***Project Title***

**Software Requirements Specification**

**Ver. XX**

**Revision History**

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| Version | Revision  Date | Contents | Responsibility | Reviewed By | Approval |
| Date | Date | Date |
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# Introduction

## Objective of This Document

This document specifies software requirements for the [product name] to achieve followings

* Explain the required software functions and design properties to meet the system level design
* Provide comprehensible understanding of the software function and related design features
* Provide verification criteria for each software functions and design properties
* Provide evaluation target of the system for the development phase of software testing

## Terms, definitions and abbreviated terms

|  |  |  |
| --- | --- | --- |
| Term | Description | Note |
| ALS | Auto Light Sensor |  |
| SAS | Sun Angle Sensor |  |
| System | Set of elements that relates at least a sensor, a controller and an actuator with one another |  |
|  |  |  |

## Reference

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. | Document Name | Version | Release Date | Author | Note |
| 1 | ES93540-80\_K | Rev. 6 | 2016.XX.XX | OEM |  |
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| --- |
| Specification Guideline |
| Any documents that contribute to specify this document should be identified. Generally following items can be considered.   * System requirements specification * System design specification * HW-SW interface specification * Analysis report to define the SW functionality (e.g. algorithms) at requirements development level * Engineering standards (ex. VDA, SAE standards) * Supplier’s own SW development standards |

# SW Function List

*Context type: Informative*

|  |  |  |  |
| --- | --- | --- | --- |
| System Level Function | SW Function Name | Description | Note |
| Cell voltage measurement and CAN communication | Cell voltage measurement |  |  |
| CAN management |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
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# Software Functional Requirements

## System Level Function: Cell Voltage Measurement and CAN Communication

### SW Function: Cell Voltage Measurement

#### Description

*Context type: Informative*

|  |
| --- |
| Specification Guideline |
| Describe any description for the corresponding software function. Be sure that the specification of technical aspect of the software function that should be regarded as a requirement shall be avoid in this chapter. |

#### Requirements

*Context type: Requirements*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SW Function Name | Cell voltage measurement | | | | | |
| SW REQ ID | Priority | High | Status | Completed | Target | A sample (MQ4) |
| SWR01 | Ref. ID | SYSR\_CL\_01, | Allocation | SWC\_IO\_01 | ASIL |  |
| SYSE01 |
| Requirement | | | | | |
| The cell voltage measurement function shall measure the following objects with the specified properties.   * Measurement channel: Cell 01 to 13 * HW interface: ADC channel [0] * Subtract min value, max value and average value for every 10 measurement cycle for each Cell channel. * Average value shall be calculated except for the min value and max value. | | | | | |
| Note |  | | | | |
|  | | | | | |
| SW REQ ID | Priority | High | Status | Completed | Target | A sample (MQ4) |
| SWR02 | Ref. ID | SYSR\_CL\_01 | Allocation | SWC\_IO\_01 | ASIL |  |
| Requirement | | | | | |
| The cell voltage measurement function shall perform the range check with the following rule.   * Acceptable voltage range: 0.1V ~ 5.0V   If the measure value is out-of-scope, the default value shall be applied. (0.0V) | | | | | |
| Note |  | | | | |
|  | | | | | |

#### Verification Criteria

|  |  |  |
| --- | --- | --- |
| Verification Method | Verification Description | Note |
|  |  |  |

|  |
| --- |
| Specification Guideline |
| SW Function Name   * Title or Summary of System Requirements   SW REQ ID   * Unique ID shall be assigned to the corresponding SW Function (using of numbering convention is preferred)   Priority   * Priority of the SW requirement   ㆍHigh: The confirmation of the requirement should be performed prior to other SW requirements that have medium or low level.  ㆍMedium: The confirmation of the requirement should be performed prior to other SW requirements that have low level.  ㆍLow: Any requirements except for high or medium level.   * In following case, higher level of priority can be assigned   ㆍThe context of the requirement has impact to almost other SW requirements. (e.g. ECU internal power net configuration)  ㆍThe impact to the development cost and scheduling is critical. (e.g. Related to MCU selection)  ㆍThe feasibility of the implementation is uncertain. (e.g. To meet the requirement, specific new algorithm is to be developed)  Status   * Status of the requirement (i.e. proposed, accepted, deleted, suspended)   ㆍProposed: Draft of the requirement (not decided to implement yet)  ㆍAccepted: Accepted to implement the requirement according to the related analysis / testing results  ㆍDeleted: The requirement is removed (decide to not to implement)  ㆍSuspended: The requirement is proposed but the decision of implementation is not confirmed yet for technical or temporal reason in spite of the related analysis or testing results.  Target   * Target sample or vehicle   Ref. ID   * Detail position of higher requirements. In this case, higher requirements are System requirements on System Requirement Specification or System Design Specification.   Allocation   * Mainly unique top level SW component ID to which SW requirements should be assigned.   Requirement   * Detailed requirement to develop a SW. It shall be sufficiently specific to reflect higher requirement. Attach any picture or document if needed.   Note   * Any constraint, customer’s comments or considerations for implementing SW etc. |

### SW Function: CAN Communication

#### Description

*Context type: Informative*

|  |
| --- |
| Specification Guideline |
| Describe any description for the corresponding software function. Be sure that the specification of technical aspect of the software function that should be regarded as a requirement shall be avoid in this chapter. |

#### Requirements

*Context type: Requirements*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SW Function Name |  | | | | | |
| SW REQ ID | Priority |  | Status |  | Target |  |
|  | Ref. ID |  | Allocation |  | ASIL |  |
|  |
| Requirement | | | | | |
|  | | | | | |
| Note |  | | | | |
|  | | | | | |
| SW REQ ID | Priority |  | Status |  | Target |  |
|  | Ref. ID |  | Allocation |  | ASIL |  |
| Requirement | | | | | |
|  | | | | | |
| Note |  | | | | |
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#### Verification Criteria

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| --- | --- | --- |
| Verification Method | Verification Description | Note |
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## System Level Function: Cell Temperature Measurement and CAN Communication

### SW Function: Cell Temperature Measurement

#### Description

*Context type: Informative*

#### Requirements

*Context type: Requirements*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SW Function Name |  | | | | | |
| SW REQ ID | Priority |  | Status |  | Target |  |
|  | Ref. ID |  | Allocation |  | ASIL |  |
|  |
| Requirement | | | | | |
|  | | | | | |
| Note |  | | | | |
|  | | | | | |
| SW REQ ID | Priority |  | Status |  | Target |  |
|  | Ref. ID |  | Allocation |  | ASIL |  |
| Requirement | | | | | |
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| Note |  | | | | |
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#### Verification Criteria

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| Verification Method | Verification Description | Note |
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# SW Structural Properties/Constraints

|  |
| --- |
| Specification Guideline |
| Specify the software requirements that can affect to the software structures. Followings can be considered.   * Reuse of the legacy software components * Application of AUTOSAR or OEM specific software structure * Application of a specific software OS (e.g. OSEK) * Requirements for the task scheduling |

## Properties/Constraints: XXXX

### Description

*Context type: Informative*

### Requirements

*Context type: Requirements*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SW REQ ID | Priority |  | Status |  | Target |  |
|  | Ref. ID |  | Allocation |  | ASIL |  |
|  |
| Requirement | | | | | |
|  | | | | | |
| Note |  | | | | |
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### Verification Criteria

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| --- | --- | --- |
| Verification Method | Verification Description | Note |
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# Non-Functional Requirements

|  |
| --- |
| Specification Guideline |
| Specify the non-functional software requirements. Followings can be considered.   * SW quality standards to be applied (e.g. line of code, source code complexity control, MISRAC rule set) * OEM dependent software functions (e.g. SW version check, manufacturing date check) * Re-flash method, protocol * Specific software test requirements * Security requirements for the specific code/data area (e.g. calibration data) * Resource consumption requirements (e.g. RAM, ROM margin, scheduling time margin) |

## Properties/Constraints: XXXX

### Description

*Context type: Informative*

### Requirements

*Context type: Requirements*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SW REQ ID | Priority |  | Status |  | Target |  |
|  | Ref. ID |  | Allocation |  | ASIL |  |
|  |
| Requirement | | | | | |
|  | | | | | |
| Note |  | | | | |
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### Verification Criteria

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| --- | --- | --- |
| Verification Method | Verification Description | Note |
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