**Module Design Document**

**ForMotor Quadrant Detection**

**VERSION: 1.0**

**DATE: 11-MAY-2015**

**Prepared By:**

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**Location:** The official version of this document is stored in the Nexteer Configuration Management System.

**Revision History**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No.** | **Description** | **Author** | **Version** | **Date** |
| 1 | Initial Version | SB | 1.0 | 11-May-2015 |
| 2 | Update to Unit Test Considerations | SPP | 2.0 | 16-Jun-2017 |
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**Table of Contents**

[1 Abbrevations And Acronyms 5](#_Toc419711690)

[2 References 6](#_Toc419711691)

[3 motquaddetn & High-Level Description 7](#_Toc419711692)

[4 Design details of software module 8](#_Toc419711693)

[4.1 Graphical representation of MOtquaddetn 8](#_Toc419711694)

[4.2 Data Flow Diagram 8](#_Toc419711695)

[4.2.1 Module level DFD 8](#_Toc419711696)

[4.2.2 Sub-Module level DFD 8](#_Toc419711697)

[4.3 COMPONENT FLOW DIAGRAM 8](#_Toc419711698)

[5 Variable Data Dictionary 9](#_Toc419711699)

[5.1 User defined typedef definition/declaration 9](#_Toc419711700)

[5.2 Variable definition for enumerated types 9](#_Toc419711701)

[6 Constant Data Dictionary 10](#_Toc419711702)

[6.1 Program(fixed) Constants 10](#_Toc419711703)

[6.1.1 Embedded Constants 10](#_Toc419711704)

[6.1.1.1 Local 10](#_Toc419711705)

[6.1.1.2 Global 10](#_Toc419711706)

[6.1.2 Module specific Lookup Tables Constants 10](#_Toc419711707)

[7 Software Module Implementation 11](#_Toc419711708)

[7.1 Sub-Module Functions 11](#_Toc419711709)

[7.1.1 Initialization Functions 11](#_Toc419711710)

[7.1.1.1 INIT: MotQuadDetnInit1 11](#_Toc419711711)

[7.1.1.2 Design Rationale 11](#_Toc419711712)

[7.1.1.3 Store Module Inputs to Local copies 11](#_Toc419711713)

[7.1.1.4 (Processing of function)……… 11](#_Toc419711714)

[7.1.1.5 Store Local copy of outputs into Module Outputs 11](#_Toc419711715)

[7.1.2 PERIODIC FUNCTIONS 11](#_Toc419711716)

[7.1.2.1 Per: MotQuadDetnPer1 11](#_Toc419711717)

[7.1.2.2 Design Rationale 11](#_Toc419711718)

[7.1.2.3 Store Module Inputs to Local copies 11](#_Toc419711719)

[7.1.2.4 (Processing of function)……… 11](#_Toc419711720)

[7.1.2.5 Store Local copy of outputs into Module Outputs 11](#_Toc419711721)

[7.2 Interrupt Functions 11](#_Toc419711722)

[7.3 Serial Communication Functions 12](#_Toc419711723)

[7.4 Local Function/Macro Definitions 12](#_Toc419711724)

[7.5 GLObAL Function/Macro Definitions 12](#_Toc419711725)

[7.6 TRANSIENT FUNCTIONS 12](#_Toc419711726)

[8 Known Limitations With Design 13](#_Toc419711727)

[9 UNIT TEST CONSIDERATION 14](#_Toc419711728)

[10 Appendix 15](#_Toc419711729)

# Abbrevations And Acronyms

|  |  |
| --- | --- |
| Abbreviation | Description |
| DFD | Design functional diagram |
| MDD | Module design Document |
|  | <ADD more to the table if applicable> |
|  |  |

# References

This section lists the title & version of all the documents that are referred for development of this document

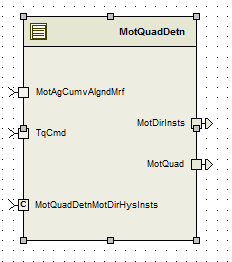
|  |  |  |
| --- | --- | --- |
| Sr. No. | Title | Version |
| <1> | <MDD Guidelines> | Process 3.06.00 |
| <2> | <Software Naming Conventions> | Process 3.06.00 |
| <3> | <Coding standards> | Process 3.06.00 |
| <4> | FDD – SF101A Motor Quadrant Detection | See Synergy Subproject version |
|  | <Add if more available> |  |

# motquaddetn & High-Level Description

*None*

# Design details of software module

## Graphical representation of MOtquaddetn



## Data Flow Diagram

## Module level DFD

*N/A*

## Sub-Module level DFD

*N/A*

## COMPONENT FLOW DIAGRAM

*N/A*

# Variable Data Dictionary

## User defined typedef definition/declaration

*<This section documents any user types uniquely used for the module.>*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Typedef Name | Element Name | User Defined Type | Legal Range  (min) | Legal Range  (max) |
| N/A |  |  |  |  |
|  |  |  |  |  |

## Variable definition for enumerated types

|  |  |  |
| --- | --- | --- |
| Enum Name | Element Name | Value |
| N/A |  |  |

# Constant Data Dictionary

## Program(fixed) Constants

## Embedded Constants

*< All program specific constants will be defined in detail >*

## Local

|  |  |  |  |
| --- | --- | --- | --- |
| Constant Name | Resolution | Units | Value |
| Refer constants from .m file |  |  |  |

## Global

*<This section lists the global constants used by the module. For details on global constants, refer to the Data Dictionary for the application>*

|  |
| --- |
| Constant Name |
| N/A |
|  |
|  |

## Module specific Lookup Tables Constants

*<(This is for lookup tables (arrays) with fixed values, same name as other tables)>*

|  |  |  |  |
| --- | --- | --- | --- |
| Constant Name | Resolution | Value | Software Segment |
| <Refer Constant name qualified in [2]> | <Refer MDD guidelines [1]> | <Refer MDD guidelines [1]> | <Refer MDD guidelines [1]> |

# Software Module Implementation

## Sub-Module Functions

None

## Initialization Functions

## INIT: MotQuadDetnInit1

## Design Rationale

*None*

## Store Module Inputs to Local copies

*Refer to FDD*

## (Processing of function)………

*Refer to FDD*

## Store Local copy of outputs into Module Outputs

*Refer to FDD*

## PERIODIC FUNCTIONS

*(Note: For multiple periodic functions, insert new headers at the “Header 2” level – subset of “7.2 Periodic Functions” and follow the same sub-section design shown below). If none required, place the text “None”)>*

## Per: MotQuadDetnPer1

## Design Rationale

## Store Module Inputs to Local copies

*Refer to FDD*

## (Processing of function)………

*Refer to FDD*

## Store Local copy of outputs into Module Outputs

*Refer to FDD*

## Interrupt Functions

*None*

## Serial Communication Functions

*None*

## Local Function/Macro Definitions

None

## GLObAL Function/Macro Definitions

None

## TRANSIENT FUNCTIONS

*None*

# Known Limitations With Design

Rollover Checking is not needed. Fixed point math implementation takes care of it and no additional logic is required.

# UNIT TEST CONSIDERATION

Rollovers should not occur in normal operation in the vehicle, however, rollovers will most likely occur during dynamometer testing or other tests. (From Motor Control FDD REPS GG4500 BMW 5.3.doc)

# Appendix

*None*