X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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Documentation for X-CUBE-SPN11 Software for STM32, Expansion for STM32Cube

Introduction

X-CUBE-SPN11 is a expansion software for STM32Cube. The software runs on the STM32 providing management of STSPIN230 for control low voltage three-phase brushless DC stepper motors. The expansion is built on STM32Cube software technology to ease portability across different STM32 microcontrollers. It is compatible with the NUCLEO-F401RE when plugged into one X-NUCLEO-IHM11M1. The software comes with an example of implementation of the driving of one low voltage three-phase brushless DC motor, with BEMF sensing. The package contains a user interface layer enabling real-time transmission of data to a PC through the terminal.

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Modules
Here is a list of all modules:
[detail level 12345]

DRIVERS	Driver Layer
BSP	BSP Layer
COMPONENTS	Components
STSPIN230_Motor_Driver_handler	Handler for STSPIN230 Motor driver
STSPIN230	STSPIN230 driver section
STSPIN230MotorDriver	API pointer for STSPIN230
EnableInput_CH1_E_CH2_E_CH3_D	Enable Input channel CH1 and CH2 for STSPIN230
EnableInput_CH1_E_CH2_D_CH3_E	Enable Input channel CH1 and CH3 for STSPIN230
EnableInput_CH1_D_CH2_E_CH3_E	Enable Input channel CH2 and CH3 for STSPIN230
DisableInput_CH1_D_CH2_D_CH3_D	Enable Input channel CH2 and CH3 for STSPIN230
Start_PWM_driving	Enable PWM channels for STSPIN230
Stop_PWM_driving	Disable PWM channels for STSPIN230
HF_TIMx_SetDutyCycle_CH1	Set the Duty Cycle value for CH1

HF_TIMx_SetDutyCycle_CH2	Set the Duty Cycle value for CH2
HF_TIMx_SetDutyCycle_CH3	Set the Duty Cycle value for CH3
Current_Reference_Start	Enable the Current Reference generation
Current_Reference_Stop	Disable the Current Reference generation
Current_Reference_Setvalue	Set the value for Current Reference
X-NUCLEO-IHM11M1	X-Nucleo expansion board
STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D	Enable Input channel for STSPIN230
STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E	Enable Input channel for STSPIN230
STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E	Enable Input channel for STSPIN230
STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D	Disable All Input channels for STSPIN230
STSPIN230_Start_PWM_driving	Enable the PWM generation on Input channels for STSPIN230
STSPIN230_Stop_PWM_driving	Disable the PWM generation on Input channels for STSPIN230
STSPIN230_HF_TIMx_SetDutyCycle_CH1	Set the Duty Cycle value for CH1 for STSPIN230
STSPIN230_HF_TIMx_SetDutyCycle_CH2	Set the Duty Cycle value for CH2 for STSPIN230
STSPIN230_HF_TIMx_SetDutyCycle_CH3	Set the Duty Cycle value for CH3 for STSPIN230
STSPIN230_Current_Reference_Start	Enable the Current Reference generation for STSPIN230
STSPIN230_Current_Reference_Stop	Disable the Current Reference generation for STSPIN230
STSPIN230_Current_Reference_Setvalue	Set the value for Current Reference for STSPIN230
BSP_X_NUCLEO_FAULT_LED_ON	Turns selected LED On
BSP_X_NUCLEO_FAULT_LED_OFF	Turns selected LED Off
MIDDLEWARES	Middlewares Layer
MC_6-STEP_LIB	Motor Control driver
Exported_types	
Exported_function_6StepLib	
MC_SixStep_TABLE	Set the peripherals (TIMx, GPIO etc.) for each step
MC_SixStep_NEXT_step	Generate the next step number according with the direction (CW or CCW)
MC_SixStep_RESET	Reset all variables used for 6Step control algorithm
MC_SixStep_Ramp_Motor_calc	Calculate the acceleration profile step by step for motor during start-up
MC_SixStep_ARR_step	Generate the ARR value for Low Frequency TIM during start-up
MC_SixStep_Alignment	Generate the motor alignment
MC_SixStep_Speed_Val_target_potentiometer	Calculate the Motor Speed validation threshold according with the potentiometer value
MC_SixStep_Speed_Potentiometer	Calculate the potentiometer value to set the Motor Speed
MC_Set_PI_param	Set all parameters for PI regulator
MC_PI_Controller	Compute the PI output for the Current Reference
MC_Task_Speed	Main task: Speed Loop with PI regulator
MC_Set_Speed	Set the new motor speed value
MC_Bemf_Delay	Take the delay time after each new 6-step

	commutation
MC_StartMotor	Start the Motor
MC_StopMotor	Stop the Motor
MC_GetElSpeedHz	Get the Eletrical Motor Speed from ARR value of LF TIM
MC_GetMechSpeedRPM	Get the Mechanical Motor Speed (RPM)
MC_SixStep_Init_main_data	Init the main variables for motor driving from MC_SixStep_param.h
MC_SixStep_INIT	Initialitation function for SixStep library
MC_TIMx_SixStep_timebase	Low Frequency Timer Callback - Call the next step and request the filtered speed value
MC_Speed_Filter	Calculate the speed filtered
MC_Potentiometer_filter	Calculate the filtered potentiometer value
MC_SysTick_SixStep_MediumFrequencyTask	Systick Callback - Call the Speed loop
MC_SixStep_ARR_Bemf	Calculate the new Autoreload value (ARR) for Low Frequency timer
MC_ADCx_SixStep_Bemf	Compute the zero crossing detection
MC_EXT_button_SixStep	GPIO EXT Callback - Start or Stop the motor through the Blue push button on STM32Nucleo
Main_Motor_parameters	All motor parameters for 6Step driving
stm32F401_nucleo_ihm11m1	Interface file for STM32F401 and Motor Control Library configuration
MC_SixStep_ADC_Channel	Select the new ADC Channel
MC_SixStep_Nucleo_Init	Init the STM32 register
START_DAC	Start DAC for debug
STOP_DAC	Stop DAC for debug
SET_DAC_value	Set DAC value for debug
HAL_ADC_ConvCpltCallback	ADC callback
HAL_TIM_PeriodElapsedCallback	Htim callback
HAL_SYSTICK_Callback	Systick callback
HAL_GPIO_EXTI_Callback	EXT callback
EnableInput_CH1_E_CH2_E_CH3_D	Enable Input channel CH1 and CH2 for STSPIN230
EnableInput_CH1_E_CH2_D_CH3_E	Enable Input channel CH1 and CH3 for STSPIN230
EnableInput_CH1_D_CH2_E_CH3_E	Enable Input channel CH2 and CH3 for STSPIN230
DisableInput_CH1_D_CH2_D_CH3_D	Enable Input channel CH2 and CH3 for STSPIN230
Start_PWM_driving	Enable PWM channels for STSPIN230
Stop_PWM_driving	Disable PWM channels for STSPIN230
HF_TIMx_SetDutyCycle_CH1	Set the Duty Cycle value for CH1
HF_TIMx_SetDutyCycle_CH2	Set the Duty Cycle value for CH2
HF_TIMx_SetDutyCycle_CH3	Set the Duty Cycle value for CH3
Current_Reference_Start	Enable the Current Reference generation
Current_Reference_Stop	Disable the Current Reference generation
Current_Reference_Setvalue	Set the value for Current Reference
Bemf_delay_calc	Bemf delay calculation
Get_UART_data	Get the UART value from DR register
Exported_function_F401	

UART_UI Serial communication through PC serial terminal
Exported_function_Uart

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Modules
DRIVERS
Driver Layer. More...

Modules

BSP
BSP Layer.

Detailed Description

Driver Layer.

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Modules
BSP
DRIVERS
BSP Layer. More...

Modules

COMPONENTS
Components.

X-NUCLEO-IHM11M1
X-Nucleo expansion board.

Detailed Description

BSP Layer.

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Modules
COMPONENTS
DRIVERS » BSP
Components. More...

Modules

STSPIN230_Motor_Driver_handler
Handler for STSPIN230 Motor driver.

STSPIN230
STSPIN230 driver section.

Detailed Description

Components.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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Data Structures
STSPIN230_Motor_Driver_handler
DRIVERS » BSP » COMPONENTS
Handler for STSPIN230 Motor driver. More...

Data Structures

struct STSPIN230_MotorDriver_TypeDef

Detailed Description

Handler for STSPIN230 Motor driver.

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- Data&"temp0535.html">Data Structure Index
- Data&"header">
  Data Fields
  STSPIN230_MotorDriver_TypeDef Struct Reference
  DRIVERS » BSP » COMPONENTS » STSPIN230_Motor_Driver_handler

```
#include <MC_Common.h>
```

Data Fields

void(* EnableInput_CH1_E_CH2_E_CH3_D)(void)

void(* EnableInput_CH1_E_CH2_D_CH3_E)(void)

void(* EnableInput_CH1_D_CH2_E_CH3_E)(void)

void(* DisableInput_CH1_D_CH2_D_CH3_D)(void)

void(* Start_PWM_driving)(void)

void(* Stop_PWM_driving)(void)

void(* HF_TIMx_SetDutyCycle_CH1)(uint16_t)

void(* HF_TIMx_SetDutyCycle_CH2)(uint16_t)

void(* HF_TIMx_SetDutyCycle_CH3)(uint16_t)

void(* Current_Reference_Start)(void)

void(* Current_Reference_Stop)(void)

void(* Current_Reference_Setvalue)(uint16_t)

Detailed Description

Definition at line 63 of file MC_Common.h.

Field Documentation

void(* STSPIN230_MotorDriver_TypeDef::Current_Reference_Setvalue) (uint16_t)
Set current reference value for closed loop control

Definition at line 76 of file MC_Common.h.

Referenced by MC_SixStep_Current_Reference_Setvalue().

void(* STSPIN230_MotorDriver_TypeDef::Current_Reference_Start) (void)
Start current reference generation for closed loop control

Definition at line 74 of file MC_Common.h.

Referenced by MC_SixStep_Current_Reference_Start().

void(* STSPIN230_MotorDriver_TypeDef::Current_Reference_Stop) (void)
Stop current reference generation for closed loop control

Definition at line 75 of file MC_Common.h.

Referenced by MC_SixStep_Current_Reference_Stop().

void(* STSPIN230_MotorDriver_TypeDef::DisableInput_CH1_D_CH2_D_CH3_D) (void)
Disable all channels

Definition at line 68 of file MC_Common.h.

Referenced by MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D().

void(* STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_D_CH2_E_CH3_E) (void)
Enable the channel 2,3 and Disable the channel 1

Definition at line 67 of file MC_Common.h.

Referenced by MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E().

void(* STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_E_CH2_D_CH3_E) (void)
Enable the channel 1,3 and Disable the channel 2

Definition at line 66 of file MC_Common.h.

Referenced by MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E().

void(* STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_E_CH2_E_CH3_D) (void)
Enable the channel 1,2 and Disable the channel 3

Definition at line 65 of file MC_Common.h.

Referenced by MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D().

void(* STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH1) (uint16_t)
High Frequency Timer - Change DutyCycle value for CH1

Definition at line 71 of file MC_Common.h.

Referenced by MC_SixStep_HF_TIMx_SetDutyCycle_CH1().

void(* STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH2) (uint16_t)
High Frequency Timer - Change DutyCycle value for CH2

Definition at line 72 of file MC_Common.h.

Referenced by MC_SixStep_HF_TIMx_SetDutyCycle_CH2().

void(* STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH3) (uint16_t)
High Frequency Timer - Change DutyCycle value for CH3

Definition at line 73 of file MC_Common.h.

Referenced by MC_SixStep_HF_TIMx_SetDutyCycle_CH3().

void(* STSPIN230_MotorDriver_TypeDef::Start_PWM_driving) (void)
Start PWM generation

Definition at line 69 of file MC_Common.h.

Referenced by MC_SixStep_Start_PWM_driving().

void(* STSPIN230_MotorDriver_TypeDef::Stop_PWM_driving) (void)
Stop PWM generation

Definition at line 70 of file MC_Common.h.

Referenced by MC_SixStep_Stop_PWM_driving().

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

- MC_Common.h

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Modules
STSPIN230
DRIVERS » BSP » COMPONENTS
STSPIN230 driver section. More...

Modules

STSPIN230MotorDriver
API pointer for STSPIN230.

EnableInput_CH1_E_CH2_E_CH3_D
Enable Input channel CH1 and CH2 for STSPIN230.

EnableInput_CH1_E_CH2_D_CH3_E
Enable Input channel CH1 and CH3 for STSPIN230.

EnableInput_CH1_D_CH2_E_CH3_E
Enable Input channel CH2 and CH3 for STSPIN230.

DisableInput_CH1_D_CH2_D_CH3_D
Enable Input channel CH2 and CH3 for STSPIN230.

Start_PWM_driving
Enable PWM channels for STSPIN230.

Stop_PWM_driving
Disable PWM channels for STSPIN230.

HF_TIMx_SetDutyCycle_CH1
Set the Duty Cycle value for CH1.

HF_TIMx_SetDutyCycle_CH2
Set the Duty Cycle value for CH2.

HF_TIMx_SetDutyCycle_CH3
Set the Duty Cycle value for CH3.

Current_Reference_Start
Enable the Current Reference generation.

Current_Reference_Stop
Disable the Current Reference generation.

Current_Reference_Setvalue
Set the value for Current Reference.

Detailed Description

STSPIN230 driver section.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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Variables
STSPIN230MotorDriver
DRIVERS » BSP » COMPONENTS » STSPIN230
API pointer for STSPIN230. More...

Variables

STSPIN230_MotorDriver_TypeDef STSPIN230MotorDriver
It handles all API functions for STSPIN230 MC Driver. More...

Detailed Description

API pointer for STSPIN230.

Variable Documentation

STSPIN230_MotorDriver_TypeDef STSPIN230MotorDriver
Initial value:
=

{
EnableInput_CH1_E_CH2_E_CH3_D,
EnableInput_CH1_E_CH2_D_CH3_E,
EnableInput_CH1_D_CH2_E_CH3_E,
DisableInput_CH1_D_CH2_D_CH3_D,
Start_PWM_driving,
Stop_PWM_driving,
HF_TIMx_SetDutyCycle_CH1,
HF_TIMx_SetDutyCycle_CH2,
HF_TIMx_SetDutyCycle_CH3,
Current_Reference_Start,
Current_Reference_Stop,
Current_Reference_Setvalue,
}
DisableInput_CH1_D_CH2_D_CH3_D
void DisableInput_CH1_D_CH2_D_CH3_D()
Definition: STSPIN230.c:143
EnableInput_CH1_E_CH2_E_CH3_D
void EnableInput_CH1_E_CH2_E_CH3_D()
Definition: STSPIN230.c:96
EnableInput_CH1_E_CH2_D_CH3_E
void EnableInput_CH1_E_CH2_D_CH3_E()
Definition: STSPIN230.c:112
Current_Reference_Setvalue
void Current_Reference_Setvalue(uint16_t Iref)
Definition: STSPIN230.c:269
HF_TIMx_SetDutyCycle_CH2
void HF_TIMx_SetDutyCycle_CH2(uint16_t CCR_value)
Definition: STSPIN230.c:204
HF_TIMx_SetDutyCycle_CH1
void HF_TIMx_SetDutyCycle_CH1(uint16_t CCR_value)
Definition: STSPIN230.c:188
HF_TIMx_SetDutyCycle_CH3
void HF_TIMx_SetDutyCycle_CH3(uint16_t CCR_value)
Definition: STSPIN230.c:219
Current_Reference_Start
void Current_Reference_Start()
Definition: STSPIN230.c:237
EnableInput_CH1_D_CH2_E_CH3_E
void EnableInput_CH1_D_CH2_E_CH3_E()
Definition: STSPIN230.c:127
Stop_PWM_driving
void Stop_PWM_driving()
Definition: STSPIN230.c:173
Start_PWM_driving
void Start_PWM_driving()
Definition: STSPIN230.c:158
Current_Reference_Stop
void Current_Reference_Stop()
Definition: STSPIN230.c:253
It handles all API functions for STSPIN230 MC Driver.

Return values
None

Definition at line 70 of file STSPIN230.c.

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Functions
EnableInput_CH1_E_CH2_E_CH3_D
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » | stm32F401_nucleo_ihm11m1
Enable Input channel CH1 and CH2 for STSPIN230. More...

Functions

void EnableInput_CH1_E_CH2_E_CH3_D ()

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D ()
Enable Input channel CH1 and CH2 for STSPIN230. More...

Detailed Description

Enable Input channel CH1 and CH2 for STSPIN230.

Enable Input channel for STSPIN230.

Return values
None

Function Documentation

void EnableInput_CH1_E_CH2_E_CH3_D (void)
Definition at line 96 of file STSPIN230.c.

References STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D().

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D (void)
Enable Input channel CH1 and CH2 for STSPIN230.

Return values
None

Definition at line 273 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_E_CH2_E_CH3_D.

Referenced by MC_SixStep_TABLE().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
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Functions
EnableInput_CH1_E_CH2_D_CH3_E
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Enable Input channel CH1 and CH3 for STSPIN230. More...

Functions

void EnableInput_CH1_E_CH2_D_CH3_E ()

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E ()
Enable Input channel CH1 and CH3 for STSPIN230. More...

Detailed Description

Enable Input channel CH1 and CH3 for STSPIN230.

Enable Input channel for STSPIN230.

Return values
None

Function Documentation

void EnableInput_CH1_E_CH2_D_CH3_E (void)
Definition at line 112 of file STSPIN230.c.

References STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E().

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E (void)
Enable Input channel CH1 and CH3 for STSPIN230.

Return values
None

Definition at line 291 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_E_CH2_D_CH3_E.

Referenced by MC_SixStep_TABLE().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
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Functions
EnableInput_CH1_D_CH2_E_CH3_E
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Enable Input channel CH2 and CH3 for STSPIN230. More...

Functions

void EnableInput_CH1_D_CH2_E_CH3_E ()

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E ()
Enable Input channel CH2 and CH3 for STSPIN230. More...

Detailed Description

Enable Input channel CH2 and CH3 for STSPIN230.

Enable Input channel for STSPIN230.

Return values
None

Function Documentation

void EnableInput_CH1_D_CH2_E_CH3_E (void)
Definition at line 127 of file STSPIN230.c.

References STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E().

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E (void)
Enable Input channel CH2 and CH3 for STSPIN230.

Return values
None

Definition at line 309 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_D_CH2_E_CH3_E.

Referenced by MC_SixStep_TABLE().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
DisableInput_CH1_D_CH2_D_CH3_D
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
Enable Input channel CH2 and CH3 for STSPIN230. More...

Functions

void DisableInput_CH1_D_CH2_D_CH3_D ()

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D ()
Enable Input channel CH2 and CH3 for STSPIN230. More...

Detailed Description

Enable Input channel CH2 and CH3 for STSPIN230.

Disable All Input channels for STSPIN230.

Return values
None

Function Documentation

void DisableInput_CH1_D_CH2_D_CH3_D (void)
Definition at line 143 of file STSPIN230.c.

References STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D().

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D (void)
Enable Input channel CH2 and CH3 for STSPIN230.

Return values
None

Definition at line 327 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::DisableInput_CH1_D_CH2_D_CH3_D.

Referenced by MC_StopMotor().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Start_PWM_driving
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Enable PWM channels for STSPIN230. More...

Functions

void Start_PWM_driving ()

void MC_SixStep_Start_PWM_driving ()
Enable PWM channels for STSPIN230. More...

Detailed Description

Enable PWM channels for STSPIN230.

Enable the PWM generation on Input channels.

Return values
None

Function Documentation

void MC_SixStep_Start_PWM_driving (void)
Enable PWM channels for STSPIN230.

Return values
None

Definition at line 345 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Start_PWM_driving.

Referenced by MC_SixStep_NEXT_step().

void Start_PWM_driving (void)
Definition at line 158 of file STSPIN230.c.

References STSPIN230_Start_PWM_driving().

Referenced by STSPIN230_Current_Reference_Start().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Stop_PWM_driving
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Disable PWM channels for STSPIN230. More...

Functions

void Stop_PWM_driving ()

void MC_SixStep_Stop_PWM_driving ()
Disable PWM channels for STSPIN230. More...

Detailed Description

Disable PWM channels for STSPIN230.

Disable the PWM generation on Input channels.

Return values
None

Function Documentation

void MC_SixStep_Stop_PWM_driving (void)
Disable PWM channels for STSPIN230.

Return values
None

Definition at line 363 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Stop_PWM_driving.

Referenced by MC_StopMotor().

void Stop_PWM_driving (void)
Definition at line 173 of file STSPIN230.c.

References STSPIN230_Stop_PWM_driving().

Referenced by STSPIN230_Current_Reference_Stop().

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X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
HF_TIMx_SetDutyCycle_CH1
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Set the Duty Cycle value for CH1. More...

Functions

void HF_TIMx_SetDutyCycle_CH1 (uint16_t CCR_value)

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t CCR_value)
Set the Duty Cycle value for CH1. More...

Detailed Description

Set the Duty Cycle value for CH1.

Return values
None

Function Documentation

void HF_TIMx_SetDutyCycle_CH1 (uint16_t *CCR_value*)
Definition at line 188 of file STSPIN230.c.

References STSPIN230_HF_TIMx_SetDutyCycle_CH1().

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH1.

Return values
None

Definition at line 381 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH1.

Referenced by MC_SixStep_RESET(), and MC_SixStep_TABLE().

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X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
HF_TIMx_SetDutyCycle_CH2
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Set the Duty Cycle value for CH2. More...

Functions

void HF_TIMx_SetDutyCycle_CH2 (uint16_t CCR_value)

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t CCR_value)
Set the Duty Cycle value for CH2. More...

Detailed Description

Set the Duty Cycle value for CH2.

Return values
None

Function Documentation

void HF_TIMx_SetDutyCycle_CH2 (uint16_t *CCR_value*)
Definition at line 204 of file STSPIN230.c.

References STSPIN230_HF_TIMx_SetDutyCycle_CH2().

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH2.

Return values
None

Definition at line 400 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH2.

Referenced by MC_SixStep_RESET(), and MC_SixStep_TABLE().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
HF_TIMx_SetDutyCycle_CH3
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Set the Duty Cycle value for CH3. More...

Functions

void HF_TIMx_SetDutyCycle_CH3 (uint16_t CCR_value)

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t CCR_value)
Set the Duty Cycle value for CH3. More...

Detailed Description

Set the Duty Cycle value for CH3.

Return values
None

Function Documentation

void HF_TIMx_SetDutyCycle_CH3 (uint16_t *CCR_value*)
Definition at line 219 of file STSPIN230.c.

References STSPIN230_HF_TIMx_SetDutyCycle_CH3().

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH3.

Return values
None

Definition at line 423 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH3.

Referenced by MC_SixStep_RESET(), and MC_SixStep_TABLE().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Current_Reference_Start
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Enable the Current Reference generation. More...

Functions

void Current_Reference_Start ()

void MC_SixStep_Current_Reference_Start ()
Enable the Current Reference generation. More...

Detailed Description

Enable the Current Reference generation.

Return values
None

Function Documentation

void Current_Reference_Start (void)
Definition at line 237 of file STSPIN230.c.

References STSPIN230_Current_Reference_Start().

void MC_SixStep_Current_Reference_Start (void)
Enable the Current Reference generation.

Return values
None

Definition at line 441 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Current_Reference_Start.

Referenced by MC_SixStep_RESET().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Current_Reference_Stop
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Disable the Current Reference generation. More...

Functions

void Current_Reference_Stop ()

void MC_SixStep_Current_Reference_Stop ()
Disable the Current Reference generation. More...

Detailed Description

Disable the Current Reference generation.

Return values
None

Function Documentation

void Current_Reference_Stop (void)
Definition at line 253 of file STSPIN230.c.

References STSPIN230_Current_Reference_Stop().

void MC_SixStep_Current_Reference_Stop (void)
Disable the Current Reference generation.

Return values
None

Definition at line 460 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Current_Reference_Stop.

Referenced by MC_StopMotor().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Current_Reference_Setvalue
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Set the value for Current Reference. More...

Functions

void Current_Reference_Setvalue (uint16_t Iref)

void MC_SixStep_Current_Reference_Setvalue (uint16_t Iref)
Set the value for Current Reference. More...

Detailed Description

Set the value for Current Reference.

Return values
None

Function Documentation

void Current_Reference_Setvalue (uint16_t *Iref*)
Definition at line 269 of file STSPIN230.c.

References STSPIN230_Current_Reference_Setvalue().

void MC_SixStep_Current_Reference_Setvalue (uint16_t *Iref*)
Set the value for Current Reference.

Return values
None

Definition at line 480 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Current_Reference_Setvalue.

Referenced by MC_SixStep_INIT(), MC_SixStep_Ramp_Motor_calc(), MC_SixStep_RESET(), and MC_Task_Speed().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Modules | Variables
X-NUCLEO-IHM11M1
DRIVERS » BSP
X-Nucleo expansion board. More...

Modules

STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D
Enable Input channel for STSPIN230.

STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E
Enable Input channel for STSPIN230.

STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E
Enable Input channel for STSPIN230.

STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D
Disable All Input channels for STSPIN230.

STSPIN230_Start_PWM_driving
Enable the PWM generation on Input channels for STSPIN230.

STSPIN230_Stop_PWM_driving
Disable the PWM generation on Input channels for STSPIN230.

STSPIN230_HF_TIMx_SetDutyCycle_CH1
Set the Duty Cycle value for CH1 for STSPIN230.

STSPIN230_HF_TIMx_SetDutyCycle_CH2
Set the Duty Cycle value for CH2 for STSPIN230.

STSPIN230_HF_TIMx_SetDutyCycle_CH3
Set the Duty Cycle value for CH3 for STSPIN230.

STSPIN230_Current_Reference_Start
Enable the Current Reference generation for STSPIN230.

STSPIN230_Current_Reference_Stop
Disable the Current Reference generation for STSPIN230.

STSPIN230_Current_Reference_Setvalue
Set the value for Current Reference for STSPIN230.

BSP_X_NUCLEO_FAULT_LED_ON
Turns selected LED On.

BSP_X_NUCLEO_FAULT_LED_OFF
Turns selected LED Off.

Variables

SIXSTEP_Base_InitTypeDef SIXSTEP_parameters

Detailed Description

X-Nucleo expansion board.

Variable Documentation

SIXSTEP_Base_InitTypeDef SIXSTEP_parameters
Main SixStep structure

Definition at line 73 of file 6Step_Lib.c.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D
DRIVERS » BSP » X-NUCLEO-IHM11M1
Enable Input channel for STSPIN230. More...

Functions

void STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D ()
Enable Input channel CH1 and CH2 for STSPIN230. More...

Detailed Description

Enable Input channel for STSPIN230.

Function Documentation

void STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D (void)
Enable Input channel CH1 and CH2 for STSPIN230.

Return values
None

Definition at line 79 of file X-NUCLEO-IHM11M1.c.

References HF_TIMx, HF_TIMx_CH1, HF_TIMx_CH2, and HF_TIMx_CH3.

Referenced by EnableInput_CH1_E_CH2_E_CH3_D().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E
DRIVERS » BSP » X-NUCLEO-IHM11M1
Enable Input channel for STSPIN230. More...

Functions

void STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E ()
Enable Input channel CH1 and CH3 for STSPIN230. More...

Detailed Description

Enable Input channel for STSPIN230.

Function Documentation

void STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E (void)
Enable Input channel CH1 and CH3 for STSPIN230.

Return values
None

Definition at line 104 of file X-NUCLEO-IHM11M1.c.

References HF_TIMx, HF_TIMx_CH1, HF_TIMx_CH2, and HF_TIMx_CH3.

Referenced by EnableInput_CH1_E_CH2_D_CH3_E().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E
DRIVERS » BSP » X-NUCLEO-IHM11M1
Enable Input channel for STSPIN230. More...

Functions

void STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E ()
Enable Input channel CH2 and CH3 for STSPIN230. More...

Detailed Description

Enable Input channel for STSPIN230.

Function Documentation

void STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E (void)
Enable Input channel CH2 and CH3 for STSPIN230.

Return values
None

Definition at line 129 of file X-NUCLEO-IHM11M1.c.

References HF_TIMx, HF_TIMx_CH1, HF_TIMx_CH2, and HF_TIMx_CH3.

Referenced by EnableInput_CH1_D_CH2_E_CH3_E().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D
DRIVERS » BSP » X-NUCLEO-IHM11M1
Disable All Input channels for STSPIN230. More...

Functions

void STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D ()
Enable Input channel CH2 and CH3 for STSPIN230. More...

Detailed Description

Disable All Input channels for STSPIN230.

Function Documentation

void STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D (void)
Enable Input channel CH2 and CH3 for STSPIN230.

Return values
None

Definition at line 154 of file X-NUCLEO-IHM11M1.c.

References HF_TIMx, HF_TIMx_CH1, HF_TIMx_CH2, and HF_TIMx_CH3.

Referenced by DisableInput_CH1_D_CH2_D_CH3_D().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_Start_PWM_driving
DRIVERS » BSP » X-NUCLEO-IHM11M1
Enable the PWM generation on Input channels for STSPIN230. More...

Functions

void STSPIN230_Start_PWM_driving ()
Enable PWM channels for STSPIN230. More...

Detailed Description

Enable the PWM generation on Input channels for STSPIN230.

Function Documentation

void STSPIN230_Start_PWM_driving (void)
Enable PWM channels for STSPIN230.

Return values
None

Definition at line 179 of file X-NUCLEO-IHM11M1.c.

References HF_TIMx, HF_TIMx_CH1, HF_TIMx_CH2, and HF_TIMx_CH3.

Referenced by Start_PWM_driving().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_Stop_PWM_driving
DRIVERS » BSP » X-NUCLEO-IHM11M1
Disable the PWM generation on Input channels for STSPIN230. More...

Functions

void STSPIN230_Stop_PWM_driving ()
Disable PWM channels for STSPIN230. More...

Detailed Description

Disable the PWM generation on Input channels for STSPIN230.

Function Documentation

void STSPIN230_Stop_PWM_driving (void)
Disable PWM channels for STSPIN230.

Return values
None

Definition at line 204 of file X-NUCLEO-IHM11M1.c.

References HF_TIMx, HF_TIMx_CH1, HF_TIMx_CH2, and HF_TIMx_CH3.

Referenced by Stop_PWM_driving().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_HF_TIMx_SetDutyCycle_CH1
DRIVERS » BSP » X-NUCLEO-IHM11M1
Set the Duty Cycle value for CH1 for STSPIN230. More...

Functions

void STSPIN230_HF_TIMx_SetDutyCycle_CH1 (uint16_t CCR_value)
Set the Duty Cycle value for CH1. More...

Detailed Description

Set the Duty Cycle value for CH1 for STSPIN230.

Function Documentation

void STSPIN230_HF_TIMx_SetDutyCycle_CH1 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH1.

Return values
None

Definition at line 230 of file X-NUCLEO-IHM11M1.c.

References HF_TIMx.

Referenced by HF_TIMx_SetDutyCycle_CH1().

Generated by  1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_HF_TIMx_SetDutyCycle_CH2
DRIVERS » BSP » X-NUCLEO-IHM11M1
Set the Duty Cycle value for CH2 for STSPIN230. More...

Functions

void STSPIN230_HF_TIMx_SetDutyCycle_CH2 (uint16_t CCR_value)
Set the Duty Cycle value for CH2. More...

Detailed Description

Set the Duty Cycle value for CH2 for STSPIN230.

Function Documentation

void STSPIN230_HF_TIMx_SetDutyCycle_CH2 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH2.

Return values
None

Definition at line 250 of file X-NUCLEO-IHM11M1.c.

References HF_TIMx.

Referenced by HF_TIMx_SetDutyCycle_CH2().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_HF_TIMx_SetDutyCycle_CH3
DRIVERS » BSP » X-NUCLEO-IHM11M1
Set the Duty Cycle value for CH3 for STSPIN230. More...

Functions

void STSPIN230_HF_TIMx_SetDutyCycle_CH3 (uint16_t CCR_value)
Set the Duty Cycle value for CH3. More...

Detailed Description

Set the Duty Cycle value for CH3 for STSPIN230.

Function Documentation

void STSPIN230_HF_TIMx_SetDutyCycle_CH3 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH3.

Return values
None

Definition at line 274 of file X-NUCLEO-IHM11M1.c.

References HF_TIMx.

Referenced by HF_TIMx_SetDutyCycle_CH3().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_Current_Reference_Start
DRIVERS » BSP » X-NUCLEO-IHM11M1
Enable the Current Reference generation for STSPIN230. More...

Functions

void STSPIN230_Current_Reference_Start ()
Enable the Current Reference generation. More...

Detailed Description

Enable the Current Reference generation for STSPIN230.

Function Documentation

void STSPIN230_Current_Reference_Start (void)
Enable the Current Reference generation.

Return values
None

Definition at line 293 of file X-NUCLEO-IHM11M1.c.

References SIXSTEP_Base_InitTypeDef::pulse_value, Start_PWM_driving(), and STARTUP_DUTY_CYCLE.

Referenced by Current_Reference_Start().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_Current_Reference_Stop
DRIVERS » BSP » X-NUCLEO-IHM11M1
Disable the Current Reference generation for STSPIN230. More...

Functions

void STSPIN230_Current_Reference_Stop ()
Disable the Current Reference generation. More...

Detailed Description

Disable the Current Reference generation for STSPIN230.

Function Documentation

void STSPIN230_Current_Reference_Stop (void)
Disable the Current Reference generation.

Return values
None

Definition at line 313 of file X-NUCLEO-IHM11M1.c.

References SIXSTEP_Base_InitTypeDef::pulse_value, STARTUP_DUTY_CYCLE, and Stop_PWM_driving().

Referenced by Current_Reference_Stop().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
STSPIN230_Current_Reference_Setvalue
DRIVERS » BSP » X-NUCLEO-IHM11M1
Set the value for Current Reference for STSPIN230. More...

Functions

void STSPIN230_Current_Reference_Setvalue (uint16_t Iref)
Set the value for Current Reference. More...

Detailed Description

Set the value for Current Reference for STSPIN230.

Function Documentation

void STSPIN230_Current_Reference_Setvalue (uint16_t *Iref*)
Set the value for Current Reference.

Return values
None

Definition at line 334 of file X-NUCLEO-IHM11M1.c.

References SIXSTEP_Base_InitTypeDef::pulse_value.

Referenced by Current_Reference_Setvalue().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
BSP_X_NUCLEO_FAULT_LED_ON
DRIVERS » BSP » X-NUCLEO-IHM11M1
Turns selected LED On. More...

Functions

void BSP_X_NUCLEO_FAULT_LED_ON ()

Detailed Description

Turns selected LED On.

Return values
None

Function Documentation

void BSP_X_NUCLEO_FAULT_LED_ON (void)
Definition at line 351 of file X-NUCLEO-IHM11M1.c.

Referenced by MC_StartMotor().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
BSP_X_NUCLEO_FAULT_LED_OFF
DRIVERS » BSP » X-NUCLEO-IHM11M1
Turns selected LED Off. More...

Functions

void BSP_X_NUCLEO_FAULT_LED_OFF ()

Detailed Description

Turns selected LED Off.

Return values
None

Function Documentation

void BSP_X_NUCLEO_FAULT_LED_OFF (void)
Definition at line 364 of file X-NUCLEO-IHM11M1.c.

Referenced by MC_StopMotor().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Modules
MIDDLEWARES
Middlewares Layer. More...

Modules

MC_6-STEP_LIB
Motor Control driver.

UART_UI
Serial communication through PC serial terminal.

Detailed Description

Middlewares Layer.

****

Main functions for 6-Step algorithm

The main function are the following:

1) MC_SixStep_TABLE(...) -> Set the peripherals (TIMx, GPIO etc.) for each step 2) MC_SixStep_ARR_step() -> Generate the ARR value for Low Frequency TIM during start-up 3) MC_SixStep_INIT() -> Init the main variables for motor driving from MC_SixStep_param.h 4) MC_SixStep_RESET() -> Reset all variables used for 6Step control algorithm 5) MC_SixStep_Ramp_Motor_calc() -> Calculate the acceleration profile step by step for motor during start-up 6) MC_SixStep_NEXT_step()-> Generate the next step number according with the direction (CW or CCW) 7) MC_Task_Speed() -> Speed Loop with PI regulator 8) MC_Set_Speed(...) -> Set the new motor speed value 9) MC_StartMotor() -> Start the Motor 10)MC_StopMotor() -> Stop the Motor

---

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Modules | Functions | Variables
MC_6-STEP_LIB
MIDDLEWARES
Motor Control driver. More...

Modules

Exported_types

Exported_function_6StepLib

MC_SixStep_TABLE
Set the peripherals (TIMx, GPIO etc.) for each step.

MC_SixStep_NEXT_step
Generate the next step number according with the direction (CW or CCW)

MC_SixStep_RESET
Reset all variables used for 6Step control algorithm.

MC_SixStep_Ramp_Motor_calc
Calculate the acceleration profile step by step for motor during start-up.

MC_SixStep_ARR_step
Generate the ARR value for Low Frequency TIM during start-up.

MC_SixStep_Alignment
Generate the motor alignment.

MC_SixStep_Speed_Val_target_potentiometer
Calculate the Motor Speed validation threshold according with the potentiometer value.

MC_SixStep_Speed_Potentiometer
Calculate the potentiometer value to set the Motor Speed.

MC_Set_PI_param
Set all parameters for PI regulator.

MC_PI_Controller
Compute the PI output for the Current Reference.

MC_Task_Speed
Main task: Speed Loop with PI regulator.

MC_Set_Speed
Set the new motor speed value.

MC_Bemf_Delay
Take the delay time after each new 6-step commutation.

MC_StartMotor
Start the Motor.

MC_StopMotor
Stop the Motor.

MC_GetElSpeedHz
Get the Eletrical Motor Speed from ARR value of LF TIM.

MC_GetMechSpeedRPM
Get the Mechanical Motor Speed (RPM)

MC_SixStep_Init_main_data
Init the main variables for motor driving from MC_SixStep_param.h.

MC_SixStep_INIT
Initialitation function for SixStep library.

MC_TIMx_SixStep_timebase
Low Frequency Timer Callback - Call the next step and request the filtered speed value.

MC_Speed_Filter
Calculate the speed filtered.

MC_Potentiometer_filter
Calculate the filtered potentiometer value.

MC_SysTick_SixStep_MediumFrequencyTask
Systick Callback - Call the Speed loop.

MC_SixStep_ARR_Bemf
Calculate the new Autoreload value (ARR) for Low Frequency timer.

MC_ADCx_SixStep_Bemf
Compute the zero crossing detection.

MC_EXT_button_SixStep
GPIO EXT Callback - Start or Stop the motor through the Blue push button on STM32Nucleo.

Main_Motor_parameters
All motor parameters for 6Step driving.

stm32F401_nucleo_ihm11m1
Interface file for STM32F401 and Motor Control Library configuration.

Functions

uint64_t MCM_Sqrt (uint64_t wInput)
It calculates the square root of a non-negative s64. More...

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D (void)
Enable Input channel CH1 and CH2 for STSPIN230. More...

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E (void)
Enable Input channel CH1 and CH3 for STSPIN230. More...

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E (void)
Enable Input channel CH2 and CH3 for STSPIN230. More...

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D (void)
Enable Input channel CH2 and CH3 for STSPIN230. More...

void MC_SixStep_Start_PWM_driving (void)
Enable PWM channels for STSPIN230. More...

void MC_SixStep_Stop_PWM_driving (void)
Disable PWM channels for STSPIN230. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t)
Set the Duty Cycle value for CH1. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t)
Set the Duty Cycle value for CH2. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t)
Set the Duty Cycle value for CH3. More...

void MC_SixStep_Current_Reference_Start (void)
Enable the Current Reference generation. More...

void MC_SixStep_Current_Reference_Stop (void)
Disable the Current Reference generation. More...

void MC_SixStep_Current_Reference_Setvalue (uint16_t)
Set the value for Current Reference. More...

void MC_UI_INIT (void)

void UART_Set_Value (void)

void UART_Communication_Task (void)

void CMD_Parser (char *pCommandString)

void HAL_IncTick (void)
This function is called to increment a global variable "uwTick" used as application time base. More...

uint32_t HAL_GetTick (void)
Povides a tick value in millisecond. More...

Variables

SIXSTEP_Base_InitTypeDef SIXSTEP_parameters

SIXSTEP_PI_PARAM_InitTypeDef_t PI_parameters

uint16_t Rotor_poles_pairs

uint32_t mech_accel_hz = 0

uint32_t constant_k = 0

uint32_t Time_vector_tmp = 0

uint32_t Time_vector_prev_tmp = 0

uint32_t T_single_step = 0

uint32_t T_single_step_first_value = 0

int32_t delta = 0

uint16_t index_array = 1

int16_t speed_tmp_array [FILTER_DEEP]

uint16_t speed_tmp_buffer [FILTER_DEEP]

uint16_t HFBuffer [HFBUFFERSIZE]

uint16_t HFBufferIndex = 0

uint8_t array_completed = FALSE

uint8_t buffer_completed = FALSE

uint8_t UART_FLAG_RECEIVE = FALSE

uint32_t ARR_LF = 0

int32_t Mech_Speed_RPM = 0

int32_t El_Speed_Hz = 0

uint16_t index_adc_chn = 0

uint16_t index_motor_run = 0

uint16_t test_motor_run = 1

uint8_t Enable_start_button = TRUE

uint16_t index_ARR_step = 1

uint32_t n_zcr_startup = 0

uint16_t index_startup_motor = 1

uint16_t target_speed = TARGET_SPEED

uint16_t shift_n_sqrt = 14

uint16_t cnt_bemf_event = 0

uint8_t startup_bemf_failure = 0

uint8_t speed_fdbk_error = 0

__IO uint32_t uwTick = 0

uint8_t dac_status = DAC_ENABLE

uint16_t index_align = 1

int32_t speed_sum_sp_filt = 0

int32_t speed_sum_pot_filt = 0

uint16_t index_pot_filt = 1

int16_t potent_filtered = 0

uint32_t Tick_cnt = 0

uint32_t counter_ARR_Bemf = 0

uint64_t constant_multiplier_tmp = 0

Detailed Description

Motor Control driver.

Function Documentation

void CMD_Parser (char * *pCommandString*)
uint32_t HAL_GetTick (void)
Povides a tick value in millisecond.

Note
The function is declared as __Weak to be overwritten in case of other implementations in user file.

Return values

tick value

Definition at line 1618 of file 6Step_Lib.c.

References uwTick.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

void HAL_IncTick (void)
This function is called to increment a global variable "uwTick" used as application time base.

Note
In the default implementation, this variable is incremented each 1ms in Systick ISR.
This function is declared as __weak to be overwritten in case of other implementations in user file.

Return values
None

Definition at line 1607 of file 6Step_Lib.c.

References uwTick.

Referenced by SysTick_Handler().

void MC_SixStep_Current_Reference_Setvalue (uint16_t *Iref*)
Set the value for Current Reference.

Return values
None

Definition at line 480 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_SixStep_INIT(), MC_SixStep_Ramp_Motor_calc(), MC_SixStep_RESET(), and MC_Task_Speed().

void MC_SixStep_Current_Reference_Start ( )
Enable the Current Reference generation.

Return values
None

Definition at line 441 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_SixStep_RESET().

void MC_SixStep_Current_Reference_Stop ( )
Disable the Current Reference generation.

Return values
None

Definition at line 460 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_StopMotor().

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D ( )
Enable Input channel CH2 and CH3 for STSPIN230.

Return values
None

Definition at line 327 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_StopMotor().

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E ( )
Enable Input channel CH2 and CH3 for STSPIN230.

Return values
None

Definition at line 309 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_SixStep_TABLE().

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E ( )
Enable Input channel CH1 and CH3 for STSPIN230.

Return values
None

Definition at line 291 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_SixStep_TABLE().

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D ( )
Enable Input channel CH1 and CH2 for STSPIN230.

Return values
None

Definition at line 273 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_SixStep_TABLE().

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH1.

Return values
None

Definition at line 381 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_SixStep_RESET(), and MC_SixStep_TABLE().

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH2.

Return values
None

Definition at line 400 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_SixStep_RESET(), and MC_SixStep_TABLE().

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH3.

Return values
None

Definition at line 423 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_SixStep_RESET(), and MC_SixStep_TABLE().

void MC_SixStep_Start_PWM_driving ( )
Enable PWM channels for STSPIN230.

Return values
None

Definition at line 345 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_SixStep_NEXT_step().

void MC_SixStep_Stop_PWM_driving ( )
Disable PWM channels for STSPIN230.

Return values
None

Definition at line 363 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_StopMotor().

void MC_UI_INIT (void)
Referenced by MC_SixStep_INIT().

uint64_t MCM_Sqrt (uint64_t *wInput*)
It calculates the square root of a non-negative s64.

It returns 0 for negative s64.

Parameters
Input uint64_t number

Return values

int32_t Square root of Input (0 if Input<0)

Definition at line 533 of file 6Step_Lib.c.

References shift_n_sqrt.

Referenced by MC_SixStep_Ramp_Motor_calc().

void UART_Communication_Task (void)
Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

void UART_Set_Value (void)

Variable Documentation

uint32_t ARR_LF = 0
Autoreload LF TIM variable

Definition at line 93 of file 6Step_Lib.c.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint8_t array_completed = FALSE
Speed filter variable

Definition at line 90 of file 6Step_Lib.c.

Referenced by MC_SixStep_RESET(), and MC_Speed_Filter().

uint8_t buffer_completed = FALSE
Potentiometer filter variable

Definition at line 91 of file 6Step_Lib.c.

Referenced by MC_Potentiometer_filter(), and MC_SixStep_RESET().

uint16_t cnt_bemf_event = 0
Definition at line 105 of file 6Step_Lib.c.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint32_t constant_k = 0
1/3*mech_accel_hz

Definition at line 79 of file 6Step_Lib.c.

Referenced by MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint64_t constant_multiplier_tmp = 0
Definition at line 117 of file 6Step_Lib.c.

Referenced by MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint32_t counter_ARR_Bemf = 0
Definition at line 116 of file 6Step_Lib.c.

Referenced by MC_SixStep_ARR_Bemf(), and MC_SixStep_RESET().

uint8_t dac_status = DAC_ENABLE
Definition at line 109 of file 6Step_Lib.c.

Referenced by MC_StartMotor(), and MC_Task_Speed().

int32_t delta = 0
Startup variable

Definition at line 84 of file 6Step_Lib.c.

Referenced by MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

int32_t El_Speed_Hz = 0
Electrical motor speed

Definition at line 95 of file 6Step_Lib.c.

Referenced by MC_GetElSpeedHz(), and MC_SixStep_RESET().

uint8_t Enable_start_button = TRUE
Start/stop button filter to avoid double command

Definition at line 99 of file 6Step_Lib.c.

Referenced by MC_EXT_button_SixStep(), MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint16_t HFBuffer[HFBUFFERSIZE]
Buffer for Potentiometer Value Filtering at the High-Frequency ADC conversion

Definition at line 88 of file 6Step_Lib.c.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_RESET(), and MC_SixStep_Speed_Potentiometer().

uint16_t HFBufferIndex = 0
High-Frequency Buffer Index

Definition at line 89 of file 6Step_Lib.c.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_RESET().

uint16_t index_adc_chn = 0
Index of ADC channel selector for measuring

Definition at line 96 of file 6Step_Lib.c.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_RESET().

uint16_t index_align = 1
Definition at line 110 of file 6Step_Lib.c.

Referenced by MC_SixStep_Alignment(), and MC_SixStep_RESET().

uint16_t index_ARR_step = 1
Definition at line 100 of file 6Step_Lib.c.

Referenced by MC_SixStep_ARR_step(), and MC_SixStep_RESET().

uint16_t index_array = 1
Speed filter variable

Definition at line 85 of file 6Step_Lib.c.

Referenced by MC_SixStep_RESET(), and MC_Speed_Filter().

uint16_t index_motor_run = 0
Tmp variable for DEMO mode

Definition at line 97 of file 6Step_Lib.c.

Referenced by MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint16_t index_pot_filt = 1
Definition at line 113 of file 6Step_Lib.c.

Referenced by MC_Potentiometer_filter(), and MC_SixStep_RESET().

uint16_t index_startup_motor = 1
Definition at line 102 of file 6Step_Lib.c.

Referenced by MC_SixStep_Alignment(), MC_SixStep_ARR_step(), MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint32_t mech_accel_hz = 0
Hz – Mechanical acceleration rate

Definition at line 78 of file 6Step_Lib.c.

Referenced by MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

int32_t Mech_Speed_RPM = 0
Mechanical motor speed

Definition at line 94 of file 6Step_Lib.c.

Referenced by MC_GetMechSpeedRPM(), and MC_SixStep_RESET().

uint32_t n_zcr_startup = 0
Definition at line 101 of file 6Step_Lib.c.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

SIXSTEP_PI_PARAM_InitTypeDef_t PI_parameters
SixStep PI regulator structure

Definition at line 74 of file 6Step_Lib.c.

int16_t potent_filtered = 0
Definition at line 114 of file 6Step_Lib.c.

Referenced by MC_Potentiometer_filter(), and MC_SixStep_RESET().

uint16_t Rotor_poles_pairs
Number of pole pairs of the motor

Definition at line 77 of file 6Step_Lib.c.

Referenced by MC_GetMechSpeedRPM(), MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint16_t shift_n_sqrt = 14
Definition at line 104 of file 6Step_Lib.c.

Referenced by MCM_Sqrt().

SIXSTEP_Base_InitTypeDef SIXSTEP_parameters
Main SixStep structure

Definition at line 73 of file 6Step_Lib.c.

uint8_t speed_fdbk_error = 0
Definition at line 107 of file 6Step_Lib.c.

Referenced by MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and
MC_SysTick_SixStep_MediumFrequencyTask().

int32_t speed_sum_pot_filt = 0
Definition at line 112 of file 6Step_Lib.c.

Referenced by MC_Potentiometer_filter(), and MC_SixStep_RESET().

int32_t speed_sum_sp_filt = 0
Definition at line 111 of file 6Step_Lib.c.

Referenced by MC_SixStep_RESET(), and MC_Speed_Filter().

int16_t speed_tmp_array[FILTER_DEEP]
Speed filter variable

Definition at line 86 of file 6Step_Lib.c.

Referenced by MC_SixStep_RESET(), and MC_Speed_Filter().

uint16_t speed_tmp_buffer[FILTER_DEEP]
Potentiometer filter variable

Definition at line 87 of file 6Step_Lib.c.

Referenced by MC_Potentiometer_filter(), and MC_SixStep_RESET().

uint8_t startup_bemf_failure = 0
Definition at line 106 of file 6Step_Lib.c.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint32_t T_single_step = 0
Startup variable

Definition at line 82 of file 6Step_Lib.c.

Referenced by MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint32_t T_single_step_first_value = 0
Startup variable

Definition at line 83 of file 6Step_Lib.c.

Referenced by MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint16_t target_speed = TARGET_SPEED
Target speed for closed loop control

Definition at line 103 of file 6Step_Lib.c.

Referenced by MC_Set_PI_param(), MC_SixStep_RESET(), MC_SixStep_Speed_Val_target_potentiometer(), and MC_Task_Speed().

uint16_t test_motor_run = 1
Tmp variable for DEMO mode

Definition at line 98 of file 6Step_Lib.c.

Referenced by MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint32_t Tick_cnt = 0
Definition at line 115 of file 6Step_Lib.c.

Referenced by MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint32_t Time_vector_prev_tmp = 0
Startup variable

Definition at line 81 of file 6Step_Lib.c.

Referenced by MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint32_t Time_vector_tmp = 0
Startup variable

Definition at line 80 of file 6Step_Lib.c.

Referenced by MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint8_t UART_FLAG_RECEIVE = FALSE
UART commmunication flag

Definition at line 92 of file 6Step_Lib.c.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

__IO uint32_t uwTick = 0
Tick counter - 1msec updated

Definition at line 108 of file 6Step_Lib.c.

Referenced by HAL_GetTick(), HAL_IncTick(), MC_SixStep_RESET(), MC_StartMotor(), and MC_StopMotor().

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X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Data Structures | Typedefs | Enumerations
Exported_types
MIDDLEWARES » MC_6-STEP_LIB

Data Structures

struct SIXSTEP_Base_InitTypeDef
Six Step parameters. More...

struct SIXSTEP_PI_PARAM_InitTypeDef_t
Six PI regulator parameters. More...

Typedefs

typedef struct SIXSTEP_PI_PARAM_InitTypeDef_t * SIXSTEP_pi_PARAM_InitTypeDef_t

Enumerations

enum SIXSTEP_Base_SystStatus_t {
IDLE, STARTUP, VALIDATION, STOP,
START, RUN, ALIGNMENT, SPEEDFBKERROR,
OVERCURRENT, STARTUP_FAILURE, STARTUP_BEMF_FAILURE

}
Six Step parameters. More...

Detailed Description

Typedef Documentation

typedef struct SIXSTEP_PI_PARAM_InitTypeDef_t * SIXSTEP_pi_PARAM_InitTypeDef_t
PI Data Structure

Enumeration Type Documentation

enum SIXSTEP_Base_SystStatus_t
Six Step parameters.

Enumerator
IDLE
STARTUP
VALIDATION
STOP
START
RUN
ALIGNMENT
SPEEDFBKERROR
OVERCURRENT
STARTUP_FAILURE
STARTUP_BEMF_FAILURE

Definition at line 68 of file 6Step_Lib.h.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
- Data&"temp0539.html">Files

- Data&"temp0535.html">Data Structure Index
- Data&"header">
  Data Fields
  SIXSTEP_Base_InitTypeDef Struct Reference
  MIDDLEWARES » MC_6-STEP_LIB » Exported_types

Six Step parameters. More...

```
#include <6Step_Lib.h>
```

Data Fields

uint32_t LF_TIMx_PSC

uint32_t LF_TIMx_ARR

uint32_t HF_TIMx_PSC

uint32_t HF_TIMx_ARR

uint32_t HF_TIMx_CCR

uint8_t step_position

SIXSTEP_Base_SystStatus_t STATUS

uint8_t status_prev

uint16_t pulse_value

uint16_t ARR_value

uint32_t Regular_channel [4]

uint32_t CurrentRegular_BEMF_ch

uint32_t prescaler_value

uint16_t numberofitemArr

uint32_t ADC_BUFFER [4]

uint32_t ADC_SEQ_CHANNEL [4]

uint32_t ADC_Regular_Buffer [5]

uint16_t ADC_BEMF_threshold_UP

uint16_t ADC_BEMF_threshold_DOWN

uint16_t demagn_counter

uint16_t demagn_value

int16_t speed_fdbk

int16_t speed_fdbk_filtered

int16_t filter_depth

uint16_t Current_Reference

uint16_t Ireference

int32_t Integral_Term_sum

uint8_t CMD

uint8_t ALIGN_OK

uint8_t ALIGNMENT

uint8_t bemf_state_1

uint8_t bemf_state_2

uint8_t bemf_state_3

uint8_t bemf_state_4

uint8_t bemf_state_5

uint8_t bemf_state_6

uint16_t Speed_Loop_Time

uint16_t Speed_Ref_filtered

uint16_t RUN_Motor

uint8_t ARR_OK

uint8_t VALIDATION_OK

uint8_t SPEED_VALIDATED

uint16_t Speed_target_ramp

uint16_t Speed_target_time

uint16_t Ramp_Start

uint16_t Bemf_delay_start

uint16_t MediumFrequencyTask_flag

uint32_t SYSCLK_frequency

uint32_t Uart_cmd_to_set

uint32_t Uart_value_to_set

uint8_t Button_ready

uint8_t BEMF_OK

uint8_t CL_READY

uint8_t BEMF_Tdown_count

uint16_t IREFERENCE

uint16_t NUMPOLESPAIRS

uint32_t ACCEL

uint16_t KP

uint16_t KI

uint8_t CW_CCW

uint8_t Potentiometer

Detailed Description

Six Step parameters.

Definition at line 94 of file 6Step_Lib.h.

Field Documentation

uint32_t SIXSTEP_Base_InitTypeDef::ACCEL
Acceleration start-up parameter

Definition at line 152 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_step(), MC_SixStep_Init_main_data(), MC_SixStep_Ramp_Motor_calc(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint16_t SIXSTEP_Base_InitTypeDef::ADC_BEMF_threshold_DOWN
Voltage threshold for BEMF detection in down direction

Definition at line 114 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::ADC_BEMF_threshold_UP
Voltage threshold for BEMF detection in up direction

Definition at line 113 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::ADC_BUFFER[4]
Buffer for ADC regular channel

Definition at line 110 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf().

uint32_t SIXSTEP_Base_InitTypeDef::ADC_Regular_Buffer[5]
Buffer for ADC regular channel

Definition at line 112 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_Speed_Val_target_potentiometer().

uint32_t SIXSTEP_Base_InitTypeDef::ADC_SEQ_CHANNEL[4]
Buffer for ADC regular channel

Definition at line 111 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_RESET().

uint8_t SIXSTEP_Base_InitTypeDef::ALIGN_OK
Flag control for Motor Alignment

Definition at line 124 of file 6Step_Lib.h.

Referenced by MC_SixStep_Alignment(), MC_SixStep_ARR_step(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint8_t SIXSTEP_Base_InitTypeDef::ALIGNMENT
Flag control for Motor Alignment ongoing

Definition at line 125 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_step(), MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint8_t SIXSTEP_Base_InitTypeDef::ARR_OK
ARR flag control for Accell status

Definition at line 135 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_step(), MC_SixStep_RESET(), and MC_TIMx_SixStep_timebase().

uint16_t SIXSTEP_Base_InitTypeDef::ARR_value
ARR vector for Accell compute

Definition at line 105 of file 6Step_Lib.h.

Referenced by MC_SixStep_Alignment(), MC_SixStep_ARR_step(), and MC_SixStep_Ramp_Motor_calc().

uint16_t SIXSTEP_Base_InitTypeDef::Bemf_delay_start
Bemf variable

Definition at line 141 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::BEMF_OK
Definition at line 147 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_RESET(), and MC_Task_Speed().

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_1
Bemf variable

Definition at line 126 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_2
Bemf variable

Definition at line 127 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_3
Bemf variable

Definition at line 128 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_4
Bemf variable

Definition at line 129 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_5
Bemf variable

Definition at line 130 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_6
Bemf variable

Definition at line 131 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::BEMF_Tdown_count
BEMF Consecutive Threshold Falling Crossings Counter

Definition at line 149 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint8_t SIXSTEP_Base_InitTypeDef::Button_ready
Definition at line 146 of file 6Step_Lib.h.

Referenced by MC_EXT_button_SixStep(), and MC_SixStep_INIT().

uint8_t SIXSTEP_Base_InitTypeDef::CL_READY
Definition at line 148 of file 6Step_Lib.h.

Referenced by MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_Task_Speed().

uint8_t SIXSTEP_Base_InitTypeDef::CMD
Flag control for Motor Start/Stop

Definition at line 123 of file 6Step_Lib.h.

Referenced by MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::Current_Reference
Currrent reference for SixStep algorithm

Definition at line 120 of file 6Step_Lib.h.

Referenced by MC_SixStep_RESET(), and MC_Task_Speed().

uint32_t SIXSTEP_Base_InitTypeDef::CurrentRegular_BEMF_ch
ADC regular channel to select

Definition at line 107 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_SixStep_TABLE().

uint8_t SIXSTEP_Base_InitTypeDef::CW_CCW
Set the motor direction

Definition at line 155 of file 6Step_Lib.h.

Referenced by MC_Set_PI_param(), MC_Set_Speed(), and MC_SixStep_Init_main_data().

uint16_t SIXSTEP_Base_InitTypeDef::demagn_counter
Demagnetization counter

Definition at line 115 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::demagn_value
Demagnetization value

Definition at line 116 of file 6Step_Lib.h.

Referenced by Bemf_delay_calc(), MC_ADCx_SixStep_Bemf(), and MC_SixStep_RESET().

int16_t SIXSTEP_Base_InitTypeDef::filter_depth
Filter depth for speed measuring

Definition at line 119 of file 6Step_Lib.h.

uint32_t SIXSTEP_Base_InitTypeDef::HF_TIMx_ARR
ARR variable for high frequency timer

Definition at line 99 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::HF_TIMx_CCR
CCR variable for high frequency timer

Definition at line 100 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::HF_TIMx_PSC
Prescaler variable for high frequency timer

Definition at line 98 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), and MC_SixStep_RESET().

int32_t SIXSTEP_Base_InitTypeDef::Integral_Term_sum
Global Integral part for PI

Definition at line 122 of file 6Step_Lib.h.

Referenced by MC_PI_Controller(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::Ireference
Currrent reference for SixStep algorithm

Definition at line 121 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), MC_SixStep_Init_main_data(), MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::IREFERENCE
Currrent reference

Definition at line 150 of file 6Step_Lib.h.

uint16_t SIXSTEP_Base_InitTypeDef::KI
KI parameter for PI regulator

Definition at line 154 of file 6Step_Lib.h.

Referenced by MC_Set_PI_param(), and MC_SixStep_Init_main_data().

uint16_t SIXSTEP_Base_InitTypeDef::KP
KP parameter for PI regulator

Definition at line 153 of file 6Step_Lib.h.

Referenced by MC_Set_PI_param(), and MC_SixStep_Init_main_data().

uint32_t SIXSTEP_Base_InitTypeDef::LF_TIMx_ARR
ARR variable for low frequency timer

Definition at line 97 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::LF_TIMx_PSC
Prescaler variable for low frequency timer

Definition at line 96 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::MediumFrequencyTask_flag
Flag for Medium Task Frequency

Definition at line 142 of file 6Step_Lib.h.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

uint16_t SIXSTEP_Base_InitTypeDef::numberofitemArr
Number of elements

Definition at line 109 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_step(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::NUMPOLESPAIRS
Number of motor pole pairs

Definition at line 151 of file 6Step_Lib.h.

Referenced by MC_SixStep_Init_main_data(), and MC_SixStep_RESET().

uint8_t SIXSTEP_Base_InitTypeDef::Potentiometer
Enable/Disable potentiometer for speed control

Definition at line 156 of file 6Step_Lib.h.

Referenced by MC_SixStep_Init_main_data(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint32_t SIXSTEP_Base_InitTypeDef::prescaler_value
Prescaler value for low freq timer

Definition at line 108 of file 6Step_Lib.h.

Referenced by MC_SixStep_Alignment(), and MC_SixStep_Ramp_Motor_calc().

uint16_t SIXSTEP_Base_InitTypeDef::pulse_value
CCR value for SixStep algorithm

Definition at line 104 of file 6Step_Lib.h.

Referenced by MC_SixStep_RESET(), MC_SixStep_TABLE(), STSPIN230_Current_Reference_Setvalue(), STSPIN230_Current_Reference_Start(), and STSPIN230_Current_Reference_Stop().

uint16_t SIXSTEP_Base_InitTypeDef::Ramp_Start
Ramp time start

Definition at line 140 of file 6Step_Lib.h.

Referenced by MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::Regular_channel[4]
Buffer for ADC regular channel

Definition at line 106 of file 6Step_Lib.h.

Referenced by MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_SixStep_TABLE().

uint16_t SIXSTEP_Base_InitTypeDef::RUN_Motor
Flag for Motor status

Definition at line 134 of file 6Step_Lib.h.

Referenced by MC_EXT_button_SixStep(), MC_SixStep_RESET(), MC_StartMotor(), and MC_StopMotor().

int16_t SIXSTEP_Base_InitTypeDef::speed_fdbk
Motor speed variable

Definition at line 117 of file 6Step_Lib.h.

Referenced by MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_Speed_Filter().

int16_t SIXSTEP_Base_InitTypeDef::speed_fdbk_filtered
Filtered Motor speed variable

Definition at line 118 of file 6Step_Lib.h.

Referenced by Bemf_delay_calc(), MC_SixStep_RESET(), MC_Speed_Filter(), and MC_Task_Speed().

uint16_t SIXSTEP_Base_InitTypeDef::Speed_Loop_Time
Speed loop variable for timing

Definition at line 132 of file 6Step_Lib.h.

Referenced by MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint16_t SIXSTEP_Base_InitTypeDef::Speed_Ref_filtered
Filtered Reference Motor Speed variable

Definition at line 133 of file 6Step_Lib.h.

Referenced by MC_Set_Speed(), MC_SixStep_RESET(), and MC_SixStep_Speed_Potentiometer().

uint16_t SIXSTEP_Base_InitTypeDef::Speed_target_ramp
Target Motor Speed

Definition at line 138 of file 6Step_Lib.h.

Referenced by MC_Set_Speed(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::Speed_target_time
Target Motor Ramp time

Definition at line 139 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::SPEED_VALIDATED
Validation flag for Speed before closed loop control

Definition at line 137 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_RESET(), and MC_Task_Speed().

SIXSTEP_Base_SystStatus_t SIXSTEP_Base_InitTypeDef::STATUS
Status variable for SixStep algorithm

Definition at line 102 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_Alignment(), MC_SixStep_ARR_step(), MC_SixStep_Ramp_Motor_calc(), MC_StartMotor(), MC_StopMotor(), MC_SysTick_SixStep_MediumFrequencyTask(), MC_Task_Speed(), and TIM1_BRK_TIM9_IRQHandler().

uint8_t SIXSTEP_Base_InitTypeDef::status_prev
Previous status variable for SixStep algorithm

Definition at line 103 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint8_t SIXSTEP_Base_InitTypeDef::step_position
Step number variable for SixStep algorithm

Definition at line 101 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_Alignment(), MC_SixStep_ARR_Bemf(), MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::SYSCLK_frequency
System clock main frequency

Definition at line 143 of file 6Step_Lib.h.

Referenced by MC_GetElSpeedHz(), MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::Uart_cmd_to_set
Definition at line 144 of file 6Step_Lib.h.

uint32_t SIXSTEP_Base_InitTypeDef::Uart_value_to_set
Definition at line 145 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::VALIDATION_OK
Validation flag for Closed loop control begin

Definition at line 136 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_ARR_step(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), MC_SysTick_SixStep_MediumFrequencyTask(), and MC_Task_Speed().

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

- 6Step_Lib.h

- Main&"temp0003.html">Modules
- Data&"temp0539.html">Files

- Data&"temp0535.html">Data Structure Index
- Data&"header">
  Data Fields

SIXSTEP_PI_PARAM_InitTypeDef_t Struct Reference
MIDDLEWARES » MC_6-STEP_LIB » Exported_types

Six PI regulator parameters. More...

`#include <6Step_Lib.h>`

Data Fields

int16_t Reference

int16_t Kp_Gain

int16_t Ki_Gain

int16_t Lower_Limit_Output

int16_t Upper_Limit_Output

int8_t Max_PID_Output

int8_t Min_PID_Output

Detailed Description

Six PI regulator parameters.

Definition at line 170 of file 6Step_Lib.h.

Field Documentation

int16_t SIXSTEP_PI_PARAM_InitTypeDef_t::Ki_Gain
Ki value for PI regulator

Definition at line 174 of file 6Step_Lib.h.

Referenced by MC_PI_Controller(), and MC_Set_PI_param().

int16_t SIXSTEP_PI_PARAM_InitTypeDef_t::Kp_Gain
Kp value for PI regulator

Definition at line 173 of file 6Step_Lib.h.

Referenced by MC_PI_Controller(), and MC_Set_PI_param().

int16_t SIXSTEP_PI_PARAM_InitTypeDef_t::Lower_Limit_Output
Min output value for PI regulator

Definition at line 175 of file 6Step_Lib.h.

Referenced by MC_PI_Controller(), and MC_Set_PI_param().

int8_t SIXSTEP_PI_PARAM_InitTypeDef_t::Max_PID_Output
Max Saturation indicator flag

Definition at line 177 of file 6Step_Lib.h.

Referenced by MC_Set_PI_param().

int8_t SIXSTEP_PI_PARAM_InitTypeDef_t::Min_PID_Output
Min Saturation indicator flag

Definition at line 178 of file 6Step_Lib.h.

Referenced by MC_Set_PI_param().

int16_t SIXSTEP_PI_PARAM_InitTypeDef_t::Reference
Refence value for PI regulator

Definition at line 172 of file 6Step_Lib.h.

Referenced by Bemf_delay_calc(), MC_ADCx_SixStep_Bemf(), MC_GetElSpeedHz(), MC_PI_Controller(), MC_Set_PI_param(), MC_Set_Speed(), MC_SixStep_ARR_step(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_Task_Speed().

int16_t SIXSTEP_PI_PARAM_InitTypeDef_t::Upper_Limit_Output
Max output value for PI regulator

Definition at line 176 of file 6Step_Lib.h.

Referenced by MC_PI_Controller(), and MC_Set_PI_param().

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

- 6Step_Lib.h

Functions
Exported_function_6StepLib
MIDDLEWARES » MC_6-STEP_LIB

Functions

void MC_SixStep_INIT (void)

void MC_SixStep_RESET (void)

void MC_StartMotor (void)

void MC_StopMotor (void)

void MC_Set_Speed (uint16_t)

void MC_EXT_button_SixStep (void)

Detailed Description

Function Documentation

void MC_EXT_button_SixStep (void)
Definition at line 1577 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::Button_ready, Enable_start_button, FALSE, MC_StartMotor(), MC_StopMotor(), SIXSTEP_Base_InitTypeDef::RUN_Motor, and TRUE.

Referenced by HAL_GPIO_EXTI_Callback().

void MC_Set_Speed (uint16_t)
Definition at line 889 of file 6Step_Lib.c.

References ADC_SPEED_TH, SIXSTEP_Base_InitTypeDef::CW_CCW, MAX_POT_SPEED, MIN_POT_SPEED, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, SIXSTEP_Base_InitTypeDef::Speed_Ref_filtered, and SIXSTEP_Base_InitTypeDef::Speed_target_ramp.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

void MC_SixStep_INIT (void)
Definition at line 1087 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::Button_ready, FALSE, HF_TIMx, SIXSTEP_Base_InitTypeDef::HF_TIMx_ARR, SIXSTEP_Base_InitTypeDef::HF_TIMx_CCR, SIXSTEP_Base_InitTypeDef::HF_TIMx_PSC, SIXSTEP_Base_InitTypeDef::Ireference, LF_TIMx, SIXSTEP_Base_InitTypeDef::LF_TIMx_ARR, SIXSTEP_Base_InitTypeDef::LF_TIMx_PSC, MC_SixStep_Current_Reference_Setvalue(), MC_SixStep_Init_main_data(), MC_SixStep_Nucleo_Init(), MC_SixStep_RESET(), MC_UI_INIT(), and TRUE.

Referenced by main().

void MC_SixStep_RESET (void)
Definition at line 353 of file 6Step_Lib.c.

References ADC_Bemf_CH1, ADC_Bemf_CH2, ADC_Bemf_CH3, SIXSTEP_Base_InitTypeDef::ADC_BEMF_threshold_DOWN, SIXSTEP_Base_InitTypeDef::ADC_BEMF_threshold_UP, ADC_CH_1, ADC_CH_2, ADC_CH_3, ADC_CH_4, SIXSTEP_Base_InitTypeDef::ADC_SEQ_CHANNEL, SIXSTEP_Base_InitTypeDef::ALIGN_OK, SIXSTEP_Base_InitTypeDef::ALIGNMENT, ARR_LF, SIXSTEP_Base_InitTypeDef::ARR_OK, array_completed, SIXSTEP_Base_InitTypeDef::BEMF_OK, SIXSTEP_Base_InitTypeDef::BEMF_Tdown_count, BEMF_THRSLD_DOWN, BEMF_THRSLD_UP, buffer_completed, SIXSTEP_Base_InitTypeDef::CL_READY, SIXSTEP_Base_InitTypeDef::CMD, cnt_bemf_event, constant_k, constant_multiplier_tmp, counter_ARR_Bemf, SIXSTEP_Base_InitTypeDef::Current_Reference, SIXSTEP_Base_InitTypeDef::CurrentRegular_BEMF_ch, delta, SIXSTEP_Base_InitTypeDef::demagn_counter, SIXSTEP_Base_InitTypeDef::demagn_value, El_Speed_Hz, Enable_start_button, FALSE, FILTER_DEEP, HF_TIMx, SIXSTEP_Base_InitTypeDef::HF_TIMx_ARR, SIXSTEP_Base_InitTypeDef::HF_TIMx_CCR, SIXSTEP_Base_InitTypeDef::HF_TIMx_PSC, HFBuffer, HFBufferIndex, HFBUFFERSIZE, index_adc_chn, index_align, index_ARR_step, index_array, index_motor_run, index_pot_filt, index_startup_motor, INITIAL_DEMAGN_DELAY, SIXSTEP_Base_InitTypeDef::Integral_Term_sum, SIXSTEP_Base_InitTypeDef::Ireference, LF_TIMx, SIXSTEP_Base_InitTypeDef::LF_TIMx_ARR, SIXSTEP_Base_InitTypeDef::LF_TIMx_PSC, MAX_POT_SPEED, MC_Set_PI_param(), MC_SixStep_Current_Reference_Setvalue(), MC_SixStep_Current_Reference_Start(), MC_SixStep_HF_TIMx_SetDutyCycle_CH1(), MC_SixStep_HF_TIMx_SetDutyCycle_CH2(), MC_SixStep_HF_TIMx_SetDutyCycle_CH3(), MC_SixStep_Ramp_Motor_calc(), mech_accel_hz, Mech_Speed_RPM, n_zcr_startup, NUMBER_OF_STEPS, SIXSTEP_Base_InitTypeDef::numberofitemArr, SIXSTEP_Base_InitTypeDef::NUMPOLESPAIRS, potent_filtered, SIXSTEP_Base_InitTypeDef::pulse_value, SIXSTEP_Base_InitTypeDef::Ramp_Start, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, SIXSTEP_Base_InitTypeDef::Regular_channel, Rotor_poles_pairs, SIXSTEP_Base_InitTypeDef::RUN_Motor, SIXSTEP_Base_InitTypeDef::speed_fdbk, speed_fdbk_error, SIXSTEP_Base_InitTypeDef::speed_fdbk_filtered, SPEED_LOOP_TIME, SIXSTEP_Base_InitTypeDef::Speed_Loop_Time, SIXSTEP_Base_InitTypeDef::Speed_Ref_filtered, speed_sum_pot_filt, speed_sum_sp_filt, SIXSTEP_Base_InitTypeDef::Speed_target_ramp, speed_tmp_array, speed_tmp_buffer, SIXSTEP_Base_InitTypeDef::SPEED_VALIDATED, startup_bemf_failure, STARTUP_CURRENT_REFERENCE, SIXSTEP_Base_InitTypeDef::status_prev, SIXSTEP_Base_InitTypeDef::step_position, SIXSTEP_Base_InitTypeDef::SYSCLK_frequency, T_single_step, T_single_step_first_value, TARGET_SPEED, target_speed, test_motor_run, Tick_cnt, Time_vector_prev_tmp, Time_vector_tmp, TRUE, uwTick, and SIXSTEP_Base_InitTypeDef::VALIDATION_OK.

Referenced by MC_SixStep_INIT(), and MC_StopMotor().

void MC_StartMotor (void)
Definition at line 978 of file 6Step_Lib.c.

References ADCx, BSP_X_NUCLEO_FAULT_LED_ON(), dac_status, LF_TIMx, SIXSTEP_Base_InitTypeDef::RUN_Motor, START, START_DAC(), SIXSTEP_Base_InitTypeDef::STATUS, TRUE, and uwTick.

Referenced by MC_EXT_button_SixStep(), and MC_SysTick_SixStep_MediumFrequencyTask().

void MC_StopMotor (void)
Definition at line 1000 of file 6Step_Lib.c.

References ADCx, BSP_X_NUCLEO_FAULT_LED_OFF(), HF_TIMx, LF_TIMx, MC_SixStep_Current_Reference_Stop(), MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D(), MC_SixStep_RESET(), MC_SixStep_Stop_PWM_driving(), SIXSTEP_Base_InitTypeDef::RUN_Motor, SIXSTEP_Base_InitTypeDef::STATUS, STOP, and uwTick.

Referenced by MC_EXT_button_SixStep(), MC_SixStep_ARR_step(), MC_SysTick_SixStep_MediumFrequencyTask(), and TIM1_BRK_TIM9_IRQHandler().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_SixStep_TABLE
MIDDLEWARES » MC_6-STEP_LIB
Set the peripherals (TIMx, GPIO etc.) for each step. More...

Functions

void MC_SixStep_TABLE (uint8_t)

Detailed Description

Set the peripherals (TIMx, GPIO etc.) for each step.

Parameters
step_number step number selected

Return values
None

Function Documentation

void MC_SixStep_TABLE (uint8_t *step_number*)
Definition at line 164 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::CurrentRegular_BEMF_ch, GPIO_CH_COMM, GPIO_COMM, GPIO_PORT_COMM, MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E(), MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E(), MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D(), MC_SixStep_HF_TIMx_SetDutyCycle_CH1(), MC_SixStep_HF_TIMx_SetDutyCycle_CH2(), MC_SixStep_HF_TIMx_SetDutyCycle_CH3(), SIXSTEP_Base_InitTypeDef::pulse_value, and SIXSTEP_Base_InitTypeDef::Regular_channel.

Referenced by MC_SixStep_NEXT_step().

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- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_SixStep_NEXT_step
MIDDLEWARES » MC_6-STEP_LIB
Generate the next step number according with the direction (CW or CCW) More...

Functions

void MC_SixStep_NEXT_step (void)

Detailed Description

Generate the next step number according with the direction (CW or CCW)

Return values
uint8_t SIXSTEP_parameters.status

Function Documentation

void MC_SixStep_NEXT_step (void)
Definition at line 239 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::ALIGN_OK, ARR_LF, BEMF_CONSEC_DOWN_MAX, SIXSTEP_Base_InitTypeDef::BEMF_Tdown_count, SIXSTEP_Base_InitTypeDef::CL_READY, SIXSTEP_Base_InitTypeDef::CMD, SIXSTEP_Base_InitTypeDef::CurrentRegular_BEMF_ch, SIXSTEP_Base_InitTypeDef::demagn_counter, FALSE, HF_TIMx, LF_TIMx, MC_GetMechSpeedRPM(), MC_SixStep_ADC_Channel(), MC_SixStep_Start_PWM_driving(), MC_SixStep_TABLE(), n_zcr_startup, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, SIXSTEP_Base_InitTypeDef::Regular_channel, SIXSTEP_Base_InitTypeDef::speed_fdbk, speed_fdbk_error, SIXSTEP_Base_InitTypeDef::status_prev, SIXSTEP_Base_InitTypeDef::step_position, TRUE, and SIXSTEP_Base_InitTypeDef::VALIDATION_OK.

Referenced by MC_TIMx_SixStep_timebase().

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- Data&"temp0539.html">Files

Functions
MC_SixStep_RESET
MIDDLEWARES » MC_6-STEP_LIB
Reset all variables used for 6Step control algorithm. More...

Functions

void MC_SixStep_RESET ()

Detailed Description

Reset all variables used for 6Step control algorithm.

Return values
None

Function Documentation

void MC_SixStep_RESET (void)
Definition at line 353 of file 6Step_Lib.c.

References ADC_Bemf_CH1, ADC_Bemf_CH2, ADC_Bemf_CH3, SIXSTEP_Base_InitTypeDef::ADC_BEMF_threshold_DOWN, SIXSTEP_Base_InitTypeDef::ADC_BEMF_threshold_UP, ADC_CH_1, ADC_CH_2, ADC_CH_3, ADC_CH_4, SIXSTEP_Base_InitTypeDef::ADC_SEQ_CHANNEL, SIXSTEP_Base_InitTypeDef::ALIGN_OK, SIXSTEP_Base_InitTypeDef::ALIGNMENT, ARR_LF, SIXSTEP_Base_InitTypeDef::ARR_OK, array_completed, SIXSTEP_Base_InitTypeDef::BEMF_OK, SIXSTEP_Base_InitTypeDef::BEMF_Tdown_count, BEMF_THRSLD_DOWN, BEMF_THRSLD_UP, buffer_completed, SIXSTEP_Base_InitTypeDef::CL_READY, SIXSTEP_Base_InitTypeDef::CMD, cnt_bemf_event, constant_k, constant_multiplier_tmp, counter_ARR_Bemf, SIXSTEP_Base_InitTypeDef::Current_Reference, SIXSTEP_Base_InitTypeDef::CurrentRegular_BEMF_ch, delta, SIXSTEP_Base_InitTypeDef::demagn_counter, SIXSTEP_Base_InitTypeDef::demagn_value, El_Speed_Hz, Enable_start_button, FALSE, FILTER_DEEP, HF_TIMx, SIXSTEP_Base_InitTypeDef::HF_TIMx_ARR, SIXSTEP_Base_InitTypeDef::HF_TIMx_CCR, SIXSTEP_Base_InitTypeDef::HF_TIMx_PSC, HFBuffer, HFBufferIndex, HFBUFFERSIZE, index_adc_chn, index_align, index_ARR_step, index_array, index_motor_run, index_pot_filt, index_startup_motor, INITIAL_DEMAGN_DELAY, SIXSTEP_Base_InitTypeDef::Integral_Term_sum, SIXSTEP_Base_InitTypeDef::Ireference, LF_TIMx, SIXSTEP_Base_InitTypeDef::LF_TIMx_ARR, SIXSTEP_Base_InitTypeDef::LF_TIMx_PSC, MAX_POT_SPEED, MC_Set_PI_param(), MC_SixStep_Current_Reference_Setvalue(), MC_SixStep_Current_Reference_Start(), MC_SixStep_HF_TIMx_SetDutyCycle_CH1(), MC_SixStep_HF_TIMx_SetDutyCycle_CH2(), MC_SixStep_HF_TIMx_SetDutyCycle_CH3(), MC_SixStep_Ramp_Motor_calc(), mech_accel_hz, Mech_Speed_RPM, n_zcr_startup, NUMBER_OF_STEPS, SIXSTEP_Base_InitTypeDef::numberofitemArr, SIXSTEP_Base_InitTypeDef::NUMPOLESPAIRS, potent_filtered, SIXSTEP_Base_InitTypeDef::pulse_value, SIXSTEP_Base_InitTypeDef::Ramp_Start, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, SIXSTEP_Base_InitTypeDef::Regular_channel, Rotor_poles_pairs, SIXSTEP_Base_InitTypeDef::RUN_Motor, SIXSTEP_Base_InitTypeDef::speed_fdbk, speed_fdbk_error, SIXSTEP_Base_InitTypeDef::speed_fdbk_filtered, SPEED_LOOP_TIME, SIXSTEP_Base_InitTypeDef::Speed_Loop_Time, SIXSTEP_Base_InitTypeDef::Speed_Ref_filtered,

speed_sum_pot_filt, speed_sum_sp_filt, SIXSTEP_Base_InitTypeDef::Speed_target_ramp, speed_tmp_array, speed_tmp_buffer, SIXSTEP_Base_InitTypeDef::SPEED_VALIDATED, startup_bemf_failure, STARTUP_CURRENT_REFERENCE, SIXSTEP_Base_InitTypeDef::status_prev, SIXSTEP_Base_InitTypeDef::step_position, SIXSTEP_Base_InitTypeDef::SYSCLK_frequency, T_single_step, T_single_step_first_value, TARGET_SPEED, target_speed, test_motor_run, Tick_cnt, Time_vector_prev_tmp, Time_vector_tmp, TRUE, uwTick, and SIXSTEP_Base_InitTypeDef::VALIDATION_OK.

Referenced by MC_SixStep_INIT(), and MC_StopMotor().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
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Functions
MC_SixStep_Ramp_Motor_calc
MIDDLEWARES » MC_6-STEP_LIB
Calculate the acceleration profile step by step for motor during start-up. More...

Functions

void MC_SixStep_Ramp_Motor_calc (void)

Detailed Description

Calculate the acceleration profile step by step for motor during start-up.

Return values
None

Function Documentation

void MC_SixStep_Ramp_Motor_calc (void)
Definition at line 479 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::ACCEL, ALIGNMENT, SIXSTEP_Base_InitTypeDef::ARR_value, constant_k, constant_multiplier_tmp, delta, index_startup_motor, SIXSTEP_Base_InitTypeDef::Ireference, MC_SixStep_Current_Reference_Setvalue(), MCM_Sqrt(), mech_accel_hz, NUMBER_OF_STEPS, SIXSTEP_Base_InitTypeDef::prescaler_value, Rotor_poles_pairs, START, SIXSTEP_Base_InitTypeDef::STATUS, SIXSTEP_Base_InitTypeDef::SYSCLK_frequency, T_single_step, T_single_step_first_value, Time_vector_prev_tmp, and Time_vector_tmp.

Referenced by MC_SixStep_Alignment(), MC_SixStep_ARR_step(), and MC_SixStep_RESET().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_SixStep_ARR_step
MIDDLEWARES » MC_6-STEP_LIB
Generate the ARR value for Low Frequency TIM during start-up. More...

Functions

void MC_SixStep_ARR_step (void)

Detailed Description

Generate the ARR value for Low Frequency TIM during start-up.

Return values
None

Function Documentation

void MC_SixStep_ARR_step (void)
Definition at line 573 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::ACCEL, SIXSTEP_Base_InitTypeDef::ALIGN_OK, SIXSTEP_Base_InitTypeDef::ALIGNMENT, SIXSTEP_Base_InitTypeDef::ARR_OK, SIXSTEP_Base_InitTypeDef::ARR_value, FALSE, index_ARR_step, index_startup_motor, LF_TIMx, MC_SixStep_Ramp_Motor_calc(), MC_StopMotor(), MINIMUM_ACC, SIXSTEP_Base_InitTypeDef::numberofitemArr, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, STARTUP, STARTUP_FAILURE, SIXSTEP_Base_InitTypeDef::STATUS, TRUE, and SIXSTEP_Base_InitTypeDef::VALIDATION_OK.

Referenced by MC_TIMx_SixStep_timebase().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_SixStep_Alignment
MIDDLEWARES » MC_6-STEP_LIB
Generate the motor alignment. More...

Functions

void MC_SixStep_Alignment (void)

Detailed Description

Generate the motor alignment.

Return values
None

Function Documentation

void MC_SixStep_Alignment (void)
Definition at line 657 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::ALIGN_OK, ALIGNMENT, SIXSTEP_Base_InitTypeDef::ARR_value, index_align, index_startup_motor, LF_TIMx, MC_SixStep_Ramp_Motor_calc(), MC_SixStep_Speed_Val_target_potentiometer(), SIXSTEP_Base_InitTypeDef::prescaler_value, STARTUP, SIXSTEP_Base_InitTypeDef::STATUS, SIXSTEP_Base_InitTypeDef::step_position, TIME_FOR_ALIGN, and TRUE.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_SixStep_Speed_Val_target_potentiometer
MIDDLEWARES » MC_6-STEP_LIB
Calculate the Motor Speed validation threshold according with the potentiometer value. More...

Functions

void MC_SixStep_Speed_Val_target_potentiometer (void)

Detailed Description

Calculate the Motor Speed validation threshold according with the potentiometer value.

Return values
None

Function Documentation

void MC_SixStep_Speed_Val_target_potentiometer (void)
Definition at line 687 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::ADC_Regular_Buffer, MAX_POT_SPEED, MIN_POT_SPEED, target_speed, and VAL_POT_SPEED_DIV.

Referenced by MC_SixStep_Alignment().

Functions
MC_SixStep_Speed_Potentiometer
MIDDLEWARES » MC_6-STEP_LIB
Calculate the potentiometer value to set the Motor Speed. More...

Functions

void MC_SixStep_Speed_Potentiometer (void)

Detailed Description

Calculate the potentiometer value to set the Motor Speed.

Return values
None

Function Documentation

void MC_SixStep_Speed_Potentiometer (void)
Definition at line 707 of file 6Step_Lib.c.

References HFBuffer, HFBUFFERSIZE, MC_Potentiometer_filter(), and SIXSTEP_Base_InitTypeDef::Speed_Ref_filtered.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

Functions
MC_Set_PI_param
MIDDLEWARES » MC_6-STEP_LIB
Set all parameters for PI regulator. More...

Functions

void MC_Set_PI_param (SIXSTEP_PI_PARAM_InitTypeDef_t *)

Detailed Description

Set all parameters for PI regulator.

Parameters
PI_PARAM

Return values
None

Function Documentation

void MC_Set_PI_param (SIXSTEP_PI_PARAM_InitTypeDef_t * *PI_PARAM*)
Definition at line 740 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::CW_CCW, FALSE, SIXSTEP_Base_InitTypeDef::KI, SIXSTEP_PI_PARAM_InitTypeDef_t::Ki_Gain, SIXSTEP_Base_InitTypeDef::KP, SIXSTEP_PI_PARAM_InitTypeDef_t::Kp_Gain, SIXSTEP_PI_PARAM_InitTypeDef_t::Lower_Limit_Output, LOWER_OUT_LIMIT, SIXSTEP_PI_PARAM_InitTypeDef_t::Max_PID_Output, SIXSTEP_PI_PARAM_InitTypeDef_t::Min_PID_Output, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, target_speed, SIXSTEP_PI_PARAM_InitTypeDef_t::Upper_Limit_Output, and UPPER_OUT_LIMIT.

Referenced by MC_SixStep_RESET().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_PI_Controller
MIDDLEWARES » MC_6-STEP_LIB
Compute the PI output for the Current Reference. More...

Functions

int16_t MC_PI_Controller (SIXSTEP_PI_PARAM_InitTypeDef_t *, int16_t)

Detailed Description

Compute the PI output for the Current Reference.

Parameters

PI_PARAM	PI parameters structure
speed_fdb	motor_speed_value

Return values

int16_t	Currente reference

Function Documentation

int16_t MC_PI_Controller (SIXSTEP_PI_PARAM_InitTypeDef_t * *PI_PARAM*,
int16_t *speed_fdb*
)

Definition at line 768 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::Integral_Term_sum, KI_DIV, SIXSTEP_PI_PARAM_InitTypeDef_t::Ki_Gain, KP_DIV, SIXSTEP_PI_PARAM_InitTypeDef_t::Kp_Gain, SIXSTEP_PI_PARAM_InitTypeDef_t::Lower_Limit_Output, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, and SIXSTEP_PI_PARAM_InitTypeDef_t::Upper_Limit_Output.

Referenced by MC_Task_Speed().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_Task_Speed
MIDDLEWARES » MC_6-STEP_LIB
Main task: Speed Loop with PI regulator. More...

Functions

void MC_Task_Speed (void)

Detailed Description

Main task: Speed Loop with PI regulator.

Return values
None

Function Documentation

void MC_Task_Speed (void)
Definition at line 838 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::BEMF_OK, SIXSTEP_Base_InitTypeDef::CL_READY, SIXSTEP_Base_InitTypeDef::Current_Reference, dac_status, MC_Bemf_Delay(), MC_PI_Controller(),

MC_SixStep_Current_Reference_Setvalue(), SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, RUN, SET_DAC_value(), SIXSTEP_Base_InitTypeDef::speed_fdbk_filtered, SIXSTEP_Base_InitTypeDef::SPEED_VALIDATED, SIXSTEP_Base_InitTypeDef::STATUS, target_speed, TRUE, VALIDATION, and SIXSTEP_Base_InitTypeDef::VALIDATION_OK.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_Set_Speed
MIDDLEWARES » MC_6-STEP_LIB
Set the new motor speed value. More...

Functions

void MC_Set_Speed (uint16_t speed_value)

Detailed Description

Set the new motor speed value.

Parameters
speed_value set new motor speed

Return values
None

Function Documentation

void MC_Set_Speed (uint16_t *speed_value*)
Definition at line 889 of file 6Step_Lib.c.

References ADC_SPEED_TH, SIXSTEP_Base_InitTypeDef::CW_CCW, MAX_POT_SPEED, MIN_POT_SPEED, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, SIXSTEP_Base_InitTypeDef::Speed_Ref_filtered, and SIXSTEP_Base_InitTypeDef::Speed_target_ramp.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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- Data&"temp0539.html">Files

Functions
MC_Bemf_Delay
MIDDLEWARES » MC_6-STEP_LIB
Take the delay time after each new 6-step commutation. More...

Functions

void MC_Bemf_Delay (void)

Detailed Description

Take the delay time after each new 6-step commutation.

Return values
None

Function Documentation

void MC_Bemf_Delay (void)
Definition at line 965 of file 6Step_Lib.c.

References Bemf_delay_calc().

Referenced by MC_Task_Speed().

Generated by 

1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_StartMotor
MIDDLEWARES » MC_6-STEP_LIB

Start the Motor. More...

Functions

void MC_StartMotor ()

Detailed Description

Start the Motor.

Return values
None

Function Documentation

void MC_StartMotor (void)
Definition at line 978 of file 6Step_Lib.c.

References ADCx, BSP_X_NUCLEO_FAULT_LED_ON(), dac_status, LF_TIMx, SIXSTEP_Base_InitTypeDef::RUN_Motor, START, START_DAC(), SIXSTEP_Base_InitTypeDef::STATUS, TRUE, and uwTick.

Referenced by MC_EXT_button_SixStep(), and MC_SysTick_SixStep_MediumFrequencyTask().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_StopMotor
MIDDLEWARES » MC_6-STEP_LIB
Stop the Motor. More...

Functions

void MC_StopMotor ()

Detailed Description

Stop the Motor.

Return values
None

Function Documentation

void MC_StopMotor (void)
Definition at line 1000 of file 6Step_Lib.c.

References ADCx, BSP_X_NUCLEO_FAULT_LED_OFF(), HF_TIMx, LF_TIMx, MC_SixStep_Current_Reference_Stop(), MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D(), MC_SixStep_RESET(), MC_SixStep_Stop_PWM_driving(), SIXSTEP_Base_InitTypeDef::RUN_Motor, SIXSTEP_Base_InitTypeDef::STATUS, STOP, and uwTick.

Referenced by MC_EXT_button_SixStep(), MC_SixStep_ARR_step(), MC_SysTick_SixStep_MediumFrequencyTask(), and TIM1_BRK_TIM9_IRQHandler().

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X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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Functions
MC_GetElSpeedHz
MIDDLEWARES » MC_6-STEP_LIB
Get the Eletrical Motor Speed from ARR value of LF TIM. More...

Functions

int32_t MC_GetElSpeedHz (void)

Detailed Description

Get the Eletrical Motor Speed from ARR value of LF TIM.

Return values
int32_t Return the electrical motor speed

Function Documentation

int32_t MC_GetElSpeedHz (void)
Definition at line 1025 of file 6Step_Lib.c.

References El_Speed_Hz, LF_TIMx, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, and SIXSTEP_Base_InitTypeDef::SYSCLK_frequency.

Referenced by MC_GetMechSpeedRPM().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_GetMechSpeedRPM
MIDDLEWARES » MC_6-STEP_LIB
Get the Mechanical Motor Speed (RPM) More...

Functions

int32_t MC_GetMechSpeedRPM (void)

Detailed Description

Get the Mechanical Motor Speed (RPM)

Return values
int32_t Return the mechanical motor speed (RPM

Function Documentation

int32_t MC_GetMechSpeedRPM (void)
Definition at line 1049 of file 6Step_Lib.c.

References MC_GetElSpeedHz(), Mech_Speed_RPM, and Rotor_poles_pairs.

Referenced by MC_SixStep_NEXT_step().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_SixStep_Init_main_data
MIDDLEWARES » MC_6-STEP_LIB
Init the main variables for motor driving from MC_SixStep_param.h. More...

Functions

void MC_SixStep_Init_main_data (void)

Detailed Description

Init the main variables for motor driving from MC_SixStep_param.h.

Return values
None

Function Documentation

void MC_SixStep_Init_main_data (void)
Definition at line 1065 of file 6Step_Lib.c.

References ACC, SIXSTEP_Base_InitTypeDef::ACCEL, SIXSTEP_Base_InitTypeDef::CW_CCW, DIRECTION, SIXSTEP_Base_InitTypeDef::Ireference, SIXSTEP_Base_InitTypeDef::KI, KI_GAIN, SIXSTEP_Base_InitTypeDef::KP, KP_GAIN, NUM_POLE_PAIRS, SIXSTEP_Base_InitTypeDef::NUMPOLESPAIRS, POTENTIOMETER, SIXSTEP_Base_InitTypeDef::Potentiometer, and STARTUP_CURRENT_REFERENCE.

Referenced by MC_SixStep_INIT().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
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Functions
MC_SixStep_INIT
MIDDLEWARES » MC_6-STEP_LIB
Initialitation function for SixStep library. More...

Functions

void MC_SixStep_INIT ()

Detailed Description

Initialitation function for SixStep library.

Return values
None

Function Documentation

void MC_SixStep_INIT (void)
Definition at line 1087 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::Button_ready, FALSE, HF_TIMx, SIXSTEP_Base_InitTypeDef::HF_TIMx_ARR, SIXSTEP_Base_InitTypeDef::HF_TIMx_CCR, SIXSTEP_Base_InitTypeDef::HF_TIMx_PSC, SIXSTEP_Base_InitTypeDef::Ireference, LF_TIMx, SIXSTEP_Base_InitTypeDef::LF_TIMx_ARR, SIXSTEP_Base_InitTypeDef::LF_TIMx_PSC, MC_SixStep_Current_Reference_Setvalue(), MC_SixStep_Init_main_data(), MC_SixStep_Nucleo_Init(), MC_SixStep_RESET(), MC_UI_INIT(), and TRUE.

Referenced by main().

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- Main&"current">Modules
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Functions
MC_TIMx_SixStep_timebase
MIDDLEWARES » MC_6-STEP_LIB
Low Frequency Timer Callback - Call the next step and request the filtered speed value. More...

Functions

void MC_TIMx_SixStep_timebase (void)

Detailed Description

Low Frequency Timer Callback - Call the next step and request the filtered speed value.

Return values
None

Function Documentation

void MC_TIMx_SixStep_timebase (void)
Definition at line 1123 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::ARR_OK, MC_SixStep_ARR_step(), MC_SixStep_NEXT_step(), and MC_Speed_Filter().

Referenced by HAL_TIM_PeriodElapsedCallback().

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- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_Speed_Filter
MIDDLEWARES » MC_6-STEP_LIB
Calculate the speed filtered. More...

Functions

void MC_Speed_Filter (void)

Detailed Description

Calculate the speed filtered.

Return values
None

Function Documentation

void MC_Speed_Filter (void)
Definition at line 1144 of file 6Step_Lib.c.

References array_completed, FALSE, FILTER_DEEP, index_array, SIXSTEP_Base_InitTypeDef::speed_fdbk, SIXSTEP_Base_InitTypeDef::speed_fdbk_filtered, speed_sum_sp_filt, speed_tmp_array, and TRUE.

Referenced by MC_TIMx_SixStep_timebase().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_Potentiometer_filter
MIDDLEWARES » MC_6-STEP_LIB
Calculate the filtered potentiometer value. More...

Functions

uint16_t MC_Potentiometer_filter (uint16_t)

Detailed Description

Calculate the filtered potentiometer value.

Return values
uint16_t Return the filtered potentiometer value

Function Documentation

uint16_t MC_Potentiometer_filter (uint16_t *potentiometer_value*)
Definition at line 1189 of file 6Step_Lib.c.

References buffer_completed, FALSE, FILTER_DEEP, index_pot_filt, potent_filtered, speed_sum_pot_filt, speed_tmp_buffer, and TRUE.

Referenced by MC_SixStep_Speed_Potentiometer().

- Main&"current">Modules

- Data&"temp0539.html">Files

Functions
MC_SysTick_SixStep_MediumFrequencyTask
MIDDLEWARES » MC_6-STEP_LIB
Systick Callback - Call the Speed loop. More...

Functions

void MC_SysTick_SixStep_MediumFrequencyTask (void)

Detailed Description

Systick Callback - Call the Speed loop.

Return values
None

Function Documentation

void MC_SysTick_SixStep_MediumFrequencyTask (void)
Definition at line 1246 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::ACCEL, SIXSTEP_Base_InitTypeDef::ALIGN_OK, SIXSTEP_Base_InitTypeDef::ALIGNMENT, BUTTON_DELAY, cnt_bemf_event, DEMO_START_TIME, DEMO_STOP_TIME, Enable_start_button, FALSE, HAL_GetTick(), index_motor_run, MC_Set_Speed(), MC_SixStep_Alignment(), MC_SixStep_Speed_Potentiometer(), MC_StartMotor(), MC_StopMotor(), MC_Task_Speed(), SIXSTEP_Base_InitTypeDef::MediumFrequencyTask_flag, MINIMUM_ACC, SIXSTEP_Base_InitTypeDef::Potentiometer, speed_fdbk_error, SIXSTEP_Base_InitTypeDef::Speed_Loop_Time, SPEEDFBKERROR, STARTUP_BEMF_FAILURE, startup_bemf_failure, SIXSTEP_Base_InitTypeDef::STATUS, test_motor_run, Tick_cnt, TRUE, UART_Communication_Task(), UART_FLAG_RECEIVE, and SIXSTEP_Base_InitTypeDef::VALIDATION_OK.

Referenced by HAL_SYSTICK_Callback().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_SixStep_ARR_Bemf
MIDDLEWARES » MC_6-STEP_LIB

Calculate the new Autoreload value (ARR) for Low Frequency timer. More...

Functions

void MC_SixStep_ARR_Bemf (uint8_t)

Detailed Description

Calculate the new Autoreload value (ARR) for Low Frequency timer.

Return values
None

Function Documentation

void MC_SixStep_ARR_Bemf (uint8_t *up_bemf*)
Definition at line 1328 of file 6Step_Lib.c.

References ARR_LF, BEMF_CNT_EVENT_MAX, SIXSTEP_Base_InitTypeDef::BEMF_OK, cnt_bemf_event, counter_ARR_Bemf, GPIO_CH_ZCR, GPIO_PORT_ZCR, GPIO_ZERO_CROSS, LF_TIMx, n_zcr_startup, NUMBER_ZCR, SIXSTEP_Base_InitTypeDef::SPEED_VALIDATED, startup_bemf_failure, SIXSTEP_Base_InitTypeDef::status_prev, SIXSTEP_Base_InitTypeDef::step_position, TRUE, and SIXSTEP_Base_InitTypeDef::VALIDATION_OK.

Referenced by MC_ADCx_SixStep_Bemf().

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- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_ADCx_SixStep_Bemf
MIDDLEWARES » MC_6-STEP_LIB
Compute the zero crossing detection. More...

Functions

void MC_ADCx_SixStep_Bemf (void)

Detailed Description

Compute the zero crossing detection.

Return values
None

Function Documentation

void MC_ADCx_SixStep_Bemf (void)
Definition at line 1381 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::ADC_BEMF_threshold_DOWN, SIXSTEP_Base_InitTypeDef::ADC_BEMF_threshold_UP, SIXSTEP_Base_InitTypeDef::ADC_BUFFER, SIXSTEP_Base_InitTypeDef::ADC_Regular_Buffer, SIXSTEP_Base_InitTypeDef::ADC_SEQ_CHANNEL, ADCx, ALIGNMENT, SIXSTEP_Base_InitTypeDef::BEMF_Tdown_count, SIXSTEP_Base_InitTypeDef::CurrentRegular_BEMF_ch, SIXSTEP_Base_InitTypeDef::demagn_counter, SIXSTEP_Base_InitTypeDef::demagn_value, GPIO_CH_COMM, GPIO_PORT_COMM, HF_TIMx, HFBuffer, HFBufferIndex, HFBUFFERSIZE, index_adc_chn, MC_SixStep_ADC_Channel(), MC_SixStep_ARR_Bemf(), SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, START, SIXSTEP_Base_InitTypeDef::STATUS, and SIXSTEP_Base_InitTypeDef::step_position.

Referenced by HAL_ADC_ConvCpltCallback().

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- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_EXT_button_SixStep
MIDDLEWARES » MC_6-STEP_LIB
GPIO EXT Callback - Start or Stop the motor through the Blue push button on STM32Nucleo. More...

Functions

void MC_EXT_button_SixStep ()

Detailed Description

GPIO EXT Callback - Start or Stop the motor through the Blue push button on STM32Nucleo.

Return values

None

Function Documentation

void MC_EXT_button_SixStep (void)
Definition at line 1577 of file 6Step_Lib.c.

References SIXSTEP_Base_InitTypeDef::Button_ready, Enable_start_button, FALSE, MC_StartMotor(), MC_StopMotor(), SIXSTEP_Base_InitTypeDef::RUN_Motor, and TRUE.

Referenced by HAL_GPIO_EXTI_Callback().

Macros
Main_Motor_parameters
MIDDLEWARES » MC_6-STEP_LIB
All motor parameters for 6Step driving. More...

Macros

#define NUM_POLE_PAIRS 2

#define DIRECTION 0

#define TARGET_SPEED 4000

#define POTENTIOMETER 1

#define STARTUP_DUTY_CYCLE 600

#define STARTUP_CURRENT_REFERENCE STARTUP_DUTY_CYCLE

#define ACC 1000000

#define MINIMUM_ACC 1000

#define NUMBER_OF_STEPS 20000

```
#define TIME_FOR_ALIGN 500

#define BUTTON_DELAY 1000

#define NUMBER_ZCR 12

#define SPEED_LOOP_TIME 1

#define KP_GAIN 500

#define KI_GAIN 50

#define KP_DIV 4096

#define KI_DIV 4096

#define LOWER_OUT_LIMIT 50

#define UPPER_OUT_LIMIT 800

#define MAX_POT_SPEED 20000

#define MIN_POT_SPEED 1700

#define VAL_POT_SPEED_DIV 2

#define INITIAL_DEMAGN_DELAY 10

#define BEMF_THRSLD_DOWN 200

#define BEMF_THRSLD_UP 200

#define FILTER_DEEP 20

#define HFBUFFERSIZE 10

#define ADC_SPEED_TH 82

#define BEMF_CONSEC_DOWN_MAX 10

#define BEMF_CNT_EVENT_MAX 100

#define GPIO_ZERO_CROSS 1

#define GPIO_COMM 1
```

#define DEMO_START_TIME 5000

#define DEMO_STOP_TIME 2000

#define DEMAGN_VAL_1 1

#define DEMAGN_VAL_2 2

#define DEMAGN_VAL_3 3

#define DEMAGN_VAL_4 4

#define DEMAGN_VAL_5 5

#define DEMAGN_VAL_6 6

#define DEMAGN_VAL_7 7

#define DEMAGN_VAL_8 8

#define DEMAGN_VAL_9 9

#define DEMAGN_VAL_10 10

#define DEMAGN_VAL_11 11

#define DEMAGN_VAL_12 12

#define DEMAGN_VAL_13 13

#define DEMAGN_VAL_14 14

#define TRUE 1

#define FALSE 0

Detailed Description

All motor parameters for 6Step driving.

Macro Definition Documentation

#define ACC 1000000

Mechanical acceleration rate (setting available in manual mode, LOAD_TYPE = 0)

Definition at line 73 of file MC_SixStep_param.h.

Referenced by MC_SixStep_Init_main_data().

#define ADC_SPEED_TH 82
Fixed treshold to change the target speed (t.b.f) Motor stall detection parameters

Definition at line 99 of file MC_SixStep_param.h.

Referenced by MC_Set_Speed().

#define BEMF_CNT_EVENT_MAX 100
Maximum number of BEMF Counter in open loop Debug pin

Definition at line 103 of file MC_SixStep_param.h.

Referenced by MC_SixStep_ARR_Bemf().

#define BEMF_CONSEC_DOWN_MAX 10
Maximum value of BEMF Consecutive Threshold Falling Crossings Counter in closed loop

Definition at line 102 of file MC_SixStep_param.h.

Referenced by MC_SixStep_NEXT_step().

#define BEMF_THRSLD_DOWN 200
Zero Crossing threshold

Definition at line 93 of file MC_SixStep_param.h.

Referenced by MC_SixStep_RESET().

#define BEMF_THRSLD_UP 200
Zero Crossing threshold Speed filtering parameters

Definition at line 94 of file MC_SixStep_param.h.

Referenced by MC_SixStep_RESET().

#define BUTTON_DELAY 1000
Delay time to enable push button for new command (1 = 1msec)

Definition at line 77 of file MC_SixStep_param.h.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

#define DEMAGN_VAL_1 1
Look UP table for dynamic demagn control for speed into (10000,12000] or [-12000,-10000) range

Definition at line 115 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_10 10
Look UP table for dynamic demagn control for speed into (1800, 2600] or [- 2600,- 1800) range

Definition at line 124 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_11 11
Look UP table for dynamic demagn control for speed into (1500, 1800] or [- 1800,- 1500) range

Definition at line 125 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_12 12
Look UP table for dynamic demagn control for speed into (1300, 1500] or [- 1500,- 1300) range

Definition at line 126 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_13 13
Look UP table for dynamic demagn control for speed into (1000, 1300] or [- 1300,- 1000) range

Definition at line 127 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_14 14
Look UP table for dynamic demagn control for speed into [500, 1000] or [- 1000,- 500] range

Definition at line 128 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_2 2
Look UP table for dynamic demagn control for speed into (7800,10000] or [-10000,- 7800) range

Definition at line 116 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_3 3
Look UP table for dynamic demagn control for speed into (6400, 7800] or [- 7800,- 6400) range

Definition at line 117 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_4 4
Look UP table for dynamic demagn control for speed into (5400, 6400] or [- 6400,- 5400) range

Definition at line 118 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_5 5
Look UP table for dynamic demagn control for speed into (4650, 5400] or [- 5400,- 4650) range

Definition at line 119 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_6 6
Look UP table for dynamic demagn control for speed into (4100, 4650] or [- 4650,- 4100) range

Definition at line 120 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_7 7
Look UP table for dynamic demagn control for speed into (3650, 4100] or [- 4100,- 3650) range

Definition at line 121 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_8 8
Look UP table for dynamic demagn control for speed into (3300, 3650] or [- 3650,- 3300) range

Definition at line 122 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMAGN_VAL_9 9
Look UP table for dynamic demagn control for speed into (2600, 3300] or [- 3300,- 2600) range

Definition at line 123 of file MC_SixStep_param.h.

Referenced by Bemf_delay_calc().

#define DEMO_START_TIME 5000
Time (msec) to keep the motor in run mode

Definition at line 111 of file MC_SixStep_param.h.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

#define DEMO_STOP_TIME 2000
Time (msec) to keep the motor in stop mode Look UP table for dynamic demagn control of speed

Definition at line 112 of file MC_SixStep_param.h.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

#define DIRECTION 0
Set motor direction CW = 0 and CCW = 1

Definition at line 60 of file MC_SixStep_param.h.

Referenced by MC_SixStep_Init_main_data().

#define FALSE 0
Define FALSE

Definition at line 131 of file MC_SixStep_param.h.

Referenced by MC_EXT_button_SixStep(), MC_Potentiometer_filter(), MC_Set_PI_param(), MC_SixStep_ARR_step(), MC_SixStep_INIT(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), MC_Speed_Filter(), and MC_SysTick_SixStep_MediumFrequencyTask().

#define FILTER_DEEP 20
Number of bits for digital filter

Definition at line 97 of file MC_SixStep_param.h.

Referenced by MC_Potentiometer_filter(), MC_SixStep_RESET(), and MC_Speed_Filter().

#define GPIO_COMM 1
Enable (1) the GPIO toggling for commutation Demo mode parameters

Definition at line 107 of file MC_SixStep_param.h.

Referenced by MC_SixStep_TABLE().

#define GPIO_ZERO_CROSS 1
Enable (1) the GPIO toggling for zero crossing detection

Definition at line 106 of file MC_SixStep_param.h.

Referenced by MC_SixStep_ARR_Bemf().

#define HFBUFFERSIZE 10
Definition at line 98 of file MC_SixStep_param.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_RESET(), and MC_SixStep_Speed_Potentiometer().

#define INITIAL_DEMAGN_DELAY 10
Initial value for delay time during startup for Bemf detection Zero Crossissing parameters

Definition at line 90 of file MC_SixStep_param.h.

Referenced by MC_SixStep_RESET().

#define KI_DIV 4096
Ki parameter divider for PI regulator

Definition at line 84 of file MC_SixStep_param.h.

Referenced by MC_PI_Controller().

#define KI_GAIN 50
Ki parameter for PI regulator

Definition at line 82 of file MC_SixStep_param.h.

Referenced by MC_SixStep_Init_main_data().

#define KP_DIV 4096
Kp parameter divider for PI regulator

Definition at line 83 of file MC_SixStep_param.h.

Referenced by MC_PI_Controller().

#define KP_GAIN 500
Kp parameter for PI regulator

Definition at line 81 of file MC_SixStep_param.h.

Referenced by MC_SixStep_Init_main_data().

#define LOWER_OUT_LIMIT 50
Low Out value of PI regulator

Definition at line 85 of file MC_SixStep_param.h.

Referenced by MC_Set_PI_param().

#define MAX_POT_SPEED 20000
Maximum Speed regulated by potentiometer

Definition at line 87 of file MC_SixStep_param.h.

Referenced by MC_Set_Speed(), MC_SixStep_RESET(), and MC_SixStep_Speed_Val_target_potentiometer().

#define MIN_POT_SPEED 1700
Minimum Speed regulated by potentiometer

Definition at line 88 of file MC_SixStep_param.h.

Referenced by MC_Set_Speed(), and MC_SixStep_Speed_Val_target_potentiometer().

#define MINIMUM_ACC 1000
Mechanical acceleration rate for BIG load application

Definition at line 74 of file MC_SixStep_param.h.

Referenced by MC_SixStep_ARR_step(), and MC_SysTick_SixStep_MediumFrequencyTask().

#define NUM_POLE_PAIRS 2
Number of Motor Pole pairs

Definition at line 59 of file MC_SixStep_param.h.

Referenced by MC_SixStep_Init_main_data().

#define NUMBER_OF_STEPS 20000
Number of elements for motor start-UP (max value 65535)

Definition at line 75 of file MC_SixStep_param.h.

Referenced by MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

#define NUMBER_ZCR 12
Number of zero crossing event during the startup for closed loop control begin ********** Closed Loop control

Definition at line 78 of file MC_SixStep_param.h.

Referenced by MC_SixStep_ARR_Bemf().

#define POTENTIOMETER 1
Enable (1)/Disable (0) the potentiometer

Definition at line 62 of file MC_SixStep_param.h.

Referenced by MC_SixStep_Init_main_data().

#define SPEED_LOOP_TIME 1
Speed Loop time (1 = 1msec)

Definition at line 80 of file MC_SixStep_param.h.

Referenced by MC_SixStep_RESET().

#define STARTUP_CURRENT_REFERENCE STARTUP_DUTY_CYCLE
Definition at line 72 of file MC_SixStep_param.h.

Referenced by MC_SixStep_Init_main_data(), and MC_SixStep_RESET().

#define STARTUP_DUTY_CYCLE 600
< ********** Open loop control StartUP Duty Cycle

Definition at line 71 of file MC_SixStep_param.h.

Referenced by STSPIN230_Current_Reference_Start(), and STSPIN230_Current_Reference_Stop().

#define TARGET_SPEED 4000
Target speed in closed loop control

Definition at line 61 of file MC_SixStep_param.h.

Referenced by MC_SixStep_RESET().

#define TIME_FOR_ALIGN 500
Time for alignment (msec)

Definition at line 76 of file MC_SixStep_param.h.

Referenced by MC_SixStep_Alignment().

#define TRUE 1
Define TRUE

Definition at line 130 of file MC_SixStep_param.h.

Referenced by MC_EXT_button_SixStep(), MC_Potentiometer_filter(), MC_SixStep_Alignment(), MC_SixStep_ARR_Bemf(), MC_SixStep_ARR_step(), MC_SixStep_INIT(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), MC_Speed_Filter(), MC_StartMotor(), MC_SysTick_SixStep_MediumFrequencyTask(), and MC_Task_Speed().

#define UPPER_OUT_LIMIT 800
High Out value of PI regulator

Definition at line 86 of file MC_SixStep_param.h.

Referenced by MC_Set_PI_param().

#define VAL_POT_SPEED_DIV 2
Validation potentiometer speed divider

Definition at line 89 of file MC_SixStep_param.h.

Referenced by MC_SixStep_Speed_Val_target_potentiometer().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Modules
stm32F401_nucleo_ihm11m1
MIDDLEWARES » MC_6-STEP_LIB
Interface file for STM32F401 and Motor Control Library configuration. More...

Modules

MC_SixStep_ADC_Channel
Select the new ADC Channel.

MC_SixStep_Nucleo_Init
Init the STM32 register.

START_DAC
Start DAC for debug.

STOP_DAC
Stop DAC for debug.

SET_DAC_value
Set DAC value for debug.

HAL_ADC_ConvCpltCallback
ADC callback.

HAL_TIM_PeriodElapsedCallback
htim callback

HAL_SYSTICK_Callback
Systick callback.

HAL_GPIO_EXTI_Callback
EXT callback.

EnableInput_CH1_E_CH2_E_CH3_D
Enable Input channel CH1 and CH2 for STSPIN230.

EnableInput_CH1_E_CH2_D_CH3_E
Enable Input channel CH1 and CH3 for STSPIN230.

EnableInput_CH1_D_CH2_E_CH3_E
Enable Input channel CH2 and CH3 for STSPIN230.

DisableInput_CH1_D_CH2_D_CH3_D
Enable Input channel CH2 and CH3 for STSPIN230.

Start_PWM_driving
Enable PWM channels for STSPIN230.

Stop_PWM_driving

Disable PWM channels for STSPIN230.

HF_TIMx_SetDutyCycle_CH1
Set the Duty Cycle value for CH1.

HF_TIMx_SetDutyCycle_CH2
Set the Duty Cycle value for CH2.

HF_TIMx_SetDutyCycle_CH3
Set the Duty Cycle value for CH3.

Current_Reference_Start
Enable the Current Reference generation.

Current_Reference_Stop
Disable the Current Reference generation.

Current_Reference_Setvalue
Set the value for Current Reference.

Bemf_delay_calc
Bemf delay calculation.

Get_UART_data
Get the UART value from DR register.

Exported_function_F401

Detailed Description

Interface file for STM32F401 and Motor Control Library configuration.

Interface file for STM32F401 and Library configuration.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_SixStep_ADC_Channel
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
Select the new ADC Channel. More...

Functions

void MC_SixStep_ADC_Channel (uint32_t adc_ch)
Select the new ADC Channel. More...

Detailed Description

Select the new ADC Channel.

Function Documentation

void MC_SixStep_ADC_Channel (uint32_t *adc_ch*)
Select the new ADC Channel.

API function for STM32 instruction.

Parameters
adc_ch

Return values
None

Definition at line 74 of file stm32F401_nucleo_ihm11m1.c.

References ADCx.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_NEXT_step().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
MC_SixStep_Nucleo_Init
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
Init the STM32 register. More...

Functions

void MC_SixStep_Nucleo_Init ()
Init the STM32 register. More...

Detailed Description

Init the STM32 register.

Function Documentation

void MC_SixStep_Nucleo_Init (void)
Init the STM32 register.

Return values
None

Definition at line 95 of file stm32F401_nucleo_ihm11m1.c.

References ADC_Bemf_CH1, ADC_Bemf_CH1_ST, ADC_Bemf_CH2, ADC_Bemf_CH2_ST, ADC_Bemf_CH3, ADC_Bemf_CH3_ST, ADC_CH_1, ADC_CH_1_ST, ADC_CH_2, ADC_CH_2_ST, ADC_CH_3, ADC_CH_3_ST, ADC_CH_4, ADC_CH_4_ST, hadc1, HF_TIMx, HF_TIMx_CH1, HF_TIMx_CH2, HF_TIMx_CH3, and htim1.

Referenced by MC_SixStep_INIT().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
START_DAC
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
Start DAC for debug. More...

Functions

void START_DAC ()
Start DAC for debug. More...

Detailed Description

Start DAC for debug.

Function Documentation

void START_DAC (void)
Start DAC for debug.

Return values
None

Definition at line 154 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_StartMotor().

Functions
STOP_DAC
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
Stop DAC for debug. More...

Functions

void STOP_DAC ()
Stop DAC for debug. More...

Detailed Description

Stop DAC for debug.

Function Documentation

void STOP_DAC (void)
Stop DAC for debug.

Return values
None

Definition at line 169 of file stm32F401_nucleo_ihm11m1.c.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
SET_DAC_value
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
Set DAC value for debug. More...

Functions

void SET_DAC_value (uint16_t dac_value)
Set DAC value for debug. More...

Detailed Description

Set DAC value for debug.

Function Documentation

void SET_DAC_value (uint16_t *dac_value*)
Set DAC value for debug.

Parameters
dac_value information to plot through DAC

Return values
None

Definition at line 185 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_Task_Speed().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
HAL_ADC_ConvCpltCallback
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
ADC callback. More...

Functions

void HAL_ADC_ConvCpltCallback (ADC_HandleTypeDef *hadc)
ADC callback. More...

Detailed Description

ADC callback.

Function Documentation

void HAL_ADC_ConvCpltCallback (ADC_HandleTypeDef * *hadc*)
ADC callback.

Parameters
hadc

Return values
None

Definition at line 204 of file stm32F401_nucleo_ihm11m1.c.

References MC_ADCx_SixStep_Bemf().

Generated by 

1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
HAL_TIM_PeriodElapsedCallback
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
htim callback More...

Functions

void HAL_TIM_PeriodElapsedCallback (TIM_HandleTypeDef *htim)
htim callback More...

Detailed Description

htim callback

Function Documentation

void HAL_TIM_PeriodElapsedCallback (TIM_HandleTypeDef * *htim*)
htim callback

Parameters
htim

Return values
None

Definition at line 221 of file stm32F401_nucleo_ihm11m1.c.

References MC_TIMx_SixStep_timebase().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
HAL_SYSTICK_Callback
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
Systick callback. More...

Functions

void HAL_SYSTICK_Callback ()
Systick callback. More...

Detailed Description

Systick callback.

Function Documentation

void HAL_SYSTICK_Callback ( )
Systick callback.

Return values
None

Definition at line 238 of file stm32F401_nucleo_ihm11m1.c.

References MC_SysTick_SixStep_MediumFrequencyTask().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
HAL_GPIO_EXTI_Callback
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
EXT callback. More...

Functions

void HAL_GPIO_EXTI_Callback (uint16_t GPIO_Pin)
EXT callback. More...

Detailed Description

EXT callback.

Function Documentation

void HAL_GPIO_EXTI_Callback (uint16_t *GPIO_Pin*)
EXT callback.

Parameters
GPIO_Pin

Return values
None

Definition at line 256 of file stm32F401_nucleo_ihm11m1.c.

References MC_EXT_button_SixStep().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
EnableInput_CH1_E_CH2_E_CH3_D
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Enable Input channel CH1 and CH2 for STSPIN230. More...

Functions

void EnableInput_CH1_E_CH2_E_CH3_D ()

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D ()
Enable Input channel CH1 and CH2 for STSPIN230. More...

Detailed Description

Enable Input channel CH1 and CH2 for STSPIN230.

Enable Input channel for STSPIN230.

Return values
None

Function Documentation

void EnableInput_CH1_E_CH2_E_CH3_D (void)
Definition at line 96 of file STSPIN230.c.

References STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D().

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D (void)
Enable Input channel CH1 and CH2 for STSPIN230.

Return values
None

Definition at line 273 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_E_CH2_E_CH3_D.

Referenced by MC_SixStep_TABLE().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
EnableInput_CH1_E_CH2_D_CH3_E
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Enable Input channel CH1 and CH3 for STSPIN230. More...

Functions

void EnableInput_CH1_E_CH2_D_CH3_E ()

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E ()
Enable Input channel CH1 and CH3 for STSPIN230. More...

Detailed Description

Enable Input channel CH1 and CH3 for STSPIN230.

Enable Input channel for STSPIN230.

Return values
None

Function Documentation

void EnableInput_CH1_E_CH2_D_CH3_E (void)
Definition at line 112 of file STSPIN230.c.

References STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E().

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E (void)
Enable Input channel CH1 and CH3 for STSPIN230.

Return values
None

Definition at line 291 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_E_CH2_D_CH3_E.

Referenced by MC_SixStep_TABLE().

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
EnableInput_CH1_D_CH2_E_CH3_E
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Enable Input channel CH2 and CH3 for STSPIN230. More...

Functions

void EnableInput_CH1_D_CH2_E_CH3_E ()

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E ()
Enable Input channel CH2 and CH3 for STSPIN230. More...

Detailed Description

Enable Input channel CH2 and CH3 for STSPIN230.

Enable Input channel for STSPIN230.

Return values
None

Function Documentation

void EnableInput_CH1_D_CH2_E_CH3_E (void)
Definition at line 127 of file STSPIN230.c.

References STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E().

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E (void)
Enable Input channel CH2 and CH3 for STSPIN230.

Return values
None

Definition at line 309 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_D_CH2_E_CH3_E.

Referenced by MC_SixStep_TABLE().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
DisableInput_CH1_D_CH2_D_CH3_D
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
Enable Input channel CH2 and CH3 for STSPIN230. More...

Functions

void DisableInput_CH1_D_CH2_D_CH3_D ()

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D ()

Enable Input channel CH2 and CH3 for STSPIN230. More...

Detailed Description

Enable Input channel CH2 and CH3 for STSPIN230.

Disable All Input channels for STSPIN230.

Return values
None

Function Documentation

void DisableInput_CH1_D_CH2_D_CH3_D (void)
Definition at line 143 of file STSPIN230.c.

References STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D().

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D (void)
Enable Input channel CH2 and CH3 for STSPIN230.

Return values
None

Definition at line 327 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::DisableInput_CH1_D_CH2_D_CH3_D.

Referenced by MC_StopMotor().

Functions

void Start_PWM_driving ()

void MC_SixStep_Start_PWM_driving ()
Enable PWM channels for STSPIN230. More...

Detailed Description

Enable PWM channels for STSPIN230.

Enable the PWM generation on Input channels.

Return values
None

Function Documentation

void MC_SixStep_Start_PWM_driving (void)
Enable PWM channels for STSPIN230.

Return values
None

Definition at line 345 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Start_PWM_driving.

Referenced by MC_SixStep_NEXT_step().

void Start_PWM_driving (void)
Definition at line 158 of file STSPIN230.c.

References STSPIN230_Start_PWM_driving().

Referenced by STSPIN230_Current_Reference_Start().

Stop_PWM_driving
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Disable PWM channels for STSPIN230. More...

Functions

void Stop_PWM_driving ()

void MC_SixStep_Stop_PWM_driving ()
Disable PWM channels for STSPIN230. More...

Detailed Description

Disable PWM channels for STSPIN230.

Disable the PWM generation on Input channels.

Return values
None

Function Documentation

void MC_SixStep_Stop_PWM_driving (void)
Disable PWM channels for STSPIN230.

Return values
None

Definition at line 363 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Stop_PWM_driving.

Referenced by MC_StopMotor().

void Stop_PWM_driving (void)
Definition at line 173 of file STSPIN230.c.

References STSPIN230_Stop_PWM_driving().

Referenced by STSPIN230_Current_Reference_Stop().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
HF_TIMx_SetDutyCycle_CH1
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Set the Duty Cycle value for CH1. More...

Functions

void HF_TIMx_SetDutyCycle_CH1 (uint16_t CCR_value)

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t CCR_value)
Set the Duty Cycle value for CH1. More...

Detailed Description

Set the Duty Cycle value for CH1.

Return values
None

Function Documentation

void HF_TIMx_SetDutyCycle_CH1 (uint16_t *CCR_value*)
Definition at line 188 of file STSPIN230.c.

References STSPIN230_HF_TIMx_SetDutyCycle_CH1().

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH1.

Return values
None

Definition at line 381 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH1.

Referenced by MC_SixStep_RESET(), and MC_SixStep_TABLE().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
HF_TIMx_SetDutyCycle_CH2
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Set the Duty Cycle value for CH2. More...

Functions

void HF_TIMx_SetDutyCycle_CH2 (uint16_t CCR_value)

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t CCR_value)
Set the Duty Cycle value for CH2. More...

Detailed Description

Set the Duty Cycle value for CH2.

Return values
None

Function Documentation

void HF_TIMx_SetDutyCycle_CH2 (uint16_t *CCR_value*)
Definition at line 204 of file STSPIN230.c.

References STSPIN230_HF_TIMx_SetDutyCycle_CH2().

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH2.

Return values
None

Definition at line 400 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH2.

Referenced by MC_SixStep_RESET(), and MC_SixStep_TABLE().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
HF_TIMx_SetDutyCycle_CH3
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I stm32F401_nucleo_ihm11m1
Set the Duty Cycle value for CH3. More...

Functions

void HF_TIMx_SetDutyCycle_CH3 (uint16_t CCR_value)

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t CCR_value)
Set the Duty Cycle value for CH3. More...

Detailed Description

Set the Duty Cycle value for CH3.

Return values
None

Function Documentation

void HF_TIMx_SetDutyCycle_CH3 (uint16_t *CCR_value*)
Definition at line 219 of file STSPIN230.c.

References STSPIN230_HF_TIMx_SetDutyCycle_CH3().

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH3.

Return values
None

Definition at line 423 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH3.

Referenced by MC_SixStep_RESET(), and MC_SixStep_TABLE().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Current_Reference_Start
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Enable the Current Reference generation. More...

Functions

void Current_Reference_Start ()

void MC_SixStep_Current_Reference_Start ()
Enable the Current Reference generation. More...

Detailed Description

Enable the Current Reference generation.

Return values
None

Function Documentation

void Current_Reference_Start (void)
Definition at line 237 of file STSPIN230.c.

References STSPIN230_Current_Reference_Start().

void MC_SixStep_Current_Reference_Start (void)
Enable the Current Reference generation.

Return values
None

Definition at line 441 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Current_Reference_Start.

Referenced by MC_SixStep_RESET().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Current_Reference_Stop
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Disable the Current Reference generation. More...

Functions

void Current_Reference_Stop ()

void MC_SixStep_Current_Reference_Stop ()
Disable the Current Reference generation. More...

Detailed Description

Disable the Current Reference generation.

Return values
None

Function Documentation

void Current_Reference_Stop (void)
Definition at line 253 of file STSPIN230.c.

References STSPIN230_Current_Reference_Stop().

void MC_SixStep_Current_Reference_Stop (void)
Disable the Current Reference generation.

Return values
None

Definition at line 460 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Current_Reference_Stop.

Referenced by MC_StopMotor().

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Current_Reference_Setvalue
DRIVERS » BSP » COMPONENTS » STSPIN230MIDDLEWARES » MC_6-STEP_LIB » I
stm32F401_nucleo_ihm11m1
Set the value for Current Reference. More...

Functions

void Current_Reference_Setvalue (uint16_t Iref)

void MC_SixStep_Current_Reference_Setvalue (uint16_t Iref)
Set the value for Current Reference. More...

Detailed Description

Set the value for Current Reference.

Return values
None

Function Documentation

void Current_Reference_Setvalue (uint16_t *Iref*)
Definition at line 269 of file STSPIN230.c.

References STSPIN230_Current_Reference_Setvalue().

void MC_SixStep_Current_Reference_Setvalue (uint16_t *Iref*)
Set the value for Current Reference.

Return values
None

Definition at line 480 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Current_Reference_Setvalue.

Referenced by MC_SixStep_INIT(), MC_SixStep_Ramp_Motor_calc(), MC_SixStep_RESET(), and MC_Task_Speed().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Bemf_delay_calc
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
Bemf delay calculation. More...

Functions

void Bemf_delay_calc ()
Bemf delay calculation. More...

Detailed Description

Bemf delay calculation.

Function Documentation

void Bemf_delay_calc (void)
Bemf delay calculation.

Return values
None

Definition at line 498 of file stm32F401_nucleo_ihm11m1.c.

References DEMAGN_VAL_1, DEMAGN_VAL_10, DEMAGN_VAL_11, DEMAGN_VAL_12, DEMAGN_VAL_13, DEMAGN_VAL_14, DEMAGN_VAL_2, DEMAGN_VAL_3, DEMAGN_VAL_4, DEMAGN_VAL_5, DEMAGN_VAL_6, DEMAGN_VAL_7, DEMAGN_VAL_8, DEMAGN_VAL_9, SIXSTEP_Base_InitTypeDef::demagn_value, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, and SIXSTEP_Base_InitTypeDef::speed_fdbk_filtered.

Referenced by MC_Bemf_Delay().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Get_UART_data
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1
Get the UART value from DR register. More...

Functions

uint32_t Get_UART_Data ()
Get the UART value from DR register. More...

Detailed Description

Get the UART value from DR register.

Function Documentation

uint32_t Get_UART_Data (void)
Get the UART value from DR register.

Return values
uint32_t

Definition at line 629 of file stm32F401_nucleo_ihm11m1.c.

References UART.

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"current">Modules
- Data&"temp0539.html">Files

Functions
Exported_function_F401
MIDDLEWARES » MC_6-STEP_LIB » stm32F401_nucleo_ihm11m1

Functions

void MC_SixStep_ADC_Channel (uint32_t)
API function for STM32 instruction. More...

void MC_SixStep_Nucleo_Init (void)

Init the STM32 register. More...

void START_Ref_Generation (void)

void STOP_Ref_Generation (void)

void Set_Ref_Generation (uint16_t)

void START_DAC (void)
Start DAC for debug. More...

void STOP_DAC (void)
Stop DAC for debug. More...

void SET_DAC_value (uint16_t)
Set DAC value for debug. More...

void Bemf_delay_calc (void)
Bemf delay calculation. More...

uint32_t Get_UART_Data (void)
Get the UART value from DR register. More...

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D (void)
Enable Input channel CH1 and CH2 for STSPIN230. More...

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E (void)
Enable Input channel CH1 and CH3 for STSPIN230. More...

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E (void)
Enable Input channel CH2 and CH3 for STSPIN230. More...

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D (void)
Enable Input channel CH2 and CH3 for STSPIN230. More...

void MC_SixStep_Start_PWM_driving (void)
Enable PWM channels for STSPIN230. More...

void MC_SixStep_Stop_PWM_driving (void)
Disable PWM channels for STSPIN230. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t)
Set the Duty Cycle value for CH1. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t)

Set the Duty Cycle value for CH2. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t)
Set the Duty Cycle value for CH3. More...

void MC_SixStep_Current_Reference_Start (void)
Enable the Current Reference generation. More...

void MC_SixStep_Current_Reference_Stop (void)
Disable the Current Reference generation. More...

void MC_SixStep_Current_Reference_Setvalue (uint16_t)
Set the value for Current Reference. More...

void BSP_X_NUCLEO_FAULT_LED_ON (void)

void BSP_X_NUCLEO_FAULT_LED_OFF (void)

Detailed Description

Function Documentation

void Bemf_delay_calc (void)
Bemf delay calculation.

Return values
None

Definition at line 498 of file stm32F401_nucleo_ihm11m1.c.

References DEMAGN_VAL_1, DEMAGN_VAL_10, DEMAGN_VAL_11, DEMAGN_VAL_12, DEMAGN_VAL_13, DEMAGN_VAL_14, DEMAGN_VAL_2, DEMAGN_VAL_3, DEMAGN_VAL_4, DEMAGN_VAL_5, DEMAGN_VAL_6, DEMAGN_VAL_7, DEMAGN_VAL_8, DEMAGN_VAL_9, SIXSTEP_Base_InitTypeDef::demagn_value, SIXSTEP_PI_PARAM_InitTypeDef_t::Reference, and SIXSTEP_Base_InitTypeDef::speed_fdbk_filtered.

Referenced by MC_Bemf_Delay().

void BSP_X_NUCLEO_FAULT_LED_OFF (void)
Definition at line 364 of file X-NUCLEO-IHM11M1.c.

Referenced by MC_StopMotor().

void BSP_X_NUCLEO_FAULT_LED_ON (void)
Definition at line 351 of file X-NUCLEO-IHM11M1.c.

Referenced by MC_StartMotor().

uint32_t Get_UART_Data (void)
Get the UART value from DR register.

Return values
uint32_t

Definition at line 629 of file stm32F401_nucleo_ihm11m1.c.

References UART.

void MC_SixStep_ADC_Channel (uint32_t *adc_ch*)
API function for STM32 instruction.

API function for STM32 instruction.

Parameters
adc_ch

Return values
None

Definition at line 74 of file stm32F401_nucleo_ihm11m1.c.

References ADCx.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_NEXT_step().

void MC_SixStep_Current_Reference_Setvalue (uint16_t *Iref*)
Set the value for Current Reference.

Return values
None

Definition at line 480 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Current_Reference_Setvalue.

void MC_SixStep_Current_Reference_Start (void)
Enable the Current Reference generation.

Return values
None

Definition at line 441 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Current_Reference_Start.

void MC_SixStep_Current_Reference_Stop (void)
Disable the Current Reference generation.

Return values
None

Definition at line 460 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Current_Reference_Stop.

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D (void)
Enable Input channel CH2 and CH3 for STSPIN230.

Return values
None

Definition at line 327 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::DisableInput_CH1_D_CH2_D_CH3_D.

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E (void)
Enable Input channel CH2 and CH3 for STSPIN230.

Return values
None

Definition at line 309 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_D_CH2_E_CH3_E.

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E (void)
Enable Input channel CH1 and CH3 for STSPIN230.

Return values
None

Definition at line 291 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_E_CH2_D_CH3_E.

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D (void)
Enable Input channel CH1 and CH2 for STSPIN230.

Return values
None

Definition at line 273 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_E_CH2_E_CH3_D.

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH1.

Return values
None

Definition at line 381 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH1.

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH2.

Return values
None

Definition at line 400 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH2.

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t *CCR_value*)
Set the Duty Cycle value for CH3.

Return values
None

Definition at line 423 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH3.

void MC_SixStep_Nucleo_Init (void)
Init the STM32 register.

Return values
None

Definition at line 95 of file stm32F401_nucleo_ihm11m1.c.

References ADC_Bemf_CH1, ADC_Bemf_CH1_ST, ADC_Bemf_CH2, ADC_Bemf_CH2_ST, ADC_Bemf_CH3, ADC_Bemf_CH3_ST, ADC_CH_1, ADC_CH_1_ST, ADC_CH_2, ADC_CH_2_ST, ADC_CH_3, ADC_CH_3_ST, ADC_CH_4, ADC_CH_4_ST, hadc1, HF_TIMx, HF_TIMx_CH1, HF_TIMx_CH2, HF_TIMx_CH3, and htim1.

Referenced by MC_SixStep_INIT().

void MC_SixStep_Start_PWM_driving (void)
Enable PWM channels for STSPIN230.

Return values
None

Definition at line 345 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Start_PWM_driving.

void MC_SixStep_Stop_PWM_driving (void)
Disable PWM channels for STSPIN230.

Return values
None

Definition at line 363 of file stm32F401_nucleo_ihm11m1.c.

References STSPIN230_MotorDriver_TypeDef::Stop_PWM_driving.

void SET_DAC_value (uint16_t *dac_value*)
Set DAC value for debug.

Parameters
dac_value information to plot through DAC

Return values
None

Definition at line 185 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_Task_Speed().

void Set_Ref_Generation (uint16_t)
void START_DAC (void)
Start DAC for debug.

Return values
None

Definition at line 154 of file stm32F401_nucleo_ihm11m1.c.

Referenced by MC_StartMotor().

void START_Ref_Generation (void)
void STOP_DAC (void)
Stop DAC for debug.

Return values
None

Definition at line 169 of file stm32F401_nucleo_ihm11m1.c.

void STOP_Ref_Generation (void)

Modules
UART_UI
MIDDLEWARES
Serial communication through PC serial terminal. More...

Modules

Exported_function_Uart

Detailed Description

Serial communication through PC serial terminal.

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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- Data&"temp0539.html">Files

Functions
Exported_function_Uart
MIDDLEWARES » UART_UI

Functions

void CMD_STARTM (void)
UART function. More...

void CMD_STOPMT (void)

void CMD_DIRECTION (void)

void CMD_SETSPD (void)

void CMD_GETSPD (void)

void CMD_STATUS (void)

void CMD_POTENZ (void)

void CMD_HELP (void)

void CMD_INIREF (void)

void CMD_POLESP (void)

void CMD_ACCELE (void)

void CMD_KP_PRM (void)

void CMD_KI_PRM (void)

Detailed Description

Function Documentation

void CMD_ACCELE (void)
void CMD_DIRECTION (void)
void CMD_GETSPD (void)
void CMD_HELP (void)
void CMD_INIREF (void)
void CMD_KI_PRM (void)
void CMD_KP_PRM (void)
void CMD_POLESP (void)
void CMD_POTENZ (void)
void CMD_SETSPD (void)
void CMD_STARTM (void)
UART function.

void CMD_STATUS (void)
void CMD_STOPMT (void)

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
- Data&"temp0539.html">Files

- Data&"temp0535.html">Data Structure Index
- Data&"header">
  Data Structures

Here are the data structures with brief descriptions:
CCMD_T

CSIXSTEP_Base_InitTypeDef	Six Step parameters
CSIXSTEP_PI_PARAM_InitTypeDef_t	Six PI regulator parameters
CSTSPIN230_MotorDriver_TypeDef	

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
- Data&"temp0539.html">Files

- Data&"temp0535.html">Data Structure Index
- Data&"header">
  Data Structures

Here are the data structures with brief descriptions:

CCMD_T	
CSIXSTEP_Base_InitTypeDef	Six Step parameters
CSIXSTEP_PI_PARAM_InitTypeDef_t	Six PI regulator parameters
CSTSPIN230_MotorDriver_TypeDef	

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
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- Data&"temp0535.html">Data Structure Index
- Data&"header">
  Data Fields
  CMD_T Struct Reference

```
#include <UART_UI.h>
```

Data Fields

char name [10]

void(* pCmdFunc)(void)

Detailed Description

Definition at line 50 of file UART_UI.h.

Field Documentation

char CMD_T::name[10]
Definition at line 51 of file UART_UI.h.

void(* CMD_T::pCmdFunc) (void)
Definition at line 52 of file UART_UI.h.

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

- UART_UI.h

Six Step parameters. More...

```
#include <6Step_Lib.h>
```

Data Fields

uint32_t LF_TIMx_PSC

uint32_t LF_TIMx_ARR

uint32_t HF_TIMx_PSC

uint32_t HF_TIMx_ARR

uint32_t HF_TIMx_CCR

uint8_t step_position

SIXSTEP_Base_SystStatus_t STATUS

uint8_t status_prev

uint16_t pulse_value

uint16_t ARR_value

uint32_t Regular_channel [4]

uint32_t CurrentRegular_BEMF_ch

uint32_t prescaler_value

uint16_t numberofitemArr

uint32_t ADC_BUFFER [4]

uint32_t ADC_SEQ_CHANNEL [4]

uint32_t ADC_Regular_Buffer [5]

uint16_t ADC_BEMF_threshold_UP

uint16_t ADC_BEMF_threshold_DOWN

uint16_t demagn_counter

uint16_t demagn_value

int16_t speed_fdbk

int16_t speed_fdbk_filtered

int16_t filter_depth

uint16_t Current_Reference

uint16_t Ireference

int32_t Integral_Term_sum

uint8_t CMD

uint8_t ALIGN_OK

uint8_t ALIGNMENT

uint8_t bemf_state_1

uint8_t bemf_state_2

uint8_t bemf_state_3

uint8_t bemf_state_4

uint8_t bemf_state_5

uint8_t bemf_state_6

uint16_t Speed_Loop_Time

uint16_t Speed_Ref_filtered

uint16_t RUN_Motor

uint8_t ARR_OK

uint8_t VALIDATION_OK

uint8_t SPEED_VALIDATED

uint16_t Speed_target_ramp

uint16_t Speed_target_time

uint16_t Ramp_Start

uint16_t Bemf_delay_start

uint16_t MediumFrequencyTask_flag

uint32_t SYSCLK_frequency

uint32_t Uart_cmd_to_set

uint32_t Uart_value_to_set

uint8_t Button_ready

uint8_t BEMF_OK

uint8_t CL_READY

uint8_t BEMF_Tdown_count

uint16_t IREFERENCE

uint16_t NUMPOLESPAIRS

uint32_t ACCEL

uint16_t KP

uint16_t KI

uint8_t CW_CCW

uint8_t Potentiometer

Detailed Description

Six Step parameters.

Definition at line 94 of file 6Step_Lib.h.

Field Documentation

uint32_t SIXSTEP_Base_InitTypeDef::ACCEL
Acceleration start-up parameter

Definition at line 152 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_step(), MC_SixStep_Init_main_data(), MC_SixStep_Ramp_Motor_calc(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint16_t SIXSTEP_Base_InitTypeDef::ADC_BEMF_threshold_DOWN
Voltage threshold for BEMF detection in down direction

Definition at line 114 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::ADC_BEMF_threshold_UP
Voltage threshold for BEMF detection in up direction

Definition at line 113 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::ADC_BUFFER[4]
Buffer for ADC regular channel

Definition at line 110 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf().

uint32_t SIXSTEP_Base_InitTypeDef::ADC_Regular_Buffer[5]
Buffer for ADC regular channel

Definition at line 112 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_Speed_Val_target_potentiometer().

uint32_t SIXSTEP_Base_InitTypeDef::ADC_SEQ_CHANNEL[4]
Buffer for ADC regular channel

Definition at line 111 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), and MC_SixStep_RESET().

uint8_t SIXSTEP_Base_InitTypeDef::ALIGN_OK
Flag control for Motor Alignment

Definition at line 124 of file 6Step_Lib.h.

Referenced by MC_SixStep_Alignment(), MC_SixStep_ARR_step(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint8_t SIXSTEP_Base_InitTypeDef::ALIGNMENT
Flag control for Motor Alignment ongoing

Definition at line 125 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_step(), MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint8_t SIXSTEP_Base_InitTypeDef::ARR_OK
ARR flag control for Accell status

Definition at line 135 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_step(), MC_SixStep_RESET(), and MC_TIMx_SixStep_timebase().

uint16_t SIXSTEP_Base_InitTypeDef::ARR_value
ARR vector for Accell compute

Definition at line 105 of file 6Step_Lib.h.

Referenced by MC_SixStep_Alignment(), MC_SixStep_ARR_step(), and MC_SixStep_Ramp_Motor_calc().

uint16_t SIXSTEP_Base_InitTypeDef::Bemf_delay_start
Bemf variable

Definition at line 141 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::BEMF_OK
Definition at line 147 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_RESET(), and MC_Task_Speed().

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_1
Bemf variable

Definition at line 126 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_2
Bemf variable

Definition at line 127 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_3
Bemf variable

Definition at line 128 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_4
Bemf variable

Definition at line 129 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_5
Bemf variable

Definition at line 130 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::bemf_state_6
Bemf variable

Definition at line 131 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::BEMF_Tdown_count
BEMF Consecutive Threshold Falling Crossings Counter

Definition at line 149 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint8_t SIXSTEP_Base_InitTypeDef::Button_ready
Definition at line 146 of file 6Step_Lib.h.

Referenced by MC_EXT_button_SixStep(), and MC_SixStep_INIT().

uint8_t SIXSTEP_Base_InitTypeDef::CL_READY
Definition at line 148 of file 6Step_Lib.h.

Referenced by MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_Task_Speed().

uint8_t SIXSTEP_Base_InitTypeDef::CMD
Flag control for Motor Start/Stop

Definition at line 123 of file 6Step_Lib.h.

Referenced by MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::Current_Reference
Currrent reference for SixStep algorithm

Definition at line 120 of file 6Step_Lib.h.

Referenced by MC_SixStep_RESET(), and MC_Task_Speed().

uint32_t SIXSTEP_Base_InitTypeDef::CurrentRegular_BEMF_ch
ADC regular channel to select

Definition at line 107 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_SixStep_TABLE().

uint8_t SIXSTEP_Base_InitTypeDef::CW_CCW
Set the motor direction

Definition at line 155 of file 6Step_Lib.h.

Referenced by MC_Set_PI_param(), MC_Set_Speed(), and MC_SixStep_Init_main_data().

uint16_t SIXSTEP_Base_InitTypeDef::demagn_counter
Demagnetization counter

Definition at line 115 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::demagn_value
Demagnetization value

Definition at line 116 of file 6Step_Lib.h.

Referenced by Bemf_delay_calc(), MC_ADCx_SixStep_Bemf(), and MC_SixStep_RESET().

int16_t SIXSTEP_Base_InitTypeDef::filter_depth
Filter depth for speed measuring

Definition at line 119 of file 6Step_Lib.h.

uint32_t SIXSTEP_Base_InitTypeDef::HF_TIMx_ARR
ARR variable for high frequency timer

Definition at line 99 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::HF_TIMx_CCR
CCR variable for high frequency timer

Definition at line 100 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::HF_TIMx_PSC
Prescaler variable for high frequency timer

Definition at line 98 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), and MC_SixStep_RESET().

int32_t SIXSTEP_Base_InitTypeDef::Integral_Term_sum
Global Integral part for PI

Definition at line 122 of file 6Step_Lib.h.

Referenced by MC_PI_Controller(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::Ireference
Currrent reference for SixStep algorithm

Definition at line 121 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), MC_SixStep_Init_main_data(), MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::IREFERENCE
Currrent reference

Definition at line 150 of file 6Step_Lib.h.

uint16_t SIXSTEP_Base_InitTypeDef::KI
KI parameter for PI regulator

Definition at line 154 of file 6Step_Lib.h.

Referenced by MC_Set_PI_param(), and MC_SixStep_Init_main_data().

uint16_t SIXSTEP_Base_InitTypeDef::KP
KP parameter for PI regulator

Definition at line 153 of file 6Step_Lib.h.

Referenced by MC_Set_PI_param(), and MC_SixStep_Init_main_data().

uint32_t SIXSTEP_Base_InitTypeDef::LF_TIMx_ARR
ARR variable for low frequency timer

Definition at line 97 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::LF_TIMx_PSC
Prescaler variable for low frequency timer

Definition at line 96 of file 6Step_Lib.h.

Referenced by MC_SixStep_INIT(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::MediumFrequencyTask_flag
Flag for Medium Task Frequency

Definition at line 142 of file 6Step_Lib.h.

Referenced by MC_SysTick_SixStep_MediumFrequencyTask().

uint16_t SIXSTEP_Base_InitTypeDef::numberofitemArr
Number of elements

Definition at line 109 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_step(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::NUMPOLESPAIRS
Number of motor pole pairs

Definition at line 151 of file 6Step_Lib.h.

Referenced by MC_SixStep_Init_main_data(), and MC_SixStep_RESET().

uint8_t SIXSTEP_Base_InitTypeDef::Potentiometer
Enable/Disable potentiometer for speed control

Definition at line 156 of file 6Step_Lib.h.

Referenced by MC_SixStep_Init_main_data(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint32_t SIXSTEP_Base_InitTypeDef::prescaler_value
Prescaler value for low freq timer

Definition at line 108 of file 6Step_Lib.h.

Referenced by MC_SixStep_Alignment(), and MC_SixStep_Ramp_Motor_calc().

uint16_t SIXSTEP_Base_InitTypeDef::pulse_value
CCR value for SixStep algorithm

Definition at line 104 of file 6Step_Lib.h.

Referenced by MC_SixStep_RESET(), MC_SixStep_TABLE(), STSPIN230_Current_Reference_Setvalue(), STSPIN230_Current_Reference_Start(), and STSPIN230_Current_Reference_Stop().

uint16_t SIXSTEP_Base_InitTypeDef::Ramp_Start
Ramp time start

Definition at line 140 of file 6Step_Lib.h.

Referenced by MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::Regular_channel[4]
Buffer for ADC regular channel

Definition at line 106 of file 6Step_Lib.h.

Referenced by MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_SixStep_TABLE().

uint16_t SIXSTEP_Base_InitTypeDef::RUN_Motor
Flag for Motor status

Definition at line 134 of file 6Step_Lib.h.

Referenced by MC_EXT_button_SixStep(), MC_SixStep_RESET(), MC_StartMotor(), and MC_StopMotor().

int16_t SIXSTEP_Base_InitTypeDef::speed_fdbk
Motor speed variable

Definition at line 117 of file 6Step_Lib.h.

Referenced by MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_Speed_Filter().

int16_t SIXSTEP_Base_InitTypeDef::speed_fdbk_filtered
Filtered Motor speed variable

Definition at line 118 of file 6Step_Lib.h.

Referenced by Bemf_delay_calc(), MC_SixStep_RESET(), MC_Speed_Filter(), and MC_Task_Speed().

uint16_t SIXSTEP_Base_InitTypeDef::Speed_Loop_Time
Speed loop variable for timing

Definition at line 132 of file 6Step_Lib.h.

Referenced by MC_SixStep_RESET(), and MC_SysTick_SixStep_MediumFrequencyTask().

uint16_t SIXSTEP_Base_InitTypeDef::Speed_Ref_filtered
Filtered Reference Motor Speed variable

Definition at line 133 of file 6Step_Lib.h.

Referenced by MC_Set_Speed(), MC_SixStep_RESET(), and MC_SixStep_Speed_Potentiometer().

uint16_t SIXSTEP_Base_InitTypeDef::Speed_target_ramp
Target Motor Speed

Definition at line 138 of file 6Step_Lib.h.

Referenced by MC_Set_Speed(), and MC_SixStep_RESET().

uint16_t SIXSTEP_Base_InitTypeDef::Speed_target_time
Target Motor Ramp time

Definition at line 139 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::SPEED_VALIDATED
Validation flag for Speed before closed loop control

Definition at line 137 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_RESET(), and MC_Task_Speed().

SIXSTEP_Base_SystStatus_t SIXSTEP_Base_InitTypeDef::STATUS
Status variable for SixStep algorithm

Definition at line 102 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_Alignment(), MC_SixStep_ARR_step(), MC_SixStep_Ramp_Motor_calc(), MC_StartMotor(), MC_StopMotor(), MC_SysTick_SixStep_MediumFrequencyTask(), MC_Task_Speed(), and TIM1_BRK_TIM9_IRQHandler().

uint8_t SIXSTEP_Base_InitTypeDef::status_prev
Previous status variable for SixStep algorithm

Definition at line 103 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint8_t SIXSTEP_Base_InitTypeDef::step_position
Step number variable for SixStep algorithm

Definition at line 101 of file 6Step_Lib.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_Alignment(), MC_SixStep_ARR_Bemf(), MC_SixStep_NEXT_step(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::SYSCLK_frequency
System clock main frequency

Definition at line 143 of file 6Step_Lib.h.

Referenced by MC_GetElSpeedHz(), MC_SixStep_Ramp_Motor_calc(), and MC_SixStep_RESET().

uint32_t SIXSTEP_Base_InitTypeDef::Uart_cmd_to_set
Definition at line 144 of file 6Step_Lib.h.

uint32_t SIXSTEP_Base_InitTypeDef::Uart_value_to_set
Definition at line 145 of file 6Step_Lib.h.

uint8_t SIXSTEP_Base_InitTypeDef::VALIDATION_OK
Validation flag for Closed loop control begin

Definition at line 136 of file 6Step_Lib.h.

Referenced by MC_SixStep_ARR_Bemf(), MC_SixStep_ARR_step(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), MC_SysTick_SixStep_MediumFrequencyTask(), and MC_Task_Speed().

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

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  MIDDLEWARES » MC_6-STEP_LIB » Exported_types

Six PI regulator parameters. More...

```
#include <6Step_Lib.h>
```

Data Fields

int16_t Reference

int16_t Kp_Gain

int16_t Ki_Gain

int16_t Lower_Limit_Output

int16_t Upper_Limit_Output

int8_t Max_PID_Output

int8_t Min_PID_Output

Detailed Description

Six PI regulator parameters.

Definition at line 170 of file 6Step_Lib.h.

Field Documentation

int16_t SIXSTEP_PI_PARAM_InitTypeDef_t::Ki_Gain
Ki value for PI regulator

Definition at line 174 of file 6Step_Lib.h.

Referenced by MC_PI_Controller(), and MC_Set_PI_param().

int16_t SIXSTEP_PI_PARAM_InitTypeDef_t::Kp_Gain
Kp value for PI regulator

Definition at line 173 of file 6Step_Lib.h.

Referenced by MC_PI_Controller(), and MC_Set_PI_param().

int16_t SIXSTEP_PI_PARAM_InitTypeDef_t::Lower_Limit_Output
Min output value for PI regulator

Definition at line 175 of file 6Step_Lib.h.

Referenced by MC_PI_Controller(), and MC_Set_PI_param().

int8_t SIXSTEP_PI_PARAM_InitTypeDef_t::Max_PID_Output
Max Saturation indicator flag

Definition at line 177 of file 6Step_Lib.h.

Referenced by MC_Set_PI_param().

int8_t SIXSTEP_PI_PARAM_InitTypeDef_t::Min_PID_Output
Min Saturation indicator flag

Definition at line 178 of file 6Step_Lib.h.

Referenced by MC_Set_PI_param().

int16_t SIXSTEP_PI_PARAM_InitTypeDef_t::Reference
Refence value for PI regulator

Definition at line 172 of file 6Step_Lib.h.

Referenced by Bemf_delay_calc(), MC_ADCx_SixStep_Bemf(), MC_GetElSpeedHz(), MC_PI_Controller(), MC_Set_PI_param(), MC_Set_Speed(), MC_SixStep_ARR_step(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), and MC_Task_Speed().

int16_t SIXSTEP_PI_PARAM_InitTypeDef_t::Upper_Limit_Output
Max output value for PI regulator

Definition at line 176 of file 6Step_Lib.h.

Referenced by MC_PI_Controller(), and MC_Set_PI_param().

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

- 6Step_Lib.h

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  Data Fields
  STSPIN230_MotorDriver_TypeDef Struct Reference
  DRIVERS » BSP » COMPONENTS » STSPIN230_Motor_Driver_handler

```
#include <MC_Common.h>
```

Data Fields

void(* EnableInput_CH1_E_CH2_E_CH3_D)(void)

void(* EnableInput_CH1_E_CH2_D_CH3_E)(void)

void(* EnableInput_CH1_D_CH2_E_CH3_E)(void)

void(* DisableInput_CH1_D_CH2_D_CH3_D)(void)

void(* Start_PWM_driving)(void)

void(* Stop_PWM_driving)(void)

void(* HF_TIMx_SetDutyCycle_CH1)(uint16_t)

void(* HF_TIMx_SetDutyCycle_CH2)(uint16_t)

void(* HF_TIMx_SetDutyCycle_CH3)(uint16_t)

void(* Current_Reference_Start)(void)

void(* Current_Reference_Stop)(void)

void(* Current_Reference_Setvalue)(uint16_t)

Detailed Description

Definition at line 63 of file MC_Common.h.

Field Documentation

void(* STSPIN230_MotorDriver_TypeDef::Current_Reference_Setvalue) (uint16_t)
Set current reference value for closed loop control

Definition at line 76 of file MC_Common.h.

Referenced by MC_SixStep_Current_Reference_Setvalue().

void(* STSPIN230_MotorDriver_TypeDef::Current_Reference_Start) (void)
Start current reference generation for closed loop control

Definition at line 74 of file MC_Common.h.

Referenced by MC_SixStep_Current_Reference_Start().

void(* STSPIN230_MotorDriver_TypeDef::Current_Reference_Stop) (void)
Stop current reference generation for closed loop control

Definition at line 75 of file MC_Common.h.

Referenced by MC_SixStep_Current_Reference_Stop().

void(* STSPIN230_MotorDriver_TypeDef::DisableInput_CH1_D_CH2_D_CH3_D) (void)
Disable all channels

Definition at line 68 of file MC_Common.h.

Referenced by MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D().

void(* STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_D_CH2_E_CH3_E) (void)
Enable the channel 2,3 and Disable the channel 1

Definition at line 67 of file MC_Common.h.

Referenced by MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E().

void(* STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_E_CH2_D_CH3_E) (void)
Enable the channel 1,3 and Disable the channel 2

Definition at line 66 of file MC_Common.h.

Referenced by MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E().

void(* STSPIN230_MotorDriver_TypeDef::EnableInput_CH1_E_CH2_E_CH3_D) (void)
Enable the channel 1,2 and Disable the channel 3

Definition at line 65 of file MC_Common.h.

Referenced by MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D().

void(* STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH1) (uint16_t)
High Frequency Timer - Change DutyCycle value for CH1

Definition at line 71 of file MC_Common.h.

Referenced by MC_SixStep_HF_TIMx_SetDutyCycle_CH1().

void(* STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH2) (uint16_t)
High Frequency Timer - Change DutyCycle value for CH2

Definition at line 72 of file MC_Common.h.

Referenced by MC_SixStep_HF_TIMx_SetDutyCycle_CH2().

void(* STSPIN230_MotorDriver_TypeDef::HF_TIMx_SetDutyCycle_CH3) (uint16_t)
High Frequency Timer - Change DutyCycle value for CH3

Definition at line 73 of file MC_Common.h.

Referenced by MC_SixStep_HF_TIMx_SetDutyCycle_CH3().

void(* STSPIN230_MotorDriver_TypeDef::Start_PWM_driving) (void)
Start PWM generation

Definition at line 69 of file MC_Common.h.

Referenced by MC_SixStep_Start_PWM_driving().

void(* STSPIN230_MotorDriver_TypeDef::Stop_PWM_driving) (void)
Stop PWM generation

Definition at line 70 of file MC_Common.h.

Referenced by MC_SixStep_Stop_PWM_driving().

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

- MC_Common.h

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- Data&"temp0539.html">Files

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- u
- v

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

- a -

- ACCEL : SIXSTEP_Base_InitTypeDef
- ADC_BEMF_threshold_DOWN : SIXSTEP_Base_InitTypeDef
- ADC_BEMF_threshold_UP : SIXSTEP_Base_InitTypeDef
- ADC_BUFFER : SIXSTEP_Base_InitTypeDef
- ADC_Regular_Buffer : SIXSTEP_Base_InitTypeDef
- ADC_SEQ_CHANNEL : SIXSTEP_Base_InitTypeDef
- ALIGN_OK : SIXSTEP_Base_InitTypeDef
- ALIGNMENT : SIXSTEP_Base_InitTypeDef
- ARR_OK : SIXSTEP_Base_InitTypeDef
- ARR_value : SIXSTEP_Base_InitTypeDef

- b -

- Bemf_delay_start : SIXSTEP_Base_InitTypeDef
- BEMF_OK : SIXSTEP_Base_InitTypeDef
- bemf_state_1 : SIXSTEP_Base_InitTypeDef
- bemf_state_2 : SIXSTEP_Base_InitTypeDef
- bemf_state_3 : SIXSTEP_Base_InitTypeDef
- bemf_state_4 : SIXSTEP_Base_InitTypeDef
- bemf_state_5 : SIXSTEP_Base_InitTypeDef
- bemf_state_6 : SIXSTEP_Base_InitTypeDef
- BEMF_Tdown_count : SIXSTEP_Base_InitTypeDef
- Button_ready : SIXSTEP_Base_InitTypeDef

- c -

- CL_READY : SIXSTEP_Base_InitTypeDef
- CMD : SIXSTEP_Base_InitTypeDef
- Current_Reference : SIXSTEP_Base_InitTypeDef
- Current_Reference_Setvalue : STSPIN230_MotorDriver_TypeDef
- Current_Reference_Start : STSPIN230_MotorDriver_TypeDef
- Current_Reference_Stop : STSPIN230_MotorDriver_TypeDef
- CurrentRegular_BEMF_ch : SIXSTEP_Base_InitTypeDef
- CW_CCW : SIXSTEP_Base_InitTypeDef

- d -

- demagn_counter : SIXSTEP_Base_InitTypeDef
- demagn_value : SIXSTEP_Base_InitTypeDef
- DisableInput_CH1_D_CH2_D_CH3_D : STSPIN230_MotorDriver_TypeDef

- e -

- EnableInput_CH1_D_CH2_E_CH3_E : STSPIN230_MotorDriver_TypeDef
- EnableInput_CH1_E_CH2_D_CH3_E : STSPIN230_MotorDriver_TypeDef
- EnableInput_CH1_E_CH2_E_CH3_D : STSPIN230_MotorDriver_TypeDef

- f -

- filter_depth : SIXSTEP_Base_InitTypeDef

- h -

- HF_TIMx_ARR : SIXSTEP_Base_InitTypeDef
- HF_TIMx_CCR : SIXSTEP_Base_InitTypeDef
- HF_TIMx_PSC : SIXSTEP_Base_InitTypeDef
- HF_TIMx_SetDutyCycle_CH1 : STSPIN230_MotorDriver_TypeDef
- HF_TIMx_SetDutyCycle_CH2 : STSPIN230_MotorDriver_TypeDef
- HF_TIMx_SetDutyCycle_CH3 : STSPIN230_MotorDriver_TypeDef

- i -

- Integral_Term_sum : SIXSTEP_Base_InitTypeDef
- IREFERENCE : SIXSTEP_Base_InitTypeDef
- Ireference : SIXSTEP_Base_InitTypeDef

- k -

- KI : SIXSTEP_Base_InitTypeDef
- Ki_Gain : SIXSTEP_PI_PARAM_InitTypeDef_t
- KP : SIXSTEP_Base_InitTypeDef
- Kp_Gain : SIXSTEP_PI_PARAM_InitTypeDef_t

- l -

- LF_TIMx_ARR : SIXSTEP_Base_InitTypeDef
- LF_TIMx_PSC : SIXSTEP_Base_InitTypeDef
- Lower_Limit_Output : SIXSTEP_PI_PARAM_InitTypeDef_t

- m -

- Max_PID_Output : SIXSTEP_PI_PARAM_InitTypeDef_t
- MediumFrequencyTask_flag : SIXSTEP_Base_InitTypeDef
- Min_PID_Output : SIXSTEP_PI_PARAM_InitTypeDef_t

- n -

- name : CMD_T
- numberofitemArr : SIXSTEP_Base_InitTypeDef
- NUMPOLESPAIRS : SIXSTEP_Base_InitTypeDef

- p -

- pCmdFunc : CMD_T
- Potentiometer : SIXSTEP_Base_InitTypeDef
- prescaler_value : SIXSTEP_Base_InitTypeDef
- pulse_value : SIXSTEP_Base_InitTypeDef

- r -

- Ramp_Start : SIXSTEP_Base_InitTypeDef
- Reference : SIXSTEP_PI_PARAM_InitTypeDef_t
- Regular_channel : SIXSTEP_Base_InitTypeDef
- RUN_Motor : SIXSTEP_Base_InitTypeDef

- s -

- speed_fdbk : SIXSTEP_Base_InitTypeDef
- speed_fdbk_filtered : SIXSTEP_Base_InitTypeDef
- Speed_Loop_Time : SIXSTEP_Base_InitTypeDef
- Speed_Ref_filtered : SIXSTEP_Base_InitTypeDef
- Speed_target_ramp : SIXSTEP_Base_InitTypeDef
- Speed_target_time : SIXSTEP_Base_InitTypeDef
- SPEED_VALIDATED : SIXSTEP_Base_InitTypeDef
- Start_PWM_driving : STSPIN230_MotorDriver_TypeDef
- STATUS : SIXSTEP_Base_InitTypeDef
- status_prev : SIXSTEP_Base_InitTypeDef
- step_position : SIXSTEP_Base_InitTypeDef
- Stop_PWM_driving : STSPIN230_MotorDriver_TypeDef
- SYSCLK_frequency : SIXSTEP_Base_InitTypeDef

- u -

- Uart_cmd_to_set : SIXSTEP_Base_InitTypeDef
- Uart_value_to_set : SIXSTEP_Base_InitTypeDef
- Upper_Limit_Output : SIXSTEP_PI_PARAM_InitTypeDef_t

- v -

- VALIDATION_OK : SIXSTEP_Base_InitTypeDef

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

- a -

- ACCEL : SIXSTEP_Base_InitTypeDef
- ADC_BEMF_threshold_DOWN : SIXSTEP_Base_InitTypeDef
- ADC_BEMF_threshold_UP : SIXSTEP_Base_InitTypeDef
- ADC_BUFFER : SIXSTEP_Base_InitTypeDef
- ADC_Regular_Buffer : SIXSTEP_Base_InitTypeDef
- ADC_SEQ_CHANNEL : SIXSTEP_Base_InitTypeDef
- ALIGN_OK : SIXSTEP_Base_InitTypeDef
- ALIGNMENT : SIXSTEP_Base_InitTypeDef
- ARR_OK : SIXSTEP_Base_InitTypeDef
- ARR_value : SIXSTEP_Base_InitTypeDef

- b -

- Bemf_delay_start : SIXSTEP_Base_InitTypeDef
- BEMF_OK : SIXSTEP_Base_InitTypeDef
- bemf_state_1 : SIXSTEP_Base_InitTypeDef
- bemf_state_2 : SIXSTEP_Base_InitTypeDef
- bemf_state_3 : SIXSTEP_Base_InitTypeDef
- bemf_state_4 : SIXSTEP_Base_InitTypeDef
- bemf_state_5 : SIXSTEP_Base_InitTypeDef
- bemf_state_6 : SIXSTEP_Base_InitTypeDef
- BEMF_Tdown_count : SIXSTEP_Base_InitTypeDef
- Button_ready : SIXSTEP_Base_InitTypeDef

- c -

- CL_READY : SIXSTEP_Base_InitTypeDef
- CMD : SIXSTEP_Base_InitTypeDef

- Current_Reference : SIXSTEP_Base_InitTypeDef
- Current_Reference_Setvalue : STSPIN230_MotorDriver_TypeDef
- Current_Reference_Start : STSPIN230_MotorDriver_TypeDef
- Current_Reference_Stop : STSPIN230_MotorDriver_TypeDef
- CurrentRegular_BEMF_ch : SIXSTEP_Base_InitTypeDef
- CW_CCW : SIXSTEP_Base_InitTypeDef

- d -

- demagn_counter : SIXSTEP_Base_InitTypeDef
- demagn_value : SIXSTEP_Base_InitTypeDef
- DisableInput_CH1_D_CH2_D_CH3_D : STSPIN230_MotorDriver_TypeDef

- e -

- EnableInput_CH1_D_CH2_E_CH3_E : STSPIN230_MotorDriver_TypeDef
- EnableInput_CH1_E_CH2_D_CH3_E : STSPIN230_MotorDriver_TypeDef
- EnableInput_CH1_E_CH2_E_CH3_D : STSPIN230_MotorDriver_TypeDef

- f -

- filter_depth : SIXSTEP_Base_InitTypeDef

- h -

- HF_TIMx_ARR : SIXSTEP_Base_InitTypeDef
- HF_TIMx_CCR : SIXSTEP_Base_InitTypeDef
- HF_TIMx_PSC : SIXSTEP_Base_InitTypeDef
- HF_TIMx_SetDutyCycle_CH1 : STSPIN230_MotorDriver_TypeDef
- HF_TIMx_SetDutyCycle_CH2 : STSPIN230_MotorDriver_TypeDef
- HF_TIMx_SetDutyCycle_CH3 : STSPIN230_MotorDriver_TypeDef

- i -

- Integral_Term_sum : SIXSTEP_Base_InitTypeDef
- IREFERENCE : SIXSTEP_Base_InitTypeDef
- Ireference : SIXSTEP_Base_InitTypeDef

- k -

- KI : SIXSTEP_Base_InitTypeDef
- Ki_Gain : SIXSTEP_PI_PARAM_InitTypeDef_t
- KP : SIXSTEP_Base_InitTypeDef
- Kp_Gain : SIXSTEP_PI_PARAM_InitTypeDef_t

- l -

- LF_TIMx_ARR : SIXSTEP_Base_InitTypeDef
- LF_TIMx_PSC : SIXSTEP_Base_InitTypeDef
- Lower_Limit_Output : SIXSTEP_PI_PARAM_InitTypeDef_t

- m -

- Max_PID_Output : SIXSTEP_PI_PARAM_InitTypeDef_t
- MediumFrequencyTask_flag : SIXSTEP_Base_InitTypeDef
- Min_PID_Output : SIXSTEP_PI_PARAM_InitTypeDef_t

- n -

- name : CMD_T
- numberofitemArr : SIXSTEP_Base_InitTypeDef
- NUMPOLESPAIRS : SIXSTEP_Base_InitTypeDef

- p -

- pCmdFunc : CMD_T
- Potentiometer : SIXSTEP_Base_InitTypeDef
- prescaler_value : SIXSTEP_Base_InitTypeDef
- pulse_value : SIXSTEP_Base_InitTypeDef

- r -

- Ramp_Start : SIXSTEP_Base_InitTypeDef
- Reference : SIXSTEP_PI_PARAM_InitTypeDef_t
- Regular_channel : SIXSTEP_Base_InitTypeDef
- RUN_Motor : SIXSTEP_Base_InitTypeDef

- s -

- speed_fdbk : SIXSTEP_Base_InitTypeDef
- speed_fdbk_filtered : SIXSTEP_Base_InitTypeDef
- Speed_Loop_Time : SIXSTEP_Base_InitTypeDef
- Speed_Ref_filtered : SIXSTEP_Base_InitTypeDef
- Speed_target_ramp : SIXSTEP_Base_InitTypeDef
- Speed_target_time : SIXSTEP_Base_InitTypeDef
- SPEED_VALIDATED : SIXSTEP_Base_InitTypeDef
- Start_PWM_driving : STSPIN230_MotorDriver_TypeDef
- STATUS : SIXSTEP_Base_InitTypeDef
- status_prev : SIXSTEP_Base_InitTypeDef
- step_position : SIXSTEP_Base_InitTypeDef
- Stop_PWM_driving : STSPIN230_MotorDriver_TypeDef
- SYSCLK_frequency : SIXSTEP_Base_InitTypeDef

- u -

- Uart_cmd_to_set : SIXSTEP_Base_InitTypeDef
- Uart_value_to_set : SIXSTEP_Base_InitTypeDef
- Upper_Limit_Output : SIXSTEP_PI_PARAM_InitTypeDef_t

- v -

- VALIDATION_OK : SIXSTEP_Base_InitTypeDef

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- a -

- ACCEL : SIXSTEP_Base_InitTypeDef
- ADC_BEMF_threshold_DOWN : SIXSTEP_Base_InitTypeDef
- ADC_BEMF_threshold_UP : SIXSTEP_Base_InitTypeDef
- ADC_BUFFER : SIXSTEP_Base_InitTypeDef
- ADC_Regular_Buffer : SIXSTEP_Base_InitTypeDef
- ADC_SEQ_CHANNEL : SIXSTEP_Base_InitTypeDef
- ALIGN_OK : SIXSTEP_Base_InitTypeDef
- ALIGNMENT : SIXSTEP_Base_InitTypeDef
- ARR_OK : SIXSTEP_Base_InitTypeDef
- ARR_value : SIXSTEP_Base_InitTypeDef

- b -

- Bemf_delay_start : SIXSTEP_Base_InitTypeDef
- BEMF_OK : SIXSTEP_Base_InitTypeDef
- bemf_state_1 : SIXSTEP_Base_InitTypeDef
- bemf_state_2 : SIXSTEP_Base_InitTypeDef
- bemf_state_3 : SIXSTEP_Base_InitTypeDef
- bemf_state_4 : SIXSTEP_Base_InitTypeDef
- bemf_state_5 : SIXSTEP_Base_InitTypeDef
- bemf_state_6 : SIXSTEP_Base_InitTypeDef
- BEMF_Tdown_count : SIXSTEP_Base_InitTypeDef
- Button_ready : SIXSTEP_Base_InitTypeDef

- c -

- CL_READY : SIXSTEP_Base_InitTypeDef
- CMD : SIXSTEP_Base_InitTypeDef
- Current_Reference : SIXSTEP_Base_InitTypeDef
- Current_Reference_Setvalue : STSPIN230_MotorDriver_TypeDef
- Current_Reference_Start : STSPIN230_MotorDriver_TypeDef
- Current_Reference_Stop : STSPIN230_MotorDriver_TypeDef
- CurrentRegular_BEMF_ch : SIXSTEP_Base_InitTypeDef
- CW_CCW : SIXSTEP_Base_InitTypeDef

- d -

- demagn_counter : SIXSTEP_Base_InitTypeDef
- demagn_value : SIXSTEP_Base_InitTypeDef
- DisableInput_CH1_D_CH2_D_CH3_D : STSPIN230_MotorDriver_TypeDef

- e -

- EnableInput_CH1_D_CH2_E_CH3_E : STSPIN230_MotorDriver_TypeDef
- EnableInput_CH1_E_CH2_D_CH3_E : STSPIN230_MotorDriver_TypeDef
- EnableInput_CH1_E_CH2_E_CH3_D : STSPIN230_MotorDriver_TypeDef

- f -

- filter_depth : SIXSTEP_Base_InitTypeDef

- h -

- HF_TIMx_ARR : SIXSTEP_Base_InitTypeDef
- HF_TIMx_CCR : SIXSTEP_Base_InitTypeDef
- HF_TIMx_PSC : SIXSTEP_Base_InitTypeDef
- HF_TIMx_SetDutyCycle_CH1 : STSPIN230_MotorDriver_TypeDef
- HF_TIMx_SetDutyCycle_CH2 : STSPIN230_MotorDriver_TypeDef
- HF_TIMx_SetDutyCycle_CH3 : STSPIN230_MotorDriver_TypeDef

- i -

- Integral_Term_sum : SIXSTEP_Base_InitTypeDef
- IREFERENCE : SIXSTEP_Base_InitTypeDef

- Ireference : SIXSTEP_Base_InitTypeDef

- k -

- KI : SIXSTEP_Base_InitTypeDef
- Ki_Gain : SIXSTEP_PI_PARAM_InitTypeDef_t
- KP : SIXSTEP_Base_InitTypeDef
- Kp_Gain : SIXSTEP_PI_PARAM_InitTypeDef_t

- l -

- LF_TIMx_ARR : SIXSTEP_Base_InitTypeDef
- LF_TIMx_PSC : SIXSTEP_Base_InitTypeDef
- Lower_Limit_Output : SIXSTEP_PI_PARAM_InitTypeDef_t

- m -

- Max_PID_Output : SIXSTEP_PI_PARAM_InitTypeDef_t
- MediumFrequencyTask_flag : SIXSTEP_Base_InitTypeDef
- Min_PID_Output : SIXSTEP_PI_PARAM_InitTypeDef_t

- n -

- name : CMD_T
- numberofitemArr : SIXSTEP_Base_InitTypeDef
- NUMPOLESPAIRS : SIXSTEP_Base_InitTypeDef

- p -

- pCmdFunc : CMD_T
- Potentiometer : SIXSTEP_Base_InitTypeDef
- prescaler_value : SIXSTEP_Base_InitTypeDef
- pulse_value : SIXSTEP_Base_InitTypeDef

- r -

- Ramp_Start : SIXSTEP_Base_InitTypeDef
- Reference : SIXSTEP_PI_PARAM_InitTypeDef_t
- Regular_channel : SIXSTEP_Base_InitTypeDef
- RUN_Motor : SIXSTEP_Base_InitTypeDef

- s -

- speed_fdbk : SIXSTEP_Base_InitTypeDef
- speed_fdbk_filtered : SIXSTEP_Base_InitTypeDef
- Speed_Loop_Time : SIXSTEP_Base_InitTypeDef
- Speed_Ref_filtered : SIXSTEP_Base_InitTypeDef
- Speed_target_ramp : SIXSTEP_Base_InitTypeDef
- Speed_target_time : SIXSTEP_Base_InitTypeDef
- SPEED_VALIDATED : SIXSTEP_Base_InitTypeDef
- Start_PWM_driving : STSPIN230_MotorDriver_TypeDef
- STATUS : SIXSTEP_Base_InitTypeDef
- status_prev : SIXSTEP_Base_InitTypeDef

- step_position : SIXSTEP_Base_InitTypeDef
- Stop_PWM_driving : STSPIN230_MotorDriver_TypeDef
- SYSCLK_frequency : SIXSTEP_Base_InitTypeDef

- u -

- Uart_cmd_to_set : SIXSTEP_Base_InitTypeDef
- Uart_value_to_set : SIXSTEP_Base_InitTypeDef
- Upper_Limit_Output : SIXSTEP_PI_PARAM_InitTypeDef_t

- v -

- VALIDATION_OK : SIXSTEP_Base_InitTypeDef

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
- Data&"current">Files

- File&"temp1011.html">Globals

File List
Here is a list of all files with brief descriptions:

6Step_Lib.c	This file provides the set of functions for Motor Control library
&"6Step__Lib_8h_source.html">6Step_Lib.h	This header file provides the set of functions for Motor Control library
main_F401.c	This file provides a set of functions needed to configure STM32 MCU
&"main__F401_8h_source.html">main_F401.h	Main program body for STM32F401xx
MC_Common.h	This header file is a common file
&"MC__SixStep__param_8h_source.html">MC_SixStep_param.h	This header file provides all parameters to driver a motor with 6Step library
stm32_nucleo_ihm11m1.h	This file provides the interface between the

	MC-lib and STM Nucleo
&"stm32F401__nucleo__ihm11m1_8c_source.html">stm32F401_nucleo_ihm11m1.c	This file provides the interface between the MC-lib and STM Nucleo F401xx
stm32F401_nucleo_ihm11m1.h	This file provides the interface between the MC-lib and STM Nucleo
&"stm32f4xx__hal__conf_8h_source.html">stm32f4xx_hal_conf.h	HAL configuration file
stm32f4xx_hal_msp.c	This file provides code for the MSP Initialization and de-Initialization codes
&"stm32f4xx__it_8c_source.html">stm32f4xx_it.c	Interrupt Service Routines
stm32f4xx_it.h	This file contains the headers of the interrupt handlers
&"STSPIN230_8c_source.html">STSPIN230.c	This file provides a set of functions to manage STSPIN230 driver
STSPIN230.h	This file provides a set of functions to manage STSPIN230 driver
&"UART__UI_8c_source.html">UART_UI.c	This file provides a set of functions needed to manage the UART com
UART_UI.h	This file provides a set of functions needed to manage the UART com
&"X-NUCLEO-IHM11M1_8c_source.html">X-NUCLEO-IHM11M1.c	This file provides the set of functions to manage the X-Nucleo expansion board
X-NUCLEO-IHM11M1.h	This file provides the set of functions to manage the X-Nucleo board

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
- Data&"current">Files

- File&"temp1011.html">Globals

- Middlewares
- ST
- MC_6Step_Lib
- Src

Functions | Variables

6Step_Lib.c File Reference

This file provides the set of functions for Motor Control library. More...

```
#include "6Step_Lib.h"
#include <string.h>
```

Go to the source code of this file.

Functions

int16_t&"memItemRight" valign="bottom">MC_PI_Controller (SIXSTEP_PI_PARAM_InitTypeDef_t *, int16_t)

uint16_t MC_Potentiometer_filter (uint16_t)

uint64_t MCM_Sqrt (uint64_t wInput)
It calculates the square root of a non-negative s64. More...

int32_t MC_GetElSpeedHz (void)

int32_t MC_GetMechSpeedRPM (void)

void MC_SixStep_NEXT_step (void)

void MC_Speed_Filter (void)

void MC_SixStep_ARR_step (void)

void MC_SixStep_TABLE (uint8_t)

void MC_SixStep_Speed_Potentiometer (void)

void MC_Set_PI_param (SIXSTEP_PI_PARAM_InitTypeDef_t *)

void MC_Task_Speed (void)

void MC_SixStep_Alignment (void)

void MC_Bemf_Delay (void)

void MC_TIMx_SixStep_timebase (void)

void MC_ADCx_SixStep_Bemf (void)

void MC_SysTick_SixStep_MediumFrequencyTask (void)

void MC_SixStep_Ramp_Motor_calc (void)

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D (void)
Enable Input channel CH1 and CH2 for STSPIN230. More...

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E (void)
Enable Input channel CH1 and CH3 for STSPIN230. More...

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E (void)
Enable Input channel CH2 and CH3 for STSPIN230. More...

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D (void)
Enable Input channel CH2 and CH3 for STSPIN230. More...

void MC_SixStep_Start_PWM_driving (void)
Enable PWM channels for STSPIN230. More...

void MC_SixStep_Stop_PWM_driving (void)
Disable PWM channels for STSPIN230. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t)
Set the Duty Cycle value for CH1. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t)

Set the Duty Cycle value for CH2. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t)
Set the Duty Cycle value for CH3. More...

void MC_SixStep_Current_Reference_Start (void)
Enable the Current Reference generation. More...

void MC_SixStep_Current_Reference_Stop (void)
Disable the Current Reference generation. More...

void MC_SixStep_Current_Reference_Setvalue (uint16_t)
Set the value for Current Reference. More...

void MC_SixStep_ARR_Bemf (uint8_t)

void MC_UI_INIT (void)

void UART_Set_Value (void)

void UART_Communication_Task (void)

void MC_SixStep_Init_main_data (void)

void CMD_Parser (char *pCommandString)

void MC_SixStep_Speed_Val_target_potentiometer (void)

void MC_SixStep_RESET ()

void MC_Set_Speed (uint16_t speed_value)

void MC_StartMotor ()

void MC_StopMotor ()

void MC_SixStep_INIT ()

void MC_EXT_button_SixStep ()

void HAL_IncTick (void)
This function is called to increment a global variable "uwTick" used as application time base. More...

uint32_t HAL_GetTick (void)

Povides a tick value in millisecond. More...

Variables

SIXSTEP_Base_InitTypeDef SIXSTEP_parameters

SIXSTEP_PI_PARAM_InitTypeDef_t PI_parameters

uint16_t Rotor_poles_pairs

uint32_t mech_accel_hz = 0

uint32_t constant_k = 0

uint32_t Time_vector_tmp = 0

uint32_t Time_vector_prev_tmp = 0

uint32_t T_single_step = 0

uint32_t T_single_step_first_value = 0

int32_t delta = 0

uint16_t index_array = 1

int16_t speed_tmp_array [FILTER_DEEP]

uint16_t speed_tmp_buffer [FILTER_DEEP]

uint16_t HFBuffer [HFBUFFERSIZE]

uint16_t HFBufferIndex = 0

uint8_t array_completed = FALSE

uint8_t buffer_completed = FALSE

uint8_t UART_FLAG_RECEIVE = FALSE

uint32_t ARR_LF = 0

int32_t Mech_Speed_RPM = 0

int32_t El_Speed_Hz = 0

uint16_t index_adc_chn = 0

uint16_t index_motor_run = 0

uint16_t test_motor_run = 1

uint8_t Enable_start_button = TRUE

uint16_t index_ARR_step = 1

uint32_t n_zcr_startup = 0

uint16_t index_startup_motor = 1

uint16_t target_speed = TARGET_SPEED

uint16_t shift_n_sqrt = 14

uint16_t cnt_bemf_event = 0

uint8_t startup_bemf_failure = 0

uint8_t speed_fdbk_error = 0

__IO uint32_t uwTick = 0

uint8_t dac_status = DAC_ENABLE

uint16_t index_align = 1

int32_t speed_sum_sp_filt = 0

int32_t speed_sum_pot_filt = 0

uint16_t index_pot_filt = 1

int16_t potent_filtered = 0

uint32_t Tick_cnt = 0

uint32_t counter_ARR_Bemf = 0

uint64_t constant_multiplier_tmp = 0

Detailed Description

This file provides the set of functions for Motor Control library.

Author
System lab - Automation and Motion control team

Version
V1.0.0

Date
06-July-2015

Attention

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Definition in file 6Step_Lib.c.

- File&"temp1011.html">Globals

- Middlewares
- ST
- MC_6Step_Lib
- Inc

Data Structures | Typedefs | Enumerations | Functions
6Step_Lib.h File Reference
This header file provides the set of functions for Motor Control library. More...

```
#include "stm32_nucleo_ihm11m1.h"
#include "math.h"
#include "stdlib.h"
#include "stdio.h"
```

Go to the source code of this file.

Data Structures

struct &"memItemRight"
valign="bottom">SIXSTEP_Base_InitTypeDef
Six Step parameters. More...

struct SIXSTEP_PI_PARAM_InitTypeDef_t
Six PI regulator parameters. More...

Typedefs

typedef struct SIXSTEP_PI_PARAM_InitTypeDef_t * SIXSTEP_pi_PARAM_InitTypeDef_t

Enumerations

enum SIXSTEP_Base_SystStatus_t {
IDLE, STARTUP, VALIDATION, STOP,
START, RUN, ALIGNMENT, SPEEDFBKERROR,
OVERCURRENT, STARTUP_FAILURE, STARTUP_BEMF_FAILURE
}
Six Step parameters. More...

Functions

void MC_SixStep_INIT (void)

void MC_SixStep_RESET (void)

void MC_StartMotor (void)

void MC_StopMotor (void)

void MC_Set_Speed (uint16_t)

void MC_EXT_button_SixStep (void)

Detailed Description

This header file provides the set of functions for Motor Control library.

Author
System lab

Version
V1.0.0

Date
06-July-2015

Attention

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Definition in file 6Step_Lib.h.

- Main&"temp0003.html">Modules
- Data&"current">Files

- File&"temp1011.html">Globals

- Projects
- Multi
- Applications
- MotorControl
- Src

Functions | Variables

main_F401.c File Reference

This file provides a set of functions needed to configure STM32 MCU. More...

```
#include "stm32f4xx_hal.h"
#include "6Step_Lib.h"
```

Go to the source code of this file.

Functions

void&"memItemRight" valign="bottom">SystemClock_Config (void)

System Clock Configuration. More...

static void MX_ADC1_Init (void)

static void MX_TIM1_Init (void)

static void MX_TIM3_Init (void)

static void MX_TIM4_Init (void)

static void MX_USART2_UART_Init (void)

int main (void)

Variables

ADC_HandleTypeDef hadc1

TIM_HandleTypeDef htim1

TIM_HandleTypeDef htim2

TIM_HandleTypeDef htim3

TIM_HandleTypeDef htim4

UART_HandleTypeDef huart2

Detailed Description

This file provides a set of functions needed to configure STM32 MCU.

Author
IPC

Version
V0

Date
10/07/2016

Attention

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Definition in file main_F401.c.

Function Documentation

int main (void)

****

How to use the 6Step FW Example project

This workspace contains the middleware layer with Motor Control library to drive a motor connected on X-Nucleo board performing a 6-step control algorithm allowing the motor speed regulation through a potentiometer. The 6-step algorithm is based on 1shunt current sensing mode and sensorless algorithm for bEmf detection. The workspace is provided for STM32Fxx-Nucleo in four different configurations, normal, demo, comm mode, boot mode. The "normal" mode waits the blue button event to start the motor, the "demo" mode starts and stop the motor automatically, the "comm" mode enables the communication protocol with external PC terminal and the "boot" mode enables the FW for external boot loader.

A list of APIs is provided to send command to 6Step lib, for instance:

(#) MC_StartMotor() -> Start the motor

(#) MC_StoptMotor() -> Stop the motor

(#) MC_Set_Speed(...) -> Set the new motor speed

The MC_SixStep_param.h contains the full list of MC parameters

---

USER SPACE

Definition at line 74 of file main_F401.c.

References MC_SixStep_INIT(), MX_ADC1_Init(), MX_TIM1_Init(), MX_TIM3_Init(), MX_TIM4_Init(), MX_USART2_UART_Init(), and SystemClock_Config().

void MX_ADC1_Init (void) static

Configure the global features of the ADC (Clock, Resolution, Data Alignment and number of conversion)

Configure for the selected ADC regular channel its corresponding rank in the sequencer and its sample time.

Definition at line 180 of file main_F401.c.

References hadc1.

Referenced by main().

void MX_TIM1_Init (void) static

Definition at line 213 of file main_F401.c.

References htim1.

Referenced by main().

void MX_TIM3_Init (void) static

Definition at line 271 of file main_F401.c.

References htim3.

Referenced by main().

void MX_TIM4_Init (void) static

Definition at line 304 of file main_F401.c.

References htim4.

Referenced by main().

void MX_USART2_UART_Init (void) static
Definition at line 327 of file main_F401.c.

References huart2.

Referenced by main().

void SystemClock_Config (void)
System Clock Configuration.

Definition at line 149 of file main_F401.c.

Referenced by main().

Variable Documentation

ADC_HandleTypeDef hadc1
Definition at line 46 of file main_F401.c.

Referenced by ADC_IRQHandler(), MC_SixStep_Nucleo_Init(), and MX_ADC1_Init().

TIM_HandleTypeDef htim1
Definition at line 48 of file main_F401.c.

Referenced by MC_SixStep_Nucleo_Init(), MX_TIM1_Init(), and TIM1_BRK_TIM9_IRQHandler().

TIM_HandleTypeDef htim2
Definition at line 49 of file main_F401.c.

TIM_HandleTypeDef htim3
Definition at line 50 of file main_F401.c.

Referenced by MX_TIM3_Init().

TIM_HandleTypeDef htim4
Definition at line 51 of file main_F401.c.

Referenced by MX_TIM4_Init(), and TIM4_IRQHandler().

UART_HandleTypeDef huart2
Definition at line 53 of file main_F401.c.

Referenced by MX_USART2_UART_Init(), and USART2_IRQHandler().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
- Data&"current">Files

- File&"temp1011.html">Globals

- Projects
- Multi
- Applications
- MotorControl
- Inc

Variables
main_F401.h File Reference
Main program body for STM32F401xx. More...

Go to the source code of this file.

Variables

ADC_HandleTypeDef&"memItemRight" valign="bottom">hadc1

TIM_HandleTypeDef htim1

TIM_HandleTypeDef htim3

TIM_HandleTypeDef htim4

UART_HandleTypeDef huart2

Detailed Description

Main program body for STM32F401xx.

Author
IPC

Version
V0

Date
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Definition in file main_F401.h.

Variable Documentation

ADC_HandleTypeDef hadc1
Definition at line 46 of file main_F401.c.

Referenced by MC_SixStep_Nucleo_Init(), and MX_ADC1_Init().

TIM_HandleTypeDef htim1
Definition at line 48 of file main_F401.c.

Referenced by MC_SixStep_Nucleo_Init(), and MX_TIM1_Init().

TIM_HandleTypeDef htim3
Definition at line 50 of file main_F401.c.

Referenced by MX_TIM3_Init().

TIM_HandleTypeDef htim4
Definition at line 51 of file main_F401.c.

Referenced by MX_TIM4_Init().

UART_HandleTypeDef huart2
Definition at line 53 of file main_F401.c.

Referenced by MX_USART2_UART_Init().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
- Data&"current">Files

- File&"temp1011.html">Globals

- Drivers
- BSP
- Components
- Common

Data Structures
MC_Common.h File Reference
This header file is a common file. More...

Go to the source code of this file.

Data Structures

struct &"memItemRight" valign="bottom">STSPIN230_MotorDriver_TypeDef

Detailed Description

This header file is a common file.

Author
System lab - Automation and Motion control team

Version
V1.0.0

Date
06-July-2015

Attention

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Definition in file MC_Common.h.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
- Data&"current">Files

- File&"temp1011.html">Globals

- Projects
- Multi
- Applications
- MotorControl
- Inc

Macros

MC_SixStep_param.h File Reference

This header file provides all parameters to driver a motor with 6Step library. More...

Go to the source code of this file.

Macros

"memItemRight"
valign="bottom">NUM_POLE_PAIRS 2

#define DIRECTION 0

#define TARGET_SPEED 4000

```
#define POTENTIOMETER 1

#define STARTUP_DUTY_CYCLE 600

#define STARTUP_CURRENT_REFERENCE STARTUP_DUTY_CYCLE

#define ACC 1000000

#define MINIMUM_ACC 1000

#define NUMBER_OF_STEPS 20000

#define TIME_FOR_ALIGN 500

#define BUTTON_DELAY 1000

#define NUMBER_ZCR 12

#define SPEED_LOOP_TIME 1

#define KP_GAIN 500

#define KI_GAIN 50

#define KP_DIV 4096

#define KI_DIV 4096

#define LOWER_OUT_LIMIT 50

#define UPPER_OUT_LIMIT 800

#define MAX_POT_SPEED 20000

#define MIN_POT_SPEED 1700

#define VAL_POT_SPEED_DIV 2

#define INITIAL_DEMAGN_DELAY 10

#define BEMF_THRSLD_DOWN 200

#define BEMF_THRSLD_UP 200

#define FILTER_DEEP 20
```

```
#define HFBUFFERSIZE 10

#define ADC_SPEED_TH 82

#define BEMF_CONSEC_DOWN_MAX 10

#define BEMF_CNT_EVENT_MAX 100

#define GPIO_ZERO_CROSS 1

#define GPIO_COMM 1

#define DEMO_START_TIME 5000

#define DEMO_STOP_TIME 2000

#define DEMAGN_VAL_1 1

#define DEMAGN_VAL_2 2

#define DEMAGN_VAL_3 3

#define DEMAGN_VAL_4 4

#define DEMAGN_VAL_5 5

#define DEMAGN_VAL_6 6

#define DEMAGN_VAL_7 7

#define DEMAGN_VAL_8 8

#define DEMAGN_VAL_9 9

#define DEMAGN_VAL_10 10

#define DEMAGN_VAL_11 11

#define DEMAGN_VAL_12 12

#define DEMAGN_VAL_13 13

#define DEMAGN_VAL_14 14
```

```
#define TRUE   1

#define FALSE  0
```

Detailed Description

This header file provides all parameters to driver a motor with 6Step library.

Author

Version
V0

Date
10/07/2016

Attention

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Definition in file MC_SixStep_param.h.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
- Data&"current">Files

- File&"temp1011.html">Globals

- Middlewares
- ST
- MC_6Step_Lib
- Inc

stm32_nucleo_ihm11m1.h File Reference
This file provides the interface between the MC-lib and STM Nucleo. More...

Go to the source code of this file.

Detailed Description

This file provides the interface between the MC-lib and STM Nucleo.

Author
System lab - Automation and Motion control team

Version
V1.0.0

Date
10/07/2016

Attention

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Definition in file stm32_nucleo_ihm11m1.h.

Generated by &"http://www.doxygen.org/temp0001.html"> doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

- Main&"temp0003.html">Modules
- Data&"current">Files

- File&"temp1011.html">Globals

- Projects
- Multi
- Applications
- MotorControl
- Src

Functions | Variables

stm32F401_nucleo_ihm11m1.c File Reference

This file provides the interface between the MC-lib and STM Nucleo F401xx. More...

```
#include "stm32F401_nucleo_ihm11m1.h"
#include "6Step_Lib.h"
#include "X-NUCLEO-IHM11M1.h"
```

Go to the source code of this file.

Functions

void&"memItemRight" valign="bottom">MC_ADCx_SixStep_Bemf (void)

void MC_TIMx_SixStep_timebase (void)

void MC_SysTick_SixStep_MediumFrequencyTask (void)

void MC_SixStep_ADC_Channel (uint32_t adc_ch)

Select the new ADC Channel. More...

void MC_SixStep_Nucleo_Init ()
Init the STM32 register. More...

void START_DAC ()
Start DAC for debug. More...

void STOP_DAC ()
Stop DAC for debug. More...

void SET_DAC_value (uint16_t dac_value)
Set DAC value for debug. More...

void HAL_ADC_ConvCpltCallback (ADC_HandleTypeDef *hadc)
ADC callback. More...

void HAL_TIM_PeriodElapsedCallback (TIM_HandleTypeDef *htim)
htim callback More...

void HAL_SYSTICK_Callback ()
Systick callback. More...

void HAL_GPIO_EXTI_Callback (uint16_t GPIO_Pin)
EXT callback. More...

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D ()
Enable Input channel CH1 and CH2 for STSPIN230. More...

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E ()
Enable Input channel CH1 and CH3 for STSPIN230. More...

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E ()
Enable Input channel CH2 and CH3 for STSPIN230. More...

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D ()
Enable Input channel CH2 and CH3 for STSPIN230. More...

void MC_SixStep_Start_PWM_driving ()
Enable PWM channels for STSPIN230. More...

void MC_SixStep_Stop_PWM_driving ()
Disable PWM channels for STSPIN230. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t CCR_value)
Set the Duty Cycle value for CH1. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t CCR_value)
Set the Duty Cycle value for CH2. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t CCR_value)
Set the Duty Cycle value for CH3. More...

void MC_SixStep_Current_Reference_Start ()
Enable the Current Reference generation. More...

void MC_SixStep_Current_Reference_Stop ()
Disable the Current Reference generation. More...

void MC_SixStep_Current_Reference_Setvalue (uint16_t Iref)
Set the value for Current Reference. More...

void Bemf_delay_calc ()
Bemf delay calculation. More...

uint32_t Get_UART_Data ()
Get the UART value from DR register. More...

Variables

SIXSTEP_Base_InitTypeDef SIXSTEP_parameters

SIXSTEP_PI_PARAM_InitTypeDef_t PI_parameters

STSPIN230_MotorDriver_TypeDef STSPIN230MotorDriver
It handles all API functions for STSPIN230 MC Driver. More...

Detailed Description

This file provides the interface between the MC-lib and STM Nucleo F401xx.

Author
IPC

Version
V0

Date
10/07/2016 COPYRIGHT(c) 2015 STMicroelectronics

Definition in file stm32F401_nucleo_ihm11m1.c.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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Macros | Functions
stm32F401_nucleo_ihm11m1.h File Reference
This file provides the interface between the MC-lib and STM Nucleo. More...

```
#include "stm32f4xx_hal.h"
#include "main_F401.h"
```

Go to the source code of this file.

Macros

"memItemRight"
valign="bottom">HF_TIMx htim1

#define LF_TIMx htim4

#define HALL_ENCODER_TIMx htim2

#define ADCx hadc1

#define DACx htim3

#define UART huart2

#define ADC_CH_1 ADC_CHANNEL_0 /*CURRENT*/

#define ADC_CH_2 ADC_CHANNEL_12 /*SPEED*/

#define ADC_CH_3 ADC_CHANNEL_1 /*VBUS*/

#define ADC_CH_4 ADC_CHANNEL_2 /*TEMP */

#define ADC_Bemf_CH1 ADC_CHANNEL_13 /*BEMF1*/

#define ADC_Bemf_CH2 ADC_CHANNEL_8 /*BEMF2*/

#define ADC_Bemf_CH3 ADC_CHANNEL_7 /*BEMF3*/

#define ADC_CH_1_ST ADC_SAMPLETIME_3CYCLES
/*CURRENT sampling time */

#define ADC_CH_2_ST ADC_SAMPLETIME_84CYCLES
/*SPEED sampling time*/

#define ADC_CH_3_ST ADC_SAMPLETIME_84CYCLES
/*VBUS sampling time*/

#define ADC_CH_4_ST ADC_SAMPLETIME_84CYCLES
/*TEMP sampling time*/

#define ADC_Bemf_CH1_ST ADC_SAMPLETIME_28CYCLES
/*BEMF1 sampling time*/

```
#define ADC_Bemf_CH2_ST   ADC_SAMPLETIME_28CYCLES
        /*BEMF2 sampling time*/

#define ADC_Bemf_CH3_ST   ADC_SAMPLETIME_28CYCLES
        /*BEMF3 sampling time*/

#define HF_TIMx_CH1   TIM_CHANNEL_1

#define HF_TIMx_CH2   TIM_CHANNEL_2

#define HF_TIMx_CH3   TIM_CHANNEL_3

#define HF_TIMx_CCR1   CCR1 /*Channel 1*/

#define HF_TIMx_CCR2   CCR2 /*Channel 2*/

#define HF_TIMx_CCR3   CCR3 /*Channel 3*/

#define DAC_ENABLE   0

#define GPIO_PORT_ZCR   GPIOC

#define GPIO_CH_ZCR   GPIO_PIN_12

#define GPIO_PORT_COMM   GPIOC

#define GPIO_CH_COMM   GPIO_PIN_10

#define STARTM_CMD   0

#define STOPMT_CMD   1

#define SETSPD_CMD   2

#define GETSPD_CMD   3

#define INIREF_CMD   4

#define POLESP_CMD   5

#define ACCELE_CMD   6

#define KP_PRM_CMD   7
```

#define KI_PRM_CMD 8

#define POTENZ_CMD 9

#define HELP_CMD 10

#define STATUS_CMD 11

#define DIRECT_CMD 12

Functions

void MC_SixStep_ADC_Channel (uint32_t)
API function for STM32 instruction. More...

void MC_SixStep_Nucleo_Init (void)
Init the STM32 register. More...

void START_Ref_Generation (void)

void STOP_Ref_Generation (void)

void Set_Ref_Generation (uint16_t)

void START_DAC (void)
Start DAC for debug. More...

void STOP_DAC (void)
Stop DAC for debug. More...

void SET_DAC_value (uint16_t)
Set DAC value for debug. More...

void Bemf_delay_calc (void)
Bemf delay calculation. More...

uint32_t Get_UART_Data (void)
Get the UART value from DR register. More...

void MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D (void)
Enable Input channel CH1 and CH2 for STSPIN230. More...

void MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E (void)
Enable Input channel CH1 and CH3 for STSPIN230. More...

void MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E (void)
Enable Input channel CH2 and CH3 for STSPIN230. More...

void MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D (void)
Enable Input channel CH2 and CH3 for STSPIN230. More...

void MC_SixStep_Start_PWM_driving (void)
Enable PWM channels for STSPIN230. More...

void MC_SixStep_Stop_PWM_driving (void)
Disable PWM channels for STSPIN230. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH1 (uint16_t)
Set the Duty Cycle value for CH1. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH2 (uint16_t)
Set the Duty Cycle value for CH2. More...

void MC_SixStep_HF_TIMx_SetDutyCycle_CH3 (uint16_t)
Set the Duty Cycle value for CH3. More...

void MC_SixStep_Current_Reference_Start (void)
Enable the Current Reference generation. More...

void MC_SixStep_Current_Reference_Stop (void)
Disable the Current Reference generation. More...

void MC_SixStep_Current_Reference_Setvalue (uint16_t)
Set the value for Current Reference. More...

void BSP_X_NUCLEO_FAULT_LED_ON (void)

void BSP_X_NUCLEO_FAULT_LED_OFF (void)

Detailed Description

This file provides the interface between the MC-lib and STM Nucleo.

Author
IPC

Version
V0

Date
10/08/2016

Attention

Definition in file stm32F401_nucleo_ihm11m1.h.

Macro Definition Documentation

#define ACCELE_CMD 6
Set the Accelleration for Start-up of the motor command received

Definition at line 88 of file stm32F401_nucleo_ihm11m1.h.

#define ADC_Bemf_CH1 ADC_CHANNEL_13 /*BEMF1*/
Definition at line 56 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init(), and MC_SixStep_RESET().

#define ADC_Bemf_CH1_ST ADC_SAMPLETIME_28CYCLES /*BEMF1 sampling time*/
Definition at line 64 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init().

#define ADC_Bemf_CH2 ADC_CHANNEL_8 /*BEMF2*/
Definition at line 57 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init(), and MC_SixStep_RESET().

#define ADC_Bemf_CH2_ST ADC_SAMPLETIME_28CYCLES /*BEMF2 sampling time*/
Definition at line 65 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init().

#define ADC_Bemf_CH3 ADC_CHANNEL_7 /*BEMF3*/
Definition at line 58 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init(), and MC_SixStep_RESET().

#define ADC_Bemf_CH3_ST ADC_SAMPLETIME_28CYCLES /*BEMF3 sampling time*/
Definition at line 66 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init().

#define ADC_CH_1 ADC_CHANNEL_0 /*CURRENT*/
Definition at line 52 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init(), and MC_SixStep_RESET().

#define ADC_CH_1_ST ADC_SAMPLETIME_3CYCLES /*CURRENT sampling time */
Definition at line 60 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init().

#define ADC_CH_2 ADC_CHANNEL_12 /*SPEED*/
Definition at line 53 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init(), and MC_SixStep_RESET().

#define ADC_CH_2_ST ADC_SAMPLETIME_84CYCLES /*SPEED sampling time*/
Definition at line 61 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init().

#define ADC_CH_3 ADC_CHANNEL_1 /*VBUS*/
Definition at line 54 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init(), and MC_SixStep_RESET().

#define ADC_CH_3_ST ADC_SAMPLETIME_84CYCLES /*VBUS sampling time*/
Definition at line 62 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init().

#define ADC_CH_4 ADC_CHANNEL_2 /*TEMP */
Definition at line 55 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init(), and MC_SixStep_RESET().

#define ADC_CH_4_ST ADC_SAMPLETIME_84CYCLES /*TEMP sampling time*/
Definition at line 63 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init().

#define ADCx hadc1
Definition at line 48 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_ADC_Channel(), MC_StartMotor(), and MC_StopMotor().

#define DAC_ENABLE 0
Enable (1) the DAC peripheral

Definition at line 75 of file stm32F401_nucleo_ihm11m1.h.

#define DACx htim3
Definition at line 49 of file stm32F401_nucleo_ihm11m1.h.

#define DIRECT_CMD 12
Get the motor direction

Definition at line 94 of file stm32F401_nucleo_ihm11m1.h.

#define GETSPD_CMD 3
Get Mechanical Motor Speed command received

Definition at line 85 of file stm32F401_nucleo_ihm11m1.h.

#define GPIO_CH_COMM GPIO_PIN_10
GPIO pin name for 6Step commutation

Definition at line 80 of file stm32F401_nucleo_ihm11m1.h.

Referenced by HAL_MspInit(), MC_ADCx_SixStep_Bemf(), and MC_SixStep_TABLE().

#define GPIO_CH_ZCR GPIO_PIN_12
GPIO pin name for zero crossing detection

Definition at line 78 of file stm32F401_nucleo_ihm11m1.h.

Referenced by HAL_MspInit(), and MC_SixStep_ARR_Bemf().

#define GPIO_PORT_COMM GPIOC
GPIO port name for 6Step commutation

Definition at line 79 of file stm32F401_nucleo_ihm11m1.h.

Referenced by HAL_MspInit(), MC_ADCx_SixStep_Bemf(), and MC_SixStep_TABLE().

#define GPIO_PORT_ZCR GPIOC
GPIO port name for zero crossing detection

Definition at line 77 of file stm32F401_nucleo_ihm11m1.h.

Referenced by HAL_MspInit(), and MC_SixStep_ARR_Bemf().

#define HALL_ENCODER_TIMx htim2
Definition at line 47 of file stm32F401_nucleo_ihm11m1.h.

#define HELP_CMD 10
Help command received

Definition at line 92 of file stm32F401_nucleo_ihm11m1.h.

#define HF_TIMx htim1
Definition at line 45 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_ADCx_SixStep_Bemf(), MC_SixStep_INIT(), MC_SixStep_NEXT_step(), MC_SixStep_Nucleo_Init(), MC_SixStep_RESET(), MC_StopMotor(), STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D(), STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E(), STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E(), STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D(), STSPIN230_HF_TIMx_SetDutyCycle_CH1(), STSPIN230_HF_TIMx_SetDutyCycle_CH2(), STSPIN230_HF_TIMx_SetDutyCycle_CH3(), STSPIN230_Start_PWM_driving(), and STSPIN230_Stop_PWM_driving().

#define HF_TIMx_CCR1 CCR1 /*Channel 1*/
Definition at line 71 of file stm32F401_nucleo_ihm11m1.h.

#define HF_TIMx_CCR2 CCR2 /*Channel 2*/
Definition at line 72 of file stm32F401_nucleo_ihm11m1.h.

#define HF_TIMx_CCR3 CCR3 /*Channel 3*/
Definition at line 73 of file stm32F401_nucleo_ihm11m1.h.

#define HF_TIMx_CH1 TIM_CHANNEL_1
Definition at line 68 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init(), STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D(), STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E(), STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E(), STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D(), STSPIN230_Start_PWM_driving(), and STSPIN230_Stop_PWM_driving().

#define HF_TIMx_CH2 TIM_CHANNEL_2
Definition at line 69 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init(), STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D(), STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E(), STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E(), STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D(), STSPIN230_Start_PWM_driving(), and STSPIN230_Stop_PWM_driving().

#define HF_TIMx_CH3 TIM_CHANNEL_3
Definition at line 70 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_SixStep_Nucleo_Init(), STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D(), STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E(), STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E(), STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D(), STSPIN230_Start_PWM_driving(), and STSPIN230_Stop_PWM_driving().

#define INIREF_CMD 4
Set the new STARUP_CURRENT_REFERENCE value command received

Definition at line 86 of file stm32F401_nucleo_ihm11m1.h.

#define KI_PRM_CMD 8
Set the KI PI param command received

Definition at line 90 of file stm32F401_nucleo_ihm11m1.h.

#define KP_PRM_CMD 7
Set the KP PI param command received

Definition at line 89 of file stm32F401_nucleo_ihm11m1.h.

#define LF_TIMx htim4
Definition at line 46 of file stm32F401_nucleo_ihm11m1.h.

Referenced by MC_GetElSpeedHz(), MC_SixStep_Alignment(), MC_SixStep_ARR_Bemf(), MC_SixStep_ARR_step(), MC_SixStep_INIT(), MC_SixStep_NEXT_step(), MC_SixStep_RESET(), MC_StartMotor(), and MC_StopMotor().

#define POLESP_CMD 5
Set the Pole Pairs value command received

Definition at line 87 of file stm32F401_nucleo_ihm11m1.h.

#define POTENZ_CMD 9
Enable Potentiometer command received

Definition at line 91 of file stm32F401_nucleo_ihm11m1.h.

#define SETSPD_CMD 2
Set the new speed value command received

Definition at line 84 of file stm32F401_nucleo_ihm11m1.h.

#define STARTM_CMD 0
Start Motor command received

Definition at line 82 of file stm32F401_nucleo_ihm11m1.h.

#define STATUS_CMD 11
Get the Status of the system command received

Definition at line 93 of file stm32F401_nucleo_ihm11m1.h.

#define STOPMT_CMD 1
Stop Motor command received

Definition at line 83 of file stm32F401_nucleo_ihm11m1.h.

#define UART huart2
Definition at line 50 of file stm32F401_nucleo_ihm11m1.h.

Referenced by Get_UART_Data().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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Macros
stm32f4xx_hal_conf.h File Reference
HAL configuration file. More...

```
#include "stm32f4xx_hal_rcc.h"
#include "stm32f4xx_hal_gpio.h"
#include "stm32f4xx_hal_dma.h"
#include "stm32f4xx_hal_cortex.h"
#include "stm32f4xx_hal_adc.h"
#include "stm32f4xx_hal_flash.h"
#include "stm32f4xx_hal_pwr.h"
#include "stm32f4xx_hal_spi.h"
#include "stm32f4xx_hal_tim.h"
#include "stm32f4xx_hal_uart.h"
```

Go to the source code of this file.

Macros

"memItemRight"
valign="bottom">HAL_MODULE_ENABLED

This is the list of modules to be used in the HAL driver. More...

#define HAL_ADC_MODULE_ENABLED

#define HAL_SPI_MODULE_ENABLED

#define HAL_TIM_MODULE_ENABLED

#define HAL_UART_MODULE_ENABLED

#define HAL_GPIO_MODULE_ENABLED

#define HAL_DMA_MODULE_ENABLED

#define HAL_RCC_MODULE_ENABLED

#define HAL_FLASH_MODULE_ENABLED

#define HAL_PWR_MODULE_ENABLED

#define HAL_CORTEX_MODULE_ENABLED

#define HSE_VALUE ((uint32_t)8000000)

Adjust the value of External High Speed oscillator (HSE) used in your application. More...

#define HSE_STARTUP_TIMEOUT ((uint32_t)5000)

#define HSI_VALUE ((uint32_t)16000000)

Internal High Speed oscillator (HSI) value. More...

#define LSI_VALUE ((uint32_t)32000)

Internal Low Speed oscillator (LSI) value. More...

#define LSE_VALUE ((uint32_t)32768)

External Low Speed oscillator (LSE) value. More...

#define EXTERNAL_CLOCK_VALUE ((uint32_t)12288000)

External clock source for I2S peripheral This value is used by the I2S HAL module to compute the I2S clock source frequency, this source is inserted directly through I2S_CKIN pad. More...

#define VDD_VALUE ((uint32_t)3300)

This is the HAL system configuration section. More...

#define TICK_INT_PRIORITY ((uint32_t)2)

#define USE_RTOS 0

#define PREFETCH_ENABLE 1

#define INSTRUCTION_CACHE_ENABLE 1

#define DATA_CACHE_ENABLE 1

#define MAC_ADDR0 2

Uncomment the line below to expanse the "assert_param" macro in the HAL drivers code. More...

#define MAC_ADDR1 0

#define MAC_ADDR2 0

#define MAC_ADDR3 0

#define MAC_ADDR4 0

#define MAC_ADDR5 0

#define ETH_RX_BUF_SIZE ETH_MAX_PACKET_SIZE /* buffer size for receive */

#define ETH_TX_BUF_SIZE ETH_MAX_PACKET_SIZE /* buffer size for transmit */

#define ETH_RXBUFNB ((uint32_t)4) /* 4 Rx buffers of size ETH_RX_BUF_SIZE */

#define ETH_TXBUFNB ((uint32_t)4) /* 4 Tx buffers of size ETH_TX_BUF_SIZE */

#define DP83848_PHY_ADDRESS 0x01

#define PHY_RESET_DELAY ((uint32_t)0x000000FF)

#define PHY_CONFIG_DELAY ((uint32_t)0x00000FFF)

#define PHY_READ_TO ((uint32_t)0x0000FFFF)

#define PHY_WRITE_TO ((uint32_t)0x0000FFFF)

#define PHY_BCR ((uint16_t)0x00)

#define PHY_BSR ((uint16_t)0x01)

#define PHY_RESET ((uint16_t)0x8000)

```
#define PHY_LOOPBACK ((uint16_t)0x4000)

#define PHY_FULLDUPLEX_100M ((uint16_t)0x2100)

#define PHY_HALFDUPLEX_100M ((uint16_t)0x2000)

#define PHY_FULLDUPLEX_10M ((uint16_t)0x0100)

#define PHY_HALFDUPLEX_10M ((uint16_t)0x0000)

#define PHY_AUTONEGOTIATION ((uint16_t)0x1000)

#define PHY_RESTART_AUTONEGOTIATION ((uint16_t)0x0200)

#define PHY_POWERDOWN ((uint16_t)0x0800)

#define PHY_ISOLATE ((uint16_t)0x0400)

#define PHY_AUTONEGO_COMPLETE ((uint16_t)0x0020)

#define PHY_LINKED_STATUS ((uint16_t)0x0004)

#define PHY_JABBER_DETECTION ((uint16_t)0x0002)

#define PHY_SR ((uint16_t)0x10)

#define PHY_MICR ((uint16_t)0x11)

#define PHY_MISR ((uint16_t)0x12)

#define PHY_LINK_STATUS ((uint16_t)0x0001)

#define PHY_SPEED_STATUS ((uint16_t)0x0002)

#define PHY_DUPLEX_STATUS ((uint16_t)0x0004)

#define PHY_MICR_INT_EN ((uint16_t)0x0002)

#define PHY_MICR_INT_OE ((uint16_t)0x0001)

#define PHY_MISR_LINK_INT_EN ((uint16_t)0x0020)

#define PHY_LINK_INTERRUPT ((uint16_t)0x2000)

#define assert_param(expr) ((void)0)
```

Include module's header file. More...

Detailed Description

HAL configuration file.

Attention

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Definition in file stm32f4xx_hal_conf.h.

Macro Definition Documentation

#define assert_param (expr) ((void)0)
Include module's header file.

Definition at line 391 of file stm32f4xx_hal_conf.h.

#define DATA_CACHE_ENABLE 1
Definition at line 149 of file stm32f4xx_hal_conf.h.

#define DP83848_PHY_ADDRESS 0x01
Definition at line 179 of file stm32f4xx_hal_conf.h.

#define ETH_RX_BUF_SIZE ETH_MAX_PACKET_SIZE /* buffer size for receive */
Definition at line 171 of file stm32f4xx_hal_conf.h.

#define ETH_RXBUFNB ((uint32_t)4) /* 4 Rx buffers of size ETH_RX_BUF_SIZE */
Definition at line 173 of file stm32f4xx_hal_conf.h.

#define ETH_TX_BUF_SIZE ETH_MAX_PACKET_SIZE /* buffer size for transmit */
Definition at line 172 of file stm32f4xx_hal_conf.h.

#define ETH_TXBUFNB ((uint32_t)4) /* 4 Tx buffers of size ETH_TX_BUF_SIZE */
Definition at line 174 of file stm32f4xx_hal_conf.h.

#define EXTERNAL_CLOCK_VALUE ((uint32_t)12288000)
External clock source for I2S peripheral This value is used by the I2S HAL module to compute the I2S clock source frequency, this source is inserted directly through I2S_CKIN pad.

Value of the External audio frequency in Hz

Definition at line 133 of file stm32f4xx_hal_conf.h.

#define HAL_ADC_MODULE_ENABLED
Definition at line 51 of file stm32f4xx_hal_conf.h.

#define HAL_CORTEX_MODULE_ENABLED
Definition at line 87 of file stm32f4xx_hal_conf.h.

#define HAL_DMA_MODULE_ENABLED
Definition at line 83 of file stm32f4xx_hal_conf.h.

#define HAL_FLASH_MODULE_ENABLED
Definition at line 85 of file stm32f4xx_hal_conf.h.

#define HAL_GPIO_MODULE_ENABLED
Definition at line 82 of file stm32f4xx_hal_conf.h.

#define HAL_MODULE_ENABLED
This is the list of modules to be used in the HAL driver.

Definition at line 50 of file stm32f4xx_hal_conf.h.

#define HAL_PWR_MODULE_ENABLED
Definition at line 86 of file stm32f4xx_hal_conf.h.

#define HAL_RCC_MODULE_ENABLED
Definition at line 84 of file stm32f4xx_hal_conf.h.

#define HAL_SPI_MODULE_ENABLED
Definition at line 73 of file stm32f4xx_hal_conf.h.

#define HAL_TIM_MODULE_ENABLED
Definition at line 74 of file stm32f4xx_hal_conf.h.

#define HAL_UART_MODULE_ENABLED
Definition at line 75 of file stm32f4xx_hal_conf.h.

#define HSE_STARTUP_TIMEOUT ((uint32_t)5000)
Time out for HSE start up, in ms

Definition at line 100 of file stm32f4xx_hal_conf.h.

#define HSE_VALUE ((uint32_t)8000000)
Adjust the value of External High Speed oscillator (HSE) used in your application.

This value is used by the RCC HAL module to compute the system frequency (when HSE is used as system clock source, directly or through the PLL). Value of the External oscillator in Hz

Definition at line 96 of file stm32f4xx_hal_conf.h.

#define HSI_VALUE ((uint32_t)16000000)
Internal High Speed oscillator (HSI) value.

This value is used by the RCC HAL module to compute the system frequency (when HSI is used as system clock source, directly or through the PLL). Value of the Internal oscillator in Hz

Definition at line 109 of file stm32f4xx_hal_conf.h.

#define INSTRUCTION_CACHE_ENABLE 1
Definition at line 148 of file stm32f4xx_hal_conf.h.

#define LSE_VALUE ((uint32_t)32768)
External Low Speed oscillator (LSE) value.

< Value of the Internal Low Speed oscillator in Hz The real value may vary depending on the variations in voltage and temperature.Value of the External Low Speed oscillator in Hz

Definition at line 124 of file stm32f4xx_hal_conf.h.

#define LSI_VALUE ((uint32_t)32000)
Internal Low Speed oscillator (LSI) value.

Definition at line 116 of file stm32f4xx_hal_conf.h.

#define MAC_ADDR0 2
Uncomment the line below to expanse the "assert_param" macro in the HAL drivers code.

Definition at line 163 of file stm32f4xx_hal_conf.h.

#define MAC_ADDR1 0
Definition at line 164 of file stm32f4xx_hal_conf.h.

#define MAC_ADDR2 0
Definition at line 165 of file stm32f4xx_hal_conf.h.

#define MAC_ADDR3 0
Definition at line 166 of file stm32f4xx_hal_conf.h.

#define MAC_ADDR4 0

Definition at line 167 of file stm32f4xx_hal_conf.h.

#define MAC_ADDR5 0
Definition at line 168 of file stm32f4xx_hal_conf.h.

#define PHY_AUTONEGO_COMPLETE ((uint16_t)0x0020)
Auto-Negotiation process completed

Definition at line 204 of file stm32f4xx_hal_conf.h.

#define PHY_AUTONEGOTIATION ((uint16_t)0x1000)
Enable auto-negotiation function

Definition at line 199 of file stm32f4xx_hal_conf.h.

#define PHY_BCR ((uint16_t)0x00)
Transceiver Basic Control Register

Definition at line 190 of file stm32f4xx_hal_conf.h.

#define PHY_BSR ((uint16_t)0x01)
Transceiver Basic Status Register

Definition at line 191 of file stm32f4xx_hal_conf.h.

#define PHY_CONFIG_DELAY ((uint32_t)0x00000FFF)
Definition at line 183 of file stm32f4xx_hal_conf.h.

#define PHY_DUPLEX_STATUS ((uint16_t)0x0004)
PHY Duplex mask

Definition at line 216 of file stm32f4xx_hal_conf.h.

#define PHY_FULLDUPLEX_100M ((uint16_t)0x2100)
Set the full-duplex mode at 100 Mb/s

Definition at line 195 of file stm32f4xx_hal_conf.h.

#define PHY_FULLDUPLEX_10M ((uint16_t)0x0100)
Set the full-duplex mode at 10 Mb/s

Definition at line 197 of file stm32f4xx_hal_conf.h.

#define PHY_HALFDUPLEX_100M ((uint16_t)0x2000)
Set the half-duplex mode at 100 Mb/s

Definition at line 196 of file stm32f4xx_hal_conf.h.

#define PHY_HALFDUPLEX_10M ((uint16_t)0x0000)
Set the half-duplex mode at 10 Mb/s

Definition at line 198 of file stm32f4xx_hal_conf.h.

#define PHY_ISOLATE ((uint16_t)0x0400)
Isolate PHY from MII

Definition at line 202 of file stm32f4xx_hal_conf.h.

#define PHY_JABBER_DETECTION ((uint16_t)0x0002)
Jabber condition detected

Definition at line 206 of file stm32f4xx_hal_conf.h.

#define PHY_LINK_INTERRUPT ((uint16_t)0x2000)
PHY link status interrupt mask

Definition at line 222 of file stm32f4xx_hal_conf.h.

#define PHY_LINK_STATUS ((uint16_t)0x0001)
PHY Link mask

Definition at line 214 of file stm32f4xx_hal_conf.h.

#define PHY_LINKED_STATUS ((uint16_t)0x0004)
Valid link established

Definition at line 205 of file stm32f4xx_hal_conf.h.

#define PHY_LOOPBACK ((uint16_t)0x4000)
Select loop-back mode

Definition at line 194 of file stm32f4xx_hal_conf.h.

#define PHY_MICR ((uint16_t)0x11)
MII Interrupt Control Register

Definition at line 211 of file stm32f4xx_hal_conf.h.

#define PHY_MICR_INT_EN ((uint16_t)0x0002)
PHY Enable interrupts

Definition at line 218 of file stm32f4xx_hal_conf.h.

#define PHY_MICR_INT_OE ((uint16_t)0x0001)
PHY Enable output interrupt events

Definition at line 219 of file stm32f4xx_hal_conf.h.

#define PHY_MISR ((uint16_t)0x12)
MII Interrupt Status and Misc. Control Register

Definition at line 212 of file stm32f4xx_hal_conf.h.

#define PHY_MISR_LINK_INT_EN ((uint16_t)0x0020)
Enable Interrupt on change of link status

Definition at line 221 of file stm32f4xx_hal_conf.h.

#define PHY_POWERDOWN ((uint16_t)0x0800)
Select the power down mode

Definition at line 201 of file stm32f4xx_hal_conf.h.

#define PHY_READ_TO ((uint32_t)0x0000FFFF)
Definition at line 185 of file stm32f4xx_hal_conf.h.

#define PHY_RESET ((uint16_t)0x8000)
PHY Reset

Definition at line 193 of file stm32f4xx_hal_conf.h.

#define PHY_RESET_DELAY ((uint32_t)0x000000FF)
Definition at line 181 of file stm32f4xx_hal_conf.h.

#define PHY_RESTART_AUTONEGOTIATION ((uint16_t)0x0200)
Restart auto-negotiation function

Definition at line 200 of file stm32f4xx_hal_conf.h.

#define PHY_SPEED_STATUS ((uint16_t)0x0002)
PHY Speed mask

Definition at line 215 of file stm32f4xx_hal_conf.h.

#define PHY_SR ((uint16_t)0x10)
PHY status register Offset

Definition at line 210 of file stm32f4xx_hal_conf.h.

#define PHY_WRITE_TO ((uint32_t)0x0000FFFF)
Definition at line 186 of file stm32f4xx_hal_conf.h.

#define PREFETCH_ENABLE 1
Definition at line 147 of file stm32f4xx_hal_conf.h.

#define TICK_INT_PRIORITY ((uint32_t)2)
tick interrupt priority

Definition at line 145 of file stm32f4xx_hal_conf.h.

#define USE_RTOS 0
Definition at line 146 of file stm32f4xx_hal_conf.h.

#define VDD_VALUE ((uint32_t)3300)
This is the HAL system configuration section.

Value of VDD in mv

Definition at line 144 of file stm32f4xx_hal_conf.h.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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Functions

stm32f4xx_hal_msp.c File Reference

This file provides code for the MSP Initialization and de-Initialization codes. More...

```
#include "stm32f4xx_hal.h"
#include "stm32F401_nucleo_ihm11m1.h"
```

Go to the source code of this file.

Functions

void&"memItemRight" valign="bottom">HAL_MspInit (void)

Initializes the Global MSP. More...

void HAL_ADC_MspInit (ADC_HandleTypeDef *hadc)

void HAL_ADC_MspDeInit (ADC_HandleTypeDef *hadc)

void HAL_TIM_Base_MspInit (TIM_HandleTypeDef *htim_base)

void HAL_TIM_PWM_MspInit (TIM_HandleTypeDef *htim)

Initializes the TIM PWM MSP. More...

void HAL_TIMEx_HallSensor_MspInit (TIM_HandleTypeDef *htimex_hallsensor)

void HAL_TIM_Base_MspDeInit (TIM_HandleTypeDef *htim_base)

void HAL_TIMEx_HallSensor_MspDeInit (TIM_HandleTypeDef *htimex_hallsensor)

void HAL_UART_MspInit (UART_HandleTypeDef *huart)

void HAL_UART_MspDeInit (UART_HandleTypeDef *huart)

Detailed Description

This file provides code for the MSP Initialization and de-Initialization codes.

Author
IPC

Version
V0

Date
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Definition in file stm32f4xx_hal_msp.c.

Function Documentation

void HAL_ADC_MspDeInit (ADC_HandleTypeDef * *hadc*)
ADC1 GPIO Configuration IHM11M1 PC1 ------> ADC1_IN11 PC2 ------> ADC1_IN12 PC3 ------> ADC1_IN13 PA1 ------> ADC1_IN1 PA7 ------> ADC1_IN7 PB0 ------> ADC1_IN8

Definition at line 160 of file stm32f4xx_hal_msp.c.

void HAL_ADC_MspInit (ADC_HandleTypeDef * *hadc*)
ADC1 GPIO Configuration IHM11M1 PC1 ------> ADC1_IN11 PC2 ------> ADC1_IN12 PC3 ------> ADC1_IN13 PA1 ------> ADC1_IN1 PA7 ------> ADC1_IN7 PB0 ------> ADC1_IN8

Definition at line 115 of file stm32f4xx_hal_msp.c.

void HAL_MspInit (void)
Initializes the Global MSP.

GPIO Configuration IHM11M1

Definition at line 48 of file stm32f4xx_hal_msp.c.

References GPIO_CH_COMM, GPIO_CH_ZCR, GPIO_PORT_COMM, and GPIO_PORT_ZCR.

void HAL_TIM_Base_MspDeInit (TIM_HandleTypeDef * *htim_base*)
TIM1 GPIO Configuration IHM11M1 PA8 ——> TIM1_CH1 PA9 ——> TIM1_CH2 PA10 ——> TIM1_CH3 PB13 ——> TIM1_CH1N PB14 ——> TIM1_CH2N PB1 ——> TIM1_CH3N

TIM3 GPIO Configuration PB4 ------> TIM3_CH1

Definition at line 374 of file stm32f4xx_hal_msp.c.

void HAL_TIM_Base_MspInit (TIM_HandleTypeDef * *htim_base*)
TIM1 GPIO Configuration IHM11M1 PA8 ——> TIM1_CH1 PA9 ——> TIM1_CH2 PA10 ——> TIM1_CH3 PB13 ——> TIM1_CH1N PB14 ——> TIM1_CH2N PB1 ——> TIM1_CH3N

TIM3 GPIO Configuration IHM11M1 PB4 ------> TIM3_CH1

Definition at line 195 of file stm32f4xx_hal_msp.c.

void HAL_TIM_PWM_MspInit (TIM_HandleTypeDef * *htim*)
Initializes the TIM PWM MSP.

Parameters

htim pointer to a TIM_HandleTypeDef structure that contains the configuration information for TIM module.

Return values

None

TIM1 GPIO Configuration IHM11M1 PA8 ------> TIM1_CH1 PA9 ------> TIM1_CH2 PA10 ------> TIM1_CH3 PB13 ------> TIM1_CH1N PB14 ------> TIM1_CH2N PB1 ------> TIM1_CH3N

Definition at line 287 of file stm32f4xx_hal_msp.c.

void HAL_TIMEx_HallSensor_MspDeInit (TIM_HandleTypeDef * *htimex_hallsensor*)
TIM2 GPIO Configuration PA15 ------> TIM2_CH1 PB10 ------> TIM2_CH3 PB3 ------> TIM2_CH2

Definition at line 440 of file stm32f4xx_hal_msp.c.

void HAL_TIMEx_HallSensor_MspInit (TIM_HandleTypeDef * *htimex_hallsensor*)
TIM2 GPIO Configuration IHM11M1 PA15 ------> TIM2_CH1 PB10 ------> TIM2_CH3 PB3 ------> TIM2_CH2

Definition at line 326 of file stm32f4xx_hal_msp.c.

void HAL_UART_MspDeInit (UART_HandleTypeDef * *huart*)
USART2 GPIO Configuration PA2 ------> USART2_TX PA3 ------> USART2_RX

Definition at line 500 of file stm32f4xx_hal_msp.c.

void HAL_UART_MspInit (UART_HandleTypeDef * *huart*)
USART2 GPIO Configuration PA2 ------> USART2_TX PA3 ------> USART2_RX

Definition at line 467 of file stm32f4xx_hal_msp.c.

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Functions | Variables
stm32f4xx_it.c File Reference
Interrupt Service Routines. More...

```
#include "stm32f4xx_hal.h"
#include "stm32f4xx.h"
#include "stm32f4xx_it.h"
#include "6Step_Lib.h"
```

Go to the source code of this file.

Functions

void&"memItemRight"
valign="bottom">UART_Set_Value (void)

void ADC_IRQHandler (void)

This function handles ADC1 global interrupt. More...

void SysTick_Handler (void)
This function handles System tick timer. More...

void USART2_IRQHandler (void)
This function handles USART2 global interrupt. More...

void TIM4_IRQHandler (void)
This function handles TIM4 global interrupt. More...

void EXTI15_10_IRQHandler (void)
This function handles EXTI Line[15:10] interrupts. More...

void TIM1_BRK_TIM9_IRQHandler (void)
This function handles TIM1 Break interrupt and TIM9 global interrupt. More...

Variables

SIXSTEP_Base_InitTypeDef SIXSTEP_parameters

ADC_HandleTypeDef hadc1

TIM_HandleTypeDef htim1

TIM_HandleTypeDef htim4

UART_HandleTypeDef huart2

Detailed Description

Interrupt Service Routines.

Date
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Definition in file stm32f4xx_it.c.

Function Documentation

void ADC_IRQHandler (void)
This function handles ADC1 global interrupt.

Definition at line 59 of file stm32f4xx_it.c.

References hadc1.

void EXTI15_10_IRQHandler (void)
This function handles EXTI Line[15:10] interrupts.

Definition at line 118 of file stm32f4xx_it.c.

void SysTick_Handler (void)
This function handles System tick timer.

Definition at line 73 of file stm32f4xx_it.c.

References HAL_IncTick().

void TIM1_BRK_TIM9_IRQHandler (void)
This function handles TIM1 Break interrupt and TIM9 global interrupt.

Definition at line 132 of file stm32f4xx_it.c.

References htim1, MC_StopMotor(), OVERCURRENT, and SIXSTEP_Base_InitTypeDef::STATUS.

void TIM4_IRQHandler (void)
This function handles TIM4 global interrupt.

Definition at line 104 of file stm32f4xx_it.c.

References htim4.

void UART_Set_Value (void)
Referenced by USART2_IRQHandler().

void USART2_IRQHandler (void)
This function handles USART2 global interrupt.

Definition at line 88 of file stm32f4xx_it.c.

References huart2, and UART_Set_Value().

Variable Documentation

ADC_HandleTypeDef hadc1
Definition at line 46 of file main_F401.c.

Referenced by ADC_IRQHandler().

TIM_HandleTypeDef htim1
Definition at line 48 of file main_F401.c.

Referenced by TIM1_BRK_TIM9_IRQHandler().

TIM_HandleTypeDef htim4
Definition at line 51 of file main_F401.c.

Referenced by TIM4_IRQHandler().

UART_HandleTypeDef huart2
Definition at line 53 of file main_F401.c.

Referenced by USART2_IRQHandler().

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Functions
stm32f4xx_it.h File Reference
This file contains the headers of the interrupt handlers. More...

Go to the source code of this file.

Functions

void&"memItemRight" valign="bottom">ADC_IRQHandler (void)

This function handles ADC1 global interrupt. More...

void SysTick_Handler (void)

This function handles System tick timer. More...

void USART2_IRQHandler (void)

This function handles USART2 global interrupt. More...

void TIM4_IRQHandler (void)

This function handles TIM4 global interrupt. More...

void EXTI15_10_IRQHandler (void)

This function handles EXTI Line[15:10] interrupts. More...

void TIM1_BRK_TIM9_IRQHandler (void)

This function handles TIM1 Break interrupt and TIM9 global interrupt. More...

Detailed Description

This file contains the headers of the interrupt handlers.

Date

27/04/2015 12:50:22 COPYRIGHT(c) 2015 STMicroelectronics

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Definition in file stm32f4xx_it.h.

Function Documentation

void ADC_IRQHandler (void)
This function handles ADC1 global interrupt.

Definition at line 59 of file stm32f4xx_it.c.

References hadc1.

void EXTI15_10_IRQHandler (void)
This function handles EXTI Line[15:10] interrupts.

Definition at line 118 of file stm32f4xx_it.c.

void SysTick_Handler (void)
This function handles System tick timer.

Definition at line 73 of file stm32f4xx_it.c.

References HAL_IncTick().

void TIM1_BRK_TIM9_IRQHandler (void)
This function handles TIM1 Break interrupt and TIM9 global interrupt.

Definition at line 132 of file stm32f4xx_it.c.

References htim1, MC_StopMotor(), OVERCURRENT, and SIXSTEP_Base_InitTypeDef::STATUS.

void TIM4_IRQHandler (void)
This function handles TIM4 global interrupt.

Definition at line 104 of file stm32f4xx_it.c.

References htim4.

void USART2_IRQHandler (void)
This function handles USART2 global interrupt.

Definition at line 88 of file stm32f4xx_it.c.

References huart2, and UART_Set_Value().

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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- Components
- STSPIN230

Functions | Variables
STSPIN230.c File Reference
This file provides a set of functions to manage STSPIN230 driver. More...

```
#include "STSPIN230.h"
```

Go to the source code of this file.

Functions

void&"memItemRight"
valign="bottom">EnableInput_CH1_E_CH2_E_CH3_D ()

void EnableInput_CH1_E_CH2_D_CH3_E ()

void EnableInput_CH1_D_CH2_E_CH3_E ()

void DisableInput_CH1_D_CH2_D_CH3_D ()

void Start_PWM_driving ()

void Stop_PWM_driving ()

void HF_TIMx_SetDutyCycle_CH1 (uint16_t CCR_value)

void HF_TIMx_SetDutyCycle_CH2 (uint16_t CCR_value)

void HF_TIMx_SetDutyCycle_CH3 (uint16_t CCR_value)

void Current_Reference_Start ()

void Current_Reference_Stop ()

void Current_Reference_Setvalue (uint16_t Iref)

Variables

STSPIN230_MotorDriver_TypeDef STSPIN230MotorDriver
It handles all API functions for STSPIN230 MC Driver. More...

Detailed Description

This file provides a set of functions to manage STSPIN230 driver.

Author
IPC

Version
V0

Date
28-April-2016

Attention

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Definition in file STSPIN230.c.

Generated by doxygen 1.8.11

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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- Components
- STSPIN230

Functions

STSPIN230.h File Reference

This file provides a set of functions to manage STSPIN230 driver. More...

```
#include "stdint.h"
#include "MC_Common.h"
```

Go to the source code of this file.

Functions

void&"memItemRight" ="bottom">STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D (void)

Enable Input channel CH1 and CH2 for STSPIN230. More...

void STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E (void)

Enable Input channel CH1 and CH3 for STSPIN230. More...

void STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E (void)

Enable Input channel CH2 and CH3 for STSPIN230. More...

void STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D (void)

Enable Input channel CH2 and CH3 for STSPIN230. More...

void STSPIN230_Start_PWM_driving (void)

Enable PWM channels for STSPIN230. More...

void STSPIN230_Stop_PWM_driving (void)
Disable PWM channels for STSPIN230. More...

void STSPIN230_HF_TIMx_SetDutyCycle_CH1 (uint16_t)
Set the Duty Cycle value for CH1. More...

void STSPIN230_HF_TIMx_SetDutyCycle_CH2 (uint16_t)
Set the Duty Cycle value for CH2. More...

void STSPIN230_HF_TIMx_SetDutyCycle_CH3 (uint16_t)
Set the Duty Cycle value for CH3. More...

void STSPIN230_Current_Reference_Start (void)
Enable the Current Reference generation. More...

void STSPIN230_Current_Reference_Stop (void)
Disable the Current Reference generation. More...

void STSPIN230_Current_Reference_Setvalue (uint16_t)
Set the value for Current Reference. More...

void STSPIN230_START_Ref_Generation (void)

void STSPIN230_STOP_Ref_Generation (void)

void STSPIN230_Set_Ref_Generation (uint16_t)

void EnableInput_CH1_E_CH2_E_CH3_D (void)

void EnableInput_CH1_E_CH2_D_CH3_E (void)

void EnableInput_CH1_D_CH2_E_CH3_E (void)

void DisableInput_CH1_D_CH2_D_CH3_D (void)

void Start_PWM_driving (void)

void Stop_PWM_driving (void)

void HF_TIMx_SetDutyCycle_CH1 (uint16_t)

void HF_TIMx_SetDutyCycle_CH2 (uint16_t)

void HF_TIMx_SetDutyCycle_CH3 (uint16_t)

void Current_Reference_Start (void)

void Current_Reference_Stop (void)

void Current_Reference_Setvalue (uint16_t)

Detailed Description

This file provides a set of functions to manage STSPIN230 driver.

Author
IPC

Version
V0

Date
04-April-2016

Attention

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Definition in file STSPIN230.h.

Function Documentation

void STSPIN230_Set_Ref_Generation (uint16_t)
void STSPIN230_START_Ref_Generation (void)
void STSPIN230_STOP_Ref_Generation (void)

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UART_UI.c File Reference
This file provides a set of functions needed to manage the UART com. More...

```
#include "UART_UI.h"
```

Go to the source code of this file.

Detailed Description

This file provides a set of functions needed to manage the UART com.

Author
IPC

Version
V0

Date
10/07/2016

Attention

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Definition in file UART_UI.c.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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- Inc

Data Structures | Macros | Functions

UART_UI.h File Reference

This file provides a set of functions needed to manage the UART com. More...

```
#include "6Step_Lib.h"
#include "stdlib.h"
#include "stdio.h"
#include <string.h>
```

Go to the source code of this file.

Data Structures

struct &"memItemRight" valign="bottom">CMD_T

Macros

#define TOKEN "\r"

#define CMD_NUM 16

#define COUNTOF(__BUFFER__) (sizeof(__BUFFER__) / sizeof(*(__BUFFER__)))

#define TXBUFFERSIZE (COUNTOF(aTxBuffer) - 1)

#define RXBUFFERSIZE 8

Functions

void CMD_STARTM (void)
UART function. More...

void CMD_STOPMT (void)

void CMD_DIRECTION (void)

void CMD_SETSPD (void)

void CMD_GETSPD (void)

void CMD_STATUS (void)

void CMD_POTENZ (void)

void CMD_HELP (void)

void CMD_INIREF (void)

void CMD_POLESP (void)

void CMD_ACCELE (void)

void CMD_KP_PRM (void)

void CMD_KI_PRM (void)

Detailed Description

This file provides a set of functions needed to manage the UART com.

Author
System lab

Version
V1.0.0

Date
06-July-2015

Attention

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Definition in file UART_UI.h.

Macro Definition Documentation

#define CMD_NUM 16
Definition at line 44 of file UART_UI.h.

#define COUNTOF (__BUFFER__) (sizeof(__BUFFER__) / sizeof(*(__BUFFER__)))
Definition at line 46 of file UART_UI.h.

#define RXBUFFERSIZE 8
Definition at line 48 of file UART_UI.h.

#define TOKEN "\r"
Definition at line 43 of file UART_UI.h.

#define TXBUFFERSIZE (COUNTOF(aTxBuffer) - 1)
Definition at line 47 of file UART_UI.h.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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- Data&"temp0535.html">Data Structure Index
- Data&"header">
  Data Fields
  CMD_T Struct Reference

```
#include <UART_UI.h>
```

Data Fields

char name [10]

void(* pCmdFunc)(void)

Detailed Description

Definition at line 50 of file UART_UI.h.

Field Documentation

char CMD_T::name[10]
Definition at line 51 of file UART_UI.h.

void(* CMD_T::pCmdFunc) (void)
Definition at line 52 of file UART_UI.h.

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

- UART_UI.h

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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- X-NUCLEO-IHM11M1

Functions | Variables

X-NUCLEO-IHM11M1.c File Reference

This file provides the set of functions to manage the X-Nucleo expansion board. More...

```
#include "X-NUCLEO-IHM11M1.h"
#include "6Step_Lib.h"
```

Go to the source code of this file.

Functions

void&"memItemRight" ="bottom">STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D ()

Enable Input channel CH1 and CH2 for STSPIN230. More...

void STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E ()

Enable Input channel CH1 and CH3 for STSPIN230. More...

void STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E ()

Enable Input channel CH2 and CH3 for STSPIN230. More...

void STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D ()

Enable Input channel CH2 and CH3 for STSPIN230. More...

void STSPIN230_Start_PWM_driving ()

Enable PWM channels for STSPIN230. More...

void STSPIN230_Stop_PWM_driving ()
Disable PWM channels for STSPIN230. More...

void STSPIN230_HF_TIMx_SetDutyCycle_CH1 (uint16_t CCR_value)
Set the Duty Cycle value for CH1. More...

void STSPIN230_HF_TIMx_SetDutyCycle_CH2 (uint16_t CCR_value)
Set the Duty Cycle value for CH2. More...

void STSPIN230_HF_TIMx_SetDutyCycle_CH3 (uint16_t CCR_value)
Set the Duty Cycle value for CH3. More...

void STSPIN230_Current_Reference_Start ()
Enable the Current Reference generation. More...

void STSPIN230_Current_Reference_Stop ()
Disable the Current Reference generation. More...

void STSPIN230_Current_Reference_Setvalue (uint16_t Iref)
Set the value for Current Reference. More...

void BSP_X_NUCLEO_FAULT_LED_ON ()

void BSP_X_NUCLEO_FAULT_LED_OFF ()

Variables

SIXSTEP_Base_InitTypeDef SIXSTEP_parameters

Detailed Description

This file provides the set of functions to manage the X-Nucleo expansion board.

Author
IPC

Version
V0

Date
10/07/2016

Attention

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Definition in file X-NUCLEO-IHM11M1.c.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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- X-NUCLEO-IHM11M1

Functions

X-NUCLEO-IHM11M1.h File Reference

This file provides the set of functions to manage the X-Nucleo board. More...

```
#include "STSPIN230.h"
```

Go to the source code of this file.

Functions

void&"memItemRight" valign="bottom">STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D (void)

Enable Input channel CH1 and CH2 for STSPIN230. More...

void STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E (void)

Enable Input channel CH1 and CH3 for STSPIN230. More...

void STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E (void)

Enable Input channel CH2 and CH3 for STSPIN230. More...

void STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D (void)

Enable Input channel CH2 and CH3 for STSPIN230. More...

void STSPIN230_Start_PWM_driving (void)

Enable PWM channels for STSPIN230. More...

void STSPIN230_Stop_PWM_driving (void)

Disable PWM channels for STSPIN230. More...

void STSPIN230_HF_TIMx_SetDutyCycle_CH1 (uint16_t)

Set the Duty Cycle value for CH1. More...

void STSPIN230_HF_TIMx_SetDutyCycle_CH2 (uint16_t)

Set the Duty Cycle value for CH2. More...

void STSPIN230_HF_TIMx_SetDutyCycle_CH3 (uint16_t)

Set the Duty Cycle value for CH3. More...

void STSPIN230_Current_Reference_Start (void)

Enable the Current Reference generation. More...

void STSPIN230_Current_Reference_Stop (void)

Disable the Current Reference generation. More...

void STSPIN230_Current_Reference_Setvalue (uint16_t)
Set the value for Current Reference. More...

Detailed Description

This file provides the set of functions to manage the X-Nucleo board.

Author
IPC

Version
V0

Date
10/07/2016

Attention

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Definition in file X-NUCLEO-IHM11M1.h.

X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- a -

- ACC : MC_SixStep_param.h
- ACCELE_CMD : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH1 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH1_ST : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH2 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH2_ST : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH3 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH3_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_1 : stm32F401_nucleo_ihm11m1.h

- ADC_CH_1_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_2 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_2_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_3 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_3_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_4 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_4_ST : stm32F401_nucleo_ihm11m1.h
- ADC_IRQHandler() : stm32f4xx_it.c , stm32f4xx_it.h
- ADC_SPEED_TH : MC_SixStep_param.h
- ADCx : stm32F401_nucleo_ihm11m1.h
- ALIGNMENT : 6Step_Lib.h
- ARR_LF : 6Step_Lib.c
- array_completed : 6Step_Lib.c
- assert_param : stm32f4xx_hal_conf.h

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X-CUBE-SPN11 for X-NUCLEO-IHM11M1

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- a -

- ACC : MC_SixStep_param.h
- ACCELE_CMD : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH1 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH1_ST : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH2 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH2_ST : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH3 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH3_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_1 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_1_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_2 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_2_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_3 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_3_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_4 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_4_ST : stm32F401_nucleo_ihm11m1.h
- ADC_IRQHandler() : stm32f4xx_it.c , stm32f4xx_it.h
- ADC_SPEED_TH : MC_SixStep_param.h
- ADCx : stm32F401_nucleo_ihm11m1.h
- ALIGNMENT : 6Step_Lib.h
- ARR_LF : 6Step_Lib.c
- array_completed : 6Step_Lib.c
- assert_param : stm32f4xx_hal_conf.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- a -

- ACC : MC_SixStep_param.h
- ACCELE_CMD : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH1 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH1_ST : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH2 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH2_ST : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH3 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH3_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_1 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_1_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_2 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_2_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_3 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_3_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_4 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_4_ST : stm32F401_nucleo_ihm11m1.h
- ADC_IRQHandler() : stm32f4xx_it.c , stm32f4xx_it.h
- ADC_SPEED_TH : MC_SixStep_param.h
- ADCx : stm32F401_nucleo_ihm11m1.h
- ALIGNMENT : 6Step_Lib.h
- ARR_LF : 6Step_Lib.c
- array_completed : 6Step_Lib.c
- assert_param : stm32f4xx_hal_conf.h

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- b -

- BEMF_CNT_EVENT_MAX : MC_SixStep_param.h
- BEMF_CONSEC_DOWN_MAX : MC_SixStep_param.h
- Bemf_delay_calc() : stm32F401_nucleo_ihm11m1.h , stm32F401_nucleo_ihm11m1.c
- BEMF_THRSLD_DOWN : MC_SixStep_param.h
- BEMF_THRSLD_UP : MC_SixStep_param.h
- BSP_X_NUCLEO_FAULT_LED_OFF() : stm32F401_nucleo_ihm11m1.h , X-NUCLEO-IHM11M1.c
- BSP_X_NUCLEO_FAULT_LED_ON() : stm32F401_nucleo_ihm11m1.h , X-NUCLEO-IHM11M1.c

- buffer_completed : 6Step_Lib.c
- BUTTON_DELAY : MC_SixStep_param.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- C -

- CMD_ACCELE() : UART_UI.h
- CMD_DIRECTION() : UART_UI.h
- CMD_GETSPD() : UART_UI.h
- CMD_HELP() : UART_UI.h

- CMD_INIREF() : UART_UI.h
- CMD_KI_PRM() : UART_UI.h
- CMD_KP_PRM() : UART_UI.h
- CMD_NUM : UART_UI.h
- CMD_Parser() : 6Step_Lib.c
- CMD_POLESP() : UART_UI.h
- CMD_POTENZ() : UART_UI.h
- CMD_SETSPD() : UART_UI.h
- CMD_STARTM() : UART_UI.h
- CMD_STATUS() : UART_UI.h
- CMD_STOPMT() : UART_UI.h
- cnt_bemf_event : 6Step_Lib.c
- constant_k : 6Step_Lib.c
- constant_multiplier_tmp : 6Step_Lib.c
- counter_ARR_Bemf : 6Step_Lib.c
- COUNTOF : UART_UI.h
- Current_Reference_Setvalue() : STSPIN230.h , STSPIN230.c
- Current_Reference_Start() : STSPIN230.c , STSPIN230.h
- Current_Reference_Stop() : STSPIN230.c , STSPIN230.h

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- d -

- DAC_ENABLE : stm32F401_nucleo_ihm11m1.h
- dac_status : 6Step_Lib.c
- DACx : stm32F401_nucleo_ihm11m1.h
- DATA_CACHE_ENABLE : stm32f4xx_hal_conf.h
- delta : 6Step_Lib.c
- DEMAGN_VAL_1 : MC_SixStep_param.h
- DEMAGN_VAL_10 : MC_SixStep_param.h
- DEMAGN_VAL_11 : MC_SixStep_param.h
- DEMAGN_VAL_12 : MC_SixStep_param.h
- DEMAGN_VAL_13 : MC_SixStep_param.h
- DEMAGN_VAL_14 : MC_SixStep_param.h
- DEMAGN_VAL_2 : MC_SixStep_param.h
- DEMAGN_VAL_3 : MC_SixStep_param.h
- DEMAGN_VAL_4 : MC_SixStep_param.h
- DEMAGN_VAL_5 : MC_SixStep_param.h
- DEMAGN_VAL_6 : MC_SixStep_param.h
- DEMAGN_VAL_7 : MC_SixStep_param.h
- DEMAGN_VAL_8 : MC_SixStep_param.h
- DEMAGN_VAL_9 : MC_SixStep_param.h
- DEMO_START_TIME : MC_SixStep_param.h
- DEMO_STOP_TIME : MC_SixStep_param.h
- DIRECT_CMD : stm32F401_nucleo_ihm11m1.h
- DIRECTION : MC_SixStep_param.h
- DisableInput_CH1_D_CH2_D_CH3_D() : STSPIN230.c , STSPIN230.h
- DP83848_PHY_ADDRESS : stm32f4xx_hal_conf.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- e -

- El_Speed_Hz : 6Step_Lib.c
- Enable_start_button : 6Step_Lib.c
- EnableInput_CH1_D_CH2_E_CH3_E() : STSPIN230.h , STSPIN230.c
- EnableInput_CH1_E_CH2_D_CH3_E() : STSPIN230.c , STSPIN230.h
- EnableInput_CH1_E_CH2_E_CH3_D() : STSPIN230.h , STSPIN230.c
- ETH_RX_BUF_SIZE : stm32f4xx_hal_conf.h
- ETH_RXBUFNB : stm32f4xx_hal_conf.h
- ETH_TX_BUF_SIZE : stm32f4xx_hal_conf.h
- ETH_TXBUFNB : stm32f4xx_hal_conf.h
- EXTERNAL_CLOCK_VALUE : stm32f4xx_hal_conf.h
- EXTI15_10_IRQHandler() : stm32f4xx_it.h , stm32f4xx_it.c

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- f -

- FALSE : MC_SixStep_param.h
- FILTER_DEEP : MC_SixStep_param.h

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- g -

- Get_UART_Data() : stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- GETSPD_CMD : stm32F401_nucleo_ihm11m1.h
- GPIO_CH_COMM : stm32F401_nucleo_ihm11m1.h
- GPIO_CH_ZCR : stm32F401_nucleo_ihm11m1.h
- GPIO_COMM : MC_SixStep_param.h
- GPIO_PORT_COMM : stm32F401_nucleo_ihm11m1.h
- GPIO_PORT_ZCR : stm32F401_nucleo_ihm11m1.h
- GPIO_ZERO_CROSS : MC_SixStep_param.h

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- h -

- hadc1 : main_F401.c , stm32f4xx_it.c , main_F401.h
- HAL_ADC_ConvCpltCallback() : stm32F401_nucleo_ihm11m1.c
- HAL_ADC_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_ADC_MspDeInit() : stm32f4xx_hal_msp.c
- HAL_ADC_MspInit() : stm32f4xx_hal_msp.c
- HAL_CORTEX_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_DMA_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_FLASH_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_GetTick() : 6Step_Lib.c
- HAL_GPIO_EXTI_Callback() : stm32F401_nucleo_ihm11m1.c
- HAL_GPIO_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_IncTick() : 6Step_Lib.c
- HAL_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_MspInit() : stm32f4xx_hal_msp.c
- HAL_PWR_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_RCC_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_SPI_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_SYSTICK_Callback() : stm32F401_nucleo_ihm11m1.c
- HAL_TIM_Base_MspDeInit() : stm32f4xx_hal_msp.c
- HAL_TIM_Base_MspInit() : stm32f4xx_hal_msp.c

- HAL_TIM_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_TIM_PeriodElapsedCallback() : stm32F401_nucleo_ihm11m1.c
- HAL_TIM_PWM_MspInit() : stm32f4xx_hal_msp.c
- HAL_TIMEx_HallSensor_MspDeInit() : stm32f4xx_hal_msp.c
- HAL_TIMEx_HallSensor_MspInit() : stm32f4xx_hal_msp.c
- HAL_UART_MODULE_ENABLED : stm32f4xx_hal_conf.h
- HAL_UART_MspDeInit() : stm32f4xx_hal_msp.c
- HAL_UART_MspInit() : stm32f4xx_hal_msp.c
- HALL_ENCODER_TIMx : stm32F401_nucleo_ihm11m1.h
- HELP_CMD : stm32F401_nucleo_ihm11m1.h
- HF_TIMx : stm32F401_nucleo_ihm11m1.h
- HF_TIMx_CCR1 : stm32F401_nucleo_ihm11m1.h
- HF_TIMx_CCR2 : stm32F401_nucleo_ihm11m1.h
- HF_TIMx_CCR3 : stm32F401_nucleo_ihm11m1.h
- HF_TIMx_CH1 : stm32F401_nucleo_ihm11m1.h
- HF_TIMx_CH2 : stm32F401_nucleo_ihm11m1.h
- HF_TIMx_CH3 : stm32F401_nucleo_ihm11m1.h
- HF_TIMx_SetDutyCycle_CH1() : STSPIN230.c , STSPIN230.h
- HF_TIMx_SetDutyCycle_CH2() : STSPIN230.h , STSPIN230.c
- HF_TIMx_SetDutyCycle_CH3() : STSPIN230.h , STSPIN230.c
- HFBuffer : 6Step_Lib.c
- HFBufferIndex : 6Step_Lib.c
- HFBUFFERSIZE : MC_SixStep_param.h
- HSE_STARTUP_TIMEOUT : stm32f4xx_hal_conf.h
- HSE_VALUE : stm32f4xx_hal_conf.h
- HSI_VALUE : stm32f4xx_hal_conf.h
- htim1 : main_F401.h , main_F401.c , stm32f4xx_it.c
- htim2 : main_F401.c
- htim3 : main_F401.c , main_F401.h
- htim4 : main_F401.h , main_F401.c , stm32f4xx_it.c
- huart2 : main_F401.c , stm32f4xx_it.c , main_F401.h

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- i -

- IDLE : 6Step_Lib.h
- index_adc_chn : 6Step_Lib.c
- index_align : 6Step_Lib.c
- index_ARR_step : 6Step_Lib.c
- index_array : 6Step_Lib.c
- index_motor_run : 6Step_Lib.c
- index_pot_filt : 6Step_Lib.c
- index_startup_motor : 6Step_Lib.c
- INIREF_CMD : stm32F401_nucleo_ihm11m1.h
- INITIAL_DEMAGN_DELAY : MC_SixStep_param.h
- INSTRUCTION_CACHE_ENABLE : stm32f4xx_hal_conf.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- k -

- KI_DIV : MC_SixStep_param.h
- KI_GAIN : MC_SixStep_param.h
- KI_PRM_CMD : stm32F401_nucleo_ihm11m1.h
- KP_DIV : MC_SixStep_param.h
- KP_GAIN : MC_SixStep_param.h
- KP_PRM_CMD : stm32F401_nucleo_ihm11m1.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- l -

- LF_TIMx : stm32F401_nucleo_ihm11m1.h
- LOWER_OUT_LIMIT : MC_SixStep_param.h
- LSE_VALUE : stm32f4xx_hal_conf.h
- LSI_VALUE : stm32f4xx_hal_conf.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- m -

- MAC_ADDR0 : stm32f4xx_hal_conf.h
- MAC_ADDR1 : stm32f4xx_hal_conf.h
- MAC_ADDR2 : stm32f4xx_hal_conf.h
- MAC_ADDR3 : stm32f4xx_hal_conf.h
- MAC_ADDR4 : stm32f4xx_hal_conf.h
- MAC_ADDR5 : stm32f4xx_hal_conf.h
- main() : main_F401.c
- MAX_POT_SPEED : MC_SixStep_param.h
- MC_ADCx_SixStep_Bemf() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c
- MC_Bemf_Delay() : 6Step_Lib.c
- MC_EXT_button_SixStep() : 6Step_Lib.h , 6Step_Lib.c
- MC_GetElSpeedHz() : 6Step_Lib.c
- MC_GetMechSpeedRPM() : 6Step_Lib.c
- MC_PI_Controller() : 6Step_Lib.c
- MC_Potentiometer_filter() : 6Step_Lib.c
- MC_Set_PI_param() : 6Step_Lib.c
- MC_Set_Speed() : 6Step_Lib.h , 6Step_Lib.c
- MC_SixStep_ADC_Channel() : stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_Alignment() : 6Step_Lib.c
- MC_SixStep_ARR_Bemf() : 6Step_Lib.c
- MC_SixStep_ARR_step() : 6Step_Lib.c
- MC_SixStep_Current_Reference_Setvalue() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_Current_Reference_Start() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_Current_Reference_Stop() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h

- MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_HF_TIMx_SetDutyCycle_CH1() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_HF_TIMx_SetDutyCycle_CH2() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_HF_TIMx_SetDutyCycle_CH3() : stm32F401_nucleo_ihm11m1.h , 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c
- MC_SixStep_INIT() : 6Step_Lib.h , 6Step_Lib.c
- MC_SixStep_Init_main_data() : 6Step_Lib.c
- MC_SixStep_NEXT_step() : 6Step_Lib.c
- MC_SixStep_Nucleo_Init() : stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_Ramp_Motor_calc() : 6Step_Lib.c
- MC_SixStep_RESET() : 6Step_Lib.h , 6Step_Lib.c
- MC_SixStep_Speed_Potentiometer() : 6Step_Lib.c
- MC_SixStep_Speed_Val_target_potentiometer() : 6Step_Lib.c
- MC_SixStep_Start_PWM_driving() : stm32F401_nucleo_ihm11m1.c , 6Step_Lib.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_Stop_PWM_driving() : stm32F401_nucleo_ihm11m1.h , stm32F401_nucleo_ihm11m1.c , 6Step_Lib.c
- MC_SixStep_TABLE() : 6Step_Lib.c
- MC_Speed_Filter() : 6Step_Lib.c
- MC_StartMotor() : 6Step_Lib.c , 6Step_Lib.h
- MC_StopMotor() : 6Step_Lib.h , 6Step_Lib.c
- MC_SysTick_SixStep_MediumFrequencyTask() : stm32F401_nucleo_ihm11m1.c , 6Step_Lib.c
- MC_Task_Speed() : 6Step_Lib.c
- MC_TIMx_SixStep_timebase() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c
- MC_UI_INIT() : 6Step_Lib.c
- MCM_Sqrt() : 6Step_Lib.c
- mech_accel_hz : 6Step_Lib.c
- Mech_Speed_RPM : 6Step_Lib.c
- MIN_POT_SPEED : MC_SixStep_param.h
- MINIMUM_ACC : MC_SixStep_param.h
- MX_ADC1_Init() : main_F401.c
- MX_TIM1_Init() : main_F401.c
- MX_TIM3_Init() : main_F401.c
- MX_TIM4_Init() : main_F401.c
- MX_USART2_UART_Init() : main_F401.c

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- n -

- n_zcr_startup : 6Step_Lib.c
- NUM_POLE_PAIRS : MC_SixStep_param.h
- NUMBER_OF_STEPS : MC_SixStep_param.h
- NUMBER_ZCR : MC_SixStep_param.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- o -

- OVERCURRENT : 6Step_Lib.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- p -

- PHY_AUTONEGO_COMPLETE : stm32f4xx_hal_conf.h
- PHY_AUTONEGOTIATION : stm32f4xx_hal_conf.h
- PHY_BCR : stm32f4xx_hal_conf.h
- PHY_BSR : stm32f4xx_hal_conf.h
- PHY_CONFIG_DELAY : stm32f4xx_hal_conf.h
- PHY_DUPLEX_STATUS : stm32f4xx_hal_conf.h
- PHY_FULLDUPLEX_100M : stm32f4xx_hal_conf.h
- PHY_FULLDUPLEX_10M : stm32f4xx_hal_conf.h
- PHY_HALFDUPLEX_100M : stm32f4xx_hal_conf.h
- PHY_HALFDUPLEX_10M : stm32f4xx_hal_conf.h
- PHY_ISOLATE : stm32f4xx_hal_conf.h
- PHY_JABBER_DETECTION : stm32f4xx_hal_conf.h
- PHY_LINK_INTERRUPT : stm32f4xx_hal_conf.h
- PHY_LINK_STATUS : stm32f4xx_hal_conf.h
- PHY_LINKED_STATUS : stm32f4xx_hal_conf.h
- PHY_LOOPBACK : stm32f4xx_hal_conf.h
- PHY_MICR : stm32f4xx_hal_conf.h
- PHY_MICR_INT_EN : stm32f4xx_hal_conf.h
- PHY_MICR_INT_OE : stm32f4xx_hal_conf.h
- PHY_MISR : stm32f4xx_hal_conf.h
- PHY_MISR_LINK_INT_EN : stm32f4xx_hal_conf.h
- PHY_POWERDOWN : stm32f4xx_hal_conf.h
- PHY_READ_TO : stm32f4xx_hal_conf.h
- PHY_RESET : stm32f4xx_hal_conf.h
- PHY_RESET_DELAY : stm32f4xx_hal_conf.h

- PHY_RESTART_AUTONEGOTIATION : stm32f4xx_hal_conf.h
- PHY_SPEED_STATUS : stm32f4xx_hal_conf.h
- PHY_SR : stm32f4xx_hal_conf.h
- PHY_WRITE_TO : stm32f4xx_hal_conf.h
- PI_parameters : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c
- POLESP_CMD : stm32F401_nucleo_ihm11m1.h
- potent_filtered : 6Step_Lib.c
- POTENTIOMETER : MC_SixStep_param.h
- POTENZ_CMD : stm32F401_nucleo_ihm11m1.h
- PREFETCH_ENABLE : stm32f4xx_hal_conf.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- r -

- Rotor_poles_pairs : 6Step_Lib.c
- RUN : 6Step_Lib.h
- RXBUFFERSIZE : UART_UI.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- s -

- STSPIN230_Set_Ref_Generation() : STSPIN230.h
- STSPIN230_Start_PWM_driving() : X-NUCLEO-IHM11M1.c , X-NUCLEO-IHM11M1.h , STSPIN230.h
- STSPIN230_START_Ref_Generation() : STSPIN230.h
- STSPIN230_Stop_PWM_driving() : X-NUCLEO-IHM11M1.c , X-NUCLEO-IHM11M1.h , STSPIN230.h
- STSPIN230_STOP_Ref_Generation() : STSPIN230.h
- STSPIN230MotorDriver : stm32F401_nucleo_ihm11m1.c , STSPIN230.c
- SystemClock_Config() : main_F401.c
- SysTick_Handler() : stm32f4xx_it.c , stm32f4xx_it.h

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- t -

- T_single_step : 6Step_Lib.c
- T_single_step_first_value : 6Step_Lib.c
- TARGET_SPEED : MC_SixStep_param.h
- target_speed : 6Step_Lib.c
- test_motor_run : 6Step_Lib.c
- Tick_cnt : 6Step_Lib.c
- TICK_INT_PRIORITY : stm32f4xx_hal_conf.h
- TIM1_BRK_TIM9_IRQHandler() : stm32f4xx_it.c , stm32f4xx_it.h
- TIM4_IRQHandler() : stm32f4xx_it.h , stm32f4xx_it.c
- TIME_FOR_ALIGN : MC_SixStep_param.h
- Time_vector_prev_tmp : 6Step_Lib.c
- Time_vector_tmp : 6Step_Lib.c
- TOKEN : UART_UI.h
- TRUE : MC_SixStep_param.h
- TXBUFFERSIZE : UART_UI.h

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- u -

- UART : stm32F401_nucleo_ihm11m1.h
- UART_Communication_Task() : 6Step_Lib.c
- UART_FLAG_RECEIVE : 6Step_Lib.c
- UART_Set_Value() : 6Step_Lib.c , stm32f4xx_it.c
- UPPER_OUT_LIMIT : MC_SixStep_param.h
- USART2_IRQHandler() : stm32f4xx_it.c , stm32f4xx_it.h
- USE_RTOS : stm32f4xx_hal_conf.h
- uwTick : 6Step_Lib.c

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Here is a list of all functions, variables, defines, enums, and typedefs with links to the files they belong to:

- v -

- VAL_POT_SPEED_DIV : MC_SixStep_param.h
- VALIDATION : 6Step_Lib.h
- VDD_VALUE : stm32f4xx_hal_conf.h

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- ADC_IRQHandler() : stm32f4xx_it.c , stm32f4xx_it.h

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- ADC_IRQHandler() : stm32f4xx_it.c , stm32f4xx_it.h

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- b -

- Bemf_delay_calc() : stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- BSP_X_NUCLEO_FAULT_LED_OFF() : stm32F401_nucleo_ihm11m1.h , X-NUCLEO-IHM11M1.c
- BSP_X_NUCLEO_FAULT_LED_ON() : stm32F401_nucleo_ihm11m1.h , X-NUCLEO-IHM11M1.c

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- CMD_ACCELE() : UART_UI.h
- CMD_DIRECTION() : UART_UI.h
- CMD_GETSPD() : UART_UI.h
- CMD_HELP() : UART_UI.h
- CMD_INIREF() : UART_UI.h
- CMD_KI_PRM() : UART_UI.h
- CMD_KP_PRM() : UART_UI.h
- CMD_Parser() : 6Step_Lib.c
- CMD_POLESP() : UART_UI.h
- CMD_POTENZ() : UART_UI.h
- CMD_SETSPD() : UART_UI.h
- CMD_STARTM() : UART_UI.h
- CMD_STATUS() : UART_UI.h
- CMD_STOPMT() : UART_UI.h
- Current_Reference_Setvalue() : STSPIN230.h , STSPIN230.c
- Current_Reference_Start() : STSPIN230.c , STSPIN230.h
- Current_Reference_Stop() : STSPIN230.h , STSPIN230.c

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- d -

- DisableInput_CH1_D_CH2_D_CH3_D() : STSPIN230.c , STSPIN230.h

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- Get_UART_Data() : stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h

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- HAL_ADC_ConvCpltCallback() : stm32F401_nucleo_ihm11m1.c
- HAL_ADC_MspDeInit() : stm32f4xx_hal_msp.c
- HAL_ADC_MspInit() : stm32f4xx_hal_msp.c
- HAL_GetTick() : 6Step_Lib.c
- HAL_GPIO_EXTI_Callback() : stm32F401_nucleo_ihm11m1.c
- HAL_IncTick() : 6Step_Lib.c
- HAL_MspInit() : stm32f4xx_hal_msp.c
- HAL_SYSTICK_Callback() : stm32F401_nucleo_ihm11m1.c
- HAL_TIM_Base_MspDeInit() : stm32f4xx_hal_msp.c
- HAL_TIM_Base_MspInit() : stm32f4xx_hal_msp.c
- HAL_TIM_PeriodElapsedCallback() : stm32F401_nucleo_ihm11m1.c

- HAL_TIM_PWM_MspInit() : stm32f4xx_hal_msp.c
- HAL_TIMEx_HallSensor_MspDeInit() : stm32f4xx_hal_msp.c
- HAL_TIMEx_HallSensor_MspInit() : stm32f4xx_hal_msp.c
- HAL_UART_MspDeInit() : stm32f4xx_hal_msp.c
- HAL_UART_MspInit() : stm32f4xx_hal_msp.c
- HF_TIMx_SetDutyCycle_CH1() : STSPIN230.h , STSPIN230.c
- HF_TIMx_SetDutyCycle_CH2() : STSPIN230.c , STSPIN230.h
- HF_TIMx_SetDutyCycle_CH3() : STSPIN230.h , STSPIN230.c

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- main() : main_F401.c
- MC_ADCx_SixStep_Bemf() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c
- MC_Bemf_Delay() : 6Step_Lib.c
- MC_EXT_button_SixStep() : 6Step_Lib.h , 6Step_Lib.c
- MC_GetElSpeedHz() : 6Step_Lib.c
- MC_GetMechSpeedRPM() : 6Step_Lib.c

- MC_PI_Controller() : 6Step_Lib.c
- MC_Potentiometer_filter() : 6Step_Lib.c
- MC_Set_PI_param() : 6Step_Lib.c
- MC_Set_Speed() : 6Step_Lib.h , 6Step_Lib.c
- MC_SixStep_ADC_Channel() : stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_Alignment() : 6Step_Lib.c
- MC_SixStep_ARR_Bemf() : 6Step_Lib.c
- MC_SixStep_ARR_step() : 6Step_Lib.c
- MC_SixStep_Current_Reference_Setvalue() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_Current_Reference_Start() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_Current_Reference_Stop() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_DisableInput_CH1_D_CH2_D_CH3_D() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_EnableInput_CH1_D_CH2_E_CH3_E() : stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h , 6Step_Lib.c
- MC_SixStep_EnableInput_CH1_E_CH2_D_CH3_E() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_EnableInput_CH1_E_CH2_E_CH3_D() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_HF_TIMx_SetDutyCycle_CH1() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_HF_TIMx_SetDutyCycle_CH2() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_HF_TIMx_SetDutyCycle_CH3() : stm32F401_nucleo_ihm11m1.c , 6Step_Lib.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_INIT() : 6Step_Lib.h , 6Step_Lib.c
- MC_SixStep_Init_main_data() : 6Step_Lib.c
- MC_SixStep_NEXT_step() : 6Step_Lib.c
- MC_SixStep_Nucleo_Init() : stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h
- MC_SixStep_Ramp_Motor_calc() : 6Step_Lib.c
- MC_SixStep_RESET() : 6Step_Lib.h , 6Step_Lib.c
- MC_SixStep_Speed_Potentiometer() : 6Step_Lib.c
- MC_SixStep_Speed_Val_target_potentiometer() : 6Step_Lib.c
- MC_SixStep_Start_PWM_driving() : stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h , 6Step_Lib.c
- MC_SixStep_Stop_PWM_driving() : stm32F401_nucleo_ihm11m1.c , stm32F401_nucleo_ihm11m1.h , 6Step_Lib.c
- MC_SixStep_TABLE() : 6Step_Lib.c
- MC_Speed_Filter() : 6Step_Lib.c
- MC_StartMotor() : 6Step_Lib.h , 6Step_Lib.c
- MC_StopMotor() : 6Step_Lib.h , 6Step_Lib.c
- MC_SysTick_SixStep_MediumFrequencyTask() : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c
- MC_Task_Speed() : 6Step_Lib.c
- MC_TIMx_SixStep_timebase() : stm32F401_nucleo_ihm11m1.c , 6Step_Lib.c
- MC_UI_INIT() : 6Step_Lib.c
- MCM_Sqrt() : 6Step_Lib.c
- MX_ADC1_Init() : main_F401.c
- MX_TIM1_Init() : main_F401.c
- MX_TIM3_Init() : main_F401.c
- MX_TIM4_Init() : main_F401.c
- MX_USART2_UART_Init() : main_F401.c

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- STSPIN230_DisableInput_CH1_D_CH2_D_CH3_D() : STSPIN230.h , X-NUCLEO-IHM11M1.c , X-NUCLEO-IHM11M1.h
- STSPIN230_EnableInput_CH1_D_CH2_E_CH3_E() : STSPIN230.h , X-NUCLEO-IHM11M1.c , X-NUCLEO-IHM11M1.h
- STSPIN230_EnableInput_CH1_E_CH2_D_CH3_E() : X-NUCLEO-IHM11M1.h , STSPIN230.h , X-NUCLEO-IHM11M1.c
- STSPIN230_EnableInput_CH1_E_CH2_E_CH3_D() : STSPIN230.h , X-NUCLEO-IHM11M1.c , X-NUCLEO-IHM11M1.h
- STSPIN230_HF_TIMx_SetDutyCycle_CH1() : X-NUCLEO-IHM11M1.c , X-NUCLEO-IHM11M1.h , STSPIN230.h
- STSPIN230_HF_TIMx_SetDutyCycle_CH2() : X-NUCLEO-IHM11M1.c , STSPIN230.h , X-NUCLEO-IHM11M1.h
- STSPIN230_HF_TIMx_SetDutyCycle_CH3() : X-NUCLEO-IHM11M1.h , X-NUCLEO-IHM11M1.c , STSPIN230.h
- STSPIN230_Set_Ref_Generation() : STSPIN230.h
- STSPIN230_Start_PWM_driving() : STSPIN230.h , X-NUCLEO-IHM11M1.c , X-NUCLEO-IHM11M1.h
- STSPIN230_START_Ref_Generation() : STSPIN230.h
- STSPIN230_Stop_PWM_driving() : STSPIN230.h , X-NUCLEO-IHM11M1.c , X-NUCLEO-IHM11M1.h
- STSPIN230_STOP_Ref_Generation() : STSPIN230.h
- SystemClock_Config() : main_F401.c
- SysTick_Handler() : stm32f4xx_it.h , stm32f4xx_it.c

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- TIM1_BRK_TIM9_IRQHandler() : stm32f4xx_it.c , stm32f4xx_it.h
- TIM4_IRQHandler() : stm32f4xx_it.c , stm32f4xx_it.h

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- UART_Communication_Task() : 6Step_Lib.c
- UART_Set_Value() : 6Step_Lib.c , stm32f4xx_it.c
- USART2_IRQHandler() : stm32f4xx_it.c , stm32f4xx_it.h

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- ARR_LF : 6Step_Lib.c
- array_completed : 6Step_Lib.c

- b -

- buffer_completed : 6Step_Lib.c

- c -

- cnt_bemf_event : 6Step_Lib.c
- constant_k : 6Step_Lib.c
- constant_multiplier_tmp : 6Step_Lib.c

- counter_ARR_Bemf : 6Step_Lib.c

- d -

- dac_status : 6Step_Lib.c
- delta : 6Step_Lib.c

- e -

- El_Speed_Hz : 6Step_Lib.c
- Enable_start_button : 6Step_Lib.c

- h -

- hadc1 : main_F401.c , stm32f4xx_it.c , main_F401.h
- HFBuffer : 6Step_Lib.c
- HFBufferIndex : 6Step_Lib.c
- htim1 : stm32f4xx_it.c , main_F401.h , main_F401.c
- htim2 : main_F401.c
- htim3 : main_F401.c , main_F401.h
- htim4 : main_F401.c , stm32f4xx_it.c , main_F401.h
- huart2 : main_F401.c , stm32f4xx_it.c , main_F401.h

- i -

- index_adc_chn : 6Step_Lib.c
- index_align : 6Step_Lib.c
- index_ARR_step : 6Step_Lib.c
- index_array : 6Step_Lib.c
- index_motor_run : 6Step_Lib.c
- index_pot_filt : 6Step_Lib.c
- index_startup_motor : 6Step_Lib.c

- m -

- mech_accel_hz : 6Step_Lib.c
- Mech_Speed_RPM : 6Step_Lib.c

- n -

- n_zcr_startup : 6Step_Lib.c

- p -

- PI_parameters : 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c
- potent_filtered : 6Step_Lib.c

- r -

- Rotor_poles_pairs : 6Step_Lib.c

- s -

- shift_n_sqrt : 6Step_Lib.c
- SIXSTEP_parameters : X-NUCLEO-IHM11M1.c , stm32f4xx_it.c , 6Step_Lib.c , stm32F401_nucleo_ihm11m1.c
- speed_fdbk_error : 6Step_Lib.c
- speed_sum_pot_filt : 6Step_Lib.c
- speed_sum_sp_filt : 6Step_Lib.c
- speed_tmp_array : 6Step_Lib.c
- speed_tmp_buffer : 6Step_Lib.c
- startup_bemf_failure : 6Step_Lib.c
- STSPIN230MotorDriver : STSPIN230.c , stm32F401_nucleo_ihm11m1.c

- t -

- T_single_step : 6Step_Lib.c
- T_single_step_first_value : 6Step_Lib.c
- target_speed : 6Step_Lib.c
- test_motor_run : 6Step_Lib.c
- Tick_cnt : 6Step_Lib.c
- Time_vector_prev_tmp : 6Step_Lib.c
- Time_vector_tmp : 6Step_Lib.c

- u -

- UART_FLAG_RECEIVE : 6Step_Lib.c
- uwTick : 6Step_Lib.c

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&"el" href="temp0092.html#ga5432dbb5c72c0097723ad536d3bf9da2">6Step_Lib.h

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&"el" href="temp0092.html#gaaad1d664976a8c5cdfe3f8521ea7bf5a">6Step_Lib.h

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&"el"
href="temp0092.html#ggaaad1d664976a8c5cdfe3f8521ea7bf5aa8d86de0851abd047aef8c1cbb3c1603b">6Step_Lib.h
- IDLE : 6Step_Lib.h
- OVERCURRENT : 6Step_Lib.h
- RUN : 6Step_Lib.h
- SPEEDFBKERROR : 6Step_Lib.h
- START : 6Step_Lib.h

- STARTUP : 6Step_Lib.h
- STARTUP_BEMF_FAILURE : 6Step_Lib.h
- STARTUP_FAILURE : 6Step_Lib.h
- STOP : 6Step_Lib.h
- VALIDATION : 6Step_Lib.h

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- ACC : MC_SixStep_param.h

- ACCELE_CMD : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH1 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH1_ST : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH2 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH2_ST : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH3 : stm32F401_nucleo_ihm11m1.h
- ADC_Bemf_CH3_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_1 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_1_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_2 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_2_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_3 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_3_ST : stm32F401_nucleo_ihm11m1.h
- ADC_CH_4 : stm32F401_nucleo_ihm11m1.h
- ADC_CH_4_ST : stm32F401_nucleo_ihm11m1.h
- ADC_SPEED_TH : MC_SixStep_param.h
- ADCx : stm32F401_nucleo_ihm11m1.h
- assert_param : stm32f4xx_hal_conf.h

- b -

- BEMF_CNT_EVENT_MAX : MC_SixStep_param.h
- BEMF_CONSEC_DOWN_MAX : MC_SixStep_param.h
- BEMF_THRSLD_DOWN : MC_SixStep_param.h
- BEMF_THRSLD_UP : MC_SixStep_param.h
- BUTTON_DELAY : MC_SixStep_param.h

- c -

- CMD_NUM : UART_UI.h
- COUNTOF : UART_UI.h

- d -

- DAC_ENABLE : stm32F401_nucleo_ihm11m1.h
- DACx : stm32F401_nucleo_ihm11m1.h
- DATA_CACHE_ENABLE : stm32f4xx_hal_conf.h
- DEMAGN_VAL_1 : MC_SixStep_param.h
- DEMAGN_VAL_10 : MC_SixStep_param.h
- DEMAGN_VAL_11 : MC_SixStep_param.h
- DEMAGN_VAL_12 : MC_SixStep_param.h
- DEMAGN_VAL_13 : MC_SixStep_param.h
- DEMAGN_VAL_14 : MC_SixStep_param.h
- DEMAGN_VAL_2 : MC_SixStep_param.h
- DEMAGN_VAL_3 : MC_SixStep_param.h
- DEMAGN_VAL_4 : MC_SixStep_param.h
- DEMAGN_VAL_5 : MC_SixStep_param.h
- DEMAGN_VAL_6 : MC_SixStep_param.h
- DEMAGN_VAL_7 : MC_SixStep_param.h
- DEMAGN_VAL_8 : MC_SixStep_param.h
- DEMAGN_VAL_9 : MC_SixStep_param.h
- DEMO_START_TIME : MC_SixStep_param.h
- DEMO_STOP_TIME : MC_SixStep_param.h
- DIRECT_CMD : stm32F401_nucleo_ihm11m1.h

- e -

- f -

- g -

- h -

- i -

- INIREF_CMD : stm32F401_nucleo_ihm11m1.h
- INITIAL_DEMAGN_DELAY : MC_SixStep_param.h
- INSTRUCTION_CACHE_ENABLE : stm32f4xx_hal_conf.h

- k -

- KI_DIV : MC_SixStep_param.h
- KI_GAIN : MC_SixStep_param.h
- KI_PRM_CMD : stm32F401_nucleo_ihm11m1.h
- KP_DIV : MC_SixStep_param.h
- KP_GAIN : MC_SixStep_param.h
- KP_PRM_CMD : stm32F401_nucleo_ihm11m1.h

- l -

- LF_TIMx : stm32F401_nucleo_ihm11m1.h
- LOWER_OUT_LIMIT : MC_SixStep_param.h
- LSE_VALUE : stm32f4xx_hal_conf.h
- LSI_VALUE : stm32f4xx_hal_conf.h

- m -

- MAC_ADDR0 : stm32f4xx_hal_conf.h
- MAC_ADDR1 : stm32f4xx_hal_conf.h
- MAC_ADDR2 : stm32f4xx_hal_conf.h
- MAC_ADDR3 : stm32f4xx_hal_conf.h
- MAC_ADDR4 : stm32f4xx_hal_conf.h
- MAC_ADDR5 : stm32f4xx_hal_conf.h
- MAX_POT_SPEED : MC_SixStep_param.h
- MIN_POT_SPEED : MC_SixStep_param.h
- MINIMUM_ACC : MC_SixStep_param.h

- n -

- NUM_POLE_PAIRS : MC_SixStep_param.h
- NUMBER_OF_STEPS : MC_SixStep_param.h
- NUMBER_ZCR : MC_SixStep_param.h

- p -

- PHY_AUTONEGO_COMPLETE : stm32f4xx_hal_conf.h
- PHY_AUTONEGOTIATION : stm32f4xx_hal_conf.h
- PHY_BCR : stm32f4xx_hal_conf.h
- PHY_BSR : stm32f4xx_hal_conf.h
- PHY_CONFIG_DELAY : stm32f4xx_hal_conf.h
- PHY_DUPLEX_STATUS : stm32f4xx_hal_conf.h
- PHY_FULLDUPLEX_100M : stm32f4xx_hal_conf.h
- PHY_FULLDUPLEX_10M : stm32f4xx_hal_conf.h
- PHY_HALFDUPLEX_100M : stm32f4xx_hal_conf.h
- PHY_HALFDUPLEX_10M : stm32f4xx_hal_conf.h
- PHY_ISOLATE : stm32f4xx_hal_conf.h

- PHY_JABBER_DETECTION : stm32f4xx_hal_conf.h
- PHY_LINK_INTERRUPT : stm32f4xx_hal_conf.h
- PHY_LINK_STATUS : stm32f4xx_hal_conf.h
- PHY_LINKED_STATUS : stm32f4xx_hal_conf.h
- PHY_LOOPBACK : stm32f4xx_hal_conf.h
- PHY_MICR : stm32f4xx_hal_conf.h
- PHY_MICR_INT_EN : stm32f4xx_hal_conf.h
- PHY_MICR_INT_OE : stm32f4xx_hal_conf.h
- PHY_MISR : stm32f4xx_hal_conf.h
- PHY_MISR_LINK_INT_EN : stm32f4xx_hal_conf.h
- PHY_POWERDOWN : stm32f4xx_hal_conf.h
- PHY_READ_TO : stm32f4xx_hal_conf.h
- PHY_RESET : stm32f4xx_hal_conf.h
- PHY_RESET_DELAY :