Requirements on TIMERS Driver

Team X

Contents

Introduction:

The proposed AVR Timer Driver is a C language library designed to provide efficient and flexible control over the AVR microcontroller's timer functionality. This SRS document outlines the specifications, functionalities, and features of the AVR Timer Driver.

Scope of document:

The AVR Timer Driver aims to provide the following key features:

- Initialization function for timers

- Overflow mode configuration

- CTC mode configuration

- Pulse Width Modulation (PWM) configuration for both Phase Correct and Fast PWM modes

- Input Capture Unit (ICU) functionality

Requirement specifications:

Functional Requirements:

Configuration and initialization:

1- **[SRS_TIMERS_111] The Timer driver shall provide an initialization function to configure the timer module.**

Type:	**Valid**
Description:	The Timer driver shall provide an initialization function to configure the timer module.
Use cases	--
Dependencies	--
Supporting material	--

2- **[SRS_TIMERS_112] The TIMERS driver shall provide a service that configures the overflow mode.**

Type:	**Valid**
Description:	The Timer driver shall support configuration for overflow mode.It writes the command on the LCD pins.

Use cases	--
Dependencies	[SRS_TIMERS_111]
Supporting material	--

3- [SRS_TIMERS_113] The TIMERS driver shall provide a service that configures the CTC mode.

Type:	**Valid**
Description:	The TIMERS driver shall provide a service that configures the CTC mode.
Use cases	--
Dependencies	[SRS_TIMERS_111]
Supporting material	--

4- [SRS_TIMERS_113] The TIMERS driver shall provide a service that configures the PWM mode.

Type:	**Valid**
Description:	The TIMERS driver shall provide a service that configures the PWM mode.
Use cases	--
Dependencies	[SRS_TIMERS_111]
Supporting material	--

5-[SRS_TIMERS_114] The TIMERS driver shall provide the functionality for Input Capture Unit operations.

Type:	**Valid**
Description:	The TIMERS driver shall provide the functionality for Input Capture Unit operations.
Use cases	--
Dependencies	[SRS_TIMERS_111]
Supporting material	--

Non-Functional Requirements:

1. [SRS_TIMERS_001] The Timer driver shall provide the efficiency feature.

Type	Valid
Description	The Timer driver shall be implemented in an efficient manner with minimal computational and memory overhead.
Dependencies	--

2. [SRS_TIMERS_002] The Timer driver shall provide the Portability feature.

Type	Valid
Description	The Timer driver shall be written in C language to ensure cross-platform portability. Dependencies: None
Dependencies	--

Autosar Compliance

The Timer driver follows the Autosar documentation standards, ensuring compatibility and consistency in system development.

Flexible Configuration

The driver provides support for initialization, overflow mode, CTC mode, PWM modes, and the ICU functionality, allowing for a wide range of timer configurations.

Conclusion

The AVR Timer Driver offers a comprehensive set of functionalities for controlling timers on AVR microcontrollers. Its compliance with Autosar documentation, flexible configuration options, efficiency, and portability make it a reliable choice for various embedded system applications. The clear and comprehensive documentation further aids developers in utilizing this technology effectively.