**Module Design Document**

**For**

**GMStrtStop**

**Aug 9, 2016**

**Prepared For:**

**Software Engineering**

**Nexteer Automotive,**

**Saginaw, MI, USA**

**Prepared By:**

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**Saginaw, MI, USA****Change History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Description** | **Author** | **Version** | **Date** |
| Initial Version | Jared W Julien | 1.0 | 05/08/2014 |
| Updated sections 2, 2.1.1, 4.2, 6.1.1.3, 6.1.4 and 8.1 according to Unit Test Findings. | KPIT-SSK | 2.0 | 05/22/2014 |
| Updated to V002 of FDD  (Updated template too) | Krishna Anne | 3.0 | 05/20/2016 |
| Updated to V002 of FDD  (Updated template too) | Krishna Anne | 4.0 | 06/03/2016 |
| Range corrections done after UT | Krishna Anne | 5.0 | 07/19/2016 |
| Init1 call updated | Krishna Anne | 6.0 | 08/09/2016 |

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# Introduction

## Purpose

MDD for GMStrtStop (CF12A).

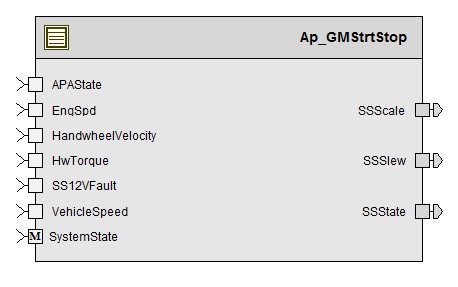
# GMStrtStop & High-Level Description

Please refer the FDD.

# Design details of software module

Please refer the FDD.

## Graphical representation of <MDD Name>

**

## Data Flow Diagram

Please refer the FDD.

## Variable Data Dictionary

Please refer the FDD.

## Constant Data Dictionary

Please refer the FDD.

## Software Module Implementation

Please refer the FDD.

### Module Internal (Local) Functions

#### Local Function #1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | SlewRateCalc | Type | Min | Max |
| **Arguments Passed** | NA | NA | NA | NA |
| **Return Value** | SSSlewRate\_UlspS\_T\_f32 | Float32 | 0.1 | 500.0 |

##### **Design Rationale**

##### This function corresponds to SlewRate block in FDD and is split from Per1 to handle the cyclomatic complexity and path count.

##### **Processing**

Please refer the below path in the Simulink model of FDD.

*CF12A\_GMSS\_v002/GMSS/GMSSPer1/SlewRate*

#### Local Function #2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | PreviousStCalc | Type | Min | Max |
| **Arguments Passed** | NA | NA | NA | NA |
| **Return Value** | NA | NA | NA | NA |

##### **Design Rationale**

##### This function corresponds to PreviousSt block in FDD and is split from Per1 to handle the cyclomatic complexity and path count.

##### **Processing**

Please refer the below path in the Simulink model of FDD.

*CF12A\_GMSS\_v002/GMSS/GMSSPer1/PreviousSt*

# Known Limitations with Design

StrtStop\_SSScale\_Uls\_M\_f32 shall have to be initialized to 1.0 in the Init1 function call which would be added in the coming version of FDD.

# UNIT TEST CONSIDERATION

None.

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 | EA3 01.04.00 |
| 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) | 2.1 |
| 5 | CF012A\_GMStrtStop\_Design\_2.1.0(FDD) | 2.1.0 |