Robotic Sorting System

Pace Dominy

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**Interface Control Document**

**Sensors**

REVISION – Draft

2 October 2022

Interface Control Document

for

Robotic Sorting System (Sensors)

Prepared by:

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T/A Date

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# Overview

This document will cover details about the physical, thermal, electrical and communications interface of the sensor subsystem for the RSS. The sensor subsystem consists of a RasPi camera, a load cell, and Raspberry Pi. The camera will capture an image of the fruit, and the load cell will weigh the receptacle. These datas will be sent to the Raspberry Pi.

# References and Definitions

Provide any references (i.e., standards documents) and definitions. Examples are shown below.

## References

**MIL-STD-810F**

**Environmental Engineering Considerations and Laboratories Tests**

1 Jan 2000

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30 Aug 2002

**American National Standard for VME64 (ANSI/VITA 1-1994 (R2002))**

4 Apr 1995

**American National Standard for VME64 Extensions (ANSI/VITA 1.1-1997)**

7 Oct 1998

## 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

| Component | Weight | Number of Items | Total Weight |
| --- | --- | --- | --- |
| RasPi Camera | 0.106 ounces | TBD |  |
| Load Cell |  | TBD |  |
| Raspberry Pi |  | 1 |  |

## Dimensions

| Component | Height | Width | Length |
| --- | --- | --- | --- |
| RasPi Camera | 25mm | 23mm | 9mm |
| Load Cell |  |  |  |
| Raspberry Pi |  |  |  |

## 3.3. Mounting Locations

The Raspberry Pi and the RasPi Camera are mounted on the side of the conveyor belt. The load cell is mounted on the end of the conveyor belt, under the receptacle.

# Thermal Interface

The RasPi Camera and the load cell may not need a thermal interface. They are connected to the Raspberry Pi, and it will have a heatsink.

# Electrical Interface

Provide details on the electrical interface. Examples are:

## Primary Input Power

The Robotic Sorting System is powered by a plug in wall outlet. There is an AC to DC converter installed within the system.

## Voltage and Current Levels

| Component | Voltage (V) | Current (mA) | Power (mW) |
| --- | --- | --- | --- |
| RasPi Camera | TBD | TBD | TBD |
| Load Cell | 5 V | TBD | TBD |
| Raspberry Pi | 5V | TBD | TBD |

## User Control Interface

There is an Android Application that connects to the Raspberry Pi via bluetooth. The user has the ability to check if the sensors are working properly.

# Communications / Device Interface Protocols

## Android Application

There is an Android Application that connects to the Raspberry Pi via bluetooth.