GPIO Driver for STM32F103

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Data Structure Index

1.1 Data Structures

Here are the data structures with brief descriptions:

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Chapter 2

File Index

2.1 File List

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

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Chapter 3

Data Structure Documentation

3.1 GPIO_t Struct Reference

Data Fields

- uint_16t **Pin**
- uint_64t **Mode**
- uint_64t **Speed**
- Port_t * **Port**

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

- DGPIO/DGPIO.h

3.2 Port_t Struct Reference

Data Fields

- uint_64t **CR**
- uint_32t **IDR**
- uint_32t **ODR**
- uint_32t **BSRR**
- uint_32t **BRR**
- uint_32t **LCKR**

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

- DGPIO/DGPIO.h

Chapter 4

File Documentation

4.1 DGPIO/DGPIO.c File Reference

This file is the Implementation for GPIO Driver for STM32F103.

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

Macros

- #define GPIO_CONFIG_MASK 0x000000000000000f

  Mask used to Clear Bits.
- #define PULL_UP_MODE 0X0C

  Configuration of Pull Up Mode.
- #define PULL_DOWN_MODE 0X08

  Configuration of Pull Down Mode.

Functions

- uint_8t GPIO_Config (GPIO_t ∗Pins)

  Function configure GPIO Pins.
- uint_8t GPIO_Writee (Port_t ∗Port, uint_16t Pins, uint_8t State)

  Function write GPIO pins state(SET OR CLEAR)
- uint_8t GPIO_ReadPort (Port_t ∗Port, uint_16t ∗Value)

  Function read State of a GPIO Pins of Specific Port.
- uint_8t GPIO_ReadPin (Port_t ∗Port, uint_16t Pin, uint_8t ∗Value)

  Function write GPIO pins state(SET OR CLEAR)

4.1.1 Detailed Description

This file is the Implementation for GPIO Driver for STM32F103.

Author

Mohanad (mohanad_sallam@hotmail.com)

Version

0.1

Date

2020-06-05

Copyright

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4.1.2 Function Documentation

4.1.2.1 GPIO_Config()

```
uint_8t GPIO_Config (
            GPIO_t * Pins )
```

Function configure GPIO Pins.

Parameters

Pins	Pointer to Struct GPIO_t

Returns

uint_8t : OK | NOK

4.1.2.2 GPIO_ReadPin()

```
uint_8t GPIO_ReadPin (
            Port_t * Port,
            uint_16t Pin,
            uint_8t * Value )
```

Function write GPIO pins state(SET OR CLEAR)

Parameters

Port	Pointer to Struct Port_t to configure Port Name
Pin	Variable of uint_16t to configure Pin Number
Value	Pointer to uint_8t to have State of Pin the Port

Returns

uint_8t : OK | NOK

4.1.2.3 GPIO_ReadPort()

```
uint_8t GPIO_ReadPort (
            Port_t * Port,
            uint_16t * Value )
```

Function read State of a GPIO Pins of Specific Port.

Parameters

Port	Pointer to Struct Port_t to configure Port Name
Value	Pointer to uint_16t to have States of Pins of the Port

Returns

uint_8t : OK | NOK

4.1.2.4 GPIO_Writee()

```
uint_8t GPIO_Writee (
            Port_t * Port,
            uint_16t Pins,
            uint_8t State )
```

Function write GPIO pins state(SET OR CLEAR)

Parameters

Port	Pointer to Struct Port_t to configure Port Name
Pins	Variable of uint_16t to configure Pin Number
State	variable of uint_8t to write the State of Pin

Returns

uint_8t : OK | NOK

4.2 DGPIO/DGPIO.h File Reference

This file is a user interface for GPIO Driver for STM32F103.

Data Structures

- struct Port_t
- struct GPIO_t

Macros

- #define **PIN_0** 0x0001
- #define **PIN_1** 0x0002
- #define **PIN_2** 0x0004
- #define **PIN_3** 0x0008
- #define **PIN_4** 0x0010
- #define **PIN_5** 0x0020
- #define **PIN_6** 0x0040
- #define **PIN_7** 0x0080
- #define **PIN_8** 0x0100
- #define **PIN_9** 0x0200
- #define **PIN_10** 0x0400
- #define **PIN_11** 0x0800
- #define **PIN_12** 0x1000
- #define **PIN_13** 0x2000
- #define **PIN_14** 0x4000
- #define **PIN_15** 0x8000
- #define **PIN_ALL** 0xFFFF
- #define **MODE_PIN0_OP_PP** 0X0000000000000000
- #define **MODE_PIN0_OP_OD** 0X0000000000000004
- #define **MODE_PIN0_AF_PP** 0X0000000000000008
- #define **MODE_PIN0_AF_OD** 0X000000000000000C
- #define **MODE_PIN0_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN0_IP_FLOATING** 0X0000000000000004
- #define **MODE_PIN0_IP_PDR** 0X0000000000000008
- #define **MODE_PIN0_IP_PUR** 0X000000000000000C
- #define **MODE_PIN1_OP_PP** 0X0000000000000000
- #define **MODE_PIN1_OP_OD** 0X0000000000000040
- #define **MODE_PIN1_AF_PP** 0X0000000000000080
- #define **MODE_PIN1_AF_OD** 0X00000000000000C0
- #define **MODE_PIN1_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN1_IP_FLOATING** 0X0000000000000040
- #define **MODE_PIN1_IP_PDR** 0X0000000000000080
- #define **MODE_PIN1_IP_PUR** 0X00000000000000C0
- #define **MODE_PIN2_OP_PP** 0X0000000000000000
- #define **MODE_PIN2_OP_OD** 0X0000000000000400
- #define **MODE_PIN2_AF_PP** 0X0000000000000800

- #define **MODE_PIN2_AF_OD** 0X0000000000000C00
- #define **MODE_PIN2_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN2_IP_FLOATING** 0X0000000000000400
- #define **MODE_PIN2_IP_PDR** 0X0000000000000800
- #define **MODE_PIN2_IP_PUR** 0X0000000000000C00
- #define **MODE_PIN3_OP_PP** 0X0000000000000000
- #define **MODE_PIN3_OP_OD** 0X0000000000004000
- #define **MODE_PIN3_AF_PP** 0X0000000000008000
- #define **MODE_PIN3_AF_OD** 0X000000000000C000
- #define **MODE_PIN3_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN3_IP_FLOATING** 0X0000000000004000
- #define **MODE_PIN3_IP_PDR** 0X0000000000008000
- #define **MODE_PIN3_IP_PUR** 0X000000000000C000
- #define **MODE_PIN4_OP_PP** 0X0000000000000000
- #define **MODE_PIN4_OP_OD** 0X0000000000040000
- #define **MODE_PIN4_AF_PP** 0X0000000000080000
- #define **MODE_PIN4_AF_OD** 0X00000000000C0000
- #define **MODE_PIN4_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN4_IP_FLOATING** 0X0000000000040000
- #define **MODE_PIN4_IP_PDR** 0X0000000000080000
- #define **MODE_PIN4_IP_PUR** 0X00000000000C0000
- #define **MODE_PIN5_OP_PP** 0X0000000000000000
- #define **MODE_PIN5_OP_OD** 0X0000000000400000
- #define **MODE_PIN5_AF_PP** 0X0000000000800000
- #define **MODE_PIN5_AF_OD** 0X0000000000C00000
- #define **MODE_PIN5_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN5_IP_FLOATING** 0X0000000000400000
- #define **MODE_PIN5_IP_PDR** 0X0000000000800000
- #define **MODE_PIN5_IP_PUR** 0X0000000000C00000
- #define **MODE_PIN6_OP_PP** 0X0000000000000000
- #define **MODE_PIN6_OP_OD** 0X0000000004000000
- #define **MODE_PIN6_AF_PP** 0X0000000008000000
- #define **MODE_PIN6_AF_OD** 0X000000000C000000
- #define **MODE_PIN6_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN6_IP_FLOATING** 0X0000000004000000
- #define **MODE_PIN6_IP_PDR** 0X0000000008000000
- #define **MODE_PIN6_IP_PUR** 0X000000000C000000
- #define **MODE_PIN7_OP_PP** 0X0000000000000000
- #define **MODE_PIN7_OP_OD** 0X0000000040000000
- #define **MODE_PIN7_AF_PP** 0X0000000080000000
- #define **MODE_PIN7_AF_OD** 0X00000000C0000000
- #define **MODE_PIN7_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN7_IP_FLOATING** 0X0000000040000000
- #define **MODE_PIN7_IP_PDR** 0X0000000080000000
- #define **MODE_PIN7_IP_PUR** 0X00000000C0000000
- #define **MODE_PIN8_OP_PP** 0X0000000000000000
- #define **MODE_PIN8_OP_OD** 0X0000000400000000
- #define **MODE_PIN8_AF_PP** 0X0000000800000000
- #define **MODE_PIN8_AF_OD** 0X0000000C00000000
- #define **MODE_PIN8_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN8_IP_FLOATING** 0X0000000400000000
- #define **MODE_PIN8_IP_PDR** 0X0000000800000000
- #define **MODE_PIN8_IP_PUR** 0X0000000C00000000
- #define **MODE_PIN9_OP_PP** 0X0000000000000000
- #define **MODE_PIN9_OP_OD** 0X0000004000000000

- #define **MODE_PIN9_AF_PP** 0X0000008000000000
- #define **MODE_PIN9_AF_OD** 0X000000C000000000
- #define **MODE_PIN9_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN9_IP_FLOATING** 0X0000004000000000
- #define **MODE_PIN9_IP_PDR** 0X0000008000000000
- #define **MODE_PIN9_IP_PUR** 0X000000C000000000
- #define **MODE_PIN10_OP_PP** 0X0000000000000000
- #define **MODE_PIN10_OP_OD** 0X0000040000000000
- #define **MODE_PIN10_AF_PP** 0X0000080000000000
- #define **MODE_PIN10_AF_OD** 0X00000C0000000000
- #define **MODE_PIN10_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN10_IP_FLOATING** 0X0000040000000000
- #define **MODE_PIN10_IP_PDR** 0X0000080000000000
- #define **MODE_PIN10_IP_PUR** 0X00000C0000000000
- #define **MODE_PIN11_OP_PP** 0X0000000000000000
- #define **MODE_PIN11_OP_OD** 0X0000400000000000
- #define **MODE_PIN11_AF_PP** 0X0000800000000000
- #define **MODE_PIN11_AF_OD** 0X0000C00000000000
- #define **MODE_PIN11_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN11_IP_FLOATING** 0X0000400000000000
- #define **MODE_PIN11_IP_PDR** 0X0000800000000000
- #define **MODE_PIN11_IP_PUR** 0X0000C00000000000
- #define **MODE_PIN12_OP_PP** 0X0000000000000000
- #define **MODE_PIN12_OP_OD** 0X0004000000000000
- #define **MODE_PIN12_AF_PP** 0X0008000000000000
- #define **MODE_PIN12_AF_OD** 0X000C000000000000
- #define **MODE_PIN12_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN12_IP_FLOATING** 0X0004000000000000
- #define **MODE_PIN12_IP_PDR** 0X0008000000000000
- #define **MODE_PIN12_IP_PUR** 0X000C000000000000
- #define **MODE_PIN13_OP_PP** 0X0000000000000000
- #define **MODE_PIN13_OP_OD** 0X0040000000000000
- #define **MODE_PIN13_AF_PP** 0X0080000000000000
- #define **MODE_PIN13_AF_OD** 0X00C0000000000000
- #define **MODE_PIN13_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN13_IP_FLOATING** 0X0040000000000000
- #define **MODE_PIN13_IP_PDR** 0X0080000000000000
- #define **MODE_PIN13_IP_PUR** 0X00C0000000000000
- #define **MODE_PIN14_OP_PP** 0X0000000000000000
- #define **MODE_PIN14_OP_OD** 0X0400000000000000
- #define **MODE_PIN14_AF_PP** 0X0800000000000000
- #define **MODE_PIN14_AF_OD** 0X0C00000000000000
- #define **MODE_PIN14_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN14_IP_FLOATING** 0X0400000000000000
- #define **MODE_PIN14_IP_PDR** 0X0800000000000000
- #define **MODE_PIN14_IP_PUR** 0X0C00000000000000
- #define **MODE_PIN15_OP_PP** 0X0000000000000000
- #define **MODE_PIN15_OP_OD** 0X4000000000000000
- #define **MODE_PIN15_AF_PP** 0X8000000000000000
- #define **MODE_PIN15_AF_OD** 0XC000000000000000
- #define **MODE_PIN15_IP_ANALOG** 0X0000000000000000
- #define **MODE_PIN15_IP_FLOATING** 0X4000000000000000
- #define **MODE_PIN15_IP_PDR** 0X8000000000000000
- #define **MODE_PIN15_IP_PUR** 0XC000000000000000
- #define **SPEED_PIN0_10MHZ** 0X0000000000000001

- #define **SPEED_PIN0_2MHZ** 0X0000000000000002
- #define **SPEED_PIN0_50MHZ** 0X0000000000000003
- #define **SPEED_PIN0_INPUT** 0X0000000000000000
- #define **SPEED_PIN1_10MHZ** 0X0000000000000010
- #define **SPEED_PIN1_2MHZ** 0X0000000000000020
- #define **SPEED_PIN1_50MHZ** 0X0000000000000030
- #define **SPEED_PIN1_INPUT** 0X0000000000000000
- #define **SPEED_PIN2_10MHZ** 0X0000000000000100
- #define **SPEED_PIN2_2MHZ** 0X0000000000000200
- #define **SPEED_PIN2_50MHZ** 0X0000000000000300
- #define **SPEED_PIN2_INPUT** 0X0000000000000000
- #define **SPEED_PIN3_10MHZ** 0X0000000000001000
- #define **SPEED_PIN3_2MHZ** 0X0000000000002000
- #define **SPEED_PIN3_50MHZ** 0X0000000000003000
- #define **SPEED_PIN3_INPUT** 0X0000000000000000
- #define **SPEED_PIN4_10MHZ** 0X0000000000010000
- #define **SPEED_PIN4_2MHZ** 0X0000000000020000
- #define **SPEED_PIN4_50MHZ** 0X0000000000030000
- #define **SPEED_PIN4_INPUT** 0X0000000000000000
- #define **SPEED_PIN5_10MHZ** 0X0000000000100000
- #define **SPEED_PIN5_2MHZ** 0X0000000000200000
- #define **SPEED_PIN5_50MHZ** 0X0000000000300000
- #define **SPEED_PIN5_INPUT** 0X0000000000000000
- #define **SPEED_PIN6_10MHZ** 0X0000000001000000
- #define **SPEED_PIN6_2MHZ** 0X0000000002000000
- #define **SPEED_PIN6_50MHZ** 0X0000000003000000
- #define **SPEED_PIN6_INPUT** 0X0000000000000000
- #define **SPEED_PIN7_10MHZ** 0X0000000010000000
- #define **SPEED_PIN7_2MHZ** 0X0000000020000000
- #define **SPEED_PIN7_50MHZ** 0X0000000030000000
- #define **SPEED_PIN7_INPUT** 0X0000000000000000
- #define **SPEED_PIN8_10MHZ** 0X0000000100000000
- #define **SPEED_PIN8_2MHZ** 0X0000000200000000
- #define **SPEED_PIN8_50MHZ** 0X0000000300000000
- #define **SPEED_PIN8_INPUT** 0X0000000000000000
- #define **SPEED_PIN9_10MHZ** 0X0000001000000000
- #define **SPEED_PIN9_2MHZ** 0X0000002000000000
- #define **SPEED_PIN9_50MHZ** 0X0000003000000000
- #define **SPEED_PIN9_INPUT** 0X0000000000000000
- #define **SPEED_PIN10_10MHZ** 0X0000010000000000
- #define **SPEED_PIN10_2MHZ** 0X0000020000000000
- #define **SPEED_PIN10_50MHZ** 0X0000030000000000
- #define **SPEED_PIN10_INPUT** 0X0000000000000000
- #define **SPEED_PIN11_10MHZ** 0X0000100000000000
- #define **SPEED_PIN11_2MHZ** 0X0000200000000000
- #define **SPEED_PIN11_50MHZ** 0X0000300000000000
- #define **SPEED_PIN11_INPUT** 0X0000000000000000
- #define **SPEED_PIN12_10MHZ** 0X0001000000000000
- #define **SPEED_PIN12_2MHZ** 0X0002000000000000
- #define **SPEED_PIN12_50MHZ** 0X0003000000000000
- #define **SPEED_PIN12_INPUT** 0X0000000000000000
- #define **SPEED_PIN13_10MHZ** 0X0010000000000000
- #define **SPEED_PIN13_2MHZ** 0X0020000000000000
- #define **SPEED_PIN13_50MHZ** 0X0030000000000000
- #define **SPEED_PIN13_INPUT** 0X0000000000000000

- #define **SPEED_PIN14_10MHZ** 0X0100000000000000
- #define **SPEED_PIN14_2MHZ** 0X0200000000000000
- #define **SPEED_PIN14_50MHZ** 0X0300000000000000
- #define **SPEED_PIN14_INPUT** 0X0000000000000000
- #define **SPEED_PIN15_10MHZ** 0X1000000000000000
- #define **SPEED_PIN15_2MHZ** 0X2000000000000000
- #define **SPEED_PIN15_50MHZ** 0X3000000000000000
- #define **SPEED_PIN15_INPUT** 0X0000000000000000
- #define **PORTA_BASE_ADDRESS** 0X40010800
- #define **PORTB_BASE_ADDRESS** 0X40010C00
- #define **PORTC_BASE_ADDRESS** 0X40011000
- #define **PORTD_BASE_ADDRESS** 0X40011400
- #define **PORTE_BASE_ADDRESS** 0X40011800
- #define **PORTF_BASE_ADDRESS** 0X40011C00
- #define **PORTG_BASE_ADDRESS** 0X40012000
- #define **PORT_A** ((Port_t∗)(PORTA_BASE_ADDRESS))
- #define **PORT_B** ((Port_t∗)(PORTB_BASE_ADDRESS))
- #define **PORT_C** ((Port_t∗)(PORTC_BASE_ADDRESS))
- #define **PORT_D** ((Port_t∗)(PORTD_BASE_ADDRESS))
- #define **PORT_E** ((Port_t∗)(PORTE_BASE_ADDRESS))
- #define **PORT_F** ((Port_t∗)(PORTF_BASE_ADDRESS))
- #define **PORT_G** ((Port_t∗)(PORTG_BASE_ADDRESS))
- #define SET 1

  Defined by 1

- #define CLEAR 0

  Defined by 0

Functions

- uint_8t GPIO_Config (GPIO_t ∗Pins)

  Function configure GPIO Pins.
- uint_8t GPIO_Writee (Port_t ∗Port, uint_16t Pins, uint_8t State)

  Function write GPIO pins state(SET OR CLEAR)
- uint_8t GPIO_ReadPort (Port_t ∗Port, uint_16t ∗Value)

  Function read State of a GPIO Pins of Specific Port.
- uint_8t GPIO_ReadPin (Port_t ∗Port, uint_16t Pin, uint_8t ∗Value)

  Function write GPIO pins state(SET OR CLEAR)

4.2.1 Detailed Description

This file is a user interface for GPIO Driver for STM32F103.

Author

Mohanad (mohanad_sallam@hotmail.com)

Version

0.1

Date

2020-06-05

Copyright

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4.2.2 Macro Definition Documentation

4.2.2.1 SET

```
#define SET 1
```

Defined by 1

4.2.3 Function Documentation

4.2.3.1 GPIO_Config()

```
uint_8t GPIO_Config (
            GPIO_t * Pins )
```

Function configure GPIO Pins.

Parameters

Pins	Pointer to Struct GPIO_t

Returns

uint_8t : OK | NOK

4.2.3.2 GPIO_ReadPin()

```
uint_8t GPIO_ReadPin (
            Port_t * Port,
```

```
            uint_16t Pin,
            uint_8t * Value )
```

Function write GPIO pins state(SET OR CLEAR)

Parameters

Port	Pointer to Struct Port_t to configure Port Name
Pin	Variable of uint_16t to configure Pin Number
Value	Pointer to uint_8t to have State of Pin the Port

Returns

uint_8t : OK | NOK

4.2.3.3 GPIO_ReadPort()

```
uint_8t GPIO_ReadPort (
            Port_t * Port,
            uint_16t * Value )
```

Function read State of a GPIO Pins of Specific Port.

Parameters

Port	Pointer to Struct Port_t to configure Port Name
Value	Pointer to uint_16t to have States of Pins of the Port

Returns

uint_8t : OK | NOK

4.2.3.4 GPIO_Writee()

```
uint_8t GPIO_Writee (
            Port_t * Port,
            uint_16t Pins,
            uint_8t State )
```

Function write GPIO pins state(SET OR CLEAR)

Parameters

Port	Pointer to Struct Port_t to configure Port Name
Pins	Variable of uint_16t to configure Pin Number
State	variable of uint_8t to write the State of Pin

Returns

uint_8t : OK | NOK

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