Requirements on DIO Driver

Team X

Contents

Scope of document:

This document specifies requirements on the module DIO Driver.

Functional overview:

The DIO Driver provides ports and pins based read and write access to the internal general purpose I/O ports.

The following expressions are used within the DIO driver

Expression	Explanation
Port_num	Represents multiple DIO channels that are grouped by hardware and accessible synchronously. Example: Port A
Pin_num	Represents a single general-purpose digital input/output pin Example : PIN5
Direction	Decides whether the pin or port Input or Output

Functional Requirements:

Configuration and initialization:

1- [SRS_DIO_500] The configuration and initialization of the port structure is not part of the DIO driver. This is done by the Port Driver

Type:	**Valid**
Description:	The DIO driver shall allow the static configuration of the following symbolic names: • port_num • pin_num • Direction
Rationale:	Provide human readable symbolic names for LCD channels
Use cases	--
Dependencies	--
Supporting material	--

Normal operation:

1- **[SRS_DIO_501] The DIO Driver shall provide a service that writes a data word to the assigned DIO port**

Type:	**Valid**
Description:	The DIO Driver shall provide a service that writes a data word to the assigned DIO port. The operation shall be unbuffered. There shall be no influence to the input functionality of the port.
Rationale:	Basic functionality
Use cases	Write access to an entire DIO port
Dependencies	General read/write behaviour
Supporting material	--

2- **[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**

Type:	**Valid**
Description:	The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port.
Rationale:	Allow for simultaneous setting of a group of DIO channels of a DIO port that has multiple external assignments
Use cases	Write access to DIO ports with multiple assignments.
Dependencies	General read/write behaviour
Supporting material	--

3- **[SRS_DIO_503] The DIO Driver shall provide a service for reading a data word from the assigned Dio Port**

Type:	**Valid**
Description:	The DIO Driver shall provide a service for reading a data word from the assigned DIO port. The operation shall be unbuffered. There shall be no influence to the output functionality of the port.
Rationale:	Basic functionality
Use cases	Read access to an entire DIO port.
Dependencies	General read/write behavior
Supporting material	--

4- [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

Type:	**Valid**
Description:	The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port. The operation shall be unbuffered.
Rationale:	Basic functionality
Use cases	Read access to DIO ports with multiple assignments.
Dependencies	General read/write behavior
Supporting material	--

5- [SRS_DIO_505] The Dio Driver shall provide a service to Toggle

Type:	**Valid**
Description:	The DIO Driver shall provide a service to Toggle (change from 1 to 0 or from 0 to 1) one bit of an assigned DIO Pin The operation shall be unbuffered.
Rationale:	Efficient handling of single DIO Pins.
Use cases	Read & write access to a particular DIO Pin to Toggle the level.
Dependencies	General read/write behavior
Supporting material	--

6- [SRS_DIO_506] The DIO Driver shall provide a service to Set a desired Port Direction

Type:	**Valid**
Description:	The DIO Driver shall provide a service to set a desired port to be an output or input
Rationale:	Basic functionality
Use cases	Setting DIO Port Direction
Dependencies	--
Supporting material	--

7- [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.

	Valid
Description:	The DIO Driver shall provide a service to set a desired number of adjoining bits to be an output or input
Rationale:	Basic functionality
Use cases	Setting DIO Pins Direction
Dependencies	--
Supporting material	--

8- [SRS_DIO_508] The DIO Driver shall provide a service to Read A specific pin at DIO Port

	Valid
Description:	The DIO Driver shall provide a service to Read single pin
Rationale:	Basic functionality
Use cases	Read DIO Pin
Dependencies	--
Supporting material	--

9- [SRS_DIO_509] The DIO Driver shall provide a service to Write A specific pin at DIO Port

	Valid
Description:	The DIO Driver shall provide a service to Write single pin
Rationale:	Basic functionality
Use cases	Write on DIO Pin
Dependencies	--
Supporting material	--