

40SSV Turntable 4M Controller Outline

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1. Introduction

This document is intended to further detail the standard turntable controller equipment described in the contractual agreement. It will cover functionality and provides step-by-step standard operating procedures.

a. Content of Carousel USA Agreement

CUSA 4M Controls, with one (1) remote transmitter.

b. Components

| | | |
|------------------|---------------|--|
| Enclosure: | JB121206HC | Rittal H12" x W12"x D6" Steel Enclosure |
| VFD: | 22F-A8P0N103 | Allen-Bradley PowerFlex 4M 120V 1 HP |
| Circuit Breaker: | L9-10/2/D | Sprecher+ Schuh 2-Pole Circuit Breaker, 10A |
| Wi-Fi Switch: | 4CHPRO | SONOFF 4ch R3 Wi-Fi Smart Switch |
| Operators: | 800FD-SB32X20 | Allen-Bradley 3-Pos. Spring-Return Selector Switch |
| | LB1P-1TO4G | IDEC Green LED Indicator |
| | LB1P-1TO4R | IDEC Red LED Indicator |

2. Control Panel

a. Enclosure Specifications

3. Wall mounting hole dimensions – H10.24" x W10.24" x ø0.34"
4. Carbon steel housing and door, RAL 7035 light gray, dip-coat primed, powder-coated
5. One-piece welded cold-rolled steel body
6. Left-hand hinged door
7. Single quarter-turn latch with screwdriver insert
8. Foamed-in-place gasket
9. 4 wall mounting holes
10. UL Type 1 (other ratings available on request)
11. Recommended enclosure location: within 20ft of motor.

a. Connections

- Incoming Power (9ft cable; Included)
 - Voltage: 120V/1Φ/60Hz
 - Required Amperage: 10A
- Cable to motor (25ft cable; Included)
 - Motor Horsepower: 0.75 HP, 230VAC, 2.16A, 3Φ, 60Hz

b. Features and Functions

The following operators will be available on the front of the control panel:

- **Rotate Table CCW/CW Spring-return Selector Switch**
Jogs turntable clockwise or counterclockwise. Table will stop when the switch is released.
- **POWER Indicator Light, Green**
Illuminates when control panel is powered.
- **FAULT Indicator Light, Red**
Illuminates when there is a fault in the system.

c. Front Panel Layout



d. Electrical Schematic

See Attachment.

e. Enclosure Drawing

See Attachment.

3. Remote Controller (Transmitter)

a. Specifications

- Frequency: 433MHz
- Buttons: 4x1 step
- Weight: 1 oz
- Dimensions: 2.1" x 1.2"
- Batteries: 1 x 12V 27A

b. Features and Functions

The following functions will be available on the remote controller:

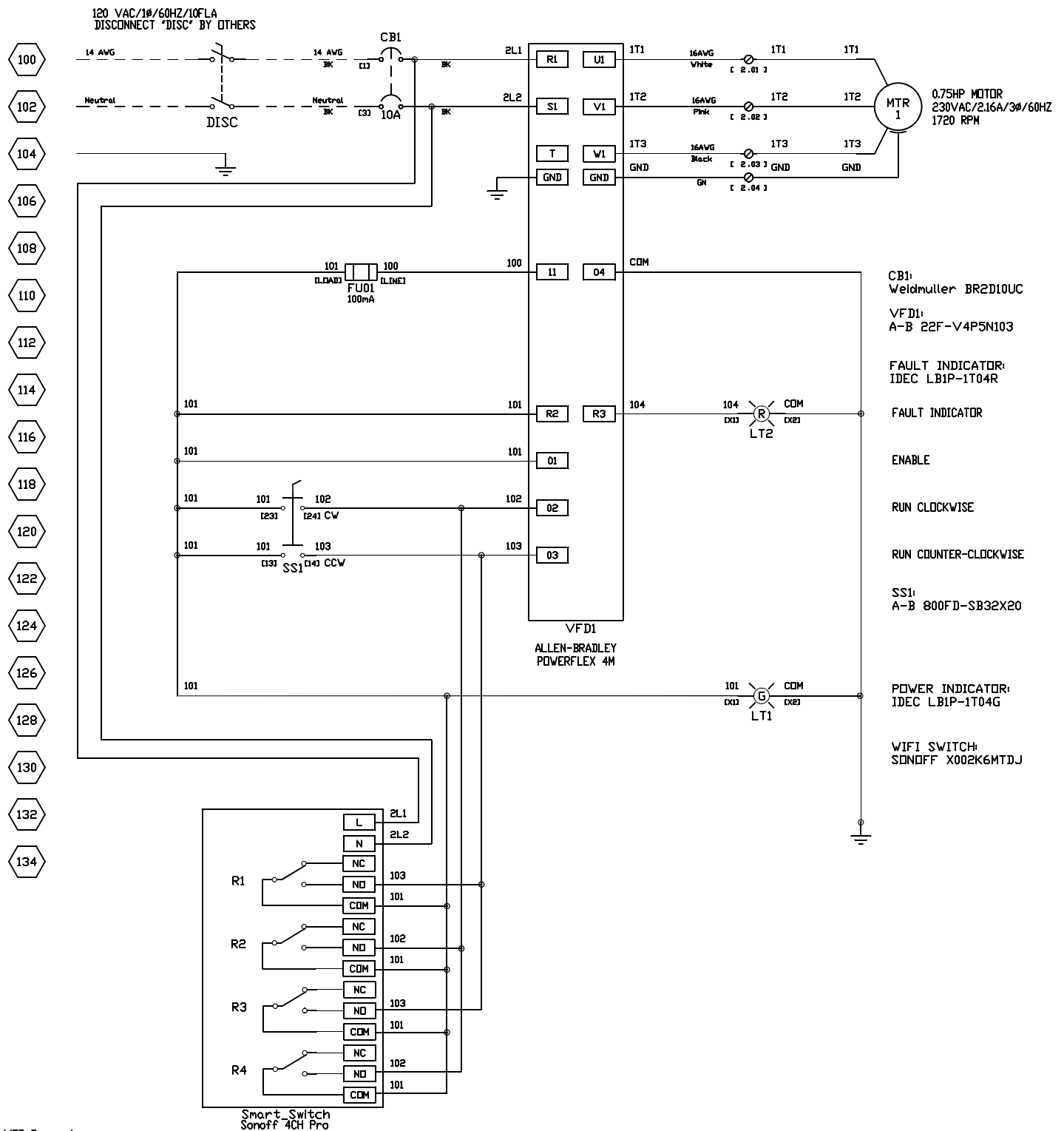
- **A Momentary Push Button**
Rotates turntable counterclockwise. The turntable will continue rotating until button A is pressed again.
- **B Momentary Push Button**
Rotates turntable clockwise. The turntable will continue rotating until button B is pressed again.

c. Remote Controller Button Layout



4. Standard Operating Procedure

1. User will pull the vehicle onto the turntable.
2. User will exit the vehicle and use the front panel CCW/CW switch or the A/B buttons on the remote controller to turn the table in the desired direction.
3. Once the vehicle is in position, the user will release the door CCW/CW switch or press button A/B again to stop the turntable, get back into the vehicle and either reverse or pull forward into the parking space.



VFD Parameters:

The following must be set by Installer:

Jumper on "Source"

P103: 2.8 [A] (Motor OL Current)

P104: 15.0 [Hz] (Minimum Frequency)

P106: 2 [2-Wire] (Start Source)

P109: 4.0 [Sec] (Acceleration Time)

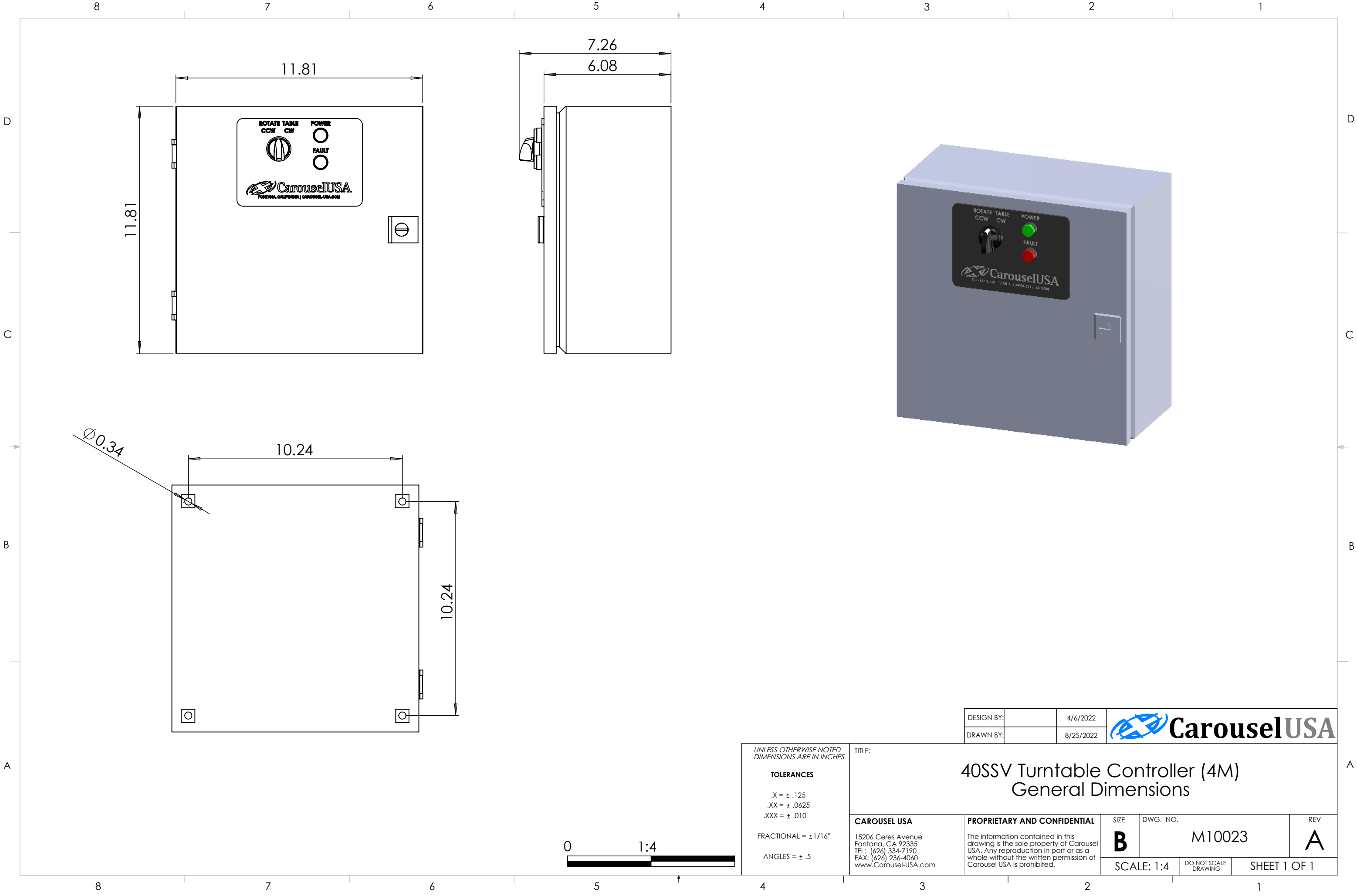
P110: 2.5 [Sec] (Deceleration Time)

For field wiring use Copper
or Aluminum Conductors rated
for 60°C (140°F)
Terminal torque 7lb.in.

A Disconnect Switch must be
used by installer and be
rated for:

20A 600VAC.

| CUSTOMER APPROVAL | | TOLERANCE BLOCK: | | Carousel USA | |
|--|------|---|---|---|---------------------------|
| APPROVED | DATE | DECIMALS: XX ± 0.50 XXX ± 0.020 XXXX ± 0.010 | ANGULAR: ± 1° DIMENSIONS ARE IN INCHES | | |
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| REVISION DATE: 09/23/2020 | | | | DESIGNED BY: | DATE |
| | | | | ENG. APPROVAL: | |
| | | | | MFG. APPROVAL: | |
| | | | | TITLE OR DESCRIPTION: 4M CONTROLS 0.75 HP | |
| | | | | SIZE: AUTOCAD FILE: A | DRAWING NUMBER: C10023 |
| | | | | REV A | |





CarouselUSA

40SSV/SSO Turntable Controller Troubleshooting Guide



Revised 01/09/2024

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1. Introduction

This manual provides a step-by-step guide to troubleshooting simple issues related to the Carousel-USA 40SSV/SSO Turntable Controller.

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2. Inspect Operational Area

Create a clear and free working area around the turntable, ensuring that there is no debris that could cause interference with the turntable while in motion and that no one would be endangered by sudden movement of the turntable at any time while troubleshooting.

3. Opening the Control Box

Using a large, flathead screwdriver, rotate the key-hole a quarter turn counter-clockwise to unlatch the door, and open the control box.



WARNING

OPENING THE CONTROL BOX EXPOSES LIVE WIRING. ANY WORK PERFORMED INSIDE THE CONTROL BOX IS DONE AT THE USER'S OWN RISK. TO PREVENT ELECTRICAL SHOCK USE CAUTION WHENEVER WORKING NEAR EXPOSED WIRING OR CONNECTIONS.

4. Check Circuit Breaker

A. Reset Circuit Breaker

If the orange tabs on the circuit breaker have been flipped down, reset them by pushing them back up into the position displayed below. If they are forced down again, the fault condition is still present. Call Carousel-USA at (626)334-7190 and ask for electrical troubleshooting assistance.



Circuit Breaker

5. Check for VFD Fault

A. Clear VFD Faults

On the VFD, if the LED light labeled “FAULT” is lit, press the VFD Fault Reset Button pictured below. If the fault is still present, check the table below to determine what is causing the fault, and next steps to take to correct the fault. If there is no fault present but the table is still not fully operational, skip to Section 9 Controls Testing.



VFD Fault Reset Button

*****DISCLAIMER*****

Before performing any work involving removing wire from terminals, ensure that power is turned off and proper precautions are taken to avoid electrical shock. If ever unsure about how to proceed, please email Carousel-USA at support@carousel-usa.com and provide a brief description of the issue as well as pictures inside the control box or call Carousel-USA at (626)334-7190 and request electrical troubleshooting assistance for a live diagnostic.

6. VFD Faults Table

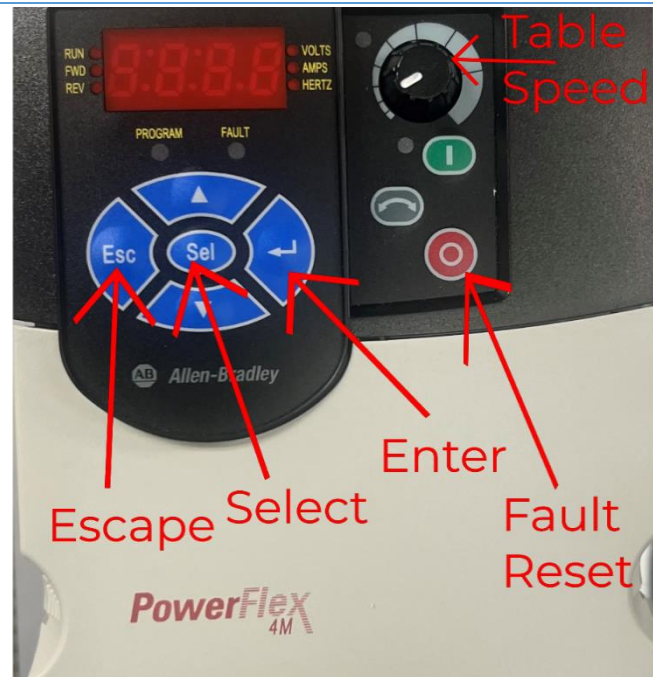
| <u>Displayed Fault Code</u> | <u>Fault</u> | <u>Description</u> | <u>Next Steps</u> |
|-----------------------------|---------------|---|---|
| F003 | Power Loss | Excessive DC Bus voltage ripple | Check incoming line for phase loss or line imbalance |
| F004 | Under Voltage | DC bus voltage fell below the minimum value | Check incoming line for low voltage or line power interruption. Fault will also appear briefly whenever the control box is powered down via circuit breaker or main disconnect switch |
| F005 | Over Voltage | DC bus voltage exceeded maximum value | Check incoming line for high voltage or transient conditions |
| F006 | Motor Stalled | Drive is unable to accelerate motor | Ensure that VFD parameter P109 is set to 3.0 (See VFD Parameters Section) |

| | | | |
|------|---------------------------|---|---|
| F007 | Motor Overload | Internal electronic overload trip | Ensure that VFD parameter P103 is set to 4.2 (See VFD Parameters Section) |
| F008 | Heatsink Over Temperature | Heatsink Temperature exceeds a predefined value | Check for blocked or dirty heatsink fins or cooling fan on the VFD. If ambient temperature is below 40°C (104°F) VFD may need replacing |
| F012 | Hardware Over Current | The drive output current has exceeded the hardware current limit | Ensure total load on turntable does not exceed rating for your model |
| F013 | Ground Fault | A current path to earth ground has been detected at one or more of the drive output terminals | Check the motor and external wiring to the drive output terminals for a grounded condition |
| F038 | Phase U to Ground | A phase to ground fault has been detected between the drive and the motor in this phase | Check the wiring between the drive and the motor, check the motor for grounded phase, and replace drive if fault cannot be cleared |
| F039 | Phase V to Ground | | |
| F040 | Phase W to Ground | | |
| F041 | Phase UV Short | Excessive current has been detected between these two output terminals | Check the motor and drive output terminal wiring for a shorted condition, and replace drive if fault cannot be cleared |
| F042 | Phase UW Short | | |
| F043 | Phase VW Short | | |

| | | | |
|------|----------------------|---|---|
| F048 | Parameters Defaulted | The drive was commanded to write factory default values to all parameters | **IMPORTANT** **See VFD Parameters Section to set parameters before operating turntable. Failure to do so may result in damaged components** |
| F064 | Drive Overload | Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceeded | Ensure total load on turntable does not exceed rating for your model |
| F070 | Power Unit | Failure has been detected in the drive power section | Cycle power and replace drive if fault cannot be cleared |
| F100 | Parameter Checksum | The checksum read from the board does not match the checksum calculated | Set VFD parameter P112 to 1 (See VFD Parameters Section) to reset parameters to factory defaults **IMPORTANT** **See VFD Parameters Section to set parameters before operating turntable. Failure to do so may result in damaged components** |

7. VFD Navigation

On power-up, the VFD display will show 0.0 Hz, indicating that the turntable is not moving. Hit enter, and the display will change to show one flashing letter and three solid numbers indicating that the up and down arrows will change the letter. Hitting enter will allow you to change the numbers rather than the letter, and hitting escape will bring you back to 0.0 Hz. Navigate to the parameter you need and hit enter again to view the value currently set to that parameter. This can be changed if needed by using the arrow keys and will be saved once the escape button is pressed, however, you must only change these values if instructed to do so as it may cause damage to the turntable if changed incorrectly.



8. VFD Parameters

*****Stop ALL turntable movement before changing parameters*****

A. Factory Default Parameters

If you believe the issue is being caused by parameters in the VFD, begin by factory resetting the parameters. This can be done by setting the value of parameter P041 to 1, however, keep in mind that the parameters listed in the next section will need to be set again to operate the turntable without possible damaging of components.

B. Parameters Set by Carousel-USA

The following are parameters set by Carousel-USA, all others should be set at the factory default. Use these as a guide on which parameters need to be changed if the VFD gets set back to a factory default state (via parameter P041 or P112 being set to 1, or an F048 fault occurring):

P103 (Motor Overload Current): 2.8A

P104 (Minimum Frequency): 15.0 Hz

P106 (Start Source): 2

P109 (Acceleration Time): 4.0 seconds

P110 (Deceleration Time): 2.5 seconds

C. Diagnostic Parameters

The following parameters are used in troubleshooting to determine important control values and cannot be changed.

| <u>Parameter Number</u> | <u>Parameter Name</u> | <u>Description</u> |
|--------------------------------|------------------------------|---|
| d001 | Output Frequency | Frequency present at VFD to motor terminals |
| d002 | Commanded Frequency | Frequency the VFD is attempting to achieve |
| d003 | Output Current | Current present at VFD to motor terminals |
| d004 | Output Voltage | Voltage present at VFD to motor terminals |

| | | |
|----------------------|----------------------|--|
| d006 | Drive Status | First number represents deceleration (1 = true 0 = false), second number represents acceleration (1 = true 0 = false), third number represents forward or reverse (1 = forward 0 = reverse), and fourth number represents running or stopped (1 = running 0 = stopped) |
| d007, d008, and d009 | Fault Codes | Displays recent fault codes with d007 being the most recent fault and d009 being third most recent fault |
| d013 | Control Input Status | Displays whether the VFD is being told to stop (second number, 0 = stop command), run in reverse (third number, 1 = run reverse command), or run forward (fourth number, 1 = run forward command) |

9. Controls Testing

A. Test All Control Inputs

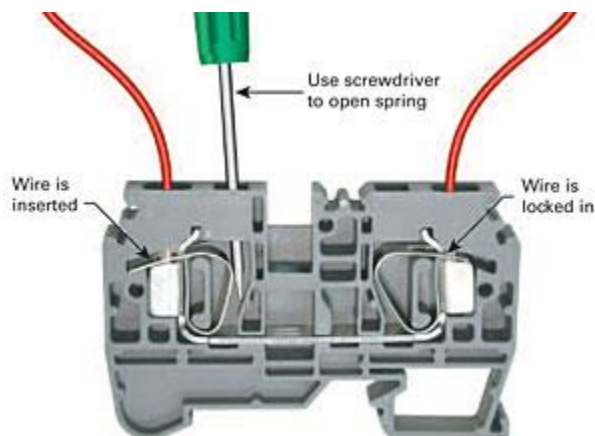
Begin by attempting to move the turntable in both directions using the selector switch on the control panel door and on each remote you have. Take note which of these moves the table and in what direction. Also note if any of these control inputs do not move the table but make an audible noise from the motor and avoid retesting these until the problem has been identified and rectified.

B. Check Connections

Inspect each control input that did not work, looking for loose connections or damaged wiring. For the door controls, they will be wired directly to the back of the door, and for the remotes, the wiring will be fed into the receiver pictured below.

(Note: The receiver model will be different depending on the use of your turntable, however there should only be one receiver present in the control box).

Also inspect the terminal blocks at the bottom of the control panel that hold wires of the same designation as those going into the faulty control inputs for loose connections and damaged wiring. Should any of the terminal blocks have loose connections, you will need a small flathead screwdriver to reinsert the wire as shown below.



Use a small flathead screwdriver to pry the terminal towards the wire insert to release clamps and pull screwdriver out to re-clamp wire

Instructions to Pair Sonoff Smart Switch with Phone (via Wi-Fi) and RF Remote

Pairing with Wi-Fi using eWeLink App:

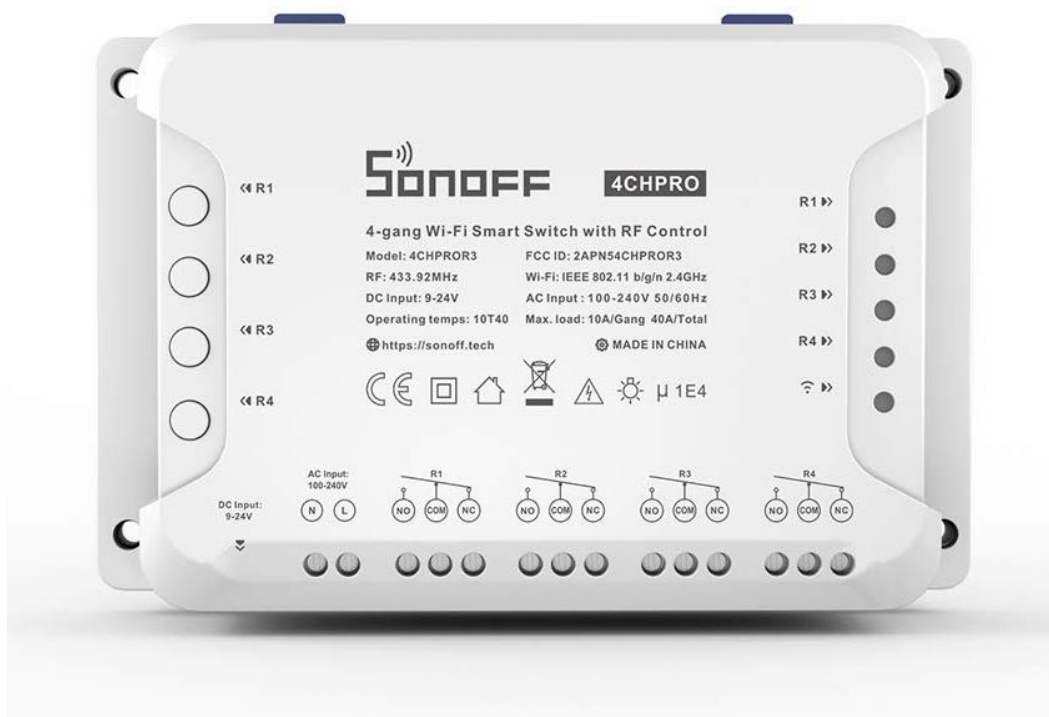
1. Checklist before using the device:

- Your Smart phone or tablet is connected to a 2.4G Wi-Fi with internet.
- You have the correct password.
- Your smart phone or tablet must have the access to App Store or Google Play.

2. User Guide:

- Start by downloading the eWeLink app from App Store for IOS and Google Play for Android.
- Create an eWeLink account and Login.
- Power up the control panel.

3. Add Device:



- a. Press and hold any of the four switch buttons (labeled R1 – R4) for 7 seconds until the Wi-Fi LED fast blinks 3 times and repeats.
- b. Open the eWeLink app, tap the “+” icon at the bottom of the screen to search for a new device. Then click “Quick Pairing”, followed by “Add one device.” Make sure your Wi-Fi credentials are entered correctly and click “Next”. The app will auto-search for the device.
- c. Next, the device will be registered by eWelink and added to your account in 1-3 minutes.
- d. Name the device to complete.

Note: The device may be “Offline” on eWeLink and needs 1 minute to connect to your router and server. When the Wi-Fi LED is on, the device is “Online”.

4. RF Remote Settings:

The 4CHPRO Smart Switch supports 433.92MHz RF remotes.

To pair a new remote to the smart switch:

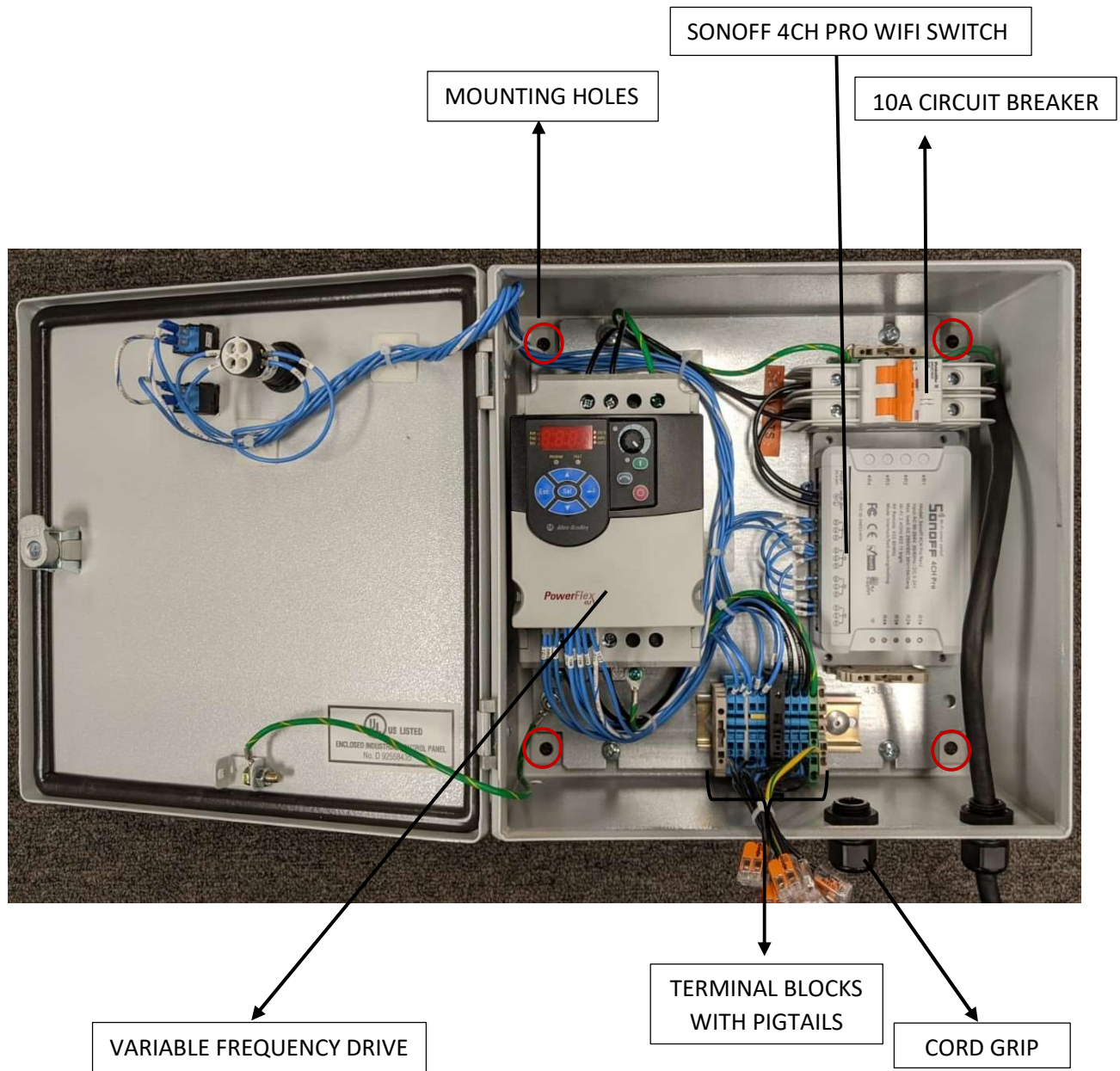
- a. Press and hold button R1 on the switch for 3 seconds, until the Wi-Fi LED indicator turns red and quickly flashes once, and release, then short-press button “A” on the remote. If the Wi-Fi LED indicator turns red and quickly flashes once, the pairing is successful.
- b. Now press and hold button R2 on the switch for 3 seconds, until the Wi-Fi LED indicator turns red and quickly flashes once, and release, then short press button “B” on the remote. If the Wi-Fi LED indicator turns red and quickly flashes once, the pairing is successful.

To clear a programmed button on the remote:

- a. Press and hold the channel button to be cleared on the smart switch for 5 seconds until the Wi-Fi LED indicator turns red and quickly flashes twice, and release. Then short-press the button to be cleared on the remote control. If the Wi-Fi LED indicator turns red and quickly flashes once, the button is cleared.

CONTROLS INSTALLATION MANUAL

INSTALLATION GUIDE FOR MOUNTING AND WIRING OF CONTROLS



MOUNTING INSTRUCTIONS

1. Mounting the control box should be done before wiring.
2. The image on page 2 of the document displays four mounting holes circled in red.
Carefully mark these holes onto a wall where you would like to mount your control box.
Ensure the cable motor cable length is appropriate prior to marking.
3. Once the position is determined, predrill screw holes to appropriate screw size.
4. Use four screws to mount the control box to wall.

WIRING INSTRUCTIONS

1. Pass the cable from the motor into the box through the cord grip. Observe wire colors coming out of terminal blocks. Connect these 4 wires with matching colors. i.e. Black with black, white with white, pink with pink etc.

****Note that if you're installing an inground model with a motor pit, electrician will need to run wires from control panel to motor pit through the conduit****

2. Tighten the grip when the required cable length is achieved.