

**Pixel Control System**  
Installation & Adjustment  
**For Hydraulic Elevator Applications**  
Utilizing Mechanical or Solid-State Starter Motor Control

Product Documentation that's Simple to Navigate™  
**This is the Installation and Adjustment Manual** that is the guide for installation, startup and final adjustment of all Pixel Hydraulic Series elevator controllers. Other resources include:

- **Solid State Starter Motor Control Specific Manuals**
- **Maintenance & Troubleshooting Training Manual** provided in conjunction with Factory and Customer Site technical training classes
- **Telephone Technical Support** available for Customers at no charge
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# Introduction

## Conventions in this Manual

### Warning, Caution, and Note Icons

Throughout this manual, icons call attention to text that issues safety warnings, cautions, and/or notes to which particular attention should be paid.



**WARNING:** Operating procedures or practices that may result in personal injury and/or equipment damage if not followed correctly.



**CAUTION:** Operating procedures and practices that may result in equipment damage if not correctly followed.



**NOTE:** Useful information or procedures.

All instructions in this manual assume that work will be done by qualified field personnel, trained and experienced in the installation of elevator equipment. No attempt has been made to define terms or procedures that should be familiar to qualified elevator personnel.



**CAUTION:** Equipment installation must comply with all Local and other applicable Elevator and Electrical Codes and regulations.



**NOTE:** It is assumed that all switches serving as stop and overtravel limits – at both terminal landings – have been verified to be of the proper type, correctly placed and operating as intended.

This manual is intended only to acquaint elevator personnel with the information required to successfully install the Pixel elevator control system. Installation personnel must be familiar with all



codes and regulations pertaining to safe installation and operation of the elevator systems.



**WARNING: THE AC POWER SUPPLIED to this equipment must be provided through a PROPERLY FUSED DISCONNECT OR CIRCUIT BREAKER. Improper circuit protection may create a HAZARDOUS CONDITION.**



**CAUTION:** Restrict access to elevator control equipment and apparatus to qualified personnel only.



**NOTE:** Installation and wiring must be in accordance with the National Electrical Code and consistent with all local codes, as well as National elevator codes and regulations.



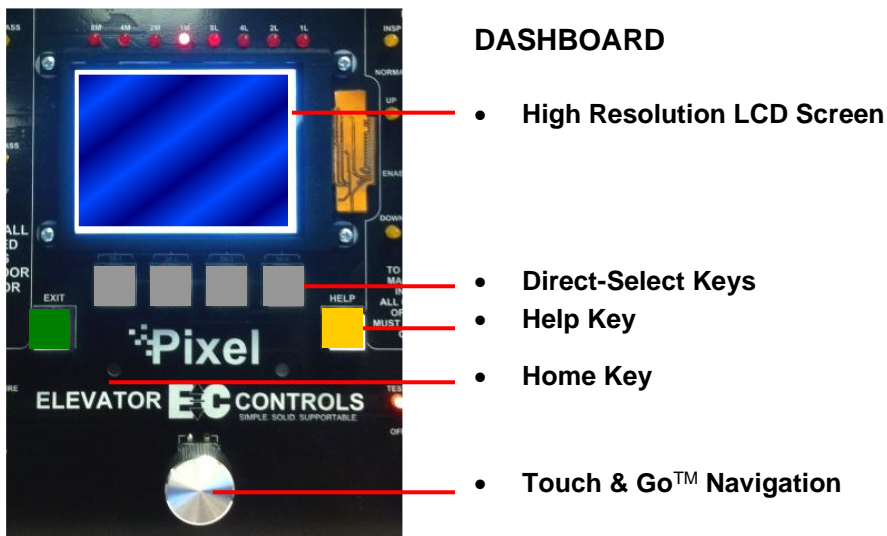
**NOTE:** Connection of field wiring to controller terminals must be accomplished in a neat and careful manner. Stranded wire conductors must be twisted together to avoid any strands that, if left out of terminals, would create potential shorts. All controller connections, field terminals, and cable connectors must be checked to be sure they are tight and properly seated. When connecting flat cable connectors, take care to match pin #1 marks (arrow symbol on connector, red stripe on cable) to prevent damage.

## Conventions in this Manual

# System Menu Navigation

The Pixel system has a very powerful and flexible set of menus.

To view and access selections, a high-resolution color LCD screen has been paired with an intuitive [Touch & Go™](#) selection knob. Simply rotate to scroll up and down any selection list. Then press to select the desired function (or setting) and keep right on working.








**Figure i1 – System Access Point**

Above the silver Touch & Go knob – within easy reach – are six keys. The GREEN key is [Home](#), the YELLOW key is [Help](#), and the four GREY keys between have menu-specific functions.

GREY keys are [Direct-Select keys](#), for which function labels appear just above the keys at the bottom of the LED screen, based on the specific menu being viewed.

Throughout this manual, visual shorthand is used to describe how to quickly locate and interact with various menus and options.





<b>Pixel Navigation Icons</b>	
<b>Knob Rotate/Push</b>	<b>Key Press</b>
 Rotate to locate	 Home
 Push to select	 Direct-Select
	 Help

**Figure i2 – Pixel Visual Shorthand Navigation Icons**












### **Narrative Navigation Instructions too Complicated**

This manual might instruct you to press the Green HOME key, then use the Touch & Go knob to navigate to INSTALL. Once this selection is highlighted, select it by pressing the Touch & Go knob. Then use the knob again, to navigate to ABOUT. Press to select.

**Visual Shorthand:** Simplified version of the instructions above.

 Home  
 Install   
 About 

**Another Example:** Modify Fire Return Floor

 Home  
 Adjust   
 Select Car Performance   
 Fire Return Floor   
 Select New Value   
 Save or  Cancel

# Section 1 – Pixel Overview

## 1.1 System Description, Capabilities & Advantages

*The Pixel Hydraulic Control System uses advanced technology to enable more routine tasks to be accomplished faster.*

**Everything about Pixel has been designed to save field labor time.**

This digital elevator control system provides three points of system access – Machine Room, Cartop, and Inside the Cab – so the most convenient location can be used to complete tasks quickly and easily.

**Each of the three system access points** includes a vivid color LCD display, unique Touch & Go™ interface, one-button access to context-responsive help, and intuitive direct-select keys. Instant real-time awareness of current car operation is provided on all displays when not otherwise in use.

**The Landa™ car positioning system** provides absolute cab position information with high tech accuracy – using dual sensor heads to track cab position to 0.8 millimeter. Landa components are mounted quickly – all limits, slowdowns and landings are defined virtually, stored digitally, and easily readjusted. No need to install or wire vanes or switches in the hoistway (except top physical limit switch as required by elevator safety code).

**Powerful yet simplified diagnostics** are built into each system access point, including the ability to intuitively view and easily reprogram elevator “personality” parameters onsite. Review and adjust parameters, access fault diagnostics and playback the operating sequence leading to a fault notification.

**The integrated Pixel control system package** typically includes the car controller, cartop box with access point, COP access point, Landa positioning system, and hall nodes that communicate using EC’s enhanced **c-LINK™** CAN-bus serial communication system. **c-LINK** reduces wire count for hall, car and cartop signals without compromising EC’s Safe & Sensible™ standards.

**Dual CAN-bus controller area networks** provide high speed internal system communication. Use of this industrial standard communication protocol opens the door to interoperability with a variety of current and future products and peripherals – including the latest door operators.

**Overall reliability is enhanced** by surface-mount electronic components, large scale integrated circuits, and state-of-the-art PC boards.

**When the power of technology** is used to simplify essential tasks – including installation, adjustment, maintenance and troubleshooting – everybody wins.

## 1.2 System Components

The Pixel system design is based on a dual high-speed CAN-bus controller area network communications architecture, which supports group operation for up to twelve cars. The most basic component – a car control system – is made up of the following:

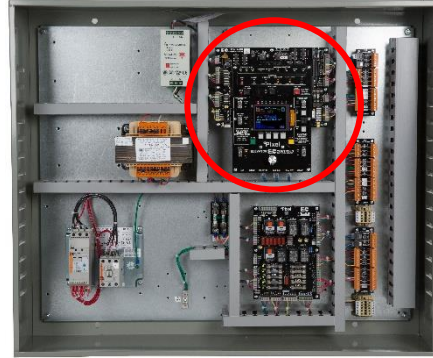
- a **Pixel** Car controller
- b **P-TOC** Pixel top of the car interface controller
- c **P-COP** Pixel car operation panel interface controller (one per COP; up to four per car supported)
- d **P-HALL** Pixel hall nodes (as required for hall calls, fire recall, gongs, etc.)
- e **Landa™** dual sensor car positioning system

## 1.2.1 Typical System Components

The Pixel control system – depending on the specific application – typically includes:

a **Pixel Car Controller**

The Pixel car controller is usually located in a machine room or – in machine-room-less applications, in an equipment closet. Various enclosures are available to fit your specific application and meet your NEMA rating requirements.



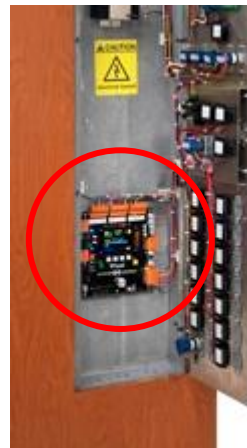
b **P-TOC Pixel Cartop Interface**

The cartop system access point provides access to configuration information, parameters and diagnostics. The cartop interface box provides a convenient wiring termination for Landa, door operator, load weigher, safety edge, cab light and fan, traveler cable and the provided TOC-to-COP wire harness. Optional (similar to photo) cartop inspection station with light and service outlet is available.



c **P-COP Pixel Car Operating Panel Interface**

A system access point is located at each COP. EC-Ready COP Fixtures fully interconnect to the TOC box using the provided TOC-to-COP harness. One wiring harness is provided for each of up to four COP's per cab.



d **P-HALL Pixel Hall Nodes**

Universal hall nodes can provide connections for hall calls, fire recall, access, hall gongs, code blue calls and more.

Each CAN-driven node supports two I/O easily configurable using onboard switchgear.



e **Landa™ Dual Positioning System**

Landa is a dual positioning system that provides absolute cab location information without the need for vanes or switches in the hoistway. \*

Dual communication channels, one for each positioning system, provide truly independent redundancy for failsafe operation.

Landa provides precision accuracy – tracking cab location to within 0.8 millimeter.

\* Top physical limit switch  
*Must be provided as required by elevator safety code*



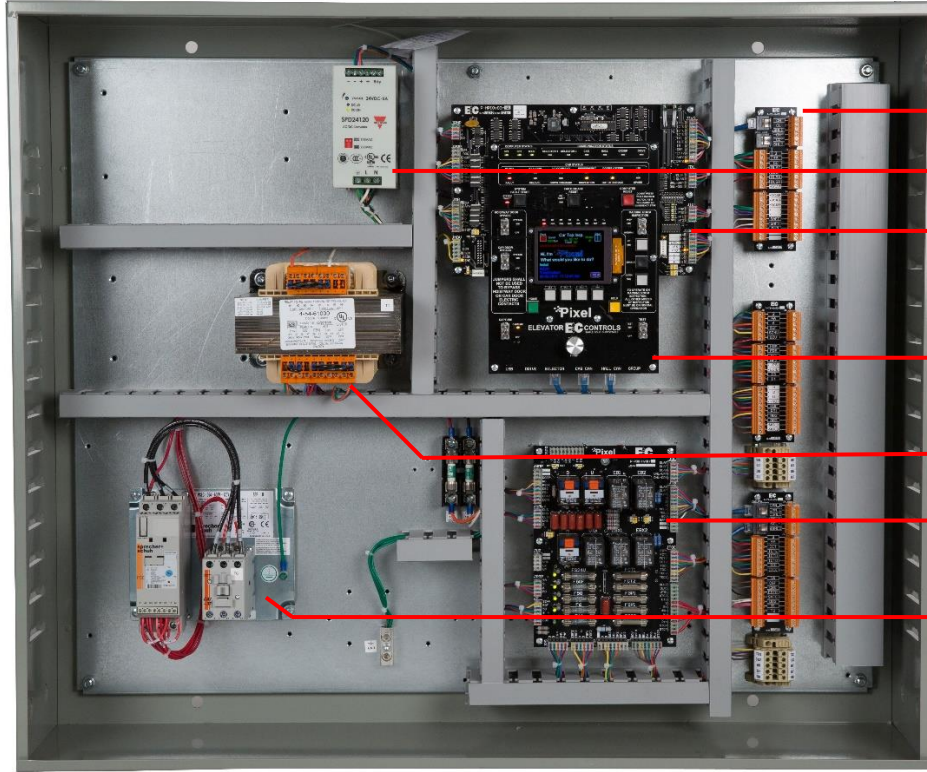
## 1.2.2 Pixel Hydraulic Series Capabilities

Speed	<b>300 fpm   1.5 mps</b>
Stops	<b>128 Stops maximum</b> with selective door operation
Group Size	<b>12 cars maximum</b>
Environment	<b>32 to 104 degrees Fahrenheit   0C to 40C degrees</b> <b>Altitude to 12,000 feet   3,658 meters</b> 95% relative humidity (non-condensing)
Motor Control	<b>Solid State Starter</b>  <b>Y-Delta Mechanical Starter</b>  <b>Across the line, Delta, Mechanical Starter</b>
Positioning	<b>Landa™ absolute car positioning</b> system using dual sensor heads and coated tape to track position accuracy to 0.032" (0.8mm)



## 1.3 About Pixel

### 1.3.1 Typical Pixel Hydraulic Controller Layout



#### PC BOARDS & COMPONENTS

- Field wiring Terminals
- 24 VDC Power Supply
- P-MP-IO Microprocessor  
Main Input/ Output Safety  
Microprocessor
- P-MP Pixel Microprocessor  
Board with onboard diagnostics
- Power Transformer
- P-PDB Power Distribution  
Board
- Pump Motor Contactor

Figure 1.3.1 – Typical Pixel Hydraulic Car Controller

### 1.3.2 Typical Pixel TOC Top of Car Interface

The Pixel TOC Top of Car Interface is provided with all mounting hardware required to fasten it to the crosshead rail on the cartop.

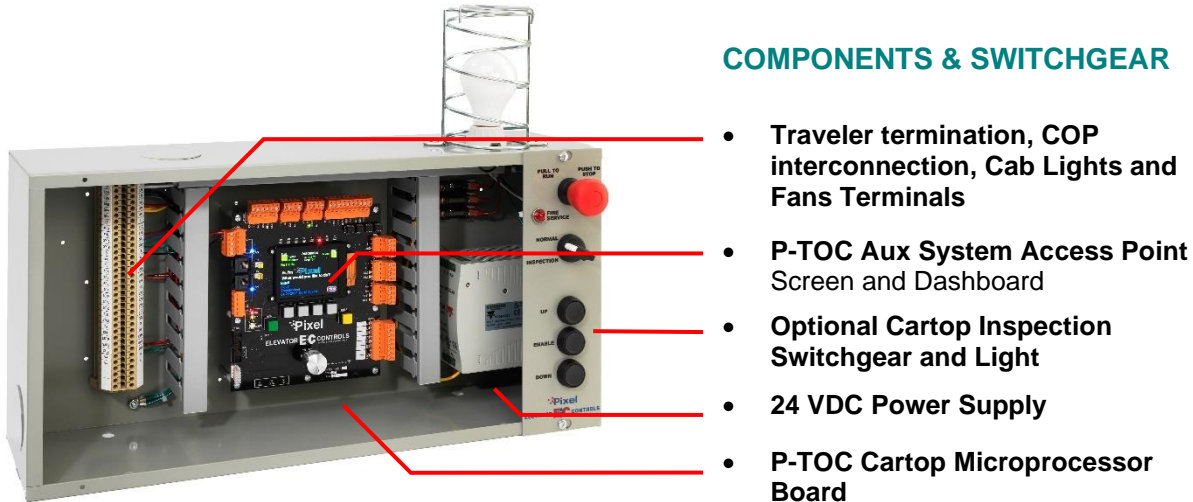


Figure 1.3.2 – Typical Pixel Cartop Interface



**NOTE:** The P-TOC Top-of-Car Interface can optionally include a cartop inspection station, with light and service outlet, as an option (like picture Figure 1.3.2 above).

## 1.4 New Technology, New Terms

*Our goal was to design the Pixel system using advanced technology to simplify routine tasks – so you can accomplish more, faster.*

Lots of traditional tasks are done with Pixel using a new, time saving approach. Here's a quick tour of key system components. We've developed some new terms to make your transition to Pixel easy.

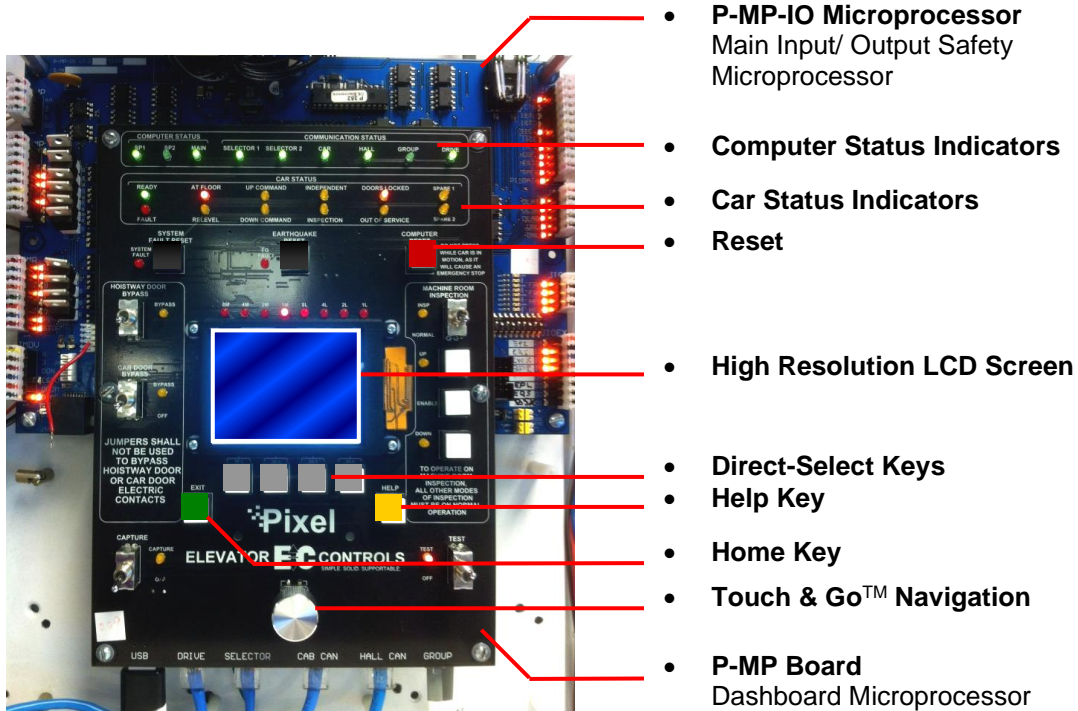
### 1.4.1 Pixel Dashboard – Overview

*Complete tasks more easily and quickly by working from the most convenient location.*

Pixel concentrates switchgear, indicators, readouts and a vivid color LCD display into an intuitive [dashboard](#). The primary [system access point](#) is the controller in the machine room.

Two convenient additional [system access point](#) locations are provided – on the cartop, and inside the car operating panel. These provide access for checking system status, viewing and resetting most system parameters, and powerful diagnostics for troubleshooting.

## DASHBOARD



**Figure 1.4.1 - Pixel Dashboard Overview**

Pixel displays information on a vivid, full color LCD screen at each [system access point](#). Instant [real-time awareness](#) of current car operation is provided on all system screens, when not otherwise in use.

The majority of functions and parameters can be viewed and changed from any of the three [system access point](#) locations (there are just a few exceptions to meet safety requirements).

Each System Access Point provides:

- Elevator “personality” parameters that are easily viewed and intuitively reprogrammed
- Simplified access to review and adjustment of parameters
- Learn landing zones and readjust position virtually by entering offsets in inches or millimeters
- View of faults and access to diagnostics
- Powerful, easy to use system diagnostic tools

## 1.4.2 Pixel Dashboard – Screen and Navigation

*Pixel uses a simple knob for navigation and selection – called ‘Touch and Go™’ – everything you need is at your fingertips.*

Pixel’s high-resolution color LCD [screen](#) is paired with a simple, intuitive selection knob called the [Touch & Go™](#) interface. Rotate to scroll up and down any selection list. Then – press this same knob – to select the desired function (or setting) and keep right on working.

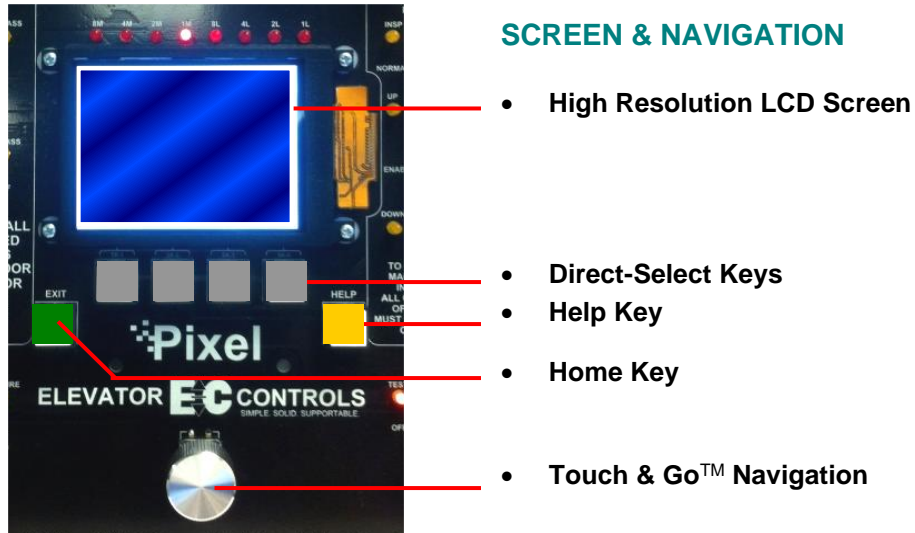


Figure 1.4.2 – Pixel Screen & Navigation

The [dashboard](#) provides a dedicated YELLOW button for immediate access to [context-responsive help](#) if needed.

Depending on the menu or parameter display being viewed, flexible GREY [direct-select keys](#) are assigned helpful functions.

Return to the main menu at any time by pressing the GREEN [home](#) key.

### 1.4.3 Pixel Screen – Home/Startup Display

*Pixel's screens continuously display information – understood 'at a glance' – from multiple system access points.*



Figure 1.4.3a - Pixel Home Screen Display

The top third of the home screen displays useful system information – whether seen in the machine room, on the cartop, or in the cab.

This view appears on system startup **Figure 1.4.3a**. The icons and text information are each identified below for reference **Figure 1.4.3b** and described in detail on the following pages.

#### HOME SCREEN DISPLAY

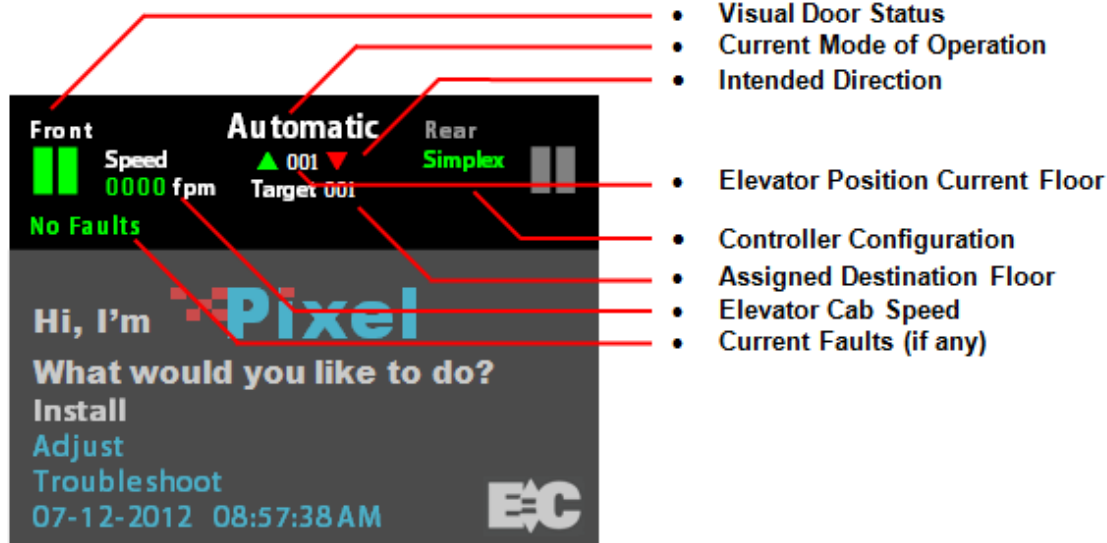


Figure 1.4.3b - Pixel Home Screen Display

## 1.4.4 Quick Reference Color Status

### 1.4.4.1.1 Visual Door Status

Available door openings are displayed as active (in green) or inactive (in grey) using center parting door icons. Visual door status is indicated as follows:

- Opened Small portion of door on each side of opening
- Closed Solid green door panels indicated
- Opening Animation: doors moving partly to fully open
- Closing Animation: doors moving partly to fully closed
- Faulted Solid red door panels indicated

### 1.4.4.1.2 Mnemonic Color Code Status

Each Mnemonic represents an input, output, or an internal process status; Refer to Appendix D, Mnemonic Description Translation Tables, for a listing of the most relevant mnemonics. Pixel implements a color scheme background to differentiate the mnemonic status for each of the safety processor SP1, SP2 and the elevator microprocessor MP as shown on Figure 1.4.4.1.2 – Pixel Screen Flag Status, GOV= SP1 active, SP2 and MP inactive, SAFC= SP1 and MP inactive, SP2 active, SAFH= SP1, SP2 and MP active, and RG= SP1, SP2 and MP inactive to match color key below:

- Black SP1, SP2 and MP inactive
- Blue SP1, SP2 and MP active
- Yellow SP1 active, SP2 and MP inactive
- Green SP1 and MP inactive, SP2 active



**NOTE:** Full color scheme above applies to safety input or output mnemonics; for MP input-outputs or internal process mnemonics only Black and Blue colors apply representing the MP status.



Figure 1.4.4.1.2 – Pixel Screen Flag Status

### 1.4.4.2 Modes of Operation

*Construction mode, when enabled, restricts operation to inspection mode with limited speed and no positioning.*

Pixel supports multiple modes of operation including:

#### **Automatic**

- Main Fire Recall
- Alternate Fire Recall
- Fire Phase 2
- Emergency Power Phase 1
- Emergency Power Phase 2
- Emergency Power Pre-transfer
- Battery Rescue Operation (traction)
- Battery Lowering Operation
- Fire Service
- EMT Phase 1
- EMT Phase 2
- Hospital Service
- Earthquake Normal Mode (Traction)
- Earthquake Abnormal Mode (Traction)
- Test
- Capture
- Independent
- Wild / Sabbath
- Security
- Out of Service Recall
- Car to Lobby
- Flooded Pit Recall
- Piston Synchronization
- Viscosity Operation
- Car Overloaded
- Attendant Service

#### **Inspection**

- Cartop Inspection
- In Car Inspection
- Hoistway Access
- Machine Room Ins.

#### **Construction**

- Cartop Inspection
- Machine Room Ins.

### 1.4.4.3 Intended Direction

When car direction is determined, the Pixel screen will display a solid up Green or down Red directional arrow. If direction has not been assigned, both arrows appear in outline.

#### 1.4.4.4 Current and Destination Floors

The Pixel screen displays the current floor at all times, found between the up and down directional arrows, indicated in three digits.

If a destination floor has been assigned, it will be displayed just below the current floor, labeled Target, indicated in three digits. The Target is dynamic and may change during a run.

#### 1.4.4.5 Speed

The Pixel screen displays cab speed, just to the right of the Front door icon. Scale can be toggled between fpm (feet per minute) and mps (meters per second).

#### 1.4.4.6 Control System Configuration

The Pixel screen displays system configuration, just to the left of the Rear Door icon. Car configuration can be Simplex or Group. In group configuration, the current priority to assume dispatching functions for the group is indicated, under the word 'Group'.

#### 1.4.4.7 Active Fault

The Pixel screen displays the active fault with the highest priority or **No Faults** if none present.



**NOTE:** Faults are classified as either latching or non-latching. While non-latching faults self-reset, all faults are recorded in fault counters and logs.

### 1.5 Pixel New Features Quick Overview

#### 1.5.1 Landa™ Dual Positioning System

***No more time consuming and costly hoistway work mounting vanes, wiring and readjusting switches.***

Landa is a [dual positioning system](#) that provides absolute cab location information. Dual communication channels, one for each positioning system, provide truly [independent redundancy](#) for failsafe operation.

Landa provides precision accuracy – tracking cab location to within 0.8 millimeter. All limits, slowdowns and landings are defined virtually, stored digitally, and easily readjusted. No wiring, vanes or switches are required in the hoistway (\*except top physical limit switch as required by elevator safety code).



## 1.5.2 Virtual Safety Limits

*Pixel knows where the car is always .*

The Landa car positioning system captures high resolution position data that is maintained through power cycling. During the hoistway 'learn' procedure, the control system generates and records the location and associated position for all required [virtual safety limits](#).

Once learned, virtual safety limits function in the same way that vane and switch systems worked in the past. Safety code requires placement of top physical limit switch, for which Pixel provides inputs (described in the wiring Section).

## 1.5.3 CAN-bus Network

*Proven industrial standard communication protocol provides simplified interoperability using high speed dual CAN-bus networks.*

The Pixel controller uses dual CAN-bus controller area networks to provide high speed internal system communication, including group to and between individual car controllers. Use of this industrial standard protocol opens the door to interoperability with a variety of current and future products and peripherals.

## 1.5.4 Parallel Independent Safety Processors

*If at any time, Pixel's two independent safety systems do not agree, an automatic system shutdown is executed to keep passengers safe.*

In compliance with current elevator safety code, Pixel's design incorporates parallel [independent safety processors](#). Two independent, redundant means are used to monitor safe operation. The logic output from both safety systems is continually compared.

EC design engineers devised **SP1**, a powerful software-based safety processor, which is [continually crosschecked](#) by **SP2**, a hardware-based FPGA (Field Programmable Gate Array) safety processor.

## 1.5.5 Integrated I/O Testing and Remapping

***Local diagnostics function whether the access point has an active connection to the system network.***

Pixel has designed-in reliability and flexibility. Simple [onboard I/O testing](#) is supported at each [system access point](#). Every I/O is provided with an associated LED indicator.

If an I/O is found to have failed, [remap I/O](#) can be used to reassign this I/O to another location on the same PC board, or to another I/O board, using an intuitive, visually-based process.

## 1.5.6 Consolidated Field Wiring

***Consolidated field wiring saves time while separating low and high voltage signals to help prevent component damaging wiring errors.***

The Pixel controller cabinet has been designed so you can bring field wiring into a functional assigned color coded terminal strips – a convenience we call [consolidated field wiring](#).

## 1.5.7 Remote Assist™

***Virtual tech support is delivered to your machine room on demand – with system access you always approve and control.***

Elevator mechanics have long wished that support technicians could join them in the machine room with a simple call for help. [Remote Assist](#) enables the Pixel technical support team to virtually view the system you are working on, in real time, and provide guidance and recommendations.


## 1.6 Pixel Menu System Overview

***Menu content is strategically organized, and logically sequenced, with related tasks grouped together.***

The broad range of selections within the Pixel system are presented in menus, each containing a reasonable number of selections within each tier. The number of tiers has also been minimized to simplify navigation and selection.



The breadth and depth of the Pixel menu system provides access to the extensive parameters demanded by the most experienced adjuster. But many installers will find that the top two or three menu tiers will satisfy the majority of their needs.

## 1.6.1 Home/Startup Menu – Top Tier

The Pixel home menu displays on startup – or whenever the green  Home key is pressed.

This screen displays a greeting message, “Hi, I’m Pixel. What would you like to do?” along with the following Menu options:

- **Install**
- **Adjust**
- **Troubleshoot**
- **Date/Time display/reset**



Start by selecting one of three basic tasks – Install, Adjust, or Troubleshoot – by using the  Touch & Go™ knob to scroll through selection options. When your desired selection is highlighted, press the  knob to select.

Note that system date/time settings and preferences are accessed from the Home screen as well.

## 1.6.2 Install Menu – Second Tier

The Install menu presents a range of options which are roughly organized in the most likely sequence in which tasks will be completed:

- **About**
- **Initial Settings**
- **View Selector Data**
- **Learn Functions**
- **Code Compliance Test**
- **Construction Mode**
- **File Transfer**
- **I/O Mapping**
- **Contact**



Again, the  Touch & Go™ knob is used to scroll through selection options. When your desired selection is highlighted, press the  knob to select.

Each of these options, and their submenus, are presented in detail in **Section 3 – Install the Control System.**

### 1.6.3 Adjust Menu – Second Tier

The Adjust menu presents a range of options for optimizing ride, car and group dispatching performance:

- **About**
- **Car Performance**
- **Ride Performance**
- **Group Performance**
- **Contact**



The  Touch & Go™ knob is used to scroll through selection options. When your desired selection is highlighted, press the  knob to select.

Each of these options, and their submenus, are presented in detail in **Section 4 – Final Adjustment**.

### 1.6.4 Troubleshoot Menu – Second Tier

The Troubleshoot menu presents a range of tools designed to simplify and expedite system troubleshooting if required:

- **About**
- **Single Call Enter**
- **Auto Car Call Simulation**
- **View Selector Data**
  - Serial Brake(s)
  - Drive
- **Controller Network**
- **Flags**
- **Event Logs**
- **Sequence Log**
- **Statistics Counters**
- **View Selector Data**
- **View Current Events**
- **Local Diagnostics**
- **Contact**

The  Touch & Go™ knob is used to scroll through selection options. When your desired selection is highlighted, press the  knob to select.

# Section 2 – Your Installation Plan

## 2.1 General Information

*This section contains important instructions and recommendations to ensure successful Pixel Control System installation.*

Successful installation and reliable, trouble free operation of all elevator control equipment depends on proper assessment of the installation environment and proper wiring methods. Completing both correctly protects equipment from disruption by external sources.

## 2.2 Installation Considerations

When selecting the best physical location for the control equipment consider the following:

- a. Make sure the control system is placed logically, while taking into consideration all elevator system components and non-elevator equipment sharing the space.
- b. Use four 3/8" in diameter, Grade 5 bolts and four 3" x 3" x 3/16" carbon steel plated washers in the designated enclosure mounting holes to secure controller.
- c. Provide adequate working space for control system installation, wiring, and maintenance. Elevator Controls standard equipment enclosures require front access only. This eliminates many constraints that would otherwise limit how equipment can be located.
- d. Do not install equipment where it may create a hazard.



**WARNING: Install Pixel Control equipment according to all applicable electrical, fire, and building codes. Improper installation and/or equipment location may create a HAZARDOUS CONDITION.**

- e. Do not install control system components in areas or on surfaces where there is exposure to vibration that may be produced by other equipment. Modern control systems contain socket-mounted parts whose function may be compromised by vibration.
- f. Provide adequate lighting for safety and efficiency.
- g. An internet connection, with fixed IP address, is desirable for access to **Remote Assist™** from the EC factory technical support team.
- h. If wireless service at the installation location is poor or intermittent, have a wired phone installed in the machine room.

## 2.3 Environmental Considerations

The elevator control system should be installed according to the following requirements to ensure proper operation and longevity:

- a. Temperature inside the control system enclosure should be maintained between 32- and 104-degrees Fahrenheit (0 to 40 degrees Celsius). Temperatures outside this range may affect normal operation and/or reduce system life. If required, make provisions for machine room air conditioning. EC can quote and provide an enclosure-mounted air conditioning unit.
- b. Air in the machine room should be free of corrosive gases and sufficiently dry to prevent condensation from moisture. NEMA 4 or NEMA 12 enclosures, with integral air conditioning units, are recommended for applications that do not meet these requirements. EC can quote and provide the full range of specialized NEMA rated enclosures for proper and safe operation in non-standard environments.
- c. Locate control system enclosures and components away from any window or opening to minimize the risk of equipment damage due to severe weather conditions.
- d. Protect control system equipment from exposure to extreme levels of electromagnetic (EM) and radio frequency (RF) radiation. EC control systems are certified to current EMI/RFI standards though independent testing by CKC Laboratories, Inc. However, note that EMI and RFI have the potential to interfere with normal operation of any electronic system.



**NOTE:** Hand-held communications devices used close to the system microprocessors have been known to generate disruptive RF interference.

## 2.4 Recommended Tools, Test Equipment & Manuals

The following tools are recommended for installation:

- a. Digital multi-meter
- b. Assorted tools used for electronics work such as pliers, cutters, flashlight, EC small straight blade screwdriver (supplied with each controller), etc.
- c. Amprobe or similar probe equipped ammeter
- d. Telephone
- e. Test weights
- f. Control system “as built” job wiring prints
- g. This installation and adjustment manual
- h. Solid State Starter Motor Control Manual, if applicable

- i. Oscilloscope and meter that measures meg-ohms may be desirable for advanced troubleshooting (rarely required)

## 2.5 Controller Wiring Guidelines



**CAUTION:** Restrict access to elevator control equipment and apparatus to qualified personnel only.



**NOTE:** It is very important to follow control system wiring guidelines to prevent problems with EMI/RFI interference and feeder line pollution.



**NOTE:** Wiring to controller terminals must be done neatly and carefully. Stranded wire conductors must be twisted together, avoiding stray strands that could create short circuits if not contained in terminals.



**NOTE:** All terminals and cable connectors should be checked to ensure that they are properly and solidly seated. When connecting flat cable connectors, be certain to match pin #1 marks (arrow symbol on connectors; red stripe on cable) to prevent mechanical damage to connectors and electrical damage to system components.

There are four wiring entry points provided in order to maintain proper separation between wiring for various purposes to ensure proper system operation:

- a. **Power Wiring:** The line power feeders and ground coming from the elevator service disconnect.
- b. **Motor Wiring:** Power wiring to pump motor.
- c. **Safety and Logic Wiring:** All wiring to fixtures and switches, as well as signal cross-connect cables from one car to another in a multi-car group system.
- d. **Communications Cable:** Communication cables run from one controller to another in a group of two or more cars.



**NOTE:** The standard EC NEMA 1 enclosure is provided with factory knockouts for recommended ideal field wiring entry points.

Knockouts and intended use are listed:

- a. Top right side
  - **Communication cable**

- b. Middle right side
  - **Safety & Logic wiring**
- c. Lower left and right side
  - **Main Line Power wiring**
  - **Pump Motor wiring**



**WARNING: METAL SHAVINGS AND/OR WIRE CLIPPINGS** can cause immediate and delayed **DAMAGE** to circuits – in any part of the system – if they bridge or short any circuit or connection. They can also **COMPROMISE SAFE AND PROPER SYSTEM OPERATION** if they become positioned in a way that modifies a circuit or circuits.



**CAUTION:** Ensure that metallic shavings and/or wire clippings are minimized and prevented from remaining in any enclosure interior. Thoroughly check for and remove residue before applying power. Methods used to capture and remove metal fragments should not be allowed to create static buildup or discharge.

**Good Practice:** Soft clean paint brush (gently sweep particles on enclosure bottom into pile and remove); masking tape (use to remove particles; create adhesive pocket under intended hole locations with tape to catch shavings when drilling).

**Risky Practice:** Use of small vacuum (potential ESD electrostatic discharge damage); compressed air (may drive particles into inaccessible or undetectable locations, potential for eye injury).



**NOTE:** Alternate wiring entry points may be created in the field to accommodate specific installation conditions.



**NOTE:** Study your control system layout to develop the best arrangement for keeping the five entry points separated and laid out logically to suit your particular application.



# Section 3 – Install the Control System

## 3.1 Pixel Hydraulic Control System Steps to Startup

*Protect printed circuit boards from dust and foreign materials. Remove main fuses. Complete elevator controller mounting, installation, and wiring.*

Observe controller field terminal locations in relation to wiring ducts to determine optimum locations for wiring to enter the control equipment enclosure.

Complete the steps in **Sections 3.2 through 3.4.5 below** in order to run the car on Construction mode.



**CAUTION:** Use care to protect circuit boards from metal debris when cutting.



**NOTE:** The standard Pixel Hydraulic controller enclosure has several 3/4" knockouts marked for wiring ducts which can be used as guides for location of knockouts required for each particular job.

## 3.2 Install the Controller Cabinet

In Section 2 you reviewed the general considerations for machine room layout and develop your installation plan. Now, proceed to locate and mount the controller enclosure.

## 3.3 Wire the Control System

### 3.3.1 Test Ground Continuity

Test all terminals for continuity to ground. If continuity is found, resolve the problem before proceeding.



**NOTE:** Terminal 3 is connected to ground and used as system common.

### 3.3.2 Remove Primary Controller Fuses


Remove fuses FL1, FL2, FCT1, FCT2, F4A in order to remove power to controller logic, and the door operator. Place **Machine Room Inspection** to **INSP** and the **Test** switch to **TEST**. Both switches are located on the P-MP board.




**NOTE:** Always review job prints to confirm correct fuse designations and amperages, as well as to become familiar with job specific circuit requirements.

### 3.3.3 Place Disconnect Switch in Off Position


Place the disconnect switch in the off position and check voltage on the line side to verify that all three legs are correct based on job prints page 1.


 **WARNING: CONFIRM THAT FEEDER LINE VOLTAGE is within 10% of specified control voltage or PERMANENT DAMAGE could occur to both the motor and elevator control system logic. TURN OFF THE MAIN DISCONNECT and CORRECT any voltage problem BEFORE PROCEEDING with installation.**

 **CAUTION:** Remove any protective covering that may still be in place on PC boards and components before applying power.

### 3.3.4 Wire Main Line to Controller

Wire the main line from the disconnect switch to the motor starter or terminal block provided in the controller enclosure as indicated on job prints page 1.

 **NOTE:** Use proper wire size for amperage.

 **NOTE:** Ground wire size must provide equal or greater ampacity than the incoming feeders.


### 3.3.5 Verify Supply Voltages at Equipment

Turn on the disconnect switch to verify that voltages at controller terminals are correct based on job prints page 1.

Turn off the disconnect switch then replace the fuses removed previously in Section 3.3.2 above.

Turn on the disconnect switch and confirm that computer power supply input and output voltages are correct based on job prints page 2. Verify that buss voltages are 24 volts DC for terminals 6, 50, 50F, and S24V; and 120 VAC for terminal 4A.

Confirm that the P-MP color display is on and the screen shows the Pixel home/startup display, “Hi, I’m Pixel. What would you like to do?”

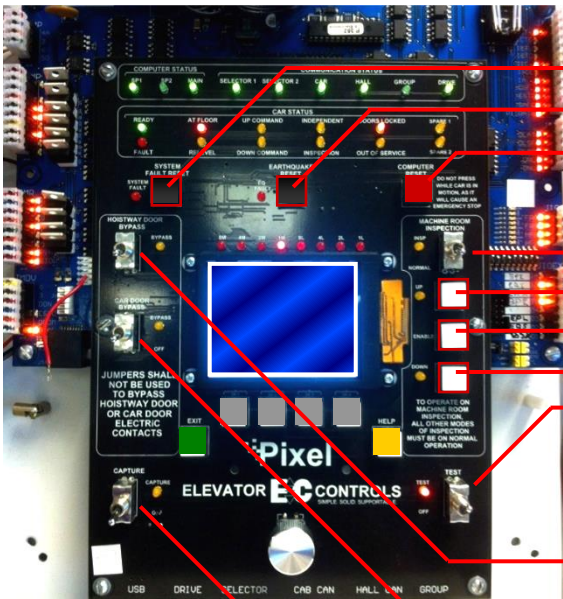
 **NOTE:** After verifying input voltages and fuses as required per job prints, if you are unable to correct conditions to confirm voltages and behaviors described, call Elevator Controls technical support at **916-428-1708**.

### 3.3.6 Pixel Dashboard Interface – Indicators

You will find multiple LED indicators have been provided on PC boards, and onboard computer diagnostics are included. Both are very useful tools that will save installation and troubleshooting time.



**NOTE:** Review the Pixel system dashboard indicators and switchgear before continuing to Section 3.3.7.



### SWITCHGEAR

- System Fault Reset
- Earthquake Reset
- Computer Reset

### MACHINE ROOM INSPECTION

- Inspection Switch
- Up Button
- Enable Button
- Down Button
- Test Switch

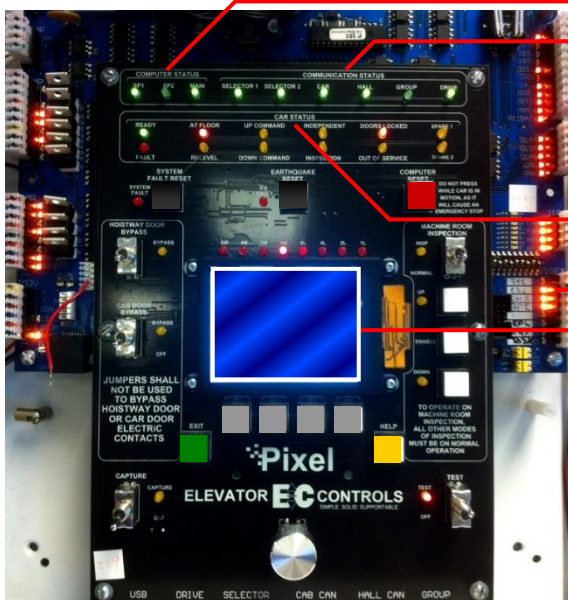
### DOOR BYPASS PANEL

- Hoistway Door Bypass
- Car Door Bypass
- Capture Switch

Figure 3.3.6a - Pixel

### INDICATORS

- Computer Status
- Communication Status



- Car Status Indicators
- I/O Indicators
- High Resolution LCD Display


Figure 3.3.6b - Pixel Dashboard

### 3.3.7 Verify Motor Data Tag Information

This step confirms that the data provided to manufacture the control system agrees with actual nameplate data for the motor.

Compare motor nameplate data to that found on the job prints page 1.

 **WARNING: DO NOT CONTINUE if any DATA discrepancy is found.**

 **NOTE:** If any data does **NOT** agree with job prints, call Elevator Controls Technical Support at 916-428-1708. Be prepared with your job number, nameplate data, and job print data.

### 3.3.8 Section purposely left blank








### 3.3.9 Section purposely left blank






### 3.3.10 Section purposely left blank


### 3.3.11 Enable Construction Mode of Operation

The steps described starting in this section will allow you to operate the car in Construction mode when you reach the end of Section 3.4.5. Construction Mode allows the car to be operated on Cartop inspection without Landa™ selector feedback – while maintaining elevator safeties consistent with this inspection mode.

Construction mode is enabled or disabled by using the Touch & Go™ knob to navigate:

-  Home
-  Install 
-  Construction Mode 
-  **Enable** or  **Cancel**


Pixel Navigation Icons	
Knob Rotate/Push	Key Press
 Rotate to locate	 Home
 Push to select	 Direct-Select
	 Help

 **NOTE:** Construction Mode must be set to Disable in order to Enable any automatic mode of operation.

### 3.3.12 Wire Circuits Required for Construction Mode

Construction Mode allows the car to be operated on Car Top or Machine Room Inspection modes. All safety circuits required for these modes of operation must be operational:

- a. Set HOISTWAY DOOR BYPASS and CAR DOOR BYPASS SWITCHES to BYPASS position; OR ensure that all car and hoistway gates and locks are closed.
- b. Wire Motor to Motor Contactor; refer to page 1 of prints for guidance.
- c. Governor switch contact wired between Terminals 4A and GOV or Jumper terminal 4A to GOV if no governor device is required.
- d. Wire Car-Top Station Pendant unit, refer to page QR1 of the prints:
  1. Switch between 4A and ICT
  2. Enable Push Button between 4A and ICTE
  3. Up Push Button between 4A and ICTU
  4. Down Push Button between 4A and ICTD
  5. Stop Push Button between 4A and SAFH and SAFC

 **NOTE:** Use proper wire size for amperage and use ground wire size equal or greater ampacity than the motor power wires.

### 3.3.13 Section purposely left blank

### 3.3.14 Verify Motor rotation

 **NOTE:** Section 3.3.14 is for Wye-Delta or Delta Motor Starter. Skip to Section 3.3.15 if using Solid State Starter.


#### 3.3.14.1 Pump Motor Rotation (Wye Delta or Delta Starter only)

Verify proper rotation of the pump motor by momentarily closing starter contacts (use the Y Contactor for Y-Delta starters) and BK redundant motor contactor if required by job, refer to page 1 of prints. Do not hold for more than one second). If rotation is incorrect, interchange two of the leads at disconnect, or the top of the starter (**power lines only, not motor leads**).

#### 3.3.14.2 Reverse Phase Relay (Wye Delta or Delta Starter only)

Observe the RP (Reverse Phase) relay. If it is picked, proceed to the next step. If RP is not picked, check fuses FL1, FL2, and FL3 and make sure that, if an adjustable sensor is provided, the setting is correct.

If this does not cause the RP relay to pick, turn off the power and reverse two of the three wires (probably #14 or #18 gauge) that feed 3-phase AC power from the starter to the rest of the controller (these wires will typically be at the top of the starter). Restore power. The RP relay should pick. If not, replace the RP plug-in sensor or the RP relay and repeat this step.

 **NOTE:** Section 3.3.15 is for Solid State Motor Starter. (Skip to Section 3.3.14 above if using Wye-Delta or Delta Starter).


### 3.3.15 Review Instructions (Solid State Starter only)


Read the manufacturer's solid-state starter unit (SSSU) application instructions and use for reference through this section. The ready light should come on when power is applied to the input side of the SSSU. If there is a phase loss the phase reverse indicator will come on. Verify that the line-to-line voltage is the proper value. If incorrect, swap any two power input lines to the starter. This should correct the problem and the ready LED indicator should come on. Refer to SSSU manufacturer's manual for advanced troubleshooting.

#### 3.3.15.1 Proper Pump Motor Rotation (Solid State Starter only)

Verify proper rotation of the pump motor by momentarily jumpering the enable contacts (Motor Run Input) on the SSSU, refer to page 4 of prints to jump terminals connected while AA auxiliary contact 1 is closed. If motor rotation is reversed, correct by swapping two of the motor winding connections (refer to the SSSU manufacturer manual for directions to properly swap two of the motor winding connections).

## 3.4 Run the Car on Construction Mode

 **NOTE:** Pixel will prevent the car from moving until the required Construction Mode signal status is achieved.

 **NOTE:** Construction Mode allows the car to run On Car Top or In Car Inspection in low speed only regardless of High Speed on INS parameter setting.

Navigate to the home screen, then follow step-by-step instructions.

 Home

Confirm that the Pixel screen displays, "No Faults."


If a fault condition is indicated


 Help

Read the fault description and follow instructions for resolving the issue  
Once recommended actions are completed press the

 System Fault Reset

This will clear a “fault latched” state.


 **NOTE:** The highest priority fault is displayed on the Pixel home screen (No Faults is the default). Lower priority faults may be revealed once the first fault is resolved. Repeat instructions above until No Fault are displayed.

 **NOTE:** Faults are classified as either latching or non-latching. While non-latching faults self-reset, all faults are recorded in fault counters and logs.

### 3.4.1 Attempt to Move Car


Using the Car-Top Station Pendant unit confirm the car can be commanded to move in the up or down direction, verify respective up or down valve unit is energized matching commanded direction of travel, refer to page 1 of prints for valve coils wiring interface.

### 3.4.2 Wye Delta Timeout Adjustment

 **NOTE:** Section 3.4.2 applies to Wye-Delta mechanical starter units only, skip to 3.4.3 if Solid State Starter unit is being used.

For WYE-DELTA starters, the proper transition time from Wye to Delta should be verified and adjusted for smooth pump motor acceleration and up to speed transition, the Wye Delta Timeout is found navigating to:

 Home

 Adjust 

 Car Performance 


 Timers 

 Hydraulic Timers 

 Wye Delta Timeout 




### 3.4.3 Up to Speed Solid State Starter Adjustment

 **NOTE:** Section 3.4.3 applies to Solid State Starters units only for Wye-Delta mechanical starter skip to 3.4.2 above.  
For Solid State Starter Unit or Variable Voltage Variable Frequency starter is provided, refer to the manufacturer's manual for acceleration and up-to- speed motor control adjustment.

### 3.4.4 Valves Adjustment

Refer to the valves manufacturer's manual to adjust car Inspection speed, low speed up and downs valves, to allow for car use to finalize elevator installation.

 **NOTE:** Low speed valves may need to be adjusted during final adjustment to achieve performance and comfortable landing approach.

### 3.4.5 System Startup Complete

At this point the system startup is complete: the elevator car should run correctly on Construction mode in Car Top Inspection or Controller Inspection modes.

If you are unable to run the car, review the steps in Section 3 to section 3.4.4 above, and repeat as required.

Elevator system hardware installation should be completed next, including installation of the Cartop box, Car Operating Panel, Landa™ dual head positioning system etc. in order to enable the car to transition from Construction Mode to Inspection and Automatic modes of operation.

## 3.5 System Components Installation and Wiring

### 3.5.1 TOC Box Installation

The Pixel TOC box is supplied with necessary hardware to permanently attach it to the crosshead using Unistrut and clamps.

Survey the cartop and determine the best quadrant for mounting, setup and ease of wiring to door operator(s), load weighing devices, Landa™ positioning hardware, fans and cab accessories to the TOC box. Refer to job prints page TOC1 for instructions and details of TOC mechanical installation.

Install the TOC box provided. If your TOC box includes the optional pre-wired Car Top Inspection Station, install the TOC box the light bulb and light bulb mesh protection provided. Install the Emergency Stop push button switch.

- i** **NOTE:** Pixel's pre-wired Car Top Inspection Station light bulb, light bulb mesh protection, and the Emergency Stop push button switch are shipped inside the TOC box.

Once the TOC box has been installed, if you did not order the pre-wired Car Top Inspection Station, wire the job Inspection Station provided by others to the TOC Box, referring to page CW of the prints for wiring instructions.

### 3.5.2 COP Installation Wiring

Refer to your COP panel provider and cab manufacturer for any special installation instructions for the pre-wired COP panel. Use the harness provided to connect to the TOC box. Refer to job prints page CW for harness wiring details.

- i** **NOTE:** A color-coded harness is provided to simplify connection of the COP(s) to the TOC. One harness is shipped with the TOC box for each COP.
- i** **NOTE:** Place the switch for Independent Service to on and leave it on to make sure car will open doors while transferring from TEST to Independent service as indicated in Section 4, final adjustment below, and to enable access to inside of the cab.

### 3.5.3 Traveler Cable Installation and Wiring

Install the Traveler Cable and wiring. Refer to your traveler cable provider and cab manufacturer for any special installation instructions. Refer to page CW of the prints for traveler wire count as well as for one-to-one terminal wiring instructions.

- i** **NOTE:** A separate terminal strip is provided, in the controller, to wire one to one the traveler cable conductors to the controller. Another identical terminal strip is located inside the TOC box. The top portion of the TOC box terminal strip is intended for termination of traveler cable conductors.


### 3.5.4 Positioning System Installation

- i** **NOTE:** If using a CEDES APS position system instead of a Landa™, refer to Appendix E for installations instructions then skip to section 3.5.5 below.

#### 3.5.4.1 Landa™ Encoded Tape

Landa™ Positioning System is supplied with necessary hardware to permanently attach it to the rails and crosshead using Unistrut and clamps. Survey the cartop and hoistway to determine the quadrant that provides clearance for the Encoded Tape to run the entire length of the hoistway. Refer to page QR5/PS1 of the prints for installation guidelines.


Start by fastening the top end of the tape to the top-of-hoistway bracket, and then allow the roll to descend the hoistway.


-  **NOTE:** The Encoded Tape is polarized so it must be installed with the start position at the bottom of the hoistway. To simplify installation, tape has been coiled with the top end on the outside of the roll.

### 3.5.4.2 Landa™ Dual Sensor Head Installation and Wiring

The sensor heads can be mounted on any of their three sides to facilitate encoded tape position and sensor head assemble locations. Refer to page QR5/PS1 of the prints for installation guidelines.












Connect the Sensor heads to the TOC box using the color-coded wiring harnesses provided. Refer to page 6 of the prints for wiring details.

-  **NOTE:** The Auxiliary sensor head (selector 2) is the one mounted at the top of the Landa Dual Sensor Head bracket assembly. It connects to the TOC JASEL connector on the TOC board. The Main sensor head (selector 1) is the one mounted at the bottom of the bracket and connects to the TOC JMSEL connector.






-  **NOTE:** The sensor head connector location must be at the top of sensor head unit to ensure proper sensor head orientation.

### 3.5.4.3 Landa™ Positioning System Verification


Using the TOC access point, verify the distance between the two position sensor heads. Navigating to:

-  Home
-  Install 
-  Learn Functions 
-  Virtual Limits 
-  **Tape Reader Offset** 
-  **Learn** or  **Back**

Verify proper operation of the Landa system. Navigate to:

-  Home
-  Install 
-  **View Selector Data** 

- a. Confirm that the position displayed for selector 1 should be smaller than selector 2. If not, swap the pluggable terminal strips JMSEL and JASEL on the P-TOC board.
- b. Confirm that selector positions increment and decrement together as you run the car either up or down.
- c. Confirm that the RAW delta difference is between 0.7 to 1 foot, and roughly matches the physical distance between the two sensor heads as mounted.

 **NOTE:** If you cannot confirm performance as described above, repeat steps in Section 3.5.4 until the landing system operates correctly.

## 3.5.5 Cab and Hoistway Wiring


### 3.5.5.1 Mechanical Switches and Peripherals Wiring

Refer to page CW of the prints for cab peripherals, such as Door Operator, Photo Detectors, Fans and Lights, etc. requirements and wiring guidelines. Install and wire as necessary.

Refer to page HMW of the prints for hoistway switches requirements and wiring guidelines. Install and wire necessary mechanical switches.


### 3.5.5.2 Hall Network

Refer to your Fixture manufacturer for any special installation instructions for the EC-Ready pre-wired Hall Stations. See page QR4/ HMW of the prints for hall station node wiring guidelines.

 **NOTE:** CAN-driven hall station nodes require power and data wiring. Care must be observed not to interchange data wires and power wires so node(s) will be able to access the network and communicate.

#### 3.5.5.2.1 Pixel RJ45 Hall Wiring Option

If the controller purchase included the optional Pixel RJ45 Hall Wiring option, consisting of all the necessary RJ45 cables and RJ45 cable splitters to wire the Hall network to Pixel, refer to page QR4/ HMW of prints and observe that the use of RJ45 splitters is optional the P-Hall boards have two RJ45 female jacks that can be used to interconnect the hall network eliminating the need of splitters and the three feet RJ45 cables used to connect from the splitter to the hall nodes.

 **NOTE:** The on-board P-Hall RJ45 female jacks can be used for either input or output to connect them directly to the hall network eliminating the RJ45 splitters and the three feet cables from splitter to hall nodes.

### 3.5.6 Verify Network Set Up


Pixel network is divided into Cab and Hall node networks to facilitate setup and troubleshooting. Pixel needs to be told what to expect as part of each network through configuration parameters that can be manipulated navigating to:

 Home

 Install 


 Initial Settings 

 MP CAB Node Network  or  HALL Node Network 

 **NOTE:** Even though Pixel's "This Job" network parameters have been factory preset it is important to verify them or be able to re-configure to match job requirements.


#### 3.5.6.1 MP Cab Node Network Setup Verification

The Cab Node Network window indicates to Pixel which nodes to expect as part of "This Job" Cab nodes, verify settings to match job requirements for the correct number and type COP nodes, Door Operator, and load weigh device.

 **NOTE:** If the door operator interface is not CAN driven set CAN Driven Door Operator to No. if no Load Weigh Device is to be used set Load Weigh device to None, or Discrete for dry contact interface, or CAN Based if CAN driven.

#### 3.5.6.2 HALL Node Network Setup Verification

The Hall Node Network window indicates to Pixel which nodes to expect as part of "This Job" Hall Nodes on top of the Hall Call Nodes which are defaulted to be part of the network based on car landing eligibility, verify settings to match job requirements for the correct number and type








 **NOTE:** If top or/ and bottom inspection access operation will be required and the job has front and rear doors openings, the top and bottom access nodes must be configured to the door opening access operation which locks will be bypassed while active.

### 3.5.7 Verify Network Communications

Once wiring has been completed, and the network set up verified, Pixel needs to acknowledge each node throughout the network, to facility this task Pixel network verification has been divided into four landscape windows as follows:

### 3.5.7.1 Car Network Landscape

Once cab wiring has been completed can be viewed navigating to:



-  Home
-  Install 
-  Learn Functions 
-  **Car Network Landscape** 

Selecting the Car Network Landscape menu causes the Pixel MP to perform a node search for all available CAN-driven cab nodes and display a list of nodes found. Verify that the list confirms all expected and required cab nodes and correct wiring or Pixel nodes switchgear as needed to obtain expected network nodes listing.

### 3.5.7.2 Pixel Car Nodes Switchgear Configuration








Each Pixel node member having an on-board configuration switchgear, must be configured to behave for the selected task to be performed as follows:

- a. COP main front switch 1 On, switches 2, 3, and 4 Off
- b. COP Main Auxiliary front switch 2 On, switches 1, 3, and 4 Off
- c. COP main rear switch 1 and 2 On, switches 3, and 4 Off
- d. COP Main Auxiliary front switch 3 On, switches 1, 2, and 4 Off
- e. CNEX Nodes utilize switches 1 to 4 in binary mode to identify node number, with all switches off as reserved configuration, i.e. CNEX one will have switch 1 On, switches 2, 3, and 4 Off.



 **NOTE:** Press the  Refresh soft key if any node switch gear has been modified or if any node wiring has been correct to cause the Pixel MP to perform a node search and refresh window data.

### 3.5.7.3 Car Hall Network Landscape

Once hall wiring has been completed can be viewed navigating to:

-  Home
-  Install 
-  Learn Functions 
-  **Car Hall Network Landscape** 

Selecting the Car Hall Network Landscape menu causes the Pixel MP to perform a node search for all available CAN-driven Car Hall nodes and display a list of nodes found. Verify that the list confirms all job required Car Hall nodes, i.e. Top and Bottom Access, Hall Gongs, Etc., refer to job prints page 9 for job required car hall node configuration switch gear.

 **NOTE:** Press the  Refresh soft key if any node switch gear has been modified or if any node wiring has been correct to cause the Pixel MP to perform a node search and refresh window data.

### 3.5.7.4 System Hall Network Landscape

Once hall wiring has been completed can be viewed navigating to:



 Home

 Install 

 Learn Functions 

 **System Hall Network Landscape** 

Selecting the System Hall Network Landscape menu causes the Pixel MP to perform a node search for all available CAN-driven system nodes and display a list of nodes found. Verify that the list confirms all required System Hall nodes, i.e. Hall Calls, Fire Service, Hospital Calls, Etc., refer to job prints page 9 for job required system hall node configuration switch gear.

 **NOTE:** Press the  Refresh soft key if any node switch gear has been modified or if any node wiring has been correct to cause the Pixel MP to perform a node search and refresh window data.

### 3.5.7.5 Unknown Node Landscape

Once hall wiring has been completed can be viewed navigating to:

 Home



 Install 

 Learn Functions 

 **Unknown Node Landscape** 

Selecting the Unknown Node Landscape menu causes the Pixel MP to perform a node search for all CAN-driven nodes whose switchgear has an invalid switchgear configuration and display a list of nodes found, this window is useful in helping to


determine if the correct number of nodes has been installed but their switch gear may not be properly configured, refer to job prints page 9 for job required system node configurations switch gear.

 **NOTE:** Press the  Refresh soft key if any node switch gear has been modified or if any node wiring has been correct to cause the Pixel MP to perform a node search and refresh window data.

### 3.6 Verify Hoistway Clearance


Inspect the full length of the hoistway to ensure availability of required free running clearances. Check all door locks to ensure that they also have proper clearances.

While running the car, verify that the Landa encoded tape selector heads allow tape to pass freely with no continuous contact. Make necessary adjustments to correct any misalignment.

 **NOTE:** The position of the Landa sensor heads in relation to the encoded tape must be consistently maintained throughout the entire hoistway for the system to function reliably.


### 3.7 Verify Connectors Properly Seated

Verify that all connectors in the system are correctly seated. Ribbon and plug in field wiring connectors can work loose during shipment or installation. Press firmly on all connectors to verify seating. If this car is part of a group system, verify that required car-to-car communications cables are installed, along with any #18 Awg. cross connection wiring according to the page HMW of the prints.

 **CAUTION:** Proper seating and secure latching of all connectors is critical to reliable system operation.

### 3.8 Hoistway Position Learn

Pixel needs to “learn” the position of the virtual door zone positions, as well as virtual positions for the top and bottom normal and access limit positions. This process can be completed all at once or by individual “target”. The learn process is broken into sections for clarity.


 **NOTE:** Pixel must learn the virtual bottom landing door zone position first such position will be used to normalize all other virtual positions.



## 3.8.1 Floor Setup

### 3.8.1.1 Bottom Landing Setup

Pixel must “learn” the position of the bottom landing first; such position must be learned by positioning the car at the bottom landing position. The bottom landing position will be used to normalize the encoded position read from the tape at the bottom landing to 1.2 feet and use this virtual position to scale all other floors and virtual limits required by Pixel logic.

-  **NOTE:** The bottom landing position does not have to be set precisely at this time, its value will be fine-tuned during Final Adjustment Section 4, and all other positions will be automatically adjusted to reflect change in bottom floor normalized position.

To learn the bottom landing position, drive the car to the approximate bottom landing location and Navigate to:

 Home

 Install 


 Learn Functions 



 Floor Set Up 


 Landing Number 


 **Rotate Landing Number value to select bottom landing** 

Press the  Learn soft key, to learn position.



Press the  Save soft key, to permanently store position.


-  **NOTE:** Press the  Cancel soft key to abort learning position and make a new selection, or to return to the previous menu without saving.

-  **NOTE:** The Car’s Current Position value and the Door Zone Position values change to 1.2 ft value

-  **NOTE:** The Down Normal Terminal virtual switch position, DNL, will be defaulted to a position 0.2 Feet below the bottom landing Door Zone Position value, i.e. 1 Foot, its position can be adjusted from 0.1 to 0.5 Feet as needed to match elevator performance.

### 3.8.1.2 All Other Landings Setup


Pixel now can use the bottom landing learned position to learn and normalize the remaining landing positions. Such landing positions can be learned by Learn by Position (indicated by this symbol  ) or Learn by Input Value (indicated by this symbol  )

 **NOTE:** The landing position does not have to be set precisely at this time – values will be fine-tuned during Final Adjustment Section 4.

#### Learn by Position

Drive the car to the landing position to “Learn” and navigate to:

 Home


 Install 


 Learn Functions 



 Floor Set Up 

 Landing Number 

 **Rotate to select landing position to be learn** 

Press the  Learn soft key, to learn position.


Press the  Save soft key, to permanently store position.

 **NOTE:** Press the  Cancel soft key to abort learning position and make a new selection, or to return to the previous menu without saving.

Repeat Steps above for all landings.

#### Learn by Input Value

If the approximate landing to landing distance is known, such distance can be entered to Pixel data base, instead of driving the car to the landing position to learn it.

 **NOTE:** To use this method, Step 3.8.1.1 Bottom Landing Setup must have been performed.

Examples of calculations for landing position entry values, assuming 10 feet from landing to landing:

- a. Landing Position second landing= Bottom Landing position + Distance from bottom to second landing.


$$\text{Landing position second landing} = 1 \text{ ft} + 10\text{ft} = 11\text{ft}.$$

- b. Landing Position fifth landing = Bottom Landing position + Distance from bottom to fifth landing.

$$\text{Landing Position fifth landing} = 1\text{ft} + (4 \text{ landings} \times 10 \text{ ft per landing})$$

$$\text{Landing Position fifth landing} = 1\text{ft} + 40 \text{ ft} = 41 \text{ ft}$$

Calculate values for all landings then navigate to:



 Home

 Install 


 Learn Functions 



 Floor Set Up 



 Landing Number 

 Rotate to select landing position to be entered 


 Rotate to enter calculated value for Landing Position 

Press the  Save soft key, to permanently store position.

 **NOTE:** Press the  Cancel soft key to abort learning position and make a new selection, or to return to the previous menu without saving.

 **NOTE:** The x1  soft key can be used to adjust the magnitude/size of rotational increments by 1, 10, 100, or 1000, back to 1.














Repeat Steps above for all but bottom landing landings.


 **NOTE:** The FLOOR SETUP window allows the manipulation of the position indicator landing labels displayed, as well as verification of individual landing CAN-driven network devices. This area will be explored further in Final Adjustment Section 4 of this manual.







### 3.8.2 Adjust Up and Down Limit Positions

Pixel logic will default the Up Normal Limit (UNL) to be two inches above the top landing, and the Down Normal Limit (DNL) to be two inches below the bottom landing.

The UNL and DNL positions can be adjusted from to be a maximum of 0.5 Feet past the direction of travel if required, navigating to:


-  Home
-  Install 
-  Learn Functions 
-  Limit Switches 
-  Up Normal Limit (UNL)  -or-  Down Normal Limit (DNL) 
-  Rotate to desired position value to be entered 

Press the  Save soft key, to permanently store position.

-  **NOTE:** Press the  Cancel soft key to abort learning position and make a new selection, or to return to the previous menu without saving.
-  **NOTE:** The x1  soft key can be used to adjust the magnitude/size of rotational increments by 1, 10, 100, or 1000, back to 1.
-  **NOTE:** The Top and Bottom Terminal Markers are not currently used by Pixel logic.
-  **NOTE:** Changing the Top and Bottom Terminal Markers value has no effect on the elevator behavior.

### 3.8.3 Learn Hoistway Access Virtual Limits










Pixel must “learn” the position of top and bottom hoistway access travel positions. Choose from two learn methods below: Learn by Position (indicated by this


symbol  ) or Learn by Input Value (indicated by this symbol  ).


#### Learn by Position



On inspection mode, drive the car to the bottom access travel position.

Navigate to:

-  Home
-  Install 
-  **Learn Functions** 
-  Virtual Limits 
-  **Bottom Access Limit (BAL)** 










Press the  Learn soft key, to learn position.


Press the  Save soft key, to permanently store position.


 **NOTE:** Press the  Back soft key to abort learning position and make a new selection, or to return to the previous menu without saving.



Repeat procedure at the top of the hoistway.

Navigate to:

-  Home
-  Install 
-  Learn Functions 
-  Virtual Limits 
-  **Top Access Limit (TAL)** 

Press the  Learn soft key, to learn position.

Press the  Save soft key, to permanently store position.
















 **NOTE:** Press the  Back soft key to abort learning position and make a new selection, or to return to the previous menu without saving.


### Learn by Input Value



 **NOTE:** To use this method, Step 3.8.1 Bottom Floor Setup must have been performed.



- a. Note the positions for the Bottom and Top landing recorded on Step 3.8.1.1 and 3.8.1.2 above.
- b. Determine the allowed travel distance, based on your cab size and elevator code requirements.
- c. BAL position = Bottom landing Position + allowed travel distance from b above
- d. TAL position = Top landing Position - allowed travel distance from b above

Navigate to:

-  Home
-  Install 
-  **Learn Functions** 
-  Virtual Limits 
-  Bottom Access Limit (BAL) 
-  Rotate to desired value for BAL position 
-  Top Access Limit (TAL) 
-  **Rotate to desired value for TAL** 





Press the  Save soft key, to permanently store position.

 **NOTE:** Press the  Cancel soft key to abort learning position and make a new selection, or to return to the previous menu without saving.

 **NOTE:** The x1  soft key can be used to adjust the magnitude/size of rotational increments by 1, 10, 100, or 1000, back to 1.




### 3.9 Transfer of Hoistway Layout


Section 3.8 above allowed Pixel MP Microprocessor to create a virtual image of the hoistway, such image needs to be transferred to the safety microprocessors as part of the Safety Configuration for Pixel to allow the car to operate under Inspection, TEST, or Automatic mode of operation once Construction Mode is disable, to transfer the Safety Configuration File to SP1 and SP2 microprocessors navigate to:

-  Home 
-  Install 

 File Transfer 

 Safety Configuration Upload 

 **NOTE:** Press the  **Transfer** soft key to transfer a configuration file to the safety microprocessors or the  **Back** soft key to abort Transfer.

 **NOTE:** Pixel will stop all elevator functions and prompt user to wait for transfer mode status, controller setting requirements for transfer mode will be displayed as File Transfer selection is made



### 3.10 Disable Construction Mode of Operation


Pixel components have now been installed and functional operation verified. You can now transition Pixel from Construction Mode to Inspection Mode. Construction mode is enabled or disabled by using the Touch & Go™ knob to navigate to:

 Home

 Install 

 Construction Mode 

 **Disable** or  **Cancel**


 **NOTE:** Construction Mode must be set to Disable in order to Enable any automatic mode of operation.

# Section 4 – Final Adjustment

## 4.1 Door Adjustment

The elevator door operator (or operators) should be adjusted to provide desired door performance.

- a. Position the car in a convenient location within the hoistway to adjust car doors to a preliminary setting.
- b. Place the car on inspection mode then follow the adjustment procedure provided by the door operator manufacturer.

 **NOTE:** Most solid-state door control systems use adjustment procedures that require no interaction with the elevator controller.

### 4.1.1 MOVFE CAN-bus Door Operator Adjustment

If the controller has been provided with the MOVFE CAN-bus interface, refer to page QR3 of the job prints and the MOVFE door operator manual for programming the MOVFE door operator parameters to allow communications with Pixel controller and verify the following parameters in Pixel, from any of Pixel's three access points, Navigate to:

 Home 

 Install 

 Initial Settings 


 MP Cab Node Network 

 **Front Door Operator ; Set to MOVFE, for front doors**  
And/ Or

 **Rear Door Operator ; Set to MOVFE, for Rear doors**

Press the  Save soft key, to permanently store selection(s).

 **NOTE:** Pixel Allows for discrete & CAN-bus door interfaces to coexist.

 **NOTE:** Pixel emulates the MOVFE door operator programming tool functionality making available through any of Pixel's three access points to facilitate and validate adjustment and performance from within the Cab.



## 4.2 Check Hoistway Clearances

For the door operator to operate properly, all door equipment clutches, rollers, etc. must be adjusted to the correct running clearances.

Make sure all hoistway and car doors for this elevator are closed and locked.

Run the car the entire length of the hoistway on inspection, while riding the cartop, to be sure that the hoistway is completely clear of obstructions. View the cartop system access point to confirm that the positioning system tape and sensor head continuously track car position. Navigate to:

 Home

 Install 



 **View Selector Data** 

Make any necessary adjustments to tape alignment before proceeding.

## 4.3 Use of Test Switch

Place the TEST switch in the “Test” position (the TEST switch is located on the lower right of the P-MP board). In the test position the controller will not open doors (either front or rear) and the car will behave as on Independent Service mode of operation.

Switch from inspection to normal operation. The car should travel to the closest landing.

 **NOTE:** If this does not happen, view the Pixel screen from any system access point and see if a fault condition is displayed. Consult onboard help by pressing the yellow  **Help** key for guidance to resolve any fault that might prevent the car from moving.

The car will be ready to respond to car call demand as soon as the **READY** and **AT FLOOR** indicators are lit, and the **RE-LEVEL** indicator is off. This confirms that the car has completed leveling at a landing. If any door opening device is active – Door Open Button, DOB, Safety Edge, SE, Photo Eye Sensor, PHE, Door Lock, Door Closed, Car Gate not closed – the car will be prevented from responding to car call demand.

Observe door input status by navigating to:

 Home  Troubleshoot  Flags  **Door Flags**

Correct wiring or repair any device necessary to eliminate the active input that is preventing car movement.

Refer to **Section 7 – Troubleshooting** in this manual for more troubleshooting assistance.














## 4.4 Get Car Ready to Run in Test Mode

Set the Machine Room Inspection switch located in Pixel MP Board to INSP and the TEST switch to TEST position, release the car from car top, in car, or Access inspection modes to allow it to be operated from Machine Room Inspection Mode. Set Pixel display to Home/Startup and observe for Machine Insp. and No Faults display indication, press the HELP push button for guidance in resolving any reported fault condition.



Use the Pixel MP onboard Machine Room Inspection switch gear to drive the car past the bottom landing until the down terminal position of travel is reached and the display reports Down Terminal Switch Open fault. At this position verify that the car is positioned within a couple of inches below the bottom floor.

Enable **ETS Bypass** to prevent SP1 and SP2 safety processors from triggering Slowdown Terminal Overspeed faults.


Navigate to:

-  Home 
-  Install 
-  Learn Functions 
-  ETS Learn 
-  ETS Learn Up 
-  ETS Bypass Option 
-  Yes

Press the  **Save** soft key, to enable bypass.

 **NOTE:** Press the  **Cancel** soft key to abort and make a new selection, or to return to the previous menu without saving.


Remove the car from Machine Insp. observe for **TEST** mode and **No Faults** display indication. Press the **HELP** push button for guidance in resolving any reported fault condition, and section 4.5 below to reset Non-TEST Mode of operation. The car should re-level up to the floor.

 **NOTE:** The car will attempt to re-level into floor position once Machine Room Inspection switches to TEST Mode of operation.

## 4.5 Reset Non-TEST Modes

If Pixel main window displays other Mode of operation, such as Emergency Power, Hospital Service, Fire Service, etc. such modes must be cleared to allow

TEST Mode functional operation, in order to reset non latching modes of operation one must clear the mode triggering input, and for latching modes of operation such Fire Service and Earthquake Operation they can be reset by clearing the triggering inputs, then entering and exiting Construction Mode. Refer to section 3.3.11 and 3.10 to Enable or Disable Construction Mode of Operation.

 **NOTE:** At this point Pixel’s screen should display TEST Mode, doors closed, and No Fault in order for the car to run in TEST Mode.

















## 4.6 Entering Calls to Run in Test Mode

Pixel provides an **Auto Call Simulation** menu to allow car calls to be entered in TEST Mode. Four choices are provided in this menu as follows:

- f. **Up and Down from xxx to yyy**, where xxx and yyy represent the landing numbers where the car will run to and from.
- g. **Circle xx floors around landing yyy**, where xx represent the number of floors above and below the landing yyy where the car will run to and from.
- h. **xx floors to runs Up and Down**, where xx represent the number of floors to run, one, two, etc. floor runs up or down until the end of hoistway in the direction of travel before proceeding with the same pattern in the opposite direction.
- i. **Run to floor xxx**, where xxx represents the destination landing.

**Auto Call Stop Dwell Timer**, from 00 to 99 seconds, represents the timeout to be allowed between each run for entries a, b, and c above.

To access the Auto Call Simulation menu, navigate to:

-  Home 
-  Adjust 
-  Ride Performance 
-  **Auto Call Simulation** 
-  “Desired entry from a to d above” 
-  Select xxx and yyy landing numbers 
-  Auto Call Stop Dwell Timer 
-  “Dial up time out period” 

Press the  **Enable** soft key, to enable and start auto call simulation.



**NOTE:** As soon as the **Enable** soft key is pressed the car call entry process will start and the car may start a run.

## 4.7 Speed Performance Parameters Description

Table 4.7-1 lists adjustable parameters available to customize car speed and performance. **Sections 4.7.1** through **4.7.15** provide a brief description for each parameter, the adjustment range, and a more detailed explanation for each available parameter.

<b>Table 4.7-1 Speed Parameters</b>	
4.7.1 Contract Speed	4.7.9 Inspection Trip Speed
4.7.2 Slowdown Dis. per 50FPM	4.7.10 Leveling Trip Speed
4.7.3 STD Offset Adjustment	4.7.11 Up ETS % Trip Speed
4.7.4 SLDN End Marker	4.7.12 Down ETS % Trip Speed
4.7.5 Level Zone	4.7.13 Down ETS Warning Count
4.7.6 Dead Zone	4.7.14 High Speed on Inspection
4.7.7 Leveling Adjustment	4.7.15 Releveling UP Offset
4.7.8 Highspeed Trip Speed	

### 4.7.1 Contract Speed

**Brief Description:** The Contract Speed parameter must be set to the contract speed of this car. The value is preset at the factory based on speed specified on your data sheets.

**Adjustment Range:** 25 - 1400 fpm

**Default:** Set to car contract speed

**Units of Measure:** feet per minute

**Detailed Explanation:** The Contract Speed parameter sets the scale value for all speed monitoring parameters. This parameter must be set correctly for all other speed parameters to function properly.

### 4.7.2 Slowdown Dist. per 50 FPM

**Brief Description:** Distance required for the elevator to slowdown for every 50 fpm of contract speed.

**Adjustment Range:** 10 – 30 Inches

**Default:** 12 in

**Units of Measure:** Inches

**Detailed Explanation:** Adjust parameter value up to allow more slowdown distance while decelerating into a target landing, while sacrificing performance, decrease value to improve performance

### 4.7.3 STD Offset Adjustment

**Brief Description:** Offset value added to the step-down position before stepping down to the next floor to compensate for speed differential between Up and Down speeds.

**Adjustment Range:** 0 – 1.5 Feet

**Default:** 0 ft

**Units of Measure:** Feet

**Detailed Explanation:** With an empty cab increment parameter value to prevent car from dragging into the floors in the down direction to compensate for speed differential between Up vs. Down, Pixel will dynamically adjust value as the measured cab speed increases due to load in the cab.

### 4.7.4 SLDN End Marker

**Brief Description:** Distance from the Dead Zone center where the slowdown speed monitoring stops to give way to Leveling Speed monitoring.

**Adjustment Range:** 0.5 – 2.0 ft

**Default:** 0.5 ft

**Units of Measure:** feet

**Detailed Explanation:** Adjust parameter value up to decrease distance used for slowdown monitoring speed. Always keep value equal to or larger than Level Zone value.

### 4.7.5 Level Zone

**Brief Description:** Level Zone, or Trucking Zone, defines the Door Zone area where leveling and door operations are allowed.

**Adjustment Range:** 0.01 - 1.00 ft

**Default:** 0.5 ft

**Units of Measure:** feet  
**Detailed Explanation:** Increasing the Level Zone increases the area where door operations and leveling speed monitoring take place.

#### 4.7.6 Dead Zone

**Brief Description:** Area within Door Zone, or Trucking Zone, where the car is considered to be leveled with the floor, the accuracy value is the parameter value divided by two to account for above and below the door center position.

**Adjustment Range:** .01 - .25 ft

**Default:** 0.05 ft

**Units of Measure:** feet

**Detailed Explanation:** Higher values in Dead Zone decreases landing accuracy, lower values increases accuracy but may generate excessive re-leveling.

#### 4.7.7 Leveling Adjustment

**Brief Description:** Area outside Dead Zone where direction speed is dropped while approaching a landing to allow the car to target the floor without overshooting while keeping leveling accuracy.

**Adjustment Range:** .000 - .050 ft

**Default:** 0.000 ft

**Units of Measure:** feet

**Detailed Explanation:** Increasing the Leveling Adjustment allows more time for valves to close to prevent overshooting and re-leveling by dropping out direction prior to entering the Dead Zone.

#### 4.7.8 Highspeed Trip Speed

**Brief Description:** Speed value at which the safety processors, SP1 or SP2 will declare an Overspeed condition to trigger a Contract Overspeed latching fault bringing the car to a halt.

**Adjustment Range:** 0001 - Contact Speed + 25%

**Default:** Contact Speed + 10%

**Units of Measure:** feet per minute

**Detailed Explanation:** Adjust Highspeed Trip Speed in conjunction with the high-speed valves to prevent car speed from overshooting contract speed setting reaching trip threshold settings to prevent safety processors, SP1 or SP2 from declaring a Contract Overspeed latching fault.

#### 4.7.9 Inspection Trip Speed

**Brief Description:** Speed value at which the safety processors, SP1 or SP2 will declare an Overspeed condition to trigger an Inspection Overspeed latching fault bringing the car to a halt.

**Adjustment Range:** 000 – 187 fpm

**Default:** 100 fpm

**Units of Measure:** feet per minute

**Detailed Explanation:** Adjust Inspection Trip Speed in conjunction with the low speed valves to prevent car speed from overshooting Inspection trip speed setting to prevent safety processors, SP1 or SP2 from declaring an Inspection Overspeed latching fault while car is running on Inspection mode.  
For cars with contract speed below 150 fpm and where the elevator codes allow for the car to be operated on high speed while on Inspection Mode and the option “High Speed on INS” is set to Y, the adjustment value for this parameter should be set equal to the High Speed Trip setting parameter value.

#### 4.7.10 Leveling Trip Speed

**Brief Description:** Speed value at which the safety processors, SP1 or SP2 will declare an Overspeed condition to trigger a Leveling Overspeed latching fault bringing the car to a halt.

**Adjustment Range:** 000 - 187 fpm

**Default:** 100 fpm

**Units of Measure:** feet per minute

**Detailed Explanation:** Adjust Leveling Trip Speed in conjunction with the Valves response to ensure that the car will be running under the Leveling Trip Speed setting when entering the leveling zone to prevent safety processors, SP1 or SP2, from intermittently declaring a Leveling Overspeed latching fault.

#### 4.7.11 Up ETS % Trip Speed

**Brief Description:** Defines the speeds at which the Safety Processors will declare a Slowdown Overspeed Fault in the up direction. At a value of 10% an overspeed condition is declared if the car is traveling at or above 110% of the learned normal approach speed values at any point in its approach into the up-terminal landing.

**Adjustment Range:** 000 - 100 %

**Default:** 10 %

**Units of Measure:** Percentage of digitized learned pattern

**Detailed Explanation:** Adjust Percentage Overspeed to prevent safety processors, SP1 or SP2 from declaring a Slowdown Overspeed latching fault in the Up direction.



**NOTE:** Percentage Overspeed monitors the difference between the learned normal slowdown positions and speeds and compares it to the car's current position, speed and direction dynamically.

#### 4.7.12 Down ETS % Trip Speed

**Brief Description:** Defines the speeds at which the Safety Processors will declare a Slowdown Overspeed Fault in the down direction. At a value of 15% an overspeed condition is declared if the car is traveling at or above 115% of the learned normal approach speed values at any point in its approach into a terminal landing.

**Adjustment Range:** 000 - 100 %

**Default:** 15 %

**Units of Measure:** Percentage of digitized learned pattern



**Detailed Explanation:** Adjust Percentage Overspeed to prevent safety processors, SP1 or SP2 from declaring a Slowdown Overspeed latching fault.



**NOTE:** Percentage Overspeed monitors the difference between the learned normal slowdown positions and speeds and compares it to the car's current position, speed and direction dynamically.

#### 4.7.13 Down ETS Warning Count

**Brief Description:** Defines the number of consecutive detections of an ETS overspeed in the down direction that need to occur before the fault is latched and the car is taken out of service.

**Adjustment Range:** 00 - 50

**Default:** 03

**Units of Measure:** None

**Detailed Explanation:** Adjust to the number of consecutive Down Overspeed occurrences need to occur before fault is latched and the car is taken out of service.



**NOTE:** If parameter is set to 00 the Down ETS Overspeed fault in the down direction will be disabled.



**NOTE:** After a non ETS overspeed run into the down terminal landing the threshold value detection is reset to its parameter programmed value.

#### 4.7.14 High Speed on INS

**Brief Description:** Option allows for the High-speed output to be enabled while car runs on Inspection Mode.

**Adjustment Range:** Yes- No

**Default:** No

**Units of Measure:** None

**Detailed Explanation:** While set to Yes, the car will run with High speed output active, activating high speed valves on Inspection Mode, while set to No the car will run high speed output inactive on Inspection Mode activating Low Speed valves only.

#### 4.7.15 Releveling Up Offset

**Brief Description:** Offset value added to the Leveling Up location to allow Pixel to drive the car further up towards the center of the Dead Zone on a Relevel Up operation.

**Adjustment Range:** 0 – 0.250 Feet

**Default:** 0 ft

**Units of Measure:** Feet

**Detailed Explanation:** Incrementing parameter value allows Pixel to drive the cab farther up into the Dead Zone area to compensate for an up fast closing valve from leaving the cab at a position too close to the up leveling position to prevent excessive releveling.



**NOTE:** Releveling Up Offset value must be kept less than or equal to the value of Dead Zone parameter divided by 2.

#### 4.8 Verify Speed Parameters



**NOTE:** Even though Pixel's "This Job" parameters have been factory preset it is important to verify them, when this manual instructs you to do so, for optimum system performance.

##### 4.8.1 Verify Short Floor Distance

The shortest floor to floor distance must be larger than the slowdown distance required to decelerate from high speed into a landing plus 6 inches; to determine if job installation require short floor logic perform following calculation:

Assume:

1. Car speed of 125 ft/ min
2. Slowdown Dist. Per 50FPM = 12 in.
3. Installation minimum floor to floor distance 2 ft, 24 in.

Floor to Floor distance= [(Speed/ 50) X Slowdown Dist. Per 50FPM] + 6 In.

Floor to Floor distance= {(125/ 50) x 12} + 6 = 36 in




**NOTE:** The minimum floor to floor distance supported by Pixel is 1 ft, 12 in.



**NOTE:** If the Floor to Floor distance value is less than or equal to this job shortest floor to floor distance skip to section 4.8.2, Verify Speed Parameter Settings, below.

36 in is larger than the 24 in available, the installation will require the Short Floor Logic, which can be implemented through Pixel's Hydro Per Floor Stepping Logic functionality.



The hydro per floor stepping logic uses a set of “virtual magnets” which represent stepping positions in the hoistway. The stepping positions are the landing system locations at which the STU, STD, ISTU, and ISTD virtual magnets are located.

 **NOTE:** The hydro per floor stepping logic can be used for non-short floor jobs if desired.

To enable hydro per floor stepping logic the following steps need to be performed:

1. Floor Setup, Section 3.8.1 of this manual must be completed
2. Verify that legacy Short Floor Logic Parameter is set to No navigating to:

 Home


 Adjust 

 Car Performance 

 Hydraulic Options 

 Short Floor Logic Stepping; Set to No

3. Enable Per Floor Stepping Option navigating to:

 Home


 Install 

 Initial Settings 

 Per Floor Hydro Stepping 

 Stepping Options 

 Per Floor Stepping Option; Set to Yes

 **NOTE:** If Per Floor Stepping Option was not factory preset to “Yes”, it is advisable to contact Elevator Controls Corp. Technical Support Team with job specific requirements for guidance as how to preset the speed parameters that may be needed for this job.

4. Auto populate virtual stepping magnets navigating to:


 Home

 Install 

 Initial Settings 

 Per Floor Hydro Stepping 

 Stepping Auto Place ; Follow instructions on Pixel screen.



 **NOTE:** The short floor stepping virtual magnets will be placed for the most conservative setting. While executing one floor runs through short floors the car may run in leveling speed for a while at this point of the adjustment process.

5. Press the Computer Reset Button to reset the P-MP and re-start Pixel and incorporate Per Floor Stepping logic.
6. Perform a Safety Configuration Upload to transfer safety parameters to the safety microprocessors.

## 4.8 .2 Verify Speed Parameter Settings

Pixel’s microprocessor MP uses programmed parameters to optimize car performance. Verify that Pixel speed parameters match job requirement. View parameters, using the Pixel screen, and compare settings to the speed profile table below navigating to:

 Home

 Adjust 

 Ride Performance 

 Speed Profile 


Speed Parameters	Default Settings	
	Per Floor Stepping Option = NO (NO SHORT FLOORS)	Per Floor Stepping Option = Yes
Contract Speed	XXX fpm Job Specific	XXX fpm Job Specific
Slowdown distance	12 in	12 in
STD Offset	0.000 ft	0.000 ft
SLDN End Marker	1.0 ft	0.5 ft
Level Zone	0.83 ft	0.50 ft
Dead Zone	0.05 ft	0.05 ft
Leveling Adjustment	0.000 ft	0.000 ft
Highspeed trip speed	Contract Speed +15%	Contract Speed +15%
Inspection Trip Speed	100 fpm	100 fpm
Leveling trip Speed	100 fpm	100 fpm


Up ETS % Trip Speed	10%	10%
Down ETS % Trip	15%	15%
Down ETS Warning	03	03
High Speed on INS	No	No
Releveling Up Offset	0.012ft	0.012ft

## 4.9 Run Car to Every Landing

### 4.9.1 Slow Down Distance per 50FPM Adjustment.

Verify the car is able to travel to every landing on TEST Mode from the machine room using Auto Call Simulation section 4.6 above, Adjust valves in conjunction with Slowdown distance per 50fpm parameter, to make sure the car is able to slowdown and stop at every landing while preventing landing overshoots while maintaining elevator performance.

 **NOTE:** If Per Floor Stepping Option is set to Yes and the job has short floor to floor distances, the short floor stepping virtual magnets will be placed for the most conservative setting. While executing one floor runs through short floors the car may run in leveling speed for a while at this point of the adjustment process.

 **NOTE:** Ride quality & performance for short floor(s) will be adjusted later.

### 4.9.2 STD Offset Adjustment


With an empty cab observe and make a note of the displayed speed, in Pixel's home screen, in the up and down direction while making long floor runs to calculate initial value for STD Offset Adjustment parameter as per the following example for a 25fpm faster up Vs. down speed:

STD Offset Adjustment = (Speed Difference/ 50 fpm) X Slow down distance per 50FPM

STD Offset Adjustment = (25 fpm / 50 fpm) X 12in = 6 in

Convert value to be programmed into feet = 6 in  $\times$   $\left(\frac{1 \text{ ft}}{12 \text{ in}}\right)$  = 0.5 ft.



Adjust parameter value to a lower value to prevent overshooting the floors on the down direction.

 **NOTE:** If the down speed is larger than up speed, verify pumping unit performance with the manufacturer. **Do not adjust this parameter to compensate for this differential.**

## 4.10 Pump Motor Soft Stop

Regulation of the pump motor for the up direction is controlled by outputs AAo and Po, and optionally BK, outputs driving the pump motor contactors refer to prints page 1 and 4 for circuits interface. Verify in the up direction when the car comes to a stop that the pump motor keeps running until after the valves close to prevent car from sinking at the floor. The Soft Stop timer which controls the timeout for this operation is found by navigating to:

 **Home** 


 **Adjust** 


 **Car Performance** 

 **Timers** 

 **Hydraulic Timers** 

 **Soft Stop** 

 **NOTE:** The ride quality and final stop must be acceptable before proceeding forward; steps below require riding the car.


 **NOTE:** The COP Independent Service switch was switched to ON position during installation of the COP, before switching car TEST Mode operation OFF verify it still on the ON position.

Place the CAPTURE switch to CAPTURE, to prevent the car from participating in any hall system dispatching, remove the car from TEST MODE, to place it in Independent Service Mode and be able to run it from within the car while enabling door operation.

## 4.11 Adjust Leveling Adjustment

To determine if parameter needs to be adjusted, on inspection run the car out of the Dead Zone area in the down direction and allow it to reposition up while observing final level position, then run the car on automatic in the up direction while observing final level position or if it overshoots the landing.

If final level position from an automatic run is above the reposition up position adjust the Leveling Adjustment value to compensate for the difference and to prevent overshoots in the up direction.












 **NOTE:** If overshoots in both up and down direction occurs review adjustments from section 4.9 Slowdown Distance per 50FPM Adjustment above. **Do not adjust this parameter.**

## 4.12 Adjust Releveling Offset



To determine if parameter needs to be adjusted, on inspection run the car out of the Dead Zone area in the down direction and allow it to reposition up while observing final level position, if position is below the Door Zone Center learned position increment parameter to compensate for the difference. Increasing the value in this parameter allows Pixel to drive the car farther up towards the Door Zone Center learned position and helps to prevent releveling up due to the car position being too close to the leveling up position on a relevel.

## 4.13 Adjust Floor Levels









To prevent SP1 and SP2 safety processors from triggering **Unintended Movement Fault** latching fault, while adjusting floor levels, place the CAPTURE switch on the P-PM board to CAPTURE, Independent Service Mode of operation inside the cab, and enable **Unintended Movement Bypass** navigating to:

-  Home 
-  Install 
-  Code Compliance Test 
-  Unintended Movement 
-  **Unintended Movement Bypass** 
-  Yes

Press the  **Save** soft key, to enable bypass.



 **NOTE:** Press the  **Cancel** soft key to abort and make a new selection, or to return to the previous menu without saving.


The task to verify and correct the learned landing level position is best performed from inside the cab on Independent Service mode of operation and is accomplished by driving the car to every landing and adjusting the landing level position Learned during initial set up to its final proper level position. To perform this task from the COP access point, navigate to:



-  Home 
-  Install 
-  Learn Functions 
-  Floor Setup 


 Landing Number 


 Door Zone Position 

 “Adjust current Position up-down as needed” 


Press the  **Save** soft key, to save modified position or the Cancel soft key to reset to back value to last stored position.

 **NOTE:** As soon as the  **Save** soft key is press the car will re-level into the saved floor level position.

 **NOTE:** The PI Label can also be modified while performing the floor level task from within this menu by Selecting PI Label menu entry and manipulating its contents to match those on the COP landing push buttons.

 **NOTE:** The Hall Call and Hall Gong nodes operation can also be verified from within this menu by Selecting Verify Floor Hall Nodes menu entry.

#### 4.14 Adjust STU and STD Virtual Magnets

 **NOTE:** If Per Floor Stepping Option is set to “No” skip to section 4.15, ETS Learn Below.



The fine tuning of the Virtual STU and STD magnets needs to be performed in a per floor basis to obtain the best performance per individual up and down short floor runs, follow procedure below per each short floor.

1. Identify which floors will benefit from Virtual STU and STD magnets adjustment navigating to:

 Home

 Install 

 Initial Settings 

 Per Floor Hydro Stepping 

 Stepping Options 

 Short Floor List: Write down floor numbers listed for reference.


2. Select one floor from list to be adjusted and perform short floor run(s) up and down while adjusting the stepping virtual positions for desired short floor to improve comfort and performance, refer to section 4.6,





Auto Call Simulation, to set up the car to auto run up and down, then navigating to:

 Home

 Install 

 Initial Settings 

 Per Floor Hydro Stepping 


 Virtual Magnet Centers 

 Floor  ; Select desired from list above

3. Adjust the STU and STD positions, this is equivalent to allowing the car to run longer or less in high speed towards the target. Therefore, reducing the STU or STD position values will allow the car to run longer in high speed while performing a short floor run and vice versa. For example: If the current STD position is 2.5 feet, changing the value to 2.0 feet will allow the car to run for 0.5 feet longer with the high-speed valve energized in the down direction.
4. Repeat steps 2 and 3 above for every landing per list above

#### 4.15 ETS Learn

After all ride adjustments described above are complete, Pixel needs to learn the speed profiles as the car approaches the terminal landings. This task is accomplished through the ETS Learn menu by following the displayed instructions. ETS Learn menu can be accessed by navigating to:


 **NOTE:** Take the car to a terminal landing placing a car call. The car must be at a terminal landing for Pixel to enable ETS Learn operation.


 Home 

 Install 




 Learn Functions 




 ETS Learn 

 **NOTE:** The car will need to perform one run up and one run down through the entire length of the hoistway follow displayed instructions to perform this task.

 **NOTE:** The learned terminal landings speed profiles must be transferred to SP1 and SP2 safety microprocessors follow displayed instructions to



perform transfer or refer to section 4.15 below to perform a Safety Configuration File Transfer, or the car will not be allowed to run automatic modes of operation.

 **NOTE:** Disable ETS Bypass option and verify that the car can run the entire length of the hoistway without triggering a Slowdown Overspeed fault. Refer to section 4.4 above replacing last selection  Yes with  No.

 **NOTE:** Disable Unintended Movement Bypass option to enable Unintended Movement monitoring logic and be able to switch the car to Automatic mode of operation as needed. Refer to section 4.13 above replacing last selection  Yes with  No.

## 4.16 Transfer Safety Configuration File


To transfer the Safety Configuration File to SP1 and SP2 microprocessors navigate to:



 Home 


 Install 

 File Transfer 

 **Safety Configuration Upload** 

 **NOTE:** Pixel will stop all elevator functions and prompt user to wait for transfer mode status, controller setting requirements for transfer mode will be displayed as File Transfer selection is made.

Press the  **Transfer** soft key to transfer a configuration file to safety microprocessors or the  **Back** soft key to abort transfer.


 **NOTE:** Through this procedure Pixel will prompt you to wait while the system enters and exits file transfer mode operation. **Do not press any keys during a wait timeout to prevent file transfer corruptions.** Wait for Pixel to confirm that it is ready to receive dashboard command.

## 4.17 Up and Down ETS % Trip Speed Adjustment

Pixel firmware monitors the CAB speed throughout the hoistway including the approach speed to both terminal landings for the Normal Terminal Speed limiting means (NTS) and Emergency Terminal Stopping Means (ETS) speed monitoring. The ETS detection parameters are separate for the up and down direction as follows:

Up Direction:


The up-direction detection threshold can be adjusted by the Up ETS % Trip Speed to ensure that the plunger does not strike its solid limit of travel at speed in excess of 50 fpm. Adjust the Up ETS % Trip Speed parameter percentage to prevent nuisance tripping while also allowing for the detection to comply with detection functionality requirements.


 **NOTE:** Perform a safety configuration file transfer after changing the Up ETS % Trip Speed parameter value to transfer the new values to the safety processors and be able to verify performance of the parameter changes


Down Direction:


The Down-direction detection threshold can be adjusted by the Down ETS % Trip Speed to prevent the plunger from striking of its solid limit of compression. Adjust the Down ETS % Trip Speed parameter percentage to prevent nuisance tripping while also allowing for the detection to comply with detection functionality requirements.

The speed regulation for hydraulic elevators in the down direction depends heavily on cab current weight and oil temperature and for some installations the learned ETS detection speed vs current speed could exceed the ETS % threshold value creating nuisance ETS overspeed detections, the nuisance detection can be compensated through the Down ETS Warning Count parameter, such as to allow the ETS detection while preventing the latching of the event, thus allowing the car to resume functionality unless the number of consecutive overspeed detections exceed the parameter value.

 **NOTE:** Perform a safety configuration file transfer after changing the ETS % trip Speed parameter value to transfer the new values to the safety processors and be able to verify performance of the parameter changes

 **NOTE:** If parameter is set to 00 the Down ETS Overspeed fault in the down direction will be disabled.

 **NOTE:** ETS overspeed detection is only required per code in the up direction. **Down Direction is not Required.**

 **NOTE:** After a non ETS overspeed run into the down terminal landing the threshold value detection is reset to its parameter programmed value.

## 4.18 Verify Overall Car Performance

Pixel car controller must be operating to desired performance, verify and correct following operations:

- a. Position Indicator displays proper landing labels.
- b. Car calls can be entered through the COP push buttons.
- c. Every push button in the COP performs its function Door Open, Door Close, Passing Gong Enable, etc.

- d. Car Responds to all capable Hall Calls.
- e. Hall and Car gongs performance.
- f. Overall car functionality and performance.



**NOTE:** If any speed parameter or learned parameter is modified the MP will display an error indicating Safety configuration mismatch requiring to execute a Safety Configuration File Transfer to SP1 and SP2 microprocessors, refer to section 4.12 above to perform this task, or the car will not be allowed to run on automatic mode of operation.



**WARNING: Safety tests sections 5 and 6 below, overall car function performance, and all local safety inspections must be completed before releasing car to public.**

# Section 5 – Speed Monitoring Adjustment

## 5.1 Car Speed Monitoring System

The Pixel Elevator Controller – working in conjunction with the Landa™ dual head positioning unit – monitors the position and speed of the elevator throughout the entire hoistway.

The Landa™ Positioning System provides actual car position “on demand” (absolute position is read from the Landa™ Encoded Tape) and car speed is calculated based upon change in car position over a time interval.

The SP1 and SP2 safety processors individually read the Landa™ Positioning System at a rate of approximately once every 10 milliseconds for current car position.

The Landa™ Positioning System includes dual sensor heads. These redundant heads continuously read encoded tape and position information from each which is compared against the other for validation (“Main Tape Position” and “Auxiliary Tape Position”). A free-running timer is used to provide an accurate measure of the time between position samples, which is used to calculate car speed as follows:

$$\begin{aligned} \text{Cab speed} &= \Delta\text{position} \div \Delta\text{time, where} \\ \Delta\text{position} &= (\text{previous cab position}) - (\text{current cab position}) \\ \Delta\text{time} &= (\text{previous cab position time}) - (\text{current cab position time}) \end{aligned}$$

### 5.1.1 Defining Overspeed

Pixel’s SP1 and SP2 safety processors always monitor car speed to detect car speeds in excess of the car’s programmed speeds, including overspeed conditions as the car approaches the terminal landings.


To determine if the speed of the car is normal or an overspeed as the car approaches either terminal landing, Pixel’s main computer learns the landing zone for each floor during the hoistway position learning process. It also learns the “normal speed profile” that is executed as the car approaches the terminal landings in order to compare the two. The normal speed profile is learned from the moment the car begins its deceleration process to the final stop at the terminal landing. Both up and down terminal deceleration profiles are learned and stored.


The learn process once performed and verified during elevator installation will be transferred and permanently stored by the three microprocessors that make up the Pixel controller’s main processing unit (MP, SP1, SP2). The learn process must be accomplished and transferred before the car can be run on any passenger automatic mode of operation (otherwise the car is only allowed to run on Inspection Operation).

## 5.1.2 Monitoring Overspeed


Pixel's SP1 and SP2 safety processors independently monitor the following overspeed conditions:

- a. **Elevator Highspeed Trip Speed** elevator cab speed exceeds programmed Contract trip speed.
- b. **Inspection Trip Speed** elevator cab speed exceeds 150 ft-min or programmed Inspection trip speed, whichever is less.
- c. **Leveling Trip Speed** elevator cab speed exceeds 150 ft-min or programmed Leveling trip speed within the landing leveling zone, whichever is less
- d. **Terminals % Trip Speed** elevator cab speed in the direction of travel exceeds learned terminal speed profile plus programmed % trip speed.

 **NOTE:** Speed monitoring final adjustments should be performed only after elevator speed performance has been attained. It must be readjusted following any speed parameter change.

 **NOTE:** Confirm that Pixel's main screen displays contract speed and speed performance correctly before proceeding with final speed monitor adjustments.

## 5.1.3 Speed Monitoring Adjustment

 **NOTE:** Place the car in TEST Mode of operation before proceeding with speed monitoring adjustments.

Pixel speed monitoring parameters are part of the Speed Profile group and can be accessed by navigating to:

 Home 

 Install 

 Initial Settings 

 Speed Profile 

 **High Speed Trip Speed**  (entry 8 of 20)

Set to contract speed value plus 10%

**OR**

 **Inspection Speed Trip Speed**  (entry 9 of 20)

Set to Inspection Speed times two, up to a maximum value of 150 ft/min.

OR



 **Leveling Trip Speed**  (entry 10 of 20)

Set to Leveling Speed times 10, up to a maximum value of 150 ft/min.

OR



 **ETS % Trip Speed**  (entry 11 of 20)

Set Terminal's % Trip Speed parameter to 10% then run the car from the top to the bottom landing, increment % value as needed to prevent car from tripping Slowdown Overspeed Fault.

Press the  **Save** soft key, to save modified speed trip value or the  **Cancel** soft key to abort speed monitoring value change.

Run the car to confirm that revised settings do not cause a speed monitoring fault.

If Speed Monitoring Trips are occurring as the car runs, adjust the corresponding trip speed value in conjunction with valves unit to prevent speed overshoots.

-  **NOTE:** Verification of Speed Monitoring will be performed in Code Compliance Verification Section 6 following.
-  **NOTE:** If any speed parameter or learned parameter is modified the MP will display an error indicating Safety configuration mismatch requiring to execute a Safety Configuration File Transfer to SP1 and SP2 microprocessors, refer to section 4.12 above to perform this task, or the car will not be allowed to run on automatic mode of operation.

# Section 6 – Code Compliance Verification

## A17.1/B44 Elevator Safety Tests & Inspection

### 6.1 Performing Elevator Safety Tests & Inspections



**WARNING:** Safety tests should be performed by a **QUALIFIED ADJUSTER OR SERVICE PERSONNEL**. A helper should always be present and prepared to turn off the main line disconnect to remove power from the elevator if needed when the car is run with safety switches bypassed. **PROCEED WITH CAUTION.**



**CAUTION:** Perform each test procedure below only after the elevator system has been adjusted and verified to comply with job performance requirements and transfer of final safety configuration data from the MP to the SP1 and SP2 processors has been performed.



**NOTE:** The following procedure is intended as a guide while performing periodic inspection and safety tests of the elevator system. Please refer to the Safety Code for Elevators and all applicable local codes for specific requirements.

6.2 Intentionally Left Blank

6.3 Intentionally Left Blank

### 6.4 Safety Speed Tests



#### 6.4.1 Car Buffer Test – Fully Loaded Car

The Pixel Car Buffer test is accomplished using a simple menu driven process and the procedure below:

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from servicing Hall Calls.
- b. Place full load test weights in the car.
- c. Drive the car to the top landing by entering a Car Call.
- d. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
- e. Turn off main power to the controller.
- f. Place jumpers from controller terminals, 4A to SAFC (Car Safety), and 4A to SAFH (Hoistway Safety), to bypass safety switches for the Car Buffer Test.
- g. Turn on main power to the controller.



h. Navigate to:

 Home 

 Install 

 Code Compliance Tests 



 Safeties Speed Tests 

 **Car Buffer** 

 ETS Bypass Option


Set **ETS Bypass Option** to **Yes**

Press the  **Save** soft key to Save **ETS Bypass Option** selection or  **Cancel** to abort test.

Press the  **Run Test** soft key to start the **Car Buffer** test run or the  **Back** soft key to abort test run.



**CAUTION:** Once the Run Test soft key has been pressed, the car will accelerate to contract speed in the down direction until the car strikes the car buffer. Once the car strikes the car buffer, flip the controller inspection switch to the INSP position to stop

- i. Inspect the mechanical condition of the cab to ensure the car can be returned to service.
- j. Using Controller Inspection, run the car up past the bottom landing door zone area. Remove all jumpers placed in item f above.
- k. Reset ETS Bypass option,  **ETS Bypass Option**, Set to **No**
- l. Toggle the TEST switch to the off position and remove test weights from the car.
- m. Set the CAPTURE switch off, which will enable the car to service hall calls and return to Automatic Mode operation.


**6.4.2** Intentionally Left Blank

**6.4.3** Intentionally Left Blank

**6.4.4 Terminal Stopping Devices (A17.1Section 3.25)**


Pixel provides menu driven procedures to verify the operation of the Terminal (up and down) Stopping Devices as detailed in sections 6.4.4.1 and 6.4.4.2 below.

#### 6.4.4.1 Terminal Speed-Reducing Devices (ASME 17.1 Section 3.25.2) “Emergency Terminal Stop test “

 **NOTE:** This test verifies failure to reduce speed at terminal landing even do Landa position system is functioning properly.

The Emergency Terminal Stop test forces the car to run on high speed pass slowdown position into the up terminal landing to verify that even do the Landa Position system is working properly the car speed will be used by the safety processors to slow down the car and prevent the plunger from striking its solid limit of travel at a car speed in excess of 50 ft/min in the up direction, the tests is accomplished using the menu driven procedure below:

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from servicing Hall Calls.
- b. Drive the car to the bottom landing by entering a Car Call.
- c. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
- d. Navigate to:


 Home 



 Install 


 Code Compliance Tests 

 Safeties Speed Tests 

 **Emergency Terminal Stop** 


 **NOTE:** The Emergency Terminal Stop parameter “Slowdown Position” represents the hoistway position at which the car must start its deceleration into the top landing (relative to the up normal limit position).

Press the  **Run Test** soft key to start the **Emergency Terminal Stop** test run or the  **Back** soft key to abort test run.


 **CAUTION:** Once the Run Test soft key has been pressed, the car will accelerate to contract speed in the down direction and run past the Slowdown Position.

- e. Observe that the Display shows a **Slowdown Overspeed** Trip latching fault, and that the car comes to a halt.
- f. Press the System Fault Reset key to clear the fault and enable the car to re-level into the top landing.

- g. Set place the TEST and CAPTURE switches to off, which will enable the car to accept hall calls and return to Automatic Mode operation.

 **NOTE:** The Emergency Terminal Stop test can be performed for the down direction of travel to, if required to verify Pixel’s ability to detect an overspeed in the down direction and stop the car.

#### 6.4.4.2 Normal Terminal Stopping Devices (ASME17.1 Section 3.25.1) “NTS Slowdown Test”

 **NOTE:** This test verifies failure of Normal means to slowdown the car into a terminal landing, Landa Main Sensor Head and Elevator microprocessor, using the safety microprocessors to declare a fault and allow the car to level with the floor utilizing Landa Auxiliary Sensor Head only.

The NTS Slowdown test forces the car to execute an emergency slowdown into a terminal landing (up or down) utilizing the Landa Auxiliary sensor head only to verify that the failure of the primary terminal slowdown device does not prevent the car from landing into terminal landing position, the test is accomplished using the menu driven procedure below:

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from servicing Hall Calls.
- b. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
- c. Drive the car to a terminal landing by entering a Car Call.
- d. Navigate to:


 Home 



 Install 

 Code Compliance Tests 

 Safeties Speed Tests 

 **NTS Slowdown Test** 

 **NOTE:** The NTS Slowdown Test parameter “Slowdown Position” represents the hoistway position at which the car must start its deceleration into the bottom landing (relative to the virtual down normal limit).

Press the  **Run Test** soft key to start the **NTS Slowdown Test** run or the  **Back** soft key to abort test run.



**CAUTION:** Once the Run Test soft key has been pressed, the car will accelerate to contract speed in the down direction and run past the Slowdown Position.

- e. Observe that the Selector 1 LED indicator on the MP board turns off, as cars travels beyond Slowdown Position indicating communications with Landa Main sensor Head have ceased.
- f. Observe that the Display shows an **NTS Slowdown Overspeed** Trip latching fault, and that the car comes level to the bottom landing.
- g. Press the System Fault Reset key to clear the fault and enable the car.
- h. Verify Selector 1 LED on Pixel MP to go on indicating communications to Landa Main sensor head have been reestablished.
- i. Set place the TEST and CAPTURE switches to off, which will enable the car to accept hall calls and return to Automatic Mode operation.
- j. Repeat test for opposite direction of travel as required.


## 6.5 Overspeed Tests

The Pixel safety microprocessors monitor three different overspeed states, depending on elevator operational mode, and provide a menu driven interface to verify overspeed monitoring performance as follows:

### 6.5.1 Inspection Overspeed

Inspection Overspeed monitors cab speed during all four inspection modes of operation Car Top, In Car, Access, or Controller inspection. Use the following process for verification:

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from servicing Hall Calls.
- b. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
- c. Place the car on Controller Inspection.
- d. Navigate to:


 Home 



 Install 

 Code Compliance Tests 

 Overspeed Tests 

 **Inspection Overspeed** 


 **NOTE:** The Inspection Overspeed display shows the programmed inspection speed parameter, overspeed tripping speed setting, and prompts for entry of the inspection tripping speed parameter to be use when running an inspection trip detection test. Enter a speed below the current inspection speed parameter setting before running the test.

Press the  **Run Test** soft key to enable – for the next inspection run only – to detect **Inspection Overspeed** condition using the **Test Trip Speed** parameter or the  **Back** soft key to abort test run.

- e. Use the Machine Room Inspection switchgear, located on the MP board, to run the car up or down.
- f. Observe that the Display shows an **Inspection Overspeed** Trip latching fault, and that the car comes to a halt.
- g. Verify the car will not accept a command to run while the latched fault is present.
- h. Press the System Fault Reset key to clear the fault and enable the enable the car to accept a command to move.
- i. Toggle the MACHINE ROOM Inspection switch to NORMAL which will enable the car to re-level into the closest landing.
- j. Set the TEST and CAPTURE switches to off, which will enable the car to service hall calls and return to Automatic Mode operation.

## 6.5.2 Leveling Overspeed

Leveling Overspeed monitors cab speed while the car is running within the door zone or trucking zone and is in the process of leveling into a landing. Use the following process for verification:

 **NOTE:** Leveling Trip Speed does not monitor the target final programmed leveling speed. Pixel’s car landing zone approach is normally greater than the final programmed leveling speed code permits speeds of up to 150 ft/min within the leveling zone.

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from servicing Hall Calls.
- b. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
- c. Navigate to:


 Home 



 Install 

 Code Compliance Tests 

 Overspeed Tests 

 Leveling Overspeed 

 **NOTE:** The Leveling Overspeed display shows the programmed Leveling speed parameter, overspeed tripping speed setting, and prompts for entry of the leveling tripping speed parameter to be use when running a leveling trip detection test. Enter a speed below the current leveling speed parameter setting before running test.

Press the  **Run Test** soft key to enable – for the next leveling run only – to detect **Leveling Overspeed** condition using the **Test Leveling Overspeed** parameter or the  **Back** soft key to abort test run.

- d. Enter a Car Call to run the car.
- e. Observe that the Fault Display entry for the safety processors shows a **Leveling Overspeed** latching fault as the car slows down into the target landing's door zone, and that the car comes to a halt.
- f. Verify the car will not accept a command to run while the latched fault is present.
- g. Press the System Fault Reset key to clear the fault and enable the enable the car to accept a command to move.
- h. Verify that the car re-levels into the closest landing
- i. Set place the TEST and CAPTURE switches to off, which will enable the car to accept hall calls and return to Automatic Mode operation.

### 6.5.3 Intentionally Left Blank

### 6.5.4 Contract Overspeed

Contract Overspeed monitors the cab speed while car is running on automatic mode use the following process for verification:

- a. Set CAPTURE switch, located in the MP board, to CAPTURE to remove car from servicing Hall Calls.
- b. Set TEST switch, located in the MP board, to TEST which will enable Test Mode operation and disable door operation.
- c. Place a car call to a terminal landing to be able to run test.
- d. Navigate to:


 Home 



 Install 

 Code Compliance Tests 

## Overspeed Tests

### Contract Overspeed


 **NOTE:** The Contract Overspeed Speed display shows the programmed contract speed parameter, overspeed tripping setting, and prompts for entry of a tripping speed parameter to be used when running a Contract Overspeed speed trip detection test. Enter a speed below the current Contract Overspeed speed parameter setting before running test.

Press the  **Run Test** soft key to enable – for the next automatic run only to detect **Contract Overspeed** condition using the **Tripping Speed** parameter or the  **Back** soft key to abort test run.

- e. Observe the display Fault entry for the safety processors to declare a latching **Contract Overspeed** fault and the car come to a halt.
- f. Verify the car will not be commanded to run while the latched fault is present.
- g. Press the System Fault Reset push button to clear fault and observe the car to re-level to its closest landing
- h. Set the TEST and CAPTURE switches to off, which will enable the car to accept hall calls and return to Automatic Mode operation.

## 6.6 Valve High Pressure Relief Test (The Stop Ring Test)

This test allows the cab to run onto the jack system's stop ring to force the valve into high pressure relief. To perform test, a means of monitoring the hydraulic system pressure must be made available and visible while performing test.

 **CAUTION:** While performing this test, monitor the system oil pressure to ensure that the pressure does not exceed the maximum limits of the hydraulic system.


To perform test:

- a. Set CAPTURE switch, located in the MP board, to CAPTURE to remove car from servicing Hall Calls.
- b. Set TEST switch, located in the MP board, to TEST which will enable Test Mode operation and disable door operation.
- c. With the car on Automatic or Inspection, position the car at or near the top Landing
- d. With the doors closed, place the car in Controller Inspection mode.


e. Set the car in Construction mode of operation navigate to:

 Home 

 Install 

 Construction Mode 

Press the  Enable soft key to enable to place car in construction mode

- f. Inch the car UP on Controller Inspection until the car contacts the stop ring. Once there, continue to inch the car up until the valve goes into pressure relief.
- g. Note the oil pressure reading.
- h. Run the car DOWN on Controller Inspection at or below the top floor landing.
- i. Remove the car from Construction mode using the process on “e” above but now press the  Disable soft key to exit construction mode.
- j. Set CAPTURE switch, located in the MP board, to off to return car to servicing Hall Calls.

## 6.7 Down Overspeed

This test allows the car to run on Machine Room Inspection in the down direction in high speed to perform the Down Overspeed Safeties Test; follow the valve manufacturer’s instructions to adjust the down valves accordingly.

To perform this test follow instructions on Pixel LCD screen navigating to:

 Home 

 Install 

 Code Compliance Tests 

 Overspeed Tests 

 Down Overspeed 



**CAUTION:** After performing this test, verify the elevator safeties and overall installation to be safe before releasing elevator for service.



**NOTE:** The speed in ft/min at which the safeties trip will be displayed under the Safety Tripped At parameter to facilitate test performance verification.



## 6.8 Landa™ Redundant Position System Verification

**Critical Component:** Landa™ Main and Auxiliary Position Sensor Heads

**Redundant Component:** Landa™ Main and Auxiliary Position Sensor Heads

**Monitored Component:** Car Speed, and Position

**i** **NOTE:** The following tests verify that Pixel can safely position the cab using either of the two independent sensor heads that comprise the Landa™ positioning system.

The Pixel control uses a dual head positioning system – Landa™ – incorporating a positional encoded tape that runs the entire length of the hoistway. This system enables each either sensor head to provide absolute position information independent of the other. Refer to page 6 of the prints for Landa™ interface circuits.

The Main Positioning head communicates its absolute position to the main processor via dedicated RS485 serial port while the Auxiliary Positioning head communicates its absolute position to the main processor via CAN.

The Landa™ positioning system verifies absolute cab position to 0.032” (0.8mm) accuracy throughout the entire length of the hoistway.

The Pixel computer network, MPU, will “learn” and then build a positional image of the entire hoistway including:

- Door Zone or Trucking Zone, one per landing
- Top and Bottom Access Limits
- Mid hoistway position
- Physical open position for the top and bottom normal limit switches
- A speed profile deceleration ramp for the top and bottom landings

**i** **NOTE:** The landing zones are limited to a maximum of six inches plus or minus learned position and are set at a factory default of three inches.

The learn process – once performed and verified during elevator installation – will be transferred and permanently stored by the three microprocessors that make up the Pixel controller’s main processing unit (MP, SP1, SP2). The learn process must be accomplished and transferred before the car can be run on any passenger automatic mode of operation.

**i** **NOTE:** Pixel always “knows” the car position by reading it from the encoded tape and validating it through comparison to the learned/stored positional image.

### Verification of Landa™ Main Sensor Head:

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from responding to hall call demand.
- b. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
- c. Enter a car call to a floor several floors away from the current car position (if this a two-stop elevator place a call to the other floor).
- d. While car is running, unplug the Main Selector RJ45 cable labeled “SELECTOR” from Pixel MP, and observe that Pixel displays a **Main Selector Fault**, makes an emergency slowdown, and positions the elevator cab at the next available landing.
- e. Pixel will remove the car from service until proper Landa™ Main sensor head communication is re-established.
- f. Verify that the car will not respond to car calls.
- g. Reconnect the RJ45 cable at the Pixel MP. Confirm that Pixel clears the **Main Selector Fault**, and that the car responds to car call demand.
- h. Return the CAPTURE and TEST switches to their off positions, which will enable the car to return to Automatic Mode of operation and serve hall call demand.

### Verification of Landa™ Auxiliary Sensor Head:

- a. Set CAPTURE switch, located on the MP board, to CAPTURE, which will prevent the car from responding to hall call demand.
- b. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
- c. Enter a car call to a floor several floors away from the current car position (if this a two-stop elevator place a call to the other floor).
- d. While car is running, unplug the cable labeled “CAB CAN” from the Pixel MP, and observe that Pixel displays **Aux. Selector Fault** makes an emergency slowdown and positions the elevator cab at the next available landing.
- e. Pixel will remove the car from service until proper Landa™ Auxiliary sensor head communication is re-established.
- f. Verify that the car will not respond to car calls.
- g. Reconnect the RJ45 cable at the Pixel MP. Confirm that Pixel clears the **Aux. Selector Fault**, and that the car responds to car call demand.
- h. Return the CAPTURE and TEST switches to their off positions, which will enable the car to return to Automatic Mode of operation and serve hall call demand.

## 6.9 Monitoring Compliance Verification

### Monitoring Critical Circuits ASME 17.1 Sections 2.26.9.3 and 2.26.9.4

#### 6.9.1 EB1-EB2 and EBX1-EBX2 Relays Contacts

<b>Critical Component:</b>	EB1-EB2 and EBX1-EBX2 Relay Contacts
<b>Redundant Component:</b>	RG1-RG2 and RGBP1-RGBP2, SP1 and SP2 Computer Monitoring Inputs
<b>Monitored Component:</b>	EB1-EB2 and EBX1-EBX2 Relay Contacts

**i** **NOTE:** Test verifies that Pixel can detect failure of Emergency Brake relay contacts to open and responds by preventing car motion. Refer to page 2 of prints for Emergency Brake circuits.

- Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from responding to hall call demand.
- Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
- Place Machine Room Inspection switch to INSP.

**i** **NOTE:** EB1-EB2 and EBX1-EBX2 Relays Contacts Verification function identically in both inspection and automatic modes of operation.

- Momentarily short RG to RGBP inputs by using a jumper to bridge pin 3 to pin 4 on the PDB board at the JSMP harness connector.
- Verify that the Pixel screen displays **EB Relay Fault** or **EBX Relays Fault**, the EB1-EB2 and EBX1-EBX2 relays are off, and the Emergency brake sets.
- Verify that the car will not accept a run command while the fault is present.
- Cycle power and confirm that the fault condition has not been cleared.
- Press the **System Fault Reset** button to clear the fault condition. Verify that either the EB1-EB2 or EBX1-EBX2 relays activate, and that the car will accept a run command.
- Set the TEST and CAPTURE switches off, which will enable the car to accept hall calls and return to Automatic Mode operation.
- Place Machine Room Inspection switch to NORMAL.

**i** **NOTE:** Pixel alternates use of EB1-EB2 and EBX1-EBX2 relay contacts, that provide power to the emergency brake circuits, at the end of every run. Proper contact opening operation is verified prior to allowing the next run.

**i** **NOTE:** Section 6.9.2 applies only for control units utilizing mechanical starters and section 6.9.3 only if mechanical starters are used in Wye-Delta configuration, skip to section 6.9.4 if control uses solid state starter.

## 6.9.2 AA Motor Contactor Force Guided Relay

**Critical Component:** AA Relay  
**Redundant Component:** STOP1-STOP2, SP1 and SP2 Computer Monitoring Inputs  
**Monitored Component:** AA Relay Contacts

**i** **NOTE:** Test confirms that Pixel correctly detects a motor contactor or solid state motor contactor pilot relay failure to open. Pixel checks for a stuck contact at the end of every run before allowing the next run. Refer to page 1 and 4 of prints.

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from responding to hall call demand.
- b. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
- c. Place Machine Room Inspection switch to INSP.

**i** **NOTE:** AA Contactor Verification functions identically in both inspection and automatic modes of operation.

- d. Manually press and hold the AA contactor, or AA solid state pilot force guided relay movable and verify that the Pixel screen displays **AA Relay Fault**. Then release and confirm that the fault condition has been cleared (screen displays **No Faults**).
- e. While holding AA contactor movable, use Controller Inspection to command the car Up or Down.
- f. Verify that the car will not accept a run command while the fault is present.
- g. Release the AA contactor movable and confirm that the Pixel screen displays **No Faults**.
- h. Return the Controller Inspection, TEST and CAPTURE switches to their off positions, which will enable the car to return to Automatic Mode of operation and serve call demand Place Machine Room Inspection switch to NORMAL.

## 6.9.3 P Potential Force Guided Relay (Y-Delta Starters Only)

**Critical Component:** P Relay  
**Redundant Component:** Pin1-Pin2, SP1 and SP2 Computer

## Monitoring Inputs

**Monitored Component:** P Relay Contacts

**i** **NOTE:** Test confirms that Pixel correctly detects a P relay, “used as the Y starter”, failure to open. Pixel checks for a stuck contact at the end of every run before allowing the next run. refer to page 1 and 4 of prints. P contactor is one of two force-guided relays that provide power to the brake circuits.

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from responding to hall call demand.
- b. Set TEST switch, located on the MP board, to TEST, which will enable Test Mode operation and disable door operation.
- c. Place Machine Room Inspection switch to INSP.

**i** **NOTE:** P Relay Verification functions identically in both inspection and automatic modes of operation.

- d. Manually press and hold the P relay movable and verify that the Pixel screen displays **P Relay Fault**. Then release and observe that the fault condition has been cleared (screen displays **No Faults**).
- e. While holding P relay movable, use Machine Room Inspection to command the car Up or Down.
- f. Verify that the car will not accept a run command while the fault is present.
- g. Release the P contactor actuator and confirm that the Pixel screen displays **No Faults**.
- h. Return the Controller Inspection, TEST and CAPTURE switches to their off positions, which will enable the car to return to Automatic Mode of operation and serve call demand.
- i. Place Machine Room Inspection switch to NORMAL.

**i** **NOTE:** Section 6.9.4 applies only for control units using auxiliary redundant mechanical starter, skip to section 6.94 if control does not use it.

### 6.9.4 BK Force Guided Relay (Redundant Mechanical Starter)

**Critical Component:** BK Relay

**Redundant Component:** BK11-BK12, SP1 and SP2 Computer Monitoring Inputs

**Monitored Component:** BK Relay Contacts

**i** **NOTE:** Test confirms that Pixel correctly detects a BK relay, used as redundant starter if required, failure to open. Pixel checks for a stuck contact at the end of every run before allowing the next run. Refer to page 1 and 4 of prints.

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from responding to hall call demand.
- b. Set TEST switch, located on the MP board, to TEST, which will enable Test Mode operation and disable door operation.
- c. Place Machine Room Inspection switch to INSP.

**i** **NOTE:** BK Relay Verification functions identically in both inspection and automatic modes of operation.

- d. Manually press and hold the BK relay movable and verify that the Pixel screen displays **BK Relay Fault**. Then release and observe that the fault condition has been cleared (screen displays **No Faults**).
- e. While holding BK relay movable, use Machine Room Inspection to command the car Up or Down.
- f. Verify that the car will not accept a run command while the fault is present.
- g. Release the BK contactor actuator and confirm that the Pixel screen displays **No Faults**.
- h. Return the Controller Inspection, TEST and CAPTURE switches to their off positions, which will enable the car to return to Automatic Mode of operation and serve call demand.
- i. Place Machine Room Inspection switch to NORMAL.

## 6.9.5 Hoistway & Car Door Bypass Switches

<b>Critical Component:</b>	Hoistway and Car Door Bypass Switches
<b>Redundant Component:</b>	HDB1-HDB2 and CDB1-CDB2, and SP1 and SP2 Computer Monitoring Inputs
<b>Monitored Component:</b>	Hall and Car Door Bypass Switches

**i** **NOTE:** This test verifies that Pixel will only allow the car to operate in Cartop or In Car Inspection modes under the following conditions: (1) Hoistway bypass switch is on BYPASS; (2) Car Door Bypass switch is on BYPASS; (3) both are on BYPASS.

### Hoistway Door Bypass Switch:

- a. While the car is on Automatic Mode of Operation, place the **Hoistway Door Bypass** switch to the BYPASS position.
- b. Confirm that the Pixel screen displays **Inspection Mode** and also a **Hall Door Bypass w/o Inspection fault**.
- c. Verify that the car will not respond to a car or hall call demand and will not move in Controller or Access inspection modes.
- d. Place the controller on **Cartop Inspection** and verify that the car will respond to an up or down cartop inspection command with any hoistway door in the not fully closed position.

- e. With a hoistway door still in the not fully closed position, place the **Hoistway Door Bypass** switch to OFF position. Verify that the car will not respond to an up or down cartop inspection command.
- f. Fully close the test door. Verify that the car will now respond to an up or down cartop inspection command.

#### **Car Door Bypass Switch:**

- a. While the car is on Automatic Mode of Operation, place the **Car Door Bypass** switch to the BYPASS position.
- b. Confirm that the Pixel screen displays **Inspection Mode** and a **Car Door Bypass w/o Inspection fault**.
- c. Verify that the car will not respond to a car or hall call demand and will not move in Controller or Access inspection modes.
- d. Place the controller on **Cartop Inspection** and verify that the car will respond to an up or down cartop inspection command with the car door in the not fully closed position.
- e. With the car door still in the not fully closed position, place the **Car Door Bypass** switch to OFF position. Verify that the car will not respond to an up or down cartop inspection command.
- f. Fully close the car door. Verify that the car will now respond to an up or down cartop inspection command.

#### **Hoistway and Car Door Bypass Switches:**

- a. While the car is on Automatic Mode of Operation, place the **Hoistway and Car Door Bypass** switches to the BYPASS position.
- b. Confirm that the Pixel screen displays **Inspection Mode** and also a **Hoistway Door Bypass w/o Inspection fault**.
- c. Verify that the car will not respond to a car or hall call demand and will not move in Controller or Access inspection modes.
- d. Place the controller on **Cartop Inspection** and verify that the car will respond to an up or down cartop inspection command with any hoistway and car door in the not fully closed position.
- e. With any hoistway and car door still in the not fully closed position, place the **Car Door Bypass** switch to OFF position. Verify that the car will not respond to an up or down cartop inspection command.
- f. Fully close the hoistway doors and car door. Verify that the car will now respond to an up or down cartop inspection command.



**NOTE:** Referring to page MP of job prints, observe that both Hoistway and Car Door Bypass switches are being monitored on the Normally Open and The Normally Closed sides of their respective contacts. If the input state of

SP1 and SP2 are not opposite, a **Car Door Bypass System Fault** or **Hoistway Door Bypass System Fault** will be displayed on the Pixel screen and the car will be prevented from moving.

### 6.9.6 Detection of Jumpers on Door Safety String (DLM)

<b>Critical Component:</b>	Car Gate and Hoistway Door Locks Redundant Component: SP1 and SP2 computer Monitoring Inputs
<b>Monitored Inputs:</b>	<b>Front Doors:</b> CGF1-CGF2, DLAT1-DLAT2, DLSF1-DLSF2, DLAB1-DLAB2  Additional inputs for front and rear doors <b>Rear Doors:</b> CGR1-CGR2, DLSR1-DLSR2,




**NOTE:** Test verifies that Pixel will detect jumpers placed on the door safety string and prevent doors from closing and any car movement. Refer to page 4 of the prints for job required door safety string inputs.

- a. Place the car on Independent Service and run the car to the bottom landing. Car will automatically open the doors.
- b. Place a jumper from 4A to CGF. Confirm that the Pixel screen displays Door Lock System Fault.
- c. Verify that the car will not respond to a car call demand.
- d. Remove jumper from 4A to CGF. Confirm that the Pixel screen displays No Faults.
- e. Place a jumper from 4A to DLAB. Confirm that the Pixel screen with displays Door Lock System Fault.
- f. Verify that the car will not respond to a car call demand.
- g. Remove jumper from 4A to DLAB. Confirm that the Pixel screen displays No Faults.
- h. Run the car to an intermediate landing.
- i. Place a jumper from 4A to DLSF. Confirm that the Pixel screen displays Door Lock System Fault.
- j. Verify that the car will not respond to a car call demand.
- k. Remove jumper from 4A to DLSF. Confirm that the Pixel screen displays No Faults.
- l. Run the car to the top landing.
- m. Place a Jumper from 4A to DLAT. Confirm that the Pixel screen displays Door Lock System Fault.
- n. Verify that the car will not respond to a car call demand.



- o. Remove Jumper from 4A to DLAT. Confirm that the Pixel screen displays No Faults.

 **NOTE:** Skip to step w below if car has no rear doors.


- p. Run the car to a rear door landing and open the rear doors.
- q. Place a jumper from 4A to CGR. Confirm that the Pixel screen displays Door Lock System Fault.
- r. Verify that the car will not respond to a car call demand.
- s. Remove jumper from 4A to CGR. Confirm that the Pixel screen displays No Faults.
- t. Place a jumper from 4A to DLSR. Confirm that the Pixel screen displays Door Lock System Fault.
- u. Verify that the car will not respond to a car call demand.
- v. Remove jumper from 4A to DLSR. Confirm that the Pixel screen displays No Fault
- w. Release car from Independent service.

### 6.9.7 Door Open and Close Simultaneously

**Critical Component:** Door Open & Door Close Limits


**Redundant Component:** DOL and DCL Computer Monitoring Inputs

**Monitored Component:** Door Opened & Door Close Limits

 **NOTE:** Test verifies that Pixel will detect a condition where the door open and door close limit switches are opened simultaneously.

- a. Call the car to the closest landing to the machine room and place it in Independent service, to command it to open the doors
- b. Place the Capture switch to Capture and the Car Door and Hoistway Door Bypass switches to Bypass on Pixel MP board
- c. Gain access to the top of the car and place it on Car Top inspection.
- d. Turn main power to the controller off.
- e. Remove and isolate the wire from the DCLF terminal on the P-TOC board.
- f. Remove the car from Car Top Inspection and place the Hoistway Door Bypass switches on Pixel MP board to off position
- g. Turn main power to the controller on, car will proceed to close its doors and to reposition to the closest landing and open the doors.
- h. Confirm that the Pixel screen displays **Front Door Limit Switches Fault.**

- i. Verify that doors will not close by pressing the door close button in the COP.
- j. Place the car on Cartop Inspection.
- k. Reconnect wire to the DCLF terminal.
- l. Remove car from Cartop Inspection. Confirm that the Pixel screen displays **No Faults**.
- m. Remove Car from Independent Service. Confirm that doors operate normally.

 **NOTE:** Repeat for rear doors if car has front and rear door operation. Use DCLR and DOLR in place of DOLF and DCLF to perform steps above.


## 6.9.8 Valves Latched Direction

### 6.9.8.1 U Relay Contact 1


**Critical Component:** U relay contact 1 normally open

**Redundant Component:** URM1-URM2, SP1 and SP2 Computer Monitoring Inputs

**Monitored Component:** U relay contact 1 normally open

 **NOTE:** Test confirms that Pixel correctly detects an up contact 1 relay failure to open possible leaving the up low speed directional valve on. Pixel checks for a stuck contact at the end of every run before allowing the next run. Refer to page 1 of prints.

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from responding to hall call demand.
- b. Set TEST switch, located on the MP board, to TEST, which will enable Test Mode operation and disable door operation.
- c. Place Machine Room Inspection switch to INSP.

-  **NOTE:** U Relay contact 1 Verification functions identically in both inspection and automatic modes of operation.
- d. Manually close the U relay using the relay manual levering flap, observe the Pixel screen displays U Relay Fault and drops EB1-EB1X- EBX1-EBX2 relays removing power from the valve's circuits and starter units.
  - e. Release manual levering flap and observe that the fault condition remains
  - f. Verify that the car will not accept a run command while the fault is present.
  - g. Cycle power and confirm that the fault condition has not been cleared.
  - h. Press the ■ System Fault Reset button to clear the fault condition. Verify that either the EB1-EB2 or EBX1-EBX2 relays activate and that the car will accept a run command.


- i. Set the TEST and CAPTURE switches off, which will enable the car to accept hall calls and return to Automatic Mode operation.
- j. Place Machine Room Inspection switch to NORMAL.

### 6.9.8.2 D Relay Contact 1


**Critical Component:** D relay contact 1 normally open

**Redundant Component:** DRM1-DRM2, SP1 and SP2 Computer Monitoring Inputs

**Monitored Component:** D relay contact 1 normally open

 **NOTE:** Test confirms that Pixel correctly detects a down contact 1 relay failure to open possible leaving the down low speed directional valve on. Pixel checks for a stuck contact at the end of every run before allowing the next run. Refer to page 1 of prints.

- a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from responding to hall call demand.
- b. Set TEST switch, located on the MP board, to TEST, which will enable Test Mode operation and disable door operation.
- c. Place Machine Room Inspection switch to INSP.

 **NOTE:** D Relay contact 1 Verification functions identically in both inspection and automatic modes of operation.

- d. Manually close the D relay using the relay manual levering flap, observe the Pixel screen displays D Relay Fault and drops EB1-EB1X- EBX1-EBX2 relays removing power from the valve's circuits and starter units.
- e. Release manual levering flap and observe that the fault condition remains
- f. Verify that the car will not accept a run command while the fault is present.
- g. Cycle power and confirm that the fault condition has not been cleared.
- h. Press the ■ System Fault Reset button to clear the fault condition. Verify that either the EB1-EB2 or EBX1-EBX2 relays activate and that the car will accept a run command.
- i. Set the TEST and CAPTURE switches to off, which will enable the car to accept hall calls and return to Automatic Mode operation.
- j. Place Machine Room Inspection switch to NORMAL.

### 6.9.9 Single Ground

<b>Critical Component:</b>	N/A
<b>Redundant Component:</b>	F4A Fuse
<b>Monitored Component:</b>	N/A

#### Test Verification of Single Ground:

- a. Place the car on Machine Room Inspection.



**NOTE:** The Single Ground Test can be performed either on automatic or inspection modes of operation.



**NOTE:** The system logic is driven by a source of 110 Volts AC, and has one side already connected to ground, the 3 buss. The other side, the 4A buss, is protected by a fuse feeding the logic power. Any accidental grounding will result in a blown fuse F4A, which will remove controller power to the safety string and logic circuits.

- b. Short terminal SAFH to ground. Verify that fuse F4A blows, and the Pixel screen displays **Safety String Open Fault**.
- c. Turn main power to controller off.
- d. Replace fuse F4A.
- e. Turn main power to controller on.
- f. Confirm that the Pixel screen displays **No Faults**.
- g. Remove the car from Machine Room Inspection.

### 6.9.10 Permit Car Speeds Over 150 fpm ASME 2.26.9.3.c except 2.26.1.5.10(b)

<b>Critical Component:</b>	Landa™ Main and Auxiliary Selectors
<b>Redundant Component:</b>	Landa™ Main and Auxiliary Selectors
<b>Monitored Component:</b>	Car Speed



**NOTE:** Refer to Section 6.6, Landa™ Redundant Position System Verification, for verification of the speed and position feedback system.



**NOTE:** Refer to Section 6.3.1, Inspection Overspeed and 6.3.2 Leveling Overspeed, for verification of inspection and leveling overspeed.

## 6.9.11 Governor Test

There are three components to be verified to confirm proper operation of the Governor device and controller interface circuits. They are the Governor Overspeed Electrical contact, the Governor inputs to the safety processors, and the Governor set trip speed. Follow procedure below to verify operation:

### Governor Electrical Contact and GOV Inputs to Safety Microprocessors:



**NOTE:** Refer to page 3 of prints for the Governor Interface circuits.



- a. Set CAPTURE switch, located on the MP board, to CAPTURE to prevent the car from responding to hall call demand.
- b. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
- c. Manually momentarily trip and reset the governor overspeed switch, then verify that the following occurs:
  - Pixel screen displays **Governor Latching Fault**
  - Relays EB1-EB2, EBX1-EBX2, located in the PDB board drop, removing power to the valve's circuits, refer to page 1 of the prints.
  - The car cannot be commanded to run.
  - Cycle power and confirm that the fault condition has not been cleared.
- d. Press the **System Fault Reset** button to clear the fault condition and pick the EB1-EB2 or EBX1-EBX2 relays, connecting power to the valve's circuits.

### Governor Device Operation Verification:

- a. Set Machine Room Inspection switch, located on the MP board, to INSP.
- b. Follow the Governor manufacturer's instructions to trip the governor.
- c. Once the Governor trips verify that the following occurs:
  - Pixel screen displays **Governor Latching Fault**
  - Relays EB1-EB2, EBX1-EBX2, located in the PDB board drop, removing power to the valve's circuits, refer to page 1 of the prints.
  - The car cannot be commanded to run.
  - Cycle power and confirm that the fault condition has not been cleared.
- d. Press the **System Fault Reset** button to clear the fault condition and pick the EB1-EB2 or EBX1-EBX2 relays, connecting power to the valve's circuits.

### 6.9.12 Executable Software, USI, Verification

The executable version of the controller running software can be viewed navigating to:

 Home 

 Install 

 About 

**Software version:** Parameter displays Elevator Microprocessor Logic Version

**SP1 Software version:** Parameter displays Safety Microprocessor Version



### 6.9.13 Remote Monitoring, RIO, Functionality

Enabling-Disabling RIO functionality can be performed navigating to:


 Home 

 Install 


 RIO Functionality 

 **Enable** or  **Disable**; Press Enable or Disable Soft Key to Enable-Disable RIO interaction functionality.

RIO **Enable** mode functionality allows Pixel to assert commands from devices connected remotely to the controller via WebInteract or Intermediate Remote monitoring interface device, as listed in the RIO Commands table, enabled column entries with green background, below.

 **NOTE:** The orange background entries listed under the Enabled column are view- only regardless of RIO status mode.

RIO **Disable** mode functionality prevents Pixel from asserting commands from devices connected remotely to the controller via WebInteract or Intermediate Remote monitoring interface device, as listed in the RIO Commands table, Disabled column entries with orange background, below.

 **NOTE:** While on RIO Disabled mode of operation Pixel Home Screen will display “**RIO-Disabled**” to indicate this operational status mode.

To verify RIO **Enable** functionality, enable RIO following steps above and confirm entering of car calls or any other Enabled, allowed, and selected command behavior using a remotely connected device.

To verify RIO, **Disable** functionality, Disable RIO following steps above and confirm entering of car calls or any other disabled, Not-allowed, command behavior using a remotely connected device is not allowed.

RIO Commands		Enabled	Disabled
Register Car and Hall Calls		Yes	No
Activate/De-Activate Lockouts		Yes	No
Schedule Lockouts		Yes	No
Lockout Bypass		Yes	No
Car to Lobby		Yes	No
Independent Service		Yes	No
Shutdown Out of Service		Yes	No
Emergency Recall (Car to Floor)		Yes	No
Disable All Commands		Yes	No
Restricted Lobby Operation		Yes	No
Up Peak Operation		Yes	No
Down Peak Operation		Yes	No
Lobby Peak Operation		Yes	No
Disable All Command		Yes	No
Download I/O File		Yes	Yes
Download Config File		Yes	Yes
Edit Config File		Yes	No
	Speed Profile	No	No
	Door Options	Yes	No
	Fire Service	No	No
	Options	No	No
	Front Door Timers	Yes	No
	Rear Door Timers	Yes	No
	Hydraulic Timers	No	No
	Traction Timers	No	No
	Motor Brake Timers	No	No
	Controller Timers	Yes	No
10 Most Recent Event List Request		Yes	Yes
Event Files		Yes	Yes

### 6.9.14 Cybersecurity Protection Functionality

Cybersecurity is relevant for an internet connected or connectivity enabled device interfaced (directly or indirectly) to an elevator controller. Pixel controller does not connect to the internet, it uses an intermediate device, PC or third-party black box, containing two separate hardware-ethernet ports to keep Pixel isolated from the internet, one private port is exclusively used for Pixel inter-communications private network and the other is exclusively used for public network communications. Cybersecurity is provided for the ethernet port connected to the internet only.

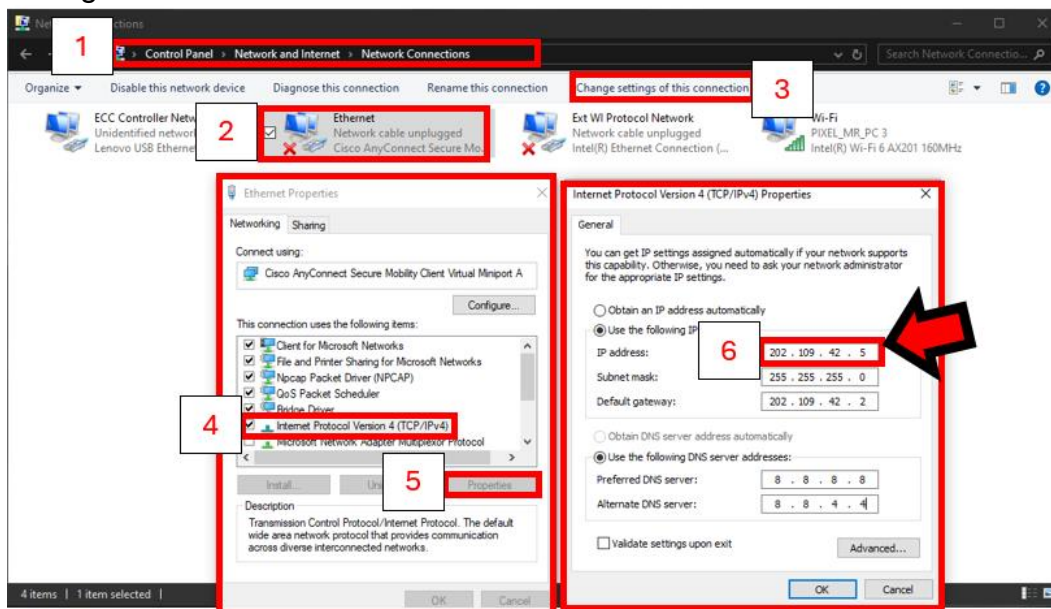
Cybersecurity functionality is enabled-disabled through a two position, ENABLE and OFF, key switch, usually located at the lobby, or building security panel labeled, Cybersecurity, wired to Pixel controller CySI input. to virtually disable any communications to and from the controller by virtually disconnecting Pixel from the internet.

To verify cybersecurity, **OFF** functionality, rotate the key switch to the OFF position and confirm communications with Pixel by entering car calls or any other Enabled, allowed, and selected command behavior using a remotely connected device.

To verify cybersecurity, **Enable** functionality, rotate the key switch to the ENABLE position and confirm communications with Pixel have stopped by entering of car calls or any other Enabled, allowed, and selected command behavior using a remotely connected device.

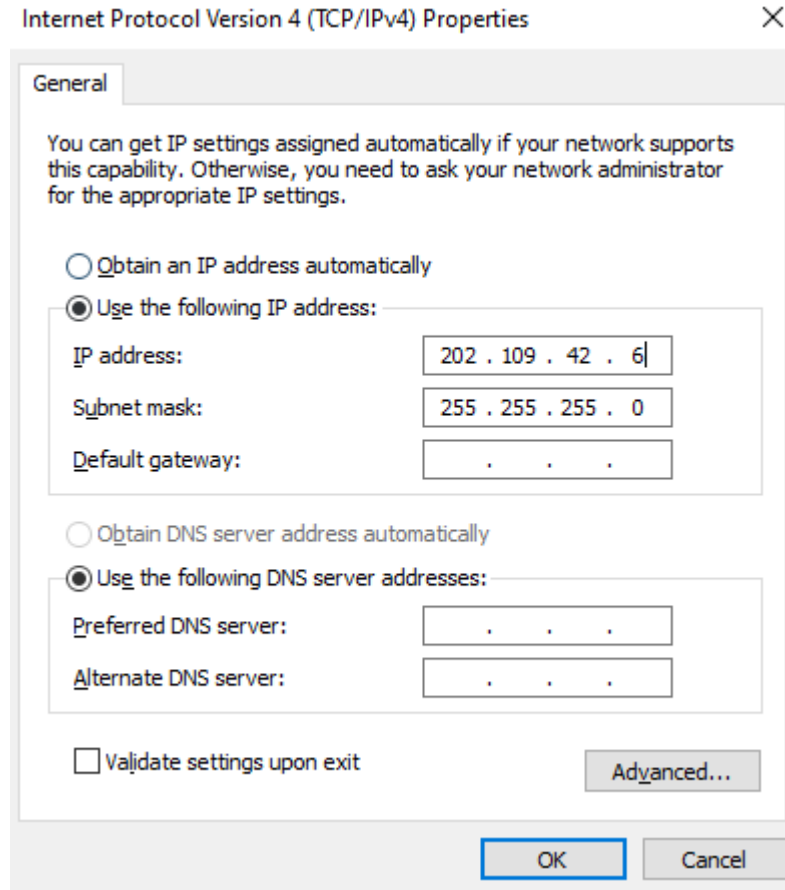
#### 6.9.14.1 Ethernet Port Hardware Disable Test Using a PC

1. Obtain and document the IP address of the network adapter that is used to provide external access, indicated by the box numbered 6, from the machine room PC navigating to the control panel and following steps 1 through 5 shown below.

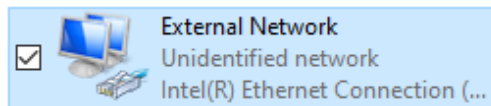




- Configure the testing PC network adapter by opening the same Network Connections window shown in the last step to set the IP address the same as the machine room PC with the last number in the IP address increased by one. The subnet will be the same and other settings are left blank.



- Use an RJ45 Ethernet cable to connect the testing PC ethernet port to the machine room PC providing the Internet connections. Remove RJ45 cable from this port if one is already present.
- Verify communication between the testing and machine room PCs have been established, navigating on any of two PCs to Network connections and observing the following prompt.



If prompt displays a red “X”, indicating no connection review steps 1 through 4 above to verify and correct any settings preventing from establishing communications.

5. On the test PC use the Windows search menu to open the “Command Prompt” to use the ping command to verify communications between the two PCs by typing at the command prompt, 10.0.0.10 and observing response below, indicating communications enabled.

```
P:\>ping 10.0.0.10

Pinging 10.0.0.10 with 32 bytes of data:
Reply from 10.0.0.10: bytes=32 time<1ms TTL=128
Reply from 10.0.0.10: bytes=32 time<1ms TTL=128
Reply from 10.0.0.10: bytes=32 time<1ms TTL=128
Reply from 10.0.0.10: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss)
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

6. Set the Cybersecurity switch to the ENABLE position.
7. On the test PC use the Windows search menu to open the “Command Prompt” to use the ping command and verify communications between the two PCs have been disabled by typing at the command prompt, 10.0.0.10 and observing response below, indicating communications are disabled.

```
C:\>ping 202.109.42.5

Pinging 202.109.42.5 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 202.109.42.5:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss)
```

8. Remove the RJ45 cable connected between the two PCs and reconnect RJ45 cable if it was removed on step 3 above.
9. Set the Cybersecurity switch to the OFF to enable remote communications access.

# Section 7 – Troubleshooting

The Elevator Controls Microprocessor Controller is the most reliable part of any elevator system. While problems are possible, the most efficient troubleshooting approach is to first look to the “outside world” for the source of malfunctions that most frequently take elevators out of service.


## 7.1 General Troubleshooting Tips.

Pixel controller is equipped with multiple indicators designed to help troubleshoot at a glance; significant time and frustration can be avoided by simply paying attention to the indicators on the MP and P-I/O boards.

## 7.2 General Checklist

- a. The Pixel home screen always displays the most prominent fault preventing the car from Automatic operation.



**NOTE:** If an active fault is displayed, pressing the  **HELP** button will display the fault help screen and possible corrective action. Refer to section 7.3 below for example of fault and HELP diagnostics navigation.

- b. Verify that each power control step-down transformer has the correct input and output voltages (refer to job prints page 2 for terminal and fuse numbers). Replace fuses as necessary.
- c. Verify that the 24 VDC power supply module green LED is illuminated, and that voltage output is within 10 % tolerance. If not, check the following:
  - i. Verify input power to the power supply.
  - ii. Check the power supply input switch setting, set per job prints page 2.
  - iii. Verify that fuses FSP1 and FSP2 are good.
- d. Check voltage between terminals 4A and 3 to confirm approximately 110 VAC.
- e. Check voltage between terminals 6 and 3; 50 and 3; and 50F and 3. Confirm approximately 24 VDC. If any of the above power supply voltages are not within range, check the appropriate fuses.



**NOTE:** System common is the 3 buss (normally terminal 3 is connected to chassis ground). Unless otherwise noted, all DC voltages are measured with respect to Terminal 3.



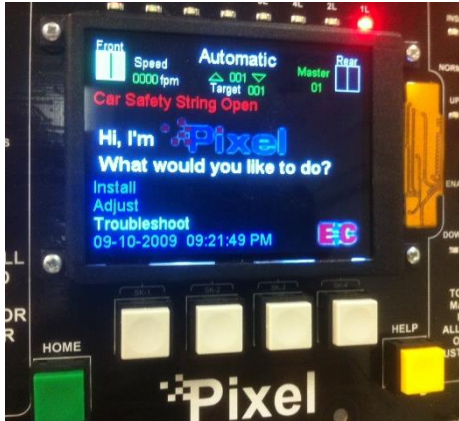
**NOTE:** Refer to Appendix D for complete list of mnemonic descriptions.



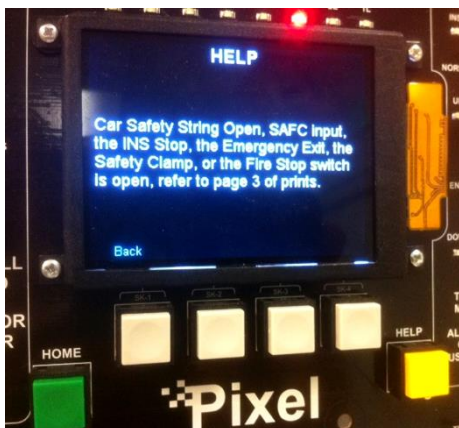
**NOTE:** Refer to Section 7.4, Pixel Fault Listing Table, for a complete list of Help Menu fault entries with expanded Possible Causes/ Solutions.


## 7.3 Fault Help Menu Navigation Example


Pixel recognizes over two hundred faults. All faults can be resolved using the same method. The example below illustrates the use of the HELP menu in correcting a Car Safety String Open fault.



Pixel home screen displays **Car Safety String Open** Fault (shown in red).




Press the yellow  **HELP** button and details about how to resolve the fault are displayed.

 **NOTE:** Every fault Pixel declares follows the same display and HELP menu format.


### 7.3.1 Troubleshooting Example

Continuing with the **Car Safety String Open** fault from above, use the help menu instructions to troubleshoot and correct fault per the example below:

- Verify the SAFC input LED, located on the P-I/O, board is not illuminated; indicating that SAFC input voltage is missing.
- Open the job prints, page 3, as indicated by the HELP menu.
- Verify that power between terminals 3 and 4A is approximately 120 VAC. For example, consider that voltage measured is within range. Power supply voltage troubleshooting is covered in Section 7.2 above, General Check List.

- d. Verify that power between terminals 3 and SAFC is not present.
- e. Verify that the COP Fire Panel Stop Switch is closed, and power between terminals 3 to 20B is approximately 120 VAC inside the COP. For example, the Fire Panel Stop Switch is closed, and the voltage measured is within range.
- f. Access the top of the car and place the car on Cartop Inspection mode.
- g. Verify that the power between terminals 3 and 20B at the TOC terminal strip is approximately 120 VAC.
- h. Determine which device is open between terminals 20B and SAFC in the TOC terminal strip. Correct as required.
- i. Verify power between terminals 3 and SAFC is approximately 120 VAC on the TOC terminal strip.
- j. Verify voltage at the controller traveler terminal strip SAFC and SAFC LED is illuminated on the P-I/O board.
- k. Press  **HOME** to return to Pixel main menu and verify fault has cleared.



**NOTE:** Some faults are latching and require that the  **RESET** System Fault Reset button be pressed to clear fault after it is no longer present. Refer to Table 7.3.1 below for a list of latching faults requiring manual reset.

- l. If another fault is displayed, follow steps 1 to 11 above to correct and return the car to service.




**Latching Fault Table 7.3.1**

<b>Table 7.3.1 Latching Faults Table</b>	<b>Traction</b>	<b>Hydraulic</b>
1. Unintended Movement	Yes	N/A
2. Governor Switch Open	Yes	Yes
3. EB1-EB2 Relays Fault	Yes	Yes
4. EBX1-EBX2 Relays Fault	Yes	Yes
5. Inspection Overspeed	Yes	Yes
6. Slowdown Overspeed	Yes	Yes
7. Earthquake Overspeed	Yes	Yes
8. Leveling Overspeed	Yes	Yes
9. Highspeed Overspeed	Yes	Yes
10. Motor Limit Timeout	Yes	Yes
11. Pit Flood	No	Yes
12. U Relay Fault	No	Yes
13. D Relay Fault	No	Yes

14. Brake Did Not Lift	Yes	N/A
15. I2C Bus Error	Yes	Yes
16. Opposite Direction Motion	Yes	N/A
17. Following Error/Traction Loss	Yes	N/A
18. Front PHE Cycle Test Failed	Yes	Yes
19. Rear PHE Cycle Test Failed	Yes	Yes
20. Low Oil Input Active	N/A	Yes
21. Hot Oil Input Active	N/A	Yes
22. Drive Speed Regulator Fault	Yes	N/A
23. Broken Suspension Detected	Yes	N/A
24. Plunger Input Active	N/A	Yes
25. Cycle Test Failed	Yes	Yes

## 7.4 Pixel Fault Listing Table

The Pixel Fault Listing is intended to provide an explanation of the event conditions that may be generated by Pixel controller and to empower the troubleshooter with a better understanding of each event to expedite corrective actions.

-  **NOTE:** Faults are listed in alphabetical order.
-  **NOTE:** Under the Fault Message column, the message description portion in () parenthesis is for Pixel software versions 3.0.3.xx and prior.
-  **NOTE:** Under the Event Message column, the message description portion in { } curly brackets is used to provide an explanation about the XX portion of the event message and will not be displayed as part of the event message

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
<p style="text-align: center;">AA Contactor/STOP Input</p>	<p>The AAo Motor Contactor output state is off but its monitored contact did not close or AAo state is on but its monitored contact did not Open, AA Contactor failed to pick, drop or it has a bad Auxiliary Contact, verify contact(s) wired to the STOP input and AAo contactor output triacs; refer to page 4 of prints.</p>	<p>TRACTION AAo = 1 STOP = 1 OR AAo = 0 STOP = 0</p> <p>HYDRO w/Contactor Proof Option SU = 0 SD = 0 AAo = 0 STOP = 0</p> <p>HYDRO w/o Contactor Proof Option AAo = 0 STOP = 0</p>	<ul style="list-style-type: none"> <li>• Verify the AA Auxiliary Contacts are properly seated</li> <li>• Manually actuate the AA motor contactor and observe the STOP input Led on the P-MPIO board turns off as contactor is pressed and turns on when released.</li> <li>• Verify the operation of the STOP input on the P-MPIO Board – Navigate to Troubleshoot→Flags →Safety I/O Flags and observe the STOP flag changing states in memory when the AA motor contactor is manually actuated.</li> <li>• If the STOP flag doesn't change state in memory, but it does change state on the P-MPIO status LED– Replace the P-MPIO Board</li> <li>• If STOP flag does change state in memory and it matches the LED status – Navigate to Troubleshoot→Flags →Safety I/O Flags observe the AAo output flag to match the AAo output status LED on the P-MPIO, if it does not replace AAo output triacs Q4 and Q5 on the P-MPIO Board and repeat this step.</li> <li>• If step above did not fix the problem, Replace the P-MPIO Board</li> </ul>
<p style="text-align: center;">Aux Cedes Checksum Error</p>	<p>CEDES APS Sensor response fails the Pixel Checksum Integrity Check. Verify the connection from the device to P-TOC is correct; refer to page 6CEDES APS of the prints.</p>		<ul style="list-style-type: none"> <li>• Verify the connection between the CEDES APS Sensor and the P-TOC board is correct. Refer to page 6CEDES APS of the prints.</li> <li>• After verifying the connection is correct, interchange the Main and Auxiliary connection on the CEDES APSC and confirm on the View Selector Data Window (Install→View Selector Data) that the fault is now displayed on the Main data.</li> <li>• If the fault does not move to the Main device, then replace the Auxiliary Cedes P-HNA board.</li> <li>• If the fault does move to the Main device, replace the CEDES APS Sensor.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Aux Cedes Unit Position Error	CEDES APS Sensor cannot read the code tape correctly. Clean the optical window, code tape, and verify the alignment of sensor with the code tape.		<ul style="list-style-type: none"> <li>• Clean the optical window on the CEDES APS Sensor device.</li> <li>• Clean the coded tape from any dust or grease.</li> <li>• Verify the alignment of the device is centered to the coded tape. Be sure to use the position indicators on the device to verify alignment, refer to Appendix E of Controller manual.</li> <li>• If the fault does not clear, replace the CEDES APS Sensor device</li> </ul>
Aux Landa Unit Bad Integrity Data	Bad/Corrupted data packets from the Auxiliary Landa unit are being received.		<ul style="list-style-type: none"> <li>• Verify the wiring of the Auxiliary Landa Sensor Unit for data and shield wires. Refer to page 6b of the prints.</li> <li>• Replace Auxiliary Landa wire harness to the TOC and verify operation, continue with steps below if problem persist.</li> <li>• Replace Auxiliary Landa Sensor Unit and verify operation, continue with step below if problem persist</li> <li>• Replace P-TOC board</li> </ul>
Aux Landa Unit Completely Off Rail	The Landa Tape is not aligned inside the Auxiliary Landa sensor unit; refer to page QR5 of the prints for tape installation directions.		<ul style="list-style-type: none"> <li>• Auxiliary Landa Sensor Unit is misaligned and is unable to read positional data. Verify Auxiliary Landa Sensor Unit alignment.</li> <li>• Ensure that the tape is straight though the entire length of the hoistway and that is braced at appropriate intervals to prevent excessive drift.</li> <li>• Navigate to Install→View Selector Data Window and verify the Landa tape alignment while running on Inspection the entire length of the hoistway. If properly align replace the Auxiliary Landa Sensor Unit, refer to page QR5 of the prints for tape installation directions.</li> </ul>
Aux Landa Unit has Invalid Data	Auxiliary Landa Sensor unit is constantly reading a position of 0.00ft, Refer to page QR5 of the prints for Landa tape installation directions.		<ul style="list-style-type: none"> <li>• Navigate to Install→View Selector Data Window and verify if the Auxiliary Landa sensor unit reads a position of 0.00ft</li> <li>• If the position is 0.00ft, verify that the Landa tape is installed properly by ensuring that the arrows on the Landa tape are pointing in the UP direction.</li> <li>• If pointing down Landa tape is hanging upside down and needs to be flipped.</li> <li>• If arrows are located to run inside sensor unit, tape is backwards and needs to be turned. i.e. arrows need to be away from sensor unit reading area, refer to page QR5 of the prints for tape installation directions.</li> </ul>



Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Aux Landa Unit Can't Read Pos. A Or Can't Read Pos. B  (Pos. A: Aux Landa Unit Lost 1) or (Pos. B: Aux Landa Unit Lost 2)	Auxiliary Landa Sensor Unit cannot calculate the current position, clean sensor unit reading area and verify it is free from scratches, if scratched replace sensor unit.		<ul style="list-style-type: none"> <li>• Clean the optical unit of any possible dirt.</li> <li>• Verify the direction of reading relative to code rail is correct</li> <li>• Verify the wire harness connection between the Landa unit and the P-TOC board is secured tightly</li> <li>• Verify that the plastic liner is not scratched; if it is then the unit must be replaced.</li> </ul>
Aux Landa Unit Partially Off Rail	The Landa Tape is partially misaligned inside of the Auxiliary Landa Sensor unit; refer to page QR5 of the prints for tape installation directions.		<ul style="list-style-type: none"> <li>• Auxiliary Landa Sensor units partially misaligned and is unable to read positional data. Verify the Auxiliary Landa Sensor unit alignment.</li> <li>• Ensure that the tape is straight though the entire length of the hoistway and that is braced at appropriate intervals to prevent excessive drift. Refer to page QR5 of the prints for tape installation directions.</li> <li>• Navigate to Install → View Selector Data Window and verify the Landa alignment while running on Inspection the entire length of the hoistway. If properly aligned replace the Auxiliary Landa Sensor unit</li> </ul>
Aux Landa Unit Checksum Error  (Aux Landa Unit Read Data Error)	The CRC of the data packet did not match the calculated CRC; Bad/Corrupted data packets from the Auxiliary Landa Unit are being received.		<ul style="list-style-type: none"> <li>• Verify the wiring of the Auxiliary Landa Sensor unit for data and shield wires. Refer to Page 6b of the prints.</li> <li>• Replace Auxiliary Landa wire harness to the TOC and verify operation, continue with steps below if problem persist.</li> <li>• Replace Auxiliary Landa Sensor unit and verify operation, continue with step below if problem persist</li> <li>• Replace P-TOC board</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Battery Lowering	<p>The building power has failed and the battery power to lower the elevator and let passengers out has been engaged, the Battery Lowering input BPL is active; refer to pages 1 &amp; 5 of the prints</p>	BPL = 1	<ul style="list-style-type: none"> <li>• If building power is not available the behavior is correct, wait for building power service to be reestablished.</li> <li>• If building power is available verify power fed to the controller matches job requirements, refer to page 1 of the prints.</li> <li>• Verify battery lowering unit is operating properly, refer to Pages. 1 &amp; 5 of prints. BPL input should be wired to a normally open contact.</li> <li>• Verify that BPL input is not active, voltage is not present on BPL terminal, if active refer to battery lowering unit manual to determine and correct input activation behavior.</li> <li>• If not active, BPL IO input may have failed, verify BPL input IO Mapping matches its terminal assignment</li> <li>• If it matches, verify that the input state matches in Local Diagnostics. Navigate to Troubleshoot → Local Diagnostics, and then select the board BPL is mapped on.</li> <li>• If it does not match, try reassigning BPL input to a different IO input or replace the board if no spare available IO inputs available. I/O mapping navigate to:(Install→I/O Mapping→ select board and BPL input location)</li> </ul>
BK Contactor Fault	<p>The BKo Brake contactor output state is off but its monitored contact did not close. BK Contactor failed to drop, or it has a bad Auxiliary Contact, verify contact(s) wired to the BKi input and BKo contactor output triac; refer to page 4 of prints.</p>	BK = 0 BKi = 0	<ul style="list-style-type: none"> <li>• Verify Mechanical Operation of BK contactor and its Auxiliary contacts</li> <li>• Manually actuate the BK contactor and observe the BKi input Led on the P-MPIO board turns off as contactor is pressed and turns on when released.</li> <li>• Verify the operation of the BKi input on the P-MPIO Board – Navigate to Troubleshoot→Flags →Safety I/O Flags and observe the BKi flag changing states in memory when the BK motor contactor is manually actuated, if the BKi flag doesn't change state in memory, but it does change state on the P-MPIO status LED – Replace the P-MPIO Board.</li> <li>• If BKi flag does change state in memory Navigate to Troubleshoot→Flags →Safety I/O Flags observe the BKo output flag matches the output status LED on the P-MPIO board, if it does not match replace BKo output triacs Q1_05 on the P-MPIO Board and repeat this step.</li> <li>• If step above did not fix the problem, Replace the P-MPIO Board</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Both Landa Units Bad Integrity Data	Bad/Corrupted data packets from both Main and Auxiliary Landa Unit are being received		<ul style="list-style-type: none"> <li>• Verify the wiring for both Main and Auxiliary Landa Sensor units for data and shield wires. Refer to Page 6b of the prints.</li> <li>• Replace Main and Auxiliary Landa Sensor units wire harnesses to the TOC and verify operation, continue with steps below if problem persist.</li> <li>• Replace Main and Auxiliary Landa Sensor units and verify operation, continue with step below if problem persist</li> <li>• Replace P-TOC board</li> </ul>
Both Landa Units Completely Off Rail	The Landa Tape is not aligned inside the sensor units; refer to page QR5 of the prints for tape installation directions.		<ul style="list-style-type: none"> <li>• Main and Auxiliary Landa Sensor units are misaligned and are unable to read positional data. Verify Main and Auxiliary Landa Sensor unit alignment. Refer to page QR5 of the prints for Landa installation directions.</li> <li>• Ensure that the tape is straight though the entire length of the hoistway and that is braced at appropriate intervals to prevent excessive drift.</li> <li>• Navigate to Install→View Selector Data Window and verify the Landa tape alignment while running on Inspection the entire length of the hoistway. If properly align replace Main and Auxiliary Landa Sensor units.</li> </ul>
Both Landa Units Have Invalid Data	Both Main and Auxiliary Landa Sensor units are constantly reading a position of 0.00ft, Refer to page QR5 of the prints for Landa tape installation directions.		<ul style="list-style-type: none"> <li>• Navigate to Install→View Selector Data Window and verify Main and Auxiliary Landa sensor unit read a position of 0.00ft</li> <li>• If the position is 0.00ft, verify that the Landa tape is installed properly by ensuring that the arrows on the Landa tape are pointing in the UP direction</li> <li>• If pointing down Landa tape is hanging upside down and needs to be flipped</li> <li>• If arrows are located to run inside sensor unit tape is backwards and needs to be turned, i.e. arrows need to be away from sensor unit reading area, refer to page QR5 of the prints for tape installation directions.</li> </ul>
Both Landa Units Can't Read Pos. A Or Can't Read Pos. B  (Pos. A: Both Landa Unit Lost 1) or (Pos. B: Both Landa Unit Lost 2)	Main and Auxiliary Landa Sensor Unit cannot calculate the current position, clean sensor units reading area and verify it is free from scratches, if scratched replace sensor unit(s).		<ul style="list-style-type: none"> <li>• Clean the optical units of any possible dirt.</li> <li>• Verify the direction of reading relative to code rail is correct</li> <li>• Verify the wire harness connection between the Landa unit and the P-TOC board is secured tightly</li> <li>• Verify that the plastic liner is not scratched; if it is then the unit(s) must be replaced.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Both Landa Units Partially Off Rail	The Landa Tape is partially misaligned inside the Main and Auxiliary Landa Sensor units; refer to page QR5 of the prints for tape installation directions.		<ul style="list-style-type: none"> <li>• Main and Auxiliary Landa Sensor units are partially misaligned and are unable to read positional data. Verify Main and Auxiliary Landa Sensor unit alignment.</li> <li>• Ensure that the tape is straight though the entire length of the hoistway and that is braced at appropriate intervals to prevent excessive drift, refer to page QR5 of the prints for tape installation directions.</li> <li>• Navigate to Install→View Selector Data Window and verify the Landa alignment while running on Inspection the entire length of the hoistway. If properly aligned replace the Main and Auxiliary Landa Sensor units</li> </ul>
Both Landa Units Checksum Error  (Both Landa Units Read Data Error)	The CRC of the data packet did not match the calculated CRC; Bad/Corrupted data packets from Main and Auxiliary Landa Units are being received.		<ul style="list-style-type: none"> <li>• Verify the wiring of the Main and Auxiliary Landa Sensor units for data and shield wires. Refer to Page 6b of the prints.</li> <li>• Replace Main and Auxiliary Landa wire harness to the TOC and verify operation, continue with steps below if problem persist.</li> <li>• Replace Main and Auxiliary Landa Sensor units and verify operation, continue with step below if problem persist</li> <li>• Replace P-TOC board</li> </ul>
CAB Comm. Failed	Unable to establish CAN communication between the P-MP and any of the Cab Nodes (P-TOC, P-COP or P-CNEX). Refer to Pages. 6 & 8 of the prints		<ul style="list-style-type: none"> <li>• Verify traveler wiring from controller to TOC and from the TOC to COP(s), refer to Pages. 6 &amp; 8 of the prints</li> <li>• Verify COP(s) configuration node ID SW2 switch settings refer to Page 8 of the prints</li> <li>• Verify CAB network to make sure all expected boards are being accounted by Pixel navigate to →Install →Learn Functions→Car Network Landscape</li> <li>• Verify CAB Network Status Good versus Bad counts. Navigate to Troubleshoot→Controller Network→Car CAN Network</li> </ul>
Car Call Disconnect Tripped	The Car Call Disconnect function has been tripped causing all car calls to be dropped, refer to statistics counter window for the trigger code.	CCD = 1	<ul style="list-style-type: none"> <li>• Navigate to Troubleshoot→Statistic Counters→CCD Trigger Code</li> <li>• Use the trigger code to guide you on seeking a solution.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Car Door Bypass Switch	SP1 and SP2 CDB1 and CDB2 inputs are both on or both off simultaneously, Pixel monitors both sides of the switch status for. Refer to Page3 of prints	CDB1 = 1 CDB2 = 1 OR CDB1 = 0 CDB2 = 0	<ul style="list-style-type: none"> <li>• Navigate to Troubleshoot → Flags → Inspection Flags and make sure that CDB is either black or blue</li> <li>• Verify the communication status for SP1 and SP2 by navigating to Troubleshoot → Controller Network → (SP1) and (SP2)</li> <li>• If the SP1 and SP2 processors still read the same status and are communicating correctly – Replace the P-MP Board; the switch may have failed. If they are not communicating correctly – Replace both the P-MP and P-MPIO Boards</li> </ul>
Car Door Bypass w/o Inspection	The Car Door Bypass switch is active while the car is not on Car Top inspection or In Car inspection	ICT = 1 IIC = 1 CDB = 1	<ul style="list-style-type: none"> <li>• Car door bypass switch cannot be active while the controller is not on either car top or in car inspection – Turn off Car Door Bypass switch</li> <li>• If the car door bypass switch is off – verify that the switch is off in memory. Navigate to Troubleshoot → Flags → Inspection Flags and look at the status of CDB. The flag is low if the switch is off and high if the switch is on.</li> <li>• If the switch status doesn't change and/ or is reflected incorrectly in memory – Change the P-MP Board; the switch may have failed.</li> </ul>
Car Safety Sting Open	Voltage lost to the Car Safety String (SAFC) Terminal on the P-MPIO Board OR not making it to memory. Fire Panel Stop Switch, Safety Clamp, Emergency Exit Switch, or Cartop Inspection Stop Switch is open. Refer to Pages 3 and 6 of the prints	SAFC = 0	<ul style="list-style-type: none"> <li>• Voltage loss on 4A (120VAC) – Check Fuse F4A on PDB Board (Page2 of prints). Note jobs with Cycle Testing will reference 4CT rather than 4A.</li> <li>• Fire Panel Stop Switch, Safety Clamp, Emergency Exit Switch, or Cartop Inspection Stop Switch is open. – Verify that full voltage is making it to SAFC. If it's not, trace backwards until the voltage loss is found refer to Pages 3 &amp; 6 of prints)</li> <li>• Verify the yellow jumpers SAFC1 and SAFC2 located on the right lower corner of the P-MP-IO board are set to the left (closed position).</li> <li>• If 120VAC voltage has been verified on terminal SAFC and the SAFC LED is lit, then navigate to Troubleshoot → Flags → Safety I/O Flags and ensure that SAFC is ON in memory. If the SAFC flag is low in memory – Replace the P-MPIO Board.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Car Timed Out of Service	Demand exists and the car was held at the floor for a time greater than the programmed amount of the Time Out of Service Timer	TOS = 1	<ul style="list-style-type: none"> <li>• Verify the closing attempts fault counter is not set too low – Navigate to Adjust→Car Performance→Door Options→Closing Attempts Fault Counter. This is the number of times it will try to close the doors before the fault comes up. Current default setting is 5 times. (If set to 0, it will try to close indefinitely)</li> <li>• Doors may not be responding to the close command from the controller – Ensure that DCF output is coming in. Navigate to Troubleshoot→Flags→Door Flags. Look at DCF or DCFR (front or rear).</li> <li>• DCF is making it to the door operator, but there is a door operator issue. – Verify the door operator.</li> <li>• A stuck photo-eye (PHE), door open button (DOB), car call, or hall call might be preventing the doors from closing.</li> <li>• Make sure the Time Out of Service timer is programmed with an appropriate value, the factory default is 45 seconds. Extend the timer as necessary.</li> </ul>
Car Out of Service	Car was unable to close its doors and or respond to call service demand and the Time Out of Service timeout expired and then the Car Out of Service Timer timeout also expired placing the car out service and to cancel call demand(s).	COS =1 TOS = 1	<ul style="list-style-type: none"> <li>• Verify the closing attempts fault counter is not set too low – Navigate to Adjust→Car Performance→Door Options→Closing Attempts Fault Counter. This is the number of times it will try to close the doors before the fault comes up. Current default setting is 5 times. (If set to 0, it will try to close indefinitely)</li> <li>• Doors may not be responding to the close command from the controller – Ensure that DCF output is coming in. Navigate to Troubleshoot→Flags→Door Flags. Look at DCF or DCFR (front or rear).</li> <li>• DCF is making it to the door operator, but there is a door operator issue. – Verify the door operator.</li> <li>• A stuck photo-eye (PHE), door open button (DOB), car call, or hall call might be preventing the doors from closing.</li> <li>• Make sure the Time Out of Service timer is programmed with an appropriate value, the factory default is 45 seconds and the car out service timer is set for at least 5 times the time out of service value, default is 6 minutes, extend the timers as necessary</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Car-Top Inspection Switch	SP1 and SP2 ICT1 and ICT2 or ICTE1 and ICTE2 inputs status are not the same or ICTE input is active and the car is not on Car Top Inspection Mode Refer to Pages 3 and 6 of the prints	ICT1 = 1 ICT2 = 0 OR ICT1 = 0 ICT2 = 1 OR ICTE1 = 0 ICTE2 = 1 OR ICTE1 = 1 ICTE2 = 0 OR ICT = 1 ICTE = 1 OR ICT = 1 ICTU = 1 OR ICT = 1 ICTD = 1 OR ICTE = 0 ICTU = 1 OR ICTE = 0 ICTD = 1	<ul style="list-style-type: none"> <li>• If the Fault is generated when the car is not in Car Top Inspection Mode, verify that ICTE, ICTU, and ICTD LEDs are off on the P-MPIO board, refer to pages 3 and 6 of the prints.</li> <li>• If fault is observed while commanding the car to move, verify the ICT LED status on the P-MPIO board is off as the car top inspection switch is placed to Inspection.</li> <li>• If the fault persists, Navigate to Troubleshoot → Flags → Inspection Flags and verify that ICT and ICTE, ICTU, and ICTD follow their respective switch setting, refer to page 6 of the prints, if they do not follow replace the P-MPIO Board</li> <li>• If the flags for ICT or ICTE are a color other than black or blue, then a mismatch exists when the Safety processors SP1 and SP2 read these inputs. – Replace the P-MPIO Board</li> </ul>
Cedes Communication Error	CEDES APS Sensor Communication error. Verify the connection from the device to P-TOC is correct; refer to Page 6CEDES APS of the prints. This error can be caused by the power supply not being within +/- 20% of the 24VDC and can also be cleared by a power cycle to the device.		<ul style="list-style-type: none"> <li>• Unplug the CEDES APS unit from the P-TOC to remove power then plug it back in and verify the fault has been cleared.</li> <li>• Verify the connection between the CEDES APS Sensor and the P-TOC board is correct. Refer to Page 6CEDES APS of the prints.</li> <li>• After verifying the connection is correct, interchange the Main and Auxiliary connection on the CEDES APSC and confirm on the View Selector Data Window (Install→View Selector Data) that the fault is now displayed on the Auxiliary data.</li> <li>• If the fault does not move to the Auxiliary device, then replace the Main Cedes P-HNA board</li> <li>• If the fault does move to the Auxiliary device, replace the CEDES APS Sensor.</li> </ul>
Cedes Internal Error	CEDES APS Sensor internally generated error. This error can be caused by the power supply not being within +/- 20% of the 24VDC and can also be cleared by a power cycle to the device.		<ul style="list-style-type: none"> <li>• Unplug the CEDES APS unit from the P-TOC to remove power then plug it back in and verify the fault has been cleared.</li> <li>• Verify the 24VDC power supply is within a +/- 20% range.</li> <li>• If the fault continues to appear, replace the CEDES APS Sensor.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Cedes Partially OFF Rail Left  Or  Cedes Partially OFF Rail Right	CEDES APS Sensor cannot read the code tape correctly, because the camera is positioned partially off rail to the left or to the right of the tape.		<ul style="list-style-type: none"> <li>• Clean the optical window on the CEDES APS Sensor device.</li> <li>• Clean the coded tape from any dust or grease.</li> <li>• Verify the alignment of the device is centered to the coded tape. Be sure to use the position indicators on the device to verify alignment, refer to Appendix E of Controller manual</li> <li>• If the fault does not clear, replace the CEDES APS Sensor device.</li> </ul>
Cedes OFF Rail Left  Or  Cedes OFF Rail Right	CEDES APS Sensor cannot read the code tape correctly, because camera is positioned too far to the left or too far to the right.		<ul style="list-style-type: none"> <li>• Clean the optical window on the CEDES APS Sensor device.</li> <li>• Clean the coded tape from any dust or grease.</li> <li>• Verify the alignment of the device is centered to the coded tape. Be sure to use the position indicators on the device to verify alignment, refer to Appendix E of Controller manual</li> <li>• If the fault does not clear, replace the CEDES APS Sensor device</li> </ul>
Cedes Too Close  Or  Cedes Partially Too Close	CEDES APS Sensor cannot read the code tape correctly, because camera is positioned too close to the tape.		<ul style="list-style-type: none"> <li>• Clean the optical window on the CEDES APS Sensor device.</li> <li>• Clean the coded tape from any dust or grease.</li> <li>• Verify the distance and alignment of the device to the coded tape. Be sure to use the position indicators on the device to verify alignment, refer to Appendix E of Controller manual.</li> <li>• If the fault does not clear, replace the CEDES APS Sensor device</li> </ul>
Cedes Too Far Back  Or  Cedes Partially Too Far Back	CEDES APS Sensor cannot read the code tape correctly, because camera is positioned too far away from the tape.		<ul style="list-style-type: none"> <li>• Clean the optical window on the CEDES APS Sensor device.</li> <li>• Clean the coded tape from any dust or grease.</li> <li>• Verify the distance and alignment of the device to the coded tape. Be sure to use the position indicators on the device to verify alignment, refer to Appendix E of Controller manual.</li> <li>• If the fault does not clear, replace the CEDES APS Sensor device</li> </ul>



Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Cedes Service Recommended	CEDES APS Sensor is almost or completely out of reading range. Verify that mounting and alignment of the code tape and the device is correct utilizing the device LED(s). Clean the optical window, code tape.		<ul style="list-style-type: none"> <li>• Clean the optical window on the CEDES APS Sensor device.</li> <li>• Clean the coded tape from any dust or grease.</li> <li>• Verify the alignment of the device is centered to the coded tape. Be sure to use the position indicators on the device to verify alignment, refer to Appendix E of Controller manual</li> <li>• If the fault does not clear, replace the CEDES APS Sensor device</li> </ul>
Company Exclusive Mismatch	P-MP, P-TOC, and P-COP company exclusive version codes do not match one another		<ul style="list-style-type: none"> <li>• Contact Elevator Controls Technical Support</li> <li>• Navigate to Install→Initial Settings→Exclusive Conversion to resolve the mismatch.</li> </ul>
COP Aux Front Comm. Failed	Unable to maintain CAN Communications between the MP and the Aux. Front COP. Refer to Page8X of the prints to verify CAB CAN network wiring.		<ul style="list-style-type: none"> <li>• Verify the correct COP configuration settings are correct to account for this car's COP nodes, Navigate to Install→ Initial Settings → MP Cab Node Network → COP Config</li> <li>• Verify the COP dipswitch (COP CONFIG) is set accordingly, refer to page 8X of the prints</li> <li>• Verify wiring from the TOC to COP Aux Font.</li> <li>• Make sure CAN-H and CAN-L are wired the CAB CAN either on JCCB1 or JCCB RJ45 Type Connector NOT to the local COP CAN Bus.</li> </ul>
COP Aux Rear Comm. Failed	Unable to maintain CAN Communications between the MP and the Aux. Rear COP. Refer to Page 8RX of the prints to verify CAB CAN network wiring.		<ul style="list-style-type: none"> <li>• Verify the correct COP configuration settings are correct to account for this car's COP nodes, Navigate to Install→ Initial Settings → MP Cab Node Network → COP Config</li> <li>• Verify the COP dipswitch (COP CONFIG) is set accordingly, refer to page 8RX of the prints</li> <li>• Verify wiring from the TOC to COP Aux Rear.</li> <li>• Make sure CAN-H and CAN-L are wired the CAB CAN either on JCCB1 or JCCB RJ45 Type Connector NOT to the local COP CAN Bus.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
COP Main Front Comm. Failed	Unable to maintain CAN Communications between the MP and the Main Front COP. Refer to Page 8 of the prints to verify CAB CAN network wiring.		<ul style="list-style-type: none"> <li>• Verify the correct COP configuration settings are correct to account for this car's COP nodes, Navigate to Install → Initial Settings → MP Cab Node Network → COP Config</li> <li>• Verify the COP dipswitch (COP CONFIG) is set accordingly, refer to page 8 of the prints</li> <li>• Verify wiring from the TOC to COP Main Front.</li> <li>• Make sure CAN-H and CAN-L are wired the CAB CAN either on JCCB1 or JCCB RJ45 Type Connector NOT to the local COP CAN Bus.</li> </ul>
COP Main Rear Comm. Failed	Unable to maintain CAN Communications between the MP and the Main Rear COP. Refer to Page 8R of the prints to verify CAB CAN network wiring.		<ul style="list-style-type: none"> <li>• Verify the correct COP configuration settings are correct to account for this car's COP nodes, Navigate to Install → Initial Settings → MP Cab Node Network → COP Config</li> <li>• Verify the COP dipswitch (COP CONFIG) is set accordingly, refer to page 8R of the prints</li> <li>• Verify wiring from the TOC to COP Main Rear.</li> <li>• Make sure CAN-H and CAN-L are wired the CAB CAN either on JCCB1 or JCCB RJ45 Type Connector NOT to the local COP CAN Bus.</li> </ul>
Cycle Test Failed	Flags in RED failed Cycle Test, refer to pages 3 and 4 of the prints (GOV, DLAT, DLSF, DLAB, ICT, ICTE, HDB, CDB, ESTP, IA, IIC, ESCO, SAFC, SAFH, IMR, IICE, CGF, CGR, DLSR, DCAT, DCAB, DCSF, DCSR)		<ul style="list-style-type: none"> <li>• Verify the CTR relay picks when the CTR output on the P-MPIO Board turns on. Refer to Page 5 of the prints.</li> <li>• Verify the inputs failing test are using as common 4CT and not the 4A bus. Refer to pages 2, 3, 4, and 5 of the prints.</li> <li>• If wired correctly verify that the failed input flag is changing states in memory. Navigate to Troubleshoot → Flags → Safety I/O Flags and confirm that the failed input flag changes states in memory when its corresponding field wire is removed, if it does not replace the P-MPIO board</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
<p>D Relay Monitor  (D Relay Fault)</p>	<p>The DNL-DRM input is on while D relay output is off indicating D Relay contact 1 failed to break open, possibly due to a bad D relay. Refer to Page 1 of the prints</p> <p>Or</p> <p>The DNL-DRM input is off while D relay output is on indicating D Relay contact 1 failed to close, possibly due to a bad D relay. Refer to Page 1 of the prints</p>	<p>DNL-DRM = 1 SD = 0</p> <p>Or</p> <p>DNL-DRM = 0 SD = 1</p>	<ul style="list-style-type: none"> <li>• Bad contact on the D relay – Replace the D relay, refer to page 1 of the prints</li> <li>• DNL-DRM input may have failed – Verify that DRM flag is changing states in memory. Navigate to Troubleshoot → Flags → Safety I/O Flags and confirm that the DRM input flag changes states in memory when D relay is removed, if it does not replace the P-MPIO board</li> <li>• If problem occurs while taking off a bad contact of the EB1-EB2 or EBX1-EBX2 relays may be preventing the D relay coil from energizing. Refer to Page 5 of the prints. Note: If EB1-EB2 or EBX1-EBX2 relays are the source of the fault, momentarily the U, D and H Led outputs only, may appear to be on simultaneously prior to fault declaration. Replace EB1-EB2 and EBX1-EBX2 relays</li> </ul>
<p>DNL Offset Corrupted</p>	<p>Data integrity error has been detected with the learned DNL Position.</p>		<ul style="list-style-type: none"> <li>• Try a Computer Reset and verify that the fault cleared.</li> <li>• If the fault persists after the Computer Reset, perform a bottom landing Floor Setup Procedure, refer to section 3.8 of controller manual</li> <li>• If error persists, replace the P-MP Board. and perform a new Floor Setup Procedure, refer to section 3.8 of controller manual</li> </ul>
<p>Earthquake Overspeed</p>	<p>Car speed exceeded the programmed earthquake overspeed threshold.</p>		<ul style="list-style-type: none"> <li>• The Car, while in Earthquake operation, exceeded the earthquake trip speed. – Verify that the Earthquake trip speed is not set lower than the earthquake speed but rather is set to about 10% above earthquake speed setting, Navigate to Install→Initial Settings→Speed Profile→Earthquake Trip Speed.</li> </ul>
<p>EB1-EB2 Relays Fault  (Aux Brake Main Relays Fault)</p>	<p>EB1 and EB2 relays cycle testing verification failed.</p> <p>RG input did not match EB1-EB2 status state, refer to pages 2 &amp; 3 of the prints</p>	<p>EB1 and EB2 = 0 RG = 1</p> <p>OR</p> <p>EB1 and EB2 = 1 RG = 0</p>	<ul style="list-style-type: none"> <li>• Verify RG, RGBP, and RGOK slide jumpers setting on the PDB board; refer to page2 of the prints.</li> <li>• Verify EB1 and EB2 output LEDs match RG input LED on the P-MPIO, if doesn't match replace Q1_03 and Q1_04 output triacs, if replacing triacs does not resolve the problem it's possible that one or more relays could have failed, try replacing EB1 and/ or EB2 relays; refer to pages 2 and 3 of the prints.</li> <li>• Once Output and Input LEDs match, if the problem persists, navigate to Troubleshoot→Flags →Safety I/O Flags to verify that EB1 and EB2 outputs vs. RG input status, if they do not match replace the P-MPIO board.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
<p>EBX1-EBX2 Relays Failure  (Aux Brake Aux Relays Fault)</p>	<p>EBX1 and EBX2 relays cycle testing verification failed.</p> <p>RGBP input did not match EBX1- EBX2 status state, refer to pages 2 &amp; 3 of the prints</p>	<p>EBX1 and EBX2 = 0 RGBP = 1</p> <p>OR</p> <p>EBX1 and EBX2 = 1 RGBP = 0</p>	<ul style="list-style-type: none"> <li>• Verify RG, RGBP, and RGOK slide jumpers setting on the PDB board; refer to page 2 of the prints.</li> <li>• Verify EBX1 and EBX2 output LEDs match RGBP input LED on the P-MPIO, if doesn't match replace Q1_01 and Q1_02 output triacs, if replacing triacs does not resolve the problem it's possible that one or more relays could have failed, try replacing EBX1 and/ or EBX2 relays; refer to pages 2 and 3 of the prints.</li> <li>• Once Output and Input LEDs match, if the problem persists, navigate to Troubleshoot → Flags → Safety I/O Flags to verify EBX1 and EBX2 outputs vs. RGBP input status. If they do not match replace the P-MPIO board.</li> </ul>
<p>Emergency Stop Switch Open</p>	<p>The Emergency Stop switch in the COP has been set to Stop, return to Run position or SP1 and SP2 do not read the same switch status for the ESTP1 &amp; ESTP2, refer to Pages 6 and 3 of prints</p>	<p>ESTP1 = 0 ESTP2 = 0 CSB = 0</p> <p>OR</p> <p>ESTP1 = 0 ESTP2 = 1</p> <p>OR</p> <p>ESTP1 = 1 ESTP2 = 0</p>	<ul style="list-style-type: none"> <li>• Verify the Emergency Stop switch in the COP is set to Run position</li> <li>• Confirm that the Emergency Stop switch is wired correctly, refer to Pages 3 and 6 of the prints</li> <li>• Verify 120 VAC are measured at the ESTP terminal on the P-TB board.</li> <li>• Verify ESTP LED is on the P-MPIO board, and observe memory flag status, Navigate to Troubleshoot → Flags → Safety I/O Flags.</li> <li>• If flag status color is other than black or blue, SP1 and SP2 are not agreeing on the ESTP input status, replace the P-MPIO board</li> <li>• If the flag status doesn't match the LED, replace the P-MPIO board</li> </ul>
<p>ESCO Contactor Fault  (ESCO Contactor)</p>	<p>ESCO Output is Off and it's monitored NO contact through the DSAF input remained active.</p>	<p>ESCO = 0 DSAF = 1</p> <p>Test Performed only when STOP = 1</p>	<ul style="list-style-type: none"> <li>• Verify Mechanical Operation of ESCO contactor.</li> <li>• Manually actuate the ESCO contactor and observe the DSAF input LED on the P-MPIO board turns on as contactor is pressed and turns off when released, if not replace the ESCO contactor.</li> <li>• Verify the operation of the DSAF input on the P-MPIO Board – Navigate to Troubleshoot → Flags → Safety I/O Flags and observe the DSAF flag changing states in memory when the ESCO contactor is manually actuated, if the DSAF flag doesn't change state in memory, but it does change state on the P-MPIO status LED – Replace the P-MPIO Board.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
ETS Bypass Enabled	The ETS Bypass option is not allowed during Automatic Operation, reset the ETS Bypass option	ETS Bypass = On	<ul style="list-style-type: none"> <li>The ETS Bypass Option is set to yes while the car is on automatic mode of operation. Navigate to Install → Learn Functions → ETS Learn → ETS Learn Up (or Down) and set the ETS Bypass option off</li> </ul>
ETS Learn Required	The Up/Down ETS, Emergency Terminal Slowdown, learn has not been performed or a parameter configuration change has been performed to landing positions or speed profile parameters requiring a new ETS learn be performed	ESTD = 1	<ul style="list-style-type: none"> <li>Perform an ETS learn for both the up &amp; down directions. – Place the car at a terminal landing. Navigate to Install → Learn Functions → ETS Learn.</li> <li>Select either ETS Learn Up or Down based on car current landing position then follow the on-screen instructions to complete the ETS learns.</li> <li>Once the ETS learns are complete – Navigate to Install → File Transfer → (follow the on-screen instructions to get into file transfer mode) → Safety Configuration Upload. Hit the transfer button in the bottom right corner to begin the transfer. Once the transfer is complete, hit the home button to return to the home screen.</li> </ul> <p>The Emergency Slowdown Table Done (ESTD) flag is reset by changes to any of the parameters below, forcing Pixel to request for a new ETS learn be performed in order to clear the fault condition:</p> <ul style="list-style-type: none"> <li>Floor Positions</li> <li>Top/Bottom Floor Number</li> <li>Contract Speed</li> <li>Hydro STD Offset</li> <li>DNL/ UNL Position</li> </ul>
Fault PB Stuck	The System Fault Reset PB is stuck in the ON position	FRST = 1 Fault Reset PB Stuck Timer Expired	<ul style="list-style-type: none"> <li>Navigate to Troubleshoot → Flags → Safety I/O Flags and verify the mFRST flag is only on when the System Fault Reset pushbutton is being pressed.</li> <li>If it is always on – Replace the P-MP Board.</li> </ul>
Fault Reset Switch	SP1 and SP2 FRST1 and FRST2 input status are the same, refer to Page 3 of prints	FRST1 = 0 FRST2 = 0 OR FRST1 = 1 FRST2 = 1	<ul style="list-style-type: none"> <li>If flag status color is other than black or blue, SP1 and SP2 are not agreeing on the FRST input status, replace the P-MPIO Board</li> <li>Verify the flag mFRST changes state accordingly. Navigate to Troubleshoot → Flags → Safety I/O Flags verify that is on when System Fault Reset push button is pressed and low when released.</li> <li>If it does not go low when released, replace both the P-MP and P-MPIO Boards.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Discrete Fire Ph1 Switch (Fire Ph1 Switch)	The Fire Ph1 Switch has none of its inputs active, must have at least one input active to be on a valid state, refer to page 9 of the prints	Discrete Ph1 switch interface  AND  {FOFF = 0 RES = 0 FON = 0 OR FON = 1 RES = 1 OR FON = 1 FOFF = 1 OR RES = 1 FOFF = 1 }	<ul style="list-style-type: none"> <li>• Verify wiring of the Fire Ph1 Switch; refer to Page 5b or 5Zb of the prints, Navigate to Troubleshoot→Flags→Emergency Service Flags and verify only one of the Fire Ph1 Switch inputs is active.</li> </ul>
Fire Phase 2 switch	The Fire Ph2 Switch has none of its inputs active, must have one input active to be on a valid state, or has more than one active at the same time, refer to page 8 of the prints	FCS = 0 F2OFF = 0 FDHD = 0 OR FCS = 1 F2OFF = 1 OR FCS = 1 FDHD = 1 OR F2OFF = 1 FDHD = 1	<ul style="list-style-type: none"> <li>• Verify the wiring of the Fire Ph2 Switch and the P-COP Configuration switch settings. Refer to Page. 8 of the prints.</li> <li>• Navigate to Troubleshoot→Flags→Emergency Service Flags and verify only one of the Fire Ph2 Switch inputs is active. Note: Navigation to screen above is available through the P-COP on board diagnostics also.</li> </ul>
Floor DZ Pos. Corrupted	Data integrity error has been detected with one or more of the learned Per Floor Door Zone Positions.		<ul style="list-style-type: none"> <li>• Try a Computer Reset and verify that the fault cleared.</li> <li>• If the fault persists after the Computer Reset, perform a new Floor Setup Procedure, refer to section 3.8 of controller manual</li> <li>• If error persists, replace the P-MP Board. and perform a new Floor Setup Procedure, refer to section 3.8 of controller manual</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
<p>Front Door Bounced At Floor XX</p> <p>XX = Landing number</p>	<p>The Front door bounced open while the car was taking off from a floor on an automatic run</p>	<p>SDI Pattern = Soft Start  H = 1  HI = 1</p> <p>AND</p> <p>CGF= 0  DLKF = 1  OR  CGF= 1  DLKF = 0  OR  CGF= 0  DLKF=0</p> <p>*DLKF flag comprises the Status of All the Front Door Locks and Front Door Close Contacts when the door option is configured to Freight or Manual door.</p>	<ul style="list-style-type: none"> <li>DLKF or CGF dropped momentarily during takeoff. Navigate to Troubleshoot→Event Logs→Event Playback→Standard DDR Event Log and review the door flags for this fault to confirm which of the door signals dropped during take off</li> <li>At the floor number displayed in the fault, verify the door closing adjustments prevent any door bouncing from a slammed closing</li> <li>Verify that doors don't roll back or relax open on takeoff.</li> </ul>
<p>Front Door Clipped At Floor XX</p> <p>XX = Landing number</p>	<p>The front car gate or one of the interlocks clipped, while the car was travelling in high speed</p>	<p>H = 1  HI = 1</p> <p>AND</p> <p>CGF = 0  DLKF = 1  OR  CGF = 1  DLKF = 0  OR  CGF = 0  DLKF=0</p> <p>*DLKF flag comprises the Status of All the front Door Locks and front Door Close Contacts when the door option is configured to Freight or Manual door</p>	<ul style="list-style-type: none"> <li>DLKF or CGF dropped momentarily while traveling on high-speed. Navigate to Troubleshoot→Event Logs→Event Playback→Standard DDR Event Log and review the door flags for this fault to confirm which of the door signals dropped during the run</li> <li>At the floor number displayed in the fault, verify door clearances as the car travels through the hoistway.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Front Door Limit Switches	<p>The front door open limit and door closed limit are both low at the same time.</p> <p>Front Door limits valid states:            Door Fully Open            DOLF = 0, DCLF = 1</p> <p>Door Fully Closed            DOLF = 1, DCLF = 0</p> <p>Door Partially Close-Open            DOLF = 1, DCLF = 1</p>	DOLF = 0 DCLF = 0	<ul style="list-style-type: none"> <li>• DOLF and DCLF are both low in memory – Verify the current position of the doors/ verify the status of the door limits on the door operator.</li> <li>• If the door operator limits are in the correct state – Verify that the door limit signals are reflected correctly on the P-TOC board terminals DOLF and DCLF.</li> <li>• If the door limits are not displayed correctly on the TOC Board – Correct/verify the door limit wiring/ setup.</li> <li>• If the DOLF and DCLR signals seem correct on the P-TOC board – Verify that they match in memory. Navigate to Troubleshoot→Flags→Door Flags</li> <li>• If the door limits status on the TOC and their status in memory does not match – Then the DOLF/ DCLF inputs could be damaged. Replace the P-TOC Board</li> </ul>
Front Door Locks Fault	<p>The front door open limit is open; indicating that the doors are fully open, but either or both the front car gate or front hoistway door locks are still closed.</p>	DOLF = 0 CGF = 1 DLKF = 0 OR DOLF = 0 CGF = 0 DLKF = 1	<ul style="list-style-type: none"> <li>• The car gate or the door lock didn't open – Verify status of DOLF, DLKF &amp; CGF. Navigate to Troubleshoot→Flags→Door Flags and Figure out which flag is in the wrong state.</li> <li>• Verify that the door contacts are open by ensuring that there is no voltage on CGF or the door lock contact for that floor Refer to Page4 of the prints</li> <li>• If there is no voltage but it stays high in memory – Replace the P-MPIO Board.</li> </ul>
Front Door Not Fully Closed	<p>The front door close limit is closed while the doors are locked.            OR            The front door close limit is open, but either the car gate or door lock is not closed.</p>	CGF = 1 DLKF = 1 DCLF = 1 OR CGF = 0 DLKF = 1 DCLF = 0 OR CGF = 1 DLKF = 0 DCLF = 0	<ul style="list-style-type: none"> <li>• Either the front door close limit, the car gate closed contact, or a hoistway door closed contact is in the incorrect state. – Verify which state the doors are in. Navigate to Troubleshoot→Flags→Door Flags. Verify and correct whichever flag isn't in the correct state.</li> <li>• Verify that the door contacts are closed by ensuring that there is voltage (120VAC) on CGF and the door lock contacts, refer to Page4 of the prints</li> <li>• If there is voltage but corresponding input(s) stay low in memory – Replace the P-MPIO Board</li> </ul>



Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Front PHE Cycle Test Failed	Front Photo Eye has failed its cycle test, test performed after the door has reached its fully opened position and before door closing starts	PHETF = 1 PHEF = 0 PEMF = 0 OR PHETF = 1 PHEF = 0 PEMF = 1 OR PHETF = 1 PHEF = 1 PEMF = 0	<ul style="list-style-type: none"> <li>• Verify the PHETF output picks the PHETF relay and verify both the PHEF and the PEMF inputs come in when the PHETF relay is picked. Refer to pages 6 and 6b of the prints.</li> <li>• Verify that the Input PEMR and Output, PHETF, are mapped correctly in the Pixel System. Navigate to Install → IO Mapping.</li> </ul> Test information detail: <ul style="list-style-type: none"> <li>• Prior to the door closing PHETR output will be turned on to signal door operator to test the reopening device. Pixel will wait for about 5 seconds for PHEF and PEMF inputs to both are active to terminate or fail test.</li> </ul>
Front PHE Fault	PHEF input remained high for more than the programmed Photo Eye Fail Timer value	PHEF = 1 Photo Eye Fail Timer Expired	<ul style="list-style-type: none"> <li>• Verify the PHEF input is not stuck in the active state by disconnecting the field wire from its assigned location and viewing the status by navigating to Troubleshoot → Flags → Door Flags</li> <li>• Extend the Photo Eye Fail Timer as needed, default value of 5 minutes, Navigate to Adjust → Car Performance → Timers → Front Door Timers → Photo Eye Fail</li> </ul>
Governor Switch Opened	Governor auxiliary monitored contact opened. Verify the Governor mechanical operation, reset the Governor and press the System Fault Reset pushbutton on the P-MP board. Refer to Page3 of the prints	GOV = 0	<ul style="list-style-type: none"> <li>• Verify and make sure the Governor switch is closed</li> <li>• If the Governor switch is closed –verify voltage on the GOV Terminal (120VAC), if there is no voltage on GOV terminal Verify Governor Switch wiring, refer to Page 3 of the prints</li> <li>• If there is voltage verify that GOV flag is active in memory. Navigate to Troubleshoot → Flags → Safety I/O Flags.</li> <li>• If GOV has voltage but is off in memory, replace the P-MPIO Board.</li> <li>• If the flag for GOV is a color other than black or blue, then a mismatch exists when the Safety processors SP1 and SP2 read this input – Replace the P-MPIO Board</li> </ul>
Hall Board Lost (Name of Node Lost)	Communication to the named P-Hall node was lost. Verify P-Hall node wiring, refer to page 9 of the prints		<ul style="list-style-type: none"> <li>• Verify named Hall node wiring or integrity of RJ45 cables and that the cables are properly seated into RJ-45 sockets</li> <li>• If a P-Hall Node has been physically reconfigured to a different node (change in the dipswitch) this fault will occur since the previous setting is no longer detected. Press the Fault Reset Button to clear the message from the Main Window</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Hall Call Disconnect Tripped	The Hall Call Disconnect function has been tripped causing all hall calls to be dropped, refer to statistics counter window for the trigger code.	HCD = 1	<ul style="list-style-type: none"> <li>• Navigate to Troubleshoot→Statistic Counters→HCD Trigger Code</li> <li>• Use the trigger code to guide you on seeking a solution.</li> </ul>
Hall Comm. Failed	Successful communication to at least one Hall node was established, but all Hall communication has stopped, verify nodes configuration and wiring. Refer to Page 9 of the prints		<ul style="list-style-type: none"> <li>• Remove the Hall Nodes network from the controller and install a known good Hall Node board and verify that the Hall LED status indicator on the P-MP board comes on, if it does not turn on replace the P-MP board; if it turned on verify hall network wiring, refer to page 9 of the prints.</li> </ul>
Hall Door Bypass w/o Inspection	The Hall Door Bypass switch is active while the car is not on Car Top inspection or In Car inspection	ICT = 1 IIC = 1 HDB = 1	<ul style="list-style-type: none"> <li>• Hall door bypass switch cannot be active while the controller is not on either car top or in car inspection – Turn off Hall Door Bypass switch</li> <li>• If the hall door bypass switch is off – verify that the switch is off in memory. Navigate to Troubleshoot → Flags → Inspection Flags and look at the status of HDB. The flag is low if the switch is off and high if the switch is on.</li> <li>• If the switch status doesn't change and/ or is reflected incorrectly in memory – Change the P-MP Board; the switch may have failed.</li> </ul>
Heat Detector Tripped	Heat Sensor input has been activated. Refer to Pages 5 or 5b of the prints.	HSR = 1	<ul style="list-style-type: none"> <li>• Heat Detector input was or still is active triggering the Heat Detector mode of operation</li> <li>• Verify Heat Detector device operation if temperature is not above detection settings.</li> <li>• Verify the polarity of the input is set correctly. Navigate to Adjust→Car Performance→Fire Service Options→ Heat Sensor Input</li> <li>• Verify the state of the physical input using the Local Diagnostics. Navigate to the appropriate window depending on where the Input is mapped to, Troubleshoot→ Local Diagnostics, if input does not match voltage at input terminal try re-mapping the HSR input to an unused input if available or replace the Pixel board where the HSR input is mapped.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Heavy Load In Car	The load-weighing device indicates that the car is loaded to capacity. When a Heavy Load Condition is registered the Hall Calls are bypassed until the loaded condition is cleared.	HLI = 1	<ul style="list-style-type: none"> <li>• The HLI input is activated and the car will bypass hall calls, if the car is empty, verify the load weighing device configuration and operation.</li> <li>• For discrete load weighing unit, if there is no voltage on HLI – Ensure that HLI is low in memory. Go to Troubleshoot → Flags → Service Flags, if not low try remapping HLI input to an unused input if available or replace Pixel board where input is mapped.</li> <li>• For CAN Based Load Weighing unit, verify the settings for Heavy Load are programmed correctly, navigate to: Install→Initial Settings→Load Weighing Config, i.e. about 80% of full load capacity</li> <li>• Verify Load Weigh Readings to be in line with current load weight in the cab, if not in line refer to Pixel Controller manual Appendix C for Load weighing device Zero and recalibration processes</li> </ul>
High Overspeed	Car speed exceeded the programmed contract overspeed threshold.		<ul style="list-style-type: none"> <li>• The Car, while in Automatic operation, exceeded the contract overspeed threshold Verify that the High Speed trip speed is not set lower than the contract speed but rather is set to about 5% to 10% above contract speed setting, Navigate to Install→Initial Settings→Speed Profile→ Highspeed Trip Speed</li> <li>• Verify car is not overshooting contract speed during acceleration; Navigate to Troubleshoot →Drive→Drive Performance Data and observe that the measured speed does not reach the overspeed threshold value. If close to the threshold value decrease speed profile parameters Acceleration and Roll Over Jerk values and adjust drive response as needed to prevent car from overshooting contract speed</li> </ul>
Hoistway Access CGF is Open	The car cannot be commanded to move in Hoistway Access because the car gate front, CGF, is open and Access operation is assigned to bypass the rear gate and locks	CGF = 0 IA = 0 And Access Operation assigned to the rear doors	<ul style="list-style-type: none"> <li>• Verify the front car gate is closed</li> <li>• If closed verify CGF LED is on in the P-MPIO board, if is not on verify CGF wiring refer to pages 4 and 6b of the prints</li> <li>• If LED is on verify the CGF flag is active, Navigate to Troubleshoot → Flags →Door Flags, if not active in replace the P-MPIO board.</li> </ul> <p>Note: Access door operation assignment parameters can be adjusted by navigating to Install→Initial Settings→Hall Node Network (Top Access Node and Bottom Access Node)</p>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Hoistway Access CGR is Open	The car cannot be commanded to move in Hoistway Access because the car gate rear, CGR, is open and Access operation is assigned to bypass the front gate and locks	CGR = 0 IA = 0 And Access Operation assigned to the front doors	<ul style="list-style-type: none"> <li>• Verify the rear car gate is closed</li> <li>• If closed verify CGR LED is on in the P-MP-REAR board, if is not on verify CGR wiring refer to pages 4 and 6R of the prints</li> <li>• If LED is on verify the CGR flag is active, Navigate to Troubleshoot → Flags → Door Flags, if not active in replace the P-MP-REAR board.</li> <li>• Note: Access door operation assignment parameters can be adjusted by navigating to Install → Initial Settings → Hall Node Network (Top Access Node and Bottom Access Node)</li> </ul>
Hoistway Access DCAB is Open	The car cannot be commanded to move in Hoistway Access because the door close contact, DCAB, bottom is open, and the car is not within the bottom access zone.	DCAB = 0 IA = 0 And Car not within the bottom access zone	<ul style="list-style-type: none"> <li>• Verify the bottom access door close contact is closed</li> <li>• If closed verify DCAB LED is on in the P-MP-REAR board, if is not on verify DCAB wiring refer to page 4 of the prints</li> <li>• If LED is on verify the DCAB flag is active, Navigate to Troubleshoot → Flags → Door Flags, if not active in memory replace the P-MP-REAR board.</li> </ul>
Hoistway Access DCAT is Open	The car cannot be commanded to move in Hoistway Access because the door close contact, DCAT, top is open, and the car is not within the top access zone.	DCAT = 0 IA = 0 And Car not within the top access zone	<ul style="list-style-type: none"> <li>• Verify the top access door close contact is closed</li> <li>• If closed verify DCAT LED is on in the P-MP-REAR board, if is not on verify DCAT wiring refer to page 4 of the prints</li> <li>• If LED is on verify the DCAT flag is active, Navigate to Troubleshoot → Flags → Door Flags, if not active in memory replace the P-MP-REAR board.</li> </ul>
Hoistway Access DCSF is Open	The car cannot be commanded to move in Hoistway Access because the intermediate front door close contacts string, DCSF, is not closed	DCSF = 0 IA = 0	<ul style="list-style-type: none"> <li>• Verify all intermediate front door close contacts are closed</li> <li>• If closed verify DCSF LED is on in the P-MP-REAR board, if is not on verify DCSF wiring refer to page 4 of the prints</li> <li>• If LED is on verify the DCSF flag is active, Navigate to Troubleshoot → Flags → Door Flags, if not active in memory replace the P-MP-REAR board.</li> </ul>
Hoistway Access DCSR is Open	The car cannot be commanded to move in Hoistway Access because the intermediate rear door close contacts string, DCSR, is not closed	DCSR = 0 IA = 0	<ul style="list-style-type: none"> <li>• Verify all intermediate rear door close contacts are closed</li> <li>• If closed verify DCSR LED is on in the P-MP-REAR board, if is not on verify DCSR wiring refer to page 4 of the prints</li> <li>• If LED is on verify the DCSR flag is active, Navigate to Troubleshoot → Flags → Door Flags, if not active in memory replace the P-MP-REAR board.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Hoistway Access DLAB is Open	The car cannot be commanded to move in Hoistway Access because the door lock bottom, DLAB is open and the car is not within the bottom access zone.	DLAB = 0 IA = 0 And Car not within the bottom access zone	<ul style="list-style-type: none"> <li>• Verify the bottom access door lock contact is closed</li> <li>• If closed verify DLAB LED is on in the P-MPIO board, if is not on verify DLAB wiring refer to page 4 of the prints</li> <li>• If LED is on verify the DLAB flag is active, Navigate to Troubleshoot → Flags →Door Flags, if not active in memory replace the P-MPIO board.</li> </ul>
Hoistway Access DLAT is Open	The car cannot be commanded to move in Hoistway Access because the door lock top, DLAT is open and the car is not within the top access zone.	DLAT = 0 IA = 0	<ul style="list-style-type: none"> <li>• Verify the top access door lock contact is closed</li> <li>• If closed verify DLAT LED is on in the P-MPIO board, if is not on verify DLAT wiring refer to page 4 of the prints</li> <li>• If LED is on verify the DLAT flag is active, Navigate to Troubleshoot → Flags →Door Flags, if not active in memory replace the P-MPIO board.</li> </ul>
Hoistway Access DLSF is Open	The car cannot be commanded to move in Hoistway Access because the intermediate front door lock contacts string, DLSF, is not closed	DLSF = 0 IA = 0	<ul style="list-style-type: none"> <li>• Verify all intermediate front door lock contacts are closed</li> <li>• If closed verify DLSF LED is on in the P-MPIO board, if is not on verify DLSF wiring refer to page 4 of the prints</li> <li>• If LED is on verify the DLSF flag is active, Navigate to Troubleshoot → Flags →Door Flags, if not active in memory replace the P-MPIO board.</li> </ul>
Hoistway Access DLSR is Open	The car cannot be commanded to move in Hoistway Access because the intermediate rear door lock contacts string, DLSR, is not closed.	DLSR = 0 IA = 0	<ul style="list-style-type: none"> <li>• Verify all intermediate rear door lock contacts are closed</li> <li>• If closed verify DLSR LED is on in the P-MP-REAR board, if is not on verify DLSR wiring refer to page 4 of the prints</li> <li>• If LED is on verify the DLSR flag is active, Navigate to Troubleshoot → Flags →Door Flags, if not active in memory replace the P-MP-REAR board</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Hoistway Access Insp. Switch	SP1 and SP2 IA1 and IA2 inputs status are not the same or a top or bottom access command to move is active and access operation is not enabled and Refer to Pages 3, 7 and 9 of the prints	IA1 = 1 IA2 = 0 OR IA1 = 0 IA2 = 1 OR IA1=IA2= 1 and IATU or IATD or IABU or IABD is 1	<ul style="list-style-type: none"> <li>• Fault will be generated if access command to move is requested when the car is not in Inspection Access mode. If the fault is observed when trying to command the car to move, verify that the activation of the in-car access switch places the car on Inspection Access mode of operation.</li> <li>• Verify that the IA LED in the P-MPIO board turns off as the in-car access inspection switch is placed to access and Pixel mode of operation changes to access mode, verify switch wiring, and refer to pages 7 and 9 of the prints. If LED status does not match the switch position; replace the P-MPIO board.</li> <li>• If the fault clears as soon as the in car switch is place on access a command to move from one of the access hall nodes is being received, Navigate to Troubleshoot → Flags → Inspection Flags and verify that IA flag status follows the in car Access switch settings and do the same for the IATU, IATD, IABU and IABD, refer to page 9 of the prints for top and bottom access to access node boards wiring.</li> <li>• If the flag for IA is a color other than black or blue, then a mismatch exists when the Safety processors SP1 and SP2 read this input – Replace the P-MPIO Board</li> </ul>
Hoistway Access Out of Zone Fault	The car's current position is either above the Bottom Access Limit (BAL) or below the Top Access Limit (TAL) while in Access Inspection		<ul style="list-style-type: none"> <li>• If car inspections access zones are at the top and bottom landings zero out values for the Top and Bottom Access Marker parameters Navigate to Install→Learn Functions→Virtual Limits→TAM and BAM = 000.000 ft</li> <li>• Verify the Car's current position is within the BAL or TAL position and that their respective positions agree with job requirements</li> <li>• Press the Help pushbutton in the Virtual Limits window for a pictorial view of how-to setup these limits.</li> </ul>
Hoistway Door Bypass Switch	SP1 and SP2 HDB1 and HDB2 inputs are both on or both off simultaneously, Pixel monitors both sides of the switch status for. Refer to Page 3 of prints	HDB1 = 1 HDB2 = 1 OR HDB1 = 0 HDB2 = 0	<ul style="list-style-type: none"> <li>• Navigate to Troubleshoot → Flags → Inspection Flags and make sure that HDB is either black or blue</li> <li>• Verify the communication status for SP1 and SP2 by navigating to Troubleshoot → Controller Network → (SP1) and (SP2)</li> <li>• If the SP1 and SP2 processors still read the same status and are communicating correctly – Replace the P-MP Board; the switch may have failed. If they are not communicating correctly – Replace both the P-MP and P-MPIO Boards</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Hoistway Not Learned	The hoistway Position Learn has not been complete to allow the car to run on automatic mode. Verify all landing and virtual limit switches positions.		<ul style="list-style-type: none"> <li>• All landing positions have not been learned. <ul style="list-style-type: none"> <li>– Complete the hoistway Position Learn, refer to section 3.8 Hoistway Position Learn for tractions and hydraulics in the installation and adjustment manuals,</li> </ul> </li> <li>• Verify the learned DNL position is below the Bottom Landing learned position.</li> <li>• Verify the learned UNL position is above the TOP Landing learned position.</li> <li>• Verify each floor’s learned position has a learned position greater than the previous floor.</li> </ul>
Hoistway Safety String Open	Voltage lost to the SAFH Terminal on the P-MPIO Board or not making it to memory. The pit stop switch, buffer switch, or the up / down terminal switches are open. Refer to Pages3 of the prints	SAFH = 0 SAFC = 1	<ul style="list-style-type: none"> <li>• For Traction: The Up or Down Terminal Switches, the Buffer Switches, or the Pit Stop Switch is open. – Verify that full voltage is making it to SAFH. If it’s not, trace backwards until the voltage loss is found., refer to Page3 of the prints</li> <li>• For Hydro: Up Overtravel Limit, Plunger Following Guide (if required), Slack Cable (if required), or Pit Access Door (if required) may be open. – Verify that full voltage is making it to SAFH. If it’s not, trace backwards until the voltage loss is found, refer to Page3 of the prints</li> <li>• After confirming the SAFH terminal has 120VAC verify that the SAFH LED is lit, then navigate to Troubleshoot → Flags → Safety I/O Flags and ensure that SAFH is ON in memory. If the SAFH flag is low in memory – Replace the P-MPIO Board.</li> </ul>
Hot Oil Input Active	Hot Oil input has been activated. Refer to Pages 4 and 5 of the prints.	HOT = 1	<ul style="list-style-type: none"> <li>• Hot Oil input was or still is active triggering the Hot Oil mode of operation</li> <li>• Verify the Oil temperature</li> <li>• If the Oil is not hot, verify the state of the HOT input, if active verify that the oil temperature sensor works correctly.</li> <li>• Verify the polarity of the input is set correctly. Navigate to Adjust→Car Performance→Hydraulic Options→Hot Oil</li> <li>• Verify the state of the physical input using the Local Diagnostics. Navigate to the appropriate window depending on where the Input is mapped to, Troubleshoot→Local Diagnostics, if input does not match voltage at input terminal try re-mapping the HOT input to an unused input if available or replace the Pixel board where the HOT input is mapped.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Hydro ETS Up Overspeed	Car speed exceeded the learned terminal landing speed profile in the Up direction		<ul style="list-style-type: none"> <li>At the up-terminal slowdown, the car was travelling faster than the learned approach speed profile. If any changes were made that could affect the speed of the car – An ETS Learn in both directions must be completed. Navigate to Install→Learn Functions→ETS Learn</li> </ul>
Hydro ETS Down Overspeed	Car speed exceeded the learned terminal landing speed profile in the Down direction		<ul style="list-style-type: none"> <li>At the down-terminal slowdown, the car was travelling faster than the learned approach speed profile.</li> <li>If any changes were made that could affect the speed of the car – An ETS Learn in both directions must be completed. Navigate to Install→Learn Functions→ETS Learn Note: The ETS Down Overspeed is not required by code and can be disabled by navigating to Install→Initial Settings→Speed Profile→Down ETS Warning Count and set it to 0.</li> </ul>
I2C Bus Error	Communication error on the I2C bus for the Safety Processors.		<ul style="list-style-type: none"> <li>Perform a Computer Reset and verify the condition still exists. If the fault is still active – Replace the P-MPIO Board</li> </ul>
In-Car Inspection Switch	SP1 and SP2 IIC1 and IIC2 or IICE1 and IICE2 inputs status are not the same or IICE input is active and the car is not on In Car Inspection Mode Refer to Pages 3 and 7 of the prints	<p style="text-align: center;"> IIC1 = 1  IIC2 = 0  OR  IIC1 = 0  IIC2 = 1  OR  IICE1 = 0  IICE2 = 1  OR  IICE1 = 1  IICE2 = 0  OR  IIC = 1  IICE = 1 </p>	<ul style="list-style-type: none"> <li>If the Fault is generated when the car is not In Car Inspection Mode, verify that IICE, LED is off on the P-MPIO board and IICU and IICD LEDs are off on the P-COP board, refer to pages 3 and 7 of the prints.</li> <li>If fault is observed while commanding the car to move, verify the IIC LED status on the P-MPIO board is off as the in-car inspection switch is placed to Inspection.</li> <li>If the fault persists, Navigate to Troubleshoot → Flags → Inspection Flags and verify that IIC and IICE, IICU, and IICD follow their respective switch setting, refer to page7 of the prints, if IIC and IICE do not follow replace the P-MPIO board or if the IICU or IICD do not follow replace the P-COP board.</li> <li>If the flags for IIC or IICE are a color other than black or blue, then a mismatch exists when the Safety processors SP1 and SP2 read these inputs, replace the P-MPIO board</li> </ul>



Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Inspection Up and Down	Both inspection up and down are active at the same time for one or more modes of inspection operation, refer to pages 3, 6, and 7 of the prints	ICTU = 1 ICTD = 1 OR IICU = 1 IICD = 1 OR IATU = 1 IATD = 1 OR IABU = 1 IABD = 1 OR IMRU = 1 IMRD = 1	<ul style="list-style-type: none"> <li>• Verify which inspection signals are active when the fault condition occurs – Navigate to Troubleshoot → Flags → Inspection Flags.</li> <li>• Verify wiring/inspection switches, refer to pages 3, 6, and 7 of the prints, verify whether the issue goes away if the wire in question is removed (car top inspection up/ ICTU for example)</li> <li>• If the flag goes low when the wire is removed – Then the issue is in the field wiring. Could be a stuck button or a button failure.</li> <li>• If the flag does not go low when the wire is removed replace the Pixel board where input is connected.</li> </ul>
Inspection Overspeed	Car speed exceeded the programmed inspection overspeed threshold during an Inspection Run		<ul style="list-style-type: none"> <li>• The Car, while running on Inspection operation, exceeded the overspeed threshold</li> <li>• Verify that the inspection trip speed (Default 100fpm) isn't set lower than the inspection speed. Navigate to Install → Initial Settings → Speed Profile → Inspection Trip Speed.</li> <li>• If the Controller is a Hydraulic System and has the High Speed on inspection Option enabled, Pixel will use the High-Speed Trip Speed instead of the inspection trip</li> <li>• Navigate to the speed profile as shown above, then verify / adjust the Car's High-Speed Trip Speed settings.</li> </ul>
IO Mapping File Corrupted	Data integrity error has been detected with the IO Mapping file, reset P-MP board or re-enter all job programmable Inputs and Outputs.		<ul style="list-style-type: none"> <li>• Navigate to Install → File Transfer → System Restore and try reloading a previously saved IO Mapping file to the P-MP.</li> <li>• Navigate to Install → File Transfer → IO Mapping Download and try reloading a previously saved IO Mapping file to the P-MP</li> <li>• If no previously saved file is available, contact Elevator Controls Technical Support for the default IO Mapping for the specific job or navigate to the IO Mapping Window Install → IO Mapping) and remap all job programmable IO(s)</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Leveling Overspeed	Car speed exceeded the programmed Leveling Overspeed threshold while leveling or Releveling into a landing		<ul style="list-style-type: none"> <li>• The Car, while in Automatic operation, exceeded the leveling overspeed threshold, verify that the leveling trip speed (default 100fpm) isn't set lower than the speed of the car as it enters the leveling zone from an automatic run</li> <li>• Navigate to Install→Initial Settings→Speed Profile→Leveling Trip Speed.</li> <li>• <i>Note:</i> Leveling overspeed condition usually occurs while the car enters the Leveling Zone. Decreasing the Deceleration parameter value allows for lower speeds while entering the Leveling Zone</li> </ul>
Load Weigh Communication	Unable to establish communications between Load Weigh Device and the Pixel, verify wiring from the TOC or the P-TB-C board to Load Weigh Device. Refer to Page QR3 or QR4 of the prints		<ul style="list-style-type: none"> <li>• Verify Load Weigh Device is powered ON</li> <li>• Verify Communication wiring; refer to Page QR3 or QR4 of the prints.</li> <li>• Verify Load Weigh Device Communication Baud rate is set to 125kbps on the device itself., Navigate to: Install→Initial Settings→Load Weighing Config to verify load weighing parameter settings</li> </ul>
Load Weigh Error	Both inputs Light Load and Heavy Load Input are simultaneously active, refer to page 6 of the prints	HLI = 1 LLI = 1	<ul style="list-style-type: none"> <li>• Verify the load weigh device operation</li> <li>• If the Load Weigh Device is a CAN based device, verify the Heavy Load and Light Load settings are set correctly, about 80% and 20% of full load, Navigate to Install→Initial Settings→Load Weighing Config</li> <li>• If the Load Weigh Device is dry contact based, Navigate to Troubleshoot→Flags→Services Flags to verify the status of HLI and LLI inputs in memory, if both inputs are active remove field wiring, if condition remains, try re-mapping one or both inputs to unused inputs if available or replace the Pixel board where the inputs are mapped.</li> </ul>
Logical Physical IO Map	The Pixel I/O Mapping file either did not load properly during power up or it did not save properly during a recent update to the I/O Mapping file		<ul style="list-style-type: none"> <li>• Perform a Computer Reset on the Pixel Controller</li> <li>• If the fault still occurs, reload the saved IO Mapping File to the Pixel Controller. Navigate to Install→File Transfer→System Restore or IO Mapping Upload</li> <li>• If no previously saved file is available, contact Elevator Controls Technical Support for the default IO Mapping for the specific job or navigate to the IO Mapping Window Install → IO Mapping) and remap all job programmable IO(s)</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Low Oil Input Active	Low Oil input has been activated. Refer to Page 5 of the prints.	LOIL = 1	<ul style="list-style-type: none"> <li>• Low Oil input was or still is active triggering the Low Oil mode of operation</li> <li>• Verify Low Oil device operation</li> <li>• Verify the polarity of the input is set correctly. Navigate to Adjust→Car Performance→Hydraulic Options→ Low Oil Input</li> <li>• Verify the state of the physical input using the Local Diagnostics.</li> <li>• Navigate to the appropriate window (depending on where the Input is mapped to) Troubleshoot→ Local Diagnostics</li> <li>• If input does not match voltage at input terminal try re-mapping the LOIL input to an unused input, if available, or replace the Pixel board where the LOIL input is mapped, refer to page5 of the prints</li> </ul>
Low Pressure Switch Active	Low-pressure input has been activated. Refer to Page 5 of the prints.	LPS = 0	<ul style="list-style-type: none"> <li>• Low Pressure input was or still is active triggering the Low-Pressure mode of operation</li> <li>• Verify Low Pressure device operation</li> <li>• Verify the state of the physical input using the Local Diagnostics.</li> <li>• Navigate to the appropriate window (depending on where the Input is mapped to) Troubleshoot→ Local Diagnostics</li> <li>• If input does not match voltage at input terminal try re-mapping the LPS input to an unused input, if available, or replace the Pixel board where the LPS input is mapped, refer to page5 of the prints.</li> </ul>
LWD Re-Cal failure	Load Weigh Device has failed the recalibration process. A manual auto-zero process must be performed. Verification of the Load Weighing device must be performed.		<ul style="list-style-type: none"> <li>• Verify the Car is at the Bottom landing, place the Pixel Controller on Test. Navigate to Install→Learn Functions→Load Weighing Learn→Load Weighing Readings, and press an Auto Zero soft key pushbutton to perform auto-zero.</li> <li>• Place known weights inside the cab and verify it agrees with Pixel Controller display values navigating to: Install→Learn Functions→Load Weighing Learn→Load Weighing Readings. If reading does not agree a load weighing verification may need to be performed, refer to Appendix C of the controller manual for directions.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Main Cedes Checksum Error	CEDES APS Sensor response fails the Pixel Checksum Integrity Check. Verify the connection from the device to P-TOC is correct; refer to page 6 CEDES APS of the prints.		<ul style="list-style-type: none"> <li>• Verify the connection between the CEDES APS Sensor and the P-TOC board is correct. Refer to page 6 CEDES APS of the prints.</li> <li>• After verifying the connection is correct, interchange the Main and Auxiliary connection on the CEDES APSC and confirm on the View Selector Data Window (Install→View Selector Data) that the fault is now displayed on the Auxiliary data.</li> <li>• If the fault does not move to the Auxiliary device, then replace the Main Cedes P-HNA board.</li> <li>• If the fault does move to the Auxiliary device, replace the CEDES APS Sensor.</li> </ul>
Main Cedes Unit Position Error	CEDES APS Sensor cannot read the code tape correctly. Clean the optical window, code tape, and verify the alignment of sensor with the code tape.		<ul style="list-style-type: none"> <li>• Clean the optical window on the CEDES APS Sensor device.</li> <li>• Clean the coded tape from any dust or grease.</li> <li>• Verify the alignment of the device is centered to the coded tape. Be sure to use the position indicators on the device to verify alignment, refer to Appendix E of Controller manual.</li> <li>• If the fault does not clear, replace the CEDES APS Sensor device</li> </ul>
M. Landa & A. Landa Units Swapped	The Main Selector cable is attached to the Aux Selector connector on the P-TOC Board, and vice versa		<ul style="list-style-type: none"> <li>• The Aux. Landa Unit is physically connected to the Main Landa Unit connection (JMSEL on the P-TOC) is reporting a higher position than the Landa Unit connected to the Auxiliary Landa Unit position (JASEL on the P-TOC)</li> <li>• Swap the JMSEL and the JASEL plugs on the P-TOC Board. The Main Landa Unit should be at the bottom &amp; the Auxiliary Landa Unit should be at the top of the Landa Bracket. Refer to Page 6b of the prints.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Machine Rm Inspection Switch	<p>Machine Room Inspection Enable Input IMRE is active but IMR1 and IMR2 state NOT for Machine Room Inspection.</p> <p style="text-align: center;">OR</p> <p>SP1 and SP2 do agree on switches status for the Machine Room Inspection and/ or Machine Room Inspection Enable. Refer to Page 3 of prints</p>	<p>IMR = 0  IMRE = 1  OR  IMR1 = 1  IMR2 = 0  OR  IMR1 = 0  IMR2 = 1  OR  IMRE1 = 1  IMRE2 = 0  OR  IMRE1 = 0  IMRE2 = 1</p>	<ul style="list-style-type: none"> <li>• Verify the flags IMR and IMRE change state accordingly. Navigate to Troubleshoot → Flags → Inspection Flags and verify that IMR and IMRE are both in the same state when both are activated.</li> <li>• If they are both high – Verify that they go low when deactivated</li> <li>• If they do not go low – Replace both the P-MP and P-MPIO Board.</li> <li>• If the flags for IMR or IMRE are a color other than black or blue, then a mismatch exists when the Safety processors SP1 and SP2 read these inputs – Replace both the P-MP and P-MPIO Board.</li> </ul>
Main Aux Landa Mismatch	<p>Both the Main and the Auxiliary Landa Sensor Units read positions that deviate above learned offset distance between the two sensor units</p>		<ul style="list-style-type: none"> <li>• Verify both Landa Sensor Units' mechanical placement on top of the car</li> <li>• Perform a Landa Tape Reader Offset learn.</li> <li>• Navigate to Install → Learn Functions → Virtual Limits → Tape Reader Offset.</li> <li>• Press Learn / Save when Tape Reader Offset is highlighted</li> </ul>
Main Landa unit Bad Integrity Data	<p>Bad/Corrupted data packets from the Main Landa unit are being received.</p>		<ul style="list-style-type: none"> <li>• Verify the wiring of the Main Landa Sensor Unit for data and shield wires. Refer to page 6b of the prints.</li> <li>• Replace Main Landa wire harness to the TOC and verify operation, continue with steps below if problem persist.</li> <li>• Replace Main Landa Sensor Unit and verify operation, continue with step below if problem persist</li> <li>• Replace P-TOC board</li> </ul>
Main Landa Unit Completely Off Rail	<p>The Landa Tape is not aligned inside the Main Landa sensor unit; refer to page QR5 of the prints for tape installation directions.</p>		<ul style="list-style-type: none"> <li>• Main Landa Sensor Unit is misaligned and is unable to read positional data. Verify Main Landa Sensor Unit alignment.</li> <li>• Ensure that the tape is straight though the entire length of the hoistway and that is braced at appropriate intervals to prevent excessive drift.</li> <li>• Navigate to Install → View Selector Data Window and verify the Landa tape alignment while running on Inspection the entire length of the hoistway. If properly align replace the Main Landa Sensor Unit. Refer to page QR5 of the prints for tape installation directions.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Main Landa Unit has Invalid Data	Main Landa Sensor unit is constantly reading a position of 0.00ft, Refer to page QR5 of the prints for Landa tape installation directions.		<ul style="list-style-type: none"> <li>• Navigate to Install→View Selector Data Window and verify if the Main Landa sensor unit reads a position of 0.00ft</li> <li>• If the position is 0.00ft, verify that the Landa tape is installed properly by ensuring that the arrows on the Landa tape are pointing in the UP direction.</li> <li>• If pointing down Landa tape is hanging upside down and needs to be flipped.</li> <li>• If arrows are located to run inside sensor unit, tape is backwards and needs to be turned. i.e. arrows need to be away from sensor unit reading area.</li> <li>• Refer to page QR5 of the prints for tape installation directions</li> </ul>
Main Landa Unit Can't Read Pos. A Or Can't Read Pos. B  (Pos. A: Main Landa Unit Lost 1) or (Pos. B: Main Landa Unit Lost 2)	Main Landa Sensor Unit cannot calculate the current position, clean sensor unit reading area and verify it is free from scratches, if scratched replace sensor unit.		<ul style="list-style-type: none"> <li>• Clean the optical unit of any possible dirt.</li> <li>• Verify the direction of reading relative to code rail is correct</li> <li>• Verify the wire harness connection between the Landa unit and the P-TOC board is secured tightly</li> <li>• Verify that the plastic liner is not scratched; if it is then the unit must be replaced.</li> </ul>
Main Landa Unit Partially Off Rain	The Landa Tape is partially misaligned inside the Main Landa Sensor unit; refer to page QR5 of the prints for tape installation directions.		<ul style="list-style-type: none"> <li>• Main Landa Sensor unit is partially misaligned and is unable to read positional data. Verify the Main Landa Sensor unit alignment.</li> <li>• Ensure that the tape is straight though the entire length of the hoistway and that is braced at appropriate intervals to prevent excessive drift. Refer to page QR5 of the prints for tape installation directions.</li> <li>• Navigate to Install→View Selector Data Window and verify the Landa alignment while running on Inspection the entire length of the hoistway. If properly align replace the Auxiliary Landa Sensor unit</li> </ul>
Main Landa Unit Checksum Error  (Main Landa Unit Read Data Error)	The CRC of the data packet did not match the calculated CRC; Bad/Corrupted data packets from the Main Landa Unit are being received.		<ul style="list-style-type: none"> <li>• Verify the wiring of the Main Landa Sensor unit for data and shield wires. Refer to Page 6b of the prints.</li> <li>• Replace Main Landa wire harness to the TOC and verify operation, continue with steps below if problem persist.</li> <li>• Replace Main Landa Sensor unit and verify operation, continue with step below if problem persist</li> <li>• Replace P-TOC board</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Motor Limit Timeout	The car exceeded the maximum time allowed to complete a run and was shut down to prevent motor damage		<ul style="list-style-type: none"> <li>• Default Motor Limit Timer Value is 3.00 min. Verify that the timer has not been adjusted to a value that is too low. Navigate to Adjust→ Car Performance→ Timers→ Controller Timers→Motor Limit Timer. Increase as necessary to allow time a complete top to bottom run plus 25%.</li> <li>• If the timer is set correctly verify <ul style="list-style-type: none"> <li>a. Motor rotation and starter interface wiring</li> <li>b. Verify Valves circuits and voltages.</li> <li>c. Inch the car up and down at several landings, including the top and bottom, landings to make sure is able to relevel</li> </ul> </li> <li>• Navigate to Troubleshoot→Event Logs → Event Playback → Standard DDR Event Play Back, to play back and analyze data collected and stored by Pixel that led to the triggering of this event.</li> <li>• If problem occurs while releveling a bad contact of the EB1-EB2 or EBX1-EBX2 relays may be preventing the U or D relay coil from energizing. Refer to Page 5 of the prints. Replace EB1-EB2 and EBX1-EBX2 relays</li> </ul>
MP Board Settings CRC	The P-MP Board IP Settings are Invalid.		<ul style="list-style-type: none"> <li>• Navigate to Install→File Transfer→Board Settings and perform a default on the P-MP board. Note that this will require a Computer Reset after executing the default command.</li> <li>• If the fault continues after the Computer Reset – Replace the P-MP Board.</li> </ul>
MP Firmware CRC Fault	MP Internal Flash CRC did not pass, perform a USB MP software upgrade.		<ul style="list-style-type: none"> <li>• If after a software update the fault persists – Replace the P-MP Board.</li> </ul>
MP Invalid Configuration	The current configuration file on the P-MP is invalid.		<ul style="list-style-type: none"> <li>• Navigate to Install→File Transfer→ System Configuration Download and try reloading a previously saved configuration file to the P-MP.</li> <li>• Or navigate to Install→File Transfer→ System Restore and try reloading a previously saved configuration file to the P-MP.</li> <li>• If no previously saved configuration file is available, contact Elevator Controls Technical Support for the default configuration for this job.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Pattern Error	Pattern Error is caused when Acceleration and Jerk parameters are set to values that will not allow Pixel to generate continuous speed pattern curve		<ul style="list-style-type: none"> <li>• There is an issue with the parameters entered into the speed profile – Refer to Section 4.6 of the Pixel Manual for allowed Acceleration and Jerk parameters range values.</li> <li>• Navigate to Adjust→Ride Performance→Speed Profile and verify parameter settings</li> </ul>
P Contactor Fault	The Po contactor output state is off but its monitored contact did not close or Po output state is on but its monitored contact did not Open, P Contactor failed to pick, drop, or it has a bad Auxiliary Contact, verify contact wired to the Pin input and Po contactor output triacs; refer to Page 4 of prints	<p>Po = 0 Pin = 0 OR Po = 1 Pin = 1</p>	<ul style="list-style-type: none"> <li>• Verify the P Auxiliary Contacts, if loaded, are properly seated</li> <li>• Manually actuate the P contactor and observe the Pin input LED on the P-MPIO board turns off as contactor is pressed and turns on when released.</li> <li>• Verify the operation of the Pin input on the P-MPIO Board – Navigate to Troubleshoot→Flags →Safety I/O Flags and observe the Pin flag changing states in memory when the P motor contactor is manually actuated.</li> <li>• If the Pin flag doesn't change state in memory, but it does change state on the P-MPIO status LED – Replace the P-MPIO Board</li> <li>• If Pin flag does change state in memory and it matches the LED status – Navigate to Troubleshoot→Flags →Safety I/O Flags observe the Po output flag to match the Po output status LED on the P-MPIO, if it does not replace Po output triacs Q2 and Q3 on the P-MPIO Board and repeat this step.</li> <li>• If step above did not fix the problem, Replace the P-MPIO Board</li> </ul>
Pit Flood Operation Complete	The Pit Flood input has been activated and the car is now at the Pit Flood recall landing.	PITI = 1	<ul style="list-style-type: none"> <li>• Pit Flood input was or still is active latching the Pit Floor recall operation</li> <li>• Verify that the pit is not flooded.</li> <li>• If the pit is not flooded, verify the state of the PITI input if active, verify that the pit flood switch works correctly (measure 24VDC voltage when active, and remove the wire from PITI and see if the input goes low).</li> <li>• If PITI is low – Reset the condition by pressing System Fault Reset push button</li> </ul>
Plunger Input Active	The Plunger input has been activated	PLUNGER = 1	<ul style="list-style-type: none"> <li>• Plunger input was or still is active latching the Plunger input status</li> <li>• Verify and correct the Plunger mechanical operation</li> <li>• If PLUNGER input is low – Reset the condition by pressing System Fault Reset push button</li> </ul>



Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
<p>Rear Door Bounced At Floor XX {XX = Landing number}</p>	<p>The rear door bounced open while the car was taking off from a floor on an automatic run</p>	<p>SDI Pattern = Soft Start H = 1 HI = 1  AND  CGR = 0 DLKR = 1 OR CGR = 1 DLKR = 0 OR CGR = 0 DLKR = 0  *DLKR flag comprises the Status of All the Rear Door Locks and Rear Door Close Contacts when the door option is configured to Freight or Manual door.</p>	<ul style="list-style-type: none"> <li>DLKR or CGR dropped momentarily during takeoff. Navigate to Troubleshoot→Event Logs→Event Playback→Standard DDR Event Log and review the door flags for this fault to confirm which of the door signals dropped during take off</li> <li>At the floor number displayed in the fault, verify the door closing adjustments prevent any door bouncing from a slammed closing</li> <li>Verify that doors don't roll back or relax open on takeoff.</li> </ul>
<p>Rear Door Clipped At Floor XX {XX = Landing number}</p>	<p>The rear car gate or one of the interlocks clipped, while the car was travelling in high speed</p>	<p>H = 1 HI = 1  AND  CGR = 0 DLKR = 1 OR CGR = 1 DLKR = 0 OR CGR = 0 DLKR = 0  *DLKR flag comprises the Status of All the Rear Door Locks and Rear Door Close Contacts when the door option is configured to Freight or Manual door</p>	<ul style="list-style-type: none"> <li>DLKR or CGR dropped momentarily while traveling on high-speed. Navigate to Troubleshoot→Event Logs→Event Playback→Standard DDR Event Log and review the door flags for this fault to confirm which of the door signals dropped during the run</li> <li>At the floor number displayed in the fault, verify door clearances as the car travels through the hoistway.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Rear Door Limit Switches	<p>The rear door open limit and door closed limit are both low at the same time.</p> <p>Rear Door limits valid states:            Door Fully Open            DOLR = 0, DCLR = 1</p> <p>Door Fully Closed            DOLR = 1, DCLR = 0</p> <p>Door Partially Close-Open            DOLR = 1, DCLR = 1</p>	<p>DOLR = 0            DCLR = 0</p>	<ul style="list-style-type: none"> <li>• DOLR and DCLR are both low in memory – Verify the current position of the doors/ verify the status of the door limits on the door operator.</li> <li>• If the door operator limits are in the correct state – Verify that the door limit signals are reflected correctly on the P-TOC board terminals DOLR and DCLR</li> <li>• If the door limits are not displayed correctly on the TOC Board – Correct/verify the door limit wiring/ setup.</li> <li>• Also verify that the rear door limits are mapped correctly per the print.</li> <li>• If the DOLR and DCLR signals seem correct on the P-TOC board – Verify that they match in memory. Navigate to Troubleshoot→Flags→Door Flags</li> <li>• If the door limits status on the TOC and their status in memory does not match – Then the DOLR/ DCLR inputs could be damaged. Replace the P-TOC Board or the board the inputs are mapped to.</li> </ul>
Rear Door Locks Fault	<p>The rear door open limit is open; indicating that the doors are fully open, but either the rear car gate or rear hoistway door locks are still closed.</p>	<p>DOLR = 0            CGR = 1            DLKR = 0            OR            DOLR = 0            CGR = 0            DLKR = 1            OR            DOLR = 0            CGR = 1            DLKR = 1</p>	<ul style="list-style-type: none"> <li>• The car gate, the door lock, or both didn't open – Verify status of DOLR, DLKR &amp; CGR. Navigate to Troubleshoot→Flags→Door Flags and Figure out which flag is in the wrong state.</li> <li>• Verify that the door contacts are open by ensuring that there is no voltage on CGR or the door lock contact for that floor Refer to Page 4 of the prints</li> <li>• If there is no voltage but it stays high in memory – Replace either the P-MPIO Board or P-MP-REAR Board.</li> </ul>
Rear Door Not Fully Closed	<p>The rear door close limit is closed while the doors are locked.            OR            The rear door close limit is open, but either the car gate or door lock is not closed.</p>	<p>CGR = 1            DLKR = 1            DCLR = 1            OR            CGR = 0            DLKR = 1            DCLR = 0            OR            CGR = 1            DLKR = 0            DCLR = 0</p>	<ul style="list-style-type: none"> <li>• Either the rear door close limit, the car gate closed contact, or a hoistway door closed contact is in the incorrect state. – Verify which state the doors are in. Navigate to Troubleshoot→Flags→Door Flags. Verify and correct whichever flag isn't in the correct state.</li> <li>• Verify that the door contacts are closed by ensuring that there is voltage (120VAC) on CGR and the door lock contacts, refer to Page 4 of the prints</li> <li>• If there is voltage but corresponding input(s) stay low in memory – Replace the P-MP-REAR Board</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Rear PHE Cycle Test Failed	Rear Photo Eye has failed its cycle test, test performed after the door has reached its fully opened position and before door closing starts	PHETR = 1 PHER = 0 PEMR = 0 OR PHETR = 1 PHER = 0 PEMR = 1 OR PHETR = 1 PHER = 1 PEMR = 0	<ul style="list-style-type: none"> <li>• Verify the PHETR output picks the PHETR relay and verify both the PHER and the PEMR inputs come in when the PHETR relay is picked. Refer to Pages 6B and 6R of the prints</li> <li>• Verify that the Inputs, PHER and PEMR, and Output, PHETR, are mapped correctly in the Pixel System. Navigate to Install→IO Mapping.</li> <li>• <b>Test information detail:</b> Prior to the door closing PHETR output will be turned on to signal door operator to test the reopening device. Pixel will wait for about 5 seconds for PHER and PEMR inputs to become active to terminate or fail the test.</li> </ul>
Rear PHE Fault	PHER input remained high for more than the programmed Photo Eye Fail Timer value	PHER = 1 Photo Eye Fail Timer Expired	<ul style="list-style-type: none"> <li>• Verify the PHER input is not stuck in the high state by disconnecting the field wire from its assigned location and viewing the status by navigating to Troubleshoot→Flags→Door Flags</li> <li>• Verify the Photo Eye Fail Timer is not set too short (default value of 5 minutes)</li> <li>• Navigate to Adjust→Car Performance→Timers→Rear Door Timers→Photo Eye Fail</li> </ul>
Re-Leveling Down	The car is repositioning Down into door zone center after being bounced up out of position, people walking in and out of car/ rope stretch		<ul style="list-style-type: none"> <li>• Verify oil is not leaking or bypassing the valves packings.</li> <li>• Adjust the Releveling Timeout value to allow the car to settle before declaring the need to relevel. This helps for cases when people are walking in and out of the car.</li> <li>• Adjust the Releveling Offset. This will give the car a push more towards the center of the Door Zone.</li> <li>• If the Car is arriving to the floors correctly and not over/under shooting the floor, increase the Dead Zone.</li> <li>• All speed control parameters can be found by navigating to Adjust →Ride Performance→Speed Profile</li> <li>• Refer to controller manual for traction section 4.6 and for hydraulic to section 4.7 for detailed information on speed profile parameters description and adjustments</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Re-Leveling Up	The car is repositioning Up into door zone center after being bounced down out of position, people walking in and out of car/ rope stretch		<ul style="list-style-type: none"> <li>• Verify oil is not leaking or bypassing the valves back to the tank reservoir.</li> <li>• Adjust the Releveling Timeout value to allow the car to settle before declaring the need to relevel. This helps for cases when people are walking in and out of the car.</li> <li>• Adjust the Releveling Offset. This will give the car a push more towards the center of the Door Zone.</li> <li>• If the Car is arriving to the floors correctly and not over/under shooting the floor, increase the Dead Zone.</li> <li>• All speed control parameters can be found by navigating to Adjust → Ride Performance → Speed Profile</li> <li>• Refer to controller manual for traction section 4.6 and for hydraulic to section 4.7 for detailed information on speed profile parameters description and adjustments</li> </ul>
Retiring Cam Failure	The retiring cam while picked is failing to lock the doors. The retiring cam RCO output is on, and the retiring cam timeout allowed for locking the door has expired.	RCO = 1 DLK = 0 And Retiring Cam Timer Expired	<ul style="list-style-type: none"> <li>• If DLK goes high when the retiring cam is picked – Ensure that the retiring cam picks when RCO is high.</li> <li>• Verify setting of Retiring CAM timer, (default value of 10 seconds)</li> <li>• Navigate to: Adjust → Car Performance → Timers → Flags → Front Door Timers → Retiring Cam Timer</li> <li>• If DLK doesn't go high when the retiring cam is picked – Verify the status of the door flags. Navigate to Troubleshoot → Flags → Door Flags.</li> <li>• Compare the status of the flags with the inputs shown on Page 4 of the prints. Verify which flag is stopping DLK from making up to help identify problem.</li> </ul>
RP Sensor Drop Fault	The controller is powered up, but the RP Sensor monitored contact is not closed to feed voltage to the RGOK terminal. Refer to Pages 2 and 3 of the prints	RGOK = 0 RG = 1 RGBP = 0 Not on Battery Lowering  OR  RGOK = 0 RG = 0 RGBP = 1 Not on Battery Lowering (Hydraulic Only)	<ul style="list-style-type: none"> <li>• Verify three phase power into controller is within 10% range, refer to page 1 of prints.</li> <li>• Verify reverse phase sensor unit is not tripped, if tripped; verify that fuse FGP1 is good, if fuse is good adjust the RP sensor voltage setting before replacing the RP sensor unit.</li> <li>• If problem remains may need to swap two lines from incoming power to get the reverse phase sensor to pick.</li> <li>• Note: If input lines were swapped, verify motor rotation.</li> <li>• If RP Sensor is active, verify RGOK input LED on the P-MPIO board to be on and its status match Pixel flag status, Navigate to Troubleshoot → Flags → Safety I/O Flags</li> <li>• If RGOK is high on the P-MPIO Board, but low in memory – Replace the P-MPIO Board.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Security Codes Invalid	Security codes read from internal flash are invalid.		<ul style="list-style-type: none"> <li>• If Security Codes have been previously saved to a USB, reload saved security codes into Pixel, and perform a Computer Reset. Insert USB with the Security Codes and navigate to Install→File Transfer→Security Restore.</li> <li>• If the above does not work, a new set of codes needs to be entered utilizing the Security Floor Setup window (Adjust→Car Performance→Functional Options→Security→Floor Setup).</li> <li>• Note: A Computer Reset is required to load the Security Codes and verify the fault condition no longer exists. If the condition still exists replace the P-MP Board.</li> </ul>
Serial COP Comm. Loss	Communication to serial COP interface has been lost.		<ul style="list-style-type: none"> <li>• Verify the wiring between the P-COP board (Connector JCOP/JCOP1) and the Serial COP fixture for data and shield wires Refer to Pages 7 or 7R of the prints</li> <li>• If there is no Serial COP, verify the option is disabled. Navigate to Install →Basic Pixel Settings →COP Touchscreen Option and set it to “None”</li> </ul>
Service Request	Service Timer has expired and needs to be renewed		<ul style="list-style-type: none"> <li>• Navigate to Install→Initial Settings→Password Access and enter the service request password</li> </ul>
Slowdown Overspeed	Car speed exceeded the learned terminal landings speed profile, perform a new slowdown speed learn if any speed parameters have been modified		<ul style="list-style-type: none"> <li>• At a terminal slowdown, the car was travelling faster than the learned approach speed profile.</li> <li>• If any changes were made that could affect the speed of the car – An ETS Learn in both directions must be completed. Navigate to Install→Learn Functions→ETS Learn</li> </ul>
SP1 Aux Selector Comm Failed	Unable to establish communications between the SP1 and the Auxiliary Landa Sensor Unit, verify traveler wiring from the Controller to TOC and the TOC to Landa. Refer to pages 6 & 6b of the prints		<ul style="list-style-type: none"> <li>• Verify Auxiliary Selector Status Good versus Bad counts. Navigate to Troubleshoot→Controller Network→Auxiliary Selector</li> <li>• If there are more Bad counts versus Good counts, verify traveler wiring from controller to TOC and from the TOC to Landa.</li> <li>• If there are Good Counts only – Replace the P-MPIO Board.</li> </ul>
Landa Aux. Sensor Unit Fault (SP1 Aux Vend. Fault)	Safety Processors are reporting a fault being generated by the Auxiliary Landa Sensor Unit		<ul style="list-style-type: none"> <li>• Navigate to Install→View Selector Data and verify which of the faults is being reported.</li> <li>• If no faults are being reported – Replace the P-MPIO Board.</li> <li>• If a fault is being reported seek guidance under Fault Message description in this document</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
SP1 Both Main Aux Sel Fault  (SP1 Both Main and Aux Vend Fault)	Safety Processors are reporting a fault being generated by the Main and Auxiliary Landa Sensor Units		<ul style="list-style-type: none"> <li>• Navigate to Install→View Selector Data and verify which of the faults is being reported.</li> <li>• If no faults are being reported – Replace the P-MPIO Board.</li> <li>• If a fault is being reported seek guidance under Fault Message description in this document</li> </ul>
Landa Main Sensor Unit Fault  (SP1 Main Vend. Fault)	Safety Processors are reporting a fault being generated by the Main Landa Sensor Unit		<ul style="list-style-type: none"> <li>• Navigate to Install→View Selector Data and verify which of the faults is being reported.</li> <li>• If no faults are being reported – Replace the P-MPIO Board.</li> <li>• If a fault is being reported seek guidance under Fault Message description in this document</li> </ul>
SP1 Comm. Failed	Unable to establish SPI Communications between the P-MP and the SP1		<ul style="list-style-type: none"> <li>• Navigate to Troubleshoot→ Controller Network and select SP1 to verify communications good counts.</li> <li>• Navigate to Troubleshoot→About and verify the SP1 Software Version Number is not 0.0.0.0.</li> <li>• If there are no good counts or the Version Number is 0.0.0.0, perform an individual software update to the SP1.</li> <li>• If the fault continues – Replace P-MPIO Board.</li> </ul>
SP1 Invalid Configuration	The current configuration file for the Safety Processors is invalid. Perform a Safety Configuration Upload		<ul style="list-style-type: none"> <li>• Navigate to Install → File Transfer (must be on Construction or Machine Room Inspection to enable)</li> <li>• Wait for the 10 second count down to complete</li> <li>• Select Safety Configuration Upload and perform a Transfer.</li> <li>• Once the Transfer is complete, hit the home button</li> <li>• If the Fault remains, replace the P-MPIO Board.</li> </ul>
SP1 Main Selector Comm.  (SP1 Main Sel Fault)	Unable to establish communications between the SP1 and the Main Landa Sensor Unit, verify traveler wiring from the Controller to TOC and from the TOC to Landa. Refer to Pages 6 and 6b of the prints		<ul style="list-style-type: none"> <li>• Verify Main Selector Status Good versus Bad counts. Navigate to Troubleshoot→Controller Network→Main Selector</li> <li>• If there are more Bad counts versus Good counts, verify traveler wiring from controller to TOC and from the TOC to Landa.</li> <li>• If there are Good Counts only – Replace the P-MPIO Board.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
SP1 Landa Main Sensor Unit Fault  (Landa Main Sensor Unit)	SP1 Safety Processors is reporting a fault being generated by the Main Landa Sensor Unit		<ul style="list-style-type: none"> <li>• Navigate to Install → View Selector Data and verify which of the faults is being reported.</li> <li>• If no faults are being reported – Replace the P-MPIO Board.</li> <li>• If a fault is being reported seek guidance under Fault Message description in this document</li> </ul>
SP MP Configuration Mismatch  (SP1 MP Configuration Mismatch)	The main processor configuration file does not match the configuration file on the safety processors. Perform a Safety Configuration Upload.		<ul style="list-style-type: none"> <li>• SP and MP Configuration files do not match</li> <li>• Navigate to Install → File Transfer (must be on Construction or Machine Room Inspection to enable)</li> <li>• Wait for the 10 second count down to complete</li> <li>• Select Safety Configuration Upload and perform a Transfer.</li> <li>• Once the Transfer is complete, hit the home button</li> <li>• If the Fault remains, replace the P-MPIO Board.</li> </ul>
SP1 and SP2 IO Mismatch	A mismatch has occurred in the Safety IO status between the SP1 and SP2 Safety Processors		<ul style="list-style-type: none"> <li>• Navigate to Troubleshoot → Controller Network and verify the SP1 and SP2 Good Counts only are incrementing</li> <li>• If only one of the SP1 or SP2 Bad Counts is incrementing replace the P-MPIO Board.</li> <li>• If both Bad Counts are incrementing, then replace both the P-MP and P-MPIO boards.</li> <li>• Navigate to Troubleshoot → Flags → Safety IO Flags to verify which input or output status is in conflict. This will be shown with a different color other than Black or Blue for the current status.</li> <li>• If they are in conflict, perform a Computer Reset; if conflict remains, replace P-MPIO Board.</li> </ul>
SP2 Comm. Failed	Unable to establish SP1 Communications between the P-MP and the SP2		<ul style="list-style-type: none"> <li>• Navigate to Troubleshoot → Controller Network and select SP2 to verify communications good counts.</li> <li>• If there are no good counts, try to do an individual software update to the SP2.</li> <li>• If the fault continues – Replace P-MPIO Board.</li> </ul>
TOC Comm. Failed	Unable to maintain CAN Communications between the MP and the TOC. Refer to Page 6 of the prints to verify CAB CAN network wiring.		<ul style="list-style-type: none"> <li>• Verify traveler wiring from the Controller to the TOC</li> <li>• Make sure CAN-H and CAN-L are wired properly and the connections are done to the CAB CAN on the JTRAV connector.</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
<p>U Relay Monitor  (U Relay Fault)</p>	<p>The UNL-URM input is on while U relay output is off indicating U Relay contact 1 failed to break open, possibly due to a bad U relay. Refer to Page 1 of the prints</p> <p style="text-align: center;">Or</p> <p>The UNL-URM input is off while U relay output is on indicating U Relay contact 1 failed to close, possibly due to a bad U relay. Refer to Page 1 of the prints.</p>	<p>UNL-URM = 1 SU = 0</p> <p style="text-align: center;">Or</p> <p>UNL-URM = 0 SU = 1</p>	<ul style="list-style-type: none"> <li>• Bad contact on the U relay – Replace the U relay, refer to page 1 of the prints</li> <li>• UNL-URM input may have failed – Verify that URM flag is changing states in memory. Navigate to Troubleshoot → Flags → Safety I/O Flags and confirm that the URM input flag changes states in memory when U relay is removed, if it does not replace the P-MPIO board</li> <li>• If problem occurs while taking off a bad contact of the EB1-EB2 or EBX1-EBX2 relays may be preventing the U relay coil from energizing. Refer to Page 5 of the prints. Note: If EB1-EB2 or EBX1-EBX2 relays are the source of the fault, momentarily the U, D and H Led outputs only, may appear to be on simultaneously prior to fault declaration. Replace EB1-EB2 and EBX1-EBX2 relays</li> </ul>
<p>UIM Bypass Enabled</p>	<p>The UIM Bypass option is not allowed during Automatic Operation, reset the UIM Bypass option</p>	<p>UIM Bypass = On</p>	<ul style="list-style-type: none"> <li>• The UIM Bypass Option is set to yes while the car is on automatic operation.</li> <li>• Navigate to Install → Code Compliance Test → Unintended Movement → Unintended Movement Bypass and set it to no.</li> </ul>



Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Unable to Close Front Door	Unable to close the front door after the programmed number of allowable attempts.	DCLF = 1 DCFF = 1 Door Close Protection Timer Expired And Closing attempts = number of attempts allowed by the Closing Attempts Fault Counter	<ul style="list-style-type: none"> <li>• Verify the doors are not blocked.</li> <li>• Verify Door Close protection timer (default 30 seconds) is set properly.            Navigate to Adjust →Car Performance            →Timers→ Front Door Timers→ Close Protection</li> <li>• Verify Door Closing attempts (default 10 attempts) is set properly.            Navigate to Adjust →Car Performance            →Door Options→ Closing Attempts Fault Counter</li> <li>• If the doors are not blocked but are physically open – Verify that the DCFF signal is making it to the door operator. (Page 6b of prints)</li> <li>• If the doors are physically closing, verify that the door close limit is functioning correctly. The DCLF input should open when the door close limit breaks.</li> <li>• Verify that the DCLF LED on the P-TOC board turns off as the doors reach their closed limit position; if it does not turn off adjust the limit position.</li> <li>• If the door close limit is functioning correctly, verify that DCLF is changing states in memory.            Navigate to Troubleshoot→Flags→Door Flags and confirm that the state of DCLF in memory is reflected correctly, low when doors are fully closed otherwise high.</li> <li>• If DCLF is incorrect in memory, but the LED input status is correct, replace the P-TOC Board</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Unable to Close Rear Door	Unable to close the rear door after the programmed number of allowable attempts.	DCLR = 1 DCFR = 1 Door Close Protection Timer Expired And Closing attempts = number of attempts allowed by the Closing Attempts Fault Counter	<ul style="list-style-type: none"> <li>• Verify the doors are not blocked.</li> <li>• Verify Door Close protection timer (default 30 seconds) is set properly.            Navigate to Adjust →Car Performance            →Timers→ Rear Door Timers→ Close Protection</li> <li>• Verify Door Closing Attempts (default 10 attempts) is set properly.            Navigate to Adjust →Car Performance            →Door Options→ Closing Attempts Fault Counter</li> <li>• If the doors are not blocked but are physically open – Verify that the DCFR signal is making it to the door operator. (Page 6b of prints)</li> <li>• If the doors are physically closing, verify that the door close limit is functioning correctly. The DCLR input should open when the door close limit breaks.</li> <li>• Verify that the DCLR LED on the P-TOC board turns off as the doors reach their closed limit position; if it does not turn off adjust the limit position.</li> <li>• If the door close limit is functioning correctly, verify that DCLR is changing states in memory.            Navigate to Troubleshoot→Flags→Door Flags and confirm that the state of DCLR in memory is reflected correctly; low when doors are fully closed, otherwise high.</li> <li>• If DCLR is incorrect in memory, but the LED input status is correct, replace the P-TOC Board</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Unable to Open Front Door	Unable to open the front door before the Door Open Protection Timer expired.	DOLF = 1 DOFF = 1 Door Open Protection Timer Expired	<ul style="list-style-type: none"> <li>• Confirm whether or not the doors actually attempt to open.</li> <li>• If the doors do not physically open, verify that the DOFF signal is actually reaching the door operator. (Page 6b of Prints)</li> <li>• If the doors are physically opening, verify that the door open limit is functioning correctly. The DOLF input should open when the door open limit breaks.</li> <li>• Verify that the DOLF LED on the P-TOC board turns off as the doors reach their open limit position; if it does not turn off adjust the limit position</li> <li>• If the door open limit is functioning correctly, verify that DOLF is changing states in memory. Navigate to Troubleshoot →Flags→Door Flags and confirm that the state of DOLF in memory is reflected correctly; low when doors are fully open, otherwise high.</li> <li>• If DOLF is incorrect in memory, but the LED input status is correct, replace the P-TOC Board</li> </ul>
Unable to Open Rear Door	Unable to open the rear door before the Door Open Protection Timer expired.	DOLR = 1 DOFR = 1 Door Open Protection Timer Expired	<ul style="list-style-type: none"> <li>• Confirm whether or not the doors actually attempt to open.</li> <li>• If the doors do not physically open, verify that the DOFR signal is reaching the door operator. (Page 6b of Prints)</li> <li>• If the doors are physically opening, verify that the door open limit is functioning correctly. The DOLR input should open when the door open limit breaks.</li> <li>• Verify that the DOLR LED on the P-TOC board turns off as the doors reach their open limit position; if it does not turn off adjust the limit position</li> <li>• If the door open limit is functioning correctly, verify that DOLR is changing states in memory. Navigate to Troubleshoot →Flags→Door Flags and confirm that the state of DOLR in memory is reflected correctly; low when doors are fully open, otherwise high.</li> <li>• If DOLR is incorrect in memory, but the LED input status is correct, replace the P-TOC Board</li> </ul>

Fault Message	Description	Logical Conditions	Possible Causes/ Solutions
Un-Intended Movement	Car moved out of the door zone area with both the car gate and the hoistway doors open	DZ = 0 CGF = 0 DLKF = 0 OR DZ = 0 CGR = 0 DLKR = 0	<ul style="list-style-type: none"> <li>• Verify break operation and adjust as necessary.</li> <li>• Verify the car does not roll back excessively or bounce up and down at a landing as passengers enter or exit the cab</li> <li>• Verify Level Zone setting, Navigate to Adjust → Ride Performance → Speed Profile → Level Zone and increment value from 0.5 to 0.83Ft to open your door zone area from 2 to 4 inches in each direction then refer to traction manual section 4.7.6.5 Improve Re-Leveling Performance for releveling adjustment directions.</li> <li>• Verify and adjust drive performance to prevent excessive roll back while performing a re-leveling run.</li> </ul>
Virtual Down Terminal Open	Car traveled beyond the learned Down Terminal Position preventing car from continue moving in the down direction.	DNL = 0	<ul style="list-style-type: none"> <li>• Verify the Car's current position vs. the learned DNL position Navigate to Install → Learn Functions → Limit Switches</li> <li>• If the car is below the DNL value – Then run the car up on inspection</li> <li>• Verify the learned position for the bottom landing to be 0.2 feet above the DNL position,</li> <li>• If it is not performing a bottom landing position learn and verify all other landing positions, refer to Floor Set Up section of the controller manual for directions for learning landing positions.</li> </ul>
Virtual Up Terminal Open	Car traveled beyond the learned-Up Terminal Position preventing car from continue moving in the up direction.	UNL = 0	<ul style="list-style-type: none"> <li>• Verify the Car's current position vs. the learned UNL position Navigate to Install → Learn Functions → Limit Switches</li> <li>• If the car is above the UNL value – Then run the car down on inspection</li> <li>• Verify the learned position for the top landing to be 0.2 feet below the UNL position,</li> <li>• If it is not performing a top landing position learn and verify all other landing positions, refer to Floor Set Up section of the controller manual for directions for learning landing positions.</li> </ul>

**Section 8 –**  
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# Section 9 – Maintenance

## 9.1 Maintenance

The Pixel elevator controller has been designed to require as little routine maintenance as possible. In fact, mechanical interconnections are the least reliable portion of the solid-state system, so the less they are disturbed the more likely the system is to continue to function properly.

The elevator itself, however, is a complex mechanical apparatus that requires routine preventive maintenance. This includes lubrication of various moving parts, and regular cleaning and inspection of door lock contacts, since exposed contacts are susceptible to dirt and corrosion. Doors themselves receive a lot of wear, since they often make two or three cycles at each floor. Rotating machinery, including belts and couplings, should be routinely inspected for wear.

If the elevator system develops intermittent problems, or fails to operate, refer to the Troubleshooting guide in Section 7 of this manual.

## 9.2 Replacement Parts List

### 9.2.1 Elevator Controls PC Boards

- |                  |  |
|------------------|--|
| a. <b>MP</b>     | Pixel microprocessor board                 |
| b. <b>MP-IO</b>  | Pixel safeties input-output board          |
| c. <b>MP-TOC</b> | Pixel top of the car microprocessor board  |
| d. <b>MP-COP</b> | Pixel COP microprocessor board             |
| e. <b>HALL</b>   | Pixel hall node board                      |
| f. <b>CN-EX</b>  | Pixel general purpose 16 IO expander board |
| g. <b>PDBH</b>   | Pixel power distribution board for Hydro   |

### 9.2.2 Relays

- |                       |   |
|-----------------------|---|
| <b>K10P-11A15-120</b> | Tyco Electronics<br>Four pole ice-cube 120 VAC coil |
| <b>RU4S-C-A110</b>    | Tyco Electronics<br>Four pole ice-cube 120 VAC coil |
| <b>CA7-16-01</b>      | Sprecher+Schuh<br>Contactor 120 VAC coil            |

### 9.2.3 Fuses

AGC ¼, 1, 2, 3, 5, 6,10, 15 AMP 250VOLT  
MDA TYPE 3, 5, 10 & 15 AMP 250 VOLT  
FRN-R 10, 20, 30, 60 AMP 250 VOLT (208 to 240 VAC power supply)  
FNQ 5, 10, 15A 500 VOLT (440 to 480 VAC power supply)

### 9.2.4 Modules

<b>Switching Power Supply</b>	SPD24120, C.G. 24 VDC-5 Amps
<b>Landa Sensor Head</b>	WCS3 Pepperel+Fuchs
<b>CEDES APS Camera</b>	CEDES APS Camera System


### 9.2.5 Semiconductors

<b>Bridge Rectifier</b>	35A 1000V	MB3510 Motorola
<b>Triac</b>	16A 800V	BTA16-800CW3G ST
<b>Triac Housing</b>		TO220AB
<b>Triac</b>	4A 800V	T405-800T ST
<b>Triac Housing</b>		TO220AB

# Appendix D –

## Mnemonic Description Translation Tables

The Mnemonic may represent a Computer Input “I”, Output “O”, or an internally generated flag “F”. Each table below represents a group of mnemonics associated with a screen shot on Pixel Display.

 **NOTE:** Some flags appear duplicated on several screens; this is done to facilitate troubleshooting while observing flags behavior.

### Safety I/O Flags

Name	I/O/F	Description
GOV	I	Governor Switch
SAFC	I	Car Safety String
SAFH	I	Hoistway Safety String
ESTP	I	Emergency Stop Switch
UNL	F	Up Normal Limit Position
DNL	F	Down Normal Limit Position
DSAF	I	Drive Safety
RG	I	EB1-EB2 Contacts Monitor
RGBP	I	EBX2-EBX2 Contacts Monitor
RGOK	I	Rope Gripper Contact
TTM	I	Not currently used
BTM	I	Not currently used
STOP	I	AA Contactor Monitored Contact
Pin	I	P Contactor Monitored Contact
BKi	I	BK Contactor Monitored Contact
AAi	I	AA Contactor Output monitor
Pi	I	P Contactor Output monitor
BPI	I	Brake Picked Contact
mFRST	I	Logic Microprocessor Fault Reset
sFRST	I	Safety Processors Fault Reset
EQR	I	Earthquake Reset Push Button
STPPD	F	Car Stopped
SOvrd	F	Landa Position Override
DirOK	F	Pattern and Car Movement Agree
BK	O	BK Contactor Output
BH	O	BH Relay Output
BPWN	O	Brake Failed to Pick Warning Ind.
ESCO	O	Emergency Stop Override
MFPF	F	Motor Field Weakening Enabled
-	-	
AAo	O	AA Contactor Output
Po	O	P Contactor Output
EB1	O	EB1 Relay Output
EB2	O	EB2 Relay Output
EBX1	O	EBX1 Relay Output
EBX2	O	EBX2 Relay Output

### Door Flags

Name	I/O/F	Description
DLAT	I	Door Lock Access Top
DLAB	I	Door Lock Access Bottom
DCAT	I	Door Closed Access Top
DCAB	I	Door Closed Access Bottom
NUDG	O	Nudging output Active
DLK	F	DLKF and DLKR both closed
CGF	I	Car Gate Front
DLSF	I	Int. Door Locks Front Closed
DCSF	I	Int. Door Closed Contacts Front Closed
DCLF	I	Door Close Limit Front
DOLF	I	Door Open Limit Front
DLKF	F	Front Door Locks & Contacts Closed
CGR	I	Car Gate Rear
DLSR	I	Int. Door Locks Rear Closed
DCSR	I	Int. Door Closed Contacts Rear Closed
DCLR	I	Door Close Limit Rear
DOLR	I	Door Open Limit Rear
DLKR	F	Rear Door Locks & Contacts Closed
PHEF	I	Photo Eye Front
SEF	I	Safety Edge Front
DHDF	I	Door Hold Button Front
PHER	I	Photo Eye Rear
SER	I	Safety Edge Rear
DHDR	I	Door Hold Button Rear
DCBF	I	Door Close Button Front
DCFF	O	Door Close Function Front
DCPF	F	Door Close Power Front
DOBF	I	Door Open Button Front
DOIF	F	Door Open Intent Front
DOFF	O	Door Open Function Front
DCBR	I	Door Close Button Rear
DCFR	O	Door Close Function Rear
DCPR	F	Door Close Power Rear
DOBR	I	Door Open Button Rear
DOIR	F	Door Open Intent Rear
DOFR	O	Door Open Function Rear



## Inspection Flags

Name	I/O/F	Description
ICT	I	Car Top Inspection
ICTE	I	Car Top Inspection Enable
ICTU	I	Car Top Inspection Up
ICTD	I	Car Top Inspection Down
HDB	I	Hoistway Door Bypass
CDB	I	Car Door Bypass
IIC	I	In Car Inspection
IICE	I	In Car Inspection Enable
IICU	I	In Car Inspection Up
IICD	I	In Car Inspection Down
SAFH	I	Car Safety String
SAFC	I	Hoistway Safety String
IA	I	Access Inspection
IATU	I	Top Access Up
IATD	I	Top Access Down
IABU	I	Bottom Access Up
IABD	I	Bottom Access Down
IAOZ	F	Cab Outside Access Zones
IMR	I	Machine Room Inspection
IMRE	I	Machine Room Inspection Enable
IMRU	I	Machine Room Inspection Up
IMRD	I	Machine Room Inspection Down
RC	O	Retiring Cam Output Front
RCR	O	Retiring Cam Output Rear
DCLF	I	Door Close Limit Front
CGF	I	Car Gate Front
DLKF	F	Front Door Locks & Contacts Closed
DPMF	I	Door Position Front
DCFF	O	Door Close Function Front
DBF	O	Door Boost Function Front
DCLR	I	Door Close Limit Rear
CGR	I	Car Gate Rear
DLKR	F	Rear Door Locks & Contacts Closed
DPMR	I	Door Position Rear
DCFR	O	Door Close Function Front
DBR	O	Door Boost Function Rear

## Emergency Service Flags

Name	I/O/F	Description
FON2	I	Alternate Fire Recall Switch
RES	I	Main Fire Recall Switch Reset Position
FOFF	I	Main Fire Recall Switch Off Position
FON	I	Main Fire Recall Switch On Position
FRA	I	Alternate Fire Recall Smog Detectors
FRS	I	Main Fire Recall Smog Detectors
HF1	I	Hoistway Smog Detectors Main Recall
HF2	I	Hoistway Smog Detectors Alt. Recall
FCS	I	Fire Phase 2 Switch On Position
F2OFF	I	Fire Phase 2 Switch Off Position
FCC	I	Fire Phase 2 Car Call Cancel
FDHD	I	Fire Phase 2 Switch Hold Position
FS1	O	Fire Phase 1 Output
85X	O	Fire Service Hat Indicator
FWI	O	Fire Warning Buzzer
CSAM	O	Canada Main Fire Indicator Output
CSAA	O	Canada Alternate Fire Indicator Output
CSB	F	Car Stop Bypass
HIS	I	Hospital Service Request
HSW	I	Hospital Service In Car Switch
HSEL	I	Car Selected for Hospital Service
ESTD	F	Emergency Slowdown Table Done
EmrSD	F	Emergency Slowdown Active
AUTOs	F	Car is on Automatic Mode of Operation
EMT	I	Mass. Emergency Medical Svc. Request
EMT11	I	Mass. Emergency MedicalPhase1
EMT12	I	Mass. Emergency Medical Phase2
EMTp1	O	Mass. Emergency Medical Phase1 Ind.
EMTp2	O	Mass. Emergency Medical Phase2 Ind.
EPS	F	Emergency Power Selected to Run
EPI	I	Emergency Power Active
EPPT	I	Emergency Power Pre-Transfer
CSI	I	Car Selected to Run on Emergency Pwr.
EPR	F	Car Running W/ Emergency Power
EP1	O	Emergency Power Phase1 Ind.
EP2	O	Emergency Power Phase2 Ind.

## Motion Control Flags

Name	I/O/F	Description
SU	F	Car Intention to Run Up
SD	F	Car Intention to Run Down
RSU	F	Car Run Up
RSD	F	Car Run Down
SUA	O	Up Arrow
SDA	O	Down Arrow
HD	F	High Speed Delay
STU	F	Step Up
ISTU	F	Intermediate Step Up
STD	F	Step Down
ISTD	F	Intermediate Step Down
STC	F	Stepping Complete
H	F	High Speed
HI	F	High Intermediate Speed
RL	F	Car Releveling
LU	F	Car Leveling Up
LD	F	Car Leveling Down
RUN	F	Car in Motion
LVL	F	LU or LD
DZ	F	Car Inside Door Zone
TFX	F	Stepping Transfer Function
CSB	F	Car Stop Switch Bypass
EQS	I	Earthquake Operation Mode Active
MLT	F	Motor Limit Time Out
DMU	F	Demand Up
UPD	F	Up Previous Direction
UDP	F	Demand Up Previous Demand
FLU	F	Fudge Leveling Up
FLD	F	Fudge Leveling Down
PTR	F	Car Has Permission to Run
DMD	F	Demand Down
DPD	F	Down Previous Direction
DDP	F	Demand Down Previous Demand
ArRLU	F	Armed Releveling Up
ArRLD	F	Armed Releveling Down
DRun	F	Drive in Running Mode

## Call Demand Flags

Name	I/O/F	Description
CCA	F	Car Call Above Car
CCB	F	Car Call Below Car
UPF	F	Up Front Hall Call
UPR	F	Up Rear Hall Call
DNF	F	Down Front Hall Call
DNR	F	Down Rear Hall Call
CCCIF	F	A Car Call Front Being Pressed
CCCIR	F	A Car Call Rear Being Pressed
UCAX	I	Up Hall Call Above Car
UCBX	I	Up Hall Call Below Car
DCAX	I	Down Hall Call Above Car
DCBX	F	Down Hall Call Below Car
CCF	F	Car Call Cancel Front
CCR	F	Car Call Cancel Rear
UCF	F	Up Call Cancel Front
UCR	F	Up Call Cancel Rear
DNCF	F	Down Call Cancel Front
DNCR	F	Down Call Cancel Rear
CCD	F	Car Call Disconnect
HCR	0	Hall Call Reject
HCD	F	Hall Call Disconnect
LCD	F	Lobby Call Disconnect
LT	F	Lobby Door Timer
TOS	F	Car Timed Out of Service
SDTF	F	Short Door Timer Front
CCTF	F	Car Call Door Timer Front
CCTR	F	Car Call Door Timer Rear
HCTF	F	Hall Call Door Timer Front
ADACF	F	A.D.A. Car Call Timer Front
ADAHF	F	A.D.A. Hall Call Timer Front
ISR	F	Car In Service and Ready
ISRT	F	Car Truly In Service and Ready
ISV	F	Car In Service
HCTR	F	Hall Call Door Timer Rear
ADACR	F	A.D.A. Car Call Timer Rear
ADAGR	F	A.D.A. Hall Call Timer Rear

## Services Flags

Name	I/O/F	Description
LLI	I	Light Load Weight in Cab
HLI	I	Heavy Load Weight in Cab
OLI	I	Overload Weight in Cab
DRLW	F	Directional Load Weight
DCWB	O	Door Close Warning Buzzer Front
DCWBR	O	Door Close Warning Buzzer Rear
iCWI	I	Counterweight Derail Input
iEQI	I	Seismic Detected Input
eCWI	F	Latched Counterweight Derail Input
eEQI	F	Latched Seismic Detected Input
CWI	F	iCWI + eCWI
EQI	F	iEQI + eEQI
EQA	F	Earthquake Abnormal Mode
EQN	F	Earthquake Normal Mode
EQS	F	Earthquake Operation Mode Active
STRE	I	EQ Counterweight Stop Timer
EQR	I	Earthquake Reset Push Button
ACS	I	Alternate Call Scheme Selected
PGO	O	Passing Gong Output
PGI	I	Passing Gong Enable Input
MLT	F	Motor Limit Timeout
OOS	F	Car Out of Service
HOBFB	I	Hoistway Door Open Button Front
HOBRR	I	Hoistway Door Open Button Rear
RepoC	F	Car Repositioning to a Landing
CTL	I	Car to Lobby
EGR	I	Emergency Recall Command Active
BTR	I	Traction Battery Rescue Mode
HCBFB	I	Hoistway Door Close Button Front
HCBRR	I	Hoistway Door Close Button Rear
WILD	F	Car in Back Up Dispatch Mode
SAB	I	Car in Sabbath Dispatch Mode
IND	I	Independent Service
IRSU	I	Rescue Operation Mode Active
HSBF	I	Hoistway Door Stop Button Front
HSBR	I	Hoistway Door Stop Button Rear

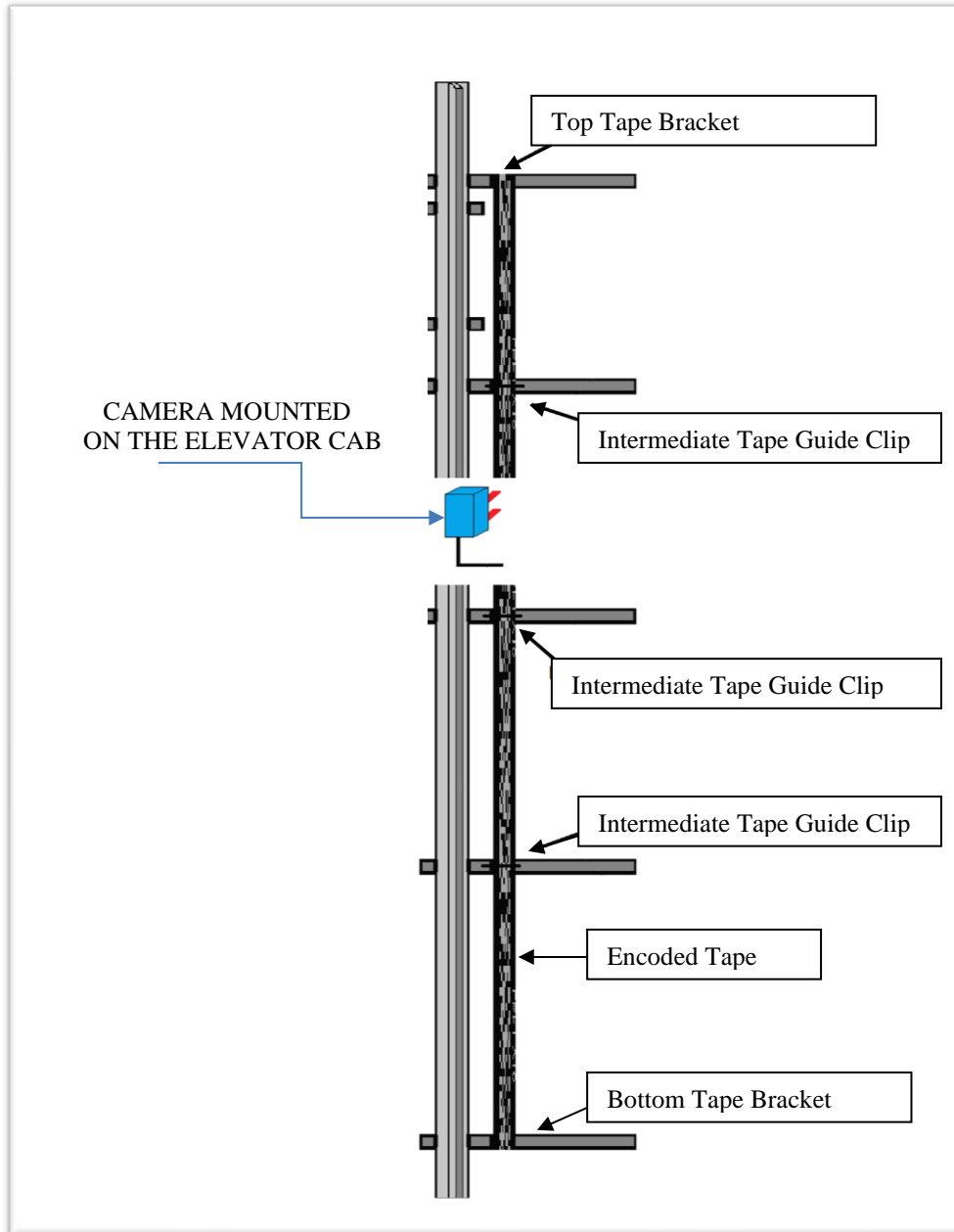
## Dispatching Flags

Name	I/O/F	Description
BAL	I/F	Balance Demand
INT	I/F	Intermittent Demand
DDP	I/F	Demand Down Peak
LUP	I/F	Lobby Up Peak
DUP	I/F	Demand Up Peak
RESs	I	Fire Service Recall Sw. Reset "System"
FOFFs	I	Fire Service Recall Sw. Off "System"
FONs	I	Fire Service Recall Sw. On "System"
FON2s	I	Fire Service Recall 2 Sw. On "System"
EPIs	I	Emergency Power "System"
AUTOs	I	Emergency Power Auto-select
EP1s	O	Emergency Power Phase 1 "System"
EP2s	O	Emergency Power Phase 2 "System"
HSIs	F	Hospital Service Request "System"
ACSs	I/F	Alternate Call Scheme Dispatch Mode
HCDD	F	Hall Call Disconnect "System"
All	F	All Cars in Service
NCII	F	No cars in Service
ECS1	I/F	Car 1 Selected to Run on Emergence Pwr.
ECS2	I/F	Car 2 Selected to Run on Emergence Pwr.
ECS3	I/F	Car 3 Selected to Run on Emergence Pwr.
ECS4	I/F	Car 4 Selected to Run on Emergence Pwr.
ECS5	I/F	Car 5 Selected to Run on Emergence Pwr.
ECS6	I/F	Car 6 Selected to Run on Emergence Pwr.
Hsel1	F	Car 1 Selected to Run Hospital Service
Hsel2	F	Car 2 Selected to Run Hospital Service
Hsel3	F	Car 3 Selected to Run Hospital Service
Hsel4	F	Car 4 Selected to Run Hospital Service
Hsel5	F	Car 5 Selected to Run Hospital Service
Hsel6	F	Car 6 Selected to Run Hospital Service
PTR1	F	Car 1 Has Permission to Run
PTR2	F	Car 2 Has Permission to Run
PTR3	F	Car 3 Has Permission to Run
PTR4	F	Car 4 Has Permission to Run
PTR5	F	Car 5 Has Permission to Run
PTR6	F	Car 6 Has Permission to Run

# Appendix E –

## CEDES APS Positioning System

The CEDES APS positioning system provides Pixel with an absolute position, through the entire length of the hoistway utilizing a dual camera system which scans the code tape with its own IR illumination, with a resolution 0.5 mm, approximately 1/10<sup>th</sup> of an inch. A system view diagram of the Absolute Position System Selector is shown below:



**CEDES APS Absolute Position System Selector Overview**

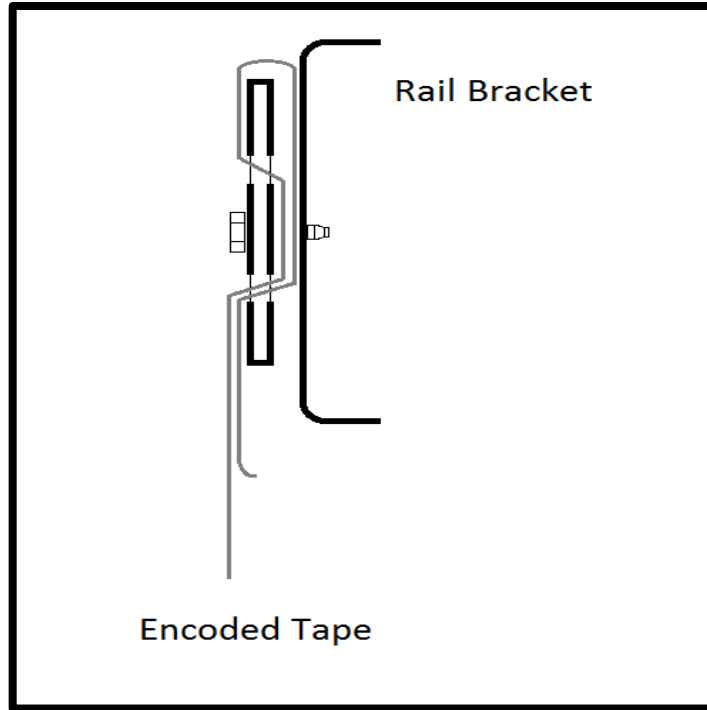
## **E1            Install CEDES APS Positioning System**

### **Step 1: Mount top bracket and connect the optical absolute encoded tape**

- Mount the top J-hook selector bracket to the rail.
- Make sure the bracket is high enough that when the car is all the way at the top, the tape can still be read by the camera and the bracket is not hit by any part of the elevator.
- Connect the encoded tape to the Top Tape Bracket. See Figure E1.1.
- Make sure you feed the tape through the front side of the bracket first, the side facing the car and then bend it around the top and lace it back down. See Figure E1.2
- Fasten it down with the supplied bracket and screws.



**Figure E1.1: Top Tape Bracket**



**Figure E1.2: Encoded Tape Connected to Top Tape Bracket**

**Step 2: Run down on inspection while unrolling the absolute encoded tape.**

- Run down on inspection while unrolling the tape. See Figure E1.3.
- Make sure you do not kink the tape or bend it in too tight of a radius. The tape can be damaged, and it should be handled with care.
- Make sure your hands are clean and you do not leave any grease or dirt on the front of the tape.



**Figure E1.3: Unroll the tape**

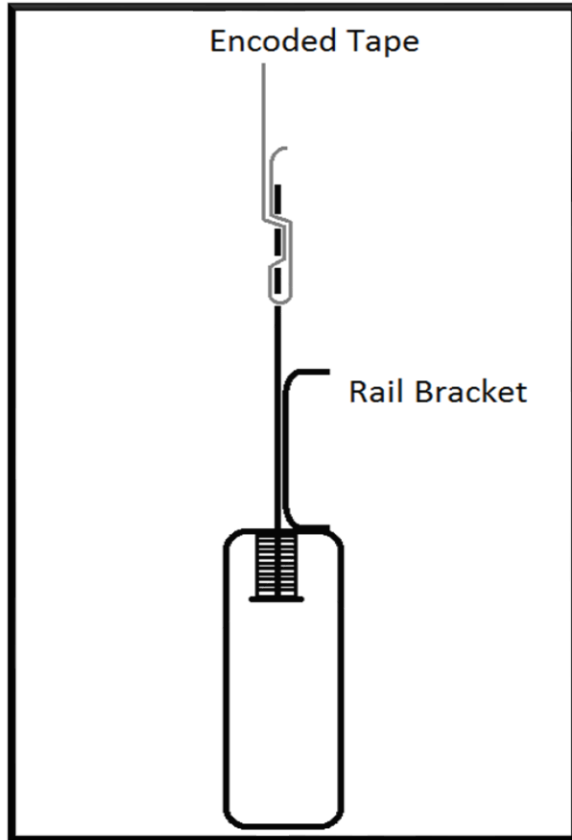
### **Step 3: Mount the bottom bracket and connect the absolute encoded tape.**

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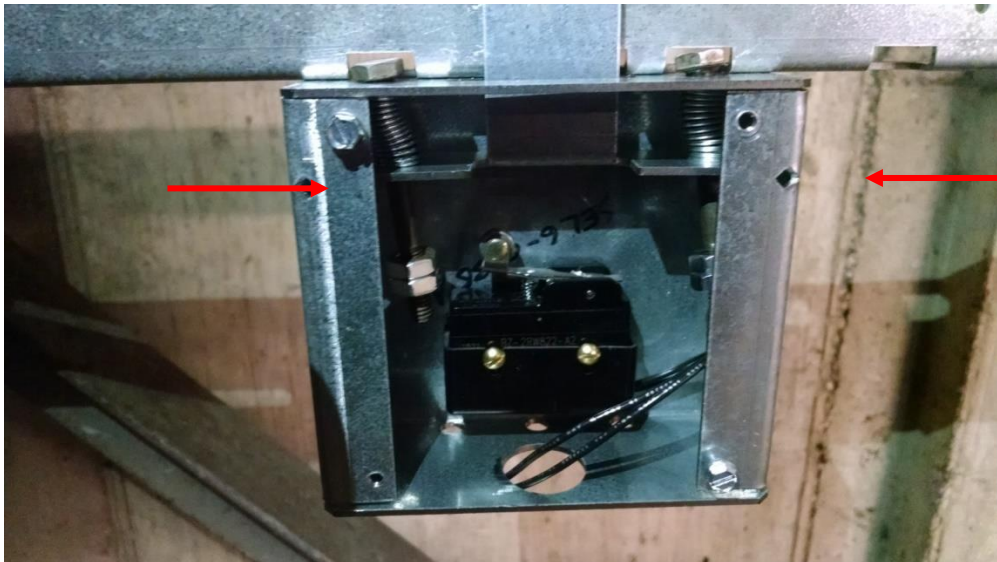
- Mount the bottom selector bracket.
- Make sure the bracket is low enough, that when the car all the way at the bottom, the camera can still read the tape and the bracket is not hit by any part of the elevator. See Figure E1.4.
- Connect the encoded tape the rail bracket with the slack tape switch.
- Make sure you feed the tape through the front side of the bracket, the side facing the car, first and then bend it back up toward the back of the tape. See Figure E1.5
- Push the bracket down until the springs are depressed to the mark, this will put the equivalent of a 10kg weight. See Figure E1.6.



**Figure E1.4: Bottom Tape Bracket**



**Figure E1.5: Encoded Tape connection.**



**Figure E1.6: Bottom Tape Bracket with springs depressed to the mark**



#### **Step 4: Mount the CEDES APS camera mounting bracket to the cross head.**

- Mount the CEDES APS camera mounting bracket to the cross head.
- Use the roller or slide shoe guide bolts to hold the camera bracket. The face of the bracket should be about 5 ½ inches from the back of the rail. See Figure E1.7.
- The back of the bracket should be as close as possible to the crosshead channel.
- Use a level and make sure it is plumb up and down.

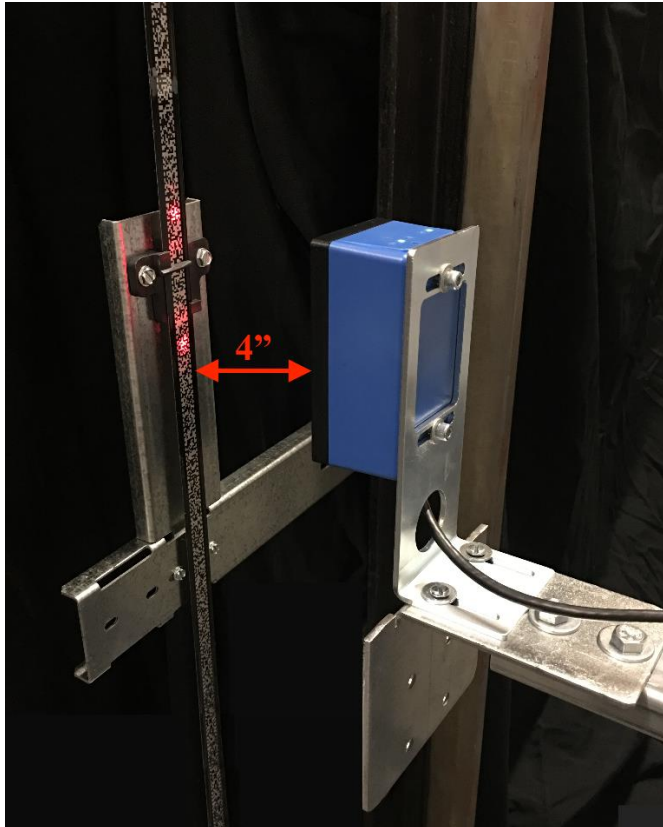


**Figure E1.7: CEDES APS Camera Mounting Bracket**

### **Step 5: Mount the CEDES APS Camera.**

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- Mount the camera on the mounting bracket. The camera should be centered with the encoded channel on the tape.
- The face of the camera should be 4 inches from the face of the tape. See Figure E.1.8.



**Figure E1.8: Camera 4 inches from tape**

### **Step 6: Connect the CEDES APS Camera to APSC RJ45 Splitter in the TOC box**

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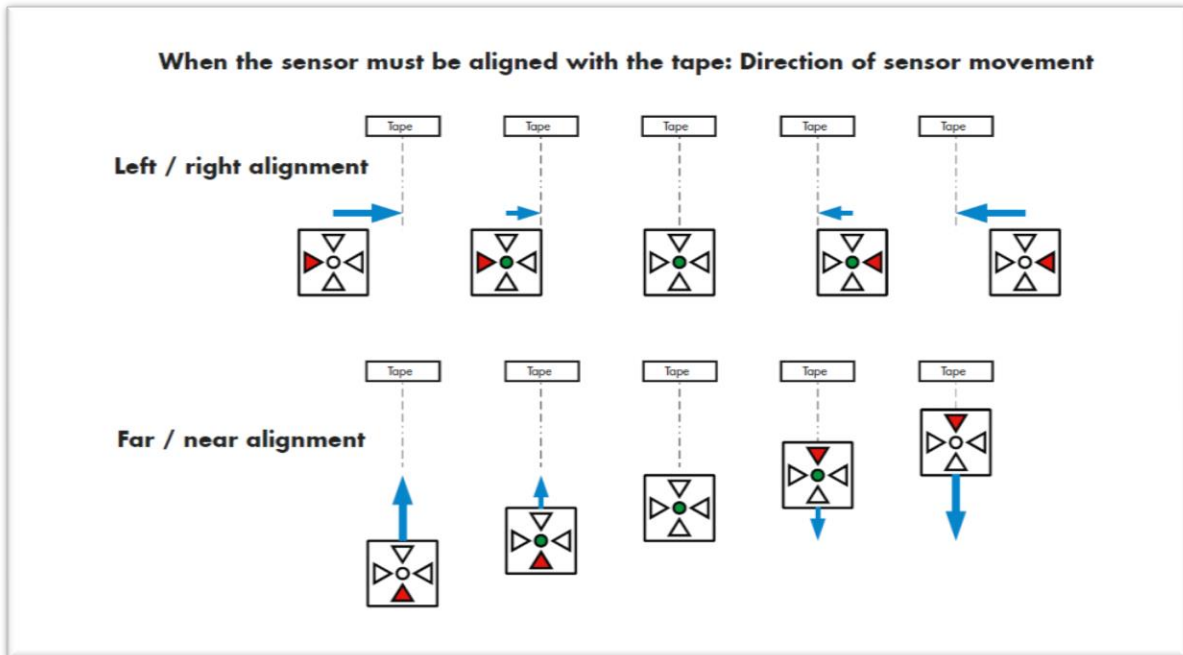
Electrical connection for power and communications to the CEDES APS Camera is achieved through an RJ45 cable, prewired to the ASP Camera with an RJ45 connector to be plugged into the ASPC RJ45 cable splitter located inside the P-TOC box, refer to page QR3 of the prints for a descriptive diagram.

### **Step7: Fine adjustment of the Camera**

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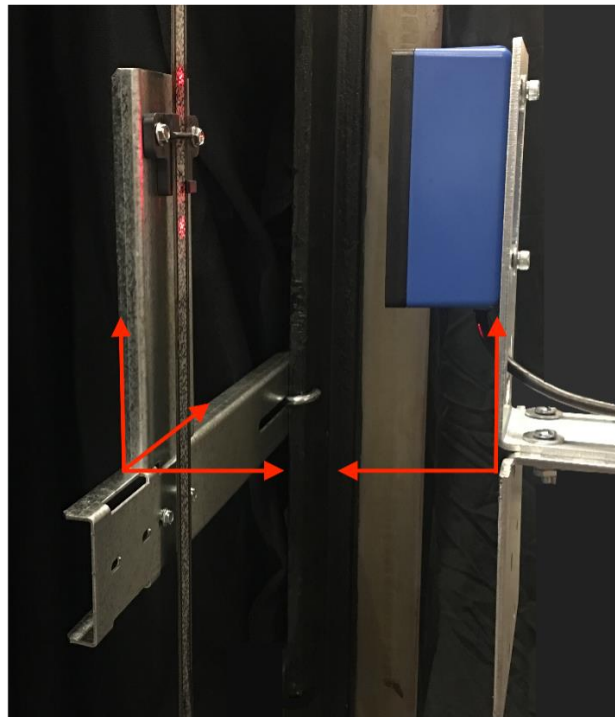
- Make the fine adjustment of the camera using the LED's on top the camera, adjust the camera position so only the green light in the middle of the 4 red arrows is on, manipulate per adjustments shown in Figure E.1.9 below.

- Put your hand in front of the camera for 5 seconds. Remove your hand from in front of the camera. You should see 2 LED's on the encoded tape. Adjust the camera so the LED's are in the center of the encoded tape.



**Figure E.1.9: Camera Sensor Alignment**

- Level the camera with a leveling device, the CEDES APS camera must be mounted to be parallel and square to the encoder tape.



**Figure E1.10: Camera Level alignment**

## E2 CEDES APS Positioning System Verification

### E2.1 Verify CEDES APS to Pixel Communications

Using the TOC access point, verify the distance between the two cameras inside the camera sensor head. Navigate to:

 Home



 Install 

 Learn Functions 

 Virtual Limits 

 Tape Reader Offset 

- a. Confirm that the RAW delta difference is between 0.15 to 0.30 feet and press the Learn soft key to store value into Pixel

 Learn or  Back


Verify proper operation of the Landa system. Navigate to:

 Home

 Install 

 View Selector Data 

- b. Confirm that selector positions are not both zero, increment and decrement together as you run the car either up or down, and Selector 1 position is smaller than Selector 2.

 **NOTE:** If you cannot confirm performance as described above, repeat steps in Section E1 above until the landing system operates correctly.

### E2.2 Install Intermediate Tape Brackets

Install intermediate rail tape brackets with a tape holder clip at approximately every 20ft from one bracket to the next, then position the rail bracket and clip so it is centered in-between the two red LED's on the encoded tape. If the red LED's are not visible put your hand in between the camera and encoded tape for 5 seconds. See Figure E2.1



**FigureE2.1: Red Setup LED's.**

 **NOTE:** Continue with job installation at Section 3.5.5 of this manual.