

# [SWS01] Software Specification Document for atmega32\_DIO.c Driver

**Version: V1.0.0**

## 1. Introduction

- This Software Specification Document (SWS) provides an overview, design details, and usage instructions for the atmega32\_DIO driver.
- This driver allows the configuration and manipulation of digital I/O pins on the ATmega32 microcontroller.

## 2. Requirements

- ATmega32 microcontroller
- AVR-GCC compiler

## 3. Design Overview

- The atmega32\_DIO driver provides functions for configuring pin direction, writing logic values, reading logic values, toggling pins, and more.

## 4. Functionality Description

### 4.1. DIO\_setupPinDirection

This function configures the direction (input/output) of a specific pin.

#### Parameters

- **port\_number:** The port number to which the pin belongs (PORTA\_ID, PORTB\_ID, etc.).
- **pin\_number:** The pin number within the port.
- **direction:** The desired direction of the pin (PIN\_INPUT or PIN\_OUTPUT).

### 4.2. DIO\_setupPortDirection

This function configures the direction (input/output) of an entire port.

## Parameters

- **port\_number:** The port number to configure (PORTA\_ID, PORTB\_ID, etc.).
- **direction:** The desired direction of the entire port (PORT\_INPUT or PORT\_OUTPUT).

### 4.3. DIO\_writePin

This function writes a logic value (high/low) to a specific pin.

## Parameters

- **port\_number:** The port number to which the pin belongs (PORTA\_ID, PORTB\_ID, etc.).
- **pin\_number:** The pin number within the port. value: The value to write to the pin (LOGIC\_HIGH or LOGIC\_LOW).

### 4.4. DIO\_readPin

This function reads the logic value (high/low) of a specific pin.

## Parameters

- **port\_number:** The port number to which the pin belongs (PORTA\_ID, PORTB\_ID, etc.).
- **pin\_number:** The pin number within the port. Return Returns the logic value read from the pin (LOGIC\_HIGH or LOGIC\_LOW).

### 4.5. DIO\_writePort

This function writes a logic value (high/low) to an entire port.

## Parameters

- **port\_number:** The port number to write to (PORTA\_ID, PORTB\_ID, etc.).
- **value:** The value to write to the port.

#### 4.6. DIO\_readPort

This function reads the logic value (high/low) of an entire port.

##### Parameters

- **port\_number:** The port number to read from (PORTA\_ID, PORTB\_ID, etc.).
- **Return** Returns the logic value read from the port.

#### 4.7. DIO\_TogglePin

This function toggles the logic value of a specific pin.

##### Parameters

- **Port:** The port number to which the pin belongs (PORTA\_ID, PORTB\_ID, etc.).
- **Pin:** The pin number within the port.