**Module Design Document**

**For**

**LrndRackCentr**

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**Change History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Description** | **Author** | **Version** | **Date** |
| Initial Version | ML | 1.0 | 26-Oct-2017 |

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# Introduction

## Purpose

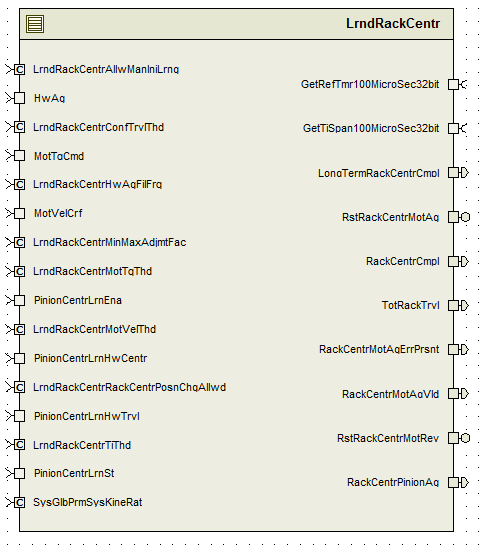
## Scope

# LrndRackCenter & High-Level Description

*Refer FDD.*

# Design details of software module

## Graphical representation of LrndRackCentr



## 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

|  |  |  |  |
| --- | --- | --- | --- |
| Constant Name | Resolution | Units | Value |
| Refer DataDict.m file from FDD for other constants | - | - | - |

# Software Component Implementation

## Sub-Module Functions

## Init: LrndRackCentrInit1

Refer FDD Simulink model

## Design Rationale

None

## Per: LrndRackCentrPer1

Refer FDD Simulink Model

## Design Rationale

Refer to Anomaly EA4#17201. Implementation deviates from design to fix for build.

## Server Runnable

## Interrupt Functions

None

## Module Internal (Local) Functions

## Local Function #1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | ManLrnRackCentr | Type | Min | Max |
| **Arguments Passed** | HwAg\_HwDeg\_T\_f32 | float32 | -1440 | 1440 |
|  | MotVelCrf\_MotRadPerSec\_T\_f32 | float32 | -1350 | 1350 |
|  | MotTqCmd\_MotNwtMtr\_T\_f32 | float32 | -8.8 | 8.8 |
| **Return Value** | None |  |  |  |

## Description

Implementation of ‘MANUAL LEARN RACK CENTER’ subsystem.

## Local Function #2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function Name** | ChkRackCentr | Type | Min | Max |
| **Arguments Passed** | HwTrvl\_HwDeg\_T\_f32 | float32 | 0 | 2880 |
|  | RackCentr\_HwDeg\_T\_f32 | float32 | -1440 | 1440 |
|  | \*RackCentrMotAgVld\_Cnt\_T\_logl | boolean | FALSE | TRUE |
|  | \*RackCentrCmpl\_Cnt\_T\_logl | boolean | FALSE | TRUE |
| **Return Value** | None |  |  |  |

## Description

Implementation of ‘Confirm Rack Center Found’ subsystem.

## GLOBAL Function/Macro Definitions

None

# Known Limitations with Design

None

# UNIT TEST CONSIDERATION

Refer to Anomaly EA4#17201. Implementation deviates from design to fix for build.

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](https://www.autosar.org/fileadmin/files/standards/classic/4-0/software-architecture/implementation-integration/standard/AUTOSAR_SWS_MemoryMapping.pdf)) | v1.4.0 R4.0 Rev 3 |
| 2 | MDD Guideline | EA4 01.00.01 |
| 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://eroom.nexteer.com/eRoomReq/Files/Nexteer-ProductLineSystems/ProcessDocumentsSystemsElectronicSystems/0_35a2f/Software%20Design%20and%20Coding%20Standards%202.1.doc) | 2.1 |
| 5 | FDD – SF039A\_LrndRackCentr\_Design | See Synergy Subproject verison |