**Module Design Document**

**For**

**HwTq9Meas**

**12-Jan-2018**

**Prepared By:**

**Software Engineering,**

**Nexteer Automotive,**

**Saginaw, MI, USA**

**Change History**

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| --- | --- | --- | --- |
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Table of Contents

[1 Introduction 6](#_Toc503521254)

[1.1 Purpose 6](#_Toc503521255)

[1.2 Scope 6](#_Toc503521256)

[2 HwTq9Meas High-Level Description 7](#_Toc503521257)

[3 Design details of software module 8](#_Toc503521258)

[3.1 Graphical representation of HwTq9Meas 8](#_Toc503521259)

[3.2 Data Flow Diagram 8](#_Toc503521260)

[3.2.1 Component level DFD 8](#_Toc503521261)

[3.2.2 Function level DFD 8](#_Toc503521262)

[4 Constant Data Dictionary 9](#_Toc503521263)

[4.1 Program (fixed) Constants 9](#_Toc503521264)

[4.1.1 Embedded Constants 9](#_Toc503521265)

[5 Software Component Implementation 10](#_Toc503521266)

[5.1 Sub-Module Functions 10](#_Toc503521267)

[5.1.1 Init: HwTq9MeasInit1 10](#_Toc503521268)

[5.1.1.1 Design Rationale 10](#_Toc503521269)

[5.1.2 Per: HwTq9MeasPer1 10](#_Toc503521270)

[5.1.2.1 Design Rationale 10](#_Toc503521271)

[5.1.3 Per: HwTq9MeasPer2 10](#_Toc503521272)

[5.1.3.1 Design Rationale 10](#_Toc503521273)

[5.2 Server Runnables 11](#_Toc503521274)

[5.2.1 HwTq9MeasHwTq9AutTrim 11](#_Toc503521275)

[5.2.1.1 Design Rationale 11](#_Toc503521276)

[5.2.2 HwTq9MeasHwTq9ClrTrim 11](#_Toc503521277)

[5.2.2.1 Design Rationale 11](#_Toc503521278)

[5.2.3 HwTq9MeasHwTq9ReadTrim 11](#_Toc503521279)

[5.2.3.1 Design Rationale 11](#_Toc503521280)

[5.2.4 HwTq9MeasHwTq9TrimPrfmdSts 11](#_Toc503521281)

[5.2.4.1 Design Rationale 11](#_Toc503521282)

[5.2.5 HwTq9MeasHwTq9WrTrim 11](#_Toc503521283)

[5.2.5.1 Design Rationale 11](#_Toc503521284)

[5.3 Interrupt Functions 11](#_Toc503521285)

[5.4 Module Internal (Local) Functions 12](#_Toc503521286)

[5.4.1 Local Function #1 12](#_Toc503521287)

[5.4.1.1 Design Rationale 12](#_Toc503521288)

[5.4.2 Local Function #2 12](#_Toc503521289)

[5.4.2.1 Design Rationale 12](#_Toc503521290)

[5.4.3 Local Function #3 12](#_Toc503521291)

[5.4.3.1 Design Rationale 12](#_Toc503521292)

[6 Known Limitations with Design 13](#_Toc503521293)

[7 UNIT TEST CONSIDERATION 14](#_Toc503521294)

[Appendix A Abbreviations and Acronyms 15](#_Toc503521295)

[Appendix B Glossary 16](#_Toc503521296)

[Appendix C References 17](#_Toc503521297)

# Introduction

## Purpose

Refer to FDD.

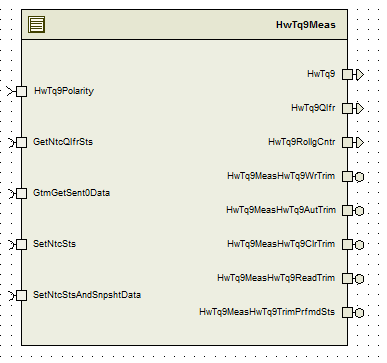
## Scope

# HwTq9Meas High-Level Description

Refer to FDD

# Design details of software module

## Graphical representation of HwTq9Meas

**

## Data Flow Diagram

### Component level DFD

Refer to FDD

### Function level DFD

Refer to FDD

# Constant Data Dictionary

## Program (fixed) Constants

### Embedded Constants

#### Local Constants

|  |  |  |  |
| --- | --- | --- | --- |
| Constant Name | Resolution | Units | Value |
| CRCTBLSIZE\_CNT\_U08 | 1 | Cnt | 16U |

*\* Refer to FDD for other constant definitions*

# Software Component Implementation

## Sub-Module Functions

## Init: HwTq9MeasInit1

## Design Rationale

None

## Per: HwTq9MeasPer1

## Design Rationale

Clear local buffer in the below path of the model has not been implemented, because it’s not required.

Path : ES224A\_HwTq9Meas/HwTq9Meas/HwTq9MeasPer1/Raw Data Processing/Clear Local Buffer

## Per: HwTq9MeasPer2

## Design Rationale

None

## Server Runnables

## HwTq9MeasHwTq9AutTrim

## Design Rationale

None

## HwTq9MeasHwTq9ClrTrim

## Design Rationale

None

## HwTq9MeasHwTq9ReadTrim

## Design Rationale

None

## HwTq9MeasHwTq9TrimPrfmdSts

## Design Rationale

None

## HwTq9MeasHwTq9WrTrim

## Design Rationale

None

## Interrupt Functions

None

## Module Internal (Local) Functions

### Local Function #1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | StuckNoDataSeln | Type | Min | Max |
| **Arguments Passed** | NA | N/A | N/A | N/A |
| **Return Value** | MissMsgEna\_Uls\_T\_u08 | uint8 | 0 | 1 |

## Design Rationale

This function is split from Per1 to reduce path count and cyclomatic complexity.

## Local Function #2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | RngChk | Type | Min | Max |
| **Arguments Passed** | Temp\_Cnt\_T\_u32 | uint32 | 0 | 4294967295 |
| **Return Value** | RngChk\_Cnt\_T\_logl | boolean | TRUE | FALSE |

## Design Rationale

This function is split from Per1 to reduce path count and cyclomatic complexity.

## Local Function #3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | CrcChk | Type | Min | Max |
| **Arguments Passed** | CalcdCrc\_Cnt\_T\_u16 | uint16 | 0 | 15 |
| **Arguments Passed** | AntcptdCrc\_Cnt\_T\_u16 | uint16 | 0 | 15 |
| **Return Value** | CRCFaildPrmByte\_Cnt\_T\_u08 | uint8 | 0 | 1 |

## Design Rationale

This function is split from Per1 to reduce path count and cyclomatic complexity.

# Known Limitations with Design

None.

# UNIT TEST CONSIDERATION

1. Clear local buffer in the below path of the model has not been implemented, because it’s not required. Path : ES224A\_HwTq9Meas/HwTq9Meas/HwTq9MeasPer1/Raw Data Processing/Clear Local Buffer

Abbreviations and Acronyms

| **Abbreviation or Acronym** | **Description** |
| --- | --- |
| MDD | Module Design Document |
| DFD | Data Flow Diagram |

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

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References

| **Ref. #** | **Title** | **Version** |
| --- | --- | --- |
| 1 | AUTOSAR Specification of Memory Mapping | v1.3.0 R4.0 Rev 2 |
| 2 | MDD Guideline | EA4 01.00.01 |
| 3 | EA4 Software Naming Conventions | 01.01.00 |
| 4 | Software Design and Coding Standards | 2.1 |
| 5 | FDD – ES224A\_HwTq9Meas\_Design | See Synergy sub project version |