[Project Name]   
Control System Functional Requirements  
[XX/XX/XXXX]

Contents

[1. Overview 4](#_Toc49193787)

[1.1 Description 4](#_Toc49193788)

[1.2 Acronyms and Abbreviations 4](#_Toc49193789)

[1.3 System Components 4](#_Toc49193790)

[1.4 Inputs 4](#_Toc49193791)

[1.5 Outputs 4](#_Toc49193792)

[2. Input Processing 4](#_Toc49193793)

[2.1 Debounce 4](#_Toc49193794)

[2.2 Anti-Tiedown 4](#_Toc49193795)

[2.3 Input Override 4](#_Toc49193796)

[2.4 Deadband 4](#_Toc49193797)

[3. Basic Functionality / Typical Operation 4](#_Toc49193798)

[3.1 Basic Functionality 1 4](#_Toc49193799)

[3.2 Basic Functionality 2 4](#_Toc49193800)

[3.3 Basic Functionality 3 4](#_Toc49193801)

[4. Operating Mode 5](#_Toc49193802)

[4.1 Operating Mode 1 5](#_Toc49193803)

[4.2 Operating Mode 2 5](#_Toc49193804)

[4.3 Operating Mode 3 5](#_Toc49193805)

[5. Failure Modes 5](#_Toc49193806)

[5.1 Failure Mode 1 5](#_Toc49193807)

[5.2 Failure Mode 2 5](#_Toc49193808)

[5.3 Failure Mode 3 5](#_Toc49193809)

[6. Communications 5](#_Toc49193810)

[6.1 CAN Topology 5](#_Toc49193811)

[6.2 Message IDs 5](#_Toc49193812)

[6.3 CCP Info 5](#_Toc49193813)

[7. Limiting and Interlock 5](#_Toc49193814)

[7.1 Limiting and Interlock 5](#_Toc49193815)

[8. Output Processing 5](#_Toc49193816)

[13.1 Output Processing 5](#_Toc49193817)

[9. Calibrations 6](#_Toc49193818)

[9.1 Calibrations 6](#_Toc49193819)

[10. Diagnostics 6](#_Toc49193820)

[10.1 Diagnostics 6](#_Toc49193821)

[11. Telematics 6](#_Toc49193822)

[11.1 Telematics 6](#_Toc49193823)

[12. Data Logging 6](#_Toc49193824)

[12.1 Data Logging 6](#_Toc49193825)

[13. Applicable Standards 6](#_Toc49193826)

[13.1 EPS, Library Blocks, IEEE, SAE, ANSI 6](#_Toc49193827)

[A. Appendix 6](#_Toc49193828)

[B. Revision History 6](#_Toc49193829)

# Overview

*The overview section should include a brief description of the project and functionality so that someone outside of the project team would be able to understand the project. The section should include a list of commonly used acronyms and abbreviations, a list of system components and their purpose, and inputs and outputs as discussed on the I/O list deliverable.*

1. Description
2. Acronyms and Abbreviations
3. System Components

|  |  |  |
| --- | --- | --- |
| **Acronym** | **Meaning** | **Notes** |
| XXXXX | XXXXXXX | XXXXXXXXXXX |
| XXXXX | XXXXXXX | XXXXXXXXXXX |

|  |  |  |
| --- | --- | --- |
| **Abbreviation** | **Meaning** | **Notes** |
| XXXXX | XXXXXXXXX | XXXXXXXXXXXXXX |

1. Inputs
2. Outputs

# Input Processing

*The input processing section should include a description of the input processing requirements of the system. This should cover details about Debounce, Anti Tie-down, Overrides, dead banding, and other project specific input processing options.*

1. Debounce
2. Anti-Tiedown
3. Input Override
4. Deadband

# Basic Functionality / Typical Operation

*This section should define regular machine operation and modes, describing how the inputs will drive outputs for PDCL targets.*

1. Basic Functionality 1
2. Basic Functionality 2
3. Basic Functionality 3

# Operating Mode

*This section should define conditional operating modes of the system for expected use.*

1. Operating Mode 1
2. Operating Mode 2
3. Operating Mode 3

# Failure Modes

*A failure mode is a mode that the system may enter into automatically upon a system fault. The most common system faults occur at an input or an output. This section should list potential input/output/communication faults and system responses.*

1. Failure Mode 1
2. Failure Mode 2
3. Failure Mode 3

# Communications

*This section should describe the modes of communication used on the project, examples including CAN, Radio, Ethernet, Multiplex, etc.*

1. CAN Topology
2. Message IDs
3. CCP Info

# Limiting and Interlock

*This section should describe the components/devices/functionality which will limit functionality or provide interlock signals for the device. This section should describe what components allow for expected functional use.*

1. Limiting and Interlock

# Output Processing

*This section should be used if there are outputs to be processed by the control system.*

1. Output Processing

# Calibrations

*This section should list the expected calibrated inputs to the system.*

1. Calibrations

# Diagnostics

*This section should list the planned diagnostic/health information that is intended.*

1. Diagnostics

# Telematics

*This section should describe the signals and information that is planned to send to a telematics device / Worldview. It is understood that at this point we may not know the specifics of signals but should have an idea of what is requested via the project team or the customer. e.g. Oil temperature, boom angle.*

1. Telematics

# Data Logging

*This section should describe the signals and information that is planned to be logged on the device(s). It is understood that at this point we may not know the specifics of signals but should have an idea of what is requested via the project team, safety team, and/or the customer.*

1. Data Logging

# Applicable Standards

*This section should list the standard requirements for the project, as well as the expected use of standardized information, such as EPS, Library Blocks, IEEE, SAE, etc.*

1. EPS, Library Blocks, IEEE, SAE, ANSI

# Appendix

# Revision History

|  |  |  |
| --- | --- | --- |
| **Revision History** | | |
| When: | Who: | What: |
| XX/XX/XXXX | XXXXXXX | XXXXXXXXXXXXXXXXXXXXXXXXX |
|  |  |  |
|  |  |  |