**Module Design Document**

**For**

**EotProtnFwl**

**Feb 01, 2016**

**Prepared For:**

**Software Engineering**

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**Saginaw, MI, USA**

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**Change History**

|  |  |  |  |
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| **Description** | **Author** | **Version** | **Date** |
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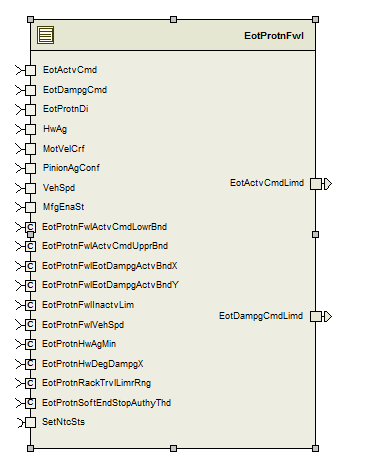
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# EotProtnFwl & High-Level Description

EOT Protection Firewall function is safety function which imposes a firewall limit to the Assist\_EOTDamping and EOTActvCmd motor commands generated by SF-018A.

# Design details of software module

## Graphical representation of EotProtnFwl



## Data Flow Diagram

Refer FDD

### Component level DFD

Refer FDD

### Function level DFD

Refer FDD

# Constant Data Dictionary

## Program (fixed) Constants

### Embedded Constants

#### Local Constants

Refer FDD

# Software Component Implementation

## Sub-Module Functions

## Init: EotProtnFwl\_Init1

## Design Rationale

*Refer FDD*

## Module Outputs

*Refer FDD*

## Per: EotProtnFwl\_Per1

## Design Rationale

EotProtnFwl\_Per1 function is divided into various functions to reduce the cyclomatic complexity.

## Store Module Inputs to Local copies

*Refer FDD*

## (Processing of function)………

*Refer FDD*

## Store Local copy of outputs into Module Outputs

*Refer FDD*

## Server Runnables

None

## Interrupt Functions

None

## Module Internal (Local) Functions

## Local Function #1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | DetEOTDamping | Type | Min | Max |
| **Arguments Passed** | EotDampgCmd\_MotNwtMtr\_T\_f32 | float32 | -8.8 | 8.8 |
|  | EotProtnDi\_Cnt\_T\_Logl | boolean | 0 | 1 |
|  | HwAg\_HwDeg\_T\_f32 | float32 | -1440.0 | 1440.0 |
|  | MotVelCrf\_MotRadPerSec\_T\_f32 | float32 | - 1118.0 | 1118.0 |
|  | EotProtnFwlPinionAgConfSts\_Cnt\_T\_Logl | boolean | 0 | 1 |
|  | VehSpd\_Kph\_T\_u9p7 | uint16 | 0 | 511 |
|  | MfgEnaSt\_Cnt\_T\_Enum | Enum | 0 | 1 |
|  | \* EotDampgFwlReached\_Cnt\_T\_Logl | boolean | 0 | 1 |
| Return by Value | EotDampgCmdLimd\_MotNwtMtr\_T\_f32 | float32 | -8.8 | 8.8 |

## Design Rationale

This function updates EotDampgFwlReached\_Cnt\_T\_Logl

## Processing

Refer Active/Inactive region for EOTDamping Command implementation in model

## Local Function #2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | DetEOTActive | Type | Min | Max |
| **Arguments Passed** | EotActvCmd\_MotNwtMtr\_T\_f32 | float32 | -8.8 | 8.8 |
|  | EotProtnDi\_Cnt\_T\_Logl | boolean | 0 | 1 |
|  | HwAg\_HwDeg\_T\_f32 | float32 | -1440.0 | 1440.0 |
|  | EotProtnFwlPinionAgConfSts\_Cnt\_T\_Logl | boolean | 0 | 1 |
|  | VehSpd\_Kph\_T\_u9p7 | uint16 | 0 | 511 |
|  | MfgEnaSt\_Cnt\_T\_Enum | Enum | 0 | 1 |
|  | \* EotActvCmdFwlReached\_Cnt\_T\_Logl | boolean | 0 | 1 |
| Return Value | EotActvCmdLimd\_MotNwtMtr\_T\_f32 | float32 | -8.8 | 8.8 |

## Design Rationale

This function updates EotActvCmdFwlReached\_Cnt\_T\_Logl

## Processing

Refer Active/Inactive region for EOT Active Command implementation in model

## GLOBAL Function/Macro Definitions

None

# Known Limitations with Design

None

# 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 | 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) | 2.0 |
| 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 | SF027\_EotProtnFwl\_Desgin | Please refer synergy subproject version |