

# Mechatronics 3700 Death Star Tracker: Technical Manual

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### **Abstract**

This document describes how each of the modules (including both software and hardware) work, and how to use them.

**Part I**

**Technical Documentation**

# Chapter 1

## Introduction

### 1.1 Document Identification

### 1.2 System Overview

### 1.3 Document Overview

### 1.4 Reference Documents

#### 1.4.1 Acronyms and Abbreviations

## Chapter 2

# System Description

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### 2.2 Operational Scenarios

### 2.3 System Requirements

### 2.4 Module Design

### 2.5 Module Requirements: Module X

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Processes

Outputs

Timing

Failure Modes

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Performance

Interfaces

Design Constraints

### 2.6 Conceptual Design: Module X

#### 2.6.1 Assumptions Made

#### 2.6.2 Constraints on Module X Performance

## Chapter 3

# User Interface Design

### 3.1 Classes of User

### 3.2 Interface Design: User Class Y

#### 3.2.1 User Inputs and Outputs

#### 3.2.2 Input Validation and Error Trapping

## Chapter 4

# Hardware Design

### 4.1 Scope of X System Hardware

### 4.2 Hardware Design

#### 4.2.1 Power Supply

#### 4.2.2 Computer Design

#### 4.2.3 Sensor Hardware

#### 4.2.4 Actuator Hardware

#### 4.2.5 Operator Input Hardware

#### 4.2.6 Operator Output Hardware

#### 4.2.7 Hardware Quality Assurance

### 4.3 Hardware Validation

### 4.4 Hardware Calibration Procedures

### 4.5 Hardware Maintenance and Adjustment

## Chapter 5

# Software Design

### 5.1 Software Design Process

#### 5.1.1 Software Development Environment

#### 5.1.2 Software Implementation Stages and Test Plans

### 5.2 Software Quality Assurance

### 5.3 Software Design Description

#### 5.3.1 Architecture

#### 5.3.2 Software Interface

#### 5.3.3 Software Components

### 5.4 Preconditions for Software

#### 5.4.1 Preconditions for System Startup

#### 5.4.2 Preconditions for System Shutdown



## Chapter 6

# System Performance

6.1 Performance Testing

6.2 State of the System as Delivered

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## Chapter 7

# Safety Implications

## Chapter 8

# Conclusions

# **Part II**

## **Appendices**

## Chapter 9

# Supporting Calculations

## Chapter 10

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