UART Project

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Data Structure Index

1.1 Data Structures

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Chapter 3

Data Structure Documentation

3.1 GPIO_t Struct Reference

`#include <GPIO.h>`

Data Fields

- u64 pin
- u64 mode
- u64 speed
- u64 port

3.1.1 Field Documentation

3.1.1.1 mode

`u64 GPIO_t::mode`

3.1.1.2 pin

`u64 GPIO_t::pin`

3.1.1.3 port

`u64 GPIO_t::port`

3.1.1.4 speed

```
u64 GPIO_t::speed
```

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

- include/GPIO.h

3.2 LED_cfg_t Struct Reference

```
#include <LED_Cfg.h>
```

Data Fields

- GPIO_t LED_IO
- u8 activeState

3.2.1 Field Documentation

3.2.1.1 activeState

```
u8 LED_cfg_t::activeState
```

3.2.1.2 LED_IO

```
GPIO_t LED_cfg_t::LED_IO
```

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

- include/LED_Cfg.h

3.3 SCHED_systask_info_t Struct Reference

```
#include <sched_config.h>
```

Data Fields

- SCHED_task_t const * apptask
- u32 delayMs

3.3.1 Field Documentation

3.3.1.1 apptask

```
SCHED_task_t const* SCHED_systask_info_t::apptask
```

3.3.1.2 delayMs

```
u32 SCHED_systask_info_t::delayMs
```

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

- include/sched_config.h

3.4 SCHED_task_t Struct Reference

```
#include <sched_interface.h>
```

Data Fields

- SCHED_task_runnable_t runnable
- u32 periodicTimeMs

3.4.1 Field Documentation

3.4.1.1 periodicTimeMs

```
u32 SCHED_task_t::periodicTimeMs
```

3.4.1.2 runnable

```
SCHED_task_runnable_t SCHED_task_t::runnable
```

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

- include/sched_interface.h

3.5 Switch_cfg_t Struct Reference

`#include <switch_config.h>`

Data Fields

- GPIO_t switchIO
- u8 activeState

3.5.1 Field Documentation

3.5.1.1 activeState

`u8 Switch_cfg_t::activeState`

3.5.1.2 switchIO

`GPIO_t Switch_cfg_t::switchIO`

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

- include/switch_config.h

3.6 UART_CONFIG_t Struct Reference

`#include <UART.h>`

Data Fields

- u8 UART_Peripheral
- u32 UART_Buadrate
- u16 UART_DataLength
- u32 UART_StopBits
- u32 UART_Parity
- u32 UART_TX_RX_Mode

3.6.1 Field Documentation

3.6.1.1 UART_Buadrate

```
u32 UART_CONFIG_t::UART_Buadrate
```

3.6.1.2 UART_DataLength

```
u16 UART_CONFIG_t::UART_DataLength
```

3.6.1.3 UART_Parity

```
u32 UART_CONFIG_t::UART_Parity
```

3.6.1.4 UART_Peripheral

```
u8 UART_CONFIG_t::UART_Peripheral
```

3.6.1.5 UART_StopBits

```
u32 UART_CONFIG_t::UART_StopBits
```

3.6.1.6 UART_TX_RX_Mode

```
u32 UART_CONFIG_t::UART_TX_RX_Mode
```

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

- include/UART.h

3.7 UART_DATABUFFER_t Struct Reference

```
#include <UART.h>
```

Data Fields

- u8 * UART_DATABuffer
- u16 UART_DataLength
- u16 UART_DataIndex
- u8 UART_State

3.7.1 Field Documentation

3.7.1.1 UART_DATABuffer

```
u8* UART_DATABUFFER_t::UART_DATABuffer
```

3.7.1.2 UART_DataIndex

```
u16 UART_DATABUFFER_t::UART_DataIndex
```

3.7.1.3 UART_DataLength

```
u16 UART_DATABUFFER_t::UART_DataLength
```

3.7.1.4 UART_State

```
u8 UART_DATABUFFER_t::UART_State
```

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

- include/UART.h

Chapter 4

File Documentation

4.1 include/GPIO.h File Reference

This file is to be used as an implementation of the GPIO driver.

Data Structures

- struct GPIO_t

Macros

- #define GPIO_PIN0_VALUE_HIGH 0x000000000000000F
- #define GPIO_PIN0_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN1_VALUE_HIGH 0x00000000000000F0
- #define GPIO_PIN1_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN2_VALUE_HIGH 0x0000000000000F00
- #define GPIO_PIN2_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN3_VALUE_HIGH 0x000000000000F000
- #define GPIO_PIN3_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN4_VALUE_HIGH 0x00000000000F0000
- #define GPIO_PIN4_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN5_VALUE_HIGH 0x0000000000F00000
- #define GPIO_PIN5_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN6_VALUE_HIGH 0x000000000F000000
- #define GPIO_PIN6_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN7_VALUE_HIGH 0x00000000F0000000
- #define GPIO_PIN7_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN8_VALUE_HIGH 0x0000000F00000000
- #define GPIO_PIN8_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN9_VALUE_HIGH 0x000000F000000000
- #define GPIO_PIN9_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN10_VALUE_HIGH 0x00000F0000000000
- #define GPIO_PIN10_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN11_VALUE_HIGH 0x0000F00000000000
- #define GPIO_PIN11_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN12_VALUE_HIGH 0x000F000000000000

- #define GPIO_PIN12_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN13_VALUE_HIGH 0x00F0000000000000
- #define GPIO_PIN13_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN14_VALUE_HIGH 0x0F00000000000000
- #define GPIO_PIN14_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN15_VALUE_HIGH 0xF000000000000000
- #define GPIO_PIN15_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN_ALL_VALUE_HIGH 0xFFFFFFFFFFFFFFFF
- #define GPIO_PIN_ALL_VALUE_LOW 0x0000000000000000
- #define GPIO_PIN0_SELECT 0x000000000000000F
- #define GPIO_PIN1_SELECT 0x00000000000000F0
- #define GPIO_PIN2_SELECT 0x0000000000000F00
- #define GPIO_PIN3_SELECT 0x000000000000F000
- #define GPIO_PIN4_SELECT 0x00000000000F0000
- #define GPIO_PIN5_SELECT 0x0000000000F00000
- #define GPIO_PIN6_SELECT 0x000000000F000000
- #define GPIO_PIN7_SELECT 0x00000000F0000000
- #define GPIO_PIN8_SELECT 0x0000000F00000000
- #define GPIO_PIN9_SELECT 0x000000F000000000
- #define GPIO_PIN10_SELECT 0x00000F0000000000
- #define GPIO_PIN11_SELECT 0x0000F00000000000
- #define GPIO_PIN12_SELECT 0x000F000000000000
- #define GPIO_PIN13_SELECT 0x00F0000000000000
- #define GPIO_PIN14_SELECT 0x0F00000000000000
- #define GPIO_PIN15_SELECT 0xF000000000000000
- #define GPIO_PIN0_PORTA 0x0000000000000001
- #define GPIO_PIN0_PORTB 0x0000000000000002
- #define GPIO_PIN0_PORTC 0x0000000000000003
- #define GPIO_PIN1_PORTA 0x0000000000000010
- #define GPIO_PIN1_PORTB 0x0000000000000020
- #define GPIO_PIN1_PORTC 0x0000000000000030
- #define GPIO_PIN2_PORTA 0x0000000000000100
- #define GPIO_PIN2_PORTB 0x0000000000000200
- #define GPIO_PIN2_PORTC 0x0000000000000300
- #define GPIO_PIN3_PORTA 0x0000000000001000
- #define GPIO_PIN3_PORTB 0x0000000000002000
- #define GPIO_PIN3_PORTC 0x0000000000003000
- #define GPIO_PIN4_PORTA 0x0000000000010000
- #define GPIO_PIN4_PORTB 0x0000000000020000
- #define GPIO_PIN4_PORTC 0x0000000000030000
- #define GPIO_PIN5_PORTA 0x0000000000100000
- #define GPIO_PIN5_PORTB 0x0000000000200000
- #define GPIO_PIN5_PORTC 0x0000000000300000
- #define GPIO_PIN6_PORTA 0x0000000001000000
- #define GPIO_PIN6_PORTB 0x0000000002000000
- #define GPIO_PIN6_PORTC 0x0000000003000000
- #define GPIO_PIN7_PORTA 0x0000000010000000
- #define GPIO_PIN7_PORTB 0x0000000020000000
- #define GPIO_PIN7_PORTC 0x0000000030000000
- #define GPIO_PIN8_PORTA 0x0000000100000000
- #define GPIO_PIN8_PORTB 0x0000000200000000
- #define GPIO_PIN8_PORTC 0x0000000300000000
- #define GPIO_PIN9_PORTA 0x0000001000000000
- #define GPIO_PIN9_PORTB 0x0000002000000000
- #define GPIO_PIN9_PORTC 0x0000003000000000

- #define GPIO_PIN10_PORTA 0x0000010000000000
- #define GPIO_PIN10_PORTB 0x0000020000000000
- #define GPIO_PIN10_PORTC 0x0000030000000000
- #define GPIO_PIN11_PORTA 0x0000100000000000
- #define GPIO_PIN11_PORTB 0x0000200000000000
- #define GPIO_PIN11_PORTC 0x0000300000000000
- #define GPIO_PIN12_PORTA 0x0001000000000000
- #define GPIO_PIN12_PORTB 0x0002000000000000
- #define GPIO_PIN12_PORTC 0x0003000000000000
- #define GPIO_PIN13_PORTA 0x0010000000000000
- #define GPIO_PIN13_PORTB 0x0020000000000000
- #define GPIO_PIN13_PORTC 0x0030000000000000
- #define GPIO_PIN14_PORTA 0x0100000000000000
- #define GPIO_PIN14_PORTB 0x0200000000000000
- #define GPIO_PIN14_PORTC 0x0300000000000000
- #define GPIO_PIN15_PORTA 0x1000000000000000
- #define GPIO_PIN15_PORTB 0x2000000000000000
- #define GPIO_PIN15_PORTC 0x3000000000000000
- #define GPIO_PIN_ALL_PORTA 0x1111111111111111
- #define GPIO_PIN_ALL_PORTB 0x2222222222222222
- #define GPIO_PIN_ALL_PORTC 0x3333333333333333
- #define GPIO_PIN0_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN0_MODE_INPUT_FLOATING 0x0000000000000004
- #define GPIO_PIN0_MODE_INPUT_PULL_UP_DOWN 0x0000000000000008
- #define GPIO_PIN0_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN0_MODE_OUTPUT_OPEN_DRAIN 0x0000000000000004
- #define GPIO_PIN0_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000000008
- #define GPIO_PIN0_MODE_OUTPUT_AF_OPEN_DRAIN 0x000000000000000C
- #define GPIO_PIN1_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN1_MODE_INPUT_FLOATING 0x0000000000000040
- #define GPIO_PIN1_MODE_INPUT_PULL_UP_DOWN 0x0000000000000080
- #define GPIO_PIN1_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN1_MODE_OUTPUT_OPEN_DRAIN 0x0000000000000040
- #define GPIO_PIN1_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000000080
- #define GPIO_PIN1_MODE_OUTPUT_AF_OPEN_DRAIN 0x00000000000000C0
- #define GPIO_PIN2_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN2_MODE_INPUT_FLOATING 0x0000000000000400
- #define GPIO_PIN2_MODE_INPUT_PULL_UP_DOWN 0x0000000000000800
- #define GPIO_PIN2_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN2_MODE_OUTPUT_OPEN_DRAIN 0x0000000000000400
- #define GPIO_PIN2_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000000800
- #define GPIO_PIN2_MODE_OUTPUT_AF_OPEN_DRAIN 0x0000000000000C00
- #define GPIO_PIN3_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN3_MODE_INPUT_FLOATING 0x0000000000004000
- #define GPIO_PIN3_MODE_INPUT_PULL_UP_DOWN 0x0000000000008000
- #define GPIO_PIN3_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN3_MODE_OUTPUT_OPEN_DRAIN 0x0000000000004000
- #define GPIO_PIN3_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000008000
- #define GPIO_PIN3_MODE_OUTPUT_AF_OPEN_DRAIN 0x000000000000C000
- #define GPIO_PIN4_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN4_MODE_INPUT_FLOATING 0x0000000000040000
- #define GPIO_PIN4_MODE_INPUT_PULL_UP_DOWN 0x0000000000080000
- #define GPIO_PIN4_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN4_MODE_OUTPUT_OPEN_DRAIN 0x0000000000040000
- #define GPIO_PIN4_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000080000

- #define GPIO_PIN4_MODE_OUTPUT_AF_OPEN_DRAIN 0x00000000000C0000
- #define GPIO_PIN5_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN5_MODE_INPUT_FLOATING 0x0000000000400000
- #define GPIO_PIN5_MODE_INPUT_PULL_UP_DOWN 0x0000000000800000
- #define GPIO_PIN5_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN5_MODE_OUTPUT_OPEN_DRAIN 0x0000000000400000
- #define GPIO_PIN5_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000800000
- #define GPIO_PIN5_MODE_OUTPUT_AF_OPEN_DRAIN 0x0000000000C00000
- #define GPIO_PIN6_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN6_MODE_INPUT_FLOATING 0x0000000004000000
- #define GPIO_PIN6_MODE_INPUT_PULL_UP_DOWN 0x0000000008000000
- #define GPIO_PIN6_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN6_MODE_OUTPUT_OPEN_DRAIN 0x0000000004000000
- #define GPIO_PIN6_MODE_OUTPUT_AF_PUSH_PULL 0x0000000008000000
- #define GPIO_PIN6_MODE_OUTPUT_AF_OPEN_DRAIN 0x000000000C000000
- #define GPIO_PIN7_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN7_MODE_INPUT_FLOATING 0x0000000040000000
- #define GPIO_PIN7_MODE_INPUT_PULL_UP_DOWN 0x0000000080000000
- #define GPIO_PIN7_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN7_MODE_OUTPUT_OPEN_DRAIN 0x0000000040000000
- #define GPIO_PIN7_MODE_OUTPUT_AF_PUSH_PULL 0x0000000080000000
- #define GPIO_PIN7_MODE_OUTPUT_AF_OPEN_DRAIN 0x00000000C0000000
- #define GPIO_PIN8_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN8_MODE_INPUT_FLOATING 0x0000000400000000
- #define GPIO_PIN8_MODE_INPUT_PULL_UP_DOWN 0x0000000800000000
- #define GPIO_PIN8_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN8_MODE_OUTPUT_OPEN_DRAIN 0x0000000400000000
- #define GPIO_PIN8_MODE_OUTPUT_AF_PUSH_PULL 0x0000000800000000
- #define GPIO_PIN8_MODE_OUTPUT_AF_OPEN_DRAIN 0x0000000C00000000
- #define GPIO_PIN9_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN9_MODE_INPUT_FLOATING 0x0000004000000000
- #define GPIO_PIN9_MODE_INPUT_PULL_UP_DOWN 0x0000008000000000
- #define GPIO_PIN9_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN9_MODE_OUTPUT_OPEN_DRAIN 0x0000004000000000
- #define GPIO_PIN9_MODE_OUTPUT_AF_PUSH_PULL 0x0000008000000000
- #define GPIO_PIN9_MODE_OUTPUT_AF_OPEN_DRAIN 0x000000C000000000
- #define GPIO_PIN10_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN10_MODE_INPUT_FLOATING 0x0000040000000000
- #define GPIO_PIN10_MODE_INPUT_PULL_UP_DOWN 0x0000080000000000
- #define GPIO_PIN10_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN10_MODE_OUTPUT_OPEN_DRAIN 0x0000040000000000
- #define GPIO_PIN10_MODE_OUTPUT_AF_PUSH_PULL 0x0000080000000000
- #define GPIO_PIN10_MODE_OUTPUT_AF_OPEN_DRAIN 0x00000C0000000000
- #define GPIO_PIN11_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN11_MODE_INPUT_FLOATING 0x0000400000000000
- #define GPIO_PIN11_MODE_INPUT_PULL_UP_DOWN 0x0000800000000000
- #define GPIO_PIN11_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN11_MODE_OUTPUT_OPEN_DRAIN 0x0000400000000000
- #define GPIO_PIN11_MODE_OUTPUT_AF_PUSH_PULL 0x0000800000000000
- #define GPIO_PIN11_MODE_OUTPUT_AF_OPEN_DRAIN 0x0000C00000000000
- #define GPIO_PIN12_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN12_MODE_INPUT_FLOATING 0x0004000000000000
- #define GPIO_PIN12_MODE_INPUT_PULL_UP_DOWN 0x0008000000000000
- #define GPIO_PIN12_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN12_MODE_OUTPUT_OPEN_DRAIN 0x0004000000000000

- #define GPIO_PIN12_MODE_OUTPUT_AF_PUSH_PULL 0x0008000000000000
- #define GPIO_PIN12_MODE_OUTPUT_AF_OPEN_DRAIN 0x000C000000000000
- #define GPIO_PIN13_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN13_MODE_INPUT_FLOATING 0x0040000000000000
- #define GPIO_PIN13_MODE_INPUT_PULL_UP_DOWN 0x0080000000000000
- #define GPIO_PIN13_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN13_MODE_OUTPUT_OPEN_DRAIN 0x0040000000000000
- #define GPIO_PIN13_MODE_OUTPUT_AF_PUSH_PULL 0x0080000000000000
- #define GPIO_PIN13_MODE_OUTPUT_AF_OPEN_DRAIN 0x00C0000000000000
- #define GPIO_PIN14_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN14_MODE_INPUT_FLOATING 0x0400000000000000
- #define GPIO_PIN14_MODE_INPUT_PULL_UP_DOWN 0x0800000000000000
- #define GPIO_PIN14_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN14_MODE_OUTPUT_OPEN_DRAIN 0x0400000000000000
- #define GPIO_PIN14_MODE_OUTPUT_AF_PUSH_PULL 0x0800000000000000
- #define GPIO_PIN14_MODE_OUTPUT_AF_OPEN_DRAIN 0x0C00000000000000
- #define GPIO_PIN15_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN15_MODE_INPUT_FLOATING 0x4000000000000000
- #define GPIO_PIN15_MODE_INPUT_PULL_UP_DOWN 0x8000000000000000
- #define GPIO_PIN15_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN15_MODE_OUTPUT_OPEN_DRAIN 0x4000000000000000
- #define GPIO_PIN15_MODE_OUTPUT_AF_PUSH_PULL 0x8000000000000000
- #define GPIO_PIN15_MODE_OUTPUT_AF_OPEN_DRAIN 0xC000000000000000
- #define GPIO_PIN_ALL_MODE_INPUT_ANALOG 0x0000000000000000
- #define GPIO_PIN_ALL_MODE_INPUT_FLOATING 0x4444444444444444
- #define GPIO_PIN_ALL_MODE_INPUT_PULL_UP_DOWN 0x8888888888888888
- #define GPIO_PIN_ALL_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
- #define GPIO_PIN_ALL_MODE_OUTPUT_OPEN_DRAIN 0x4444444444444444
- #define GPIO_PIN_ALL_MODE_OUTPUT_AF_PUSH_PULL 0x8888888888888888
- #define GPIO_PIN_ALL_MODE_OUTPUT_AF_OPEN_DRAIN 0xCCCCCCCCCCCCCCCC
- #define GPIO_PIN0_SPEED_10MHZ 0x0000000000000001
- #define GPIO_PIN0_SPEED_2MHZ 0x0000000000000002
- #define GPIO_PIN0_SPEED_50MHZ 0x0000000000000003
- #define GPIO_PIN0_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN1_SPEED_10MHZ 0x0000000000000010
- #define GPIO_PIN1_SPEED_2MHZ 0x0000000000000020
- #define GPIO_PIN1_SPEED_50MHZ 0x0000000000000030
- #define GPIO_PIN1_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN2_SPEED_10MHZ 0x0000000000000100
- #define GPIO_PIN2_SPEED_2MHZ 0x0000000000000200
- #define GPIO_PIN2_SPEED_50MHZ 0x0000000000000300
- #define GPIO_PIN2_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN3_SPEED_10MHZ 0x0000000000001000
- #define GPIO_PIN3_SPEED_2MHZ 0x0000000000002000
- #define GPIO_PIN3_SPEED_50MHZ 0x0000000000003000
- #define GPIO_PIN3_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN4_SPEED_10MHZ 0x0000000000010000
- #define GPIO_PIN4_SPEED_2MHZ 0x0000000000020000
- #define GPIO_PIN4_SPEED_50MHZ 0x0000000000030000
- #define GPIO_PIN4_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN5_SPEED_10MHZ 0x0000000000100000
- #define GPIO_PIN5_SPEED_2MHZ 0x0000000000200000
- #define GPIO_PIN5_SPEED_50MHZ 0x0000000000300000
- #define GPIO_PIN5_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN6_SPEED_10MHZ 0x0000000001000000

- #define GPIO_PIN6_SPEED_2MHZ 0x0000000002000000
- #define GPIO_PIN6_SPEED_50MHZ 0x0000000003000000
- #define GPIO_PIN6_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN7_SPEED_10MHZ 0x0000000010000000
- #define GPIO_PIN7_SPEED_2MHZ 0x0000000020000000
- #define GPIO_PIN7_SPEED_50MHZ 0x0000000030000000
- #define GPIO_PIN7_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN8_SPEED_10MHZ 0x0000000100000000
- #define GPIO_PIN8_SPEED_2MHZ 0x0000000200000000
- #define GPIO_PIN8_SPEED_50MHZ 0x0000000300000000
- #define GPIO_PIN8_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN9_SPEED_10MHZ 0x0000001000000000
- #define GPIO_PIN9_SPEED_2MHZ 0x0000002000000000
- #define GPIO_PIN9_SPEED_50MHZ 0x0000003000000000
- #define GPIO_PIN9_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN10_SPEED_10MHZ 0x0000010000000000
- #define GPIO_PIN10_SPEED_2MHZ 0x0000020000000000
- #define GPIO_PIN10_SPEED_50MHZ 0x0000030000000000
- #define GPIO_PIN10_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN11_SPEED_10MHZ 0x0000100000000000
- #define GPIO_PIN11_SPEED_2MHZ 0x0000200000000000
- #define GPIO_PIN11_SPEED_50MHZ 0x0000300000000000
- #define GPIO_PIN11_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN12_SPEED_10MHZ 0x0001000000000000
- #define GPIO_PIN12_SPEED_2MHZ 0x0002000000000000
- #define GPIO_PIN12_SPEED_50MHZ 0x0003000000000000
- #define GPIO_PIN12_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN13_SPEED_10MHZ 0x0010000000000000
- #define GPIO_PIN13_SPEED_2MHZ 0x0020000000000000
- #define GPIO_PIN13_SPEED_50MHZ 0x0030000000000000
- #define GPIO_PIN13_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN14_SPEED_10MHZ 0x0100000000000000
- #define GPIO_PIN14_SPEED_2MHZ 0x0200000000000000
- #define GPIO_PIN14_SPEED_50MHZ 0x0300000000000000
- #define GPIO_PIN14_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN15_SPEED_10MHZ 0x1000000000000000
- #define GPIO_PIN15_SPEED_2MHZ 0x2000000000000000
- #define GPIO_PIN15_SPEED_50MHZ 0x3000000000000000
- #define GPIO_PIN15_SPEED_NONE 0x0000000000000000
- #define GPIO_PIN_ALL_SPEED_10MHZ 0x1111111111111111
- #define GPIO_PIN_ALL_SPEED_2MHZ 0x2222222222222222
- #define GPIO_PIN_ALL_SPEED_50MHZ 0x3333333333333333
- #define GPIO_PIN_ALL_SPEED_NONE 0x0000000000000000

Functions

- void GPIO_InitPin (GPIO_t *gpio)

  Initialize a GPIO object: mode, speed, direction.
- void GPIO_WritePin (GPIO_t *gpio, u64 state)

  Write multiple value on a GPIO object.
- u64 GPIO_ReadPin (GPIO_t *gpio)

  Read multiple value from a GPIO object.

4.1.1 Detailed Description

This file is to be used as an implementation of the GPIO driver.

Author

MSN

Date

Mar 31, 2020

4.1.2 Macro Definition Documentation

4.1.2.1 GPIO_PIN0_MODE_INPUT_ANALOG

```
#define GPIO_PIN0_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.2 GPIO_PIN0_MODE_INPUT_FLOATING

```
#define GPIO_PIN0_MODE_INPUT_FLOATING 0x0000000000000004
```

4.1.2.3 GPIO_PIN0_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN0_MODE_INPUT_PULL_UP_DOWN 0x0000000000000008
```

4.1.2.4 GPIO_PIN0_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN0_MODE_OUTPUT_AF_OPEN_DRAIN 0x000000000000000C
```

4.1.2.5 GPIO_PIN0_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN0_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000000008
```

4.1.2.6 GPIO_PIN0_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN0_MODE_OUTPUT_OPEN_DRAIN 0x0000000000000004
```

4.1.2.7 GPIO_PIN0_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN0_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.8 GPIO_PIN0_PORTA

```
#define GPIO_PIN0_PORTA 0x0000000000000001
```

4.1.2.9 GPIO_PIN0_PORTB

```
#define GPIO_PIN0_PORTB 0x0000000000000002
```

4.1.2.10 GPIO_PIN0_PORTC

```
#define GPIO_PIN0_PORTC 0x0000000000000003
```

4.1.2.11 GPIO_PIN0_SELECT

```
#define GPIO_PIN0_SELECT 0x000000000000000F
```

4.1.2.12 GPIO_PIN0_SPEED_10MHZ

```
#define GPIO_PIN0_SPEED_10MHZ 0x0000000000000001
```

4.1.2.13 GPIO_PIN0_SPEED_2MHZ

```
#define GPIO_PIN0_SPEED_2MHZ 0x0000000000000002
```

4.1.2.14 GPIO_PIN0_SPEED_50MHZ

```
#define GPIO_PIN0_SPEED_50MHZ 0x0000000000000003
```

4.1.2.15 GPIO_PIN0_SPEED_NONE

```
#define GPIO_PIN0_SPEED_NONE 0x0000000000000000
```

4.1.2.16 GPIO_PIN0_VALUE_HIGH

```
#define GPIO_PIN0_VALUE_HIGH 0x000000000000000F
```

4.1.2.17 GPIO_PIN0_VALUE_LOW

```
#define GPIO_PIN0_VALUE_LOW 0x0000000000000000
```

4.1.2.18 GPIO_PIN10_MODE_INPUT_ANALOG

```
#define GPIO_PIN10_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.19 GPIO_PIN10_MODE_INPUT_FLOATING

```
#define GPIO_PIN10_MODE_INPUT_FLOATING 0x0000040000000000
```

4.1.2.20 GPIO_PIN10_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN10_MODE_INPUT_PULL_UP_DOWN 0x0000080000000000
```

4.1.2.21 GPIO_PIN10_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN10_MODE_OUTPUT_AF_OPEN_DRAIN 0x00000C0000000000
```

4.1.2.22 GPIO_PIN10_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN10_MODE_OUTPUT_AF_PUSH_PULL 0x0000080000000000
```

4.1.2.23 GPIO_PIN10_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN10_MODE_OUTPUT_OPEN_DRAIN 0x0000040000000000
```

4.1.2.24 GPIO_PIN10_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN10_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.25 GPIO_PIN10_PORTA

```
#define GPIO_PIN10_PORTA 0x0000010000000000
```

4.1.2.26 GPIO_PIN10_PORTB

```
#define GPIO_PIN10_PORTB 0x0000020000000000
```

4.1.2.27 GPIO_PIN10_PORTC

```
#define GPIO_PIN10_PORTC 0x0000030000000000
```

4.1.2.28 GPIO_PIN10_SELECT

```
#define GPIO_PIN10_SELECT 0x00000F0000000000
```

4.1.2.29 GPIO_PIN10_SPEED_10MHZ

```
#define GPIO_PIN10_SPEED_10MHZ 0x0000010000000000
```

4.1.2.30 GPIO_PIN10_SPEED_2MHZ

```
#define GPIO_PIN10_SPEED_2MHZ 0x0000020000000000
```

4.1.2.31 GPIO_PIN10_SPEED_50MHZ

```
#define GPIO_PIN10_SPEED_50MHZ 0x0000030000000000
```

4.1.2.32 GPIO_PIN10_SPEED_NONE

```
#define GPIO_PIN10_SPEED_NONE 0x0000000000000000
```

4.1.2.33 GPIO_PIN10_VALUE_HIGH

```
#define GPIO_PIN10_VALUE_HIGH 0x00000F0000000000
```

4.1.2.34 GPIO_PIN10_VALUE_LOW

```
#define GPIO_PIN10_VALUE_LOW 0x0000000000000000
```

4.1.2.35 GPIO_PIN11_MODE_INPUT_ANALOG

```
#define GPIO_PIN11_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.36 GPIO_PIN11_MODE_INPUT_FLOATING

```
#define GPIO_PIN11_MODE_INPUT_FLOATING 0x0000400000000000
```

4.1.2.37 GPIO_PIN11_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN11_MODE_INPUT_PULL_UP_DOWN 0x0000800000000000
```

4.1.2.38 GPIO_PIN11_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN11_MODE_OUTPUT_AF_OPEN_DRAIN 0x0000C00000000000
```

4.1.2.39 GPIO_PIN11_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN11_MODE_OUTPUT_AF_PUSH_PULL 0x0000800000000000
```

4.1.2.40 GPIO_PIN11_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN11_MODE_OUTPUT_OPEN_DRAIN 0x0000400000000000
```

4.1.2.41 GPIO_PIN11_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN11_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.42 GPIO_PIN11_PORTA

```
#define GPIO_PIN11_PORTA 0x0000100000000000
```

4.1.2.43 GPIO_PIN11_PORTB

```
#define GPIO_PIN11_PORTB 0x0000200000000000
```

4.1.2.44 GPIO_PIN11_PORTC

```
#define GPIO_PIN11_PORTC 0x0000300000000000
```

4.1.2.45 GPIO_PIN11_SELECT

```
#define GPIO_PIN11_SELECT 0x0000F00000000000
```

4.1.2.46 GPIO_PIN11_SPEED_10MHZ

```
#define GPIO_PIN11_SPEED_10MHZ 0x0000100000000000
```

4.1.2.47 GPIO_PIN11_SPEED_2MHZ

```
#define GPIO_PIN11_SPEED_2MHZ 0x0000200000000000
```

4.1.2.48 GPIO_PIN11_SPEED_50MHZ

```
#define GPIO_PIN11_SPEED_50MHZ 0x0000300000000000
```

4.1.2.49 GPIO_PIN11_SPEED_NONE

```
#define GPIO_PIN11_SPEED_NONE 0x0000000000000000
```

4.1.2.50 GPIO_PIN11_VALUE_HIGH

```
#define GPIO_PIN11_VALUE_HIGH 0x0000F00000000000
```

4.1.2.51 GPIO_PIN11_VALUE_LOW

```
#define GPIO_PIN11_VALUE_LOW 0x0000000000000000
```

4.1.2.52 GPIO_PIN12_MODE_INPUT_ANALOG

```
#define GPIO_PIN12_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.53 GPIO_PIN12_MODE_INPUT_FLOATING

```
#define GPIO_PIN12_MODE_INPUT_FLOATING 0x0004000000000000
```

4.1.2.54 GPIO_PIN12_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN12_MODE_INPUT_PULL_UP_DOWN 0x0008000000000000
```

4.1.2.55 GPIO_PIN12_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN12_MODE_OUTPUT_AF_OPEN_DRAIN 0x000C000000000000
```

4.1.2.56 GPIO_PIN12_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN12_MODE_OUTPUT_AF_PUSH_PULL 0x0008000000000000
```

4.1.2.57 GPIO_PIN12_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN12_MODE_OUTPUT_OPEN_DRAIN 0x0004000000000000
```

4.1.2.58 GPIO_PIN12_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN12_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.59 GPIO_PIN12_PORTA

```
#define GPIO_PIN12_PORTA 0x0001000000000000
```

4.1.2.60 GPIO_PIN12_PORTB

```
#define GPIO_PIN12_PORTB 0x0002000000000000
```

4.1.2.61 GPIO_PIN12_PORTC

```
#define GPIO_PIN12_PORTC 0x0003000000000000
```

4.1.2.62 GPIO_PIN12_SELECT

```
#define GPIO_PIN12_SELECT 0x000F000000000000
```

4.1.2.63 GPIO_PIN12_SPEED_10MHZ

```
#define GPIO_PIN12_SPEED_10MHZ 0x0001000000000000
```

4.1.2.64 GPIO_PIN12_SPEED_2MHZ

```
#define GPIO_PIN12_SPEED_2MHZ 0x0002000000000000
```

4.1.2.65 GPIO_PIN12_SPEED_50MHZ

```
#define GPIO_PIN12_SPEED_50MHZ 0x0003000000000000
```

4.1.2.66 GPIO_PIN12_SPEED_NONE

```
#define GPIO_PIN12_SPEED_NONE 0x0000000000000000
```

4.1.2.67 GPIO_PIN12_VALUE_HIGH

```
#define GPIO_PIN12_VALUE_HIGH 0x000F000000000000
```

4.1.2.68 GPIO_PIN12_VALUE_LOW

```
#define GPIO_PIN12_VALUE_LOW 0x0000000000000000
```

4.1.2.69 GPIO_PIN13_MODE_INPUT_ANALOG

```
#define GPIO_PIN13_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.70 GPIO_PIN13_MODE_INPUT_FLOATING

```
#define GPIO_PIN13_MODE_INPUT_FLOATING 0x0040000000000000
```

4.1.2.71 GPIO_PIN13_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN13_MODE_INPUT_PULL_UP_DOWN 0x0080000000000000
```

4.1.2.72 GPIO_PIN13_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN13_MODE_OUTPUT_AF_OPEN_DRAIN 0x00C0000000000000
```

4.1.2.73 GPIO_PIN13_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN13_MODE_OUTPUT_AF_PUSH_PULL 0x0080000000000000
```

4.1.2.74 GPIO_PIN13_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN13_MODE_OUTPUT_OPEN_DRAIN 0x0040000000000000
```

4.1.2.75 GPIO_PIN13_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN13_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.76 GPIO_PIN13_PORTA

```
#define GPIO_PIN13_PORTA 0x0010000000000000
```

4.1.2.77 GPIO_PIN13_PORTB

```
#define GPIO_PIN13_PORTB 0x0020000000000000
```

4.1.2.78 GPIO_PIN13_PORTC

```
#define GPIO_PIN13_PORTC 0x0030000000000000
```

4.1.2.79 GPIO_PIN13_SELECT

```
#define GPIO_PIN13_SELECT 0x00F0000000000000
```

4.1.2.80 GPIO_PIN13_SPEED_10MHZ

```
#define GPIO_PIN13_SPEED_10MHZ 0x0010000000000000
```

4.1.2.81 GPIO_PIN13_SPEED_2MHZ

```
#define GPIO_PIN13_SPEED_2MHZ 0x0020000000000000
```

4.1.2.82 GPIO_PIN13_SPEED_50MHZ

```
#define GPIO_PIN13_SPEED_50MHZ 0x0030000000000000
```

4.1.2.83 GPIO_PIN13_SPEED_NONE

```
#define GPIO_PIN13_SPEED_NONE 0x0000000000000000
```

4.1.2.84 GPIO_PIN13_VALUE_HIGH

```
#define GPIO_PIN13_VALUE_HIGH 0x00F0000000000000
```

4.1.2.85 GPIO_PIN13_VALUE_LOW

```
#define GPIO_PIN13_VALUE_LOW 0x0000000000000000
```

4.1.2.86 GPIO_PIN14_MODE_INPUT_ANALOG

```
#define GPIO_PIN14_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.87 GPIO_PIN14_MODE_INPUT_FLOATING

```
#define GPIO_PIN14_MODE_INPUT_FLOATING 0x0400000000000000
```

4.1.2.88 GPIO_PIN14_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN14_MODE_INPUT_PULL_UP_DOWN 0x0800000000000000
```

4.1.2.89 GPIO_PIN14_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN14_MODE_OUTPUT_AF_OPEN_DRAIN 0x0C00000000000000
```

4.1.2.90 GPIO_PIN14_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN14_MODE_OUTPUT_AF_PUSH_PULL 0x0800000000000000
```

4.1.2.91 GPIO_PIN14_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN14_MODE_OUTPUT_OPEN_DRAIN 0x0400000000000000
```

4.1.2.92 GPIO_PIN14_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN14_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.93 GPIO_PIN14_PORTA

```
#define GPIO_PIN14_PORTA 0x0100000000000000
```

4.1.2.94 GPIO_PIN14_PORTB

```
#define GPIO_PIN14_PORTB 0x0200000000000000
```

4.1.2.95 GPIO_PIN14_PORTC

```
#define GPIO_PIN14_PORTC 0x0300000000000000
```

4.1.2.96 GPIO_PIN14_SELECT

```
#define GPIO_PIN14_SELECT 0x0F00000000000000
```

4.1.2.97 GPIO_PIN14_SPEED_10MHZ

```
#define GPIO_PIN14_SPEED_10MHZ 0x0100000000000000
```

4.1.2.98 GPIO_PIN14_SPEED_2MHZ

```
#define GPIO_PIN14_SPEED_2MHZ 0x0200000000000000
```

4.1.2.99 GPIO_PIN14_SPEED_50MHZ

```
#define GPIO_PIN14_SPEED_50MHZ 0x0300000000000000
```

4.1.2.100 GPIO_PIN14_SPEED_NONE

```
#define GPIO_PIN14_SPEED_NONE 0x0000000000000000
```

4.1.2.101 GPIO_PIN14_VALUE_HIGH

```
#define GPIO_PIN14_VALUE_HIGH 0x0F00000000000000
```

4.1.2.102 GPIO_PIN14_VALUE_LOW

```
#define GPIO_PIN14_VALUE_LOW 0x0000000000000000
```

4.1.2.103 GPIO_PIN15_MODE_INPUT_ANALOG

```
#define GPIO_PIN15_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.104 GPIO_PIN15_MODE_INPUT_FLOATING

```
#define GPIO_PIN15_MODE_INPUT_FLOATING 0x4000000000000000
```

4.1.2.105 GPIO_PIN15_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN15_MODE_INPUT_PULL_UP_DOWN 0x8000000000000000
```

4.1.2.106 GPIO_PIN15_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN15_MODE_OUTPUT_AF_OPEN_DRAIN 0xC000000000000000
```

4.1.2.107 GPIO_PIN15_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN15_MODE_OUTPUT_AF_PUSH_PULL 0x8000000000000000
```

4.1.2.108 GPIO_PIN15_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN15_MODE_OUTPUT_OPEN_DRAIN 0x4000000000000000
```

4.1.2.109 GPIO_PIN15_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN15_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.110 GPIO_PIN15_PORTA

```
#define GPIO_PIN15_PORTA 0x1000000000000000
```

4.1.2.111 GPIO_PIN15_PORTB

```
#define GPIO_PIN15_PORTB 0x2000000000000000
```

4.1.2.112 GPIO_PIN15_PORTC

```
#define GPIO_PIN15_PORTC 0x3000000000000000
```

4.1.2.113 GPIO_PIN15_SELECT

```
#define GPIO_PIN15_SELECT 0xF000000000000000
```

4.1.2.114 GPIO_PIN15_SPEED_10MHZ

```
#define GPIO_PIN15_SPEED_10MHZ 0x1000000000000000
```

4.1.2.115 GPIO_PIN15_SPEED_2MHZ

```
#define GPIO_PIN15_SPEED_2MHZ 0x2000000000000000
```

4.1.2.116 GPIO_PIN15_SPEED_50MHZ

```
#define GPIO_PIN15_SPEED_50MHZ 0x3000000000000000
```

4.1.2.117 GPIO_PIN15_SPEED_NONE

```
#define GPIO_PIN15_SPEED_NONE 0x0000000000000000
```

4.1.2.118 GPIO_PIN15_VALUE_HIGH

```
#define GPIO_PIN15_VALUE_HIGH 0xF000000000000000
```

4.1.2.119 GPIO_PIN15_VALUE_LOW

```
#define GPIO_PIN15_VALUE_LOW 0x0000000000000000
```

4.1.2.120 GPIO_PIN1_MODE_INPUT_ANALOG

```
#define GPIO_PIN1_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.121 GPIO_PIN1_MODE_INPUT_FLOATING

```
#define GPIO_PIN1_MODE_INPUT_FLOATING 0x0000000000000040
```

4.1.2.122 GPIO_PIN1_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN1_MODE_INPUT_PULL_UP_DOWN 0x0000000000000080
```

4.1.2.123 GPIO_PIN1_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN1_MODE_OUTPUT_AF_OPEN_DRAIN 0x00000000000000C0
```

4.1.2.124 GPIO_PIN1_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN1_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000000080
```

4.1.2.125 GPIO_PIN1_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN1_MODE_OUTPUT_OPEN_DRAIN 0x0000000000000040
```

4.1.2.126 GPIO_PIN1_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN1_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.127 GPIO_PIN1_PORTA

```
#define GPIO_PIN1_PORTA 0x0000000000000010
```

4.1.2.128 GPIO_PIN1_PORTB

```
#define GPIO_PIN1_PORTB 0x0000000000000020
```

4.1.2.129 GPIO_PIN1_PORTC

```
#define GPIO_PIN1_PORTC 0x0000000000000030
```

4.1.2.130 GPIO_PIN1_SELECT

```
#define GPIO_PIN1_SELECT 0x00000000000000F0
```

4.1.2.131 GPIO_PIN1_SPEED_10MHZ

```
#define GPIO_PIN1_SPEED_10MHZ 0x0000000000000010
```

4.1.2.132 GPIO_PIN1_SPEED_2MHZ

```
#define GPIO_PIN1_SPEED_2MHZ 0x0000000000000020
```

4.1.2.133 GPIO_PIN1_SPEED_50MHZ

```
#define GPIO_PIN1_SPEED_50MHZ 0x0000000000000030
```

4.1.2.134 GPIO_PIN1_SPEED_NONE

```
#define GPIO_PIN1_SPEED_NONE 0x0000000000000000
```

4.1.2.135 GPIO_PIN1_VALUE_HIGH

```
#define GPIO_PIN1_VALUE_HIGH 0x00000000000000F0
```

4.1.2.136 GPIO_PIN1_VALUE_LOW

```
#define GPIO_PIN1_VALUE_LOW 0x0000000000000000
```

4.1.2.137 GPIO_PIN2_MODE_INPUT_ANALOG

```
#define GPIO_PIN2_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.138 GPIO_PIN2_MODE_INPUT_FLOATING

```
#define GPIO_PIN2_MODE_INPUT_FLOATING 0x0000000000000400
```

4.1.2.139 GPIO_PIN2_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN2_MODE_INPUT_PULL_UP_DOWN 0x0000000000000800
```

4.1.2.140 GPIO_PIN2_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN2_MODE_OUTPUT_AF_OPEN_DRAIN 0x0000000000000C00
```

4.1.2.141 GPIO_PIN2_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN2_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000000800
```

4.1.2.142 GPIO_PIN2_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN2_MODE_OUTPUT_OPEN_DRAIN 0x0000000000000400
```

4.1.2.143 GPIO_PIN2_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN2_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.144 GPIO_PIN2_PORTA

```
#define GPIO_PIN2_PORTA 0x0000000000000100
```

4.1.2.145 GPIO_PIN2_PORTB

```
#define GPIO_PIN2_PORTB 0x0000000000000200
```

4.1.2.146 GPIO_PIN2_PORTC

```
#define GPIO_PIN2_PORTC 0x0000000000000300
```

4.1.2.147 GPIO_PIN2_SELECT

```
#define GPIO_PIN2_SELECT 0x0000000000000F00
```

4.1.2.148 GPIO_PIN2_SPEED_10MHZ

```
#define GPIO_PIN2_SPEED_10MHZ 0x0000000000000100
```

4.1.2.149 GPIO_PIN2_SPEED_2MHZ

```
#define GPIO_PIN2_SPEED_2MHZ 0x0000000000000200
```

4.1.2.150 GPIO_PIN2_SPEED_50MHZ

```
#define GPIO_PIN2_SPEED_50MHZ 0x0000000000000300
```

4.1.2.151 GPIO_PIN2_SPEED_NONE

```
#define GPIO_PIN2_SPEED_NONE 0x0000000000000000
```

4.1.2.152 GPIO_PIN2_VALUE_HIGH

```
#define GPIO_PIN2_VALUE_HIGH 0x0000000000000F00
```

4.1.2.153 GPIO_PIN2_VALUE_LOW

```
#define GPIO_PIN2_VALUE_LOW 0x0000000000000000
```

4.1.2.154 GPIO_PIN3_MODE_INPUT_ANALOG

```
#define GPIO_PIN3_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.155 GPIO_PIN3_MODE_INPUT_FLOATING

```
#define GPIO_PIN3_MODE_INPUT_FLOATING 0x0000000000004000
```

4.1.2.156 GPIO_PIN3_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN3_MODE_INPUT_PULL_UP_DOWN 0x0000000000008000
```

4.1.2.157 GPIO_PIN3_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN3_MODE_OUTPUT_AF_OPEN_DRAIN 0x000000000000C000
```

4.1.2.158 GPIO_PIN3_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN3_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000008000
```

4.1.2.159 GPIO_PIN3_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN3_MODE_OUTPUT_OPEN_DRAIN 0x0000000000004000
```

4.1.2.160 GPIO_PIN3_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN3_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.161 GPIO_PIN3_PORTA

```
#define GPIO_PIN3_PORTA 0x0000000000001000
```

4.1.2.162 GPIO_PIN3_PORTB

```
#define GPIO_PIN3_PORTB 0x0000000000002000
```

4.1.2.163 GPIO_PIN3_PORTC

```
#define GPIO_PIN3_PORTC 0x0000000000003000
```

4.1.2.164 GPIO_PIN3_SELECT

```
#define GPIO_PIN3_SELECT 0x000000000000F000
```

4.1.2.165 GPIO_PIN3_SPEED_10MHZ

```
#define GPIO_PIN3_SPEED_10MHZ 0x0000000000001000
```

4.1.2.166 GPIO_PIN3_SPEED_2MHZ

```
#define GPIO_PIN3_SPEED_2MHZ 0x0000000000002000
```

4.1.2.167 GPIO_PIN3_SPEED_50MHZ

```
#define GPIO_PIN3_SPEED_50MHZ 0x0000000000003000
```

4.1.2.168 GPIO_PIN3_SPEED_NONE

```
#define GPIO_PIN3_SPEED_NONE 0x0000000000000000
```

4.1.2.169 GPIO_PIN3_VALUE_HIGH

```
#define GPIO_PIN3_VALUE_HIGH 0x000000000000F000
```

4.1.2.170 GPIO_PIN3_VALUE_LOW

```
#define GPIO_PIN3_VALUE_LOW 0x0000000000000000
```

4.1.2.171 GPIO_PIN4_MODE_INPUT_ANALOG

```
#define GPIO_PIN4_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.172 GPIO_PIN4_MODE_INPUT_FLOATING

```
#define GPIO_PIN4_MODE_INPUT_FLOATING 0x0000000000040000
```

4.1.2.173 GPIO_PIN4_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN4_MODE_INPUT_PULL_UP_DOWN 0x0000000000080000
```

4.1.2.174 GPIO_PIN4_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN4_MODE_OUTPUT_AF_OPEN_DRAIN 0x00000000000C0000
```

4.1.2.175 GPIO_PIN4_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN4_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000080000
```

4.1.2.176 GPIO_PIN4_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN4_MODE_OUTPUT_OPEN_DRAIN 0x0000000000040000
```

4.1.2.177 GPIO_PIN4_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN4_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.178 GPIO_PIN4_PORTA

```
#define GPIO_PIN4_PORTA 0x0000000000010000
```

4.1.2.179 GPIO_PIN4_PORTB

```
#define GPIO_PIN4_PORTB 0x0000000000020000
```

4.1.2.180 GPIO_PIN4_PORTC

```
#define GPIO_PIN4_PORTC 0x0000000000030000
```

4.1.2.181 GPIO_PIN4_SELECT

```
#define GPIO_PIN4_SELECT 0x00000000000F0000
```

4.1.2.182 GPIO_PIN4_SPEED_10MHZ

```
#define GPIO_PIN4_SPEED_10MHZ 0x0000000000010000
```

4.1.2.183 GPIO_PIN4_SPEED_2MHZ

```
#define GPIO_PIN4_SPEED_2MHZ 0x0000000000020000
```

4.1.2.184 GPIO_PIN4_SPEED_50MHZ

```
#define GPIO_PIN4_SPEED_50MHZ 0x0000000000030000
```

4.1.2.185 GPIO_PIN4_SPEED_NONE

```
#define GPIO_PIN4_SPEED_NONE 0x0000000000000000
```

4.1.2.186 GPIO_PIN4_VALUE_HIGH

```
#define GPIO_PIN4_VALUE_HIGH 0x000000000000F0000
```

4.1.2.187 GPIO_PIN4_VALUE_LOW

```
#define GPIO_PIN4_VALUE_LOW 0x0000000000000000
```

4.1.2.188 GPIO_PIN5_MODE_INPUT_ANALOG

```
#define GPIO_PIN5_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.189 GPIO_PIN5_MODE_INPUT_FLOATING

```
#define GPIO_PIN5_MODE_INPUT_FLOATING 0x0000000000400000
```

4.1.2.190 GPIO_PIN5_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN5_MODE_INPUT_PULL_UP_DOWN 0x0000000000800000
```

4.1.2.191 GPIO_PIN5_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN5_MODE_OUTPUT_AF_OPEN_DRAIN 0x00000000000C00000
```

4.1.2.192 GPIO_PIN5_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN5_MODE_OUTPUT_AF_PUSH_PULL 0x0000000000800000
```

4.1.2.193 GPIO_PIN5_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN5_MODE_OUTPUT_OPEN_DRAIN 0x0000000000400000
```

4.1.2.194 GPIO_PIN5_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN5_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.195 GPIO_PIN5_PORTA

```
#define GPIO_PIN5_PORTA 0x0000000000100000
```

4.1.2.196 GPIO_PIN5_PORTB

```
#define GPIO_PIN5_PORTB 0x0000000000200000
```

4.1.2.197 GPIO_PIN5_PORTC

```
#define GPIO_PIN5_PORTC 0x0000000000300000
```

4.1.2.198 GPIO_PIN5_SELECT

```
#define GPIO_PIN5_SELECT 0x0000000000F00000
```

4.1.2.199 GPIO_PIN5_SPEED_10MHZ

```
#define GPIO_PIN5_SPEED_10MHZ 0x0000000000100000
```

4.1.2.200 GPIO_PIN5_SPEED_2MHZ

```
#define GPIO_PIN5_SPEED_2MHZ 0x0000000000200000
```

4.1.2.201 GPIO_PIN5_SPEED_50MHZ

```
#define GPIO_PIN5_SPEED_50MHZ 0x0000000000300000
```

4.1.2.202 GPIO_PIN5_SPEED_NONE

```
#define GPIO_PIN5_SPEED_NONE 0x0000000000000000
```

4.1.2.203 GPIO_PIN5_VALUE_HIGH

```
#define GPIO_PIN5_VALUE_HIGH 0x0000000000F00000
```

4.1.2.204 GPIO_PIN5_VALUE_LOW

```
#define GPIO_PIN5_VALUE_LOW 0x0000000000000000
```

4.1.2.205 GPIO_PIN6_MODE_INPUT_ANALOG

```
#define GPIO_PIN6_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.206 GPIO_PIN6_MODE_INPUT_FLOATING

```
#define GPIO_PIN6_MODE_INPUT_FLOATING 0x0000000004000000
```

4.1.2.207 GPIO_PIN6_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN6_MODE_INPUT_PULL_UP_DOWN 0x0000000008000000
```

4.1.2.208 GPIO_PIN6_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN6_MODE_OUTPUT_AF_OPEN_DRAIN 0x000000000C000000
```

4.1.2.209 GPIO_PIN6_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN6_MODE_OUTPUT_AF_PUSH_PULL 0x0000000008000000
```

4.1.2.210 GPIO_PIN6_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN6_MODE_OUTPUT_OPEN_DRAIN 0x0000000004000000
```

4.1.2.211 GPIO_PIN6_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN6_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.212 GPIO_PIN6_PORTA

```
#define GPIO_PIN6_PORTA 0x0000000001000000
```

4.1.2.213 GPIO_PIN6_PORTB

```
#define GPIO_PIN6_PORTB 0x0000000002000000
```

4.1.2.214 GPIO_PIN6_PORTC

```
#define GPIO_PIN6_PORTC 0x0000000003000000
```

4.1.2.215 GPIO_PIN6_SELECT

```
#define GPIO_PIN6_SELECT 0x000000000F000000
```

4.1.2.216 GPIO_PIN6_SPEED_10MHZ

```
#define GPIO_PIN6_SPEED_10MHZ 0x0000000001000000
```

4.1.2.217 GPIO_PIN6_SPEED_2MHZ

```
#define GPIO_PIN6_SPEED_2MHZ 0x0000000002000000
```

4.1.2.218 GPIO_PIN6_SPEED_50MHZ

```
#define GPIO_PIN6_SPEED_50MHZ 0x0000000003000000
```

4.1.2.219 GPIO_PIN6_SPEED_NONE

```
#define GPIO_PIN6_SPEED_NONE 0x0000000000000000
```

4.1.2.220 GPIO_PIN6_VALUE_HIGH

```
#define GPIO_PIN6_VALUE_HIGH 0x000000000F000000
```

4.1.2.221 GPIO_PIN6_VALUE_LOW

```
#define GPIO_PIN6_VALUE_LOW 0x0000000000000000
```

4.1.2.222 GPIO_PIN7_MODE_INPUT_ANALOG

```
#define GPIO_PIN7_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.223 GPIO_PIN7_MODE_INPUT_FLOATING

```
#define GPIO_PIN7_MODE_INPUT_FLOATING 0x0000000040000000
```

4.1.2.224 GPIO_PIN7_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN7_MODE_INPUT_PULL_UP_DOWN 0x0000000080000000
```

4.1.2.225 GPIO_PIN7_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN7_MODE_OUTPUT_AF_OPEN_DRAIN 0x00000000C0000000
```

4.1.2.226 GPIO_PIN7_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN7_MODE_OUTPUT_AF_PUSH_PULL 0x0000000080000000
```

4.1.2.227 GPIO_PIN7_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN7_MODE_OUTPUT_OPEN_DRAIN 0x0000000040000000
```

4.1.2.228 GPIO_PIN7_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN7_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.229 GPIO_PIN7_PORTA

```
#define GPIO_PIN7_PORTA 0x0000000010000000
```

4.1.2.230 GPIO_PIN7_PORTB

```
#define GPIO_PIN7_PORTB 0x0000000020000000
```

4.1.2.231 GPIO_PIN7_PORTC

```
#define GPIO_PIN7_PORTC 0x0000000030000000
```

4.1.2.232 GPIO_PIN7_SELECT

```
#define GPIO_PIN7_SELECT 0x00000000F0000000
```

4.1.2.233 GPIO_PIN7_SPEED_10MHZ

```
#define GPIO_PIN7_SPEED_10MHZ 0x0000000010000000
```

4.1.2.234 GPIO_PIN7_SPEED_2MHZ

```
#define GPIO_PIN7_SPEED_2MHZ 0x0000000020000000
```

4.1.2.235 GPIO_PIN7_SPEED_50MHZ

```
#define GPIO_PIN7_SPEED_50MHZ 0x0000000030000000
```

4.1.2.236 GPIO_PIN7_SPEED_NONE

```
#define GPIO_PIN7_SPEED_NONE 0x0000000000000000
```

4.1.2.237 GPIO_PIN7_VALUE_HIGH

```
#define GPIO_PIN7_VALUE_HIGH 0x00000000F0000000
```

4.1.2.238 GPIO_PIN7_VALUE_LOW

```
#define GPIO_PIN7_VALUE_LOW 0x0000000000000000
```

4.1.2.239 GPIO_PIN8_MODE_INPUT_ANALOG

```
#define GPIO_PIN8_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.240 GPIO_PIN8_MODE_INPUT_FLOATING

```
#define GPIO_PIN8_MODE_INPUT_FLOATING 0x0000000400000000
```

4.1.2.241 GPIO_PIN8_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN8_MODE_INPUT_PULL_UP_DOWN 0x0000000800000000
```

4.1.2.242 GPIO_PIN8_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN8_MODE_OUTPUT_AF_OPEN_DRAIN 0x0000000C00000000
```

4.1.2.243 GPIO_PIN8_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN8_MODE_OUTPUT_AF_PUSH_PULL 0x0000000800000000
```

4.1.2.244 GPIO_PIN8_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN8_MODE_OUTPUT_OPEN_DRAIN 0x0000000400000000
```

4.1.2.245 GPIO_PIN8_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN8_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.246 GPIO_PIN8_PORTA

```
#define GPIO_PIN8_PORTA 0x0000000100000000
```

4.1.2.247 GPIO_PIN8_PORTB

```
#define GPIO_PIN8_PORTB 0x0000000200000000
```

4.1.2.248 GPIO_PIN8_PORTC

```
#define GPIO_PIN8_PORTC 0x0000000300000000
```

4.1.2.249 GPIO_PIN8_SELECT

```
#define GPIO_PIN8_SELECT 0x0000000F00000000
```

4.1.2.250 GPIO_PIN8_SPEED_10MHZ

```
#define GPIO_PIN8_SPEED_10MHZ 0x0000000100000000
```

4.1.2.251 GPIO_PIN8_SPEED_2MHZ

```
#define GPIO_PIN8_SPEED_2MHZ 0x0000000200000000
```

4.1.2.252 GPIO_PIN8_SPEED_50MHZ

```
#define GPIO_PIN8_SPEED_50MHZ 0x0000000300000000
```

4.1.2.253 GPIO_PIN8_SPEED_NONE

```
#define GPIO_PIN8_SPEED_NONE 0x0000000000000000
```

4.1.2.254 GPIO_PIN8_VALUE_HIGH

```
#define GPIO_PIN8_VALUE_HIGH 0x0000000F00000000
```

4.1.2.255 GPIO_PIN8_VALUE_LOW

```
#define GPIO_PIN8_VALUE_LOW 0x0000000000000000
```

4.1.2.256 GPIO_PIN9_MODE_INPUT_ANALOG

```
#define GPIO_PIN9_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.257 GPIO_PIN9_MODE_INPUT_FLOATING

```
#define GPIO_PIN9_MODE_INPUT_FLOATING 0x0000004000000000
```

4.1.2.258 GPIO_PIN9_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN9_MODE_INPUT_PULL_UP_DOWN 0x0000008000000000
```

4.1.2.259 GPIO_PIN9_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN9_MODE_OUTPUT_AF_OPEN_DRAIN 0x000000C000000000
```

4.1.2.260 GPIO_PIN9_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN9_MODE_OUTPUT_AF_PUSH_PULL 0x0000008000000000
```

4.1.2.261 GPIO_PIN9_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN9_MODE_OUTPUT_OPEN_DRAIN 0x0000004000000000
```

4.1.2.262 GPIO_PIN9_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN9_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.263 GPIO_PIN9_PORTA

```
#define GPIO_PIN9_PORTA 0x0000001000000000
```

4.1.2.264 GPIO_PIN9_PORTB

```
#define GPIO_PIN9_PORTB 0x0000002000000000
```

4.1.2.265 GPIO_PIN9_PORTC

```
#define GPIO_PIN9_PORTC 0x0000003000000000
```

4.1.2.266 GPIO_PIN9_SELECT

```
#define GPIO_PIN9_SELECT 0x000000F000000000
```

4.1.2.267 GPIO_PIN9_SPEED_10MHZ

```
#define GPIO_PIN9_SPEED_10MHZ 0x0000001000000000
```

4.1.2.268 GPIO_PIN9_SPEED_2MHZ

```
#define GPIO_PIN9_SPEED_2MHZ 0x0000002000000000
```

4.1.2.269 GPIO_PIN9_SPEED_50MHZ

```
#define GPIO_PIN9_SPEED_50MHZ 0x0000003000000000
```

4.1.2.270 GPIO_PIN9_SPEED_NONE

```
#define GPIO_PIN9_SPEED_NONE 0x0000000000000000
```

4.1.2.271 GPIO_PIN9_VALUE_HIGH

```
#define GPIO_PIN9_VALUE_HIGH 0x000000F000000000
```

4.1.2.272 GPIO_PIN9_VALUE_LOW

```
#define GPIO_PIN9_VALUE_LOW 0x0000000000000000
```

4.1.2.273 GPIO_PIN_ALL_MODE_INPUT_ANALOG

```
#define GPIO_PIN_ALL_MODE_INPUT_ANALOG 0x0000000000000000
```

4.1.2.274 GPIO_PIN_ALL_MODE_INPUT_FLOATING

```
#define GPIO_PIN_ALL_MODE_INPUT_FLOATING 0x4444444444444444
```

4.1.2.275 GPIO_PIN_ALL_MODE_INPUT_PULL_UP_DOWN

```
#define GPIO_PIN_ALL_MODE_INPUT_PULL_UP_DOWN 0x8888888888888888
```

4.1.2.276 GPIO_PIN_ALL_MODE_OUTPUT_AF_OPEN_DRAIN

```
#define GPIO_PIN_ALL_MODE_OUTPUT_AF_OPEN_DRAIN 0xCCCCCCCCCCCCCCCC
```

4.1.2.277 GPIO_PIN_ALL_MODE_OUTPUT_AF_PUSH_PULL

```
#define GPIO_PIN_ALL_MODE_OUTPUT_AF_PUSH_PULL 0x8888888888888888
```

4.1.2.278 GPIO_PIN_ALL_MODE_OUTPUT_OPEN_DRAIN

```
#define GPIO_PIN_ALL_MODE_OUTPUT_OPEN_DRAIN 0x4444444444444444
```

4.1.2.279 GPIO_PIN_ALL_MODE_OUTPUT_PUSH_PULL

```
#define GPIO_PIN_ALL_MODE_OUTPUT_PUSH_PULL 0x0000000000000000
```

4.1.2.280 GPIO_PIN_ALL_PORTA

```
#define GPIO_PIN_ALL_PORTA 0x1111111111111111
```

4.1.2.281 GPIO_PIN_ALL_PORTB

```
#define GPIO_PIN_ALL_PORTB 0x2222222222222222
```

4.1.2.282 GPIO_PIN_ALL_PORTC

```
#define GPIO_PIN_ALL_PORTC 0x3333333333333333
```

4.1.2.283 GPIO_PIN_ALL_SPEED_10MHZ

```
#define GPIO_PIN_ALL_SPEED_10MHZ 0x1111111111111111
```

4.1.2.284 GPIO_PIN_ALL_SPEED_2MHZ

```
#define GPIO_PIN_ALL_SPEED_2MHZ 0x2222222222222222
```

4.1.2.285 GPIO_PIN_ALL_SPEED_50MHZ

```
#define GPIO_PIN_ALL_SPEED_50MHZ 0x3333333333333333
```

4.1.2.286 GPIO_PIN_ALL_SPEED_NONE

```
#define GPIO_PIN_ALL_SPEED_NONE 0x0000000000000000
```

4.1.2.287 GPIO_PIN_ALL_VALUE_HIGH

```
#define GPIO_PIN_ALL_VALUE_HIGH 0xFFFFFFFFFFFFFFFF
```

4.1.2.288 GPIO_PIN_ALL_VALUE_LOW

```
#define GPIO_PIN_ALL_VALUE_LOW 0x0000000000000000
```

4.1.3 Function Documentation

4.1.3.1 GPIO_InitPin()

```
void GPIO_InitPin (
            GPIO_t * gpio )
```

Initialize a GPIO object: mode, speed, direction.

Parameters

gpio	GPIO_t object reference

4.1.3.2 GPIO_ReadPin()

```
u64 GPIO_ReadPin (
            GPIO_t * gpio )
```

Read multiple value from a GPIO object.

Parameters

gpio	GPIO_t object reference

Returns

GPIO object pins readings

4.1.3.3 GPIO_WritePin()

```
void GPIO_WritePin (
            GPIO_t * gpio,
            u64 state )
```

Write multiple value on a GPIO object.

Parameters

gpio	GPIO_t object reference
state	GPIO_PINx_VALUE_x

4.2 include/LCD.h File Reference

This file is to be used as an implementation of the LCD driver.

Macros

- #define E_OK (Std_ReturnType)0
- #define E_NOT_OK (Std_ReturnType)1
- #define E_BUSY (Std_ReturnType)2
- #define LCD_8_BIT_1_LINE 0x30
- #define LCD_8_BIT_2_LINE 0x38
- #define LCD_4_BIT_1_LINE 0x20
- #define LCD_4_BIT_2_LINE 0x28
- #define LCD_CLEAR_SCREEN 0x01
- #define LCD_DISPLAY_OFF_CURSOR_OFF 0x08
- #define LCD_DISPLAY_ON_CURSOR_ON 0x0E
- #define LCD_DISPLAY_ON_CURSOR_OFF 0x0C
- #define LCD_DISPLAY_ON_CURSOR_Blinging 0x0F
- #define LCD_FIRST_LINE 1U
- #define LCD_SECOND_LINE 2U

Typedefs

- typedef u8 Std_ReturnType
- typedef void(∗ APPNotifiactionCbf_t) (void)

Functions

- void LCD_voidInit (void)

  Initialize LCD pins.
- Std_ReturnType LCD_WriteString (const u8 *Copy_ptStringData, u16 Copy_u16StringLength)

  Write string on LCD.
- Std_ReturnType LCD_ClearScreen (void)

  Clear the LCD screen.
- Std_ReturnType LCD_GotoLocation (u8 Copy_Line, u8 Copy_Column)

  To move the cursor to the location.
- Std_ReturnType LCD_SetCbf (APPNotifiactionCbf_t Copy_SetCbf)

  Callback function to handle any application function
  it run after
  1- the writing to LCD is finished. -> LCD_WriteString() finish successfully
  2- move cursor -> LCD_GotoLocation() finish successfully
  3- clear screen -> LCD_ClearScreen() finish successfully.

4.2.1 Detailed Description

This file is to be used as an implementation of the LCD driver.

This file is to be used as an implementation of the UART handler.

Author

MSN

Date

Mar 31, 2020

4.2.2 Macro Definition Documentation

4.2.2.1 E_BUSY

```
#define E_BUSY (Std_ReturnType)2
```

4.2.2.2 E_NOT_OK

```
#define E_NOT_OK (Std_ReturnType)1
```

4.2.2.3 E_OK

```
#define E_OK (Std_ReturnType)0
```

4.2.2.4 LCD_4_BIT_1_LINE

```
#define LCD_4_BIT_1_LINE 0x20
```

4.2.2.5 LCD_4_BIT_2_LINE

```
#define LCD_4_BIT_2_LINE 0x28
```

4.2.2.6 LCD_8_BIT_1_LINE

```
#define LCD_8_BIT_1_LINE 0x30
```

4.2.2.7 LCD_8_BIT_2_LINE

```
#define LCD_8_BIT_2_LINE 0x38
```

4.2.2.8 LCD_CLEAR_SCREEN

```
#define LCD_CLEAR_SCREEN 0x01
```

4.2.2.9 LCD_DISPLAY_OFF_CURSOR_OFF

```
#define LCD_DISPLAY_OFF_CURSOR_OFF 0x08
```

4.2.2.10 LCD_DISPLAY_ON_CURSOR_Blinging

```
#define LCD_DISPLAY_ON_CURSOR_Blinging 0x0F
```

4.2.2.11 LCD_DISPLAY_ON_CURSOR_OFF

```
#define LCD_DISPLAY_ON_CURSOR_OFF 0x0C
```

4.2.2.12 LCD_DISPLAY_ON_CURSOR_ON

```
#define LCD_DISPLAY_ON_CURSOR_ON 0x0E
```

4.2.2.13 LCD_FIRST_LINE

```
#define LCD_FIRST_LINE 1U
```

4.2.2.14 LCD_SECOND_LINE

```
#define LCD_SECOND_LINE 2U
```

4.2.3 Typedef Documentation

4.2.3.1 APPNotifiactionCbf_t

```
typedef void(* APPNotifiactionCbf_t) (void)
```

4.2.3.2 Std_ReturnType

```
typedef u8 Std_ReturnType
```

4.2.4 Function Documentation

4.2.4.1 LCD_ClearScreen()

```
Std_ReturnType LCD_ClearScreen (
            void  )
```

Clear the LCD screen.

Parameters

void	

Returns

Std_ReturnType
E_OK : Service request accepted .
E_NOT_OK : Service request not accepted .
E_BUSY : transmit request could not be processed because no transmit object was available

4.2.4.2 LCD_GotoLocation()

```
Std_ReturnType LCD_GotoLocation (
            u8 Copy_Line,
            u8 Copy_Column )
```

To move the cursor to the location.

Parameters

Copy_Line	LCD line
Copy_Column	LCD column

Returns

Std_ReturnType
E_OK : Service request accepted .
E_NOT_OK : Service request not accepted .
E_BUSY : transmit request could not be processed because no transmit object was available

4.2.4.3 LCD_SetCbf()

```
Std_ReturnType LCD_SetCbf (
            APPNotifiactionCbf_t Copy_SetCbf )
```

Callback function to handle any application function
it run after
1- the writing to LCD is finished. -> LCD_WriteString() finish successfully
2- move cursor -> LCD_GotoLocation() finish successfully
3- clear screen -> LCD_ClearScreen() finish successfully.

Parameters

Copy_SetCbf	pointer to function

Returns

Std_ReturnType
E_OK : Service request accepted .
E_NOT_OK : Service request not accepted .
E_BUSY : transmit request could not be processed because no transmit object was available

4.2.4.4 LCD_voidInit()

```
void LCD_voidInit (
            void  )
```

Initialize LCD pins.

Parameters

void	

Returns

void

4.2.4.5 LCD_WriteString()

```
Std_ReturnType LCD_WriteString (
            const u8 * Copy_ptStringData,
            u16 Copy_u16StringLength )
```

Write string on LCD.

Parameters

Copy_ptStringData	Pointer to string
Copy_u16StringLength	String length

Returns

Std_ReturnType
E_OK : Service request accepted

E_NOT_OK : Service request not accepted
E_BUSY : transmit request could not be processed because no transmit object was available

4.3 include/LCD_cfg.h File Reference

This file is to be used as an implementation of the LCD configuration.

Macros

- #define LCD_CONFIGPIN 5
- #define LCD_D_PIN 0U
- #define LCD_RS_PIN 1U
- #define LCD_RW_PIN 2U
- #define LCD_E_PIN 3U
- #define LCD_LINE LCD_FIRST_LINE
- #define LCD_CoLumn 5U
- #define LCD_FUNCTION_SET LCD_8_BIT_2_LINE
- #define LCD_DISPLAY_CURSOR LCD_DISPLAY_ON_CURSOR_OFF

4.3.1 Detailed Description

This file is to be used as an implementation of the LCD configuration.

Author

MSN

Date

Mar 31, 2020

4.3.2 Macro Definition Documentation

4.3.2.1 LCD_CoLumn

```
#define LCD_CoLumn 5U
```

4.3.2.2 LCD_CONFIGPIN

```
#define LCD_CONFIGPIN 5
```

4.3.2.3 LCD_D_PIN

```
#define LCD_D_PIN 0U
```

4.3.2.4 LCD_DISPLAY_CURSOR

```
#define LCD_DISPLAY_CURSOR LCD_DISPLAY_ON_CURSOR_OFF
```

4.3.2.5 LCD_E_PIN

```
#define LCD_E_PIN 3U
```

4.3.2.6 LCD_FUNCTION_SET

```
#define LCD_FUNCTION_SET LCD_8_BIT_2_LINE
```

4.3.2.7 LCD_LINE

```
#define LCD_LINE LCD_FIRST_LINE
```

4.3.2.8 LCD_RS_PIN

```
#define LCD_RS_PIN 1U
```

4.3.2.9 LCD_RW_PIN

```
#define LCD_RW_PIN 2U
```

4.4 include/LED.h File Reference

This file is to be used as an implementation of the LED driver.

Macros

- #define LED_ACTIVE_LOW 0
- #define LED_ACTIVE_HIGH 1

Functions

- void LED_voidInit (void)

  Function To initialize LED pin and clock.
- void LED_voidON (u8 LED_Number)

  Function put LED on.
- void LED_voidOFF (u8 LED_Number)

  Function put LED off.

4.4.1 Detailed Description

This file is to be used as an implementation of the LED driver.

Author

MSN

Date

Mar 31, 2020

4.4.2 Macro Definition Documentation

4.4.2.1 LED_ACTIVE_HIGH

```
#define LED_ACTIVE_HIGH 1
```

4.4.2.2 LED_ACTIVE_LOW

```
#define LED_ACTIVE_LOW 0
```

4.4.3 Function Documentation

4.4.3.1 LED_voidInit()

```
void LED_voidInit (
            void  )
```

Function To initialize LED pin and clock.

Parameters

void	

Returns

void

4.4.3.2 LED_voidOFF()

```
void LED_voidOFF (
            u8 LED_Number )
```

Function put LED off.

Parameters

LED_Number	LED number (LED1)

Returns

void

4.4.3.3 LED_voidON()

```
void LED_voidON (
            u8 LED_Number )
```

Function put LED on.

Parameters

LED_Number	led number (LED1)

Returns

void

4.5 include/LED_Cfg.h File Reference

This file is to be used as an implementation of the LED configuration.

Data Structures

- struct LED_cfg_t

Macros

- #define LED_CFGNUMBER 1

4.5.1 Detailed Description

This file is to be used as an implementation of the LED configuration.

Author

MSN

Date

Mar 31, 2020

4.5.2 Macro Definition Documentation

4.5.2.1 LED_CFGNUMBER

```
#define LED_CFGNUMBER 1
```

4.6 include/NVIC.h File Reference

This file is to be used as an implementation of the NVIC driver.

Macros

- #define EXTI0_IRQNUMBER 6U
- #define EXTI1_IRQNUMBER 7U
- #define EXTI2_IRQNUMBER 8U
- #define EXTI3_IRQNUMBER 9U
- #define EXTI4_IRQNUMBER 10U
- #define USART1_IRQNUMBER 37U
- #define USART2_IRQNUMBER 38U
- #define USART3_IRQNUMBER 39U
- #define UART4_IRQNUMBER 52U
- #define UART5_IRQNUMBER 53U

Functions

- Std_ReturnType NVIC_EnableIRQ (u8 IRQNumber)

  Function to enable interrupt.
- Std_ReturnType NVIC_DisableIRQ (u8 IRQNumber)

  Function to disable interrupt.
- Std_ReturnType NVIC_SetPendingIRQ (u8 IRQNumber)

  Function to changes interrupt state to pending.
- Std_ReturnType NVIC_ClearPendingIRQ (u8 IRQNumber)

  Function to removes the pending state of an interrupt.
- Std_ReturnType NVIC_ISActive (u8 IRQNumber)

  Function return status if the corresponding interrupt is active or not.
- Std_ReturnType NVIC_SetPriority (u8 IRQNumber, u8 Priority)

  Function return status if the corresponding interrupt is active or not.
- Std_ReturnType NVIC_SoftwareInterrupt (u8 IRQNumber)

  Function to generate interrupt software.
- void NVIC_EnableAllInterrupt (void)

  Function to enable IRQ interrupts.
- void NVIC_DisableAllInterrupt (void)

  Function to disable IRQ interrupts.
- void NVIC_DisableAllFaults (void)

  Function to disable all fault exceptions.
- void NVIC_SetPriorityGrouping (u32 priority_grouping)

  Set priority group.

4.6.1 Detailed Description

This file is to be used as an implementation of the NVIC driver.

Author

MSN

Date

Mar 31, 2020

4.6.2 Macro Definition Documentation

4.6.2.1 EXTI0_IRQNUMBER

```
#define EXTI0_IRQNUMBER 6U
```

4.6.2.2 EXTI1_IRQNUMBER

```
#define EXTI1_IRQNUMBER 7U
```

4.6.2.3 EXTI2_IRQNUMBER

```
#define EXTI2_IRQNUMBER 8U
```

4.6.2.4 EXTI3_IRQNUMBER

```
#define EXTI3_IRQNUMBER 9U
```

4.6.2.5 EXTI4_IRQNUMBER

```
#define EXTI4_IRQNUMBER 10U
```

4.6.2.6 UART4_IRQNUMBER

```
#define UART4_IRQNUMBER 52U
```

4.6.2.7 UART5_IRQNUMBER

```
#define UART5_IRQNUMBER 53U
```

4.6.2.8 USART1_IRQNUMBER

```
#define USART1_IRQNUMBER 37U
```

4.6.2.9 USART2_IRQNUMBER

```
#define USART2_IRQNUMBER 38U
```

4.6.2.10 USART3_IRQNUMBER

```
#define USART3_IRQNUMBER 39U
```

4.6.3 Function Documentation

4.6.3.1 NVIC_ClearPendingIRQ()

```
Std_ReturnType NVIC_ClearPendingIRQ (
            u8 IRQNumber )
```

Function to removes the pending state of an interrupt.

Parameters

IRQNumber	interrupt request number from 0 to 80

Returns

Std_ReturnType
E_OK: request accepted
E_NOT_OK: request not accepted

4.6.3.2 NVIC_DisableAllFaults()

```
void NVIC_DisableAllFaults (
            void  )
```

Function to disable all fault exceptions.

Parameters

void	

Returns

void

4.6.3.3 NVIC_DisableAllInterrupt()

```
void NVIC_DisableAllInterrupt (
            void  )
```

Function to disable IRQ interrupts.

Parameters

void	

Returns

void

4.6.3.4 NVIC_DisableIRQ()

```
Std_ReturnType NVIC_DisableIRQ (
            u8 IRQNumber )
```

Function to disable interrupt.

Parameters

IRQNumber	interrupt request number from 0 to 80

Returns

Std_ReturnType
E_OK: request accepted
E_NOT_OK: request not accepted

4.6.3.5 NVIC_EnableAllInterrupt()

```
void NVIC_EnableAllInterrupt (
            void  )
```

Function to enable IRQ interrupts.

Parameters

void	

Returns

void

4.6.3.6 NVIC_EnableIRQ()

```
Std_ReturnType NVIC_EnableIRQ (
            u8 IRQNumber )
```

Function to enable interrupt.

Parameters

IRQNumber	interrupt request number from 0 to 80

Returns

Std_ReturnType:
E_OK: request accepted
E_NOT_OK: request not accepted

4.6.3.7 NVIC_ISActive()

```
Std_ReturnType NVIC_ISActive (
            u8 IRQNumber )
```

Function return status if the corresponding interrupt is active or not.

Parameters

IRQNumber	interrupt request number from 0 to 80

Returns

Std_ReturnType
E_OK: request accepted
E_NOT_OK: request not accepted

4.6.3.8 NVIC_SetPendingIRQ()

```
Std_ReturnType NVIC_SetPendingIRQ (
            u8 IRQNumber )
```

Function to changes interrupt state to pending.

Parameters

IRQNumber	interrupt request number from 0 to 80

Returns

Std_ReturnType
E_OK: request accepted
E_NOT_OK: request not accepted

4.6.3.9 NVIC_SetPriority()

```
Std_ReturnType NVIC_SetPriority (
            u8 IRQNumber,
            u8 Priority )
```

Function return status if the corresponding interrupt is active or not.

Parameters

IRQNumber	interrupt request number from 0 to 80
Priority	interrupt priority number

Returns

Std_ReturnType
E_OK: request accepted
E_NOT_OK: request not accepted

4.6.3.10 NVIC_SetPriorityGrouping()

```
void NVIC_SetPriorityGrouping (
            u32 priority_grouping )
```

Set priority group.

Parameters

priority_grouping	priority group

Returns

void

4.6.3.11 NVIC_SoftwareInterrupt()

```
Std_ReturnType NVIC_SoftwareInterrupt (
            u8 IRQNumber )
```

Function to generate interrupt software.

Parameters

IRQNumber	interrupt request number from 0 to 80

Returns

Std_ReturnType
E_OK: request accepted
E_NOT_OK: request not accepted

4.7 include/RCC.h File Reference

This file is to be used as an implementation of the RCC driver.

```
#include "STD_TYPES.h"
```

Macros

- #define ClockSourceType (u32)
- #define RCC_CR_HSI (u32)0x00000001
- #define RCC_CR_HSIRDY (u32)0x00000002
- #define RCC_CR_HSE (u32)0x00010000
- #define RCC_CR_HSERDY (u32)0x00020000
- #define RCC_CR_HSEBYP (u32)0x00030000
- #define RCC_CR_CSSON (u32)0x00040000
- #define RCC_CR_PLL (u32)0x01000000
- #define RCC_CR_PLLRDY (u32)0x02010000
- #define RCC_CFGR_SW_HSI (u32)0x00000000
- #define RCC_CFGR_SW_HSE (u32)0x00000001
- #define RCC_CFGR_SW_PLL (u32)0x00000002
- #define RCC_CFGR_SWS_HSI (u32)0x0
- #define RCC_CFGR_SWS_HSE (u32)0x4
- #define RCC_CFGR_SWS_PLL (u32)0x8
- #define RCC_CFGR_PLLMUL_2 (u32)0x00000000
- #define RCC_CFGR_PLLMUL_3 (u32)0x00040000
- #define RCC_CFGR_PLLMUL_4 (u32)0x00080000
- #define RCC_CFGR_PLLMUL_5 (u32)0x000C0000
- #define RCC_CFGR_PLLMUL_6 (u32)0x00100000
- #define RCC_CFGR_PLLMUL_7 (u32)0x00140000
- #define RCC_CFGR_PLLMUL_8 (u32)0x00180000
- #define RCC_CFGR_PLLMUL_9 (u32)0x001C0000
- #define RCC_CFGR_PLLMUL_10 (u32)0x00200000
- #define RCC_CFGR_PLLMUL_11 (u32)0x00240000
- #define RCC_CFGR_PLLMUL_12 (u32)0x00280000
- #define RCC_CFGR_PLLMUL_13 (u32)0x002C0000
- #define RCC_CFGR_PLLMUL_14 (u32)0x00300000
- #define RCC_CFGR_PLLMUL_15 (u32)0x00340000
- #define RCC_CFGR_PLLMUL_16 (u32)0x00380000
- #define RCC_CFGR_PLLXTPRESRC_HSE_divided_1 (u32)0x00010000
- #define RCC_CFGR_PLLXTPRESRC_HSE_divided_2 (u32)0x00030000

- #define RCC_CFGR_PLLXTPRESRC_HSI_divided_2 (u32)0x00000000
- #define RCC_CFGR_PPRE1_div_1 (u32)0x00000000
- #define RCC_CFGR_PPRE1_div_2 (u32)0x00000400
- #define RCC_CFGR_PPRE1_div_4 (u32)0x00000500
- #define RCC_CFGR_PPRE1_div_8 (u32)0x00000600
- #define RCC_CFGR_PPRE1_div_16 (u32)0x00000700
- #define RCC_CFGR_PPRE2_div_1 (u32)0x00000000
- #define RCC_CFGR_PPRE2_div_2 (u32)0x00002000
- #define RCC_CFGR_PPRE2_div_4 (u32)0x00002800
- #define RCC_CFGR_PPRE2_div_8 (u32)0x00003000
- #define RCC_CFGR_PPRE2_div_16 (u32)0x00003800
- #define RCC_CFGR_HPRE_div_1 (u32)0x00000000
- #define RCC_CFGR_HPRE_div_2 (u32)0x00000080
- #define RCC_CFGR_HPRE_div_4 (u32)0x00000090
- #define RCC_CFGR_HPRE_div_8 (u32)0x000000A0
- #define RCC_CFGR_HPRE_div_16 (u32)0x000000B0
- #define RCC_CFGR_HPRE_div_64 (u32)0x000000C0
- #define RCC_CFGR_HPRE_div_128 (u32)0x000000D0
- #define RCC_CFGR_HPRE_div_256 (u32)0x000000E0
- #define RCC_CFGR_HPRE_div_512 (u32)0x000000F0
- #define RCC_CFGR_ADCPRE_div_2 (u32)0x0
- #define RCC_CFGR_ADCPRE_div_4 (u32)0x4000
- #define RCC_CFGR_ADCPRE_div_6 (u32)0x8000
- #define RCC_CFGR_ADCPRE_div_8 (u32)0xc000
- #define RCC_CFGR_MCO_NOCLK (u32)0x00000000
- #define RCC_CFGR_MCO_SYSCLK (u32)0x4000000
- #define RCC_CFGR_MCO_HSI (u32)0x5000000
- #define RCC_CFGR_MCO_HSE (u32)0x6000000
- #define RCC_CFGR_MCO_PLL (u32)0x7000000
- #define RCC_APB2ENR_AFIOEN_Enable (u32)0x1
- #define RCC_APB2ENR_AFIOEN_Disable (u32)0x0
- #define RCC_APB2ENR_IOPAEN_PORTA (u32)0x4
- #define RCC_APB2ENR_IOPBEN_PORTB (u32)0x8
- #define RCC_APB2ENR_IOPCEN_PORTC (u32)0x10
- #define RCC_APB2ENR_IOPDEN_PORTD (u32)0x20
- #define RCC_APB2ENR_IOPEEN_PORTE (u32)0x40
- #define RCC_APB2ENR_IOPFEN_PORTF (u32)0x80
- #define RCC_APB2ENR_IOPGEN_PORTG (u32)0x100
- #define RCC_APB2ENR_ADC1EN (u32)0x200
- #define RCC_APB2ENR_ADC2EN (u32)0x400
- #define RCC_APB2ENR_TIM1EN (u32)0x800
- #define RCC_APB2ENR_SPI1EN (u32)0x1000
- #define RCC_APB2ENR_TIM8EN (u32)0x2000
- #define RCC_APB2ENR_TIM9EN (u32)0x80000
- #define RCC_APB2ENR_TIM10EN (u32)0x100000
- #define RCC_APB2ENR_TIM11EN (u32)0x200000
- #define RCC_APB2ENR_USART1EN (u32)0x4000
- #define RCC_APB2ENR_ADC3EN (u32)0x8000
- #define RCC_APB2ENR_ADC3EN (u32)0x8000
- #define RCC_APB1ENR_USART2EN (u32)0x20000
- #define RCC_APB1ENR_USART3EN (u32)0x40000
- #define RCC_APB1ENR_UART4EN (u32)0x80000
- #define RCC_APB1ENR_UART5EN (u32)0x100000
- #define ON 1
- #define OFF 0

Typedefs

- typedef u32 ClockSource_ReturnType

Functions

- void Select_SystemClock (u32 SystemClock)

  Select system clock.
- void RCC_SetClock (u32 Clock, u8 State)

  Set the clock.
- ClockSource_ReturnType RCC_CheckSystemClock (void)

  check system clock
- void RCC_PLLConfiguration (u32 RCC_PLLSource, u32 RCC_PLLMUL)

  Configure PLL.
- void RCC_PPRE2_SetPrescaler (u32 Prescaler)

  Set prescaler for PPRE2.
- void RCC_PPRE1_SetPrescaler (u32 Prescaler)

  Set prescaler for PPRE1.
- void RCC_HPRE_SetPrescaler (u32 Prescaler)

  Set prescaler for HPRE.
- void RCC_ADCPRE_SetPrescaler (u32 Prescaler)

  ADC prescaler function take one argument.
- void RCC_SelectMCO (u32 Clock)

  Select MCO: Microcontroller Clock Output take one argument from.
- void RCC_EnablePeripheral_APB2 (u32 Peripheral)

  APB2 enable peripheral.
- void RCC_EnablePeripheral_APB1 (u32 Peripheral)

  Enable peripheral APB1.

4.7.1 Detailed Description

This file is to be used as an implementation of the RCC driver.

Author

MSN

Date

Mar 31, 2020

4.7.2 Macro Definition Documentation

4.7.2.1 ClockSourceType

```
#define ClockSourceType (u32)
```

4.7.2.2 OFF

```
#define OFF 0
```

4.7.2.3 ON

```
#define ON 1
```

4.7.2.4 RCC_APB1ENR_UART4EN

```
#define RCC_APB1ENR_UART4EN (u32)0x80000
```

4.7.2.5 RCC_APB1ENR_UART5EN

```
#define RCC_APB1ENR_UART5EN (u32)0x100000
```

4.7.2.6 RCC_APB1ENR_USART2EN

```
#define RCC_APB1ENR_USART2EN (u32)0x20000
```

4.7.2.7 RCC_APB1ENR_USART3EN

```
#define RCC_APB1ENR_USART3EN (u32)0x40000
```

4.7.2.8 RCC_APB2ENR_ADC1EN

```
#define RCC_APB2ENR_ADC1EN (u32)0x200
```

4.7.2.9 RCC_APB2ENR_ADC2EN

```
#define RCC_APB2ENR_ADC2EN (u32)0x400
```

4.7.2.10 RCC_APB2ENR_ADC3EN [1/2]

```
#define RCC_APB2ENR_ADC3EN (u32)0x8000
```

4.7.2.11 RCC_APB2ENR_ADC3EN [2/2]

```
#define RCC_APB2ENR_ADC3EN (u32)0x8000
```

4.7.2.12 RCC_APB2ENR_AFIOEN_Disable

```
#define RCC_APB2ENR_AFIOEN_Disable (u32)0x0
```

4.7.2.13 RCC_APB2ENR_AFIOEN_Enable

```
#define RCC_APB2ENR_AFIOEN_Enable (u32)0x1
```

4.7.2.14 RCC_APB2ENR_IOPAEN_PORTA

```
#define RCC_APB2ENR_IOPAEN_PORTA (u32)0x4
```

4.7.2.15 RCC_APB2ENR_IOPBEN_PORTB

```
#define RCC_APB2ENR_IOPBEN_PORTB (u32)0x8
```

4.7.2.16 RCC_APB2ENR_IOPCEN_PORTC

```
#define RCC_APB2ENR_IOPCEN_PORTC (u32)0x10
```

4.7.2.17 RCC_APB2ENR_IOPDEN_PORTD

```
#define RCC_APB2ENR_IOPDEN_PORTD (u32)0x20
```

4.7.2.18 RCC_APB2ENR_IOPEEN_PORTE

```
#define RCC_APB2ENR_IOPEEN_PORTE (u32)0x40
```

4.7.2.19 RCC_APB2ENR_IOPFEN_PORTF

```
#define RCC_APB2ENR_IOPFEN_PORTF (u32)0x80
```

4.7.2.20 RCC_APB2ENR_IOPGEN_PORTG

```
#define RCC_APB2ENR_IOPGEN_PORTG (u32)0x100
```

4.7.2.21 RCC_APB2ENR_SPI1EN

```
#define RCC_APB2ENR_SPI1EN (u32)0x1000
```

4.7.2.22 RCC_APB2ENR_TIM10EN

```
#define RCC_APB2ENR_TIM10EN (u32)0x100000
```

4.7.2.23 RCC_APB2ENR_TIM11EN

```
#define RCC_APB2ENR_TIM11EN (u32)0x200000
```

4.7.2.24 RCC_APB2ENR_TIM1EN

```
#define RCC_APB2ENR_TIM1EN (u32)0x800
```

4.7.2.25 RCC_APB2ENR_TIM8EN

```
#define RCC_APB2ENR_TIM8EN (u32)0x2000
```

4.7.2.26 RCC_APB2ENR_TIM9EN

```
#define RCC_APB2ENR_TIM9EN (u32)0x80000
```

4.7.2.27 RCC_APB2ENR_USART1EN

```
#define RCC_APB2ENR_USART1EN (u32)0x4000
```

4.7.2.28 RCC_CFGR_ADCPRE_div_2

```
#define RCC_CFGR_ADCPRE_div_2 (u32)0x0
```

4.7.2.29 RCC_CFGR_ADCPRE_div_4

```
#define RCC_CFGR_ADCPRE_div_4 (u32)0x4000
```

4.7.2.30 RCC_CFGR_ADCPRE_div_6

```
#define RCC_CFGR_ADCPRE_div_6 (u32)0x8000
```

4.7.2.31 RCC_CFGR_ADCPRE_div_8

```
#define RCC_CFGR_ADCPRE_div_8 (u32)0xc000
```

4.7.2.32 RCC_CFGR_HPRE_div_1

```
#define RCC_CFGR_HPRE_div_1 (u32)0x00000000
```

4.7.2.33 RCC_CFGR_HPRE_div_128

```
#define RCC_CFGR_HPRE_div_128 (u32)0x000000D0
```

4.7.2.34 RCC_CFGR_HPRE_div_16

```
#define RCC_CFGR_HPRE_div_16 (u32)0x000000B0
```

4.7.2.35 RCC_CFGR_HPRE_div_2

```
#define RCC_CFGR_HPRE_div_2 (u32)0x00000080
```

4.7.2.36 RCC_CFGR_HPRE_div_256

```
#define RCC_CFGR_HPRE_div_256 (u32)0x000000E0
```

4.7.2.37 RCC_CFGR_HPRE_div_4

```
#define RCC_CFGR_HPRE_div_4 (u32)0x00000090
```

4.7.2.38 RCC_CFGR_HPRE_div_512

```
#define RCC_CFGR_HPRE_div_512 (u32)0x000000F0
```

4.7.2.39 RCC_CFGR_HPRE_div_64

```
#define RCC_CFGR_HPRE_div_64 (u32)0x000000C0
```

4.7.2.40 RCC_CFGR_HPRE_div_8

```
#define RCC_CFGR_HPRE_div_8 (u32)0x000000A0
```

4.7.2.41 RCC_CFGR_MCO_HSE

```
#define RCC_CFGR_MCO_HSE (u32)0x6000000
```

4.7.2.42 RCC_CFGR_MCO_HSI

```
#define RCC_CFGR_MCO_HSI (u32)0x5000000
```

4.7.2.43 RCC_CFGR_MCO_NOCLK

```
#define RCC_CFGR_MCO_NOCLK (u32)0x00000000
```

4.7.2.44 RCC_CFGR_MCO_PLL

```
#define RCC_CFGR_MCO_PLL (u32)0x7000000
```

4.7.2.45 RCC_CFGR_MCO_SYSCLK

```
#define RCC_CFGR_MCO_SYSCLK (u32)0x4000000
```

4.7.2.46 RCC_CFGR_PLLMUL_10

```
#define RCC_CFGR_PLLMUL_10 (u32)0x00200000
```

4.7.2.47 RCC_CFGR_PLLMUL_11

```
#define RCC_CFGR_PLLMUL_11 (u32)0x00240000
```

4.7.2.48 RCC_CFGR_PLLMUL_12

```
#define RCC_CFGR_PLLMUL_12 (u32)0x00280000
```

4.7.2.49 RCC_CFGR_PLLMUL_13

```
#define RCC_CFGR_PLLMUL_13 (u32)0x002C0000
```

4.7.2.50 RCC_CFGR_PLLMUL_14

```
#define RCC_CFGR_PLLMUL_14 (u32)0x00300000
```

4.7.2.51 RCC_CFGR_PLLMUL_15

```
#define RCC_CFGR_PLLMUL_15 (u32)0x00340000
```

4.7.2.52 RCC_CFGR_PLLMUL_16

```
#define RCC_CFGR_PLLMUL_16 (u32)0x00380000
```

4.7.2.53 RCC_CFGR_PLLMUL_2

```
#define RCC_CFGR_PLLMUL_2 (u32)0x00000000
```

4.7.2.54 RCC_CFGR_PLLMUL_3

```
#define RCC_CFGR_PLLMUL_3 (u32)0x00040000
```

4.7.2.55 RCC_CFGR_PLLMUL_4

```
#define RCC_CFGR_PLLMUL_4 (u32)0x00080000
```

4.7.2.56 RCC_CFGR_PLLMUL_5

```
#define RCC_CFGR_PLLMUL_5 (u32)0x000C0000
```

4.7.2.57 RCC_CFGR_PLLMUL_6

```
#define RCC_CFGR_PLLMUL_6 (u32)0x00100000
```

4.7.2.58 RCC_CFGR_PLLMUL_7

```
#define RCC_CFGR_PLLMUL_7 (u32)0x00140000
```

4.7.2.59 RCC_CFGR_PLLMUL_8

```
#define RCC_CFGR_PLLMUL_8 (u32)0x00180000
```

4.7.2.60 RCC_CFGR_PLLMUL_9

```
#define RCC_CFGR_PLLMUL_9 (u32)0x001C0000
```

4.7.2.61 RCC_CFGR_PLLXTPRESRC_HSE_divided_1

```
#define RCC_CFGR_PLLXTPRESRC_HSE_divided_1 (u32)0x00010000
```

4.7.2.62 RCC_CFGR_PLLXTPRESRC_HSE_divided_2

```
#define RCC_CFGR_PLLXTPRESRC_HSE_divided_2 (u32)0x00030000
```

4.7.2.63 RCC_CFGR_PLLXTPRESRC_HSI_divided_2

```
#define RCC_CFGR_PLLXTPRESRC_HSI_divided_2 (u32)0x00000000
```

4.7.2.64 RCC_CFGR_PPRE1_div_1

```
#define RCC_CFGR_PPRE1_div_1 (u32)0x00000000
```

4.7.2.65 RCC_CFGR_PPRE1_div_16

```
#define RCC_CFGR_PPRE1_div_16 (u32)0x00000700
```

4.7.2.66 RCC_CFGR_PPRE1_div_2

```
#define RCC_CFGR_PPRE1_div_2 (u32)0x00000400
```

4.7.2.67 RCC_CFGR_PPRE1_div_4

```
#define RCC_CFGR_PPRE1_div_4 (u32)0x00000500
```

4.7.2.68 RCC_CFGR_PPRE1_div_8

```
#define RCC_CFGR_PPRE1_div_8 (u32)0x00000600
```

4.7.2.69 RCC_CFGR_PPRE2_div_1

```
#define RCC_CFGR_PPRE2_div_1 (u32)0x00000000
```

4.7.2.70 RCC_CFGR_PPRE2_div_16

```
#define RCC_CFGR_PPRE2_div_16 (u32)0x00003800
```

4.7.2.71 RCC_CFGR_PPRE2_div_2

```
#define RCC_CFGR_PPRE2_div_2 (u32)0x00002000
```

4.7.2.72 RCC_CFGR_PPRE2_div_4

```
#define RCC_CFGR_PPRE2_div_4 (u32)0x00002800
```

4.7.2.73 RCC_CFGR_PPRE2_div_8

```
#define RCC_CFGR_PPRE2_div_8 (u32)0x00003000
```

4.7.2.74 RCC_CFGR_SW_HSE

```
#define RCC_CFGR_SW_HSE (u32)0x00000001
```

4.7.2.75 RCC_CFGR_SW_HSI

```
#define RCC_CFGR_SW_HSI (u32)0x00000000
```

4.7.2.76 RCC_CFGR_SW_PLL

```
#define RCC_CFGR_SW_PLL (u32)0x00000002
```

4.7.2.77 RCC_CFGR_SWS_HSE

```
#define RCC_CFGR_SWS_HSE (u32)0x4
```

4.7.2.78 RCC_CFGR_SWS_HSI

```
#define RCC_CFGR_SWS_HSI (u32)0x0
```

4.7.2.79 RCC_CFGR_SWS_PLL

```
#define RCC_CFGR_SWS_PLL (u32)0x8
```

4.7.2.80 RCC_CR_CSSON

```
#define RCC_CR_CSSON (u32)0x00040000
```

4.7.2.81 RCC_CR_HSE

```
#define RCC_CR_HSE (u32)0x00010000
```

4.7.2.82 RCC_CR_HSEBYP

```
#define RCC_CR_HSEBYP (u32)0x00030000
```

4.7.2.83 RCC_CR_HSERDY

```
#define RCC_CR_HSERDY (u32)0x00020000
```

4.7.2.84 RCC_CR_HSI

```
#define RCC_CR_HSI (u32)0x00000001
```

4.7.2.85 RCC_CR_HSIRDY

```
#define RCC_CR_HSIRDY (u32)0x00000002
```

4.7.2.86 RCC_CR_PLL

```
#define RCC_CR_PLL (u32)0x01000000
```

4.7.2.87 RCC_CR_PLLRDY

```
#define RCC_CR_PLLRDY (u32)0x02010000
```

4.7.3 Typedef Documentation

4.7.3.1 ClockSource_ReturnType

```
typedef u32 ClockSource_ReturnType
```

4.7.4 Function Documentation

4.7.4.1 RCC_ADCPRE_SetPrescaler()

```
void RCC_ADCPRE_SetPrescaler (
            u32 Prescaler )
```

ADC prescaler function take one argument.

Parameters

Prescaler	RCC_CFGR_ADCPRE_div_2 : PCLK2 divided by 2 RCC_CFGR_ADCPRE_div_4 : PCLK2 divided by 4 RCC_CFGR_ADCPRE_div_6 : PCLK2 divided by 6 RCC_CFGR_ADCPRE_div_8 : PCLK2 divided by 8

Returns

void

4.7.4.2 RCC_CheckSystemClock()

```
ClockSource_ReturnType RCC_CheckSystemClock (
            void  )
```

check system clock

Returns

ClockSource_ReturnType
HSI = RCC_CFGR_SWS_HSI
PLL = RCC_CFGR_SWS_PLL
HSE = RCC_CFGR_SWS_HSE

4.7.4.3 RCC_EnablePeripheral_APB1()

```
void RCC_EnablePeripheral_APB1 (
            u32 Peripheral )
```

Enable peripheral APB1.

Parameters

Peripheral	RCC_APB1ENR_USART2EN -> USART2 clock enabled RCC_APB1ENR_USART3EN -> USART3 clock enabled RCC_APB1ENR_UART4EN -> UART4 clock enabled RCC_APB1ENR_UART5EN -> UART5 clock enabled

Returns

void

4.7.4.4 RCC_EnablePeripheral_APB2()

```
void RCC_EnablePeripheral_APB2 (
            u32 Peripheral )
```

APB2 enable peripheral.

Parameters

Peripheral	RCC_APB2ENR_AFIOEN_Enable AFIOEN: Alternate function IO clock enable RCC_APB2ENR_IOPAEN_PORTA IOPAEN: IO port A clock enable RCC_APB2ENR_IOPBEN_PORTB IOPBEN: IO port B clock enable RCC_APB2ENR_IOPCEN_PORTC IOPCEN: IO port C clock enable RCC_APB2ENR_IOPDEN_PORTD IOPDEN: IO port D clock enable RCC_APB2ENR_IOPEEN_PORTE IOPEEN: IO port E clock enable RCC_APB2ENR_IOPFEN_PORTF IOPFEN: IO port F clock enable RCC_APB2ENR_IOPGEN_PORTG IOPGEN: IO port G clock enable RCC_APB2ENR_ADC1EN ADC1EN: ADC 1 interface clock enable RCC_APB2ENR_ADC2EN ADC2EN: ADC 2 interface clock enable RCC_APB2ENR_TIM1EN TIM1EN: TIM1 timer clock enable RCC_APB2ENR_SPI1EN TIM8EN: TIM8 Timer clock enable RCC_APB2ENR_TIM8EN TIM8EN: TIM8 Timer clock enable RCC_APB2ENR_TIM9EN TIM9EN: TIM9 Timer clock enable RCC_APB2ENR_TIM10EN TIM10EN: TIM10 timer clock enable RCC_APB2ENR_TIM11EN TIM11EN: TIM11 Timer clock enable RCC_APB2ENR_USART1EN USART1EN: USART1 clock enable RCC_APB2ENR_ADC3EN ADC3EN: ADC3 interface clock enable

Returns

void

4.7.4.5 RCC_HPRE_SetPrescaler()

```
void RCC_HPRE_SetPrescaler (
            u32 Prescaler )
```

Set prescaler for HPRE.

Parameters

Prescaler	RCC_CFGR_HPRE_div_1 -> HCLK not divided RCC_CFGR_HPRE_div_2 -> HCLK divided by 2 RCC_CFGR_HPRE_div_4 -> HCLK divided by 4 RCC_CFGR_HPRE_div_8 -> HCLK divided by 8 RCC_CFGR_HPRE_div_16 -> HCLK divided by 16 RCC_CFGR_HPRE_div_64 -> HCLK divided by 64 RCC_CFGR_HPRE_div_128 -> HCLK divided by 128 RCC_CFGR_HPRE_div_256 -> HCLK divided by 256 RCC_CFGR_HPRE_div_512 -> HCLK divided by 512

Returns

void

4.7.4.6 RCC_PLLConfiguration()

```
void RCC_PLLConfiguration (
            u32 RCC_PLLSource,
            u32 RCC_PLLMUL )
```

Configure PLL.

Parameters

RCC_PLLSource	RCC_CFGR_PLLXTPRESRC_HSE_divided_1 RCC_CFGR_PLLXTPRESRC_HSE_divided_2 RCC_CFGR_PLLXTPRESRC_HSI_divided_2 RCC_CR_PLLON
RCC_PLLMUL	RCC_CFGR_PLLMUL_2 RCC_CFGR_PLLMUL_3 RCC_CFGR_PLLMUL_4 RCC_CFGR_PLLMUL_5 RCC_CFGR_PLLMUL_6 RCC_CFGR_PLLMUL_7 RCC_CFGR_PLLMUL_8 RCC_CFGR_PLLMUL_9 RCC_CFGR_PLLMUL_10 RCC_CFGR_PLLMUL_11 RCC_CFGR_PLLMUL_12 RCC_CFGR_PLLMUL_13 RCC_CFGR_PLLMUL_14 RCC_CFGR_PLLMUL_15 RCC_CFGR_PLLMUL_16

4.7.4.7 RCC_PPRE1_SetPrescaler()

```
void RCC_PPRE1_SetPrescaler (
            u32 Prescaler )
```

Set prescaler for PPRE1.

Parameters

Prescaler	RCC_CFGR_PPRE1_div_1 -> HCLK not divided RCC_CFGR_PPRE1_div_2 -> HCLK divided by 2 RCC_CFGR_PPRE1_div_4 -> HCLK divided by 4 RCC_CFGR_PPRE1_div_8 -> HCLK divided by 8 RCC_CFGR_PPRE1_div_16 -> HCLK divided by 16

Returns

void

4.7.4.8 RCC_PPRE2_SetPrescaler()

```
void RCC_PPRE2_SetPrescaler (
            u32 Prescaler )
```

Set prescaler for PPRE2.

Parameters

Prescaler	RCC_CFGR_PPRE2_div_1 -> HCLK not divided RCC_CFGR_PPRE2_div_2 -> HCLK divided by 2 RCC_CFGR_PPRE2_div_4 -> HCLK divided by 4 RCC_CFGR_PPRE2_div_8 -> HCLK divided by 8 RCC_CFGR_PPRE2_div_16 -> HCLK divided by 16

Returns

void

4.7.4.9 RCC_SelectMCO()

```
void RCC_SelectMCO (
            u32 Clock )
```

Select MCO: Microcontroller Clock Output take one argument from.

Parameters

Clock	RCC_CFGR_MCO_NOCLK -> No clock RCC_CFGR_MCO_SYSCLK -> System clock (SYSCLK) selected RCC_CFGR_MCO_HSI -> HSI clock selected RCC_CFGR_MCO_HSE -> HSE clock selected RCC_CFGR_MCO_PLL -> PLL clock selected

Returns

void

4.7.4.10 RCC_SetClock()

```
void RCC_SetClock (
            u32 Clock,
            u8 State )
```

Set the clock.

Parameters

clock	system clock RCC_CR_HSI RCC_CR_HSE RCC_CR_PLL
State	clock state ON OFF

Returns

void

4.7.4.11 Select_SystemClock()

```
void Select_SystemClock (
            u32 SystemClock )
```

Select system clock.

Parameters

SystemClock	system clock RCC_CFGR_SW_HSI RCC_CFGR_SW_HSE RCC_CFGR_SW_PLL

Returns

void

4.8 include/sched_config.h File Reference

This file is to be used as an implementation of the scheduler configuration.

Data Structures

- struct SCHED_systask_info_t

Macros

- #define SCHED_MAX_TASKS 3
- #define SCHED_TICK_TIME 2
- #define SCHED_AHB_CLK 8000000

4.8.1 Detailed Description

This file is to be used as an implementation of the scheduler configuration.

Author

MSN

Date

Mar 31, 2020

4.8.2 Macro Definition Documentation

4.8.2.1 SCHED_AHB_CLK

```
#define SCHED_AHB_CLK 8000000
```

4.8.2.2 SCHED_MAX_TASKS

```
#define SCHED_MAX_TASKS 3
```

4.8.2.3 SCHED_TICK_TIME

```
#define SCHED_TICK_TIME 2
```

4.9 include/sched_interface.h File Reference

This file is to be used as an implementation of the scheduler driver.

Data Structures

- struct SCHED_task_t

Typedefs

- typedef void(∗ SCHED_task_runnable_t) (void)

Functions

- void SCHED_Init (void)

  Initialize scheduler.
- void SCHED_Start (void)

  Start the scheduler.

4.9.1 Detailed Description

This file is to be used as an implementation of the scheduler driver.

Author

MSN

Date

Mar 31, 2020

4.9.2 Typedef Documentation

4.9.2.1 SCHED_task_runnable_t

```
typedef void(* SCHED_task_runnable_t) (void)
```

4.9.3 Function Documentation

4.9.3.1 SCHED_Init()

```
void SCHED_Init (
            void  )
```

Initialize scheduler.

Parameters

void	

Returns

void

4.9.3.2 SCHED_Start()

```
void SCHED_Start (
            void  )
```

Start the scheduler.

Parameters

void	

Returns

void

4.10 include/STD_TYPES.h File Reference

This file is to be used as an implementation of the standard types.

Macros

- #define E_OK (Std_ReturnType)0
- #define E_NOT_OK (Std_ReturnType)1
- #define E_BUSY (Std_ReturnType)2
- #define NULL ((void *)0)

Typedefs

- typedef unsigned char u8
- typedef unsigned short int u16
- typedef unsigned long int u32
- typedef unsigned long long u64
- typedef signed char s8
- typedef signed short int s16
- typedef signed long int s32
- typedef signed long long s64
- typedef float f32
- typedef double f64
- typedef long double f96
- typedef u8 Std_ReturnType

4.10.1 Detailed Description

This file is to be used as an implementation of the standard types.

Author

MSN

Date

Mar 31, 2020

4.10.2 Macro Definition Documentation

4.10.2.1 E_BUSY

```
#define E_BUSY (Std_ReturnType)2
```

4.10.2.2 E_NOT_OK

```
#define E_NOT_OK (Std_ReturnType)1
```

4.10.2.3 E_OK

```
#define E_OK (Std_ReturnType)0
```

4.10.2.4 NULL

```
#define NULL ((void *)0)
```

4.10.3 Typedef Documentation

4.10.3.1 f32

```
typedef float f32
```

4.10.3.2 f64

```
typedef double f64
```

4.10.3.3 f96

```
typedef long double f96
```

4.10.3.4 s16

```
typedef signed short int s16
```

4.10.3.5 s32

```
typedef signed long int s32
```

4.10.3.6 s64

```
typedef signed long long s64
```

4.10.3.7 s8

```
typedef signed char s8
```

4.10.3.8 Std_ReturnType

```
typedef u8 Std_ReturnType
```

4.10.3.9 u16

```
typedef unsigned short int u16
```

4.10.3.10 u32

```
typedef unsigned long int u32
```

4.10.3.11 u64

```
typedef unsigned long long u64
```

4.10.3.12 u8

```
typedef unsigned char u8
```

4.11 include/stm32f10x_conf.h File Reference

```
#include "stm32f10x_adc.h"
#include "stm32f10x_bkp.h"
#include "stm32f10x_can.h"
#include "stm32f10x_cec.h"
#include "stm32f10x_crc.h"
#include "stm32f10x_dac.h"
#include "stm32f10x_dbgmcu.h"
#include "stm32f10x_dma.h"
#include "stm32f10x_exti.h"
#include "stm32f10x_flash.h"
#include "stm32f10x_fsmc.h"
#include "stm32f10x_gpio.h"
#include "stm32f10x_i2c.h"
#include "stm32f10x_iwdg.h"
#include "stm32f10x_pwr.h"
#include "stm32f10x_rcc.h"
#include "stm32f10x_rtc.h"
#include "stm32f10x_sdio.h"
#include "stm32f10x_spi.h"
#include "stm32f10x_tim.h"
#include "stm32f10x_usart.h"
#include "stm32f10x_wwdg.h"
#include "misc.h"
```

Macros

- #define assert_param(expr) ((void)0)

4.11.1 Macro Definition Documentation

4.11.1.1 assert_param

```
#define assert_param(
             expr ) ((void)0)
```

4.12 include/switch_config.h File Reference

This file is to be used as an implementation of the switch configuration.

Data Structures

- struct Switch_cfg_t

Macros

- #define SWITCH_COUNT 5

4.12.1 Detailed Description

This file is to be used as an implementation of the switch configuration.

Author

MSN

Date

Mar 31, 2020

4.12.2 Macro Definition Documentation

4.12.2.1 SWITCH_COUNT

```
#define SWITCH_COUNT 5
```

4.13 include/switch_interface.h File Reference

This file is to be used as an implementation of the switch driver.

Macros

- #define SWITCH_PRESSED 1
- #define SWITCH_UNPRESSED 0
- #define SWITCH_ACTIVE_LOW 0
- #define SWITCH_ACTIVE_HIGH 1

Functions

- void Switch_Init (void)

  initialize all the switches: pin direction, default pull up/down
- u8 Switch_GetReading (u8 switchNum)

  returns the state of the switch

4.13.1 Detailed Description

This file is to be used as an implementation of the switch driver.

Author

MSN

Date

Mar 31, 2020

4.13.2 Macro Definition Documentation

4.13.2.1 SWITCH_ACTIVE_HIGH

```
#define SWITCH_ACTIVE_HIGH 1
```

4.13.2.2 SWITCH_ACTIVE_LOW

```
#define SWITCH_ACTIVE_LOW 0
```

4.13.2.3 SWITCH_PRESSED

```
#define SWITCH_PRESSED 1
```

4.13.2.4 SWITCH_UNPRESSED

```
#define SWITCH_UNPRESSED 0
```

4.13.3 Function Documentation

4.13.3.1 Switch_GetReading()

```
u8 Switch_GetReading (
            u8 switchNum )
```

returns the state of the switch

Parameters

switchNum	

Returns

the state of the switch

4.13.3.2 Switch_Init()

```
void Switch_Init (
            void  )
```

initialize all the switches: pin direction, default pull up/down

Parameters

void	

Returns

void

4.14 include/SYSTICK.h File Reference

This file is to be used as an implementation of the SysTick driver.

Macros

- #define SYSTICK_ENABLE 1U
- #define SYSTICK_DISABLE 0U
- #define SYSTICK_INTERRUPT_ENABLE (u32)0x00000002
- #define CLOCK_PRESCALER_AHB_DIV_8 (u32)0x00000000
- #define CLOCK_PRESCALER_AHB_DIV_1 (u32)0x00000004
- #define CLOCK_FREQUENCY_8_MHZ (u32)8000000UL
- #define CLOCK_FREQUENCY_8_MHZ_DIV8 (u32)1000000UL

Functions

- void SYSTICK_Init (void)
  Initialize SysTick.
- void SYSTICK_Stop (void)
  To stop SysTick.
- void SYSTICK_Start (void)
  To start SysTick.
- void SYSTICK_SetTimers (u32 Timers)
  Function to set tick time (ms)
- Std_ReturnType SYSTICK_SetCallBack (void(*Copy_SystickCbf_t)(void))
  Function callback to handle call back function.

4.14.1 Detailed Description

This file is to be used as an implementation of the SysTick driver.

Author

MSN

Date

Mar 31, 2020

4.14.2 Macro Definition Documentation

4.14.2.1 CLOCK_FREQUENCY_8_MHZ

```
#define CLOCK_FREQUENCY_8_MHZ (u32)8000000UL
```

4.14.2.2 CLOCK_FREQUENCY_8_MHZ_DIV8

```
#define CLOCK_FREQUENCY_8_MHZ_DIV8 (u32)1000000UL
```

4.14.2.3 CLOCK_PRESCALER_AHB_DIV_1

```
#define CLOCK_PRESCALER_AHB_DIV_1 (u32)0x00000004
```

4.14.2.4 CLOCK_PRESCALER_AHB_DIV_8

```
#define CLOCK_PRESCALER_AHB_DIV_8 (u32)0x00000000
```

4.14.2.5 SYSTICK_DISABLE

```
#define SYSTICK_DISABLE 0U
```

4.14.2.6 SYSTICK_ENABLE

```
#define SYSTICK_ENABLE 1U
```

4.14.2.7 SYSTICK_INTERRUPT_ENABLE

```
#define SYSTICK_INTERRUPT_ENABLE (u32)0x00000002
```

4.14.3 Function Documentation

4.14.3.1 SYSTICK_Init()

```
void SYSTICK_Init (
            void  )
```

Initialize SysTick.

Parameters

void	

Returns

void

4.14.3.2 SYSTICK_SetCallBack()

```
Std_ReturnType SYSTICK_SetCallBack (
            void(*)(void) Copy_SystickCbf_t )
```

Function callback to handle call back function.

Parameters

Copy_Systick↩ Cbf_t	(pointer to function)

Returns

E_OK :- if the input argument is correct .
(if the input pointer to function is valid)
E_NOT_OK :- if there's something wrong with the input argument .
(if the input pointer to function is not valid)

4.14.3.3 SYSTICK_SetTimers()

```
void SYSTICK_SetTimers (
             u32 Timers )
```

Function to set tick time (ms)

Parameters

Timer	time in ms

Returns

void

4.14.3.4 SYSTICK_Start()

```
void SYSTICK_Start (
             void  )
```

To start SysTick.

Parameters

void	

Returns

void

4.14.3.5 SYSTICK_Stop()

```
void SYSTICK_Stop (
             void  )
```

To stop SysTick.

Parameters

void	

Returns

void

4.15 include/SYSTICK_CFG.h File Reference

This file is to be used as an implementation of the SysTick configuration.

Macros

- #define CLOCK_PRESCALER CLOCK_PRESCALER_AHB_DIV_8
- #define CLOCK_FREQUENCY (CLOCK_FREQUENCY_8_MHZ_DIV8)

4.15.1 Detailed Description

This file is to be used as an implementation of the SysTick configuration.

Author

MSN

Date

Mar 31, 2020

4.15.2 Macro Definition Documentation

4.15.2.1 CLOCK_FREQUENCY

```
#define CLOCK_FREQUENCY (CLOCK_FREQUENCY_8_MHZ_DIV8)
```

4.15.2.2 CLOCK_PRESCALER

```
#define CLOCK_PRESCALER CLOCK_PRESCALER_AHB_DIV_8
```

4.16 include/UART.h File Reference

This file is to be used as an implementation of the UART driver.

Data Structures

- struct UART_CONFIG_t
- struct UART_DATABUFFER_t

Macros

- #define BASE_ADDRESS_UART5 ((volatile u32∗)0x40005000)
- #define BASE_ADDRESS_UART4 ((volatile u32∗)0x40004C00)
- #define BASE_ADDRESS_USART3 ((volatile u32∗)0x40004800)
- #define BASE_ADDRESS_USART2 ((volatile u32∗)0x40004400)
- #define BASE_ADDRESS_USART1 ((volatile u32∗)0x40013800)
- #define UART5 ((void∗)BASE_ADDRESS_UART5)
- #define UART4 ((void∗)BASE_ADDRESS_UART4)
- #define USART3 ((void∗)BASE_ADDRESS_USART3)
- #define USART2 ((void∗)BASE_ADDRESS_USART2)
- #define USART1 ((void∗)BASE_ADDRESS_USART1)
- #define UART_STOP_BIT_1_5 (u32)0x3000
- #define UART_STOP_BIT_2 (u32)0x2000
- #define UART_STOP_BIT_0_5 (u32)0x1000
- #define UART_STOP_BIT_1 (u32)0x0
- #define UART_ENABLE_BIT (u32)0x2000
- #define UART_M_LENGTH_8 (u32)0x0
- #define UART_M_LENGTH_9 (u32)0x1000
- #define UART_PCE_Enable_PS_EVEN (u32)0x400
- #define UART_PCE_Enable_PS_ODD (u32)0x600
- #define UART_PCE_Disable (u32)0x0
- #define UART_BUADRATE_9600 9600U
- #define UART_FREQUENCY 8000000U
- #define UART_CR1_RE_Enable (u32)0x4
- #define UART_CR1_TE_Enable (u32)0x8
- #define UART_CR1_RE_Disable (u32)0x0
- #define UART_CR1_TE_Disable (u32)0x0
- #define UART5_Peripherial 4U
- #define UART4_Peripherial 3U
- #define USART3_Peripherial 2U
- #define USART2_Peripherial 1U
- #define USART1_Peripherial 0U

Functions

- void UART_Init (void)

  Initialize UART.
- Std_ReturnType UART_SendData (u8 ∗Copy_u8DataBuffer, u16 Copy_u16DataLength, u8 Copy_u8UAR↩ TPeripherail)

  Send data through UART.
- Std_ReturnType UART_RecieveData (u8 ∗Copy_u8DataBuffer, u16 Copy_u16DataLength)
- Std_ReturnType UART_SetTransmissionCbf (void(∗Copy_APPTxNotifiactionCbf)(void))

  This function directly called back when the transmission complete.
- Std_ReturnType UART_SetRecieverCbf (void(∗Copy_APPRxNotifiactionCbf)(void))

  This function directly called back when the receiver complete.

4.16.1 Detailed Description

This file is to be used as an implementation of the UART driver.

Author

MSN

Date

Mar 31, 2020

4.16.2 Macro Definition Documentation

4.16.2.1 BASE_ADDRESS_UART4

```
#define BASE_ADDRESS_UART4 ((volatile u32*)0x40004C00)
```

4.16.2.2 BASE_ADDRESS_UART5

```
#define BASE_ADDRESS_UART5 ((volatile u32*)0x40005000)
```

4.16.2.3 BASE_ADDRESS_USART1

```
#define BASE_ADDRESS_USART1 ((volatile u32*)0x40013800)
```

4.16.2.4 BASE_ADDRESS_USART2

```
#define BASE_ADDRESS_USART2 ((volatile u32*)0x40004400)
```

4.16.2.5 BASE_ADDRESS_USART3

```
#define BASE_ADDRESS_USART3 ((volatile u32*)0x40004800)
```

4.16.2.6 UART4

```
#define UART4 ((void*)BASE_ADDRESS_UART4)
```

4.16.2.7 UART4_Peripherial

```
#define UART4_Peripherial 3U
```

4.16.2.8 UART5

```
#define UART5 ((void*)BASE_ADDRESS_UART5)
```

4.16.2.9 UART5_Peripherial

```
#define UART5_Peripherial 4U
```

4.16.2.10 UART_BUADRATE_9600

```
#define UART_BUADRATE_9600 9600U
```

4.16.2.11 UART_CR1_RE_Disable

```
#define UART_CR1_RE_Disable (u32)0x0
```

4.16.2.12 UART_CR1_RE_Enable

```
#define UART_CR1_RE_Enable (u32)0x4
```

4.16.2.13 UART_CR1_TE_Disable

```
#define UART_CR1_TE_Disable (u32)0x0
```

4.16.2.14 UART_CR1_TE_Enable

```
#define UART_CR1_TE_Enable (u32)0x8
```

4.16.2.15 UART_ENABLE_BIT

```
#define UART_ENABLE_BIT (u32)0x2000
```

4.16.2.16 UART_FREQUENCY

```
#define UART_FREQUENCY 8000000U
```

4.16.2.17 UART_M_LENGTH_8

```
#define UART_M_LENGTH_8 (u32)0x0
```

4.16.2.18 UART_M_LENGTH_9

```
#define UART_M_LENGTH_9 (u32)0x1000
```

4.16.2.19 UART_PCE_Disable

```
#define UART_PCE_Disable (u32)0x0
```

4.16.2.20 UART_PCE_Enable_PS_EVEN

```
#define UART_PCE_Enable_PS_EVEN (u32)0x400
```

4.16.2.21 UART_PCE_Enable_PS_ODD

```
#define UART_PCE_Enable_PS_ODD (u32)0x600
```

4.16.2.22 UART_STOP_BIT_0_5

```
#define UART_STOP_BIT_0_5 (u32)0x1000
```

4.16.2.23 UART_STOP_BIT_1

```
#define UART_STOP_BIT_1 (u32)0x0
```

4.16.2.24 UART_STOP_BIT_1_5

```
#define UART_STOP_BIT_1_5 (u32)0x3000
```

4.16.2.25 UART_STOP_BIT_2

```
#define UART_STOP_BIT_2 (u32)0x2000
```

4.16.2.26 USART1

```
#define USART1 ((void*)BASE_ADDRESS_USART1)
```

4.16.2.27 USART1_Peripherial

```
#define USART1_Peripherial 0U
```

4.16.2.28 USART2

```
#define USART2 ((void*)BASE_ADDRESS_USART2)
```

4.16.2.29 USART2_Peripherial

```
#define USART2_Peripherial 1U
```

4.16.2.30 USART3

```
#define USART3 ((void*)BASE_ADDRESS_USART3)
```

4.16.2.31 USART3_Peripherial

```
#define USART3_Peripherial 2U
```

4.16.3 Function Documentation

4.16.3.1 UART_Init()

```
void UART_Init (
            void  )
```

Initialize UART.

Parameters

void	

Returns

void

4.16.3.2 UART_RecieveData()

```
Std_ReturnType UART_RecieveData (
            u8 * Copy_u8DataBuffer,
            u16 Copy_u16DataLength )
```

Parameters

Copy_u8DataBuffer	pointer to data buffer
Copy_u16DataLength	Data buffer Length (Range From 0 to 511)

Returns

Std_ReturnType
E_OK : Service request accepted .
E_NOT_OK : Service request not accepted .

4.16.3.3 UART_SendData()

```
Std_ReturnType UART_SendData (
            u8 * Copy_u8DataBuffer,
            u16 Copy_u16DataLength,
            u8 Copy_u8UARTPeripherail )
```

Send data through UART.

Parameters

Copy_u8DataBuffer	pointer to data buffer
Copy_u16DataLength	Data buffer Length
Copy_u8UARTPeripherail	UART5_Peripherial UART4_Peripherial USART3_Peripherial USART2_Peripherial USART1_Peripherial

Returns

void

4.16.3.4 UART_SetRecieverCbf()

```
Std_ReturnType UART_SetRecieverCbf (
            void(*)(void) Copy_APPRxNotifiactionCbf )
```

This function directly called back when the receiver complete.

Parameters

Copy_APPRxNotifiactionCbf	pointer to application function

Returns

Std_ReturnType
E_OK : Service request accepted .
E_NOT_OK : Service request not accepted .

4.16.3.5 UART_SetTransmissionCbf()

```
Std_ReturnType UART_SetTransmissionCbf (
            void(*)(void) Copy_APPTxNotifiactionCbf )
```

This function directly called back when the transmission complete.

Parameters

Copy_APPTxNotifiactionCbf	pointer to application function

Returns

Std_ReturnType
E_OK : Service request accepted .
E_NOT_OK : Service request not accepted .

4.17 include/UART_cfg.h File Reference

This file is to be used as an implementation of the UART configuration.

Macros

- #define UART_COUNT 1U

4.17.1 Detailed Description

This file is to be used as an implementation of the UART configuration.

Author

MSN

Date

Mar 31, 2020

4.17.2 Macro Definition Documentation

4.17.2.1 UART_COUNT

```
#define UART_COUNT 1U
```

4.18 include/UART_handler.h File Reference

Functions

- void HUART_InitGPIO (void)
  Initialize UART pins.
- void HUART_EnableIRQ (void)
  Enable UART IRQ.

4.18.1 Function Documentation

4.18.1.1 HUART_EnableIRQ()

```
void HUART_EnableIRQ (
            void  )
```

Enable UART IRQ.

Parameters

void	

Returns

void

4.18.1.2 HUART_InitGPIO()

```
void HUART_InitGPIO (
            void  )
```

Initialize UART pins.

Parameters

void	

Returns

void

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