Detailed Design of DIO Driver

Team X

Contents

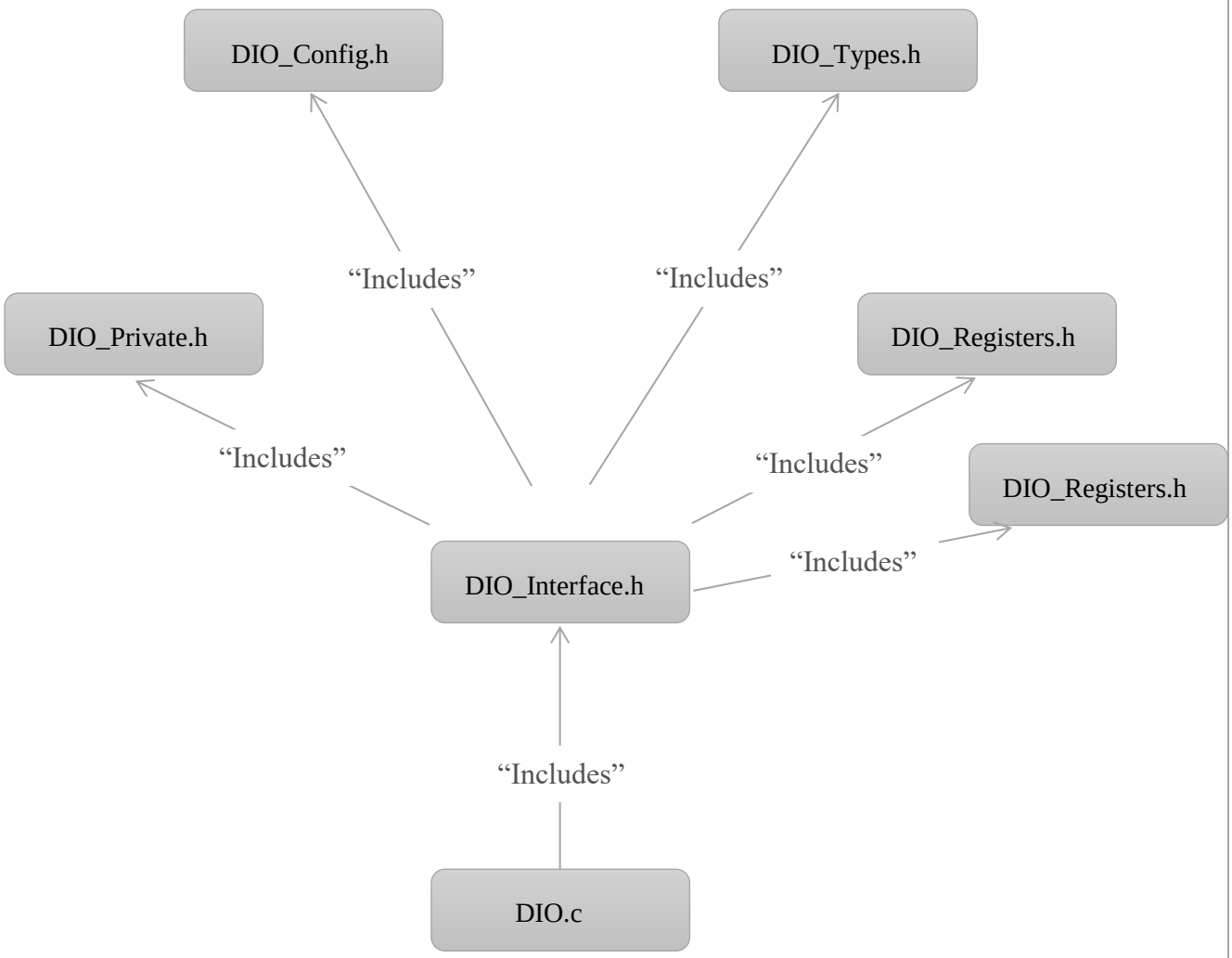
Introduction and functional overview:

This document specifies detailed design of the DIO Driver.

Dependencies to other modules:

File structure:

The DIO module shall comply with the following file structure:



[SRS_DIO_**12330**]	**The DIO Driver shall support symbolic names for LCD pins.**	**[DD_DIO_12330] [DD_DIO_12331] [DD_DIO_12332]**
[**SRS_DIO_501**]	The DIO Driver shall provide a service that writes a data word to the assigned DIO port	[DD_DIO_12333]
[**SRS_DIO_502**]	The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port	[DD_DIO_12340]
[SRS_DIO_503]	The DIO Driver shall provide a service for reading a data word from the assigned Dio Port	[DD_DIO_12336]
[SRS_DIO_504]	The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of the Dio port	[DD_DIO_12338]
[SRS_DIO_505]	The Dio Driver shall provide a service to Toggle	[DD_DIO_12341]
[SRS_DIO_506]	The DIO Driver shall provide a service to Set a desired Port Direction	[DD_DIO_12334]
[SRS_DIO_507]	The DIO Driver shall provide a service to Set a selectable number of adjoining bits to an assigned part of a DIO port.	[DD_DIO_12346]
[SRS_DIO_508]	The DIO Driver shall provide a service to Read A specific pin at DIO Port	[DD_DIO_123343]
[SRS_DIO_509]	The DIO Driver shall provide a service to Write A specific pin at DIO Port	[DD_DIO_123342]

API specification:

Type definitions:

1- [DD_DIO-12330]

Name:	E_DioPort
Type	Enum
Range:	0 : 4
Description:	Number of ports included in the microcontroller
Covered requirements:	

2- [DD_DIO_12331]

Name:	E_DioPin
Type	Enum
Range:	0x00 : 0x80
Description:	Number of pins specified on each port
Covered requirements:	

3- [DD_DIO_12332]

Name:	S_Dio
Type	Structure
Range:	--
Description:	Structure that hold Pin number & associated pins & Desiref Direction
Covered requirements:	=

Function definitions:

1- [DD_DIO_12333]

Service name:	DIO Initialization
Syntax:	Std_type MCAL_Dio_Init(S_Dio *Dio_Config)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Dio Structure
Parameters (out):	none
Parameters (inout):	none
Return type:	Std_type (error)
Description:	Function that initializes the Desired Structure
Covered requirements:	

2- [DD_DIO_12334]

Service name:	Set Port Direction
Syntax:	Std_type MCAL_Dio_SetPortDirection(S_Dio *Dio_ConfigPort)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Dio Structure
Parameters (out):	none
Parameters (inout):	none
Return type:	Std_type (error)
Description:	Function that Sets a specific port with desired Direction
Covered requirements:	

3- [DD_DOI_12335]

Service name:	Set Pin Direction
Syntax:	Std_type MCAL_Dio_SetPinDirection(S_Dio *Dio_ConfigPin)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Dio Structure
Parameters (out):	none
Parameters (inout):	none
Return type:	Std_type (error)
Description:	Function that Sets the Direction a selectable number of adjoining bits to an assigned part of a DIO port
Covered requirements:	

4- [DD_DIO_12336]

Service name:	Read PORT
Syntax:	Std_type MCAL_Dio_ReadPort(S_Dio *Dio_ReadPort,u8PortValue *Port_Value)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Dio Structure Port Number Port Value
Parameters (out):	none
Parameters (inout):	none
Return type:	Std_type (error)
Description:	Function that reads the value of the desired port and assigned the value to the Port_Value parameter
Covered requirements:	

5- [DD_DIO_12338]

Service name:	Read Pins
Syntax:	Std_type MCAL_Dio_ReadPin(S_Dio *Dio_ReadPin,E_DioPin Pin_Num,u8PinValue *Pin_Value)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Dio Structure Pin Number Pin_Value
Parameters (out):	none
Parameters (inout):	none
Return type:	Std_type (error)
Description:	Function that reads the value of the desired pin and assigned the value to the pin_Value parameter
Covered requirements:	

6- [DD_DIO_12339]

Service name:	Wrtie Port
Syntax:	Std_type MCAL_Dio_WritePort(S_Dio *Dio_WritePort,u8PortValue Port_Value)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Dio Structure The desired value to write it to the port
Parameters (out):	none
Parameters (inout):	none
Return type:	Std_type (error)
Description:	Functions That takes desired value to be written into port and set the port with this value
Covered requirements:	

7- [DD_DIO_12340]

Service name:	Write Pin
Syntax:	Std_type MCAL_Dio_WritePin(S_Dio *Dio_WritePin,u8PinValue Pin_value)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Dio Structure The desired value to write it
Parameters (out):	none
Parameters (inout):	none
Return type:	Std_type (error)
Description:	Functions That takes desired value to be written into pin and set the pin with this value
Covered requirements:	

8- [DD_DIO_12341]

Service name:	Toggle Pin
Syntax:	Std_type MCAL_Dio_TogglePin(S_Dio *Dio_TogglePin,E_DioPin Pin_Num)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Dio Structure Pin Number
Parameters (out):	none
Parameters (inout):	none
Return type:	Std_type (error)
Description:	Function that flip the value of desired pin from 0 to 1 or from 1 to 0 based on the current value of this pin
Covered requirements:	

9- [DD_DIO_12342]

Service name:	Write Single Pin
Syntax:	Std_type MCAL_Dio_WriteSinglePin(S_Dio *Dio_WritePin,E_DioPin Pin_Num,u8PinValue Pin_value)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Dio Structure Pin Number Pin Value
Parameters (out):	none
Parameters (inout):	none
Return type:	Std_type (error)
Description:	Function that sets specific pin to a desired value
Covered requirements:	

10- [DD_DIO_12343]

Service name:	Read Single Pin
Syntax:	Std_type MCAL_Dio_ReadSinglePin(S_Dio *Dio_ReadPin,E_DioPin Pin_Num,u8PinValue *Pin_Value)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Dio Structure Pin Number Pin Value
Parameters (out):	none
Parameters (inout):	none
Return type:	Std_type (error)
Description:	Function that reads the specific pin and set the value in the assigned pin_value parameter
Covered requirements:	