

***Operator Owner's Manual,
Direct Drive Door Operator
with APEX SmartController***

Section 1 – Table of Contents

Section – 3 Introduction	5
About This Manual	5
About Your Warranty	5
Technical Support Department	5
About Your Serial Number	5
How to Use This Manual	Error! Bookmark not defined.
Safety Check List	6
Required Tools and Equipment	6
Labor and Site Requirements	6
Electrical Responsibilities	7
Freight Receiving	8
If the installation is stopped due to damage	8
Returning damaged components	8
Verify that all components have arrived	8
Section – 4 System Overview	9
Drive Unit Specifications	10
Control Panel Specifications	10
Control Panel Amperage Rating Table	10
Drive Unit	11
Apex SmartController	12
About the Apex SmartController	12
About the Control Panel	12
Navigating the Menu: Using the Control Screen	12
About the Control and Navigation Arrow Buttons Located on the Front of the Control Panel Cabinet	12
Using the LCD Screen	13
Using the Menu Screen	14
Using the Options Screen	15
Using the Modify Settings Screen	16
Status LEDs	17
System Reset (Manual)	18
Section – 5 Installation	19
Mounting the Motor Operator	19
Mounting the Control Panel	19
Section – 6 Quick Start Guide	20
Introduction	20

Section 1 – Table of Contents

Control Panel	21
Control Panel Structure	21
Power Connections	21
Connect the Motor Power	21
Motor Brake Power and Encoder	22
Install the Brake Power and Encoder	22
Drive and Tension Side Sensor Cables	23
Connect the Drive and Tension Side Sensor Cables, Photo Eyes, and Light Curtains	23
Power Supply	24
Connect Incoming Power	24
Final Steps	24
Section – 7 Connections for Optional Control Accessories	25
About the Wireless Sensing Edge	25
About External OPEN/CLOSE/STOP Stations	26
About the Motion Detector	27
About Loop Detector(s)	28
About Additional Photo Eye(s)	29
About Radio Controls / Digital Keyless Entry / Open/Close Devices	30
Radio Receivers	30
Digital Keyless Entry and Open/Close Devices	32
Audio Visual Warning Devices	33
Auxiliary Limit Switches	34
Section – 8 System Start-Up and Operation	35
Commissioning (Program Mode)	35
Press OK to Start Commissioning	35
Is the Door More than Two Foot from each End?	35
Press AND Hold [OK] FOR 2 SECONDS to Start the Phase Check	36
Open Door to Desired Open Limit Next [OK]	36
Did Door Reach Open Limit? [Stop] – No Yes [OK]	36
Press Close to Close Door at Low Photo-eye	36
Did Door Stop at Low Photoeye? [Stop]-No Yes-[OK]	36
Now Jog To Tune Close Limit Next [OK]	37
If Door Reach Close Limit Confirm – [OK]	37
Setup Is Done Fine-Tune In Menu Press [OK] To Confirm	37
Main Menu Items	38

Section 1 – Table of Contents

About	48
Advanced Menu Items	48
Section – 9 System Status Messages	51
Section – 10 Schematics	53
Plug & Play Wiring Details	53
Brake and Encoder to Cable Factory Panel Connections	53
Drive Side Sensor Package Cables Connections	54
Tension Side Sensor Package Cable Connections	55
Three Phase Power Connections	56
Single Phase Power Connections	57
Pre-Wired Panel Components	57
Section – 11 Maintenance	58
Maintenance Schedule	58
Motor Operator Maintenance	58
Section – 12 Troubleshooting	59
Troubleshooting Table	59
Section – 13 Parts List	62
Parts Ordering Information	62
How to Order Parts	62
Control Panel Parts List	63
Cabling Parts, Sensors, Junction Boxes	65
Serial Numbers	65
Substitute Parts	65
Warranty and Returned Parts Policy	65
Warranty Parts	65

Section 2 – List of Figures and Tables

List of Figures

Figure 4.1 Drive Unit	11
Figure 4.2. Apex SmartController	12
Figure 4.3. The Control Buttons (left) and Navigation Arrow Buttons (right) Located on the Control Panel Cover	13
Figure 4.4. Start Screen: Program Mode	13
Figure 4.5. Normal Mode	14
Figure 4.6. Override Mode Dip Switch	14
Figure 4.7. Menu Screen	15
Figure 4.8. Options Screen	15
Figure 4.9. Modify Settings Screen	16
Figure 6.1. A Typical Door Configuration	20
Figure 6.2. A Typical Control Panel Configuration	21
Figure 6.3. Connecting the Motor Power	21
Figure 6.4. Connecting the Motor Brake Power and Encoder	22
Figure 6.5. Drive and Tension-side SENSOR Cables.	23
Figure 6.6 Connection Transformer	24
Figure 6.7 Connecting Incoming Power	24
Figure 7.1. Wireless Sensing Edge.	25
Figure 7.2. External Control Stations.	26
Figure 7.3. Motion Sensor.	27
Figure 7.4. Loop Detectors.	28
Figure 7.5. Additional Photo Eyes.	29
Figure 7.6. Single Channel Radio Receiver	30
Figure 7.7. Three Channel Radio Receiver	31
Figure 7.8. Radio Controls and Digital Keyless Entry/Open/Close Device	32
Figure 7.9. Audio Visual Warning Devices	33
Figure 7.10. Auxiliary Limit Switches	34
Figure 8.1. Disable Button Functionality Dip Switch	37
Figure 10.1. Encoder and DC Brake Terminal Connections	53
Figure 10.2. Drive Side Sensor Package Cables Connections	54
Figure 10.3. Tension Side Sensor Package Cable Connections	55
Figure 10.4. Three Phase Power Connections	56
Figure 10.5. Single Phase Power Connections	57
Figure 13.1. Exploded Diagram of Operator	62
Figure 13.2. Exploded Diagram of a Control Box	63

List of Tables

Table 3.1. Potential Hazards and Preventative Measures	6
Table 4.1. Specifications	9
Table 4.2. Control Panel Amperage Rating Table	10
Table 4.3. Drive Unit	11
Table 4.4. System Inputs	17
Table 4.5. System Outputs	18
Table 8.1. Main Menu Items	48
Table 8.2. Advanced Menu Items	50
Table 9.1. System Status Messages	52
Table 12.1. Troubleshooting	61
Table 13.1. Operator Bill of Materials	62
Table 13.2. APEX SmartController Sub-Assembly Parts	63
Table 13.3. Variable Frequency Drive Parts	64
Table 13.4. Power Board Parts	64

Section 3 – Introduction

Section – 3 Introduction

About This Manual

This manual is intended for the Direct Drive Motor with Apex SmartController only. Installation and operation information specific to your door is detailed in the Installation and Owner's manuals that were shipped with the door.

About Your Warranty

The Direct Drive Motor with Apex SmartController has been designed for ease of installation and operation. While every effort has been made to simplify and speed up installation, it is important that you follow the procedures outlined in this manual to ensure proper installation and functionality. Failure to follow these procedures, or steps as outlined, will automatically void the warranty. Do not alter the working parts, assemblies, or specifications as written; doing so, without prior authorization by CornellCookson, will void the warranty.

WARNING

Read and understand the instructions in this manual BEFORE you attempt to install, operate, or perform maintenance on this motor operator and control system.

If you have any questions, locate and refer to the Apex Serial # and Item # of the door that you're working on and contact your CornellCookson representative or call the CornellCookson Technical Support Department.

The wiring connections and schematics in this manual should cover most basic access control and entrapment equipment connections. Please refer to this manual and the wiring details that are shipped with these components.

The Technical Support Department at may be reached by calling (855)-594-4969.

About Your Serial Number

Your SERIAL NUMBER information can be found attached to the cover of the Apex Smart Controller cover.

WARNING

When installing multiple units, verify that the serial number in the control panel matches the one on the door assembly as the control panel may have been customized for a specific door. Additionally, match the Door serial # with the markings on the motor box to match the proper motor to the door prior to installation.

Section 3 – Introduction

Safety Check List

Rolling doors are large, movable objects. They move with the help of electric motors or manual operators (chain, crank, push up, etc), and most have springs under high tension. These items and their components can cause injury. In order to avoid injury to yourself and others, please follow the instructions in this manual.

Review the potential hazards and preventative measures listed below:

Potential Hazard	Preventative Measure
	DANGER Pinned or crushed by closing door. <ul style="list-style-type: none">Keep yourself and others clear of opening while door is in motion.Do not allow children to play near or operate door.Do not operate if door becomes jammed or broken.
	WARNING Electrical shock. <ul style="list-style-type: none">Make sure electrical operator is properly grounded.Turn off source power completely prior to servicing the motor.Make sure wires are clear of any moving or potentially moving parts.Avoid pinching wires when installing the motor cover.
	WARNING Pinched by moving components. <ul style="list-style-type: none">Make sure the motor is turned off and unplugged before working with moving parts such as roller chain and sprockets, drop-out mechanisms, adjusting wheels, etc.Locate the possible pinch-points of the unit (Drive chain, coil area, bottom bar, etc.) Do not operate the door while someone is near these areas.

Table 3.1. Potential Hazards and Preventative Measures

- Check the following during installation and before leaving the job site:**
 - If the unit has tension springs, be sure the proper amount of tension is applied to the torsion springs, in order to properly counterbalance the weight of the curtain.
 - Securely fasten the tension adjusting wheel in place with the appropriate hardware provided.
 - Check that the keys and/or cotter pins have been set in place and fit properly at all sprockets or gears.
 - Check that the setscrews in each sprocket or gear (one over the key and one offset from the key) have been tightened properly.
 - Check all fasteners holding the unit to the building structures.
 - Check all fasteners used to assemble the components of the unit together.
 - Instruct owner or representative in the proper method of operating the door.

Required Tools and Equipment

Carpenter's level or Water level Hammer drill and masonry drill bit sized for wall anchors (to install anchor hardware in concrete). Assorted hand tools, such as Screw Drivers, Hand Saw, Wire Stripper, $\frac{3}{4}$ inch rigid conduit, $\frac{3}{4}$ " fittings, reducing washers, electrical connectors, junction boxes, Circuit breaker and fuses, and anything else required by code, etc.

Labor and Site Requirements

The advanced control system and motor supplied with your door has been partially pre-wired at the factory to make the installation quick and easy, while remaining adaptable to the varying conditions of installation sites.

Section 3 – Introduction

Section – 6 covers the connections of the motor to control panel, and basic sensor package. Other possible sensor connections are also covered in Section – 7 of this manual. An electrician should mount and wire the local disconnect and terminate power to the Apex SmartController. (See “Electrician’s Responsibilities” below.) Depending on your jurisdiction, an electrician may be required for all electrical connections, or the installing dealer may be able to complete the connection of motor to control panel, and sensors.

⚠WARNING

All electrical work must be performed in accordance with local and state building codes.

NOTE: Do not allow any traffic to pass through the door opening during the installation procedure.

Electrical Responsibilities

A door-specific electrical schematic is located inside the control panel.

Electrician’s responsibilities include:

- 1. Furnish and install fused disconnect(s). This is not included in the door or Controller package, it is required and should be installed by the Electrician.**
2. Install Advanced Control System panel.
3. Install all necessary conduits.

⚠WARNING

High- and low-voltage cables must be routed in separate metallic or metal lined flexible conduit.

4. Run electrical power lines to the fused disconnect.
5. Run power lines from disconnect to control panel.
6. Run power and control lines from control panel to door head assembly.
7. Install conduit as necessary to route wires from sensors and activation devices to the control panel when/if used.
8. All cables must be cut to length. No excess of high or low-voltage cables should be present inside the control panel. Care should be taken to minimize excess cabling and wires inside the control panel. High and low voltage wiring should be segregated and kept separate to avoid feedback and EMF interference whenever possible.

Section 3 – Introduction

Freight Receiving

NOTICE

Upon delivery, check the condition of all components for damage.

If damage occurred in transit, do not proceed with the installation without authorization.

CAUTION

If the installation proceeds, neither the carrier nor the manufacturer will assume responsibility for replacing the damaged material.

If the installation is stopped due to damage, do the following:

1. Take pictures of the damage.
2. Do not move material from point of delivery to other premises once the damaged components are discovered.
3. Do not unpack, if the damage is visible prior to removing packaging, until an inspection is made.
4. If the damage is found while removing contents from packaging, the packaging material must be saved until inspection is made.
5. Container and packaging should be retained by consignee until inspection is made.
6. Have components inspected by carrier's representative within 15 days from date of delivery.
7. Consignee must obtain a copy of the Inspection Report.

Returning damaged components:

1. Obtain permission from carrier to return.
2. Route the return shipment via the identical carrier(s) involved in the original shipment.
3. Notify the manufacturer when shipment is returned to manufacture plant.

Verify that all components have arrived.

Look for the following:

1. Motor with flexible conduit attached;
2. Control Panel with VFD, cables installed and flexible conduit attached;
3. Venting Plug with apply tool;
4. Encoder extension cable;
5. User manual

If the delivery is incomplete:

1. Make note on delivery receipt.
2. Note should be verified by driver's signature.
3. Notify carrier and manufacturer.

Section 4 –System Overview

Section – 4 System Overview

The motor and advanced control system shipped with your door are specifically designed for reliability and longevity when used as a rolling steel door operator. The hollow shaft motor unit features a direct drive gear reducer, emergency hand chain and a high efficiency motor and solenoid brake.

The advanced control system is a solid state, microprocessor-based control system. It represents the latest in rolling steel door drive technology and had been configured and set-up exclusively for your door. It includes soft stop and soft start technology. Operating parameters, system status messages, and menu items can be accessed through the [↑], [↓], [←], [→] and the OK buttons on the control face.

CAUTION

The advanced control system is configured at the factory for the voltage specified in your order. It is available in voltages from 120VAC to 600 VAC and may be used with single-phase or three-phase power supplies. The supply voltage MUST match the voltage and phase as listed on the electrical schematic provided with the control panel. Failure to provide the required voltage and phase may damage the controller. If voltage and phase do not match supply, contact the Technical Support Department at (855)-594-4969.

Specifications

Drive System	Hollow shaft worm gear with integral anti-fallback device, emergency manual operation, integrated absolute encoder, and electric motor
Operation	Soft Stop and Soft Start for minimal ramp up and ramp down times
Control	Advanced logic PCB control, with variable frequency drive
Voltage	120/1/60* 208-230/1/60** 208-230/3/60 380/3/50 (Special Order) 460/3/60 575/3/60 (Special Order)
NEMA Rating	NEMA 4/4X enclosures available.
Cycle Rating	300,000 cycles or 2 Years, whichever comes first
Obstruction Detection	PNP type, NC photo eye and Relay type light curtain are standard, motion detectors and additional photo eyes are available as options.
24 VDC Outputs	There is 24VDC, 1A output allotted for connection to the standard accessories. This output is available through several output terminals on the board, but the total current draw of all the devices connected should not exceed 1A.
Auxiliary Outputs	The Auxiliary output contacts are not intended to be used to route power supply voltages to other components. They are rated as switching contacts for control voltages only. Total current should not exceed 200mA.

*120 VAC step-up transformer is used in conjunction with a 230VAC, 1 PH Controller
**Single phase available up to 2 HP only

Table 4.1. Specifications

Section 4 –System Overview

Drive Unit Specifications

240 Volt or 480 Volt 3 phase 1800 RPM motor

1, 2, and 3-1/3 hp sized as required to safely and reliably operate the door

24 VDC solenoid brake

Worm gear drive with safety brake built into the gear to prevent fallback in the unlikely event of worm gear failure.

As-built electrical schematics supplied with each unit

Manual operation via emergency chain hoist operator.

NEMA 4 Flexible conduit provided with “plug & play” electrical connectors for Motor and Control Panel interconnection

Control Panel Specifications

NEMA 4/4X, 12" x 24" x 8" enclosure standard

Integrated Membrane switch for Door access control and Menu control

Integrated 3.5" LCD Display indicates door status, diagnostics, life cycle count.

Variable frequency drive with overload protection

Soft stop and soft start circuitry for motor control

Primary fuse block with fuses inside panel

Control Panel Amperage Rating Table

Volt	Phase	1HP	2HP	3.33HP
120*	1	16.5	NA	NA
230	1	6.3	7.7	NA
230	3	6.3	7.7	13.3
460	3	3.5	4.5	8.3
575	3	3.5	4.5	8.3

*120 VAC step up transformer is used in conjunction with a 230VAC, 1 PH Controller

Table 4.2. Control Panel Amperage Rating Table

Approximate Control Panel Weight is 80 lbs

Section 4 –System Overview

Drive Unit

H.P.	Weight (lbs)	MOTOR DIMENSION (In)			
		DIM. A	DIM B	DIM C	DIM D
1	79	23.091	12.933	1.378	7.874
2	79	25.138	13.445	1.378	7.874
3-1/3	130	29.661	15.217	2.165	11.417

Table 4.3. Drive Unit

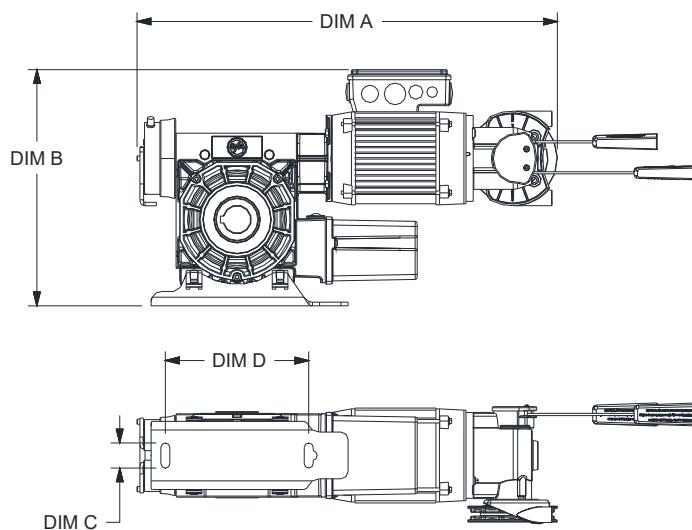


Figure 4.1 Drive Unit

Section 4 –System Overview

Apex SmartController

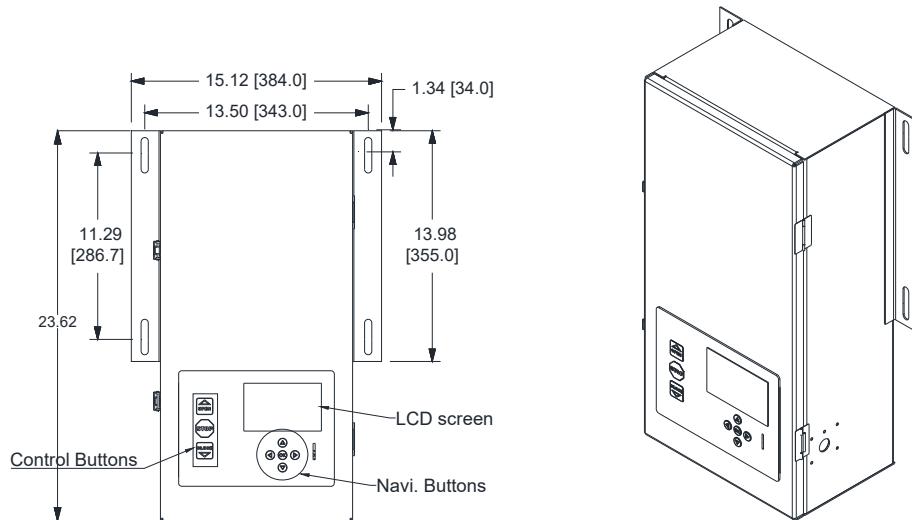


Figure 4.2. Apex SmartController

About the Apex SmartController

The Apex SmartController includes a control panel, a control screen, and five (5) navigation buttons located on the front of the panel cover for the Apex SmartController.

About the Control Panel

The control panel is housed in a metal cabinet. The control panel contains the PC boards, switches and other electronics that run the door.



When using the control panel, make sure the rated power voltage is correctly connected, ground wire is secured and High voltage protection screen is correctly installed.

Navigating the Menu: Using the Control Screen

From Factory, the LCD screen will display “Program Mode” to be ready to program door travel limit.

The control screen displays instructions for commissioning your door. See Section 8 for commissioning sequence.

About the Control and Navigation Arrow Buttons Located on the Front of the Control Panel Cabinet

- Press the Control buttons when you want to open or close the door.
- Press the [Navigation Arrows] and [OK] buttons when you want to navigate in the menu.

Section 4 –System Overview

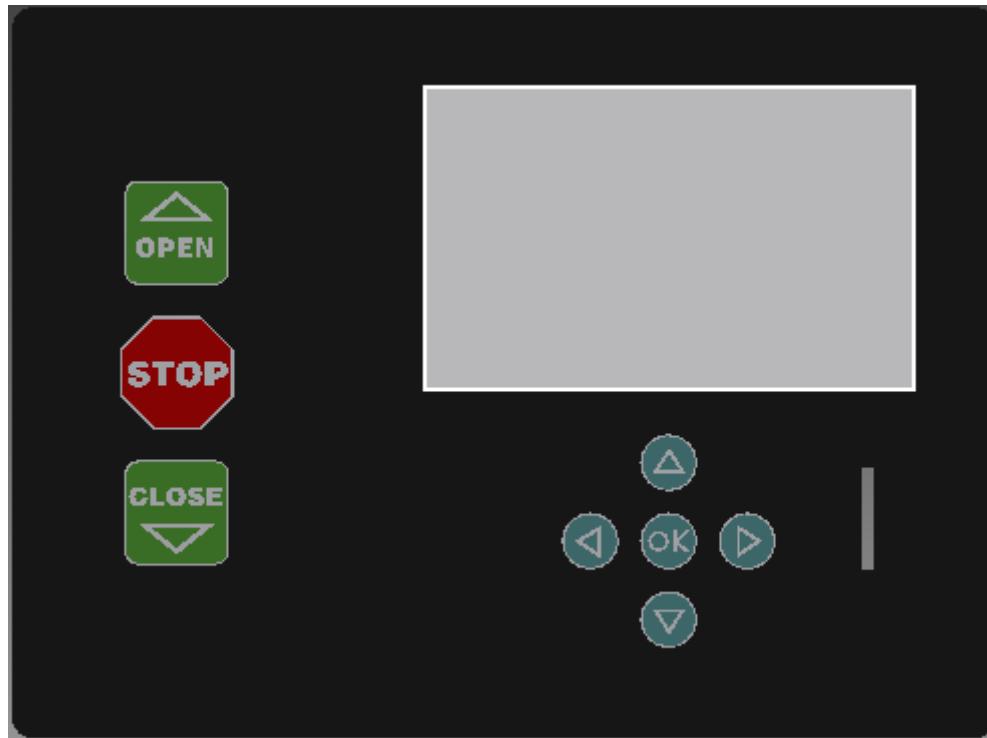


Figure 4.3. The Control Buttons (left) and Navigation Arrow Buttons (right) Located on the Control Panel Cover

Using the LCD Screen

In the screen below, the first line informs you what mode the controller is in.

Standby Mode: It is a temporary mode that will stay for 30 seconds after power cycle, it gives a window time that the user can reset the limit by press [STOP] for 5 seconds.

Program Mode: The controller has not been set up travelling limit and ready to get commissioned. The text below the first line provides direction to proceed through basic commissioning. Go to Section 8 for Commissioning details.

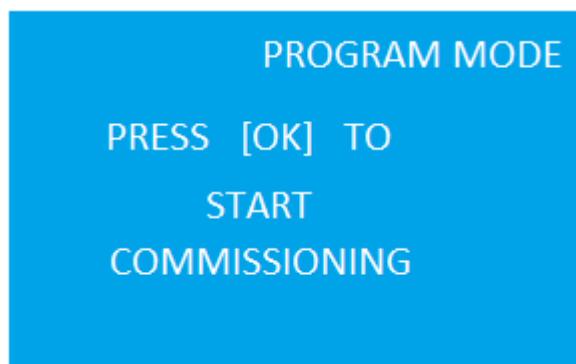


Figure 4.4. Start Screen: Program Mode

Normal Mode: While in “Normal Mode”, the unit is commissioned and operational. There are no system or sensor errors. In the Home screen, it also display the life cycle count.

Section 4 –System Overview

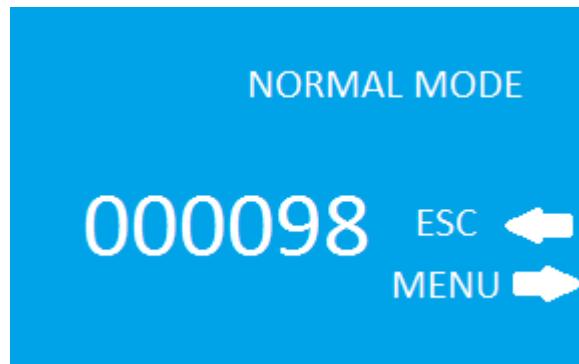


Figure 4.5. Normal Mode

Override Mode: For curtain installation purpose or temporarily operate the door to open or close, we have designed Override mode. While in “Override Mode”, the unit is either has sensor failure error or have enabled “Override Mode Dip Switch” to enable the motor to roll the door without limit travel setting.

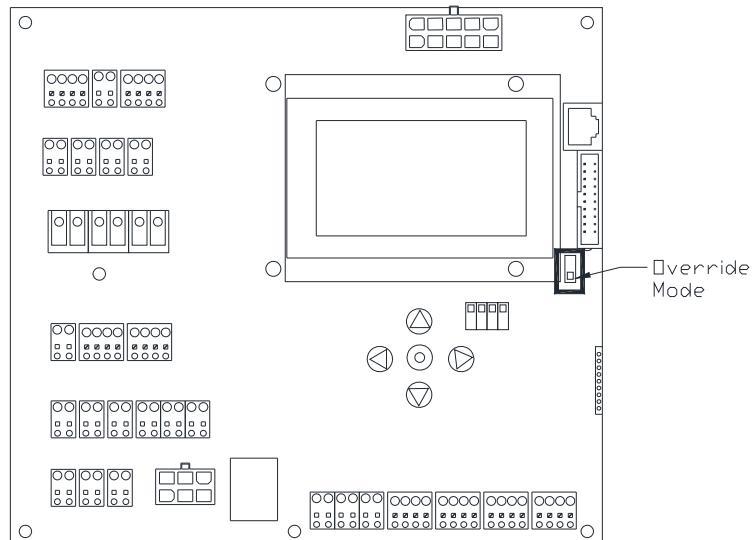


Figure 4.6. Override Mode Dip Switch

Using the Menu Screen

The Menu Screen displays 3 pieces of information displayed.

1. The left side of the vertical line indicates the current menu selection.
2. The highlighted information lets you know which settings you would be viewing if you press [ok] or [Right Arrow] button to enter.
3. To the right of the vertical line, the up, down, left and right arrows shown indicate which navigation options are active, or available for use, from this point in the menu.

Section 4 –System Overview



Figure 4.7. Menu Screen

Using the Options Screen

The Options screen displays three pieces of information

1. Above the horizontal line shows the parameter we're viewing. In this case, menu item 3. The Close Timer Enable setting.
2. The setting shows the available options for the parameter. The highlighted option shows which option will be selected when [OK] is pressed.
3. To the right of the vertical line, it only shows the up and left arrow appear, as these are the only active menu navigation options. As always, the left arrow will back you out of this menu selection, and the up arrow would change the setting to "Disable" the close timer. To make this setting active you must press the "OK" button.



Figure 4.8. Options Screen

Section 4 –System Overview

Using the Modify Settings Screen

The Modify Settings screen also displays three pieces of information

1. Above the horizontal line the screen displays a parameter.
In this case, the parameter is menu item 4. Close Timer Delay.
2. Below the horizontal line it indicates the current setting is three seconds.
3. To the right of the vertical line, this screen shows all four navigation arrows as active.
 - The Up arrow raises the value by one each time it is pressed you press it.
 - The Down Arrow decreases the value by one each time you press it.
 - The left arrow changes the place value of the active digit to the left by one each time you press it. In this case, it changes the selection from ones to tens if pressed once, and from tens to hundreds if pressed again.
 - The right arrow changes the place value of the active digit to the right by one each time you press it. (In this case, there are no decimal selections available, so it would change the active value from ones to thousands if pressed once, and from thousands to hundreds if pressed again, etc.)

NOTE: In order to switch this screen from reading the option to modifying the settings, you must press the **OK** button. This causes the setting to become active, and the value to be highlighted. Once values have been changed to their desired settings, press **OK** to lock the values. You will know the value is locked when the highlight no longer flashes in the screen.

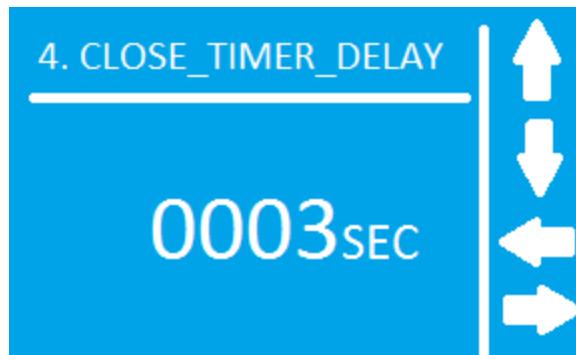


Figure 4.9. Modify Settings Screen

Section 4 –System Overview

Status LEDs

System Inputs have corresponding Status LEDs for your convenience. There are three types of signals provided.

Off – Indicates that the device is not activated or connected.

On – Indicates that the device is activated, or monitored

Blinking – Inputs from Pulse-Train signal type monitored devices (like photo eyes from Fraba, Martec, or Micanan) will be blinking when they are connected as monitored, and all is working correctly.

System Inputs			
Menu Item	Default Status	Location	Standard Indication
Upper Photo Eye	Not activated	Advanced	No LED Observed
Lower Photo Eye	PNP Type Device	Advanced	LED is on when not triggered
Basic Sensing Edge	Enables connection to a standard 2-wire sensing edge	Advanced	LED on when edge circuit is activated (Closed)
Auxiliary Sensing Edge	Enables connection to a Normally Open sensing device	Advanced	LED on when circuit is activated (Closed)
Remote	The connection for a single channel radio receiver	Advanced	LED on when receiver is getting signal from transmitter
DES Encoder	Selected	Advanced	LED is flashing when encoder is functioning properly
Light Curtain	Selected	Advanced	LED is on when Light Curtain is not activated
Remote Wired Open Button	Enabled	Advanced	LED is on when OPEN Button is Pressed
Remote Wired Close Button	Enabled	Advanced	LED is on when CLOSE Button is Pressed
Remote Wired Stop Button	Enabled	Advanced	LED is on when the Stop Button IS NOT depressed
Mid Photo-Eye	Disabled	Advanced	LED should be off
Inertia Interlock	Disabled	Advanced	LED off, Jumpered Terminals
External Interlock	Enabled	Advanced	LED on when continuity exists across circuit
Thermal Interlock	Enabled	Advanced	LED on when interlock is not tripped
Manual Chain Interlock	Enabled	Advanced	LED on when interlock is not tripped
E-Stop	Enabled-Jumper installed	Advanced	No LED
Motion Detector	Enabled	Advanced	LED is on when device activated
Loop Detector	Enabled	Advanced	LED is on when device activated
Aux_In	Disabled	Advanced	LED is OFF

Table 4.4. System Inputs

Section 4 –System Overview

System Outputs			
Output	Terminals	Limitations	Notes
24 VDC	+	1 Amp Total output (shared between external devices)	Larger power requirements will require an external power supply.
Traffic Lights	+	24 VDC 200 mA max – Adequate to power LED Light Assemblies	Red – On when Door is not fully OPEN.
	R (Red)		Green – On only when door is fully OPEN.
	G (Green)		Beacon – On when door is in motion
	B (Beacon)		
Open Limit Switch	Com	Dry contacts rated at 115VAC, 5 Amps – If higher ratings are required it will be necessary to use external relays with adequate ratings. These outputs would power the relay coils.	Simulates a limit switch output to interface door position with other systems
	N/O		
	N/C		
Close Limit Switch	Com		Simulates a limit switch output to interface door position with other systems
	N/O		
	N/C		

Table 4.5. System Outputs

System Reset (Manual)

There are two types of resets available to you and these setting cannot be undone.

1. Limit Reset: Only door travel limit setting will be cleared, all other settings will remain unchanged.
2. Factory Reset: Resets all settings back to factory original condition, including door travel limit, timers, sensor types, etc...

We will address the method to perform a Limit Reset only in this section.

Limit Reset or Factory Reset :

Press [Right Arrow] to enter the menu, again enter the item of “Limit Reset” or “Factory Reset” and select “Enable”. Press [Left Arrow] to exit to the home page, the screen will show “**Program Mode**”.

Alternative steps to reset limits:

1. First, verify that the display indicates that the unit is in “**Normal Mode**”.
2. To begin the process, you must turn off the incoming power to the door for 10 seconds, and then turn the power back on. When the unit initializes, the display indicates it is in **Standby** mode. The unit will remain in **Standby** mode up to 30 seconds before it automatically switches to **Normal Mode**.
3. From **Standby** mode, press and maintain pressure on the STOP button for 5 seconds. After five seconds you will observe the change display on the screen. If the screen doesn’t change, you were either not in **Standby** mode, or you didn’t hold the **STOP** button activated consistently, or you released it too soon. If the screen did not change, you must repeat the process called out in line 2.

Follow the on screen instructions to perform a basic commission on the door.

Section 5 –Installation

Section – 5 Installation

Mounting the Motor Operator

Refer to the installations that came with your door for mounting instructions for this motor.



Ensure that the door has been properly aligned and is working smoothly by using the hand chain before connecting the unit to any power source.

Mounting the Control Panel

The control panel should ideally be mounted with the control buttons on the panel cover not less than 5 feet above the floor, and allow a wire run of not more than 20 feet to interconnect the motor and control panel.



Wire runs longer than 20 feet should be cleared through the manufacturer prior to placing the order. If the distances requested are possible, special cabling supplied or specified by the factory will be required. Failure to do so could void the manufacturer's warranty.

The mounting location should provide a solid surface and be capable of supporting the weight of the control panel. Anchors will be included which are sized properly for the mounting slots in the control panel enclosure, and should be of a type appropriate for the wall construction. Care should be exercised to ensure the fasteners do not interfere with plumbing, conduit or power.

Cabling should be completed in a way that keeps the **low-voltage cables at least 6 inches from any line voltage or high voltage** wires throughout its entire length. Please take care to ensure that the intended cable routing does not leave you with cables that are too short to make the connections prior to final mounting of the control panel.

Section 6 –Quick-Start Guide

Section – 6 Quick Start Guide

Introduction

Please see **Section 7 Connections for Optional Control Accessories** when greater detail is required, or for clarification on items contained in this Quick-Start Guide. Fine tuning and adjustments detailed in other parts of this manual may be required to be performed as punch list items prior to final turnover of the job.

This Quick-Start Guide provides basic instructions for connecting the motor to the control panel, the control panel to the standard sensor package, and the incoming power to the door. Connections for approved and tested sensor and activation options that are not part of the standard sensor package are covered in Section – 7.

NOTICE

For help with connections, or questions about compatibility on accessories not covered in this manual, please call Tech Support at (855)-594-4969.

Note: All electrical work must be performed according to local and state building codes.

Figure 6.1 shows basic connections for a typical door configuration.

Note: 120vac configuration requires step-up transformer.

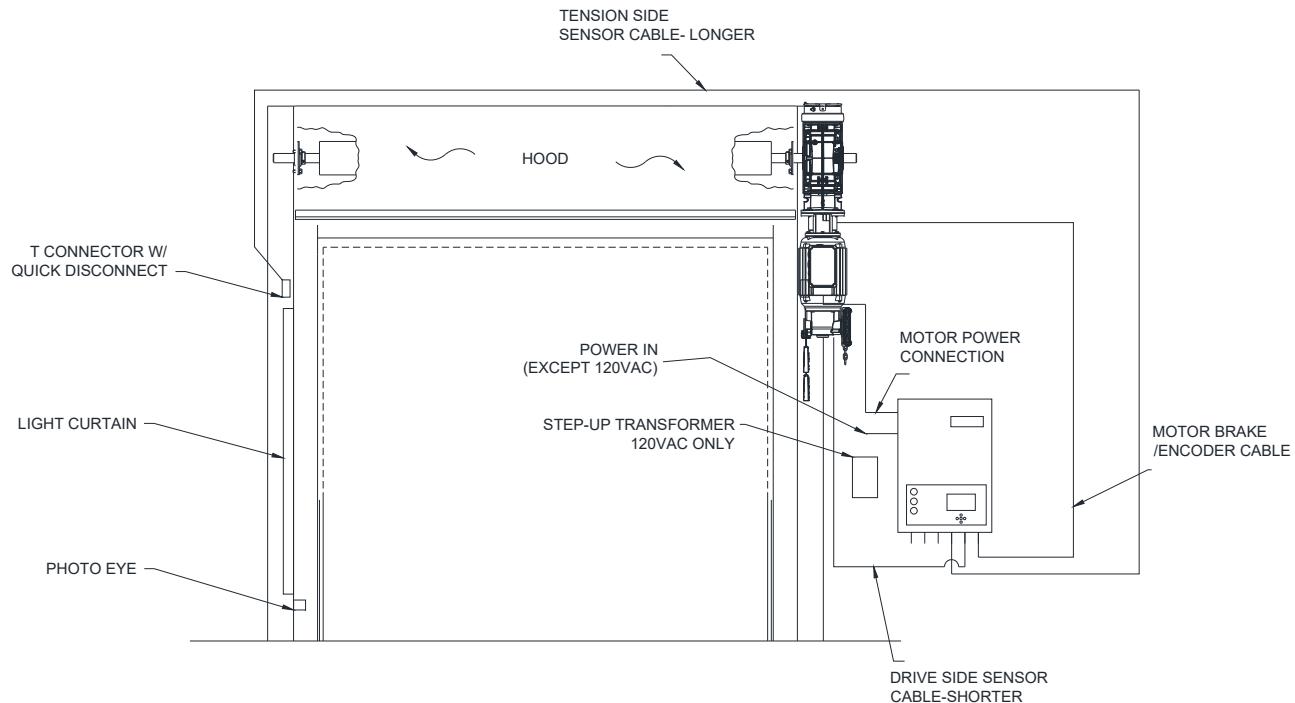


Figure 6.1. A Typical Door Configuration

Section 6 –Quick-Start Guide

Control Panel

Control Panel Structure

Figure 6.2 shows a typical control panel configuration.

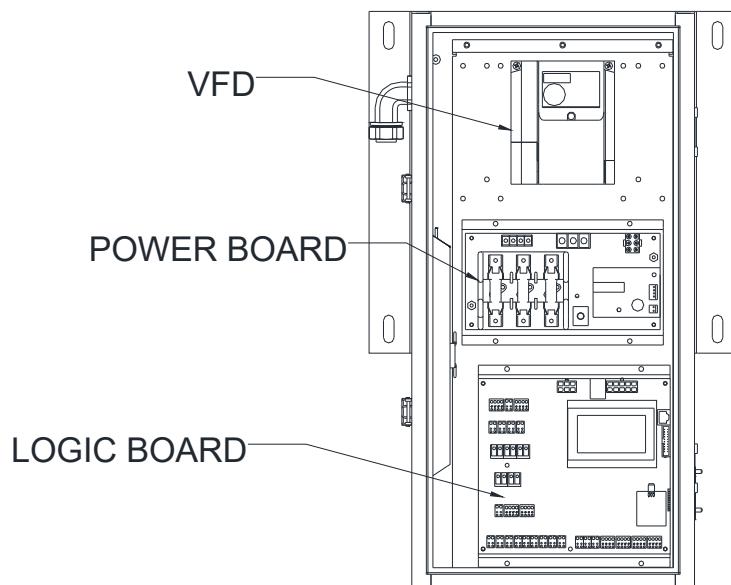


Figure 6.2. A Typical Control Panel Configuration

Power Connections

Connect the Motor Power

If the factory-installed flex conduit is not long enough to use one junction box to make the spliced connections, then use two junction boxes and install rigid conduit between the two boxes, insert wires into the conduit to cover the distance necessary and connect the motor to the control panel by matching the wire colors (black, brown, blue, yellow/green wires, size 12AWG minimum) and connecting with wire nuts or crimp type splices.

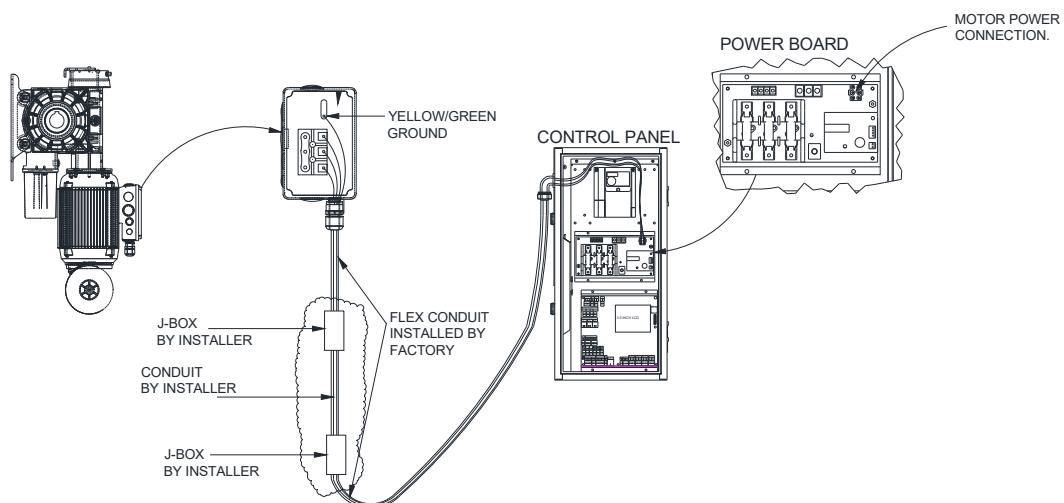


Figure 6.3. Connecting the Motor Power

Section 6 –Quick-Start Guide

Motor Brake Power and Encoder

Install the Brake Power and Encoder

Connect the motor brake power and encoder by lining up the notch on the plug at the end of the male cable, to the channel on the plug at the end of the female cable, as shown in Figure 6.4.

Note: If the distance between the motor and control panel is more than 15 feet, use the DES patch cable (Part# 523004) to connect them.

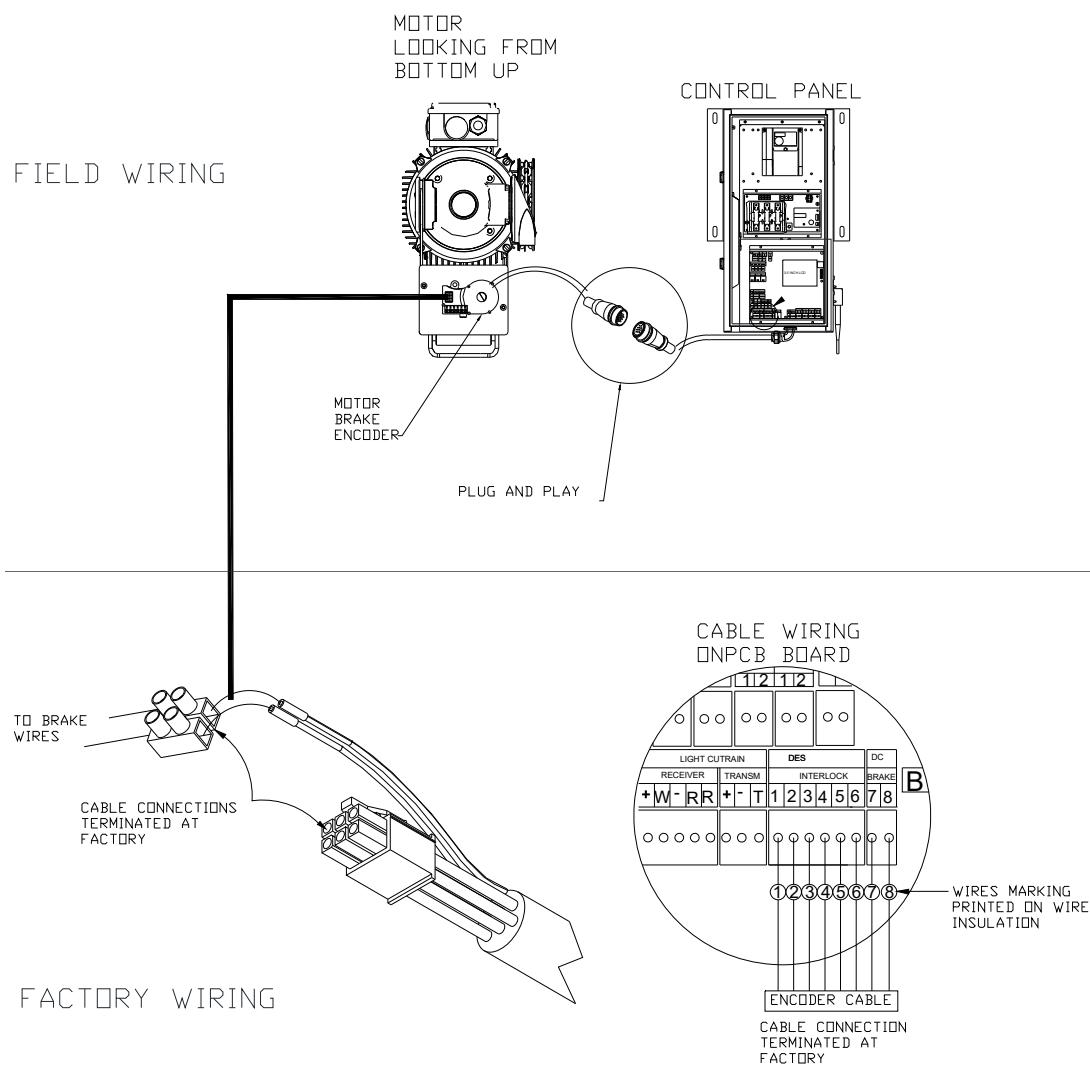


Figure 6.4. Connecting the Motor Brake Power and Encoder

Section 6 –Quick-Start Guide

Drive and Tension Side Sensor Cables

Connect the Drive and Tension Side Sensor Cables, Photo Eyes, and Light Curtains

Your door was shipped with two specialized sensor Y connectors pre-wired to the Apex SmartController. Both are fitted with the mated connectors for easy connection to the light curtain and photo-eye sensors. Both light curtain & photo eye connectors are color coded as follows. Please match the color.

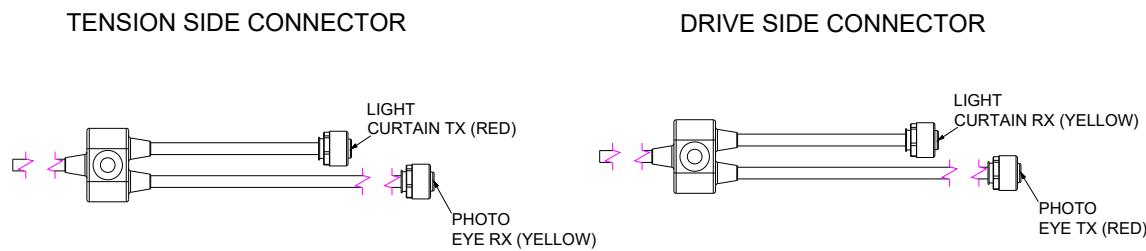


Figure 6.5. Drive and Tension-side SENSOR Cables.

Section 6 –Quick-Start Guide

Power Supply

Connect Incoming Power

For units configured as 120Vac a step-up transformer will be provided. Bring incoming line power into transformer first (Figure 6.6) and then connect into wall-mounted control panel. For any other configuration proceed to next step.

Bring incoming power from the electrical service disconnect to the wall-mounted control panel, as shown in Figure 6.7.

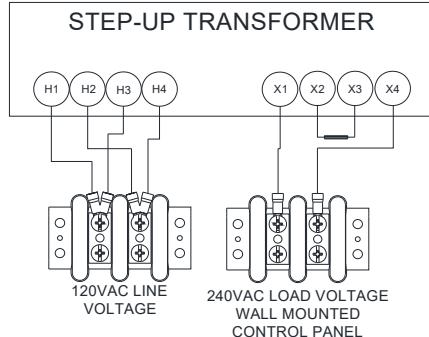


Figure 6.6 Connection Transformer

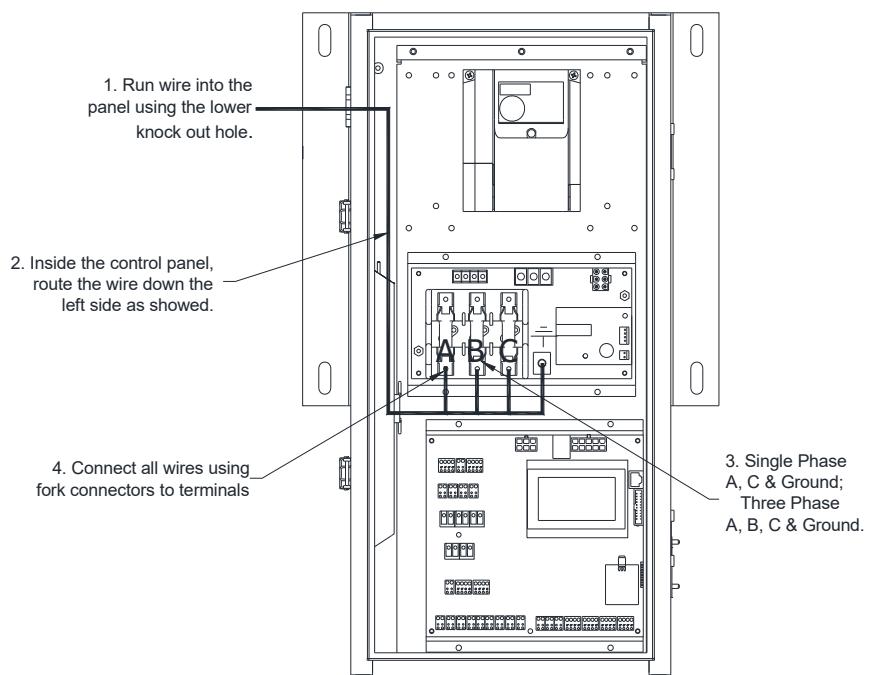


Figure 7 Connecting Incoming Power

Final Steps

1. Review your wiring, double check all connections (including the factory wiring), and verify that there are no loose or broken wires.
2. Make sure all mechanical connections are completed.
3. Make sure the door installation is complete, with the door positioned at least 24" from each end of door travel.

Turn on the incoming power and follow the quick commissioning steps on the LED display, as detailed in Section – 8

Section 7 –Connections for Optional Control Accessories

Section – 7 Connections for Optional Control Accessories

A variety of optional accessories are available for doors. This section describes how to connect each of these optional accessories to the control panel.

About the Wireless Sensing Edge

If your order comes with a wireless sensing edge, follow the manufacturer's instructions that come with the unit. Test the sensing edge with a continuity tester. When the edge is compressed, the reading should indicate continuity, when it is not compressed the reading should indicate an open circuit.

The NO connection is applicable to the Miller Edge MWATRA12 Wireless Edge Kit.

- Connect the Red Wire to Terminal 24V+.
- Connect the Black Wire to Terminal 24V-.
- Connect the Normally Open Relay Wire to either Primary Sensing Edge Terminal.
- Connect the Normally Open Relay Wire to the other Primary Sensing Edge Terminal.

Follow the manufacturer's instructions for the transmitter connections and set-up.

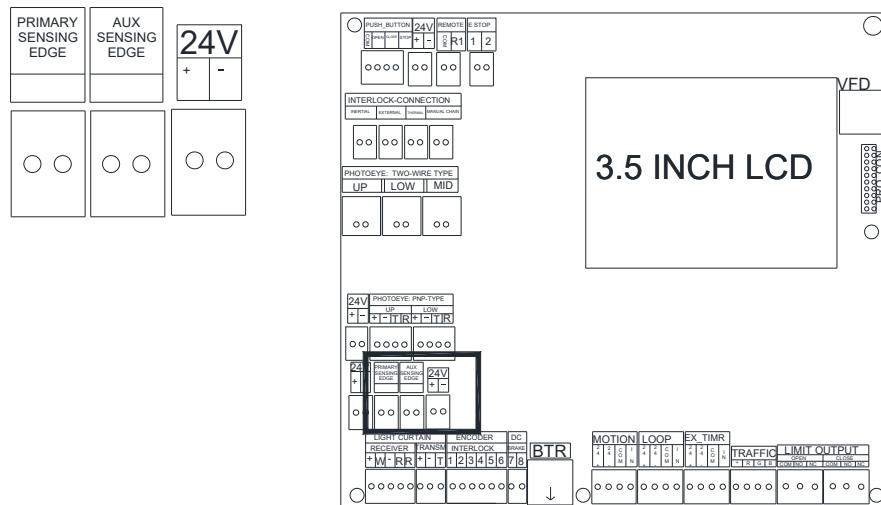


Figure 7.1. Wireless Sensing Edge.

Section 7 –Connections for Optional Control Accessories

About External OPEN/CLOSE/STOP Stations

External OPEN/CLOSE/STOP Stations may be connected to the Panel using the terminals indicated in the detail below.

- OPEN and CLOSE contacts are normally open, and multiple devices are to be connected in parallel.
- Stop Circuits are normally closed, and multiple stopping devices would be wired in series so that activation of any 1 device results in an OPEN Circuit.

NOTICE

If an external O/C/S device is used, it is necessary remove the factory-installed jumper wire between the Common and Stop terminals on the control board.

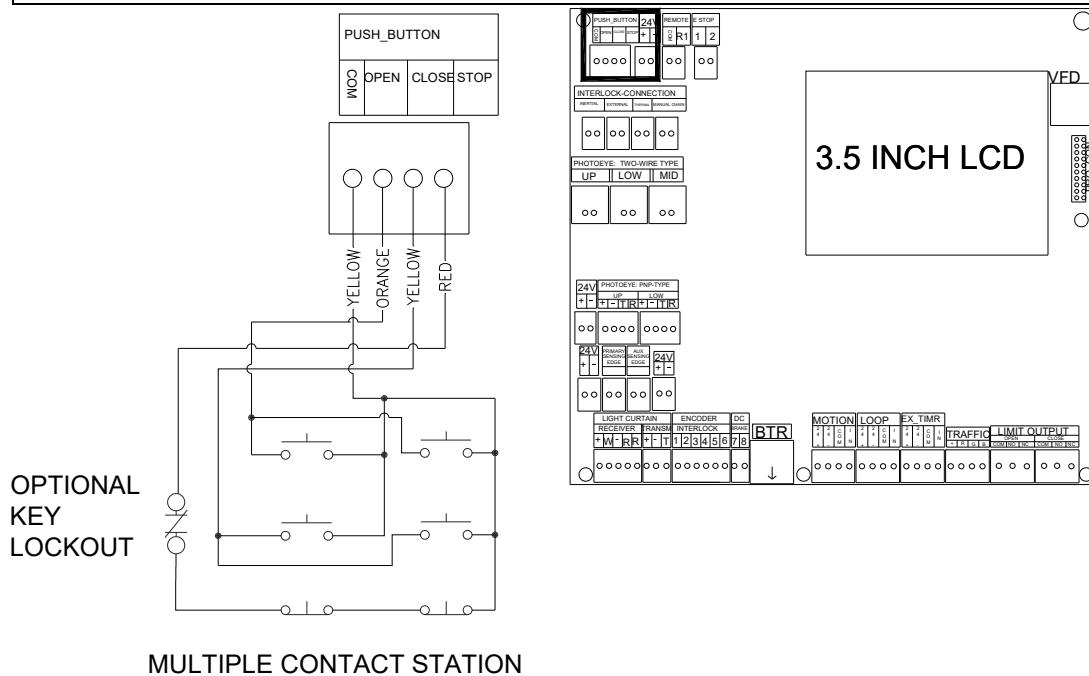


Figure 7.2. External Control Stations.

Section 7 –Connections for Optional Control Accessories

About the Motion Detector

The following is applicable to the BEA FALCON or FALCON XL Motion Detector only.

- Connect the Red Wire to terminal 24+.
- Connect the Black Wire to terminal 24-.
- Connect the (COM)- Wire to Terminal COM.
- Connect the (N/O Relay) Wire to Terminal IN.

Follow the manufacturer's instructions for the transmitter connections and set-up.



Figure 7.3. Motion Sensor.

Section 7 –Connections for Optional Control Accessories

About Loop Detector(s)

- Use 24 VDC loop detectors with dry contact outputs.
- Connect using terminals 24+ and 24- for power supply
- Use terminals “COM”: and “IN” to connect to the loop Detector Module COM and N/O terminals.



Figure 7.4. Loop Detectors.

Section 7 –Connections for Optional Control Accessories

About Additional Photo Eye(s)

When a second set of photo eyes are required, the easiest way to do this is to use a set of thru-beam photo eyes.

There are three terminals available to use for this purpose.

- **Mid**-Use for photo-eyes typically at an elevated location to capture high-profile vehicles.
- **UP and LOW connection are NOT activated.**
- Match the colors of the wires and connect to the appropriate terminal pair.



Figure 7.5. Additional Photo Eyes.

Section 7 –Connections for Optional Control Accessories

About Radio Controls / Digital Keyless Entry / Open/Close Devices

Single Channel Radio Receiver (Liftmaster Model STAR 1000) is typically connected as follows:

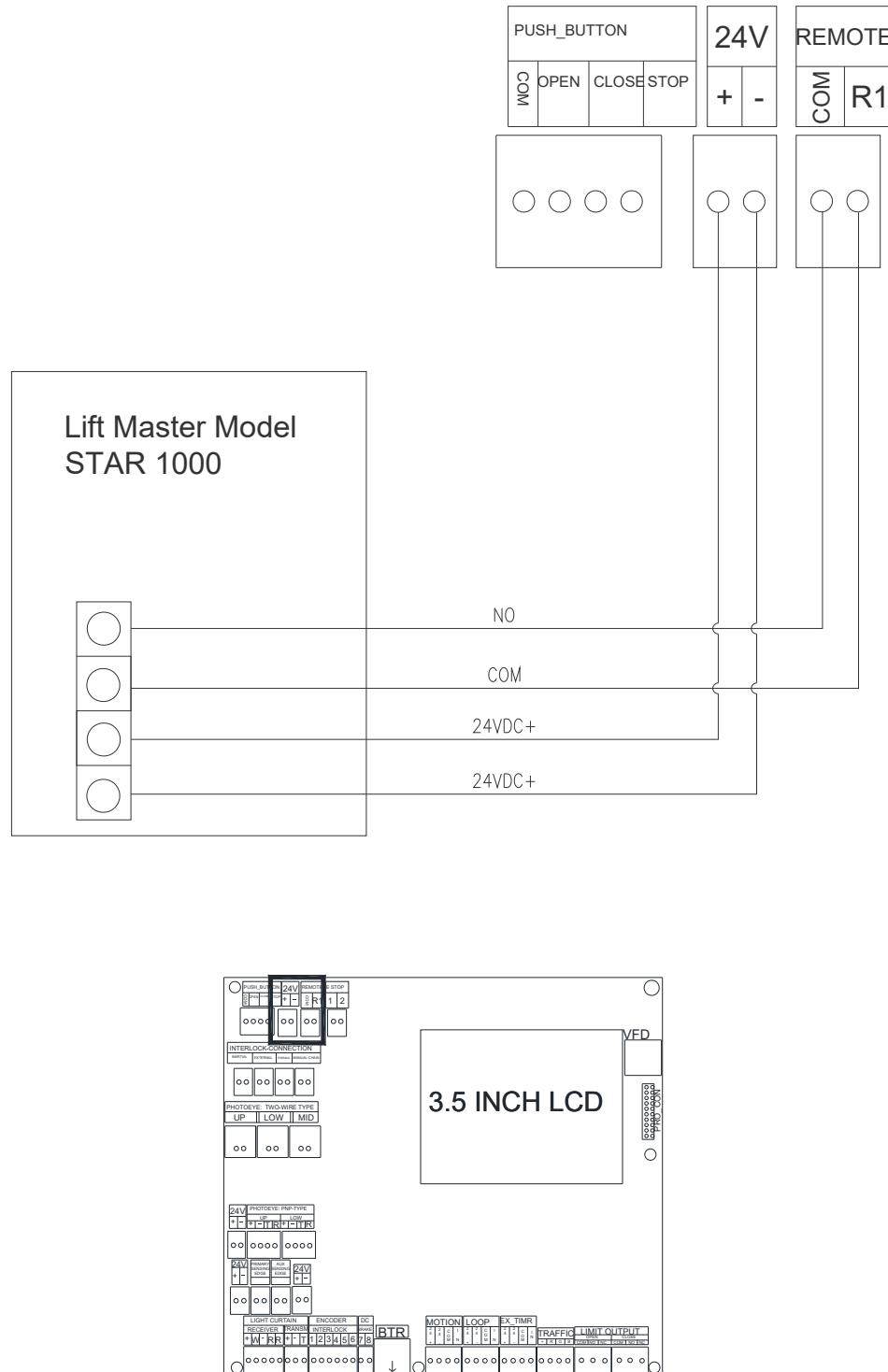


Figure 7.6. Single Channel Radio Receiver

Section 7 –Connections for Optional Control Accessories

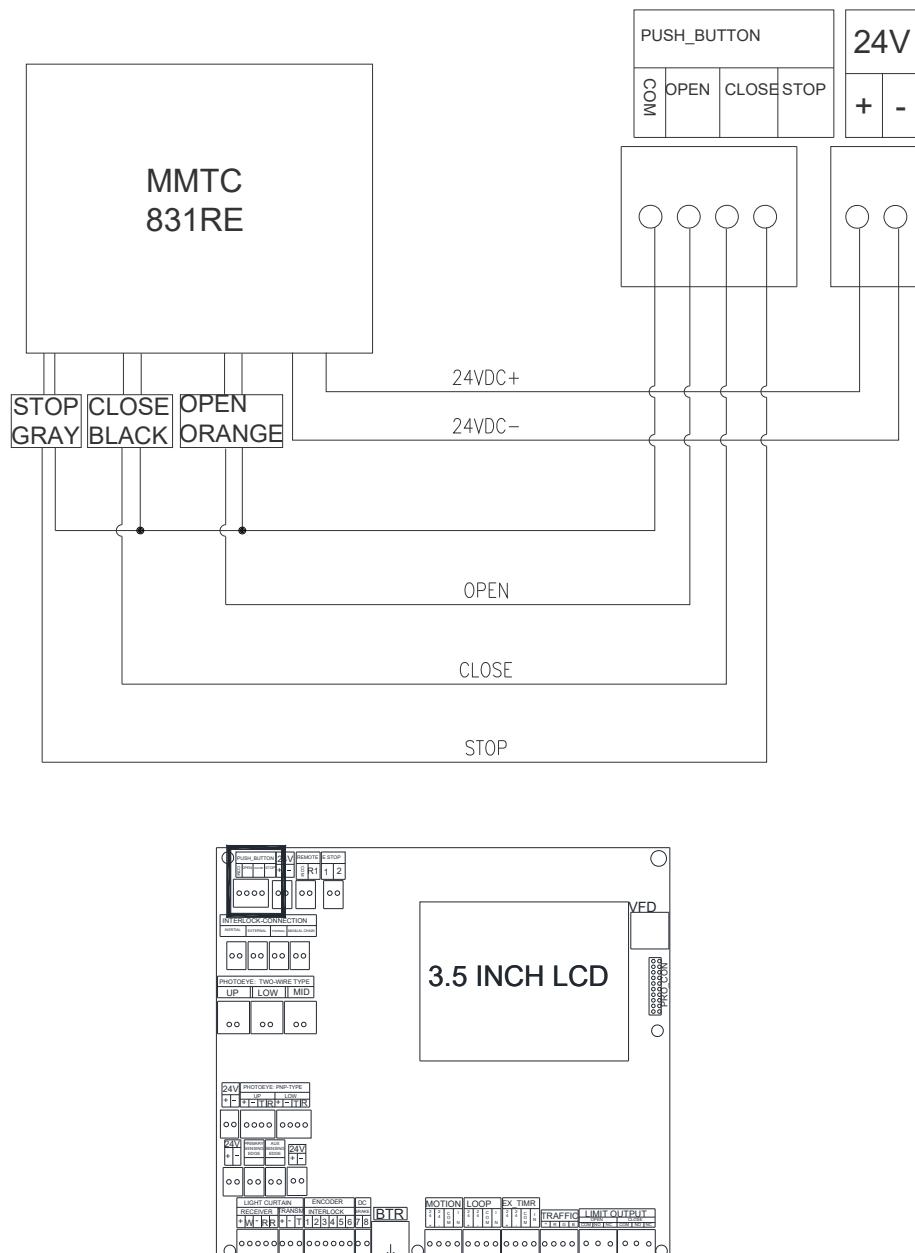


Figure 7.7. Three Channel Radio Receiver

Section 7 –Connections for Optional Control Accessories

Digital Keyless Entry and Open/Close Devices

- Digital Keyless Entry Systems (example: Single button radio control) use **24V+** and **24V-** for power, and **Remote/Com** and **R1** for the relay connection.
- Open/Close Devices and forklifts switches may be connected to **Remote/Com** and **Remote/R1**.

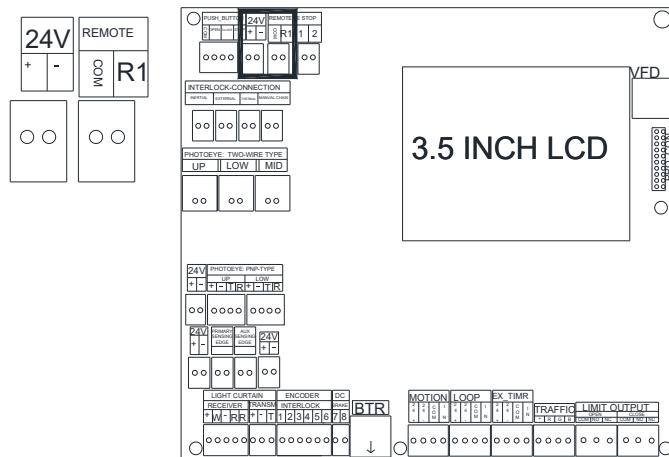


Figure 7.8. Radio Controls and Digital Keyless Entry/Open/Close Device

Section 7 –Connections for Optional Control Accessories

Audio Visual Warning Devices

- Door Close Warning Device (Beacon) or (Horn/Strobe)-May be connected using terminals **Traffic + and B**
- **Traffic Lights** should be 24 VDC, 100mA nominal power consumption.
- Connect traffic lights to Terminals **Traffic+** for power, **Traffic R** for the Red light and **Traffic G** for the Green light.
- Traffic lights will light up green only when the door is fully open, and will light up red will be lit anytime the door is not fully open.



Figure 7.9. Audio Visual Warning Devices

Section 7 –Connections for Optional Control Accessories

Auxiliary Limit Switches

WARNING

THE LIMIT OUTPUTS ARE LIMITED TO SWITCHING DEVICES WITH A LOAD OF 200MA OR SMALLER, FOR 24VAC/DC CONTROL VOLTAGE ONLY. IF LARGER OUTPUTS ARE REQUIRED, THESE CONTACTS CAN BE USED AS DRIVERS FOR A CONTROL RELAY WITH ADEQUATELY SIZED CONTACTOR FOR YOUR NEEDS.

There is a Common, Normal Open, Normally Closed contact available for both Open and Closed door positions.

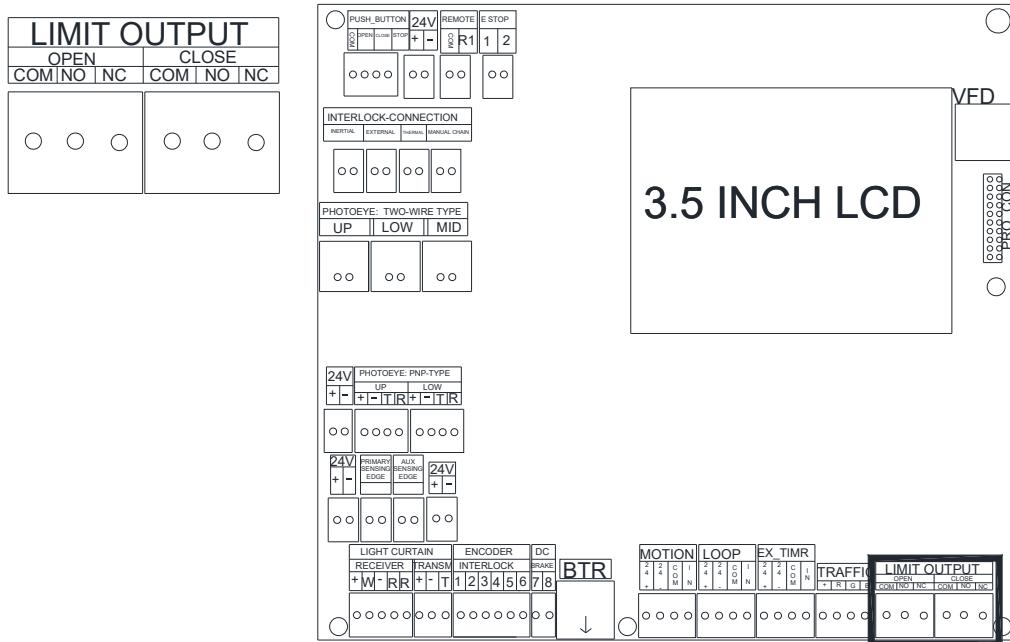


Figure 7.10. Auxiliary Limit Switches

Section 8 –System Start-Up and Operation

Section – 8 System Start-Up and Operation

Commissioning (Program Mode)

This section includes the required steps and on-screen prompts used when commissioning the door limits. While the Apex SmartController has been designed to walk you through the commissioning sequence automatically, the steps and supplementary information should be referenced if there is any question as to what is occurring or what the on-screen prompts mean.

NOTE: Pressing the STOP button anytime during the initial commissioning process will restart the sequence from the beginning.

Press OK to Start Commissioning

When this menu appears on your screen, it is usually the first time the unit has been powered up, or someone has performed a **Limit Reset** command. The digital limits have not been set, and you will need to perform a basic commission of the door before it can be used electrically.

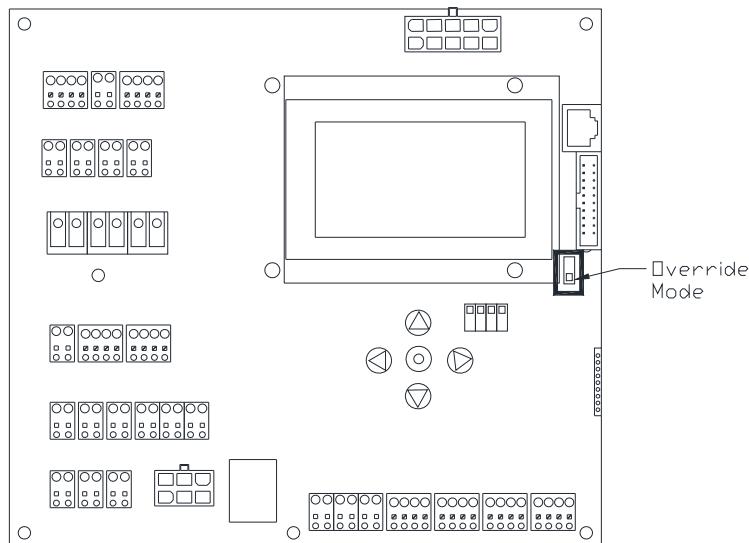
Follow the on-screen instructions to run through the commissioning sequence.

- If there is a DES Encoder Error, the system goes into override mode to allow constant pressure operation only until the error is resolved. Refer to Section 9 for troubleshooting tips.

Is the Door More than Two Foot from each End?

Turn the DIP switch to the right of LCD to activate the override mode and use [OPEN] or [CLOSE] button to move the door if the door is not at least 2 ft above the bottom of the opening or 2 ft below the desired upper limit.

Note: Be aware that the door moving direction may be reversed, but it is normal in this step, it will auto correct itself in the next step.



If there is no power, Pull the Red handle to engage the Manual Chain to operate the door.

Section 8 –System Start-Up and Operation

Press AND Hold [OK] FOR 2 SECONDS to Start the Phase Check

The operator is waiting for confirmation before beginning a phase or motor rotation check. If motor rotation is reversed, the controller will determine this and auto correct motor rotation. Follow these steps to start the Phase Check:

1. Verify that the opening is free of obstructions and the door is positioned as instructed in the previous step. Once you press the **Open + Close simultaneously**, the auto phase checking will begin. It is normal for the door to travel up to 2 feet in both directions during this process.
2. Press the **OK** button to begin. The door will start jogging up and down to verify the motor phase.
3. If the curtain becomes jammed during the phase checking process, quit the sequence by pressing the **STOP** button. Correct the problem and start the commissioning process from the beginning.

Auto Phase Check is Complete—Press OK

Press **OK** to acknowledge that the auto phase check has been performed.

Open Door to Desired Open Limit Next [OK]

1. The **OPEN** on the panel cover drives the door at slow speed. The door stops when the **OPEN** button is released. Keep in mind that no travel limits have been set. The door will not stop at the top of the opening unless you release the **OPEN** button.
2. Press the **OK** button to confirm.

Note: If you overshoot the desired position, you may use the **CLOSE** control in the same manner to lower the door. Jog the door **OPEN** or **CLOSED** as needed to get the door to the desired position.

Did Door Reach Open Limit? [Stop] – No Yes [OK]

Press **OK** to confirm that the door is at the desired fully open position.

Note: The system performs a sensor check to verify functionality of the light curtains and photo-eyes during this step. If there is a functionality issue with these sensors, you will see a **SENSOR CHECK FAIL** message on the LED screen. Please check the **shorter** cable connections in **drive** side and **longer** cable connections in **tension** side.

Press Close to Close Door at Low Photo-eye

1. Press and maintain pressure on the **Close** control to lower the door.
2. As the door passes the lower photo-eye, it will activate the device, and the door should stop there.

Note: Releasing the button will stop the door while in **Program Mode**.

Did Door Stop at Low Photoeye? [Stop]-No Yes-[OK]

Section 8 –System Start-Up and Operation

By pressing **OK** you are confirming that the door stopped (automatically) at the lower photo eye height.

Press **OK** to confirm.

Now Jog To Tune Close Limit Next [OK]

Use the close control to lower the door to the fully closed position. If you overshoot the desired door position, the open control can be used to raise the door. When the door is in the desired position go to next step.

If Door Reach Close Limit Confirm – [OK]

Press **OK** to confirm that the door is at the desired fully closed position

Setup Is Done Fine-Tune In Menu Press [OK] To Confirm

Once **OK** is pressed, the door will switch to **Standby Mode** and it will hold there for 30 seconds. Once 30 seconds has elapsed, or ANY Control button been pushed, the unit will switch to **Normal Mode**.

CAUTION

DIP switch to lock the button functions:

The first DIP switch in lower position will disable all buttons' functionality.

The second DIP switch in lower position will only disable the navigation buttons' functionality.

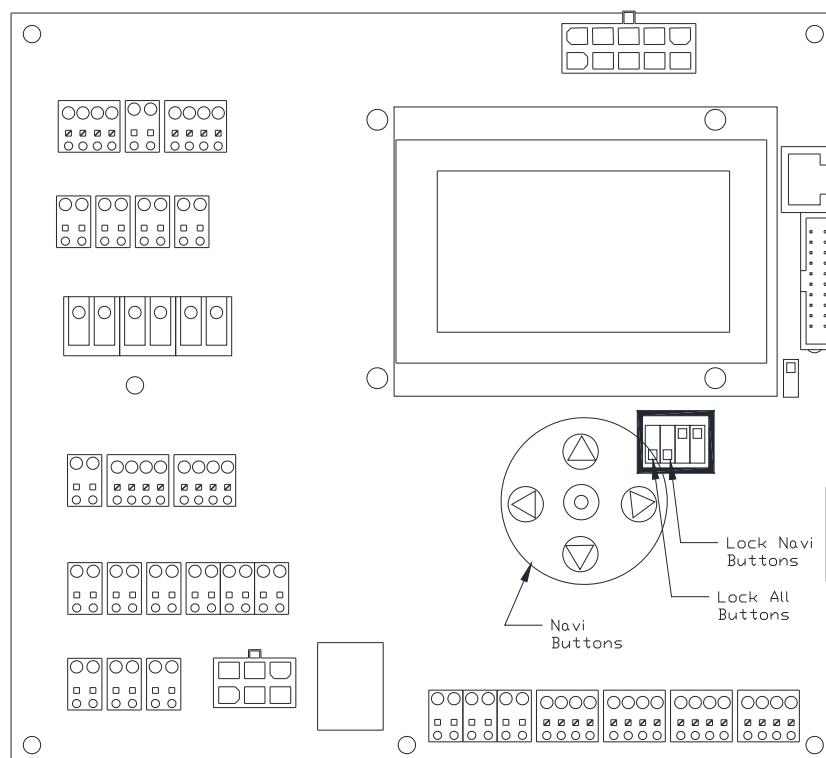


Figure 8.1. Disable Button Functionality Dip Switch

Section 8 –System Start-Up and Operation

Note: Due to the difference in operational speed of door operation between **Program Mode** and **Normal Mode**, a slight variation between the limit position during **Normal Mode** and the limits established during Program Mode may exist.

Please access the Main Menu Items 5, 6, 7, and 8 below for instructions on fine tuning the **Normal Mode** over travel limits.

Main Menu Items

1. To access the main menu items from the Normal Mode of the operator, press the [→] arrow on the control panel.
2. Use the [↑] or [↓] buttons to navigate through the menu items.
3. Use the [←] button to return to Run Mode.

Menu Name	Menu Number	Display Indicates	Remarks	To Adjust Settings:
History	1	History of the last 100 error codes	See Section – 12 for troubleshooting suggestion	This menu item is read only. No adjustment is possible.
Mid Stop Open %	2	The current setting of the operating programming.	A value of 100% means there is no mid-stop function setting on the door. A value between 30% and 99% indicates that a mid-stop position has been selected. When a mid-stop is required, ensure the mid-stop position is high enough that the light curtains are not activated by the door when stopped at the mid-stop position. If a level below the top of the light curtains is required, there are only two options: Install a shorter set of light curtains so that the mid-stop level does not activate the light curtain. Remove the light curtains from the system and select another obstruction detection option to keep the opening as safe as possible.	<ul style="list-style-type: none">• You may adjust the value anywhere between 30% and 100% by using the [↑] or [↓] arrow on the control panel cover.• Press the OK button to accept changes (The value on the screen should cease to flash)• Press [←] to return to Run mode, <u>but no change will be saved.</u>

Section 8 –System Start-Up and Operation

Close Timer Enable	3	<p>DISABLE, ENABLE and Cross_Init_Mode</p> <p>The highlighted value is the active setting.</p>	<p>A setting of DISABLE means that you selected the No Timer to Close Function</p> <p>A setting of ENABLE means that you wish to set a value to automatically close the door after a specified time delay.</p> <p>The timer countdown will begin when the door reaches the position indicated by the “MID STOP OPEN %” (Menu Number 2 above)</p> <p>Press STOP button at Open limit will disable the Timer To Close function until the activation device has been triggered.</p> <p>When the mid-stop feature is selected, the timer to close does not activate from the fully open position.</p> <p>If an activation device (light curtain, photo-eye, etc.) is triggered prior to the countdown timer initiating door closure, the timer will reset to the close timer delay value. (<i>Menu Item 4 below</i>).</p> <p>A Setting of Cross_Init_Mode means that The timer will start counting after the light_curtain and/or low photo eye is triggered and unblocked.</p>	<ul style="list-style-type: none"> • Use the [\uparrow] or [\downarrow] arrow until the desired selection is highlighted. • Press the OK button or [\leftarrow] to accept the changes and return to the main menu <p>Proceed to (<i>menu Item 4 below</i>) if the timer to close is enabled to adjust the time delay interval for timer activation.</p>
---------------------------	---	---	--	---

Section 8 –System Start-Up and Operation

Close Timer Delay	4	The current setting for the time delay interval for the timer to close.	<p>This setting has no effect on door function unless “CLOSE TIMER ENABLE” (<i>Menu Item 3 above</i>) is set to ENABLE. The timer is adjustable from 1 to 9999 seconds (<i>Maximum of 2 hours, 46 minutes, 39 seconds</i>) </p>	<ul style="list-style-type: none"> • The [\uparrow] arrow will raise the value by 1 each time it is pressed • The [\downarrow] arrow will decrease the value by 1 each time it is pressed. • The [\leftarrow] arrow will change the place value of the active digit to the left by 1 each time it is pressed. (In this case it would change the selection from <i>ones</i> to <i>tens</i> if pressed once, and from <i>tens</i> to <i>hundreds</i> if pressed again, etc.) • The [\rightarrow] arrow will change the place value of the active digit to the right by 1 each time it is pressed. (In this case, there are no decimal selections available, so it would change the active value from <i>ones</i> to <i>thousands</i> if pressed once, and from <i>thousands</i> to <i>hundreds</i> if pressed again, etc.) <p><u>Press the OK button to accept the change; or [\leftarrow] to return to the main menu without change saved.</u></p>
Adjust Open Stop	5	A value in encoder pulses which establishes an approximate distance from the original Stop position set up in the basic set-up menu.	<p>Due to variations in door height and weight, there is often some slight variation in the final stopping position of the door compared to the position selected during the initial basic door set-up. If it is necessary to fine tune the stopping position of the door, it is necessary to observe which of two conditions exist before adjusting this setting.</p> <p>NOTE: The XXX value on the display is just a programmed estimate of the distance of the proposed changes. “Positive” will travel further; “Negative” will stop sooner. Because coil sizes vary with door height and the thickness of the curtain selected, it will vary from actual distance of change caused by the adjustment to this setting.</p>	<ul style="list-style-type: none"> • Condition 1 – There is no discernible intermediate step in speed between full speed and stop. Speed ramping down is observed, but the slower speed does not stabilize prior to the door stopping. <ul style="list-style-type: none"> ○ Move immediately to menu item 7 (<i>Below</i>) and adjust as needed. • Condition 2 - There is a discernible intermediate step in speed between full speed and stop. Speed ramping down is observed, and the slower speed stabilizes prior to the door stopping. <ul style="list-style-type: none"> ○ Press the [\downarrow] or [\uparrow] button as necessary to adjust value up or down in small (from 1 to 5) increments. ○ Press OK to accept changes and return to Normal Mode cycle door and observe the Open Stop position ○ Repeat as necessary

Section 8 –System Start-Up and Operation

Adjust Close Stop	6	<p>A value in encoder pulses which establishes an approximate distance from the original Stop position set up in the basic set-up menu.</p> <p>Due to variations in door height and weight, there is often some slight variation in the final stopping position of the door compared to the position selected during the initial basic door set-up.</p> <p>If it is necessary to fine tune the stopping position of the door, you need to observe which of two conditions exist before adjusting this setting.</p> <p>NOTE: The XXX value on the display is just a programmed estimate of the distance of the proposed changes. Because coil sizes vary with door height and the thickness of the curtain selected, it will vary from actual distance of change caused by the adjustment to this setting.</p>	<p>Condition 1 – There is no discernible intermediate step in speed between full speed and stop. Speed ramping down is observed, but the slower speed does not stabilize prior to the door stopping.</p> <ul style="list-style-type: none"> Move immediately to section menu item 8 (below) and adjust as necessary. <p>Condition 2 - There is a discernible intermediate step in speed between full speed and stop. Speed ramping down is observed, and the slower speed stabilizes prior to the door stopping.</p> <ul style="list-style-type: none"> Press the [↓] or [↑] button as necessary to adjust value up or down in small (from 1 to 5) increments. Press OK to accept changes and return to NORMAL MODE. Cycle the door and observe the Close Stop position. Repeat as necessary.
--------------------------	---	--	--

Section 8 –System Start-Up and Operation

Open Ramp Area	7	<p>A value as a percentage of the total of barrel turns to raise or lower the door from full open to fully closed or fully closed to fully open.</p> <p>Due to variations in door height and weight, there is often some slight variation in the final stopping position of the door compared to the position selected during the initial basic door set-up.</p> <p>If it is necessary to fine tune the stopping position of the door, it is necessary to observe which of two conditions exist before adjusting this setting.</p> <p>NOTE: It is normal for this value to be different at the top of the opening and the bottom of the opening. The coil size is larger when the door is open than it is when the door is closed. Therefore, the distance that the curtain travels per barrel turn will be different at the top and bottom.</p>	<p>Condition 1 – There is a discernible intermediate step in speed between full speed and stop. Speed ramping down is observed, and the slower speed stabilizes prior to the door stopping.</p> <ul style="list-style-type: none"> • Move immediately to menu item 5 (above) and adjust as necessary. <p>Condition 2 - There is no discernible intermediate step in speed between full speed and stop. Speed ramping down is observed, but the slower speed does not stabilize prior to the door stopping.</p> <ul style="list-style-type: none"> • Press the [↓] or [↑] button as needed to adjust value up or down in 1% increments. • Press OK to accept changes and return to Normal Mode • Cycle the door and observe the Open ramp characteristics. • Repeat as needed. <p>NOTE: Excessive travel at the slow speed prior to the door stopping is not necessary, and extends the length of time it takes the door to cycle. You may adjust this setting to minimize the time the door stays at the slow speed while ramping down.</p>
-----------------------	---	---	---

Section 8 –System Start-Up and Operation

Close Ramp Area	8	A value as a percentage of the total of barrel turns to raise or lower the door from full open to fully closed or fully closed to fully open.	<p>Due to variations in door height and weight, there is often some slight variation in the final stopping position of the door compared to the position selected during the initial basic door set-up.</p> <p>If it is necessary to fine tune the stopping position of the door, it is necessary to observe which of two conditions exist before adjusting this setting.</p> <p>NOTE: It is normal for this value to be different at the top of the opening and the bottom of the opening. The coil size is larger when the door is open than when the door is closed. Therefore, the distance that the curtain travels per barrel turn will be different at the top and bottom.</p>	<p>Condition 1 – There is a discernible intermediate step in speed between full speed and stop. Speed ramping down is observed, and the slower speed stabilizes prior to the door stopping.</p> <ul style="list-style-type: none"> Move immediately to menu item 6 (above) and adjust as necessary. <p>Condition 2 - There is no discernible intermediate step in speed between full speed and stop. Speed ramping down is observed, but the slower speed does not stabilize prior to the door stopping.</p> <ul style="list-style-type: none"> Press the [↓] or [↑] button as necessary to adjust value up or down in 1% increments. Press OK to accept changes and return to Normal Mode Cycle the door and observe the Open ramp characteristics. Repeat as necessary <p>NOTE: Excessive travel at the slow speed prior to the door stopping is not necessary, and extends the length of time it takes the door to complete a cycle. You may adjust this setting to minimize the time the door stays at the slow speed while ramping down.</p>
Factory Setting	9	Current State of this menu Item. The default setting for this is DISABLE .	<p>All parameters in control and VFD tweaks that have been performed since installation can be reset to their original factory settings here. If you want to reset limits only, please proceed to Menu Number 10-LIMIT CLEAR.</p> <p>NOTE: If you select ENABLE and press OK to accept the changes, THIS CANNOT BE UNDONE.</p>	<ul style="list-style-type: none"> Press[↓] or [↑] to make desired selection <p>Press OK to accept changes and go to PROGRAM mode (Section 8 - System Start-Up and Operation)</p>

Section 8 –System Start-Up and Operation

Limit Clear	10	Current State of this menu Item. The default setting for this is DISABLE	<p>This parameter enables a reset of the open and close travel limits but leaves all other system tweaks that have been performed since installation to remain. If you need to make a complete restore to original factory settings, please see (<i>Menu Item 9 above</i>)</p> <p>NOTE: If you select ENABLE and press OK to accept the changes, THIS CANNOT BE UNDONE.</p>	<ul style="list-style-type: none"> • Press [↓] or [↑] to make desired selection • Press the OK button to accept changes and go to “PROGRAM MODE” (Section 8 - System Start-Up and Operation)
Up Limit Position	11	A six-digit value that represents an encoder position that has been established as the open travel limit position during the set-up process.	Info Only!	This menu item is read only. No adjustment is possible.
Low Limit Position	12	A six-digit value that represents an encoder position that has been established as the close travel limit position during the set-up process.	Info Only!	This menu item is read only. No adjustment is possible.
Door Position	13	A value that indicates the current position of the door as a percentage of open.	This is representative of a percentage of the total barrel turns to fully open or close the door, not as a percentage of distance.	This menu item is read only. No adjustment is possible
Door Direction	14	A real-time display of the current door operation (as seen by the motor controller)	If this menu is active on the display, and the door is traveling or travel is initiated, the display will indicate which direction the control thinks the door is traveling. If the door is not moving, the display should indicate “STOP”.	This menu item is read only. No adjustment is possible.
Encoder Position	15	A six-digit value representing the current encoder position	NONE	This menu item is read only. No adjustment is possible
Reserved	16	NA	NA	NA

Section 8 –System Start-Up and Operation

Changed to Reversed	17	A Value of “0” or “1”	A value of “0” means that no rotation correction has been applied. A value of “1” indicates that automatic rotation correction has been applied to make the door open when an open command is received. This is established in the initial setup process.	This menu item is read only. No adjustment is possible.
Reserved	18	DISABLE	This menu item is not currently active.	Not Active – Do Not Adjust
Reserved	19	DISABLE	This menu item is not currently active.	Not Active – Do Not Adjust
Reserved	20	DISABLE	This menu item is not currently active.	Not Active – Do Not Adjust
Reserved	21	DISABLE	This menu item is not currently active.	Not Active – Do Not Adjust
Reserved	22	DISABLE	This menu item is not currently active	Not Active – Do Not Adjust
Up Limit Out Status	23	DISABLE or ENABLE	<p>This is a dry contact output rated for control voltages and currents only. This is not to be used to route power supply voltage used to power accessories or other components. Total current of all outputs should not exceed 200mA.</p> <p>When enabled, this contact will provide continuity when the door is at the open travel limit active.</p>	<ul style="list-style-type: none"> • Press [↓] or [↑] to make desired selection • Press the OK button to accept changes and return to Run mode
Low Limit Out	24	DISABLE or ENABLE	<p>This is a dry contact output rated for control voltages and currents only. This is not to be used to route power supply voltage used to power accessories or other components. Total current of all outputs should not exceed 200mA.</p> <p>When enabled, this contact will provide continuity when the door is at the open travel limit active.</p>	<ul style="list-style-type: none"> • Press [↓] or [↑] to make desired selection • Press the OK button to accept changes and return to Run mode

Section 8 –System Start-Up and Operation

Reserved	25	DISABLE	This is not an active menu item	Do Not Adjust.
Reserved	26	DISABLE	This is not an active menu item	Do Not Adjust.
Thermal Interlock Status	27	“TRIGGERED” or “UNTRIGGERED”	Input - N/C is Normal State. If the display reads “TRIGGERED”, there has been a thermal issue detected in the brake resistor. If this doesn’t correct itself within 30 minutes or it is a recurring error, call Technical Support at (855)-594-4969 for assistance.	This menu item is read only. No adjustment is possible.
Inertial Interlock Status	28	“TRIGGERED” or “UNTRIGGERED”	Input - N/C is Normal State. On doors equipped with an inertia brake (See the Door installation and maintenance manual) if the display reads “TRIGGERED”, there has been an issue detected with the inertia brake, or the wiring from the inertia brake has been compromised.	This menu item is read only. No adjustment is possible.
Manual Chain Lock Status	29	The status of the manual hand chain interlock switch as “TRIGGERED” or “UNTRIGGERED” – “UNTRIGGERED” is normal.	Input - N/C is Normal State. A “TRIGGERED” status will electrically prevent the door from operating electrically.	This menu item is read only. No adjustment is possible.
External Interlock Status	30	The status of the external interlocks – “TRIGGERED” or “UNTRIGGERED”. The standard would be “UNTRIGGERED, and would indicate that there is continuity across the input terminals. This may indicate that door locks are activated, or that another interlocked system isn’t ready for the door to be operable.	Input - N/C is Normal State.	This menu item is read only. No adjustment is possible.

Section 8 –System Start-Up and Operation

DES Interlock Status	31	The status of the DES Encoder interlock on the motor (This device is used to maintain travel limits and door position information) – “TRIGGERED” or “UNTRIGGERED”.	Input - N/C is Normal State. The standard would be “UNTRIGGERED”, and would indicate that there is continuity across the input terminals. This may indicate there is a wiring issue between the operator and the controller, or a problem with the DES Encoder.	This menu item is read only. No adjustment is possible.
Motion Detector Status	32	Motion Detector Status – “TRIGGERED” or “UNTRIGGERED”	N/O is Normal State	This menu item is read only. No adjustment is possible.
Loop Detector Status	33	Loop Detector Status – “TRIGGERED” or “UNTRIGGERED”	Input – N/O is Normal State	This menu item is read only. No adjustment is possible.
Auxiliary In1 Status	34	UNTRIGGERED	This is not an active menu item.	Do Not Adjust.
Auxiliary In2 Status	35	UNTRIGGERED	This is not an active menu item.	Do Not Adjust.
Fraba Up Photoeye Status	36	UNTRIGGERED	This is not an active menu item.	Do Not Adjust.
FRABA Low PhotoEye Status	37	TRIGGERED	This is not an active menu item.	Do Not Adjust.
Telco Up PhotoEye Status	38	UNTRIGGERED	This is not an active menu item.	Do Not Adjust.
Telco Low PhotoEye Status	39	UNTRIGGERED	This is not an active menu item.	Do Not Adjust.
Basic Safety Sensing Edge Status	40	The Status of the monitored Sensing Edge (If Equipped)	For use with a 10K Ohm resistive terminated Sensing Edge only. The display will read “UNTRIGGERED” or “TRIGGERED”	This menu item is read only. No adjustment is possible.
Auxiliary Safety Edge Status	41	The status of an unmonitored Normally Open Sensing Edge (If Equipped)	The display will read “UNTRIGGERED” or “TRIGGERED”	This menu item is read only. No adjustment is possible.

Section 8 –System Start-Up and Operation

Auxiliary FRABA Med PhotoEye Status	42	TRIGGERED or UNTRIGGERED	This gives the status of a second set of photo eyes (Pulse Train Output Type). This menu Item would need to be enabled in the advanced. Call Technical Support for assistance at (855)-594-4969.	This menu item is read only. No adjustment is possible.
Auxiliary FRABA PhotoEye 1 Status	43	TRIGGERED	This is not an active menu item.	Do Not Adjust.
Auxiliary FRABA PhotoEye 2 Status	44	TRIGGERED	This is not an active menu item.	Do Not Adjust.
TELCO Light Curtain Status	45	The Status of the Light Curtains	Display will read "TRIGGERED" or "UNTRIGGERED"	This menu item is read only. No adjustment is possible.
About			This menu item displays the Firmware Version and Revision of the software program in the board. It also provides the phone number to contact Technical Support at (855)-594-4969.	

Table 8.1. Main Menu Items

Advanced Menu Items

Terminals designated as inputs will have LED indicators on the board there are 3 states of the LEDs on the board.

- **OFF** – Not Activated in Menu
- **ON** – Activated
- **BLINKING** – This will be available only on devices with a pulse train communication (Like FRABA Photo-eyes) There will be no blinking with PNP devices
- Any Menu Item where multiple selections are possible, the options will be shown, and the factory default setting will be indicated in ***bold, italic*** print.
-

Item	Settings	Description	LED Indicators		
			On	Off	Blinking
Upper Photo Eye	NA	No Device is being used	Sensor is active	Nothing selected/not active	Pulse train sensors enabled
	Fraba	PNP type device with blanking feature			

Section 8 –System Start-Up and Operation

Item	Settings	Description	LED Indicators		
			On	Off	Blinking
	Telco-W-Monitor	PNP device with blanking feature			connected and working properly
	Telco-WO-Monitor	Not used			
Lower Photo Eye	N/A	No device being used	Sensor is active	Sensor is not active	Pulse train sensors enabled, connected, and working properly
	Fraba	Fraba or approved pulse-train type photo eyes			
	Telco-WO-Monitor	PNP device with blanking feature			
Basic Sensing Edge	NA	No Device is being used	Sensor is active	Sensor is not active	Not Applicable
	Universal	Standard-normally open edge is being used			
	10k resistor type	10k Ohm resistive edge is being monitored			
Auxiliary Sensing Edge	NA	No device being used	Sensor is active	Sensor is not active	Not Applicable
	Universal	Standard-normally open edge is being used			
	10k resistor type	10k Ohm resistive edge is being monitored			
Remote	NA	No device being used	Device is active	Device is not inactive	Not Applicable
	1Key remote	1 channel radio receiver/.transmitter			
	2Key remote	Not available at this time			
Encoder Type	NA	No device being used	Device is active	Device is not inactive	Not Applicable
	GFA DES	GFA hollow-shaft operator is on door			
	BTA	Not available at this time			
Light Curtain	NA	No device being used	Device is not active	Door is obstructed	Not Applicable
	Connected	TELCO light curtains used on door			
Thermal Interlock	NA	No device being used	Circuit is Closed	Circuit Open	Not Applicable
	Connected	Thermal interlock on brake resistor is NC			
Inertia Interlock	NA	No device being used	Circuit is closed	Circuit open	Not Applicable
	Connected	None with GFA motor operator			
Manual Chain Interlock	NA	No device being used	No device being used	Electric operation enabled	Not Applicable
	Connected	Door inoperable when hoist chain is used			
External Interlock	NA	No device required	Circuit is Closed	No interlock in place	
	Connected	Locks or external equipment interface needed			
DES Interlock	NA	No device being used	Electrically functional	No interlock in place	Not Applicable
	Connected	Disables electrically when chain hoist is engaged			
Mid Fraba Photo-Eye	NA	No device being used	Electrically functional	No device connected	Pulse train sensors enabled
	Connected	Device connected			
Aux Fraba Photo-Eye 1	NA	Not used- Not applicable	Electrically functional	No interlock in place	Not Applicable
Aux Fraba Photo-Eye 2	NA	Not used- Not applicable	NA	NA	NA

Section 8 –System Start-Up and Operation

Motion Detector	Connected		Motion detector activated	<i>Motion detector is not activated</i>	Not Applicable		
	NA	No device being used					
Loop Detector	Connected		Motion detector activated	<i>Loop detector is not activated</i>	N/A		
	NA	No device being used					
Rated Power	1/8 hp	The value represents the rated output current of the Variable Frequency Drive (VFD) selected for your application. This value was set at the factory, it will be reset to factory original condition after factory reset.					
	1/4 hp						
	1/2 hp						
	1.0 hp						
	2.0 hp						
	3.0 hp						
	5.0 hp						
	7.5 hp						
	10.0 hp						
Operating Power	1/8 hp	The value represents the rated output current of the motor selected for your application. This value was set at the factory					
	1/4 hp						
	1/2 hp						
	1.0 hp						
	2.0 hp						
	3.0 hp						
	5.0 hp						
	7.5 hp						
	10.0 hp						
Shaft		The parameter is not being used at this time. DO NOT ADJUST					
Slat Thickness							
Opening Height							
Opening Speed							
Close Speed							

Table 8.2. Advanced Menu Items

Section 9 –System Status Messages

Section – 9 System Status Messages

Display Reads	Description	Action Required
VFD COM ERROR	VFD Communication Error	<ol style="list-style-type: none"> 1. Verify the RJ45 Cable is properly connected. 2. Cycle the power off. 3. Re-establish the connection. 4. Power the unit back on.
ENCODER ERROR	Encoder error	<ol style="list-style-type: none"> 1. Verify that the encoder is properly connected. 2. Cycle the power off. 3. Re-establish the connection. 4. Power the unit back on.
DES-INTERLOCK	There is no signal from the DES encoder	<ol style="list-style-type: none"> 1. Verify that the motor is a GFA motor with an encoder. 2. Verify that the manual chain handle is not engaged. 3. Re-establish the connector on the DES encoder.
Thermo-Interlock	Brake Resistor is too hot	<ol style="list-style-type: none"> 1. The brake resistor is too hot if the surface temperature is above 200° F, there is cause for concern. 2. Reduce the door cycling rate. 3. Check thermo-interlock connectivity.
Inertia-Interlock	The N/C inertia brake connection is reading as Open.	<ol style="list-style-type: none"> 1. Verify the factory installed jumper is properly installed.
Backwind Sensor Activated	Not currently an option.	N/A
VFD Error	Physical VFD and system settings do not match.	<ol style="list-style-type: none"> 1. Contact Technical Support at (855)-594-4969.
VFD Fault	VFD has internal fault	<ol style="list-style-type: none"> 1. Cycle Power Off. 2. Wait 10 Seconds. 3. Turn Main Power back on. 4. If issue still exists, contact technical support at (855)-594-4969.
Overload Current	The Motor is taking too much current to operate the door.	<ol style="list-style-type: none"> 1. Verify that the incoming voltage is correct and that all phases are present. 2. Check the mechanics of the door to ensure that there is no mechanical binding. 3. Contact Technical Support.
Brake Drive Broken	The solenoid brake circuit is malfunctioning.	<ol style="list-style-type: none"> 1. Contact Technical Support at (855)-594-4969.
Sensing Edge Activation	Sensing edge is activated, or not connected properly.	<ol style="list-style-type: none"> 1. Check status of sensing edge with a multi-meter. 2. Contact Technical Support at (855)-594-4969.
Motor Chain Handle Engaged	The chain hoist interlock connection is OPEN.	<ol style="list-style-type: none"> 1. Disengage hoist interlock. 2. Check across hoist interlock terminals for continuity. 3. Contact Technical Support at (855)-594-4969.
Low Photo Eye Activation	There is an issue with the primary photo eyes.	<ol style="list-style-type: none"> 1. Verify that the photo eyes are not obstructed, properly aligned, and connected. 2. Contact Technical Support at (855)-594-4969.
Middle Photo Eye Activation	If you are using a second set of photo eyes there is an issue with them.	<ol style="list-style-type: none"> 1. Verify that the photo eyes are not obstructed, properly aligned, and connected. 2. If Mid PE is not needed, deselect it in advanced menu,Contact Technical Support at (855)-594-4969.
External Interlock	There is a loss of continuity across the external interlock terminals.	<ol style="list-style-type: none"> 1. Verify that all devices interlocked with the door are providing a normally closed contact. 2. If no devices are being used, reinstall the jumper across the terminals.

Section 9 –System Status Messages

Display Reads	Description	Action Required
Curtain Lock Activation	Curtain knock out function is not used with this product.	1. Contact Technical Support at (855)-594-4969.
Light Curtain Activation	Light Curtain activation is sensed.	1. Verify that light curtains are connected, aligned properly, and that the lenses are not obscured by an obstruction, peripherals, or dirt and/or grime. 2. Contact Technical Support (855)-594-4969.
Motion Detector Activation	Motion Detector activation is sensed.	1. Verify that the motion detector is connected properly, and that the target area is free from movement. 2. Verify the motion detector connection is NO 3. Contact Technical Support
Loop Detector Activation	Loop Detector activation is detected.	1. Verify that the loop detector is functioning properly 2. Verify the Loop detector connector is NO 3. Contact Technical Support at (855)-594-4969

Table 9.1. System Status Messages

Section 10 –Schematics

Section – 10 Schematics

Plug & Play Wiring Details

Brake and Encoder to Cable Factory Panel Connections

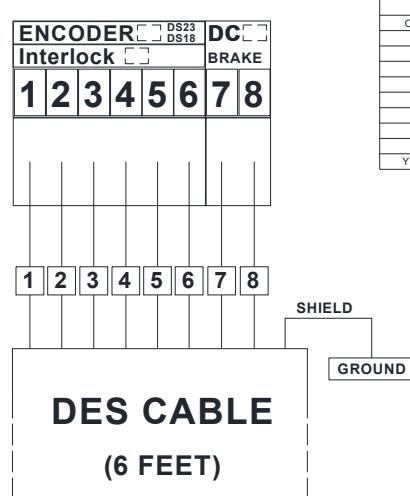
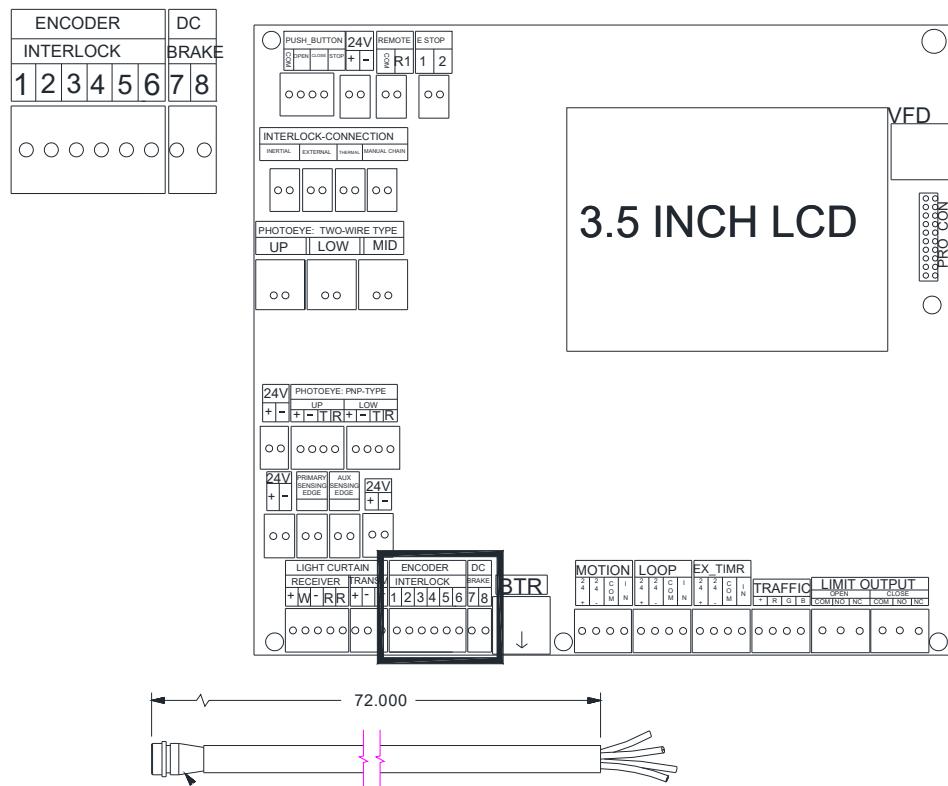


Figure 10.1. Encoder and DC Brake Terminal Connections

Section 10 –Schematics

Drive Side Sensor Package Cables Connections

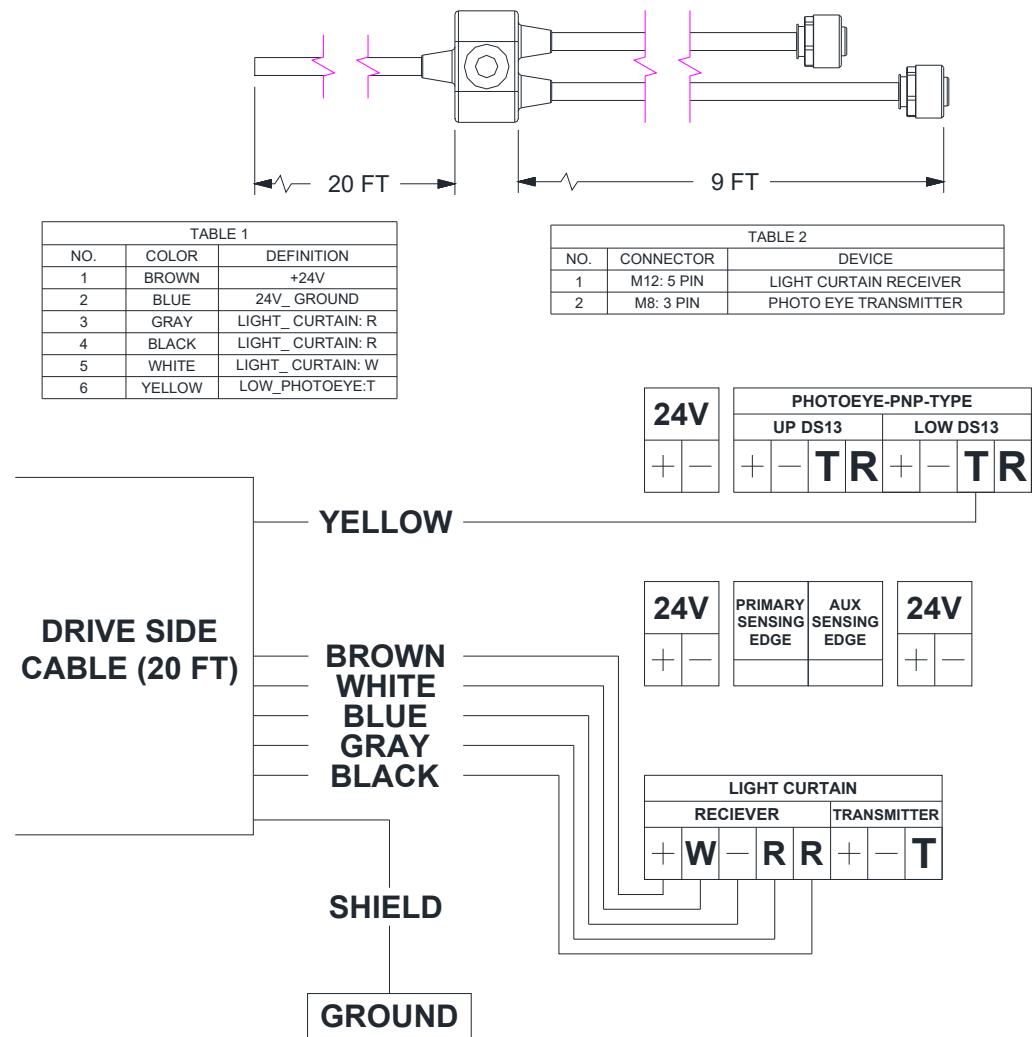


Figure 10.2. Drive Side Sensor Package Cables Connections

Section 10 –Schematics

Tension Side Sensor Package Cable Connections

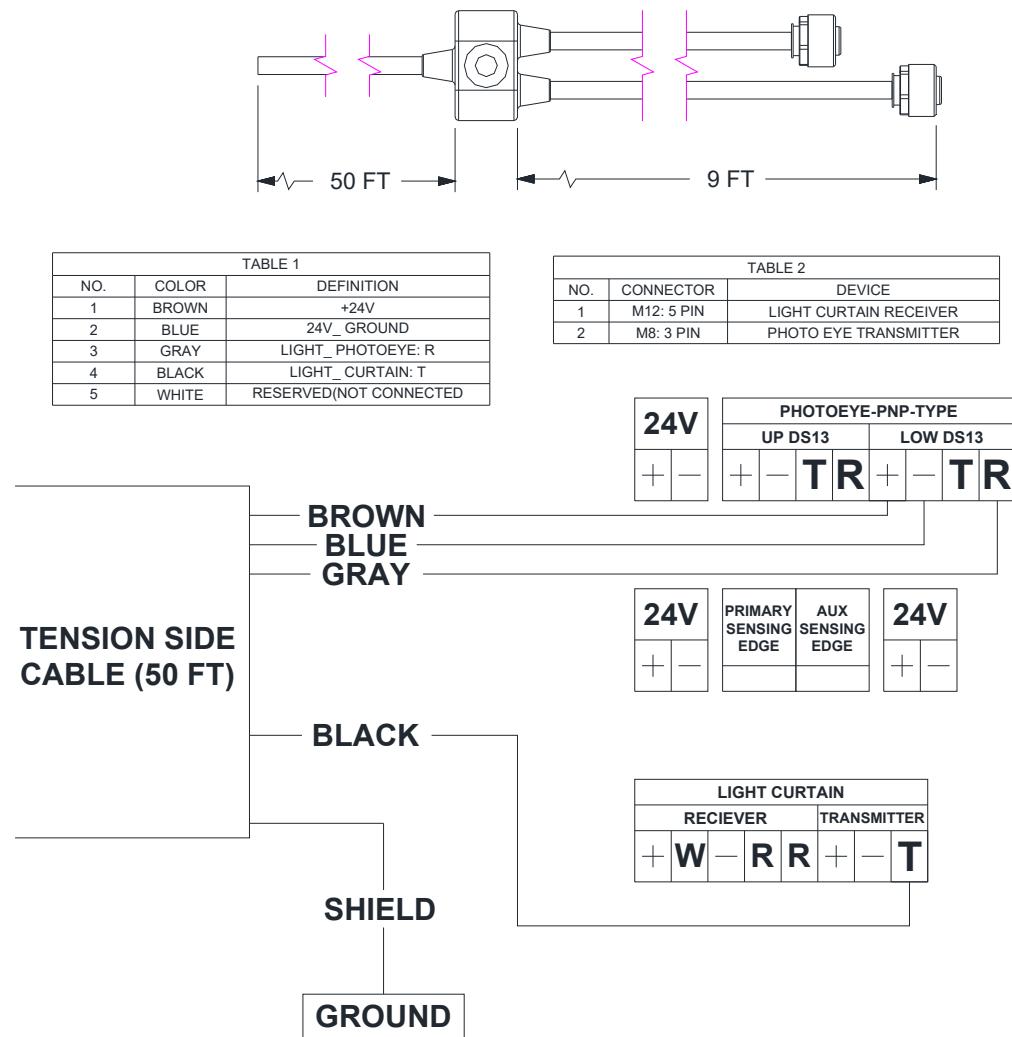


Figure 10.3. Tension Side Sensor Package Cable Connections

Section 10 –Schematics

Three Phase Power Connections

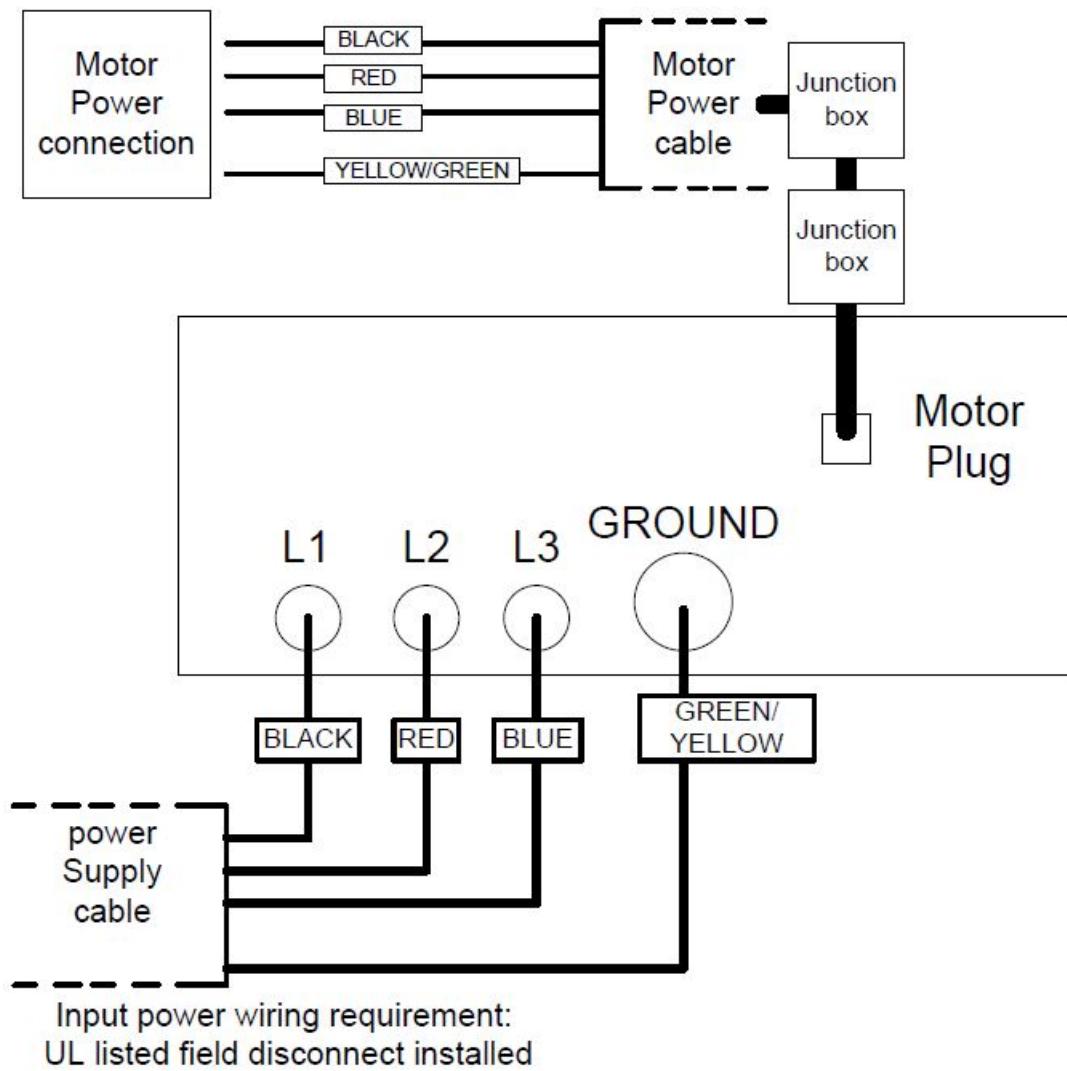


Figure 10.4. Three Phase Power Connections

Section 10 –Schematics

Single Phase Power Connections

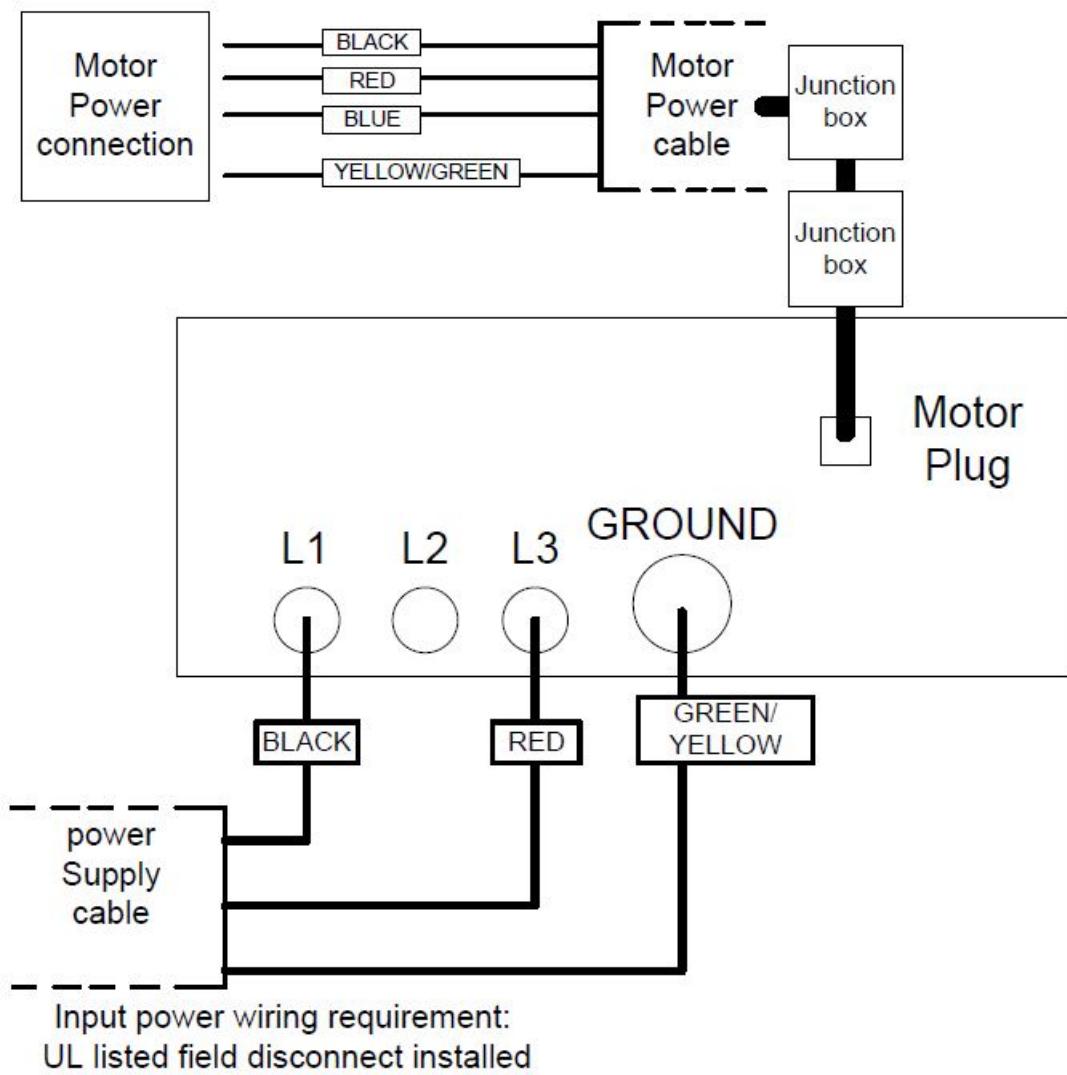


Figure 10.5. Single Phase Power Connections

Pre-Wired Panel Components

- Variable Frequency Drive
- Power Board
- Printed Circuit Board
- Brake Resistor and Thermocouple

Section 11 –Maintenance

Section – 11 Maintenance

Maintenance Schedule

COORDINATE OPERATOR MAINTENANCE SCHEDULE WITH THE MANUFACTURER'S MAINTENANCE SCHEDULE FOR YOUR DOOR

Gearbox – The gearbox on the motor operator is factory sealed, and should not require service for the life of the operator.

Brake Friction Material - The electromagnetic brake on the motor operator is factory adjusted, and should not require service for the life of the operator.



Before servicing, always disconnect the Operator from the Power Supply.

- Use Schaeffer's #227 Moly Roller Chain Lube or DuPont Teflon Chain Saver Lubricant on roller chains (*when present*)
- Do not lubricate motor. Motor bearings are lubricated at the factory.
- Inspect and service whenever a malfunction is observed or suspected.

For Technical Support please call (855)-594-4969.

Motor Operator Maintenance

Door operators require practically no special maintenance other than periodic checking to see that mechanical parts where necessary are lubricated and the electrical components are free of dirt and other possibly conductive or corrosive materials.

Service technicians should familiarize themselves with the proper sequence of operation and all related controls. Power to the operator must be disconnected when removing or replacing covers on electrical components, making adjustments, or performing maintenance.

1. Check wire connections for tightness and wire insulation for defects or abrasions.
2. Check to see that all conduit connections are secure.
3. Check wires to sensing edge or photo ice.
4. Inspect gearbox for leaks.
5. Inspect operation of break.
6. Tighten any set screws.
7. Generally inspect the motor mounting and tighten the fasteners and bracing.
8. Verify that all conduit connections are tight and have no exposed wires.
9. Inspect electrical enclosure for debris, arcing and moisture. Check for and tighten loose wiring connections.
10. Test motor operation through all control stations.
11. Examine the sensing edge (*if equipped*) for damage and proper operation.
12. Test the operation of the sensing edge (*if equipped*).

Check motor amperage draw for (1ea) full open and (1ea) full close cycle. Compare readings to those listed on the motor nameplate.

Section 12 – Troubleshooting

Section – 12 Troubleshooting

Troubleshooting Table

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Sensor Check Fail occurs during commissioning sequence. <i>With Sensor Check Fail the control will be in the Override Mode. Press and hold the Open or Close for 5 seconds to jog the door. Door direction may be reversed.</i>	Sensor functionality check failed, commissioning cannot be completed	Verify that the Light Curtain and the Photo-eyes are not blocked Check the LONG sensor cable should route to TENSION side, the SHORT cable to the DRIVE side. Check and repair the wiring as needed between Sensor Cables to the motor control panel
“DES Encoder Error” during commissioning sequence. <i>With Sensor Check Fail the control will be in the Override Mode. Press and hold the Open or Close for 5 seconds to jog the door. Door direction may be reversed.</i>	PC Board is not detecting signal from the DES Encoder	Check cabling and connection at DES Encoder Check wiring on terminals in the control panel Check the pin & socket connectors On the wires and patch cable (If supplied) to ensure that the connectors aren't damaged. Replace as necessary
Motor Vibration – door cannot be operated.	3 Phase power missing 1 leg	Check 3-phase power connection in motor junction Box Check motor power connection to motor board Disconnect motor power cable from PC Board and try to run the control only, verify that all three phases of the VFD output is the same voltage.
Door travel beyond the full OPEN limit (No distinguishable full speed /slow speed step prior to stopping)	Not enough Ramp down Distance	In Main Menu adjust “OPEN RAMP AREA”, Increase setting in 5% increments until there is distinct full and slow speed prior to stopping
Door travel beyond the OPEN limit (There is a distinct full and slow speed step prior to stopping)	Limit Setting is too high	In Main Menu Adjust “ADJUST OPEN STOP” Decrease value in 5mm increments until door stops in desired location
Door Will Not Close – Photo-Eye LED on PC Board is not lit.	The photo-eye wiring may be compromised or the photo-eye may be damaged	Check the photo-eye wiring. Physically check the photo-eye and the photo-eye mounting hardware for damage. Correct as necessary.
Door Will Not Close – Photo-Eye LED on PC Board is lit.	Observe the photo-eye LED while pressing the close button.	If the LED does not blink, verify that the transmitter is located on the tension side of the door, check the wiring to the unit, and physically inspect the unit and mounting hardware for damage.

Section 12 – Troubleshooting

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Door Will Not Close – Photo-Eye LED on PC Board is lit.	Observe the photo-eye LED while pressing the close button.	If the LED blinks, follow steps below to verify light curtain. Once that is verified, it is most likely a configuration set-up error. In the “Advanced Menu” verify settings against configurations for “Middle PE”, “10K Sensing Edge”, “10K Aux Sensing Edge” Please call Tech Support at (855)-594-4969 for assistance.
Door Will Not Close – Light Curtain LED on PC Board is lit.	Observe the light curtain LED while pressing the close button.	If the LED does not blink, verify that the transmitter is located on the tension side of the door, and check the wiring to the unit, and physically inspect the unit and mounting hardware for damage. If the LED blinks, verify that the photo-eyes function properly, it is most likely a configuration set-up error. In the “Advanced Menu” verify settings against configurations for “Middle PE”, “10K Sensing Edge”, “10K Aux Sensing Edge” Please call Tech Support at (855)-594-4969 for assistance.
Door direction is incorrect after “Phase Check” step in commissioning sequence	The door curtain may be jammed in the guided DES encoder signal to PC Board may be compromised	Verify that the guide gap is within specified tolerance from door installation manual Check DES Cable connections in the control panel. Proper terminal numbers are marked on wire insulation (1 thru 8). Check DES cable connection in DES housing on Motor. Connector should be firmly seated and undamaged. Verify that the motor is mounted with the mounting feet towards the guides.
Limit settings are reset when Power is removed from system.	Wired remote control stop circuit has integrity issues.	Verify that the Common/Stop circuit has continuity across it, and that the STOP Button is not stuck.
Supply voltage is present but PC Board is not energized	Power consumption of attached ancillary devices may exceed the 1A output of the DC power supply There may be a short circuit in the field wiring or within a failed ancillary device connected to the control circuit. Main fuse integrity may be compromised	Use factory approved devices only. Consider other sensor package options to meet application needs. Disconnect all ancillary devices and verify that PC Board Energizes. If yes, check voltage at any output marked [24+] and [24-]. If present, test for short circuits across wires to ancillary devices. Repair wires or replace equipment if short circuit exists. Replace power supply if 24V does not exist. Check main fuses.
I can see the LED screen, but it is unreadable. The door works fine.	Ambient temperature at installation may be too high.	The LED Screen specifications are limited to a maximum of 105 deg F (40 deg C) The LED screen should return to normal when the ambient temperature at the location is within the specified range.
I was playing with the settings, messed something up and need to start over.	User Error	Go to Section 4 “ System Reset ” and perform a “System Reset” (The door will require commissioning after a factory reset)

Section 12 – Troubleshooting

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
"OVERCURRENT ERROR" on VFD	Motor brake not releasing	Verify that the brake on the motor has 24VDC when the door tries to operate.
	Guide gap is too tight (Curtain is pinched inside the guides)	Check the guide gap - Reference door installation manual for specifics and adjustment procedures
	VFD voltage setting may be incorrect	Please call Technical Support at (855)-594-4969 for assistance in checking or adjusting parameter 19 in the VFD.
"VFD OL" error as door speed is ramping down	The ramp down duration is too short	Please Call (855)594-4969 for assistance adjusting ramp down duration on the VFD
Contact Technical Support at (855)-594-4969		

Table 12.1. Troubleshooting

Section 13 – Parts List

Section – 13 Parts List

Parts Ordering Information

Parts may be ordered through authorized door Dealers only. Please visit our website at www.CornellCookson.com to locate a dealer in your area, or call (855)-594-4969 for assistance.

How to Order Parts

Use the parts breakdown below to identify the part or assembly that is needed. Parts may be ordered by part number and description.

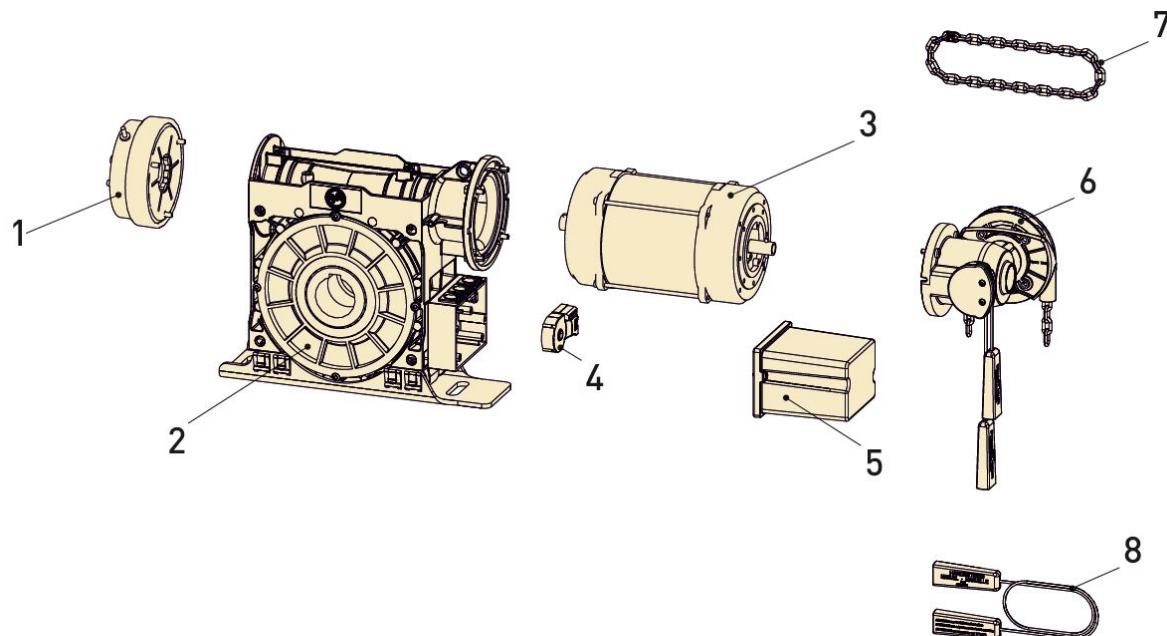


Figure 13.1. Exploded Diagram of Operator

Operator	
Item#	Description
1	Brake
2	Gearbox
2	Floating Foot
3	Motor 230V
3	Motor 460V
4	DES Encoder(Limit)
5	Limit Cover
6	Chain Hoist
7	Chain (8 Meter)
8	Ext.Cord (10 Meter)

Table 13.1. Operator Bill of Materials

Section 13 – Parts List

Control Panel Parts List

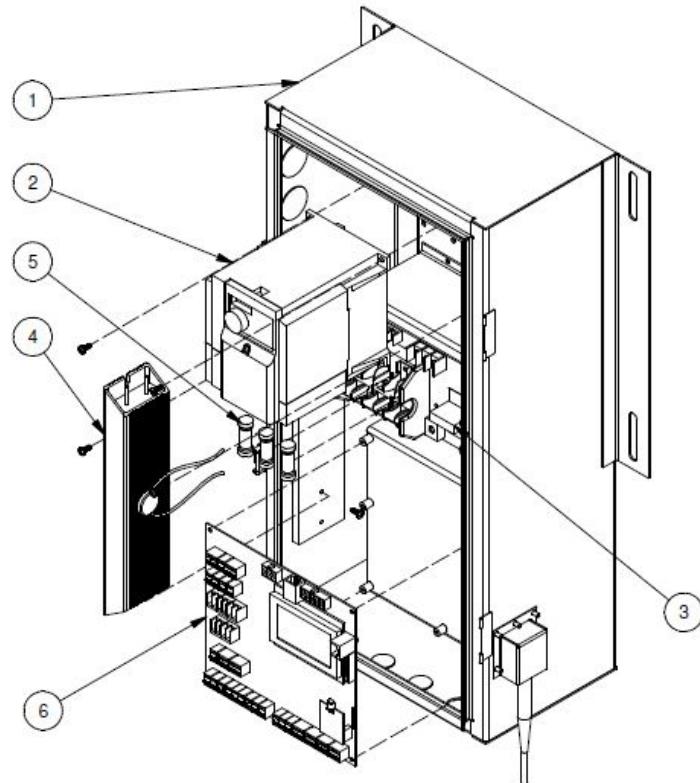


Figure 13.2. Exploded Diagram of a Control Box

Item 1 – APEX SmartControl Sub-Assembly				
Motor HP	System Voltage	NEMA Rating	Part#	Description
1 HP, 2 HP, and 3-1/3 HP (All)	208V/230V, 1 Phase or 3 Phase	NEMA 4X	523033	ASC,NEMA4X,LowVolt,DCBrake,Sub-Assembly
	460V, 3 Phase	NEMA 4X	523032	ASC,NEMA4X,HiVolt,DCBrake,Sub-Assembly
	575V, 3 Phase	NEMA 4X	523063	ASC,NEMA4X,600V,DCBrake,Sub-Assembly

Table 13.2. APEX SmartController Sub-Assembly Parts

Section 13 – Parts List

Item 2 – Variable Frequency Drive			
Motor HP	System voltage	Part#	Description
1 HP	208V/230V, 1 Phase	523036	VFD,MITSU,FR-D720S-100-NA
	208V/230V, 3 Phase	523037	VFD,MITSU,FR-D720-100-NA
	460V, 3 Phase	523039	VFD,MITSU,FR-D740-050-NA
	575V, 3 Phase	523043	VFD,MITSU,FR-E560-3.7K-NA
2 HP	208V/230V, 1 Phase	523036	VFD,MITSU,FR-D7205-100-NA
	208V/230V, 3 Phase	523037	VFD,MITSU,FR-D720-100-NA
	460V, 3 Phase	523040	VFD,MITSU,FR-D740-080-NA
	575V, 3 Phase	523043	VFD,MITSU,FR-E560-3.7K-NA
3-1/3 hp	208V/230V, 3 Phase	523038	VFD,MITSU,FR-D720-165-NA
	460V, 3 Phase	523041	VFD,MITSU,FR-D740-120-NA
	575V, 3 Phase	523044	VFD,MITSU,FR-E560-5.5K-NA

Table 13.3. Variable Frequency Drive Parts

Item 3 – Power Board			
Motor Hp	System Voltage	Part #	Description
1 HP, 2 HP, and 3-1/3 HP (All)	All	523035	PCB,ASC,POWERBOARD

Table 13.4. Power Board Parts

Item 4 – Brake Resistor		
Panel Part No.	Voltage Range	Resistor Module
523032	380-480 VAC	400W, 150 Ohm
523033	110-240 VAC	400W, 60 Ohm
523063	280-460 VAC	400, 150 Ohm

Table 13.5. Power Board Parts

Item 5 - Fuses				
Motor HP	System Voltage	Part#	Description	Quantity
1 HP	208V/230V, 1 Phase	523049	FUSE,600VAC,30A,CLASS-T	2 EA
	208V/230V, 3 Phase	523048	FUSE,600VAC,15A,CLASS-T	3 EA
	460V OR 575V, 3 Phase	523046	FUSE,600VAC,10A,CLASS-T	
2 HP	208V/230V, 1 Phase	523048	FUSE,600VAC,20A,CLASS-T	2 EA
	208V/230V/460V/575V, 3 Phase			3 EA
3 HP	208V/230V/460V, 3 Phase	523050	FUSE,600VAC,30A,CLASS-T	
	575V, 3 Phase	523069	FUSE,600VAC,25A,CLASS-T	

Table 13.6. Fuse Parts

Item 6 – Control Board		
Motor HP	Part#	Description
All	523034	PCB,ASC,LOGICBOARD

Table 13.7. Control Board Parts

Section 13 – Parts List

Cabling Parts, Sensors, Junction Boxes

Serial Numbers

Please reference the unit serial number when ordering parts as it will allow us to reference revisions and manufacturing dates to ensure that replacement equipment is compatible with your product

Substitute Parts

The use of replacement parts not provided by the door manufacturer is not authorized and could void the product warranty.

Warranty and Returned Parts Policy

Warranty Parts

Domestic Shipments: Product is guaranteed to be free from defects in workmanship and materials for a period of 2 years from the date of factory shipment. This warranty includes replacement of parts, shipped via ground service to a job site or Customer's warehouse. Warranty parts should be ordered in the method described in the beginning of this section of the owner's manual. If parts are to be returned, CornellCookson will issue a return authorization containing a reference number, shipping address and other pertinent instructions for the parts to be returned within 30 days freight collect via one of the carriers listed in the return authorization information. Care should be taken to package returned part adequately to reasonably expect the parts to arrive undamaged from the return freight. Incomplete parts, or parts damaged due to inadequate or non-existent packaging will not be considered for warranty claims

The Customer agrees to pay for warranty replacement parts and freight if such parts are not found to be defective.

Shipment of warranty parts shipped via overnight or air freight will be at the customer's expense and will be shipped freight collect. This warranty does not cover incidental costs such as guard service, liquidated damages, punitive damages, cost of removing or repairing adjacent or attaching structures, etc.

Export Shipments: Product is guaranteed to be free from defects in workmanship and materials for a period of 1 year from the date of factory shipment. This warranty includes replacement of parts, shipped via ground service to the U.S. Port of Exportation. Warranty parts should be ordered in the method described in the beginning of this section of the owner's manual.

Shipment of warranty parts shipped via overnight or air freight will be at the customer's expense and will be shipped freight collect. This warranty does not cover incidental costs such as guard service, liquidated damages, punitive damages, cost of removing or repairing adjacent or attaching structures, etc

Electrical Warranty Conditions and Exceptions: Incoming line voltages are required to fall within ranges established by ANSI C84.1 (ANSI Standard for Electrical Power Systems and Equipment) and wiring must be connected in accordance with applicable standards established by the current edition of NFPA-70 (NEC) for commercial rolling door operators. Unauthorized modifications or damage as a result of improper wiring or line voltage fluctuations will void all electrical warranties.