INMOTION

A Caldwell Company

AUTOMATION INSTALLATION INSTRUCTIONS
(ELECTRICAL INSTALLATION ONLY)

G1/G1D AUTOMATION PANEL

CONTENTS

Disclaimer: The information provided here is a general guideline. The representations and drawings included show typical placements and configurations. Refer to shop drawings and building documents for information specific to individual applications.

SAFETY TIPS

Safety is number one priority here at Caldwell. Certified Installers only, should be installing this product. Please be cautious of your surroundings during installation and use tools the proper way.

Electrical Safety:

Whenever you work with power tools or on electrical circuits, there is a risk of electrical hazards, especially electrical shock. We recommend that all workers pay special attention to electrical hazards while installing this system. Coming in contact with an electrical voltage can cause current to flow through the body, resulting in electrical shock and burns. Serious injury or even death may occur.

Note: Incorrect installation can lead to injury. Read and follow instructions contained in this manual carefully.

Safety Tips:

- Do not wear rings, watches or any loose clothing when installing or servicing the automation system.
- **Safety glasses** must be worn at all times
- Door system must be installed correctly before any automation is installed
- Watch for nails, sharp edges/corners, splintered wood, and uneven surfaces

Recommended Safety Equipment:

- Safety Glasses
- Heavy Duty Gloves
- Hard Toe Shoes
- Knee Pads
- First Aid Kit

Safety First!

PRE-INSTALLATION CHECKLIST

Prior to installing the automation system <u>verify</u> the following:

✔ Does the door open AND close smoothly and easily?
  Make sure the door moves freely over its entire length of travel.

✔ Is the sill track is in good condition and allows smooth door travel?
  Make sure the track clear of construction debris.

✔ Is the door level?
  Make sure the track does not sag or rise excessively over the run.

✔ Is the door plumb?
  Verify the door is square "panel to panel" AND "panel to jams".

✔ Do we have the required ¾" clearance in the head track for the belt and hardware?
  Measure and record the distance between the top of the door and head track in several locations over the length of the doors travel.

✔ Ensure that a 110V, 60Hz, 15A circuit is located at the automation panel.
  A dedicated circuit is recommended.

🛑 **If the above are not correct, have the installation corrected!**

TOOL LIST

In addition to safety equipment, standard framing contractor or carpenter tools are required.

- Power Drill

- Drill Bit Kit

- 1/8" Shim Spacers

- Tape Measure

- 6' Jamb Level

- Alan Wrench Set

- Precision Screw Driver Kit

- Ladders

- Screw Driver

- Hammer

- Pulley Jig

- RJ 45 Crimper Tool

- Wire Cutters/Strippers

- Electrical Tape

- Black Permanent Marker

- 2 1/8" & 1" Hole Saws

- Conductor Crimpers

- Paddle/Spade Bit Kit

- Cable Tester (optional)

COMPONENTS
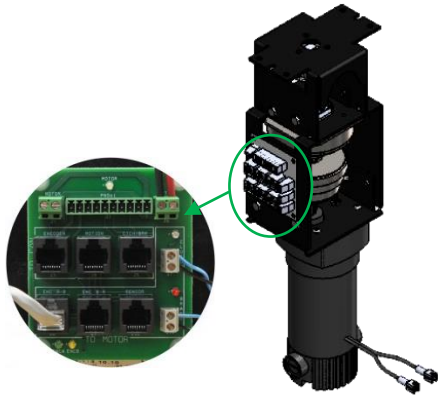
**Motor Assembly &
Motor Breakout Board (Green)**
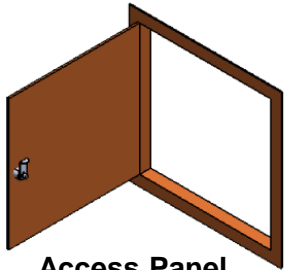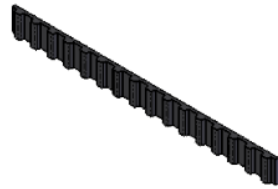
Drive Belt
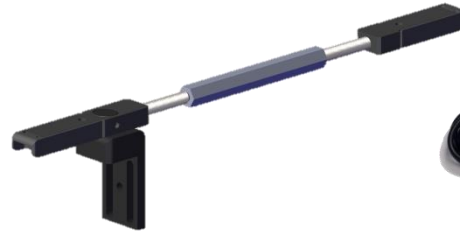
**Turnbuckle Belt Clamp &
Mounting Bracket**

Power Cable

Infrared
Controller
Receiver

Transmitter

**Infrared Sensor
System
(Optional)**

Access Panel
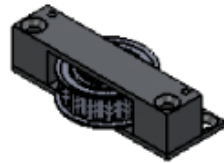
Return Pulley

26-8 Flat Wire

Touchscreen (Optional)

**Automation Panel
(Optional Battery Backup)**
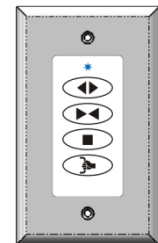
Wall Switch

**Overhead Motion
Sensor (Wired)**

**RF Wireless Motion
Receiver & Remote
(Optional)**

PRE-INSTALLATION CHECKS

- Before beginning, some things need to be checked to ensure a smooth installation.

- Ensure that a 110V, 60Hz, 15A (dedicated is preferred) circuit is located at the Automation Panel.

- Pre-installation door checks:

  – Door Movement - Make sure that the door moves freely over its entire length of travel, and that it is square panel to panel and panel to jambs. If any problems are detected, contact the door installer or job superintendent to correct them.

  – Head Track Clearance - Sagging or distortion in the door head track may cause an interference with the drive belt or belt clamp assembly. Therefore, before beginning installation, measure and record the distance between the top of the door and the head track. This should be done at several locations over the length of the door travel.

    Note: There are different minimum clearance recommendations for different door manufactures.

¾" Head Track Clearance is Recommended
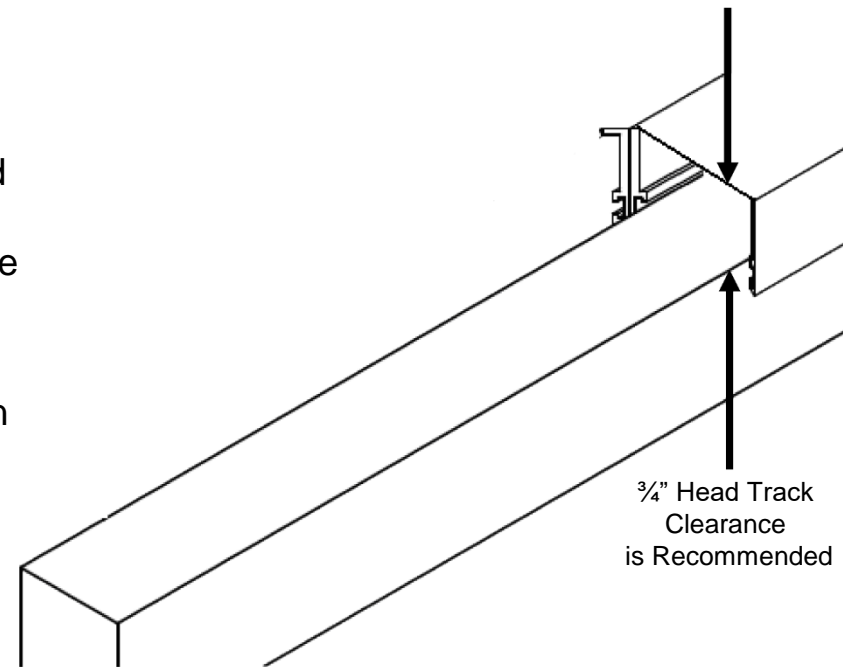
STANDARD COMPONENT PLACEMENT

When determining component locations, consider the visual impact on the end customer, ease of installation, and future serviceability. Figure below shows the typical location of components.

Wired Overhead Motion Sensor

1/2 Inch

3/8 Inch

OR

Return Pulley

Motor

Automation Panel
G1x Shown
(within 75 feet)

Wired Multi-Button
Wall Switch

OPEN
CLOSE
STOP
UNLOCK
RESET
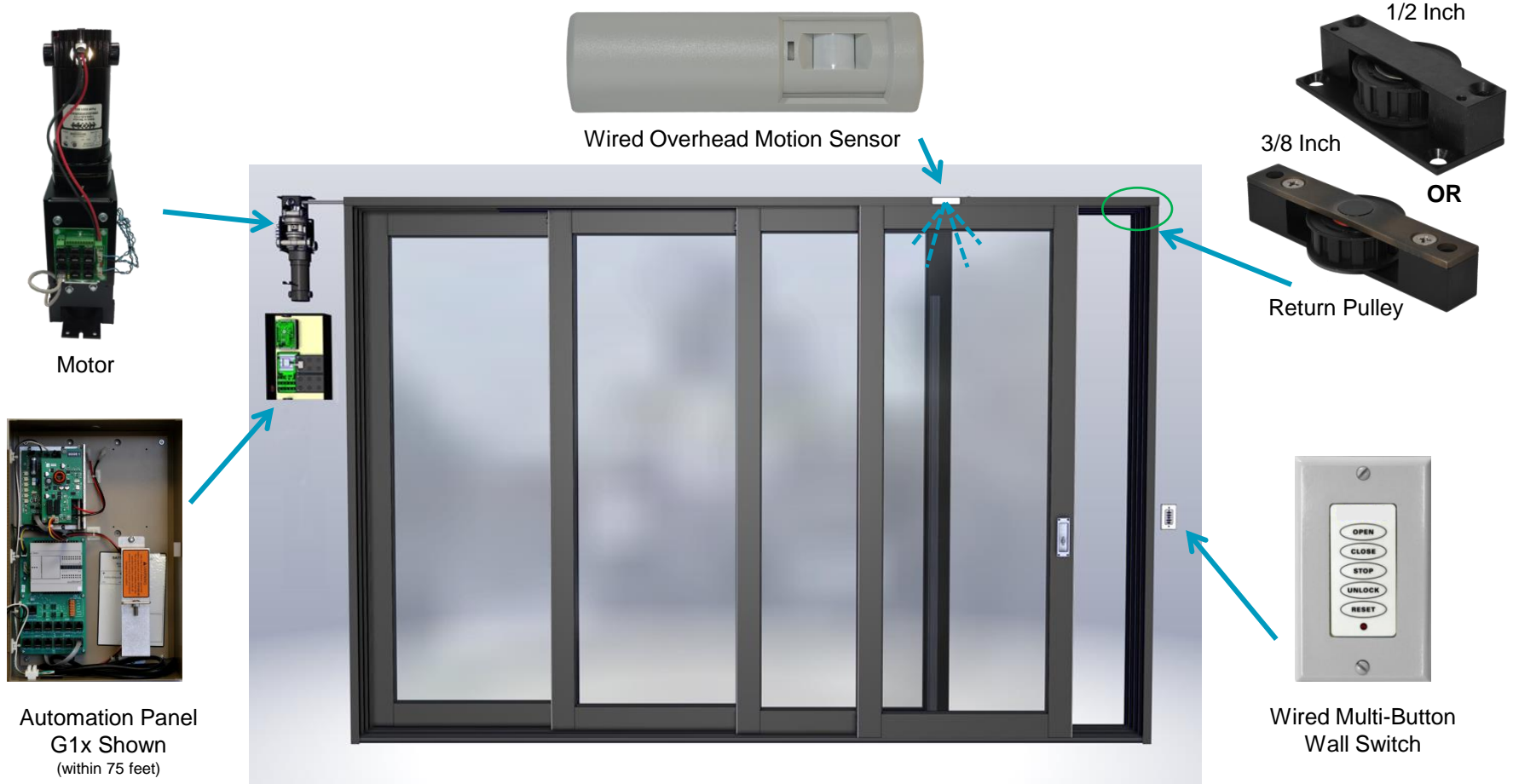
STANDARD COMPONENTS

- **Automation Panel –** The automation panel is an electrical enclosure box that measures 4 ¼" x 2 ⅛" x 14". To ensure proper system operation, the automation panel, needs to be mounted within 6 feet (wire length) of the motor assembly. This panel needs to be accessible. The Automation Panel comes with an electrical cord, so it can be plugged into a normal 110V, 60Hz, 15A, dedicated circuit. The G1 automation panel has 1 motor board labeled 'Drive 1" while the G1D has 2 motor boards labeled "Drive 1" and "Drive 2".
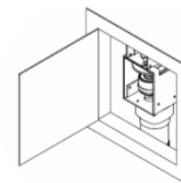
- **Motor Assembly Access Panel –** Access to the motor assembly is required. Typically this is done with a 12" x 12" Access Panel supplied by Doors In Motion.

- **Motor Assembly –** On a single pocket door or stacked door, the motor assembly is typically located opposite the lock side jamb or in an extended pocket.

- **Return Pulley –** The return pulley is located on the opposite end of the door from the motor assembly and in many instances can be installed within the head track. The return pulley comes in 2 sizes, 3/8" and 1/2"(shown) based on the belt size.

- **Multi-Button Wall Switch** – A low voltage multi-button wall switch, which fits into a single-gang switch box, is typically installed 54" above the floor to control the door. This is an wired interior switch.

- **Overhead Motion Detector –** For doors that do not have opposing locations for a through beam sensor, an overhead motion detector is installed. The motion detector is located where the first and second operating doors meet and should be installed no more than 14' above the floor. If properly installed and adjusted, when the door is closing and the motion detector senses motion, the door will come to a stop.

OPTIONAL COMPONENT PLACEMENT

When determining component locations, consider the visual impact on the end customer, ease of installation, and future serviceability. Figure below shows the typical location of components.

Wired **Exterior** Security Wall Switch [2]

RF Wireless Motion Receiver [1]

Wired Controller & Infrared Beam Receiver

Wired Infrared Beam Transmitter

Notes: **1** – RF wireless receiver should be connected to a wired keypad, or to the "Wall Switch" RJ45 on the controller **AND** located external to the enclosure for best performance.

2 - Wall switches shown are for illustration and are available in multiple colors and button configurations.

OPTIONAL COMPONENTS

- **Security Wall Switch**– A low voltage multi-button dual-gang wall switch and is typically installed 54" above the floor. This is an exterior switch provides 2 panels, one is used to enter the access code while he second is used to operate the door.

- **Wired Infrared Beam Sensor** – An infrared sensor is used to detect obstructions. The infrared sensor consists of a controller, transmitter and receiver. The transmitter to receiver range is 32' and both should be mounted 8-12" above the floor. For ease of connection purposes, the controller is typically installed near the motor assembly. The transmitter is installed in a wall on one side of the door and the receiver is in installed in a wall on the other side of the door closest to the motor assembly. Note: Options available for larger openings. This option replaces the standard wired motion detector.

- **RF Wireless Remote & Receiver**– The RF wireless remote control connects to the controller using the same flat wire bus as the wired keypad. Like wired keypads, the receiver has 2 RJ45 ports, either of which can be daisy-chained to wired keypad's connectors. RF remotes must be matched to their receivers with identical DIP switch setting on both devices. RF remote kits shipped from the factory are pre-matched. From the remote the operator can open, close, stop and lock/unlock their door.

  If connecting receiver directly to the keypad RJ45 connector of the controller, DO NOT position the receiver inside the controller's enclosure. This will significantly impact the range of the wireless components if not disable them completely. Instead attach a length of flat wire and position the receiver OUTSIDE the cabinet.

AUTOMATION SYSTEM INSTALLATION

- ## Mechanical Installation Complete:

  - Before beginning the electrical installation, check for rubs and interferences by manually moving the door over the entire length of its travel. Make sure that the door moves freely over its entire length of travel, and that it is square panel to panel and panel to jambs. If any problems are detected, contact the door installer to correct them. <u>Everything must be working properly mechanically before beginning electrical installation.</u>

- ## Electrical Installation Begins:

  - To avoid confusion and to prevent damaging system components, all wires must be labeled with a black marker.
  - For ease of installation and to avoid damaging connectors, wires should be run first and then the connectors should be applied. (Connector Application Instructions Follow Wiring Steps.)
  - **Do not connect motor or control panel to power before instructed.**

AUTOMATION SYSTEM INSTALLATION

- Electrical connections schematic and wiring diagram:

A. Automation panel **(up to 75 feet of wire length from motor)**
B. Motor
C. Clutch, brake and encoder
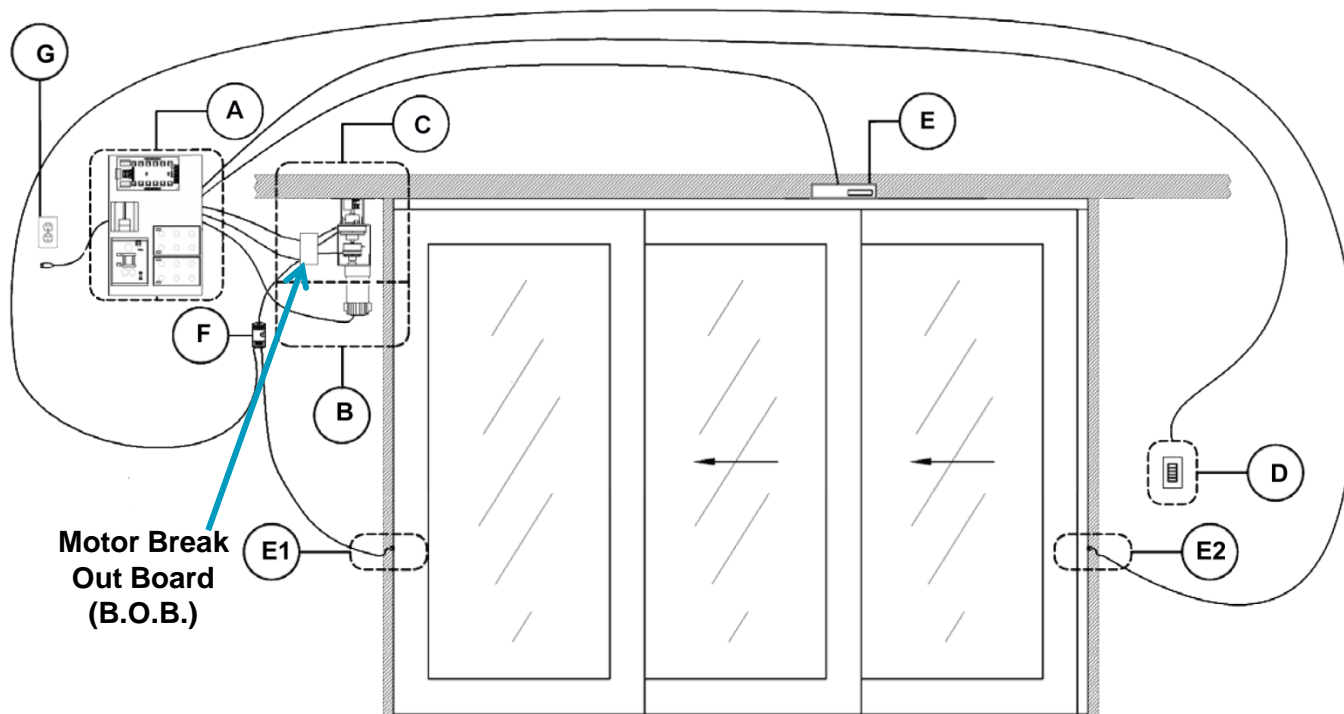**D.** Multi-button wall switch

E. Motion detector*
E1. Infrared sensor <u>receiver</u>*
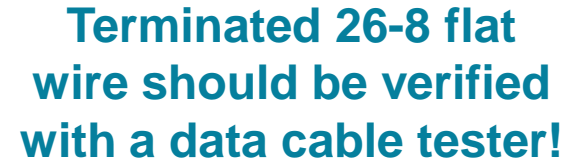**E2.** Infrared sensor <u>transmitter</u>*
F. Infrared sensor controller*
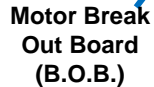**G.** 110V, 60Hz, 15A, dedicated circuit

Motor Break Out Board (B.O.B.)

* Note: Infrared Sensor System is standard, but the Overhead Motion Sensor is an optional replacement.

AUTOMATION SYSTEM INSTALLATION
Motor Wiring

Motor Break Out Board (B.O.B.)

Terminated 26-8 flat wire should be verified with a data cable tester!

Important Note: To avoid confusion and to prevent damaging system components, **all wires must be labeled with a black marker**. For ease of installation and to avoid damaging connectors, **wires should be run first and then the connectors should be applied.**
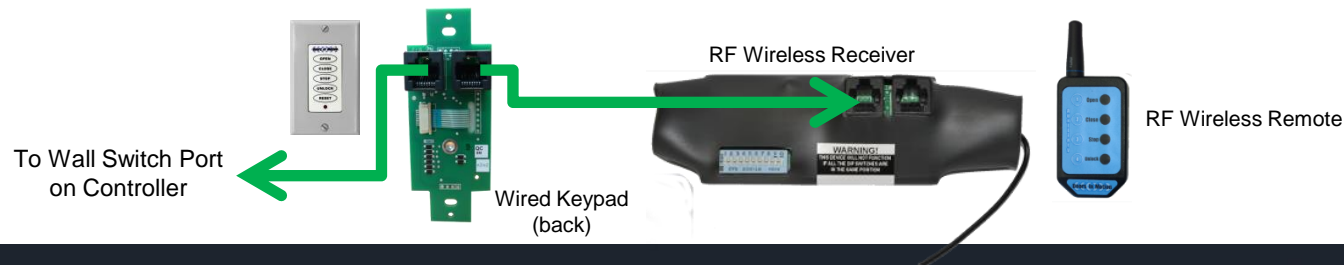
- **Automation Panel (A) to Power Supply (G)** – DO NOT PLUG IN UNTIL INSTRUCTED. When instructed, the automaton panel will be connected to "G" which is a 110V, 60Hz, 15A, dedicated circuit. "G" should be within 6 feet of the automaton panel. A "pigtail" is supplied inside the automation panel. If the automation panel is mounted flush in a wall, have a licensed electrician discard the "pigtail" and "hardwire" the panel.

- **Motor (B) to Motor Control in Automation Panel (A)** – Use the 14-2 wire harness provided, or use 2 conductor 14 gage wire and Tyco® connectors, to run from the motor break out board to the motor control in the automation panel.

- **Motor Breakout Board (C) to Automation Panel Main Circuit Board (A)** – There are typically three 26-8 flat wire cables, with male RJ45 connectors. These cables run from the motor breakout board, on the side of the motor assembly, to the automation panel main circuit board.
  - The first cable runs from the female connector on the motor breakout board labeled "ENCODER" to the female connector on the automation panel main circuit board labeled "ENCODER 1".
  - The second cable runs from the female connector on the motor breakout board labeled "CTCH / BRK" to the female connector on the automation panel main circuit board labeled "CTCH / BRK 1".
  - The third cable runs from the female connector on the motor breakout board labeled "MOTION" to the female connector on the automation panel main circuit board labeled "MOTION". (Note: Leave Provided Motion Jumper in place in the main circuit board until instructed. Do not plug in "MOTION" until instructed- after initial programming.)

AUTOMATION SYSTEM INSTALLATION
Wall Switch Wiring

Motor Break
Out Board
(B.O.B.)

Terminated 26-8 flat wire should be verified with a data cable tester!

Important Note: To avoid confusion and to prevent damaging system components, **all wires must be labeled with a black marker**. For ease of installation and to avoid damaging connectors, **wires should be run first and then the connectors should be applied.**

Important Note: For ease of installation and to avoid damaging connectors, wires should be run first and then the connectors should be applied.

- **Multi-button Switch (D) to Automation Panel Circuit Board (A)** - There is one 26-8 flat wire cable, with male RJ45 connectors, that runs from the multi-button wall switch to the female connector on the automation panel main circuit board labeled "WALL SWITCH".

- **RF Remote Control Receiver** - This will be plugged into the back of the Wall Switch with the provided RJ 45 Wire.

RF Wireless Receiver

RF Wireless Remote

To Wall Switch Port
on Controller

Wired Keypad
(back)

INMOTION

AUTOMATION SYSTEM INSTALLATION
Infrared or Motion Detector Wiring

Motor Break Out Board (B.O.B.)

Terminated 26-8 flat wire should be verified with a data cable tester!
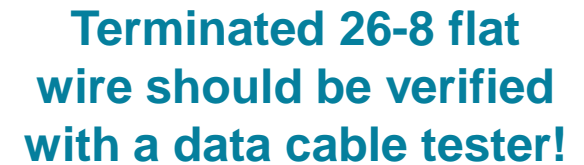
Important Note: To avoid confusion and to prevent damaging system components, **all wires must be labeled with a black marker**. For ease of installation and to avoid damaging connectors, **wires should be run first and then the connectors should be applied.**

Note: Infrared Sensor System is standard, but the Overhead Motion Sensor is an optional replacement.

- **Infrared Controller (F) to Motor Break Out Board** - Wire from infrared controller runs directly to the female connector in the motor break out board labeled "SENSOR".

- **Infrared Receiver (E1) to Infrared Controller (F)** - Use blue wire bundle to run from infrared receiver to infrared controller. To terminate the receiver wires at the sensor controller, the white shielded wire is inserted into the blue port number 6 and the unshielded wire is inserted into the yellow port number 7. If two sensor sets are used, the additional receiver wires are plugged into ports 8 and 9.

- **Infrared Transmitter (E2) to Infrared Controller (F)** - Use gray wire bundle to run from infrared transmitter to infrared controller. To terminate the transmitter wires at the sensor controller, the white shielded wire is inserted into the gray port number 10 and the unshielded wire is inserted into the yellow port number 11. If two sensor sets are used, the additional transmitter wires are plugged into ports 12 and 13.

<u>OR</u>

- **Overhead Motion Detector to Automation Panel Circuit Board** – The motion detector uses 26-8 flat wire. The 26-8 flat wire cable runs from the motion detector to the female connector in the automation panel main circuit board labeled "MOTION." (Note: Leave Provided Motion Jumper in place in the main circuit board until instructed. Do not plug in "MOTION" until instructed- after initial programming.)
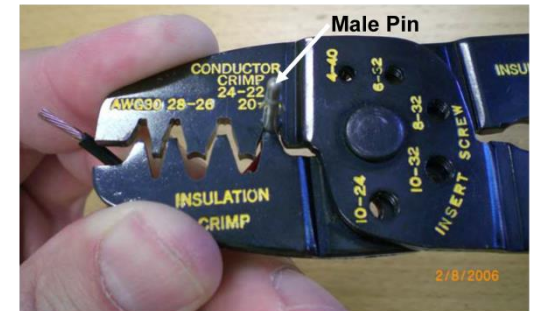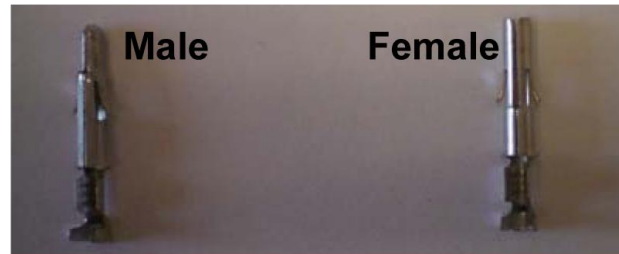
AUTOMATION SYSTEM INSTALLATION

Applying Connectors

### Motor to Motor Control in Automation Panel

Applying Tyco® Connectors – When applying the Tyco® connectors, first make sure that the wires are properly identified and strip as shown below.

Use a high quality conductor crimper to crimp the male and female pins, onto the 14-2 wire. Crimp the pin onto both the insulation and the conductor.

Insert pins into connectors. Female pins are inserted into male connectors until they snap (Shown Below). Male pins are inserted into female connectors until they snap.
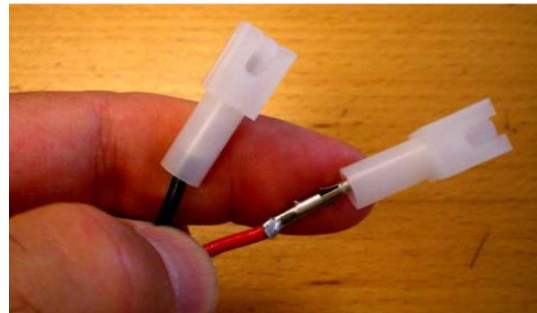
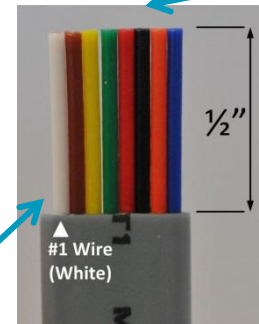# AUTOMATION SYSTEM INSTALLATION
Applying Connectors
Motor Breakout Board and Wall Switch to Automation Panel Main Circuit Board

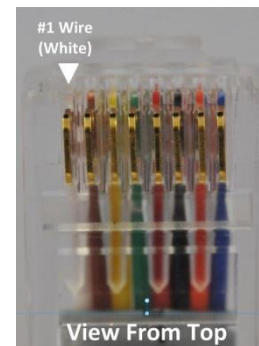**Terminated 26-8 Flat Wire should be verified with a data cable tester!**

- **Applying RJ45 Connectors** – When applying RJ45 connectors, first make sure that all wires are properly identified. Use a high quality 26-8 data/phone cable stripper (shown Right) to create a clean and even end on the 26-8 flat wire cable.

- Then strip-off about ½" of the outside jacket (only the outside jacket will be stripped). The 8 individual wires should have their relative shields intact.

- While holding the cable, identify the outermost colors of the 8 wires. Choose the left extreme white wire to be the #1 wire.

- Insert the stripped cable into the connector so that the #1 wire lines up with the connector position #1. Make sure to push the cable all of the way into the connector.

- Insert the wire/connector assembly into the correct crimper opening and crimp to form a permanent wire/connector assembly.

- Repeat this process for all wires making sure that the #1 (white) wire/connector position is the same for all wires.
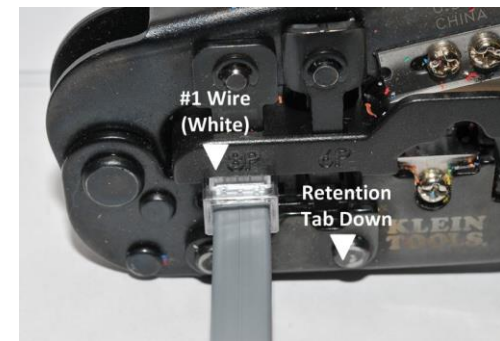
Crimper

RJ-45 Wire Colors:
#1 White
#2 Brown
#3 Yellow
#4 Green
#5 Red
#6 Black
#7 Orange
#8 Blue

½"

#1 Wire (White)

26-8 Flat Wire Cable

Position #1

Retention Tab Down

RJ45 Connector for 26-8 Cable Insertion

#1 Wire (White)

View From Top

RJ45 with Cable Inserted

#1 Wire (White)

Retention Tab Down

Crimping RJ45 Connector to Cable

AUTOMATION SYSTEM INSTALLATION
Wall Switch Wiring
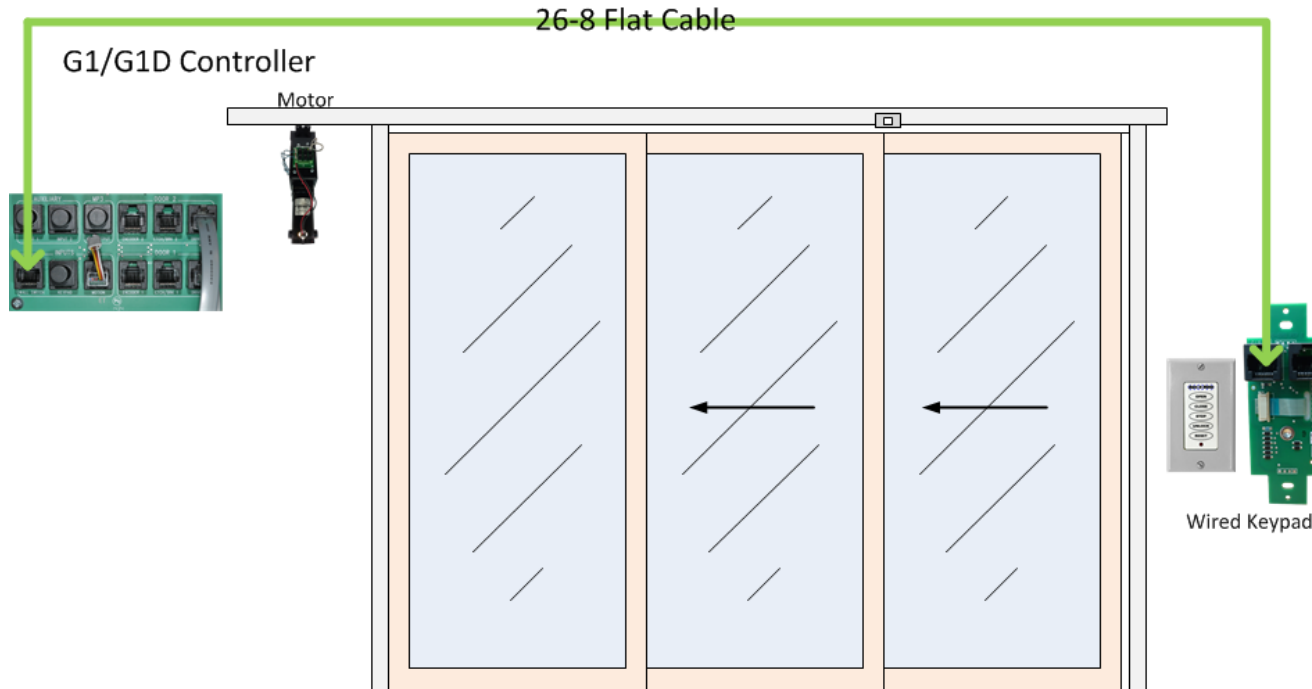
G1/G1D Controller

Motor

26-8 Flat Cable

Wired Keypad

Terminated 26-8 flat wire should be verified with a data cable tester!

Important Note: To avoid confusion and to prevent damaging system components, **all wires must be labeled with a black marker**. For ease of installation and to avoid damaging connectors, **wires should be run first and then the connectors should be applied.**

Important Note: For ease of installation and to avoid damaging connectors, wires should be run first and then the connectors should be applied.

• **Multi-button Wall Switch to Automation Panel Circuit Board** - There is one 26-8 flat wire cable, with male RJ45 connectors, that runs from the multi-button wall switch to the female connector on the G1/G1D automation panel labeled "wall switch".

AUTOMATION SYSTEM INSTALLATION
Initial Set Up For Programming G1/G1D Door #1

1. Turn OFF the controller.
2. Connect the drive power **Red** & **Black** cables to the motor
3. Install the "**Motion Jumper**" in the motion port
4. Connect the **Encoder** & **Clutch/Brake** RJ45 28-8 flat wire cables from the controller to the motor of Door # 1 (cables up to 75 feet long).
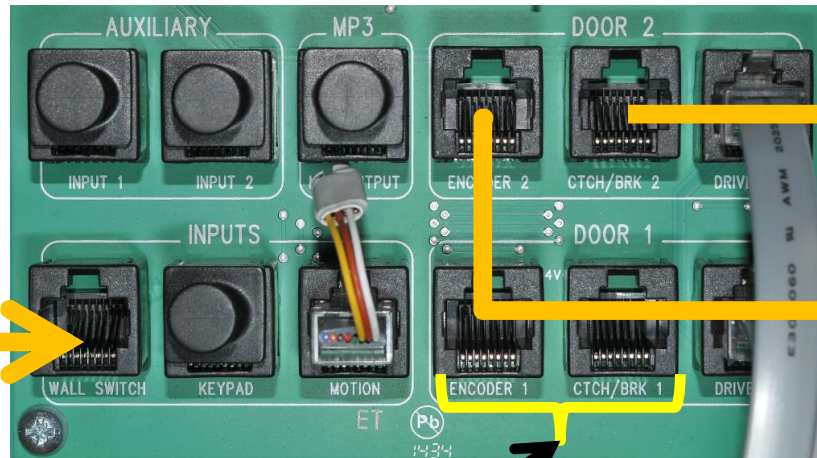5. Connect a wired keypad to the **Wall Switch** connector.
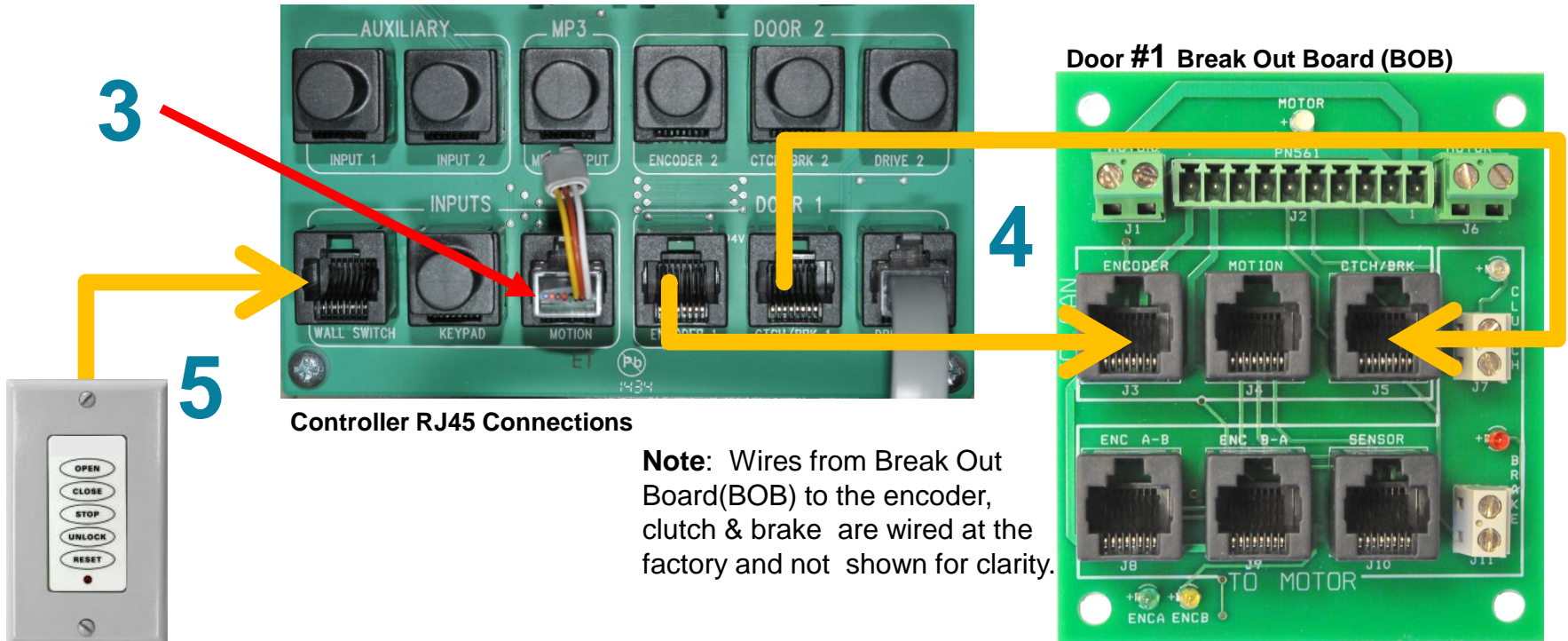
1

2

Door #1 Break Out Board (BOB)

3

4

5

Controller RJ45 Connections

Note: Wires from Break Out Board(BOB) to the encoder, clutch & brake are wired at the factory and not shown for clarity.

Terminated 26-8 flat wire should be verified with a data cable tester!

AUTOMATION SYSTEM INSTALLATION
Initial Set Up For Programming <u>G1D</u> Door <u>#2</u>

1. The controller should still be off…
2. Connect the **Encoder** & **Clutch/Brake** RJ45 28-8 flat wire cables from the controller to the motor of Door # 2 (cables up to 75 feet long).
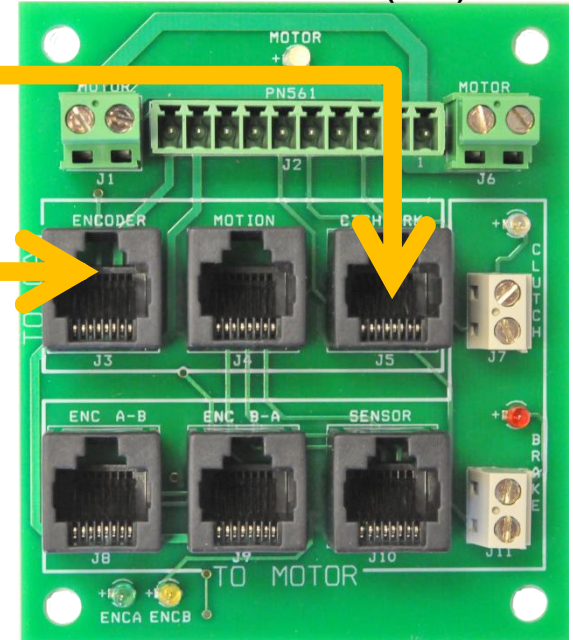

Door #2 Break Out Board (BOB)

Controller RJ45 Connections

Door # 1 wires not shown for clarity

Note: Wires from Break Out Board(BOB) to the encoder, clutch & brake are wired at the factory and not shown for clarity.
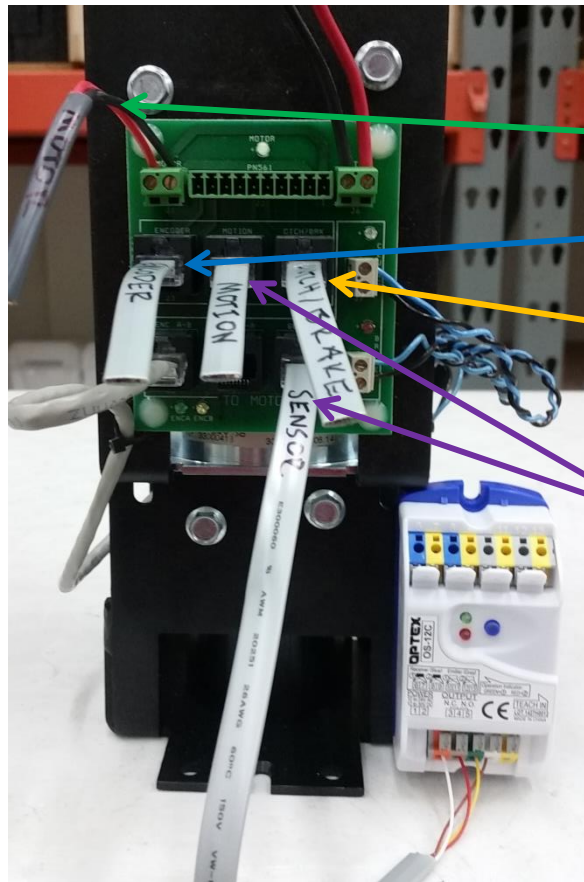
Terminated 26-8 flat wire should be verified with a data cable tester!

AUTOMATION SYSTEM INSTALLATION
Initial Programming

While the power is OFF:

Confirm that everything is plugged in correctly and in the right place in both the Control Box (Right) and the Motor Break Out Board on the Motor (Below).
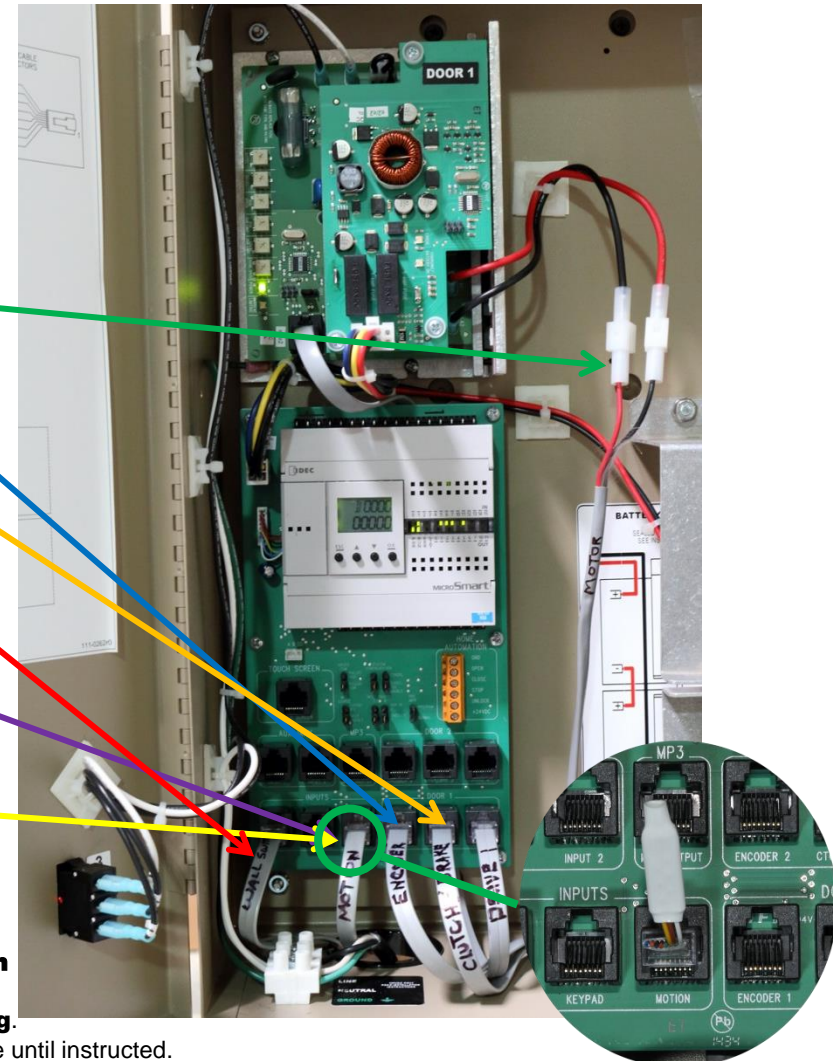
Motor to Motor Control

Encoder

Clutch/Brake

Wall Switch

Infra-Red System*

Overhead Motion Detector*

*Note: DO NOT plug "Motion" into Automation Panel until instructed- after initial programming.
Leave Motion Jumper in Place until instructed.

AUTOMATION SYSTEM INSTALLATION

Installing the *optional* IDEK HMI LCD Module

This HMI LCD module plugs into the "MicroSmart" PLC inside the controller. It allows the installer to read live encoder counts as well as adjust programming parameters. The encoder can be verified in other ways, however changing parameters require this module be installed. For most installs, this module is not required.
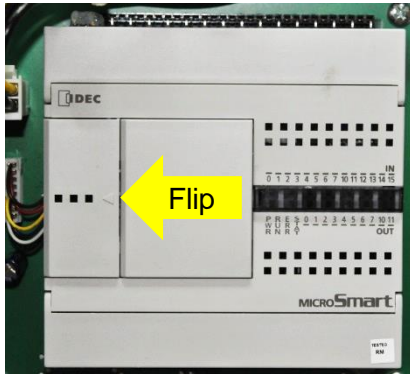
MicroSmart PLC
Power OFF
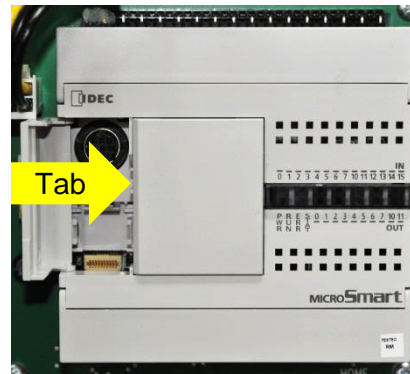
Flip the Side
Cover

Depress The Tab
On the Left and
Remove the
Cover

Gently Plug In
the LCD and
Close the Cover

When the job is done, don't forget to remove the LCD and replace the cover!

AUTOMATION SYSTEM INSTALLATION
Using the IDEK HMI LCD Module to Verify Encoders

Prior to programming the installer must verify the encoder for each door is functioning. With this module the actual encoder values can be displayed for each door. The count displayed must count **UP** while the door opens and **DOWN** when the door is closing.

The buttons on the front of the LCD are used to navigate, select and enter new parameter values into the PLC.
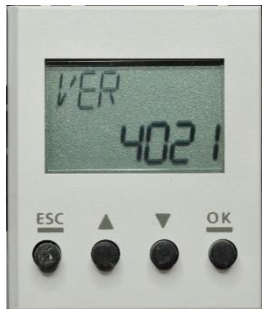
ESC	Selects the previous navigation level or moves to the previous item
▲	When the selected digit flashes *slowly* moves digit selection to the **left**
	When the selected digit flashes *rapidly* will <u>increases</u> the digit value by **1**
▼	When the selected digit flashes *slowly* moves digit selection to the **right**
	When the selected digit flashes *rapidly* will <u>decrease</u> the digit value by **1**
OK	Selects a navigation item **OR** sets the current parameter value in the PLC

Reading the Encoder

- From the Ver 4021 screen, press ▼ 3 times or until "**DR**" is displayed

    Press **OK** and "D000<mark>0</mark>" will display on the top row and the highlighted digit will blink <u>slowly</u>
    While <u>slowly</u> blinking use the ▼▲ buttons to change to a different digit, i.e. moves left & right.
    Press **OK** to cause the slowing blinking digit to rapidly blink

    While <u>rapidly</u> blinking, use the ▼▲ buttons to change the digit value

    Use the **ESC** button change from rapid to slow blinking and vise versa

- When the top line shows the desired "Dxxxxx" number, press **OK** 1-2 times to display the encoder value on the bottom line

- G1 (single motor) = **D00000**, G1D (motor 1) = **D0001**, G1D (motor 2) = **D0002**

AUTOMATION SYSTEM INSTALLATION
Using the IDEK HMI LCD Module to Verify Encoders (cont)

ESC	Selects the previous navigation level or moves to the previous item
▲	When the selected digit flashes *slowly* moves digit selection to the **left**
	When the selected digit flashes *rapidly* will <u>increases</u> the digit value by **1**
▼	When the selected digit flashes *slowly* moves digit selection to the **right**
	When the selected digit flashes *rapidly* will <u>decrease</u> the digit value by **1**
OK	Selects a navigation item **OR** sets the current parameter value in the PLC

From the Ver 4021 screen, press ▼ 3 times or until "DR" is displayed

G1's Encoder Count (Single Motor uses D0000)

- On the LCD, select the "**DR**" function and set the "D" value to "**D0000**"
Press the **OK** button 2x to display the encoder count on the bottom
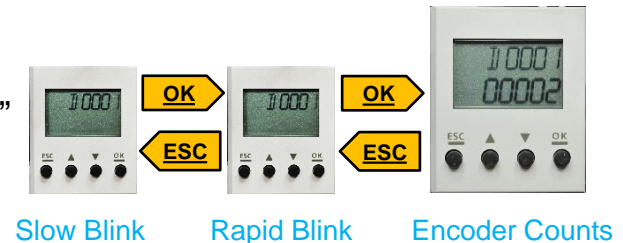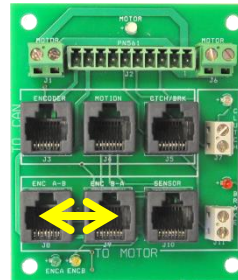

Slow Blink   Rapid Blink   Encoder Count

G1D Encoder Counts (Dual Motor uses D0001 & D0002)

- On the LCD, select the "**DR**" function and set the "D" value to "**D0001**"
- Press the **OK** button 2x to display the encoder count on the bottom
- For door 2, use "**D0002**" instead
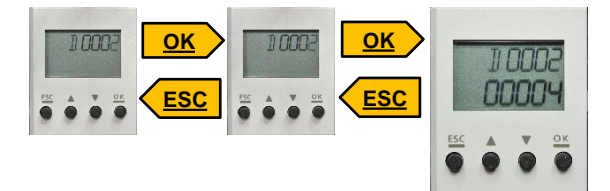

Slow Blink   Rapid Blink   Encoder Counts

For each motor, verify the encoder counts UP when <u>opening</u> and DOWN when <u>closing</u>! If not, swap the Encoder wire at the BOB, ENC A-B to ENC B-A
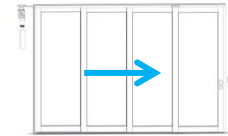
AUTOMATION SYSTEM INSTALLATION
Initial Programming G1/G1D Without a Touch Screen*

** When using a **touchscreen**, make sure the program jumper is in the "NORMAL" position and follow the setup instructions on the touchscreen after entering the "System Setup" mode. The password is 1234.*

1. Start with the system OFF the door(s) closed and all components are connected.

1

Fully CLOSE door(s)

2. Move the program jumper from "Normal" to "**Program**" and power on the controller.

2

3. Verify the encoder polarity as shown in the previous [section]. This only needs to be done once! *Skip this step if already done.*

3

Slow Blink   Rapid Blink   Encoder Count

4. Manually open the door(s) to their full open position.

4

Open door(s) Fully

5. Press and hold the **RESET** button for 15 seconds.
Then move the program jumper from "Program" to "**Normal**"
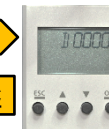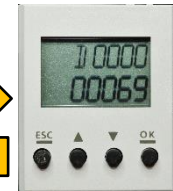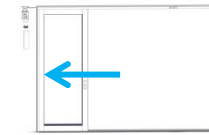
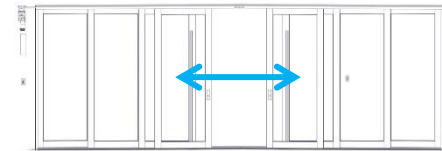**5**
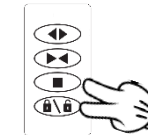
"RESET"   Jumper to "Normal"

AUTOMATION SYSTEM INSTALLATION
Initial Programming G1/G1D Without a Touch Screen*

** When using a **touchscreen**, make sure the program jumper is in the "NORMAL" position and follow the setup instructions on the touchscreen after entering the "System Setup" mode. The password is 1234.*

6. Manually move each door to its midpoint.

6

Doors at Midpoint

7. Press "**CLOSE**" and verify each door moves in the correct direction. If NOT, press **STOP**.

7
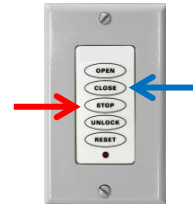
"CLOSE"

8. If the doors move in the <u>correct</u> direction, then run the doors for at least 2 full cycles to complete the programming.

8
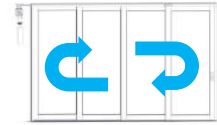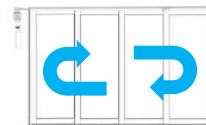
9. If a door moved towards **open** instead of **closed**, swap the **Black** & **Red** wires on the motor BOB **OR** at the controller for the affected motor.

   Then repeat steps 1-8. Step 3 can be skipped.

9

Motor Wires Inside the Controller

Motor Wires at the BOB

AUTOMATION SYSTEM INSTALLATION
Speed & Force Adjustments

IMPORTANT: Potentiometers will NOT turn 360°

- <u>Speed & Force Adjustments</u> – There are 6 potentiometers on the motor control. In addition to the potentiometers, the motor control also has 2 indicator LEDs, fuses and a potentiometer adjustment jumper.

- <u>6 Rotary Potentiometers</u> – Purpose of the 6 rotary potentiometers:
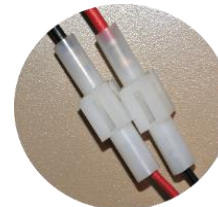
  – <u>ACCEL</u> – Controls ramp up speed from the stop position to full Run Speed.

  – <u>DECEL</u> – Controls ramp down speed from full Run Speed to Crawl Speed.

  – <u>RUN SPEED</u> – Controls over all speed of the door.

  – <u>RUN CUR LIMIT</u> – Controls maximum allowable motor current (force) when door is in Run Mode.

  – <u>CRAWL CUR LIMIT</u> – Controls maximum allowable motor current (force) when door is in Crawl Mode.

  – <u>CRAWL SPEED</u> – Controls speed of door the final 12-18" on Open/Close.

- To alter any of these speeds, use a precision screw driver to turn the associated potentiometer clockwise or counterclockwise.

Speed & Force Adjustments Cont

IMPORTANT: Potentiometers will NOT turn 360°

- Motor Control Potentiometer Adjustment Jumper – When the automation panel is first powered-up, the power indicator LED will be **flashing**. This indicates that the motor control is in the "programming mode" and the potentiometers can be adjusted. Once the potentiometers have been adjusted, the motor control potentiometer adjustment jumper must be pulled from pins 1&2 and stored on pins 2&3. This "locks" the potentiometers and stops the power indicator from flashing. Pulling the jumper prevents unwanted or accidental adjustments that may affect door performance. If the motor control must be readjusted, replace the jumper on pins 1&2 to enable *adjustment mode*.

- There is one board per motor. For the G1D, each motor is controlled independently so each motor should be adjusted for optimum performance.

Potentiometer Adjustment

J503 Jumper
Pins 1 & 2: Adjustment Mode - Green Power LED Flashes
Pins 2 & 3: Locked Mode   - Green Power LED Steady

TIP:
All pots increase in value going clockwise except for "Acceleration" which decreases!
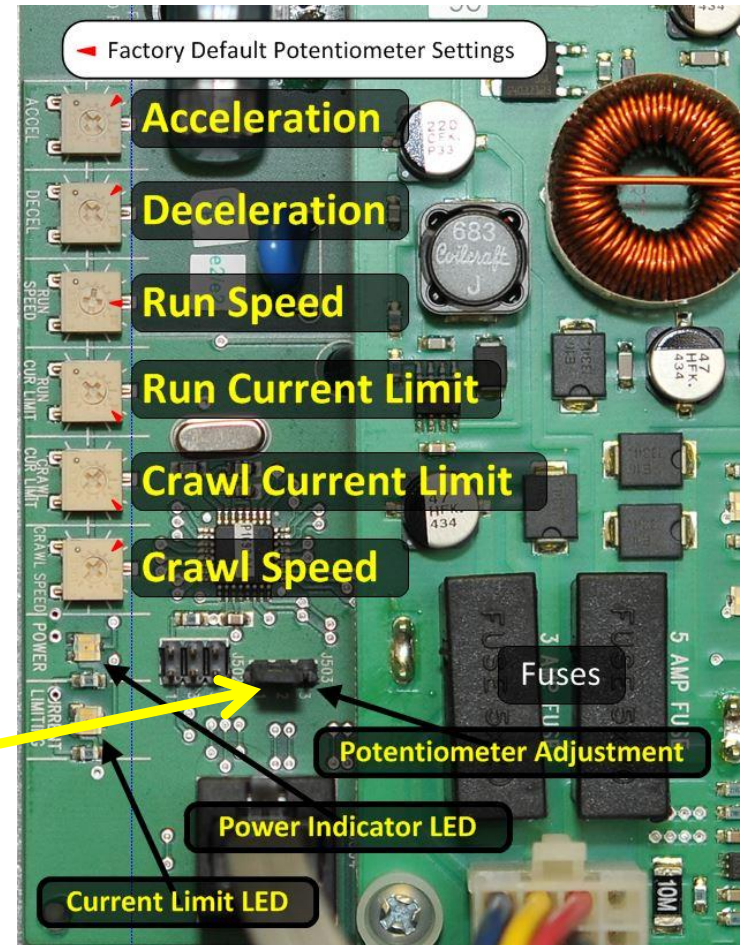
AUTOMATION SYSTEM INSTALLATION
Final Programming Instructions

- **Final Programming Instructions**: Since different doors have different weights and different rolling friction, final programming is required for proper door operation. The following process describes final programming:

  1. Remove the motion jumper, from the automation panel main circuit board, and connect the motion sensor wire.
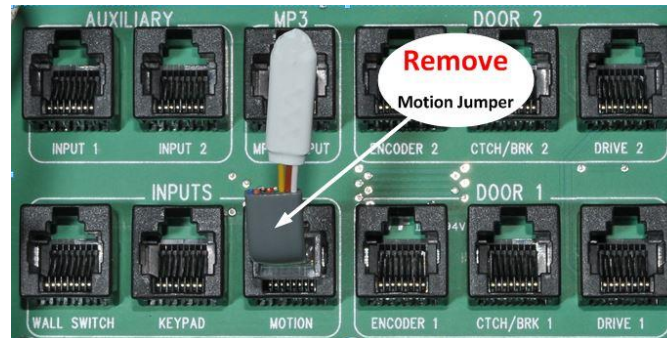
  2. Operate the door back and forth several times and observe its operation. Observe its acceleration, how fast it travels, its deceleration, how it enters the jamb, and listen for how long the motor stays on once it reaches the jamb. Decide what changes need to be made to ensure smooth operation.

  3. Changes can be made to the PLC and motor control factory settings to adjust door operation. To achieve smooth door operation, changes to the PLC and motor control settings are often made in conjunction with one another.

  4. PLC Adjustments One Motor System – On a one motor system, Only 2 parameters on the PLC may need to be adjusted to achieve smooth door operation. These parameters are T087 and T0008.

AUTOMATION SYSTEM INSTALLATION
"T" Settings

These settings allow the installer to "dial in" a door for specific application.
They are not required for all doors or installations

- **T0008/T0009 "Run Time"** – Determines how much time the system has to open or close the door before it shuts down due to an error. T0008 is for a single motor system or door 1 on a dual. T0009 is for dual motor systems only, door 2. Each should be set to roughly 2 seconds more than the measured time it takes to fully open or close.

  Single & Dual Motor Systems.
  Default is 120 seconds for both doors

- **T0014 "Brake Timer"** – Sets the delay between when the controller has pushed door #1 into the corner and when the brake engages. A setting of 0-5(ms) causes the brake to engage immediately and can prevent door 1 from bouncing out of the corner possibly far enough to not lock.

  Dual Motor Systems ONLY.
  Default 1000ms (1sec) for door 1

- **T0087/T0088 "Final Dwell Time"** – Determines how long the motor will keep running after the door enters the jamb and is intended to prevent the door from bouncing back before the brake can be applied.

  Single & Dual Motor Systems
  Default T0087 (Single or Door 1 Dual) is 300ms
  Default T0088 (Dual Door 2) is 0ms.

AUTOMATION SYSTEM INSTALLATION
"T" Setting Example

ESC	Selects the previous navigation level or moves to the previous item
▲	When the selected digit flashes *slowly* moves digit selection to the **left**
	When the selected digit flashes *rapidly* will <u>increases</u> the digit value by **1**
▼	When the selected digit flashes *slowly* moves digit selection to the **right**
	When the selected digit flashes *rapidly* will <u>decrease</u> the digit value by **1**
OK	Selects a navigation item **OR** sets the current parameter value in the PLC

All "T" settings are set the same way. T0008 is shown as an example below

Press ▼	Press **OK**	1st Digit flashes slowly Press **OK** or select digit with ▼▲ then **OK**	Digit flashes fast Set to 8 with ▼▲ then **OK**	Press **OK** Setting "Check"	1st Digit flashes slowly **OK**	1st Digit flashes fast Set to 9 with ▼▲ then **OK** to save
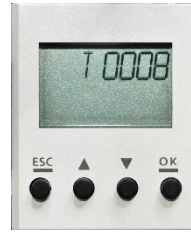
WIRED KEYPADS & RF REMOTE
The "Keypad Circuit"

- Each device is "daisy chained" to the next device in the line.

- The keypad circuit supports multiple wired keypads, security keypads and the RF remote control.

- Devices can be installed in any order as the particular installation requires.

- Devices that support this circuit will have 2 x RJ45 jacks positioned next each other.

- Either RJ45 can be used to daisy chain to the *next* component

Terminated 26-8 flat wire should be verified with a data cable tester!

26-8 Flat cables "Keypad Circuit"

Multiple Wired Keypads (front & back)

G1/G1D Controller

Security Board (part of security keypad)

Do NOT connect this RJ45 cable to the keypad circuit!

Security Keypad (front & back)

RF Remote Receiver

RF Remote

Additional Components
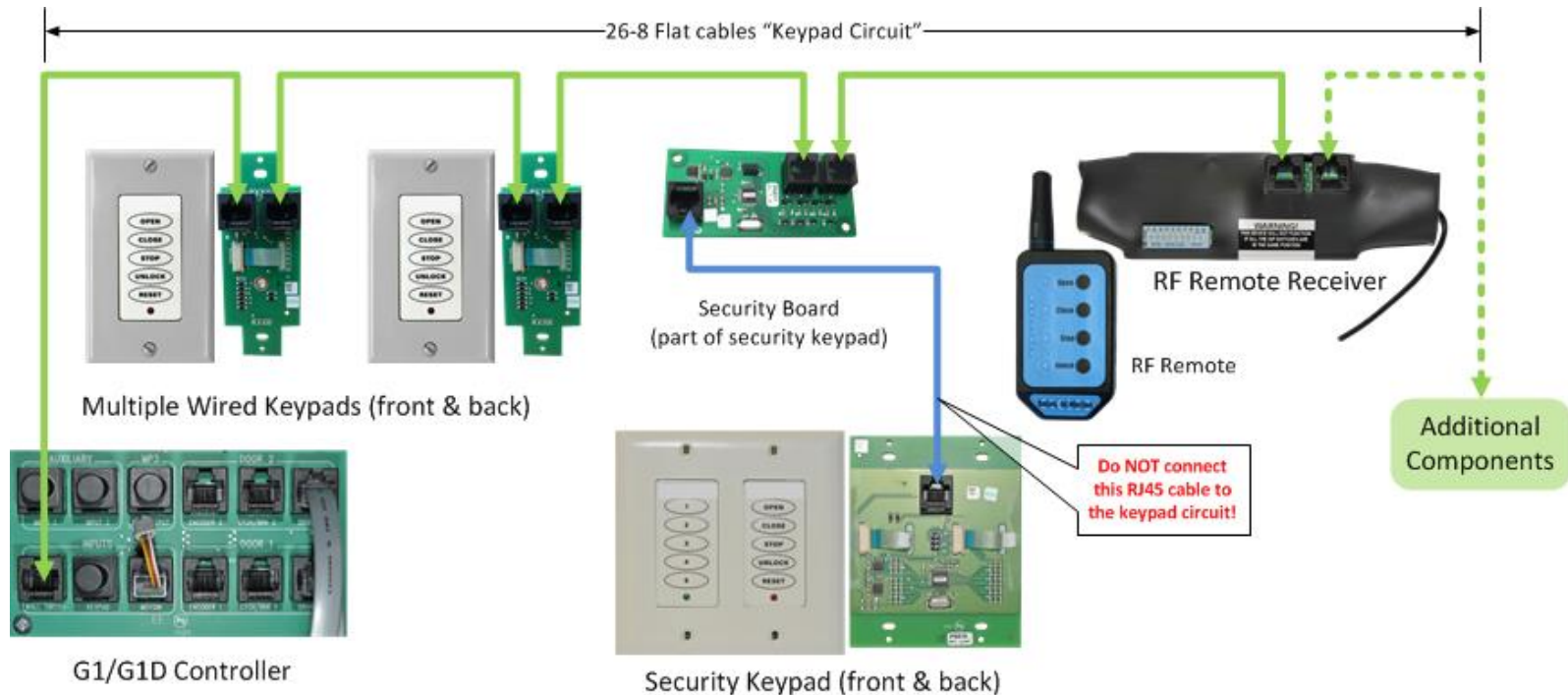
WIRED SAFETY COMPONENTS
Motion Detector OR Infrared Beam Wiring

After Initial Programming:

Once the G1/G1D controller has been programmed attach the wired motion detector OR infrared sensor with an RJ45 cable. If <u>neither</u> are installed the "Motion Jumper" must be installed.

Wired Overhead Motion Detector (standard)

OR

Wired Infrared System (optional)

via RJ45 cable

OR

Infrared OR Overhead Motion Detector
(Motion Jumper shown installed)

* Note: Overhead Motion Sensor is standard, but the Infrared Sensor System is an optional replacement. Either Device will plug into RJ45 motion jack. If <u>neither</u> are installed ,the Motion Jumper MUST be installed.
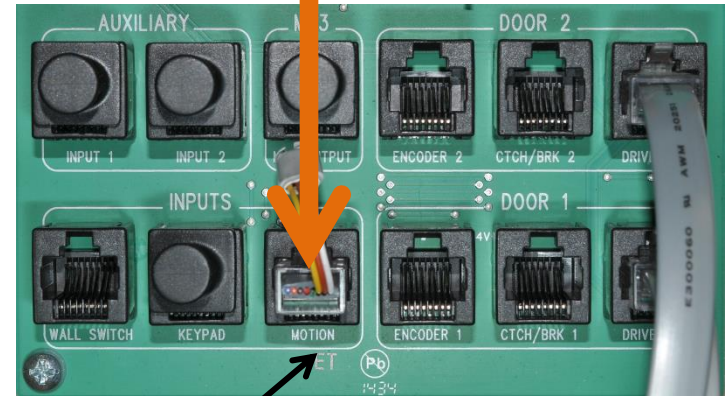
WIRED SAFETY COMPONENTS
Bosch DS160 Motion Detector Wiring (Standard)

- **Overhead Motion Detector Installation –** offered in black and white

- **Overhead Motion Detector to Automation Panel Circuit Board Wiring -** The motion detector uses 26-8 flat wire. The 26-8 flat wire cable runs from the motion detector to the automation panel "motion" RJ45 connector.

- **(Note: Do not plug in Overhead Motion Detector until instructed- after initial programming**

- **Blinders or "masking wedges"** are included with the motion detector. They are used to block undesirable activation areas from the sensor.
They mount in front of the opaque sensor window. Refer to the motion sensor manual for more information.

26-8 Flat Cable

Wired Motion Detector

G1/G1D Controller

Motor

Motion Detector Placement

Bosch DS160 Masking Wedges
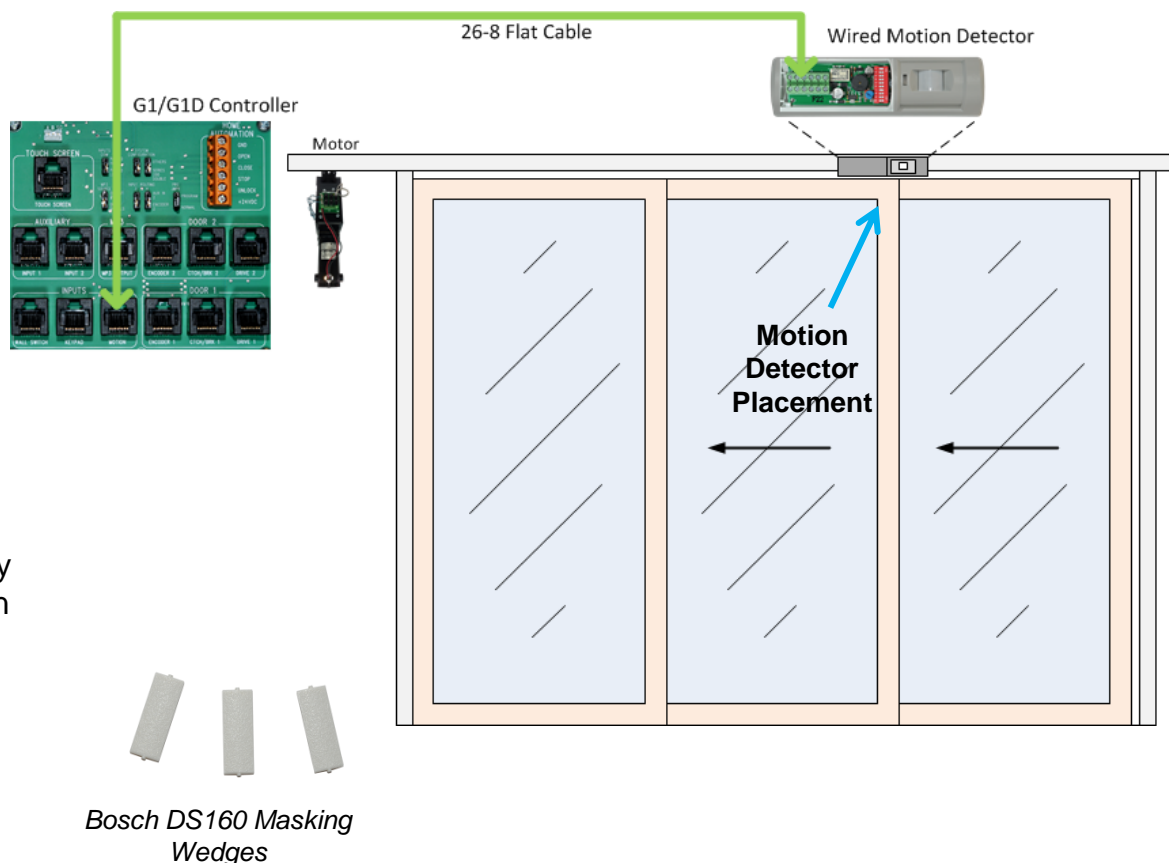
Note: The Wired Overhead Motion Sensor is standard, but an Infrared Sensor System is an optional replacement.

WIRED SAFETY COMPONENTS

Motion Detector Wiring (Bosch DS160)

- Wire the DS160 as shown using 26-8 flat wire cable run from the motion detector to G1/G1D automation panel's "motion" port.
  (Note: Do not plug in Overhead Motion Detector until after initial programming)

G1/G1D Controller

26-8 Flat Cable
wired same as keypad
1=White
2=Brown
3=Yellow
4=Green
5=Red
6=Black
7=Orange
8=Blue

1 2 3 4 5 6 7 8

G1x DIP Switch Settings

Switch 1	ON
Switch 2	off
Switch 3	off
Switch 4	off
Switch 5	off
Switch 6	off
Switch 7	ON
Switch 8	off
Switch 9	off
Switch 10	off

Wire 1(White) – Common (C)

Wires 3(Yellow) & 4 (Green) – Normally Open (NO)

Wire 2(Brown) – Positive (+)

Wire 5(Red) & 6(Black) – Negative (-)

26-8 Flat Cable

INMOTION

WIRED SAFETY COMPONENTS
IR Beam Detector Wiring Optex OS-12C/T (Optional)
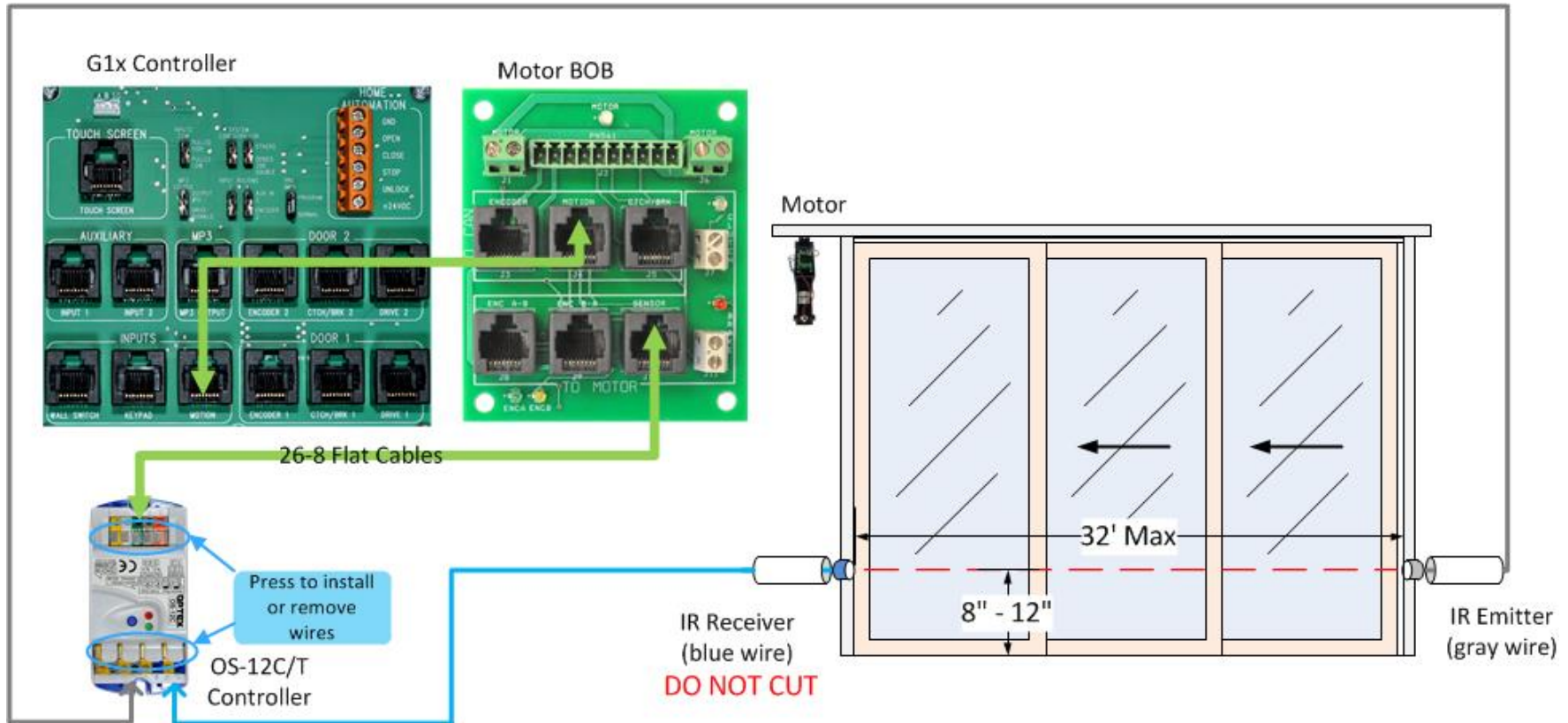
The IR Beam Detector controller plugs into motor BOB "sensor" RJ45 connector. The motor BOB "motion" RJ45 is then wired to the G1/G1D controller's "motion" RJ45. **Do NOT connect to the controller prior to completing initial programming**.

•   Overhead Motion Detector to Automation Panel Circuit Board – The motion detector uses 26-8 flat wire.

WIRED SAFETY COMPONENTS

IR Sensor Installation

- The receiver is the **BLUE** wire while the emitter is **GRAY**.
- The **BLUE** wire bundle cannot be cut or spliced so install the infrared receiver closest to the motor panel.
- The **GRAY** wire can be extended or replaced with any common wire bundle with at least two conductors.

1. Drill a 5/8" hole on each side of the door span 8-12" from the base of the opening. The holes must be at the same height with a maximum span of 32".
2. Mount the controller inside the motor access panel so that the LED's and push button on Optex OS-12 C/T controller are accessible.
3. Remove the emitter & receiver heads via the connector on the cable to prevent damage.
4. Route the **BLUE**(receiver) wire to the door edge closest to the motor access panel. Route the **GRAY**(emitter) to the opposing side of the opening.
5. Push the provided 5/8" PVC tubes into each hole while feeding the sensor wire through it.
6. Install the cover plates with the provided screws.
7. If you are not ready install and test the system now, protect sensors with the procedure at the right.
8. Re-attach sensor heads to appropriate cable runs. Snap them into place through the cover plates.

Delayed Install/Power-Up & Sensor Protection

If the system install is NOT to be completed immediately, you may want to remove the IR sensors until the system is ready for final initialization.

1. Pull the sensor cables from the wall and disconnect the sensor heads from the main cable on both sides.
2. Attach a short string or wire to both sensor cables remaining in the wall and place some tape over the exposed connector.
3. Carefully push the taped connector and wire back into the conduit while holding the string attached.
4. Secure the string to the with tape to the cover plate on each side.
5. Place both sensors in a bag and tape it to the inside of the motor access panel for installation later.

WIRED SAFETY COMPONENTS

OS-12C Setup Instructions

1. Power off the G1/G1D controller.
2. Verify the IR controller is an Optex OS-12C not the <u>OS-12CT</u>.
3. Attach a single ended RJ-45 connector to the sensor RJ45 on the motor BOB.
4. Wire a RJ45 from the BOB "motion" connector to the G1/G1D "motion" RJ45.
5. Wire the other end to the OS-12C using the color codes shown.
6. Attach the IR Receiver(s) & Emitter(s) as shown. Do NOT cut the BLUE IR receiver wire(s) shorter.
7. Verify connections and power up the controller.

Adjustment & Checking

1. Make sure the beam path is clear of obstructions & aligned.
2. Press the BLUE "teach" button on the Optex controller for 1 second to auto adjust the sensitivity. Observe the LED's.

● **Green ON** – Successful for 1 beam.

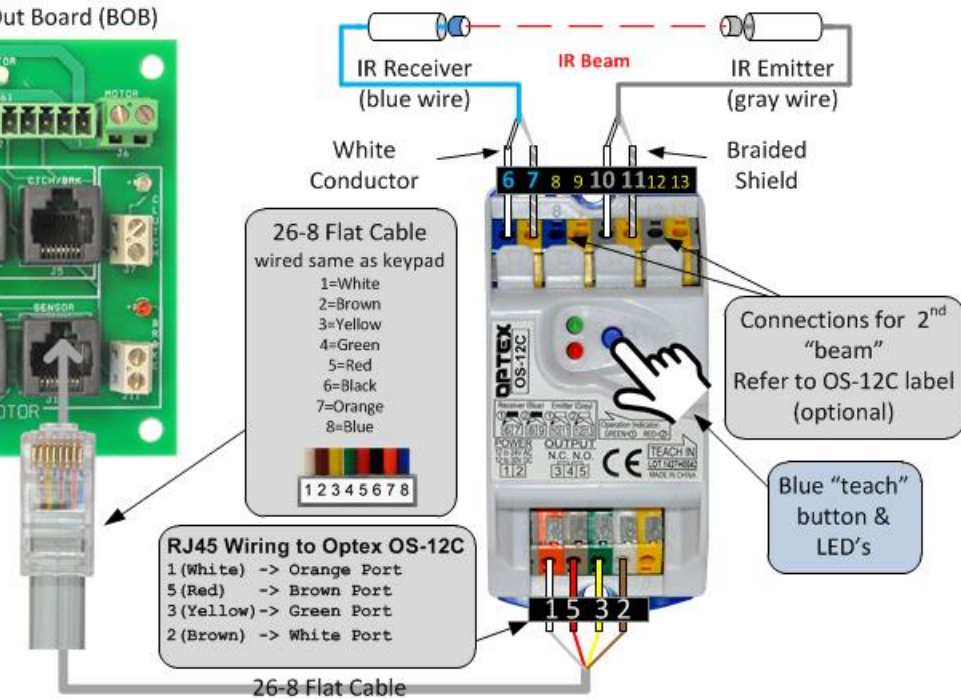● ● **Green & Red ON** – Successful for 2 beam installations.

Ⓑ Ⓑ **Blinking Red & Green** – Error, check for obstructions, dirty lens, wire connections & alignment. **Repeat Step 2**.

Motor Break Out Board (BOB)

G1/G1D Controller

IR Receiver (blue wire)   IR Beam   IR Emitter (gray wire)

White Conductor   6 7 8 9 10 11 12 13   Braided Shield

26-8 Flat Cable wired same as keypad
1=White
2=Brown
3=Yellow
4=Green
5=Red
6=Black
7=Orange
8=Blue

1 2 3 4 5 6 7 8

Connections for 2nd "beam" Refer to OS-12C label (optional)

Blue "teach" button & LED's

RJ45 Wiring to Optex OS-12C
1(White) -> Orange Port
5(Red)   -> Brown Port
3(Yellow)-> Green Port
2(Brown) -> White Port

1 5 3 2

26-8 Flat Cable

- The Optex OS-12C can be re-calibrated anytime by pressing the **BLUE** button for 1 second.

- During normal operations the **Green** LED indicates a sensor can "see" the emitter and NOT blocked.

- When the **Green** LED is **OFF**, the beam is blocked.
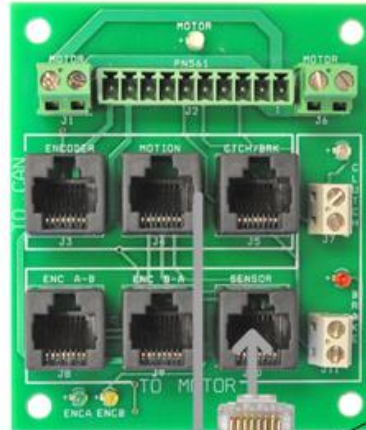
WIRED SAFETY COMPONENTS

OS-12CT Setup Instructions

This controller is "programmable" and therefore maintains the same wiring between different controller systems.
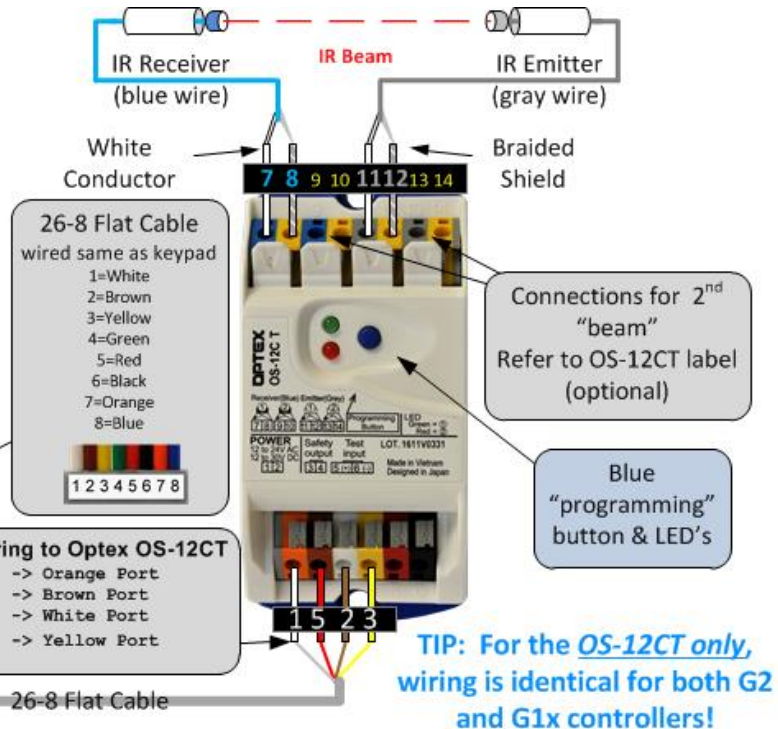
1. Power off the G1/G1D controller.
2. Verify the IR controller is an Optex OS-12CT not the OS-12C.
3. Attach a single ended RJ-45 connector to the sensor RJ45 on the motor BOB.
4. Wire a RJ45 from the BOB "motion" connector to the G1/G1D "motion" RJ45.
5. Wire the other end to the OS-12CT using the color codes shown.
6. Attach the IR Receiver(s) & Emitter(s) as shown. Do NOT cut the BLUE IR receiver wire(s) shorter.
7. Verify connections and power up the G1/G1D controller.

Motor Break Out Board (BOB)

G1/G1D Controller

IR Receiver (blue wire)   IR Beam   IR Emitter (gray wire)

White Conductor   Braided Shield

7 8 9 10 111213 14

Connections for 2nd "beam" Refer to OS-12CT label (optional)

26-8 Flat Cable
wired same as keypad
1=White
2=Brown
3=Yellow
4=Green
5=Red
6=Black
7=Orange
8=Blue

1 2 3 4 5 6 7 8

Blue "programming" button & LED's

RJ45 Wiring to Optex OS-12CT
1 (White) -> Orange Port
5 (Red)   -> Brown Port
2 (Brown) -> White Port
3 (Yellow) -> Yellow Port

1 5 2 3

26-8 Flat Cable

TIP: For the OS-12CT only, wiring is identical for both G2 and G1x controllers!

Power Supply 24 VDC
Safety Signal (common)
Safety Signal
n/a

WIRED SAFETY COMPONENTS

OS-12CT Sensitivity Adjustment

With the G1/G1D controller powered on…

1. Make sure the beam path is clear of obstructions & aligned.
2. Press the BLUE "programming" button for more than 1 second and observe the LED's.
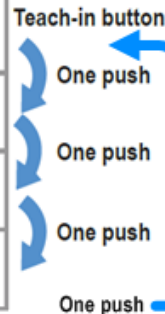3. When the Green & Red LED's stop blinking and are solid ON, the auto adjust has completed.

- **Green ON** – Successful for 1 beam.
- **Green & Red ON** – Successful for 2 beam installations.
- Alternately Blinking **Red & Green** – Error, check for obstructions, dirty lens, wire connections & alignment. Correct and repeat **Step 2**.
- **Red & Green Both Blink 2 Times Simultaneously** – OS-12CT service is required. (2x)

Programming

1. Press the **BLUE** "programming" button until the **Red** LED starts blinking. This initializes the programming function.
2. Now press the **BLUE** "programming" button to select **Amplifier Mode "D"** for where the **Red** LED blink **4 times**.
3. To save the setting, press and hold the **BLUE** "programming" button until the **Red** & **Green** LED's stop blinking.
4. The OS-12CT is now in normal operation mode.
5. **Verify the door, when closing, stops then opens when the beam is broken**.

Amplifier Mode

				Teach-in button
✗	A	Green Red	Green Red	Active-Low/N.O.
✗	B	Green Red	Green Red	Active-High/N.O. (G2 setting)
✗	C	Green Red	Green Red	Active-Low/N.C.
✓	D	Green Red	Green Red	Active-High/N.C. (G1/G1D setting)

One push → One push → One push → One push

- The Optex OS-12CT can be re-calibrated anytime by pressing the **BLUE** button for 1 second.

- During normal operations the **Green** LED indicates a sensor can "see" the emitter and NOT blocked.

- When the **Green** LED is **OFF**, the beam is blocked.

SAFETY COMPONENT TESTING

Regardless of which device is installed on the door, the install must be tested <u>prior</u> to customer delivery.
Both technologies are tested in the same way and provides a measure of safety when the door is <u>closing.</u>

Testing

1. With the G1/G1D controller powered up and the door closed, press the "Open" button on a keypad or remote.
2. While the door is opening, press "Stop", then "Close"
3. During the close operation, cause some detectable "motion" OR momentarily block the IR sensor beam(s).
4. The door should stop immediately, open a short distance and stop again.
5. If this does not occur, recheck all wiring and programming steps and repeat the test.
6. After a few moments the door can then be re-commanded to close if motion is NOT detected or the IR beams are not obstructed again.

Note:

- Neither technology has any safety purposes <u>during</u> an "open" operation and are essentially ignored.

CARE & TROUBLESHOOTING

Care During Construction:

- **Motors and Electrical Components MUST be protected after installation, before the home is finished being built**. It is recommended to cover the components after installation before the construction is complete.

- **Avoid Duct Tape-** Chemicals in the adhesives can remove finishes. 3M Blue Painter's tape is recommended.

- **Avoid rolling heavy objects over the track**. This can cause damage.

- To prevent clogging or damage to guide bearings**, tracks should be protected from construction debris** at all times.

- Do not leave door system open and exposed in wet weather conditions.

Maintenance:

The Doors In Motion automation system requires little or no maintenance; however, the best protection for the automation system is to keep the door in good working order by following the door manufacturer's recommended maintenance.

CARE & TROUBLESHOOTING

Troubleshooting:

- **Doors won't Open or Close:** With the doors in the fully closed position, turn control panel off for 30 seconds and turn back on. Push the RESET button down for 5 seconds. Door should open and close

- **When you hit the OPEN button and the door closes:** Hit the STOP button so the doors stop moving. Reverse the polarity on the Motor Control Wire in the control panel.

- **Belt is sagging while the door is closing:** Detach belt from the lead door and tighten the belt using the turn buckle.

- **Can't turn the speeds up or down using the potentiometers:** Move the jumper from 3 & 2 to 2 & 1 so the Green Light starts to blink

- **Door not locking when it comes to the fully closed position:** Check the Crawl Current Limit, might need adjustment.

- **Door stopping short of fully closed position:** Start by Resetting the system. Manually close doors, and press and hold RESET for 5 seconds on the <u>wall switch</u>. If it is still stopping short, adjust Crawl Speed.
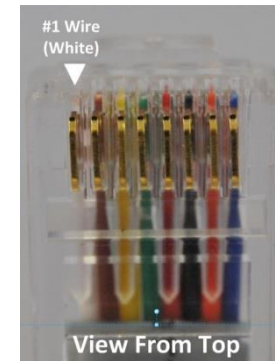
CARE & TROUBLESHOOTING

Overcurrent & Power Loss:

- **<u>Overcurrent</u>**: An overcurrent situation can occur if the floor track is excessively dirty or the door encounters an obstruction while closing or opening. If an overcurrent occurs, follow these steps:
    1. Clear the door path of any obstructions
    2. Vacuum the floor track
    3. Press the "STOP" button and resume normal operation

- **<u>Power Loss</u>**: If power is ever lost, follow these steps to reset the system:
    1. When power is restored, the door will lock in its current position (this is an indication that power was lost). If the door is open, press the "UNLOCK" button on the multi-button wall switch and manually close the door to its fully closed position.
    2. Press and hold the "RESET" button, on the multi-button wall switch, for at least 5 seconds.
    3. The door is now reset and should operate normally.
    4. HARD RESET: (Optional) Turn OFF, disconnect battery if present. Reconnect battery, turn panel ON. Then press and hold RESET for 5 seconds on wall switch.

CARE & TROUBLESHOOTING

Issue: Component(s) connected via 26-8 flat wire do not function.

Solution: Possible miswire. Visually inspect RJ45 and make sure pin 1 is wired to pin 1 on each end. Use a cable tester to verify continuity or double check.

#1 Wire (White)

View From Top

#1 Wire (White)

View From Top

TROUBLESHOOTING TOOLS

Short Cables (0'-5') PASS

Long Cables(5'-75') PASS

- [Klein Tools VDV501-823 VDV Scout Pro 2 Tester Kit](#)

  – For Coax, RJ45, Twisted Pair & Phone cable testing

  – Tests cables in the wall using remote dongles included with kit

  – Available at Amazon.com for about $80

Miswire - FAIL

Reversed - FAIL

Open Wires – FAIL (pins 1 & 2)

CUSTOMER SERVICE

- Customer Service: For customer service, please call the toll free number 1-800-426-7113.

- www.inmotion.company