**Module Design Document**

**For**

**Swp**

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**Prepared For:**

**Software Engineering**

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| --- | --- | --- | --- |
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# Introduction

## Purpose

MDD for Sweep function

## Scope

NA

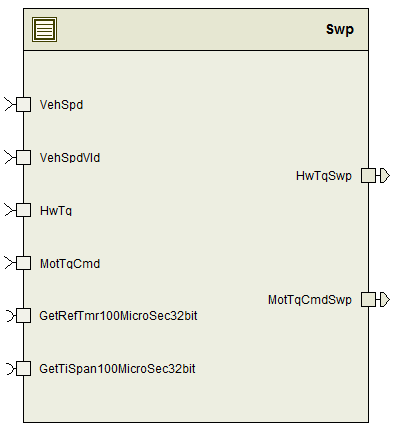
# Swp & High-Level Description

Please refer FDD.

# Design details of software module

Please refer FDD.

## Graphical representation of Swp



## Data Flow Diagram

Please refer FDD.

### Component level DFD

Please refer FDD.

### Function level DFD

Please refer FDD.

# Constant Data Dictionary

## Program (fixed) Constants

### Embedded Constants

#### Local Constants

|  |  |  |  |
| --- | --- | --- | --- |
| Constant Name | Resolution | Units | Value |
| Please refer DF002A\_Swp\_DataDict.m | NA | NA | NA |
| SWPSTRT\_CNT\_U16 | NA | NA | 0 |
| SWPTRAN\_CNT\_U16 | NA | NA | 1 |
| SWPDWELL\_CNT\_U16 | NA | NA | 2 |
| SWPSTOP\_CNT\_U16 | NA | NA | 3 |
| SWPRAMP\_CNT\_U16 | NA | NA | 4 |
| SWPDONE\_CNT\_U16 | NA | NA | 5 |

# Software Component Implementation

Please refer FDD.

## Sub-Module Functions

## Init: SwpInit1

Please refer FDD.

## Design Rationale

Dummy Initialization function to correlate with the FDD (.m file)

## Per: SwpPer1

Please refer FDD.

## Design Rationale

1. For DFs, it was decided to use the module level variables in place of PIMs defined in the FDD (PIM section of .m file), This is a deviation from regular EA4 process. This is to give control over MemMap to avoid MPU violations while writing these variables using xcp.
2. All of the given PIMs from .m file are either defined as of Function level variables (if used in only one function) or Module level variables (if used in more than one function) in DFs.
3. Each of the Function level and Module level variables shall be volatile only when they are intended to be user modifiable as per the data dictionary .m file.
4. Deviations exist in the naming conventions for all of Function level and Module level variables from regular EA4 naming conventions.

## Per: SwpPer2

Please refer FDD.

## Design Rationale

1. For DFs, it was decided to use the module level variables in place of PIMs defined in the FDD (PIM section of .m file), This is a deviation from regular EA4 process. This is to give control over MemMap to avoid MPU violations while writing these variables using xcp.
2. All of the given PIMs from .m file are either defined as of Function level variables (if used in only one function) or Module level variables (if used in more than one function) in DFs.
3. Each of the Function level and Module level variables shall be volatile only when they are intended to be user modifiable as per the data dictionary .m file.
4. Deviations exist in the naming conventions for all of Function level and Module level variables from regular EA4 naming conventions.

# Known Limitations with Design

None.

# UNIT TEST CONSIDERATION

1. Please refer Init.txt file in the FDD design: DF002A\_Swp\_Design for initial values of Function level and Module level variables.
2. For DFs, it was decided to use the module level variables in place of PIMs defined in the FDD (PIM section of .m file), This is a deviation from regular EA4 process.
3. All of the given PIMs from .m file are either defined as of Function level variables (if used in only one function) or Module level variables (if used in more than one function) in DFs.
4. Each of the Function level and Module level variables shall be volatile only when they are intended to be user modifiable as per the data dictionary .m file.
5. Deviations exist in the naming conventions for all of Function level and Module level variables from regular EA4 naming conventions.

Abbreviations and Acronyms

| **Abbreviation or Acronym** | **Description** |
| --- | --- |
|  |  |
|  |  |

Glossary

**Note**: Terms and definitions from the source “Nexteer Automotive” take precedence over all other definitions of the same term. Terms and definitions from the source “Nexteer Automotive” are formulated from multiple sources, including the following:

* ISO 9000
* ISO/IEC 12207
* ISO/IEC 15504
* Automotive SPICE® Process Reference Model (PRM)
* Automotive SPICE® Process Assessment Model (PAM)
* ISO/IEC 15288
* ISO 26262
* IEEE Standards
* SWEBOK
* PMBOK
* Existing Nexteer Automotive documentation

| **Term** | **Definition** | **Source** |
| --- | --- | --- |
| MDD | Module Design Document |  |
| DFD | Data Flow Diagram |  |

References

| **Ref. #** | **Title** | **Version** |
| --- | --- | --- |
| 1 | AUTOSAR Specification of Memory Mapping (Link:[AUTOSAR\_SWS\_MemoryMapping.pdf](http://www.autosar.org/download/R4.0/AUTOSAR_SWS_MemoryMapping.pdf)) | v1.3.0 R4.0 Rev 2 |
| 2 | MDD Guideline | EA4 01.00.00 |
| 3 | [Software Naming Conventions.doc](http://misagweb01.nexteer.com/eRoomReq/Files/erooms8/NextGeneration/0_fc55f/Software%20Naming%20Conventions%2003x(In%20Work).doc) | 1.0 |
| 4 | [Software Design and Coding Standards.doc](http://eroom1.nexteer.com/eRoomReq/Files/erooms8/NextGeneration/0_1a67a9/Software%20Design%20and%20Coding%20Standards.doc) | 2.0 |
| 5 | FDD: SF002A\_Swp\_Design | See Synergy SubProject version |