NVIC Driver for M3 Guide

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Chapter 1

Data Structure Index

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NVIC_t								 	 	 	 	 		ļ

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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 NVIC_t Struct Reference

Data Fields

- uint_32t ISER [8]
- uint_32t Reserved [24]
- uint_32t ICER [8]
- uint_32t Reserved1 [24]
- uint_32t ISPR [8]
- uint_32t Reserved2 [24]
- uint_32t ICPR [8]
- uint_32t Reserved3 [24]
- uint_32t IABR [8]
- uint_32t Reserved4 [56]
- uint_8t IPR [240]

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

• DNVIC/DNVIC.c

Chapter 4

File Documentation

4.1 DNVIC/DNVIC.c File Reference

This file is the Implementation for NVIC Driver for Cortex M3.

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

Data Structures

• struct NVIC_t

Macros

```
    #define NVIC_BASE_ADDRESS (( NVIC_t*) 0XE000E100)
```

NVIC peripheral base address.

#define SCB_AIRCR *((volatile uint_32t*) 0XE000ED0C)

NVIC Application Interrupt and Reset Control Register.

#define SCB_VTOR *((volatile uint_32t*) 0xE000ED08)

Vector Table Offset register.

#define PASSWORD_MASK 0X05FA0000

Password to make Software reset.

• #define FLASH_BASE_ADDRESS 0x08000000

Base Address of Flash.

• #define OFFSET_POSITION 0x08

used in shifting offest value to be corresponding for offest bits in Regsiter

• #define RESET_MASK 0x04

Base Address of Flash.

Functions

• uint_8t DNVIC_EnableIRQ (uint_8t IRQn)

Function to Enable peripheral Interrupt.

uint 8t DNVIC DisableIRQ (uint 8t IRQn)

Function to Disable peripheral Interrupt.

uint_8t DNVIC_SetPendingIRQ (uint_8t IRQn)

Function to Set Peripheral Pending Interrupt Flag By Software.

uint_8t DNVIC_ClearPendingIRQ (uint_8t IRQn)

Function to Reset Peripheral Pending Interrupt Flag By Software.

• uint 8t DNVIC GetPendingIRQ (uint 8t IRQn, uint 8t *Val)

Function to get Pending Flag Value.

• uint_8t DNVIC_GetActive (uint_8t IRQn, uint_8t *Val)

Function to get Active Flag Value.

• uint_8t DNVIC_SetPriorityGrouping (uint_32t priority_grouping)

Function provides priority grouping control for the exception model.

uint_8t DNVIC_SetPriority (uint_8t IRQn, uint_8t priority)

Function to Set Interrupt Priority.

• uint_8t DNVIC_GetPriority (uint_8t IRQn, uint_8t *priority)

Function to Read peripheral Priority.

void DNVIC_voidDisableAllPeripherals (void)

Function to Disable All peripherals interrupt.

void DNVIC_voidEnableAllPeripherals (void)

Function to Enable All peripherals Interrupt.

· void DNVIC_voidDisableAllFaults (void)

Function to Disable all faults Interrupts.

• void DNVIC_voidEnableAllFaults (void)

Function to Enable all faults Interrupts.

void DNVIC_voidSetBASEPRI (uint_8t priority)

Function to disable interrupts only with priority lower than certain level.

void DNVIC voidChangeVectorOffset (uint 32t offset)

Function to change vector Table offest

void DNVIC voidSysReset (void)

Function to make Software reset.

Variables

NVIC_t * NV = NVIC_BASE_ADDRESS

NV pointer to struct NVIC_t.

4.1.1 Detailed Description

This file is the Implementation for NVIC Driver for Cortex M3.

Author

Ahmed Qandeel (Ahmed.qandeel 96@gmail.com)

Version

0.1

Date

2020-06-05

Copyright

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4.1.2 Function Documentation

4.1.2.1 DNVIC_ClearPendingIRQ()

Function to Reset Peripheral Pending Interrupt Flag By Software.

Parameters

IRQn

Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG , TIM2)

Returns

OK | NOT_OK

4.1.2.2 DNVIC_DisableIRQ()

Function to Disable peripheral Interrupt.

Parameters

IRQn

Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG , TIM2)

Returns

```
OK | NOT_OK
```

4.1.2.3 DNVIC_EnableIRQ()

```
uint_8t DNVIC_EnableIRQ ( \label{eq:continuous} \mbox{uint} \mbox{\_8t } \mbox{\it IRQn} \mbox{\ )}
```

Function to Enable peripheral Interrupt.

Parameters

IRQn Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG , TIM2)

Returns

```
OK | NOT_OK
```

4.1.2.4 DNVIC_GetActive()

Function to get Active Flag Value.

Parameters

IRQn	Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG , TIM2)
Val	pointer of uint_8t , Active Flag which to be read assigned to pointer

Returns

```
OK | NOT_OK
```

4.1.2.5 DNVIC_GetPendingIRQ()

Function to get Pending Flag Value.

Parameters

IRQn	Variable of uint_8t, Interrupt Request Number is number assigned to peripheral as it is offest of them in
	vector table array ex (WWDG, TIM2)
Val	pointer of uint_8t , Pending Flag which to be read assigned to pointer

Returns

OK | NOT_OK

4.1.2.6 DNVIC_GetPriority()

Function to Read peripheral Priority.

Parameters

IRQn	Variable of uint_8t, Interrupt Request Number is number assigned to peripheral as it is offest of them
	in vector table array ex (WWDG , TIM2)
priority	Pointer to uint_8t , Priority which to be read

Returns

 $\mathsf{OK} \mid \mathsf{NOT}_\mathsf{OK}$

4.1.2.7 DNVIC_SetPendingIRQ()

Function to Set Peripheral Pending Interrupt Flag By Software.

Parameters

IRQn	Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in]
	vector table array ex (WWDG, TIM2)	

Returns

OK | NOT_OK

4.1.2.8 DNVIC_SetPriority()

Function to Set Interrupt Priority.

Parameters

IRQn	Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG , TIM2)
priority	Variable of uint_8t , Priority (016)

Returns

OK | NOT_OK

4.1.2.9 DNVIC_SetPriorityGrouping()

Function provides priority grouping control for the exception model.

Parameters

priority_grouping	Variable of uint_32t , Priority Type (ALL_PREEMPTION ,
	THREE_PREEMPTION_ONE_SUBGROUP)

Returns

OK | NOT_OK

4.1.2.10 DNVIC_voidChangeVectorOffset()

```
void DNVIC_voidChangeVectorOffset ( \label{eq:condition} uint\_32t \ \textit{offset} \ )
```

Function to change vector Table offest

Parameters

offset	Variable of uint_32t , Change vector Table offest

Returns

NA

4.1.2.11 DNVIC_voidDisableAllFaults()

```
\begin{tabular}{ll} \beg
```

Function to Disable all faults Interrupts.

Parameters



Returns

NA

4.1.2.12 DNVIC_voidDisableAllPeripherals()

```
\begin{tabular}{ll} \beg
```

Function to Disable All peripherals interrupt.

Parameters

NA

Returns

NA

4.1.2.13 DNVIC_voidEnableAllFaults()

```
\begin{tabular}{ll} \beg
```

Function to Enable all faults Interrupts.

Da			_ 1		
Pа	ra	m	eı	re	rs

NA

Returns

NA

4.1.2.14 DNVIC_voidEnableAllPeripherals()

```
\begin{tabular}{ll} \beg
```

Function to Enable All peripherals Interrupt.

Parameters

NA

Returns

NA

4.1.2.15 DNVIC_voidSetBASEPRI()

Function to disable interrupts only with priority lower than certain level.

Parameters

```
priority Variable of uint_8t , Priority (0..16)
```

Returns

NA

4.1.2.16 DNVIC_voidSysReset()

```
void DNVIC_voidSysReset (
     void )
```

Function to make Software reset.

Parameters

NA

Returns

NA

4.2 DNVIC/DNVIC.h File Reference

This file is the user interface for NVIC Driver for Cortex M3.

Macros

- #define WWDG 0
- #define PVD 1
- #define TAMPER 2
- #define RTC 3
- · #define FLASH 4
- #define RCCINT 5
- #define EXTIO 6
- #define EXTI1 7
- #define EXTI2 8
- #define **EXTI3** 9
- #define **EXTI4** 10
- #define DMA1_CHANNEL1 11
- #define DMA1_CHANNEL2 12
- #define DMA1_CHANNEL3 13
- #define DMA1_CHANNEL4 14
- #define DMA1_CHANNEL5 15
- #define DMA1_CHANNEL6 16
- #define DMA1 CHANNEL7 17
- #define ADC1_2 18
- #define USB_HP_CAN_TX 19
- #define USB_LP_CAN_RX0 20
- #define CAN RX1 21
- #define CAN SCE 22
- #define **EXTI9_5** 23
- #define TIM1_BRK 24
- #define TIM1_UP 25
- #define TIM1_TRG_COM 26
- #define TIM1_CC 27
- #define TIM2 28
- #define TIM3 29
- #define TIM4 30
- #define I2C1_EV 31
- #define **I2C1_ER** 32
- #define I2C2 EV 33
- #define I2C2 ER 34
- #define SPI1 35
- #define SPI2 36

- #define USART1 37
- #define USART2 38
- #define USART3 39
- #define EXTI15 10 40
- #define RTCALARM 41
- #define USBWAKEUP 42
- #define TIM8 BRK 43
- #define TIM8_UP 44
- #define TIM8_TRG_COM 45
- #define TIM8 CC 46
- #define ADC3 47
- #define FSMC 48
- #define SDIO 49
- #define TIM5 50
- #define Tivis 50
- #define SPI3 51
- #define UART4 52
- #define UART5 53
- #define TIM6 54
- #define **TIM7** 55
- #define DMA2_CHANNEL1 56
- #define DMA2 CHANNEL2 57
- #define DMA2 CHANNEL3 58
- #define DMA2_CHANNEL4_5 59
- #define ALL_PREEMPTION 0X00000300
- #define THREE_PREEMPTION_ONE_SUBGROUP 0X00000400
- #define TWO_PREEMPTION_TWO_SUBGROUP 0X00000500
- #define ONE_PREEMPTION_THREE_SUBGROUP 0X00000600
- #define ALL SUBGROUP 0X00000700

Functions

• uint_8t DNVIC_EnableIRQ (uint_8t IRQn)

Function to Enable peripheral Interrupt.

• uint_8t DNVIC_DisableIRQ (uint_8t IRQn)

Function to Disable peripheral Interrupt.

• uint 8t DNVIC SetPendingIRQ (uint 8t IRQn)

int_ot bittio_cott chamginta (ant_ot intan)

Function to Set Peripheral Pending Interrupt Flag By Software.

• uint_8t DNVIC_ClearPendingIRQ (uint_8t IRQn)

Function to Reset Peripheral Pending Interrupt Flag By Software.

• uint_8t DNVIC_GetPendingIRQ (uint_8t IRQn, uint_8t *Val)

Function to get Pending Flag Value.

• uint 8t DNVIC GetActive (uint 8t IRQn, uint 8t *Val)

Function to get Active Flag Value.

uint_8t DNVIC_SetPriorityGrouping (uint_32t priority_grouping)

Function provides priority grouping control for the exception model.

· uint 8t DNVIC SetPriority (uint 8t IRQn, uint 8t priority)

Function to Set Interrupt Priority.

uint_8t DNVIC_GetPriority (uint_8t IRQn, uint_8t *priority)

Function to Read peripheral Priority.

void DNVIC voidDisableAllPeripherals (void)

Function to Disable All peripherals interrupt.

void DNVIC_voidEnableAllPeripherals (void)

Function to Enable All peripherals Interrupt.

• void DNVIC_voidDisableAllFaults (void)

Function to Disable all faults Interrupts.

void DNVIC_voidEnableAllFaults (void)

Function to Enable all faults Interrupts.

void DNVIC_voidSetBASEPRI (uint_8t priority)

Function to disable interrupts only with priority lower than certain level.

void DNVIC_voidChangeVectorOffset (uint_32t offset)

Function to change vector Table offest

void DNVIC_voidSysReset (void)

Function to make Software reset.

4.2.1 Detailed Description

This file is the user interface for NVIC Driver for Cortex M3.

Author

```
Ahmed Qandeel ( Ahmed.qandeel 96@gmail.com)
```

Version

0.1

Date

2020-06-05

Copyright

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4.2.2 Function Documentation

4.2.2.1 DNVIC_ClearPendingIRQ()

```
uint_8t DNVIC_ClearPendingIRQ (
             uint_8t IRQn )
```

Function to Reset Peripheral Pending Interrupt Flag By Software.

Parameters

IRQn

Variable of uint_8t, Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG, TIM2)

Returns

OK | NOT_OK

4.2.2.2 DNVIC_DisableIRQ()

Function to Disable peripheral Interrupt.

Parameters

IRQn

Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG , TIM2)

Returns

OK | NOT_OK

4.2.2.3 DNVIC_EnableIRQ()

Function to Enable peripheral Interrupt.

Parameters

RΩn

Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG , TIM2)

Returns

OK | NOT_OK

4.2.2.4 DNVIC_GetActive()

Function to get Active Flag Value.

Parameters

IRQn	Variable of uint_8t, Interrupt Request Number is number assigned to peripheral as it is offest of them in		
	vector table array ex (WWDG, TIM2)		
Val	pointer of uint_8t , Active Flag which to be read assigned to pointer		

Returns

```
OK | NOT_OK
```

4.2.2.5 DNVIC_GetPendingIRQ()

Function to get Pending Flag Value.

Parameters

	IRQn	Variable of uint_8t, Interrupt Request Number is number assigned to peripheral as it is offest of them in
		vector table array ex (WWDG , TIM2)
Ī	Val	pointer of uint_8t , Pending Flag which to be read assigned to pointer

Returns

```
OK | NOT_OK
```

4.2.2.6 DNVIC_GetPriority()

Function to Read peripheral Priority.

Parameters

IRQn	Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG , TIM2)
priority	Pointer to uint_8t , Priority which to be read

Returns

OK | NOT_OK

4.2.2.7 DNVIC_SetPendingIRQ()

Function to Set Peripheral Pending Interrupt Flag By Software.

Parameters

IRQn Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG , TIM2)

Returns

OK | NOT_OK

4.2.2.8 DNVIC_SetPriority()

Function to Set Interrupt Priority.

Parameters

IRQn	Variable of uint_8t , Interrupt Request Number is number assigned to peripheral as it is offest of them in vector table array ex (WWDG , TIM2)
priority	Variable of uint_8t , Priority (016)

Returns

OK | NOT_OK

4.2.2.9 DNVIC_SetPriorityGrouping()

Function provides priority grouping control for the exception model.

Parameters

priority_grouping	Variable of uint_32t , Priority Type (ALL_PREEMPTION ,	
	THREE_PREEMPTION_ONE_SUBGROUP)	

Returns

OK | NOT_OK

4.2.2.10 DNVIC_voidChangeVectorOffset()

```
void DNVIC_voidChangeVectorOffset ( \label{eq:condition} uint\_32t \ offset \ )
```

Function to change vector Table offest

Parameters

offset	Variable of uint_32t , Change vector Table offest

Returns

NA

4.2.2.11 DNVIC_voidDisableAllFaults()

```
\begin{tabular}{ll} \beg
```

Function to Disable all faults Interrupts.

Parameters

NA

Returns

NA

4.2.2.12 DNVIC_voidDisableAllPeripherals()

```
\begin{tabular}{ll} \beg
```

Function to Disable All peripherals interrupt.

Parameters

NA	

Returns

NA

4.2.2.13 DNVIC_voidEnableAllFaults()

Function to Enable all faults Interrupts.

Parameters



Returns

NA

4.2.2.14 DNVIC_voidEnableAllPeripherals()

Function to Enable All peripherals Interrupt.

Parameters



Returns

NA

4.2.2.15 DNVIC_voidSetBASEPRI()

Function to disable interrupts only with priority lower than certain level.

Parameters

priority \	Variable of uint_8t , Priority (016)
------------	--------------------------------------

Returns

NA

4.2.2.16 DNVIC_voidSysReset()

```
void DNVIC_voidSysReset (
     void )
```

Function to make Software reset.

Parameters

NA

Returns

NA

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