**Module Design Document**

**For**

**FordMsg091BusHiSpd**

**17-Apr-2018**

**Prepared For:**

**Software Engineering**

**Nexteer Automotive,**

**Saginaw, MI, USA**

**Prepared By:**

**Tata Elxsi,**

**Trivandrum, INDIAChange History**

|  |  |  |  |
| --- | --- | --- | --- |
| Description | Author | Version | Date |
| Initial Version | Shishir Holenarasipura | 1.0 | 17-Apr-2018 |

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# Introduction

## Purpose

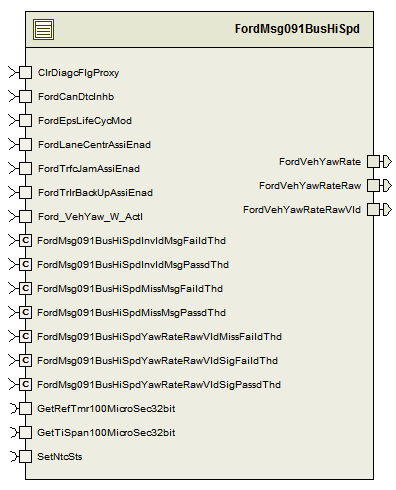
MDD for FordMsg091BusHiSpd

# FordMsg091BusHiSpd & High-Level Description

Please refer FDD.

# Design details of software module

## Graphical representation of FordMsg091BusHiSpd



## Data Flow Diagram

### 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 Data Dictionary .m file | NA | NA | NA |

# Software Component Implementation

## Sub-Module Functions

### 5.1.1 Init: FordMsg091BusHiSpdInit1

#### Design Rationale

None

#### Module Outputs

None

### 5.1.2 Per: FordMsg091BusHiSpdPer1

#### 5.1.2.1 Design Rationale

None

#### 5.1.2.2 Store Module Inputs to Local copies

None

#### 5.1.2.3 Processing of function)

None

#### 5.1.2.4 Store Local copy of outputs into Module Outputs

None

## Server Runnables

### ComIPduCallout\_Yaw\_Data\_FD1

## 5.2.1.1 Design Rationale

None

## 5.2.1.2 Processing of function

None

### ComTimeoutNotification\_VehYaw\_W\_Actl

## 5.2.2.1 Design Rationale

None

## 5.2.2.2 Processing of function

None

## Interrupt Functions

None

## Module Internal (Local) Functions

## Local Function #1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | DiagEna | Type | Min | Max |
| Arguments Passed | FordTrfcJamAssiEnad\_Cnt\_T\_logl | boolean | 0U | 1U |
| FordTrlrBackUpAssiEnad\_Cnt\_T\_logl | boolean | 0U | 1U |
| FordLaneCentrAssiEnad\_Cnt\_T\_logl | boolean | 0U | 1U |
| ClrDiagcFlgProxy\_Cnt\_T\_u08 | uint8 | 0U | 255U |
| FordCanDtcInhb\_Cnt\_T\_logl | boolean |  |  |
| \*MissMsgDiagEna\_Cnt\_T\_logl | boolean | 0U | 1U |
| \*ClrDiagcFlgProxyEna\_Cnt\_log | boolean | 0U | 1U |
| Return Value |  |  |  |  |

## Design Rationale

## Processing

Please refer to the below path in the FDD model.

MM056A\_FordMsg091BusHiSpd/FordMsg091BusHiSpd/FordMsg091BusHiSpdPer1/DiagEna

## Local Function #2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | MissMsg | Type | Min | Max |
| Arguments Passed | BusHiSpdMissThd\_Cnt\_T\_u16 | unit16 | 0U | 65535U |
| MissMsgDiagEna\_Cnt\_T\_logl | boolean | 0U | 1U |
| ClrDiagcFlgProxyEna\_Cnt\_logl | boolean | 0U | 1U |
| \*FordVehYawRateRaw\_Cnt\_T\_u16 | uint16 | 0U | 65535U |
| \*FordVehYawRate\_RadPerSec\_T\_f32 | float32 | -6.5 | +6.6066 |
| Return Value | FordVehYawRateRawVld\_Cnt\_T\_logl | boolean | 0U | 1U |

## Design Rationale

## Processing

Please refer to the below path in the FDD model.

MM056A\_FordMsg091BusHiSpd/FordMsg091BusHiSpd/FordMsg091BusHiSpdPer1/Msg\_Missing

## Local Function #3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | OutpProcg | Type | Min | Max |
| Arguments Passed | Ford\_VehYaw\_W\_Actl\_Cnt\_T\_enum | Ford\_VehYaw\_W\_Actl | 0U | 65535U |
| \*FordVehYawRateRaw\_Cnt\_T\_u16 | uint16 | 0U | 65535U |
| \*FordVehYawRateRawVld\_Cnt\_T\_logl | boolean | 0U | 1U |
| \*FordVehYawRate\_RadPerSec\_T\_f32 | float32 | -6.5 | +6.6066 |
| \*FordVehYawRateRawVldInp\_Cnt\_T\_logl | boolean | 0U | 1U |
| Return Value | None |  |  |  |

## Design Rationale

## Processing

Please refer to the below path in the FDD model.

MM056A\_FordMsg091BusHiSpd/FordMsg091BusHiSpd/FordMsg091BusHiSpdPer1/Msg\_Present/OutputProcessing

## Local Function #5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | VldElpdTi | Type | Min | Max |
| Arguments Passed | \*VldElpdTi\_Cnt\_T\_logl | boolean | 0U | 1U |
| \*InvldElpdTi\_Cnt\_T\_logl | boolean | 0U | 1U |
| Return Value | None |  |  |  |

## Design Rationale

## Processing

Please refer to the below path in the FDD model.

MM056A\_FordMsg091BusHiSpd/FordMsg091BusHiSpd/FordMsg091BusHiSpdPer1/Msg\_Present/OutputProcessing/VldElpdTi

## GLOBAL Function/Macro Definitions

None

# Known Limitations with Design

The output signals FordVehYawRate and FordVehYawRateRaw are not limited in design. But limits have been added to these signals in the implementation.

# UNIT TEST CONSIDERATION

The output signals FordVehYawRate and FordVehYawRateRaw are not limited in design. But limits have been added to these signals in the implementation. Anomaly will be created for the same.

Abbreviations and Acronyms

| **Abbreviation or Acronym** | **Description** |
| --- | --- |
| FDD | Functional Design Document. (See references) |

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) | v1.3.0 R4.0 Rev 2 |
| 2 | MDD Guideline | EA4 01.00 |
| 3 | Software Naming Conventions.doc | EA4 01.02 |
| 4 | Software Design and Coding Standards.doc | EA4 2.01 |
| 5 | FDD: MM056A\_FordMsg091BusHiSpd\_Design | See Synergy subproject version |