Robotic Sorting System

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**Interface Control Document**

**Power**

REVISION – Draft Release

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Interface Control Document

for

Robotic Sorting System (Power)

Prepared by:

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Pace Dominy 10/3/2022

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**Change Record**

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# Overview

The Interface Control Document for the Robotic Sorting System (RSS) Power Subsystem will detail the physical, electrical, thermal and communication interfaces of this subsystem in detail. The Power subsystem will consist of the Printed Circuit Board (PCB) and any wires/connections between subsystems that deliver power to and from the PCB.

# References and Definitions

## References

|  |  |  |
| --- | --- | --- |
| **Document Number** | **Revision/Release Date** | **Document Title** |
| ANSI/NFPA 70 | 2023 | National Electric Code |
| RSS FSR | 1.0/3 October 2022 | Robotic Sorting System Functional System Requirements |
| RSS Conveyor Belt FSR | 1.0/3 October 2022 | Conveyor Belt Functional System Requirements |
|  | June 2019 | Raspberry Pi 4 Module B Datasheet |

## Definitions

CCA Circuit Card Assembly

mA Milliamp

mW Milliwatt

MHz Megahertz (1,000,000 Hz)

TBD To Be Determined

TTL Transistor-Transistor Logic

VME VERSA-Module Europe

# Physical Interface

## Weight

The Power Subsystem will weigh no more than 5 lbs with the PCB weighing less than 1 lb.

## Dimensions

The PCB will be no bigger than 40 and the wiring to and from the PCB shall take up as little space as possible. The wiring will also be color coded as much as possible and be neatly routed.

## Mounting Locations

Mounting will be done in accordance with the RSS Power FSR (section 3.2.2.3.).

# Electrical Interface

## Primary Input Power

Primary input power will be 1800 Watts (120 V AC with 15 A) as part of the US National Standard for power outlets.

## Polarity Reversal

Polarity reversal will be allowed for the motor controllers, specifically as an input from the Raspberry Pi 4 to the H-bridges in order to allow control of the rotation direction of the motors.

# Communications / Device Interface Protocols

## Device Peripheral Interface

Protocol for the motor controllers/load cells from the Raspberry Pi will be determined based off of the parts decided on 10/5/2022.