG) = ((REG) & ~(0xFFu<<(bit))) | (((value) & 0xFFu)<<(bit)))

#define ASSIGN_NIB(REG, bit, value) ((REG) = ((REG) & ~(0x0Fu<<(bit))) | (((value) & 0x0Fu)<<(bit)))

#define CLR_BIT(REG, bit) ((REG) &= ~(1u<<(bit)))

#define CLR_BYTE(REG, bit) ((REG) &= ~(0xFFu<<(bit)))

#define CLR_MASK(REG, MASK) ((REG) &= ~(MASK))

#define CLR_REG(REG) ((REG) = (0u))

#define CON_u16Bits(b15, b14, b13, b12, b11, b10, b9, b8, b7, b6, b5, b4, b3, b2, b1, b0)

(0b##b15##b14##b13##b12##b11##b10##b9##b8##b7##b6##b5##b4##b3##b2##b1##b0)

#define CON_u8Bits(b7, b6, b5, b4, b3, b2, b1, b0)

(0b##b7##b6##b5##b4##b3##b2##b1##b0)

#define GET_BIT(REG, bit) (((REG)>>(bit)) & 0x01u)

#define GET_BYTE(REG, bit) (((REG)>>(bit)) & 0xFFu)

#define GET_MASK(REG, MASK) ((REG) & (MASK))

#define GET_NIB(REG, bit) (((REG)>>(bit)) & 0x0Fu)

#define SET_BIT(REG, bit) ((REG) |= (1u<<(bit)))

Bitwise Operation

```
#define SET_BYTE( REG,   bit)   ((REG) |=   (0xFFu<<(bit)))

#define SET_MASK( REG,   MASK)   ((REG) |=   (MASK))

#define SET_REG( REG)   ((REG)   = ~(0u))

#define TOG_BIT( REG,   bit)   ((REG) ^=   (1u<<(bit)))

#define TOG_BYTE( REG,   bit)   ((REG) ^=   (0xFFu<<(bit)))

#define TOG_MASK( REG,   MASK)   ((REG) ^=   (MASK))

#define TOG_REG( REG)   ((REG) ^= ~(0u))
```

LBIT_int.h

Go to the documentation of this file.

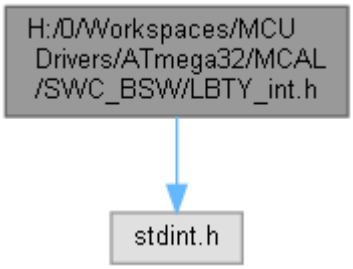
```
1 /*
******************************************************************************* */
2 /* ********************** FILE DEFINITION SECTION ************************** */
3 /* ******************************************************************************* */
4 /* File Name   : LBIT_int.h                                                    */
5 /* Author      : MAAM                                                          */
6 /* Version     : v01                                                           */
7 /* date        : Mar 24, 2023                                                  */
8 /* description : Bitwise Library                                               */
9 /* ******************************************************************************* */
10 /* ************************ HEADER FILES INCLUDES ************************  */
11 /* ******************************************************************************* */
12
13 #ifndef LBIT_INT_H_
14 #define LBIT_INT_H_
15
16 /* ******************************************************************************* */
17 /* ********************** TYPE_DEF/STRUCT/ENUM SECTION ********************** */
18 /* ******************************************************************************* */
19
20 /* ******************************************************************************* */
21 /* ************************** MACRO/DEFINE SECTION ************************** */
22 /* ******************************************************************************* */
23
24 #define _BV(bit)                                          (1u<<(bit))
25
27 #define SET_BIT(REG, bit)                                 ((REG) |=  (1u<<(bit)))
28 #define CLR_BIT(REG, bit)                                 ((REG) &= ~(1u<<(bit)))
29 #define TOG_BIT(REG, bit)                                 ((REG) ^=  (1u<<(bit)))
30
31 #define SET_BYTE(REG, bit)                                ((REG) |=  (0xFFu<<(bit)))
32 #define CLR_BYTE(REG, bit)                                ((REG) &= ~(0xFFu<<(bit)))
33 #define TOG_BYTE(REG, bit)                                ((REG) ^=  (0xFFu<<(bit)))
34
35 #define SET_MASK(REG, MASK)                               ((REG) |=  (MASK))
36 #define CLR_MASK(REG, MASK)                               ((REG) &= ~(MASK))
37 #define TOG_MASK(REG, MASK)                               ((REG) ^=  (MASK))
38 #define GET_MASK(REG, MASK)                               ((REG) &   (MASK))
39
40 #define SET_REG(REG)                                      ((REG)  = ~(0u))
41 #define CLR_REG(REG)                                      ((REG)  =  (0u))
42 #define TOG_REG(REG)                                      ((REG) ^= ~(0u))
43
44 #define GET_BIT(REG, bit)                                 (((REG)>>(bit)) & 0x01u)
45 #define GET_NIB(REG, bit)                                 (((REG)>>(bit)) & 0x0Fu)
46 #define GET_BYTE(REG, bit)                                (((REG)>>(bit)) & 0xFFu)
47
48 #define ASSIGN_BIT(REG, bit, value)                      ((REG) = ((REG) & ~(0x01u<<(bit)))
| (((value) & 0x01u)<<(bit)))
49 #define ASSIGN_NIB(REG, bit, value)                      ((REG) = ((REG) & ~(0x0Fu<<(bit)))
| (((value) & 0x0Fu)<<(bit)))
50 #define ASSIGN_BYTE(REG, bit, value)                     ((REG) = ((REG) & ~(0xFFu<<(bit)))
| (((value) & 0xFFu)<<(bit)))
51
52 /*
53 #define ASSIGN_BIT(REG,bit,value)                         do{
\
54                                                            REG &= ~(0x01u<<bit);
\
55                                                            REG |=  ((value & 0x01u)<<bit);
\
56                                                           }while(0)
57 */
58
59 /*          bits together in an u8 register          */
60 #define CON_u8Bits(b7, b6, b5, b4, b3, b2, b1, b0)
\
61
(0b##b7##b6##b5##b4##b3##b2##b1##b0)
62
63 /*          bits together in an u16 register         */
64 #define CON_u16Bits(b15, b14, b13, b12, b11, b10, b9, b8, b7, b6, b5, b4, b3, b2, b1,
b0)   \
```

```
65
(0b##b15##b14##b13##b12##b11##b10##b9##b8##b7##b6##b5##b4##b3##b2##b1##b0)
66
67 /* ************************************************************************** */
68 /* ***************************** CONST SECTION ****************************** */
69 /* ************************************************************************** */
70
71 /* ************************************************************************** */
72 /* ***************************** VARIABLE SECTION ***************************** */
73 /* ************************************************************************** */
74
75 /* ************************************************************************** */
76 /* ***************************** FUNCTION SECTION ***************************** */
77 /* ************************************************************************** */
78
79
80 #endif /* LBIT_INT_H_ */
81 /***************************** E N D (LBIT_int.h) ******************************/
```

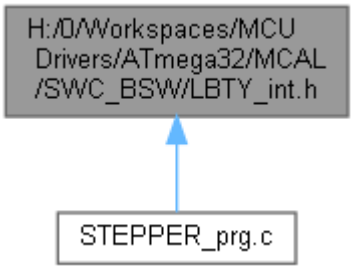
H:/0/Workspaces/MCU Drivers/ATmega32/MCAL/SWC_BSW/LBTY_int.h File Reference

```
#include <stdint.h>
```

Include dependency graph for LBTY_int.h:



This graph shows which files directly or indirectly include this file:



Data Structures

- union LBTY_tuniPort8union LBTY_tuniPort16

Macros

- #define __IO volatile
- #define __O volatile
- #define __I volatile const
- #define LBTY_u8vidNOP()
- #define LBTY_NULL ((void *) 0U)
- #define LBTY_u8ZERO ((u8)0x00U)
- #define LBTY_u8MAX ((u8)0xFFU)
- #define LBTY_s8MAX ((s8)0x7F)
- #define LBTY_s8MIN ((s8)0x80)
- #define LBTY_u16ZERO ((u16)0x0000U)
- #define LBTY_u16MAX ((u16)0xFFFFU)
- #define LBTY_s16MAX ((u16)0x7FFF)
- #define LBTY_s16MIN ((u16)0x8000)
- #define LBTY_u32ZERO ((u32)0x00000000UL)
- #define LBTY_u32MAX ((u32)0xFFFFFFFFUL)
- #define LBTY_s32MAX ((u32)0x7FFFFFFFL)
- #define LBTY_s32MIN ((u32)0x80000000L)
- #define LBTY_u64ZERO ((u64)0x0000000000000000ULL)
- #define LBTY_u64MAX ((u64)0xFFFFFFFFFFFFFFFFULL)
- #define LBTY_s64MAX ((u64)0x7FFFFFFFFFFFFFFFLL)
- #define LBTY_s64MIN ((u64)0x8000000000000000LL)

Typedefs

- typedef uint8_t u8
- typedef uint16_t u16
- typedef uint32_t u32
- typedef uint64_t u64
- typedef int8_t s8
- typedef int16_t s16
- typedef int32_t s32
- typedef int64_t s64
- typedef float f32
- typedef double f64
- typedef u8 * pu8
- typedef u16 * pu16
- typedef u32 * pu32
- typedef u64 * pu64
- typedef s8 * ps8
- typedef s16 * ps16
- typedef s32 * ps32
- typedef s64 * ps64

Enumerations

- enum LBTY_tenuFlagStatus { LBTY_RESET = 0, LBTY_SET = !LBTY_RESET }
- enum LBTY_tenuBoolean { LBTY_TRUE = 0x55, LBTY_FALSE = 0xAA }
- enum LBTY_tenuErrorStatus { LBTY_OK = (u16)0, LBTY_NOK, LBTY_NULL_POINTER, LBTY_INDEX_OUT_OF_RANGE, LBTY_NO_MASTER_CHANNEL, LBTY_READ_ERROR, LBTY_WRITE_ERROR, LBTY_UNDEFINED_ERROR, LBTY_IN_PROGRESS }

Macro Definition Documentation

#define __I volatile const

#define __IO volatile

#define __O volatile

#define LBTY_NULL ((void *) 0U)

#define LBTY_s16MAX ((u16)0x7FFF)

#define LBTY_s16MIN ((u16)0x8000)

#define LBTY_s32MAX ((u32)0x7FFFFFFFL)

#define LBTY_s32MIN ((u32)0x80000000L)

#define LBTY_s64MAX ((u64)0x7FFFFFFFFFFFFFFFLL)

#define LBTY_s64MIN ((u64)0x8000000000000000LL)

#define LBTY_s8MAX ((s8)0x7F)

#define LBTY_s8MIN ((s8)0x80)

#define LBTY_u16MAX ((u16)0xFFFFU)

#define LBTY_u16ZERO ((u16)0x0000U)

#define LBTY_u32MAX ((u32)0xFFFFFFFFUL)

#define LBTY_u32ZERO ((u32)0x00000000UL)

#define LBTY_u64MAX ((u64)0xFFFFFFFFFFFFFFFFULL)

#define LBTY_u64ZERO ((u64)0x0000000000000000ULL)

#define LBTY_u8MAX ((u8)0xFFU)

#define LBTY_u8vidNOP()

#define LBTY_u8ZERO ((u8)0x00U)

Data Types Limitation

Typedef Documentation

typedef float f32

Standard Real Decimal number

typedef double f64

typedef s16* ps16

typedef s32* ps32

typedef s64* ps64

typedef s8* ps8

Standard Pointer to Signed Byte/Word/Long_Word

typedef u16* pu16

typedef u32* pu32

typedef u64* pu64

typedef u8* pu8

Standard Pointer to Unsigned Byte/Word/Long_Word

typedef int16_t s16

typedef int32_t s32

typedef int64_t s64

typedef int8_t s8

Standard Signed Byte/Word/Long_Word

typedef uint16_t u16

typedef uint32_t u32

typedef uint64_t u64

typedef uint8_t u8

Data Types New Definitions Standard Unsigned Byte/Word/Long_Word

---

Enumeration Type Documentation

enum LBTY_tenuBoolean

Boolean type

Enumerator:

LBTY_TRUE	
LBTY_FALSE	

```
96              {
97   LBTY_TRUE = 0x55,
98   LBTY_FALSE = 0xAA
99 } LBTY_tenuBoolean;
```

enum LBTY_tenuErrorStatus

Error Return type

Enumerator:

LBTY_OK	
LBTY_NOK	
LBTY_NULL_POINTER	
LBTY_INDEX_OUT_OF_RANGE	
LBTY_NO_MASTER_CHANNEL	
LBTY_READ_ERROR	
LBTY_WRITE_ERROR	
LBTY_UNDEFINED_ERROR	
LBTY_IN_PROGRESS	

```
102             {
103   LBTY_OK = (u16)0,
104   LBTY_NOK,
105   LBTY_NULL_POINTER,
106   LBTY_INDEX_OUT_OF_RANGE,
107   LBTY_NO_MASTER_CHANNEL,
108   LBTY_READ_ERROR,
109   LBTY_WRITE_ERROR,
110   LBTY_UNDEFINED_ERROR,
111   LBTY_IN_PROGRESS        /* Error is not available, wait for availability */
112 } LBTY_tenuErrorStatus;
```

enum LBTY_tenuFlagStatus

Flag Status type

Enumerator:

LBTY_RESET	
LBTY_SET	

```
90              {
91     LBTY_RESET = 0,
92     LBTY_SET = !LBTY_RESET
93 } LBTY_tenuFlagStatus;
```

LBTY_int.h

Go to the documentation of this file.

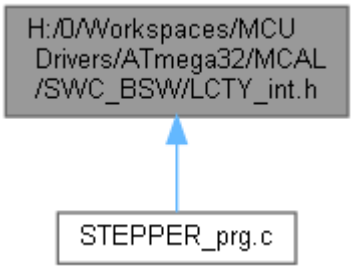
```
1 /*
2 /* ********************** FILE DEFINITION SECTION ************************** */
3 /* ************************************************************************* */
4 /* File Name   : LBTY_int.h                                                  */
5 /* Author      : MAAM                                                        */
6 /* Version     : v01                                                         */
7 /* date        : Mar 23, 2023                                                */
8 /* description : Basic Library                                               */
9 /* ************************************************************************* */
10 /* ************************ HEADER FILES INCLUDES ************************  */
11 /* ************************************************************************* */
12
13 #ifndef _LBTY_INT_H_
14 #define _LBTY_INT_H_
15
16 #include <stdint.h>
17
18 /* ************************************************************************* */
19 /* ****************************** TYPE_DEF SECTION ************************* */
20 /* ************************************************************************* */
21
24 typedef uint8_t     u8 ;
25 typedef uint16_t    u16;
26 typedef uint32_t    u32;
27 typedef uint64_t    u64;
28
30 typedef int8_t      s8 ;
31 typedef int16_t     s16;
32 typedef int32_t     s32;
33 typedef int64_t     s64;
34
36 typedef float       f32;
37 typedef double      f64;
38
40 typedef u8*         pu8 ;
41 typedef u16*        pu16;
42 typedef u32*        pu32;
43 typedef u64*        pu64;
44
46 typedef s8*         ps8 ;
47 typedef s16*        ps16;
48 typedef s32*        ps32;
49 typedef s64*        ps64;
50
51 /* ************************************************************************* */
52 /* ************************** MACRO/DEFINE SECTION ************************* */
53 /* ************************************************************************* */
54
55 /***************************************************************************/
56 #define __IO    volatile
57 #define __O     volatile
58 #define __I     volatile const
59 /***************************************************************************/
60
61 #define LBTY_u8vidNOP()
62 #define LBTY_NULL       ((void *) 0U)
63
65 #define LBTY_u8ZERO     ((u8)0x00U)
66 #define LBTY_u8MAX      ((u8)0xFFU)
67 #define LBTY_s8MAX      ((s8)0x7F )
68 #define LBTY_s8MIN      ((s8)0x80 )
69
70 #define LBTY_u16ZERO    ((u16)0x0000U)
71 #define LBTY_u16MAX     ((u16)0xFFFFU)
72 #define LBTY_s16MAX     ((u16)0x7FFF )
73 #define LBTY_s16MIN     ((u16)0x8000 )
74
75 #define LBTY_u32ZERO    ((u32)0x00000000UL)
76 #define LBTY_u32MAX     ((u32)0xFFFFFFFFUL)
77 #define LBTY_s32MAX     ((u32)0x7FFFFFFFL )
78 #define LBTY_s32MIN     ((u32)0x80000000L )
79
```

```
80 #define LBTY_u64ZERO     ((u64)0x0000000000000000ULL)
81 #define LBTY_u64MAX      ((u64)0xFFFFFFFFFFFFFFFFULL)
82 #define LBTY_s64MAX      ((u64)0x7FFFFFFFFFFFFFFFLL )
83 #define LBTY_s64MIN      ((u64)0x8000000000000000LL )
84
85 /* ********************************************************************************* */
86 /* ****************************** ENUM SECTION ************************************* */
87 /* ********************************************************************************* */
88
90 typedef enum {
91     LBTY_RESET = 0,
92     LBTY_SET = !LBTY_RESET
93 } LBTY_tenuFlagStatus;
94
96 typedef enum {
97   LBTY_TRUE = 0x55,
98   LBTY_FALSE = 0xAA
99 } LBTY_tenuBoolean;
100
102 typedef enum {
103   LBTY_OK = (u16)0,
104   LBTY_NOK,
105   LBTY_NULL_POINTER,
106   LBTY_INDEX_OUT_OF_RANGE,
107   LBTY_NO_MASTER_CHANNEL,
108   LBTY_READ_ERROR,
109   LBTY_WRITE_ERROR,
110   LBTY_UNDEFINED_ERROR,
111   LBTY_IN_PROGRESS         /* Error is not available, wait for availability */
112 } LBTY_tenuErrorStatus;
113
114 /* ********************************************************************************* */
115 /* ****************************** STRUCT SECTION ************************************* */
116 /* ********************************************************************************* */
117
119 typedef union {
120   struct {
121     u8 m_u8b0 :1;       // LSB
122     u8 m_u8b1 :1;
123     u8 m_u8b2 :1;
124     u8 m_u8b3 :1;
125     u8 m_u8b4 :1;
126     u8 m_u8b5 :1;
127     u8 m_u8b6 :1;
128     u8 m_u8b7 :1;       // MSB
129   } sBits;
130   u8 u_u8Byte;
131 } LBTY_tuniPort8;
132
133 typedef union {
134   struct  {
135     u8 m_u8b0  :1;      // LSB
136     u8 m_u8b1  :1;
137     u8 m_u8b2  :1;
138     u8 m_u8b3  :1;
139     u8 m_u8b4  :1;
140     u8 m_u8b5  :1;
141     u8 m_u8b6  :1;
142     u8 m_u8b7  :1;
143     u8 m_u8b8  :1;
144     u8 m_u8b9  :1;
145     u8 m_u8b10 :1;
146     u8 m_u8b11 :1;
147     u8 m_u8b12 :1;
148     u8 m_u8b13 :1;
149     u8 m_u8b14 :1;
150     u8 m_u8b15 :1;      // MSB
151   } sBits;
152   struct {
153     u8 m_u8low;
154     u8 m_u8high;
155   } sBytes;
156   u16 u_u16Word;
157 } LBTY_tuniPort16;
158
159 /* ********************************************************************************* */
160 /* ***************************** FUNCTION SECTION ************************************ */
```

```
161 /* ************************************************************************** */
162
163
164 #endif /* _LBTY_INT_H_ */
165 /*************************** E N D (LBTY_int.h) ****************************/
```

H:/0/Workspaces/MCU Drivers/ATmega32/MCAL/SWC_BSW/LCTY_int.h File Reference

This graph shows which files directly or indirectly include this file:



Macros

- #define LCTY_PROGMEM __attribute__((__progmem__))
- #define LCTY_PURE __attribute__((__pure__))
- #define LCTY_INLINE __attribute__((always_inline)) static inline
- #define LCTY_INTERRUPT __attribute__((interrupt))
- #define CTY_PACKED __attribute__((__packed__))
- #define LCTY_CONST __attribute__((__const__))
- #define LCTY_DPAGE __attribute__((dp))
- #define LCTY_NODPAGE __attribute__((nodp))
- #define LCTY_SECTION(section) __attribute__((section(# section)))
- #define LCTY_ASM(cmd) __asm__ __volatile__ (# cmd ::)

Macro Definition Documentation

#define CTY_PACKED __attribute__((__packed__))

#define LCTY_ASM(cmd) __asm__ __volatile__ (# cmd ::)

#define LCTY_CONST __attribute__((__const__))

#define LCTY_DPAGE __attribute__((dp))

#define LCTY_INLINE __attribute__((always_inline)) static inline

#define LCTY_INTERRUPT __attribute__((interrupt))

#define LCTY_NODPAGE __attribute__((nodp))

#define LCTY_PROGMEM __attribute__((__progmem__))

#define LCTY_PURE __attribute__((__pure__))

#define LCTY_SECTION(section) __attribute__((section(# section)))

LCTY_int.h

Go to the documentation of this file.

```
1 /*
2 /* ********************** FILE DEFINITION SECTION ************************** */
3 /* ************************************************************************* */
4 /* File Name   : LCTY_int.h                                                  */
5 /* Author      : MAAM                                                        */
6 /* Version     : v00                                                         */
7 /* date        : Apr 26, 2023                                                */
8 /* description : Compiler Library                                            */
9 /* ************************************************************************* */
10 /* ************************ HEADER FILES INCLUDES ************************  */
11 /* ************************************************************************* */
12
13 #ifndef LCTY_INT_H_
14 #define LCTY_INT_H_
15
16 /* ************************************************************************* */
17 /* ********************** TYPE_DEF/STRUCT/ENUM SECTION ********************** */
18 /* ************************************************************************* */
19
20 /* ************************************************************************* */
21 /* ************************** MACRO/DEFINE SECTION ************************** */
22 /* ************************************************************************* */
23
24 /* prog memory attribute */
25 #define LCTY_PROGMEM                __attribute__((__progmem__))
26
27 /* pure attribute */
28 #define LCTY_PURE                   __attribute__((__pure__))
29
30 /* Abstraction for inlining */
31 //#define LCTY_INLINE               static inline
32 #define LCTY_INLINE                 __attribute__((always_inline)) static inline
33
34 /* define function as interrupt handler */
35 #define LCTY_INTERRUPT              __attribute__((interrupt))
36
37 /* Memory packed to pass Memory padding */
38 #define CTY_PACKED                  __attribute__((__packed__))
39
40 /* Const attribute */
41 #define LCTY_CONST                  __attribute__((__const__))
42
43 /* place variable in direct page */
44 #define LCTY_DPAGE                  __attribute__((dp))
45
46 /* do not place variable in direct page */
47 #define LCTY_NODPAGE                __attribute__((nodp))
48
49 /* Sections */
50 #define LCTY_SECTION(section)       __attribute__((section( # section)))
51
52 /* Abstraction for assembly command */
53 # define LCTY_ASM(cmd)              __asm__ __volatile__ ( # cmd ::)
54
55 /* ************************************************************************* */
56 /* ***************************** CONST SECTION ***************************** */
57 /* ************************************************************************* */
58
59 /* ************************************************************************* */
60 /* ***************************** VARIABLE SECTION ************************** */
61 /* ************************************************************************* */
62
63 /* ************************************************************************* */
64 /* ***************************** FUNCTION SECTION ************************** */
65 /* ************************************************************************* */
66
67
68 #endif /* LCTY_INT_H_ */
69 /*************************** E N D (LCTY_int.h) ****************************/
```