**Module Design Document**

**For**

**RvsBattProtn**

**October 16, 2017**

**Prepared For:**

**Software Engineering**

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# Introduction

## Purpose

Module Design Document for ES252A\_RvsBattProtn\_Impl

## Scope

The following definitions are used throughout this document:

* **Shall**: indicates a mandatory requirement without exception in compliance.
* **Should**: indicates a mandatory requirement; exceptions allowed only with documented justification.
* **May**: indicates an optional action.

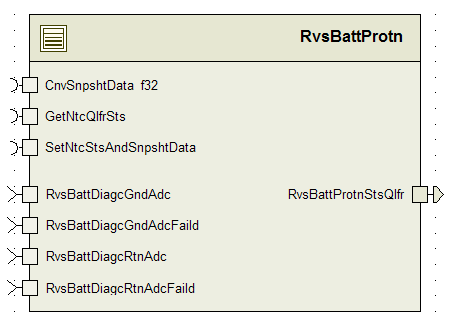
# RvsBattProtn & High-Level Description

Refer FDD.

# Design details of software module

This module provides diagnostics of Reverse Battery Protection Module. Main task is to detect opened Reverse Protection MOSFET channel.

## Graphical representation of RvsBattProtn



## Data Flow Diagram

Refer FDD

### Component level DFD

None

### Function level DFD

None

# Constant Data Dictionary

## Program (fixed) Constants

### Embedded Constants

#### Local Constants

|  |  |  |  |
| --- | --- | --- | --- |
| Constant Name | Resolution | Units | Value |
| RVSBATTPROTN\_FLTTYPADCFAILD\_CNT\_U08 | 1 | Cnt | 4 |
| RVSBATTPROTN\_FLTTYPOOR\_CNT\_U08 | 1 | Cnt | 2 |
| RVSBATTPROTN\_FLTTYPRVSFLT\_CNT\_U08 | 1 | Cnt | 1 |

# Software Component Implementation

## Sub-Module Functions

The sub-module functions are grouped based on similar functionality that needs to be executed in a given “State” of the system (refer States and Modes). For a given module, the MDD will identify the type and number of sub-modules required. The sub-module types are described below.

### Init: RvsBattProtnInit1

#### Design Rationale

Refer FDD

#### Module Outputs

Refer FDD

### Per: RvsBattProtnPer1

#### Design Rationale

Refer FDD

#### Store Module Inputs to Local copies

Refer FDD

#### (Processing of function)………

Refer FDD

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

Refer FDD

## Server Runables

None

## Interrupt Functions

None

## Module Internal (Local) Functions

None

## GLOBAL Function/Macro Definitions

None

# Known Limitations with Design

None

# UNIT TEST CONSIDERATION

This component uses config params for some configurable constants. However for testing these in PIL/SIL, please use the following strategy:

1. Rename the *RvsBattProtn\_Cfg\_PIL.h* file in *tools/local/include* folder to *RvsBattProtn\_Cfg.h*
2. Replace the *RvsBattProtn\_Cfg.h* file in tools/local/generate folder with the above file.

Now, Tessy must be able to modify the values of these config params. We should then test them with the range that is given in their definition in the DataDict.m file.

1. Abbreviations and Acronyms

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

1. 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 |  |

1. 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 | EA4 Software Naming Conventions | 01.01.00 |
| 4 | Software Design and Coding Standards | 2.1 |
| 5 | ES252A\_RvsBattProtn\_Design | See Synergy Sub Project Version |