GALaxy eHydro
Elevator Controller Manual

A VANTAGE Company

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Foreword

GAL Manufacturing has developed this manual with usability and safety in mind. General and specific safety notices and precautions are defined in the manual. However, GAL Manufacturing cannot be responsible for any injury to persons or damage to property (including the elevator equipment) resulting from negligence, misuse of the equipment, misinterpretation of instructions included in this manual, or due to any other cause beyond the control of GAL Manufacturing.

Revision 7.1
GAL Part Number: DOC-0119N

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SYMBOLS USED IN THIS MANUAL

CAUTION

This manual uses the CAUTION symbol to identify procedures and practices that may result in personal injury and/or equipment damage, if not followed correctly.

DANGER

This manual uses the DANGER symbol as an alert to a danger of electrocution or an acute electrical shock. The DANGER symbol provides elevator personnel with a warning of severe personal injury or potential fatality that can result if safety precautions are not observed.

NOTE / INFORMATION

In this manual, this symbol identifies information helpful to elevator personnel when carrying out a specific procedure or task.

NOT APPLICABLE / DOES NOT EXIST

When this symbol appears inside a table, it indicates that a value or property is not defined, or is nonexistent, for the item listed.

WARNINGS AND CAUTIONARY NOTES

Installation and wiring must be in accordance with the national electrical code, all local codes, and all elevator safety codes and standards. The 3-phase AC power supply to the equipment must originate from a properly fused disconnect or circuit breaker that is properly designed and sized for the specific controller requirements and the "Short Circuit Current Rating" listed on the controller. **Improper motor branch circuit protection will void warranty and may create a hazardous condition.**

Wiring to the controller terminals must be installed in a careful, neat manner. Stranded wire conductors must not have strands left out of the terminals. Leaving strands of wire out of the terminals can create a potential short circuit. All terminals and cable connectors must be seated properly. (See the **IMPORTANT** notice on the next page.)

Elevator control products must be installed by elevator personnel who have been trained in the construction, maintenance, repair, inspection, and testing of elevator equipment. The elevator personnel must comply with all applicable safety codes and standards. This equipment is an O. E. M. product designed and manufactured to comply with ASME A17.1-2016/CSA B44-16 Safety Code for Elevators and Escalators. It is the responsibility of the installer to ensure that the installation is performed safely and that the installation complies with all applicable codes.

Proper grounding is vitally important to the safe and successful operation of this system, and proper grounding should be installed to comply with all applicable codes. A separate ground wire should be installed from the building earth ground to the earth ground terminal in each controller. Proper conductor size must be utilized for grounding. In order to minimize resistance to ground, the shortest possible length should be used for the ground conductor.

Do not install the controller in a hazardous area where excessive vapors and chemical fumes are present. Do not install the controller in a dusty area. Do not install the controller in a carpeted area. The space in which the controller equipment is installed should be temperature controlled, moisture free, and should be maintained within a temperature range of 32° F and 110°F. The space in which the controller equipment is installed should be kept clean. The controller should be kept dry and should not be exposed to moisture or water condensation. Make sure the power supply voltage feeding the controller equipment does not fluctuate by more than +/- 10%.

Every safety precaution, whether or not specifically stated in this document, must be implemented when installing, adjusting, or servicing elevator equipment. All safety precautions must be followed to ensure the safety of elevator personnel and the general public.

Use only the correct rated fusing for controller protection. **Use of improperly rated fusing will void the warranty.**

IMPORTANT NOTICE

Most of the field connections to GALaxy controls are made using stranded wire. When inserting this stranded wire into the terminals – especially those for EPD's (Electrical Protective Devices) – care must be taken to ensure that all the strands are properly inserted into the terminals. Improper stripping and insertion may leave strands outside of the terminals. Strands not properly inserted into the terminals may make contact with wires from an adjacent terminal.

The danger associated with an occurrence as described above has led GAL Manufacturing to recommend that, for all connections to the Electrical Protective Devices listed in ASME A17.1-2016/CSA B44-16, Requirements 2.26.2.1 through 2.26.2.39, elevator personnel must follow the guidelines listed below:

- Inspect all terminals used to connect Electrical Protective Devices. Ensure that the cage clamp is fully open before inserting a wire into the terminal block.
- Perform corrective action for wires with stray strands by one of the following methods:
    - Reconnect the wire with all wire strands correctly installed into the terminal. Visually verify that **no wire** strands are outside of the terminal. The conductor should be stripped and inserted completely into the terminal in such a manner that no more than two millimeters of bare wire is visible; or
    - Attach a ferrule to the end of field wire for safety devices (as pictured below in Figures 0-1 and 0-2) and insert the ferrule into the terminal; or
    - Use an acceptable method such as tinning.
- After removal and replacement of any of these field wires, the actual Electrical Protective Device should be checked for proper operation.

Figure 0-1
Crimp Tool for Ferrule

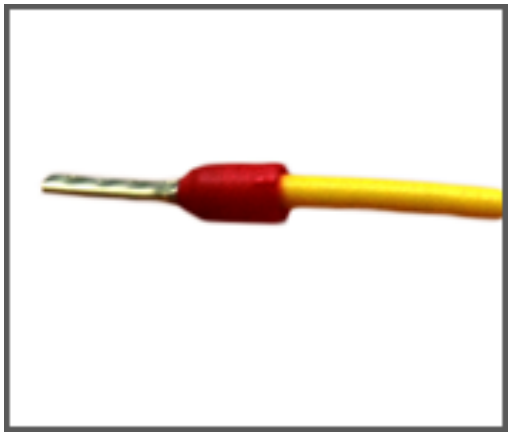


Figure 0-2
Stranded Wire with Ferrule Attached

Section 1 - Product Description

The GALaxy traction elevator controller is a computer-based system that offers superior performance, flexibility and reliability. It has been designed to save time in installation and troubleshooting, but it is still very important that the field personnel familiarize themselves with this manual before attempting to install the equipment.

1.1 Product Code Compliance

- CSA B44.1-14/ASME A17.5-2014
- ASME A17.1-2016/CSA B44-16

1.2 Specifications

Standard Features:

- Inspection Operation (car top and controller)
- Access Operation
- Independent Service
- Fire Service Phase I
- Fire Service Phase I Alternate Return
- Fire Service Phase II
- Emergency Power
- Earthquake Service
- On Board Diagnostics LEDs
- On Board LCD Interface
- Motor Protection Timers
- Door Motor Protection Timer
- Field Adjustable Parameters
- Elevator Duty Rated NEMA Motor

Environment:

- 32° F to 110° F ambient
- 12,000 feet altitude
- 95% humidity

Optional Features:

- Selective Rear Doors
- Attendant Service
- Code Blue Hospital Service
- Security
- Remote Diagnostics
- Emergency Power

1.3 Physical Layout of the Controller

Figure 1-0 shows the general layout of the GALaxy eHydro Controller cabinet. The components in the cabinet include the following items.

1) **Main I/O Board:** The 1121 main control board contains input and output devices, controller switches, fuses and field wiring terminal connections. This board also includes the, the Safety PAL and the NTS Processor.

2) **Main CPU:** The 1132 CPU board is a dual core 32-bit CPU. It executes the main control system programs. The main core runs the car operation and the secondary core runs the group operation. The LCD Interface mounted on the Main CPU provides a user interface to all controller adjustment and setup parameters. It also shows diagnostic information.

3) **PI Driver Board:** Driver for CE or E-Motive Position Indicator Displays.

4) **Car I/O Panel:** Provides space for additional car I/O.

5) **Terminal Block and Options:** Space for additional terminal blocks, optional contactors and circuit breakers.

6) **Power Supplies:** A 5 VDC power supply for the controller 5 Volt power and a 24 VDC supply for all call button and lantern power.

7) **Soft Starter:** Controls the soft start and running of the pump motor.

8) **Power Distribution Board:** Contains fuses and distributes 120 VAC and 24 VDC for the system.

9) **Transformer:** Transforms the line voltage to the proper voltages for signals and other controller functions.

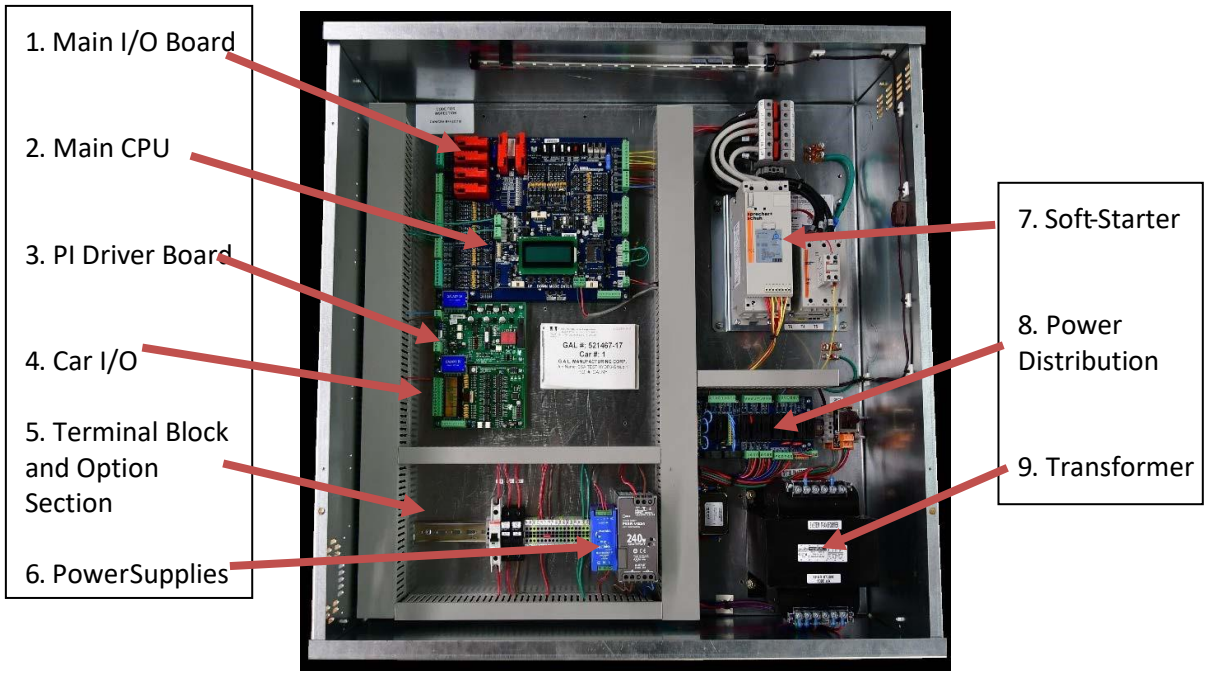


Figure 1-0: Typical Physical Layout of Top Cabinet

1.4 Selector System

The selector system for the GALaxy controller is an Absolute Position System with an encoded touchless tape.

1.4.1 Absolute Position System (APS) Selector

The Absolute Position System Selector uses an encoded tape that is read by two independent cameras. The dual camera device is SIL3 rated to supply position and velocity data over two independent CAN bus channels. One CAN bus channel connects directly to the MAIN CPU and the second CAN bus channels connects directly to the NTS processor. During setup both processors learn the hoistway floor positions and slowdown limits. Each processor's outputs control signals and door zone status to the Safety PAL for independent redundancy checking.

This selector system delivers 0.5mm accuracy, 50.8 pulses per inch. A block diagram of the Absolute Position System is shown in Figure 1-1.

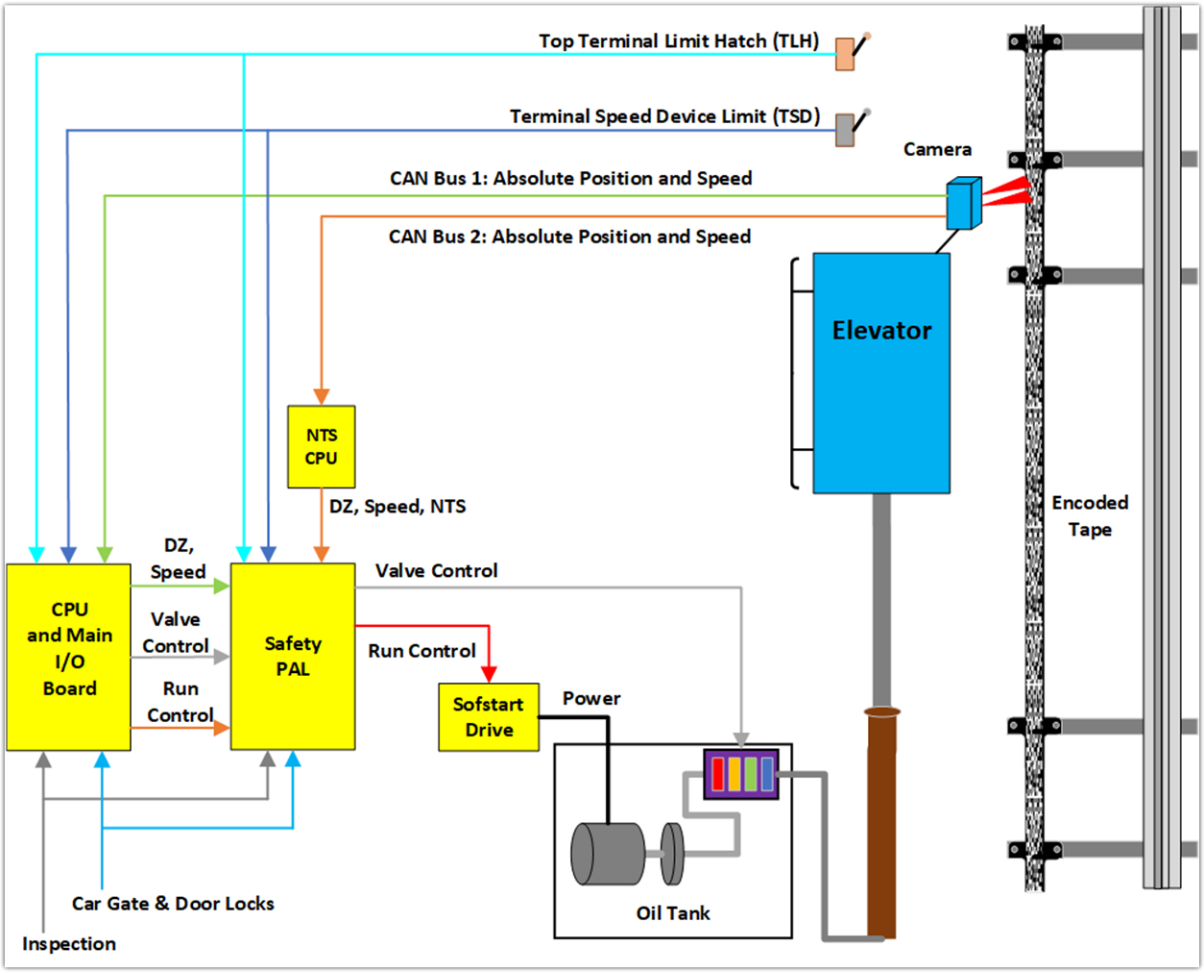


Figure 1-1: Absolute Position System Selector

1.4.2 Primary and Secondary Position Feedback

The Main CPU receives position feedback from the channel A camera CAN bus and builds a table of floor positions and slowdowns for each floor during setup. On a normal run, the Main CPU uses the slowdown points to initiate a slowdown to the appropriate floor and uses the floor position to determine the door zone and exact stopping position.

The NTS processor receives position feedback from the channel B camera CAN bus and builds an independent table of floor door zone positions and normal terminal slowdown limits (UN, UT, DN, and DT) during setup. On a normal run, the NTS processor uses the NTS slowdown points to independently remove power from the appropriate run valves as a redundancy to slowdown and stop the car at terminal landings.

Both the Main CPU and NTS processor outputs door zone and control signals, (SU, SUF, SD, SDF for the Main CPU and UN, UT, DN, DT for the NTS processor), to the Safety PAL to make hardware-controlled decisions that the car is safe to run.

To protect the car from hitting the stop ring at a speed greater than 50 fpm in the up direction, two mechanical switches are wired in the hoistway at the top terminal landing. The first switch actuated

while running up to the top terminal floor is the Terminal Speed Device (TSD) limit switch that directly removes power from the up fast valve. The top most limit switch is the Terminal Limit Hatch switch (TLH) that directly removes power from pump motor and all valves.

1.5 Sequence of Operation

Normal elevator operation, Automatic Mode, is selective-collective. When the elevator is traveling upwards to answer calls, all up hall calls at floors above the car are answered in the order reached by the car, regardless of the order in which the calls were registered. Upon reaching each landing with a car call or hall call registered, the car and hall doors at that floor are automatically opened.

The doors stay opened for a dwell time that is field adjustable. There are three different dwell times depending on whether it is a lobby call, car call, or hall call. The door will close before the set dwell time has elapsed if a passenger presses the door close button and the minimum door open time has expired. The door will reopen before it is fully closed if the door open button is pressed, if a passenger pushes on the safety edge, if the photo-eye light beam is interrupted, or if a call for that floor in the direction of travel is pushed. The door will close when the door opening condition is eliminated. When the door has fully closed, the calls are answered.

When all up hall calls and car calls above the car have been answered, the elevator reverses direction and travels downward to answer car calls and down hall calls placed below the car. The calls are answered as previously described for up calls. When all calls below a down car are answered, the car reverses direction to repeat the cycle. In short, an elevator traveling up will bypass down hall calls, and an elevator traveling down will bypass up hall calls.

In buildings with more than one elevator grouped together, the actual time of arrival, “real time”, is used to estimate how long each elevator will take to answer a hall call. The elevator that can respond the fastest takes the call. Real-time based dispatching permits the controllers to quickly respond to actual demand for elevator service. Some of the criteria used to estimate the time of arrival are as followed:

- Actual elevator floor to floor run times.
- Actual run time to the floor whether it is a multi-floor run or a one floor run.
- Whether the elevator is in or out of service.
- Whether the elevator is in load weigh bypass mode.
- The direction and position of each elevator in the group.
- The average door cycle time at each stop.
- Status of each elevator, accelerating, full speed, decelerating, actual time in motion.
- Number of stops required due to car calls.
- Number of stops required due to previously assigned hall calls.
- System demand.

The above performance criteria are continuously measured and stored for improved accuracy in the dispatching algorithm. All of the above data is continuously scanned, and the hall calls are reassigned if the conditions change and another car can respond faster. The ability to measure actual hall waiting time virtually eliminates long waiting and improves the average hall call waiting intervals throughout the building.

1.6 Modes of Operation

1.6.1 Reset Mode

Reset mode is initiated when the elevator power is first turned on, or when the system is reset. When the reset mode is initiated, the controller performs internal tests to ensure that both the car and controller are electrically operational before putting the car into service. The car will not move until reset mode is completed. Some of the internal tests that the controller performs are as follows: is the safety string made up; is the elevator on inspection operation; is the door close limit open; are the interlocks made up; is hoistway position correct. If all the safeties are made up, and the elevator is on automatic operation, and it is at floor level, the elevator will go into automatic mode. If the elevator is not at floor level, it will run slow speed down to the nearest floor, level into the floor, and reset the floor position count.

1.6.2 Safety String Open Mode

Safety string open mode is initiated when a safety is open. Some of the safeties are listed below:

- Reverse phase relay
- Governor overspeed switch
- Top Terminal Limit Switch
- Pit switch
- Hatch Safety Switch
- Exit Door Switch
- Car Safeties
- Car top stop switch
- Fire Fighters Stop Switch
- In-Car Stop Switch
- Controller Stop Switch

When the safety string is made back up, the elevator will go back to reset mode.

1.6.3 Controller Inspection Mode

The controller inspection mode is initiated by placing the “INS” switch on the 1121 board in the inspection position (down). Controller inspection mode permits operation of the car from the machine room. This mode performs the following operations:

- Enables the controller inspection “ENABLE”, “UP” and “DOWN” push buttons
- Door locks are active and must be closed to move the car.
- Pressing the controller “ENABLE” and “UP” pushbuttons causes the elevator to move at inspection speed in the up direction.
- Pressing the controller “ENABLE” and “DOWN” pushbuttons causes the elevator to move at inspection speed in the down direction.

1.6.4 Car Top Inspection Mode

This inspection mode is initiated by placing the inspection switch on top of the car in the inspection position. Inspection mode permits operation of the car from the car top inspection station. This mode performs the following operations:

- Disables access top and access bottom hall switches.
- Disables the controller "ENABLE", "UP" and "DOWN" push buttons.
- Door locks and Car gates/locks are active and must be closed or the door lock and gate bypass switch or switches must be active to move the car.
- Enables the car top inspection station "SAFE", "UP" and "DOWN" push buttons
- Pressing the inspection station "UP" and "SAFE" pushbuttons causes the elevator to move at inspection speed in the up direction.
- Pressing the inspection station "DOWN" and "SAFE" pushbuttons causes the elevator to move at inspection speed in the down direction.

1.6.5 Access Mode

The access mode is initiated by placing the key operated access switch located in the car operating panel to the on position. Access mode allows entrance into the Hoistway by qualified and authorized elevator personnel for equipment inspection and service. Access to the top of the car is possible from the top landing, and access to the pit is possible from the bottom landing. Enabling this mode permits the following operation:

- Enables the access key switches at the top and bottom landing in the entrance door jambs.
- Bypasses the gate switch to allow car movement with the car door open.
- Bypasses the top or bottom landing hall door lock, depending on which terminal access switch is being keyed.
- Turning the access key switch to the up position causes the elevator to move at access speed in the up direction.
- Turning the access key switch to the down position causes the elevator to move at access speed in the down direction.

1.6.6 Independent Service Mode

The independent service mode is initiated by placing the key operated independent switch located in the car operating panel to the on position, or by placing the controller toggle switch “IND” to the down position. Independent mode permits operation of the car with an operator. This mode performs the following operations:

- Hall initiated calls are ignored.
- Hall lanterns and gongs are disabled.
- The doors open automatically and stay open until closed by the operator.
- Closing the doors requires constant pressure on the door close button.
- When the car door is closed, the car answers the nearest car-initiated call in the direction of travel.

1.6.7 Load Weighing Bypass Mode

The load weighing bypass mode is initiated when the car is loaded to a predetermined percentage of full capacity, by closing a connection between terminals “LC” and “LW” or from serial communication from a load weighing device. Load weigh bypass mode allows the car to answer car calls and lighten the load before answering any more hall calls. This mode performs the following operations:

- Hall initiated calls are ignored.
- All other elevator functions operate as if on fully automatic service.

1.6.8 Attendant Service Mode

The attendant service mode is initiated by placing the key operated attendant switch located in the car operating panel to the on position. Attendant mode permits operation of the car with an attendant. This mode performs the following operations:

- The doors open automatically and stay open until closed by the attendant.
- Closing the doors requires a momentary pressure on the door close button, or the up or down buttons located in the car operating panel.
- Hall initiated calls are answered unless there is constant pressure on the bypass button.
- Hall lanterns and gongs are enabled.
- The direction of preference can be specified by momentary pressure on the up or down buttons located in the car operating panel.

1.6.9 Code Blue Hospital Service Mode

Code blue hospital service mode is initiated by turning one of the code blue switches, located at each floor where medical emergency service is required, to the on position. A car is selected to respond to the code blue call. That car will perform the following:

- Cancel all car calls
- Any hall calls previously assigned will be transferred to another car.
- If traveling toward the code blue call, it will proceed nonstop to the code blue call floor.
- If traveling away from the code blue call, it will slow down and stop at the nearest floor, maintain doors closed, reverse direction and proceed nonstop to the code blue call floor.
- If at a floor other than the code blue call floor, the elevator will close the doors and proceed nonstop to the code blue call floor.
- Once at the code blue call floor, the doors will open and remain open.
- The code blue in car switch located in the car operating panel must then be turned to the on position. If the code blue in car switch is not turned to the on position within 60 seconds from the time the doors reach full open on the code blue call floor, the car will revert back to normal operation.
- Upon activation of the key switch, it will allow the car to accept a car call for any floor, close the doors, and proceed nonstop to the floor desired.
- The return of the code blue in car key switch to the normal position will restore the car to normal service.

1.6.10 Fire Service Phase I Mode

Fire service phase I is initiated when the primary smoke sensor is activated, or the fire key switch located in the hall station on the primary return floor is turned to the on position. The primary return floor is usually the lobby floor but could be another landing if it better serves the needs of emergency personnel when fighting a fire or performing rescues. When fire service phase I is enabled:

- The fire emergency return light illuminates, and the fire buzzer sounds.
- The emergency stop switch is disabled when the door closes (depending on code requirement).
- The car travels to the primary return floor without answering any calls, then parks with the door open. The fire buzzer turns off, but the fire emergency return light stays illuminated.

- If the car is at a landing with the doors open, the doors will close, and the car will return non-stop to the primary return floor.
- If the car is traveling away from the primary return floor, the car will stop at the next landing, and then go immediately to the primary return floor.
- Turning the fire service key switch to the bypass position will restore the elevator to normal service.
- The elevator will perform per ASME A17.1 requirement 2.27.3 unless otherwise specified.

1.6.11 Fire Service Phase I Alternate Return Mode

Fire service phase I alternate return is initiated when the smoke sensor in front of the elevator at the primary return floor is activated. When fire service phase I alternate return is enabled:

- The fire emergency return light illuminates and the fire buzzer sounds.
- The emergency stop switch is disabled when the door closes (depending on code requirement).
- The car travels to the alternate return floor without answering any calls, then parks with the door open. The fire buzzer turns off, but the fire emergency return light stays illuminated.
- If the car is at a landing with the doors open, the doors will close, and the car will return nonstop to the alternate return floor. If the car is traveling away from the alternate return floor, the car will stop at the next landing, and then go immediately to the alternate return floor.
- Turning the fire service key switch to the bypass position will restore the elevator to normal service.
- The elevator will perform per ASME A17.1 requirement 2.27.3 unless otherwise specified.

1.6.12 Fire Service Phase II Mode

To initiate fire service phase II, the car must first have been placed in fire service phase I, and, as a result, be parked at the designated level with the door fully open. Following that, the key operated fire service phase II switch, located in the car operating panel must be placed in the on position. Fire service phase II permits operation of the car by a fire fighter. This mode performs operations in accordance with ASME A17.1 requirement 2.27.3 as follows:

- The doors close only with constant pressure on the door close button, after they have been fully opened.
- The doors open only with constant pressure on the door open button, after they have been fully closed.
- Hall lanterns and gongs are disabled. Safety edge and electric eye are disabled
- All registered car calls can be canceled with momentary pressure on the call cancel button located in the car operating panel.
- All hall calls are disabled.
- To remove the car from fire service phase II the car must be at the fire return landing with the doors in the fully open position and the phase II switch turned to the off position.
- See ASME A17.1 requirement 2.27.3 for specific operation of fire service phase II.

1.6.13 Emergency Power Sequencing

Emergency Power is initiated when a connection is made between terminals “HC” and “EMP”. This mode performs the following operations:

- All cars are returned to the bottom floor one at a time, and cycle the door.
- The door open button remains active.

- If a car is selected to run it will go back into normal operation.
- Removing the connection between terminals “HC” and “EMP” will remove the cars from emergency power operation.

1.6.14 Emergency Power Battery Lowering

Emergency Power Lowering is initiated when power is lost, and the Normal Power Relay drops out. When this occurs, the power circuit switches to the UPS backup power and activates the EMP input. This mode performs the following operations:

- The car returned to the bottom floor and cycles the door.
- The car cannot run but the door open button remains active.
- When normal power is returned to the controller, the Normal Power relay is picked removing power from the EMP input and the car will return to normal operation.

1.6.15 Earthquake Mode

Earthquake mode is initiated upon activation of a seismic switch. This mode performs the following operations:

- If in motion the car will proceed to the nearest available floor.
- Once at a floor, the car will cycle the doors and shut down.
- The door open button remains active.

1.6.16 Stalled (Low Oil) Mode

Stalled mode is initiated when the elevator has been in run mode longer than the field adjustable anti-stall timer. This mode performs the following operations:

- Turns off the pump motor and stops the elevator.
- The car is returned nonstop to the bottom floor.
- Upon reaching the bottom floor, the doors cycle, then the elevator is shut down.
- The door open button remains active.

1.6.17 Automatic Mode

Since this is the normal operating mode, the controller automatically enters this mode if none of the previously described modes are activated, and if no fault is detected. The following operations are performed in automatic mode:

- The car operates in selective-collective control sequence when answering calls.
- Hall and car calls are functional.
- Hall lanterns and gongs are operational.
- Simplex Cars Park at the last call answered unless simplex lobby parking has been enabled in the program. In a multi-car group, a car is parked at the lobby if no other demand exists and parking is enabled.
- The doors remain closed when the car is parked

Section 2 - Installation

2.1 General Information

This section provides basic guidelines and recommendations for the proper installation of the controller equipment. These guidelines should be used as general instructions. They are not intended to usurp local codes and regulations.

2.2 Site Selection

There are several factors that elevator personnel should consider when choosing a location for installing this product. The elevator controller should be installed at a location that provides the most convenient access for adjustment, inspections, and repairs. If at all possible, elevator personnel should have an unobstructed view of the machine when standing in front of the controller. A safe and adequate workspace around the controller must be provided. Work areas must be free of any items that might interfere with the proper routing of conduits or hinder the opening of cabinet doors. All clearances, workspaces, lighting, and guarding around the controller must comply with governing codes.

2.3 Environmental Considerations

The controller package is provided with a standard type 1 enclosure. This type of controller should be installed in a clean, dry, and non-corrosive environment. Ideally, the equipment room should be temperature controlled between 70° F and 90° F. However, control equipment will function properly within an ambient temperature range of 32° to 110° F. If temperatures remain at the upper and lower extremes of this range for an extended period of time, the life expectancy of the control equipment may be reduced. It is important to always keep the controller dry, clean, and free of any dust and debris.

The control system is designed to have a high immunity to electrical noise, radio frequency radiation, and magnetic interference. However, high levels of these items could cause interference with certain parts of the control system.

The power supply feeding the controller should have a fluctuation of no greater than + or - 10%.

2.4 Wiring Guidelines and Instructions

See the **IMPORTANT NOTICE** on page “viii” of this manual

2.4.1 Wiring Schematics

A complete set of wiring schematics and connection diagrams will be provided for each job. Each set of wiring schematics and connection diagrams are job specific. The job name and number will be listed in the bottom right corner of each page of these documents.

2.4.2 Proper Field Wiring

Most of the field connections to GALaxy controls are made using stranded wire. When inserting this stranded wire into the terminals – especially those for EPD's (Electrical Protective Devices) – care must be taken to ensure that all the strands are properly inserted into the terminals. Improper stripping and insertion may leave strands outside of the terminals. Strands not properly inserted into the terminals may make contact with wires from an adjacent terminal.
The danger associated with an occurrence as described above has led GAL Manufacturing to recommend that, for all connections to the Electrical Protective Devices listed in ASME A17.1-2016/CSA B44-16, Requirements 2.26.2.1 through 2.26.2.39, elevator personnel must follow the guidelines listed below:

- Inspect all terminals used to connect Electrical Protective Devices. Ensure that the cage clamp is fully open before inserting a wire into the terminal block.
- Perform corrective action for wires with stray strands by one of the following methods:
    - Reconnect the wire with all wire strands correctly installed into the terminal. Visually verify that **no wire** strands are outside of the terminal. The conductor should be stripped and inserted completely into the terminal in such a manner that no more than two millimeters of bare wire is visible; or
    - Attach a ferrule to the end of field wire for safety devices (as pictured in Figures 0-1 and 0-2) and insert the ferrule into the terminal; or
    - Use an acceptable method such as tinning.
- After removal and replacement of any of these field wires, the actual Electrical Protective Device should be checked for proper operation.

2.4.3 Ground Wiring

Proper grounding of the power supply, controller, elevator car, and hoistway is required. Separate conductors should be run for EG (earth ground) and GND terminals. These terminals and conductors are detailed on the wiring schematics.

2.4.4 Hoistway Wiring

All hoistway wiring is detailed on the wiring schematics and connection diagrams. The number of required hoistway conductors is listed in the connection diagrams. A job specific "pull sheet" is also included in the connection diagrams.

2.4.5 Elevator Car Wiring

All elevator car wiring is detailed on the wiring schematics and connection diagrams including the wiring to the car station, door operator, car top selector, and inspection station. The number of required traveling cable conductors is listed in the connection diagrams. A job specific “pull sheet” is also included in the connection diagrams.

2.4.6 Machine Room Wiring

All machine room wiring is detailed on the wiring schematics and connection diagrams including the main power supply wiring, motor wiring, and field wiring.

2.5 Normal and Top Terminal Slowdown Limits

The terminal slowdown limits include the Normal Terminal Slowdown Limits (including UN, UT, DN and DT) and the Top Terminal Limits (including TSD and TLH). The Normal Terminal Slowdown Limits are read from absolute positions on an encoded tape. The TSD and TLH limits are mechanical switches.

The Normal Terminal Limits are used to cause the car to slowdown and stop at or near the terminal landing if the normal stopping means does not function properly. The NTS processor monitors the position of the car in the hoistway from the APS selector camera and turns off the appropriate limit switch, when the limit position is reached, independent of the Main CPU.

The Top Terminal Slowdown limits are used to prevent the car from hitting the stop ring on the hydraulic jack at a speed greater 50 fpm. TSD and TLH limits must be mechanical switches installed on all GALaxy eHydro controlled elevators and must be set to activate mechanically from the movement of the car.

The distance that the limits are placed from the terminal landing depends on the speed of the car. Table 2-0 shows the slowdown limit locations with respect to contract speed. All distances are shown in inches. The distances listed represent the distance from the terminal landing when the slowdown switch is actuated.

<table>
<tr><th>FPM</th><th>UN/DN *</th><th>UT/DT *</th><th>TSD</th><th>TLH</th></tr>
<tr><td>50</td><td rowspan="5">2" above top floor and below bottom floor</td><td>5"</td><td>4"</td><td rowspan="5">4" above top floor</td></tr>
<tr><td>75</td><td>9"</td><td>7"</td></tr>
<tr><td>100</td><td>12"</td><td>10"</td></tr>
<tr><td>150</td><td>21"</td><td>17"</td></tr>
<tr><td>200</td><td>30"</td><td>22"</td></tr>
</table>

Table 2-0: Slowdown Distances from Terminal Landings

* UT and DT limit distances are setup by parameters in the NTS Processor. UN and DN limits are always 2” above and below the top and bottom terminal landings respectively.

The up and down directional limit switches UN and DN will be set to open two inches past the terminal floor levels on the NTS processor and MAIN CPU. With the Absolute Position System (APS) selector camera, the slowdown limit positions are automatically calculated by the NTS processor and Main CPU boards. If the calculated slowdown values are not adequate, the distances for the NTS Processor and the Main CPU can be modified from the Main CPU LCD Interface under the “NTS Proc Adj Vars” menu. The Main CPU slowdown distances will always match the NTS processor distances.

2.6 Top Terminal Limit Switches

The Top Terminal Limit Hatch (TLH) switch should be set to open four inches above the top terminal floor level. The Terminal Slowdown (TSD) switch should be set to open at the appropriate table value.

These two switches must be mechanical switches.

For the requirements for a running platform during initial start-up, refer to the GALaxy eHydro Quickstart Guide or Section 3.2.1 of this manual.

2.7 Selector Installation

2.7.1 APS (Absolute Position System) Selector Installation

2.7.1.1 Installation of the Encoded Tape and APS Camera

Always handle the encoded tape with care to make sure that the encoded surface of the tape is not damaged. Do not kink the tape or bend the tape in too tight of a radius. When installing the tape, make sure that no grease, dirt, or debris is on the encoded surface of the tape.

The general configuration of the APS (Absolute Position System) Selector is shown in Figure 2-0.

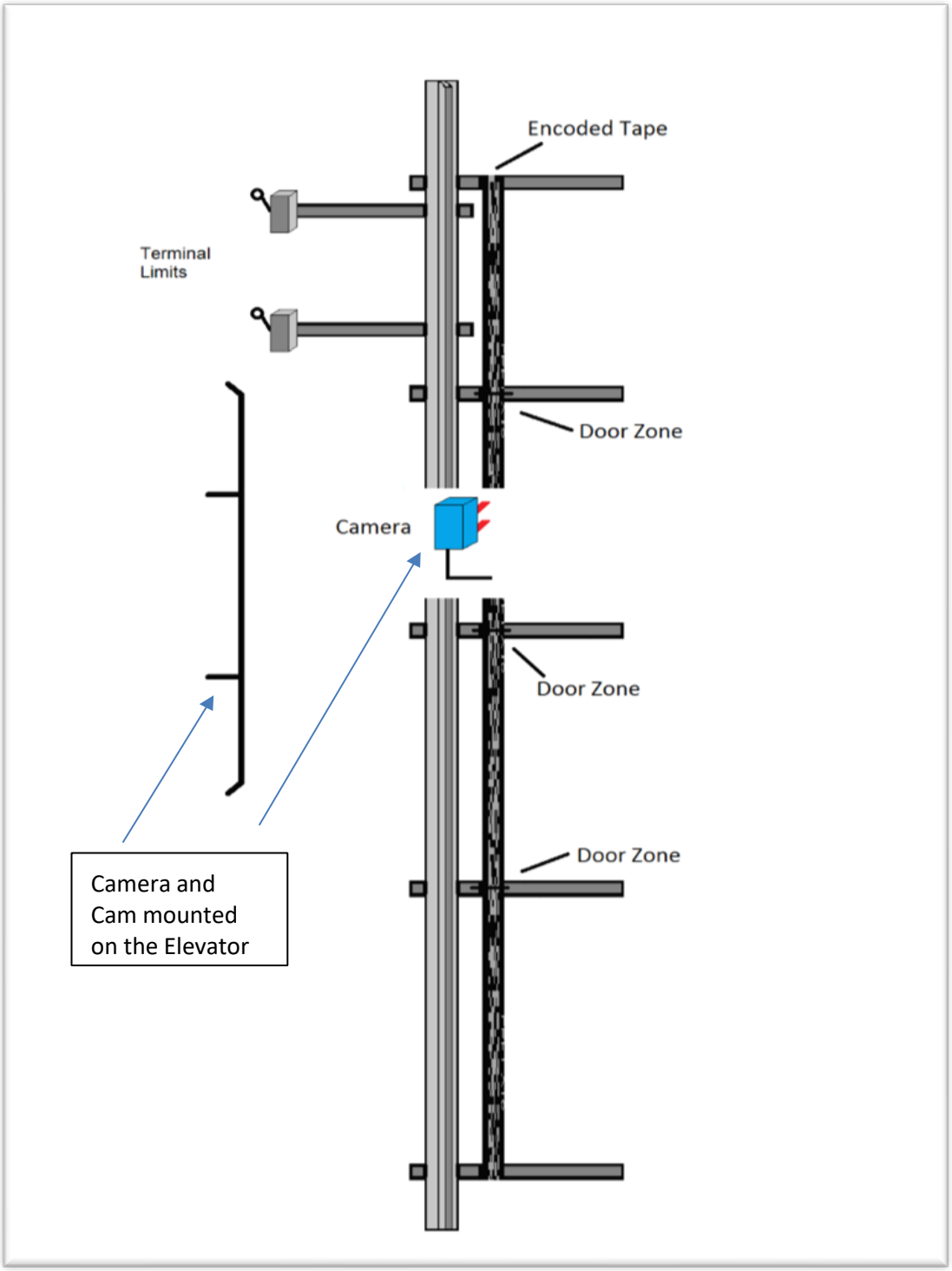


Figure 2-0: APS Selector General Configuration

To install the APS Selector, follow steps 1 through 8 below:

Step 1: Install top selector bracket and attach the encoded tape.

- Mount the top J-hook selector bracket to the rail.
- Make sure the bracket is high enough that, when the car is on the stop ring above the top terminal landing, that the encoded tape is still within the field of view of the APS cameras, and that nothing on the car contacts the bracket.
- Attach the encoded tape to the top bracket keeping the encoded tape as close to the rail as possible. See Figure 2-1.
- Make sure to feed the tape through the front side of the bracket first (the side facing the car), and then bend it around the top of the bracket and lace it back down. Make sure that the encoded side of the tape faces the car and that the “LEFT” markings on the tape are on the left side. See Figures 2-2 and 2-3.
- Fasten the tape with the supplied bracket and screws.

Figure 2-1: Encoded Tape Mounting – Top Bracket

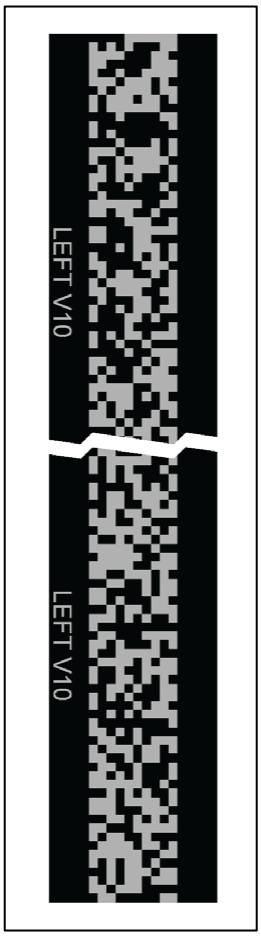


Figure 2-2: Front View of Encoded Tape

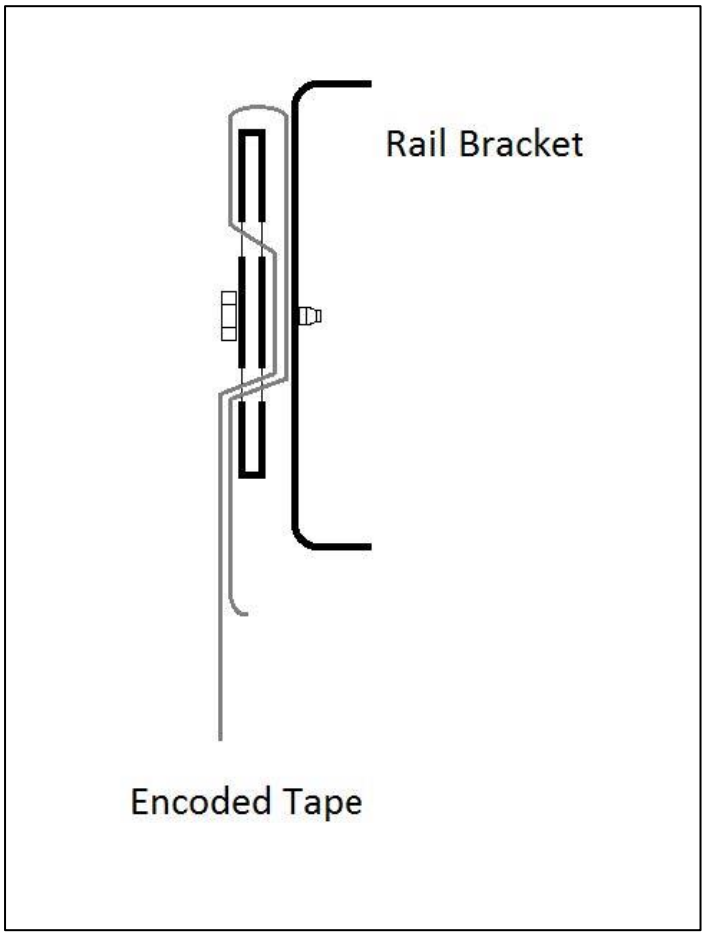


Figure 2-3: Side View of Top Bracket

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

- Run down on inspection while unrolling the tape. See Figure 2-4.
- 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.
- Mount a J-hook selector bracket and guide clip with a door zone bridge for each floor. See Figures 2-5 and 2-10.
- When the elevator is at floor level the door zone bridge should be positioned at the midpoint between the two APS cameras. See Figure 2-14. The exact positioning of this bracket and guide clip will be set in section 2.7.2.4.
- Where there are tall floor heights or blind hoistways, mount J-hook selector brackets and guide clips **without** door zone bridges, at locations as needed, that will hold the encoder tape at the proper position with respect to the guide rails and APS camera. See Figure 2-6.
- Make sure your hands are clean and you do not leave any grease or dirt on the front of the tape.

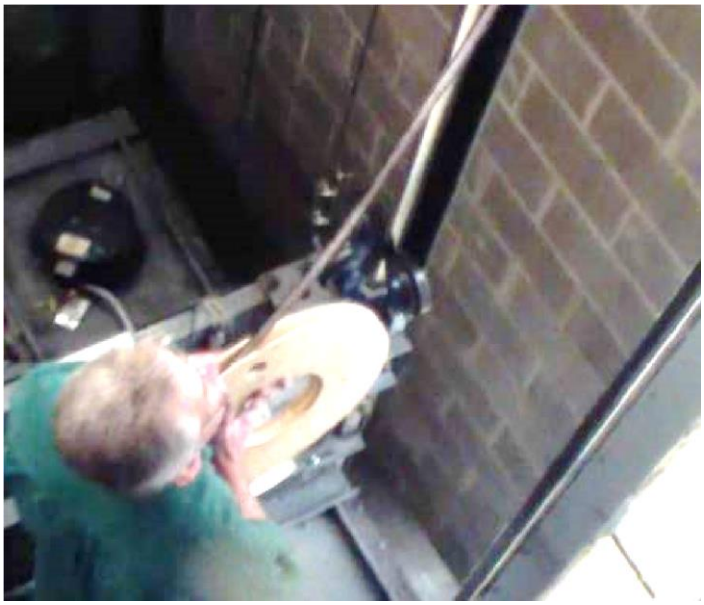


Figure 2-4: Unroll the Encoded Tape

Figure 2-5: Guide Clip with Door Zone Bridge

Figure 2-6: Guide Clip without Door Zone Bridge

Step 3: Install the bottom selector bracket and attach the encoded tape.

- Mount the bottom selector bracket onto the car guide rail as shown in Figure 2-7.
- Make sure the bracket is low enough that, when the car fully compresses car buffer, that the encoded tape is still within the field of view of the APS cameras, and that nothing on the car contacts the bracket.
- Attach the encoded tape to the rail bracket with the slack tape switch.
- Make sure to 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 2-8.
- Push the bracket down until the springs are depressed to the mark in order to properly tension the encoded tape. See Figure 2-9.
- The slack tape switch should be properly installed and wired according to the wiring schematics and connection diagrams

Figure 2-7: Lower Bracket Mounting

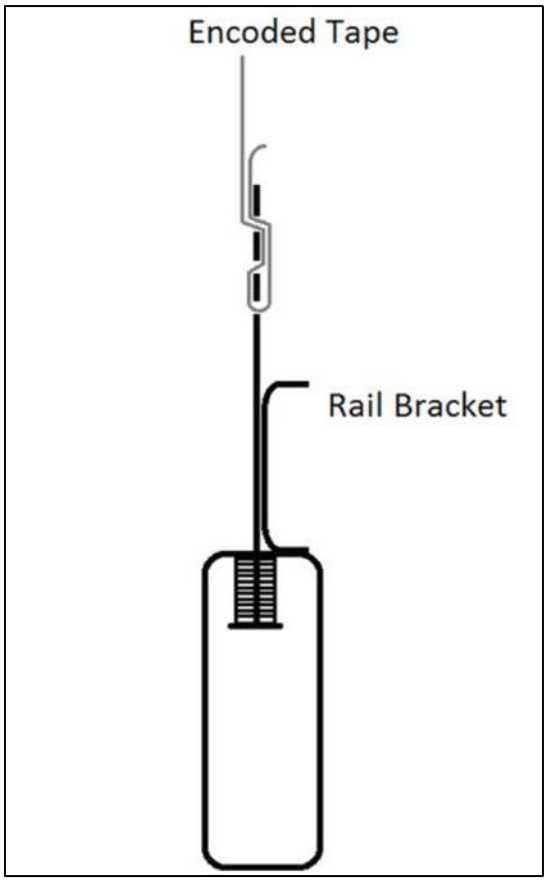


Figure 2-8: Side View of Encoded Tape Attachment to the Bottom Bracket

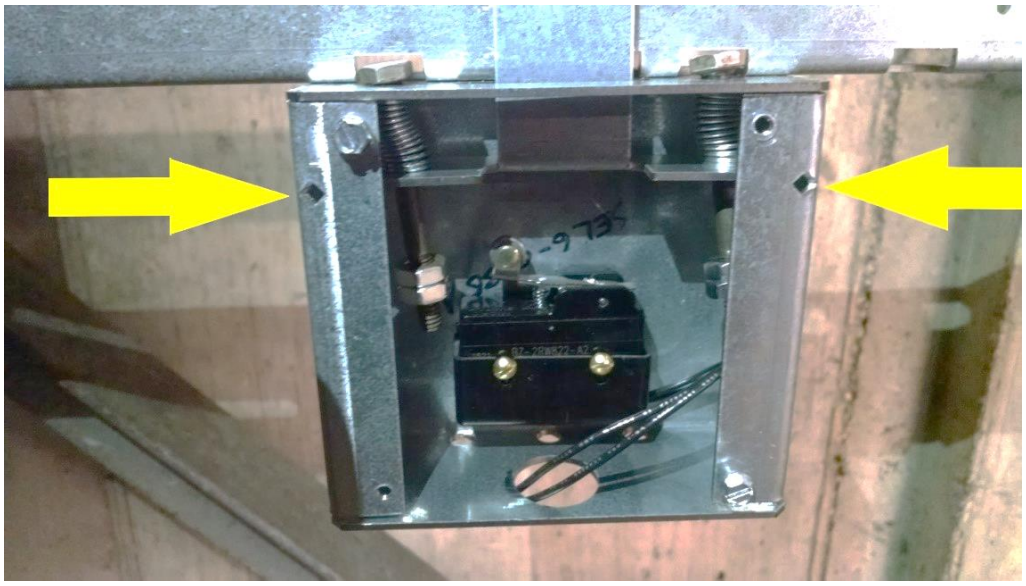


Figure 2-9: Lower Bracket with Springs Properly Compressed to the Marks

Step 4: Install the selector mounting bracket.

- Mount the selector 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 Figures 2-10 and 2-11.
- The back of the bracket should be as close as possible to the crosshead channel.
- Use a level and make sure it is plumb and level.

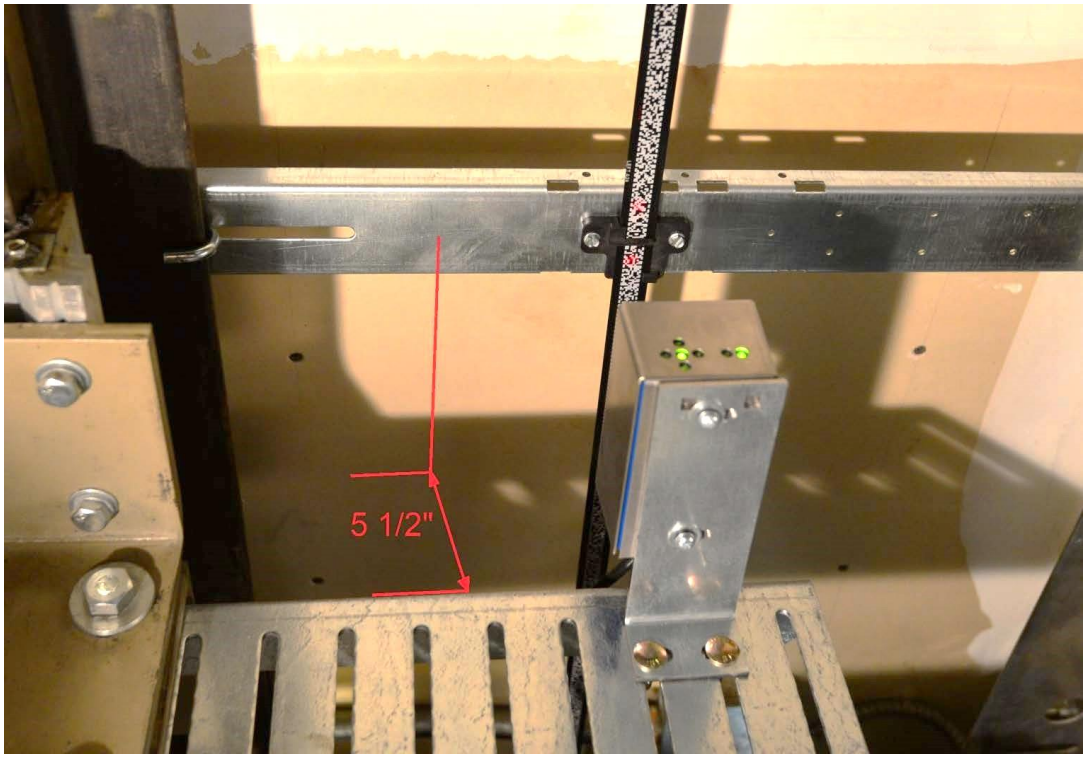


Figure 2-10: APS Camera and Mounting Bracket

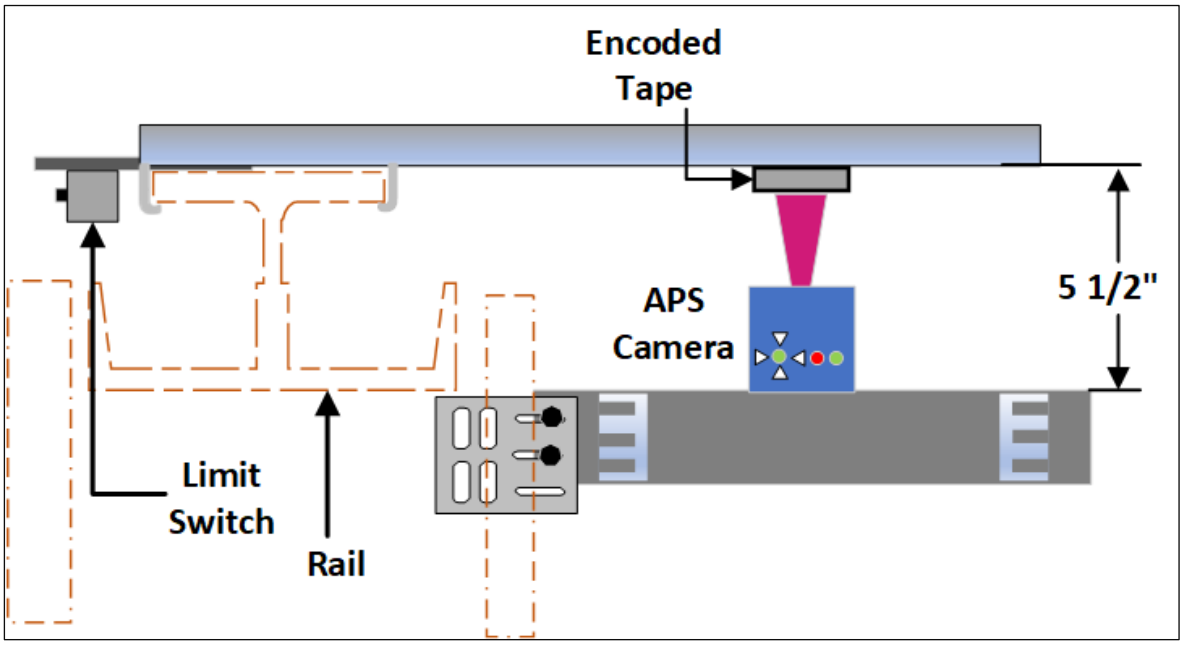


Figure 2-11: Top View of APS Camera and Mounting Bracket

Step 5: Install the APS Camera.

- Mount the camera on the mounting bracket.
- The APS camera should be centered with the encoded tape.
- The face of the camera should be 4 inches from the face of the tape. See Figure 2-12.

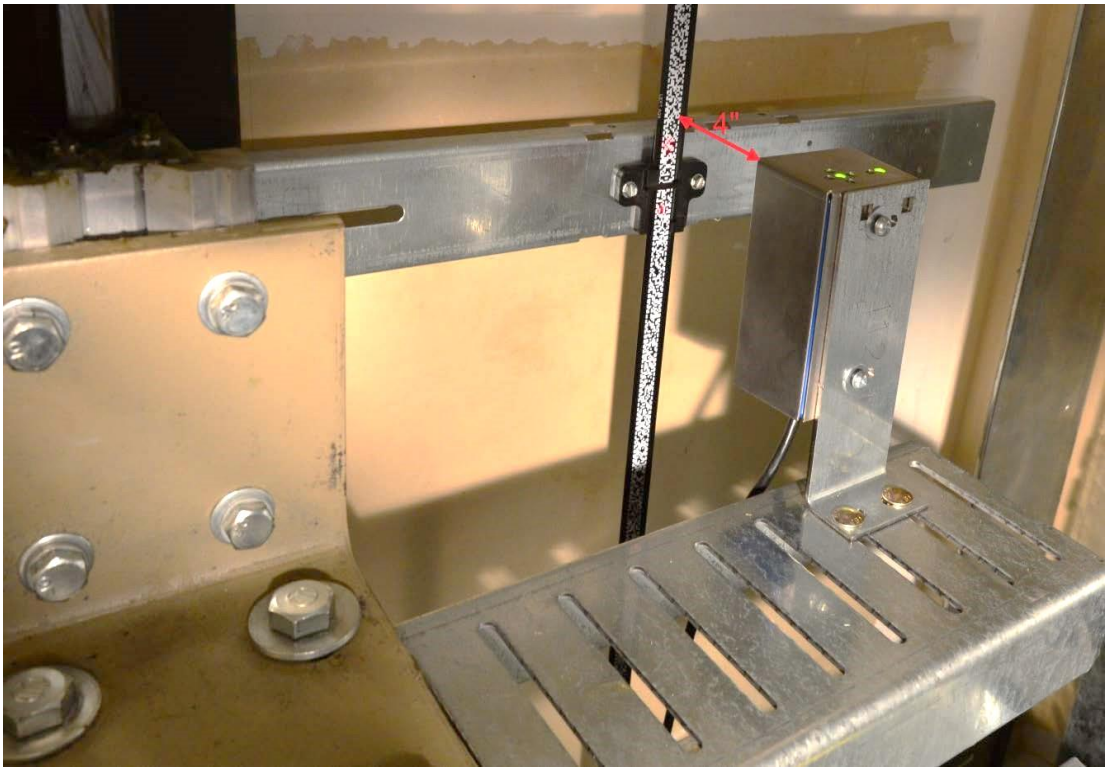


Figure 2-12: APS Camera Mounted 4 Inches From Encoded Tape

Step 6: Wire the APS Selector Camera according to the connection diagrams.

- The APS selector should be wired according to the job specific wiring schematic and connection diagrams. See Figure 2-11.

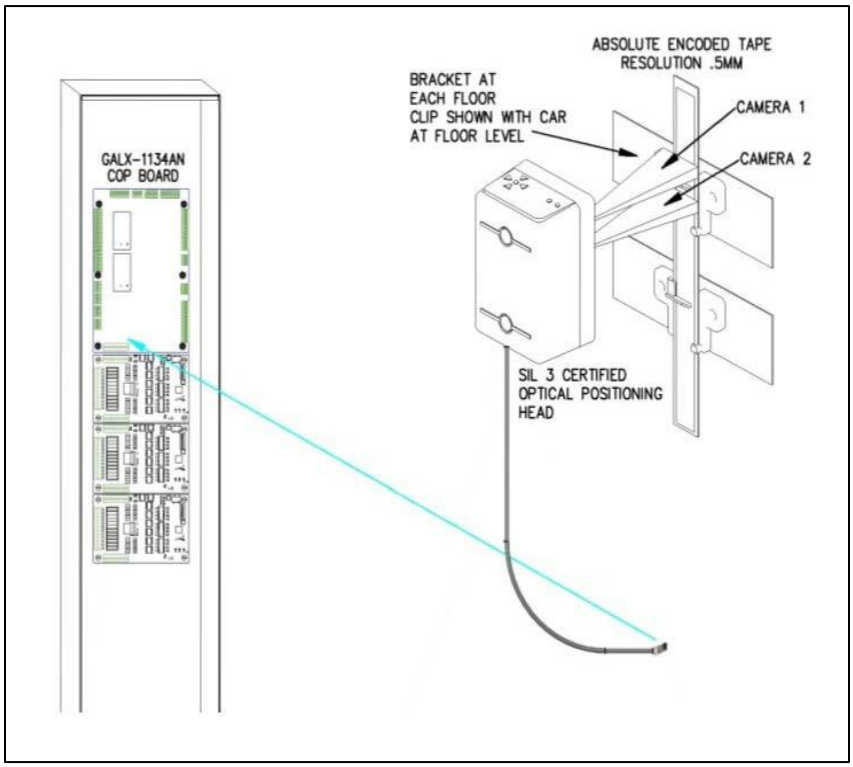


Figure 2-13: Wire APS Camera According to Wiring Schematic and Connection Diagram

Prior to performing “Step 7” below, the eHydro controller must be installed, and the APS selector must be properly wired according to the wiring schematics. See Section 3 of this manual.

Step 7: Perform a fine adjustment of the APS camera.

- Make the fine adjustment of the camera using the LED array on the top of the APS camera. See Figure 2-14.
- Adjust the camera so only the green LED in the middle of the 4 red arrows is on. See Figure 2-16.
- Temporarily obstruct the field of view of the APS camera for 5 seconds, and then remove the obstruction. Two red alignment spotlights should appear on the encoded tape. These spotlights represent the center of the field of view of each APS camera. Adjust the camera so the spotlights are in the center of the encoded tape. See Figure 2-15.
- Level the APS camera with a leveling device. The APS camera must be parallel and square to the encoded tape. See Figure 2-17.
- The PWR and STAT LED’s indicate the status of the APS. See Table 2-1.

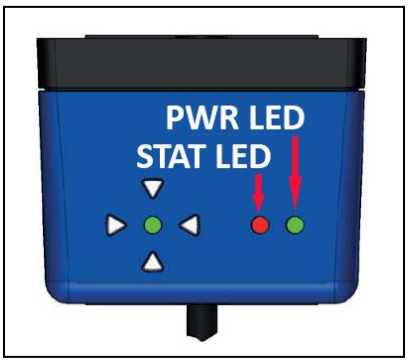


Figure 2-14: LED Array on APS Camera

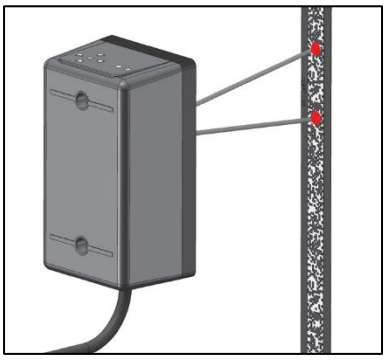


Figure 2-15: APS Camera Alignment Spotlights

LED	Color	Function	OFF	ON	Slow Blinking (1 Hz)	Fast Blinking (5 Hz)
PWR	Green	Supply voltage	No power	Power OK	--	--
STAT	Red	Status signal	No errors	Reading error	APS internal fault	Communication error

Table 2-1: APS Camera, PWR and STAT LED's

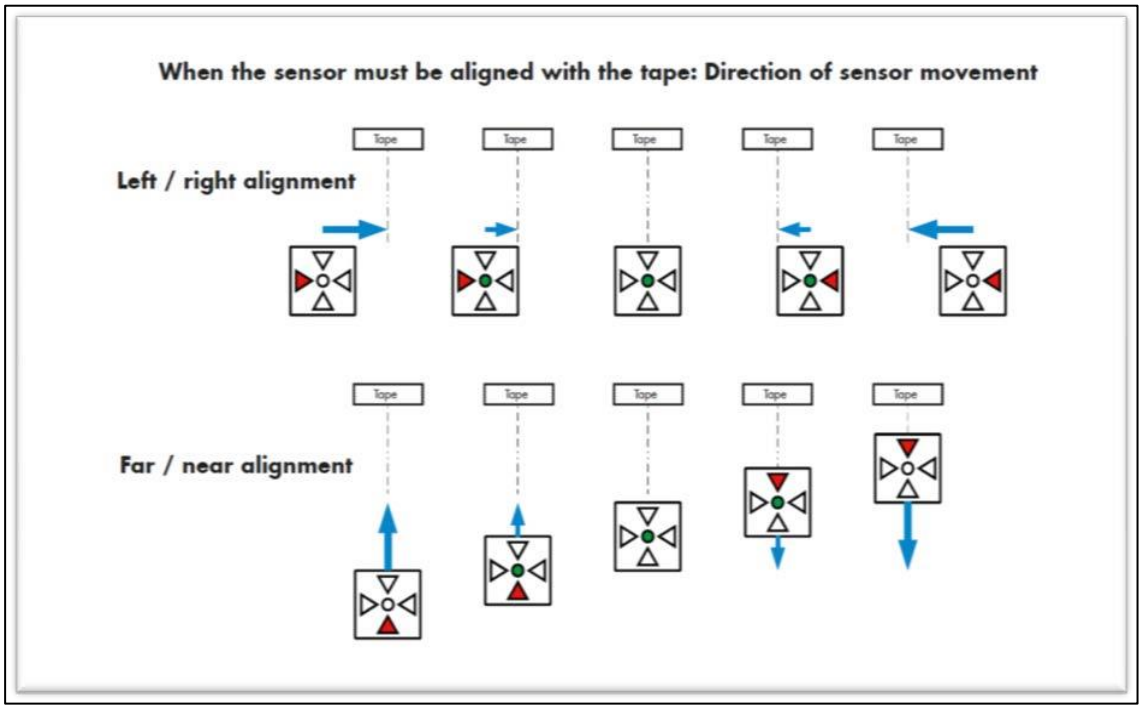


Figure 2-16: Fine Adjustment of the Camera Sensor

Figure 2-17: APS Camera Orientation

2.7.2 APS Selector Floor Position Setup (Hoistway Learn)

The hoistway learn procedure requires that the selector camera communicates properly with the Main CPU and the NTS processor. The hoistway learn procedure also requires that the APS camera module communicates properly with both CPUs on the selector interface board and with the main CPU in the controller.

Proceed to Section 3 of this manual, and, once the “Prepare the Car for Hoistway Learn” section is reached in section 3.3.3, return to section 2.7.2.1.

2.7.2.1 Verify that the APS Selector Camera is Installed Correctly and Communicating.

From the Diagnostic menu on the LCD Interface, select the Sel CAN Com Status. Verify that the CPU to Selector Rx Error Cnt is zero, that the Rx Data Cnt is counting and that the On-line status equals 1. Verify that the CNT A is not zero, that there are no Errors or Warnings and that the alignment is centered and contrast shows OK. Also verify that the NTS to Selector status shows that the Rx Error Cnt is zero, that the Rx Data Cnt is counting and that the On-line status equals 1. Continue to verify that the CNT B value for NTS Processor is not zero, that there are no Errors or Warnings and that the alignment is centered and contrast shows OK.

2.7.2.2 Set the Adjustable Variables – “NTS Proc Adj Vars” in the Controller.

The following parameters must be setup prior to learning any floor positions.

- Set “Top Speed” to the contract speed of the job.
- Set “Num Valid Fl” to the number of floors with openings on this elevator.
- Set “UT Limit Dist” and “DT Limit Dist”. If set to zero, the distance is set automatically from the slowdown table in the manual. If the parameter is changed, it will not take effect until a learn operation is done at the top and bottom floor. It is recommended to set both parameters to zero unless the slowdown distance need to be adjusted.
- Set “Can Baud Rate” to 0. 0 is 115.2K Baud. This parameter should not need to be changed.

2.7.2.3 Zero the Hoistway

After the NTS Processor parameters are setup, navigate to the Elevator Setup menu and select Learn Hoistway. The diagram below, Figure 2-18, shows the initial part of Learn Hoistway process if done from the machine room. To setup the hoistway from the car, you will only have to enter this menu the first time to zero the hoistway table. Note that the number of valid floors and top speed will be verified during this process. Be sure to select YES for First Time Setup and press ENTER. When you see the message, “Setup Active. Hit Up or Dn to Scroll thru”, press MODE to escape to the main menu. You are now ready to setup the floors from the car.

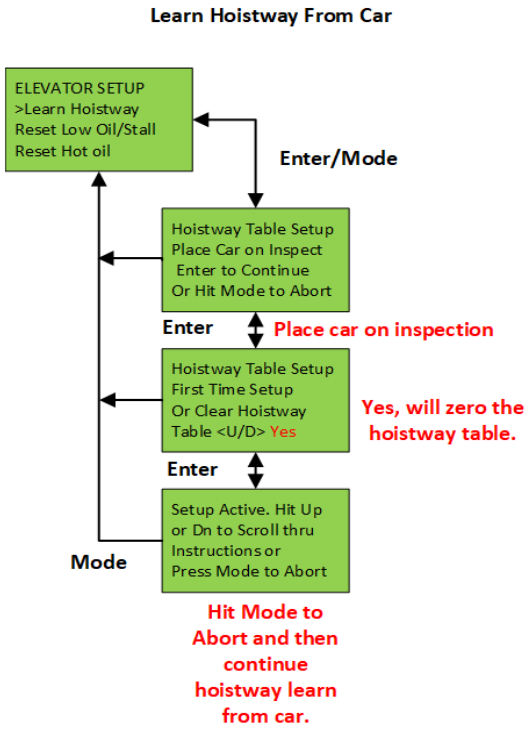


Figure 2-18: Learn Hoistway From Car

2.7.2.4 Setting Hoistway Floor Levels with APS Selector

- Put the elevator on car top inspection.

Temporarily set the car door bypass switch to the BYPASS position. Setting the car door bypass switch to the BYPASS position will allow the car to be moved on car top inspection with the car door open. All safety precautions must be followed to ensure the safety of elevator personnel and the general public when moving the car on car top inspection with the car door bypass switch in the BYPASS position.

- Move the jumper on the GALX-1134AN COP board to the setup position. See Figure 2-19.

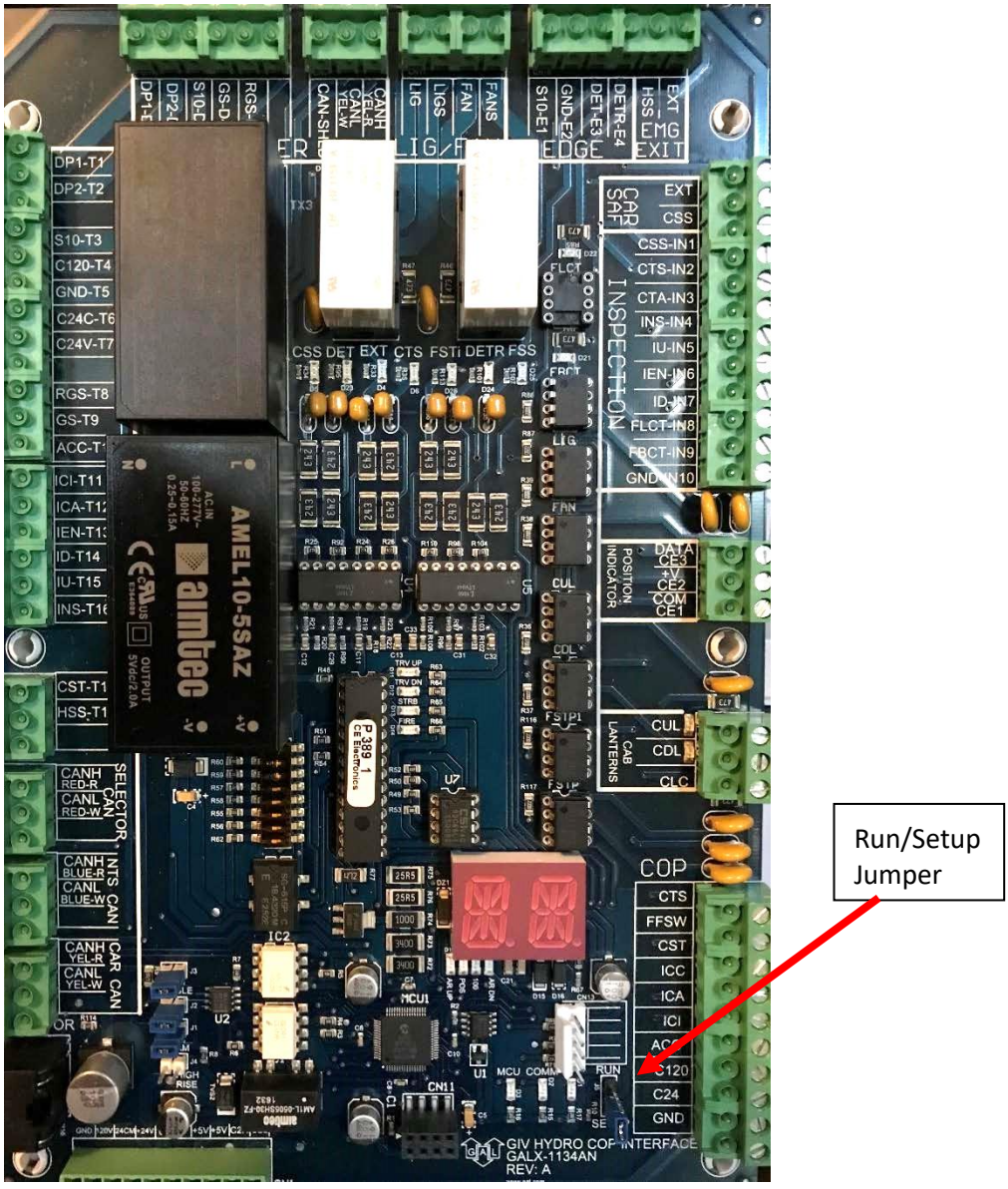


Figure 2-19: GALX-1134AN COP Interface Board Setup Jumper

- Move the car on inspection so that it is exactly level with a floor.

Pressing the door open button, while moving the car on inspection, will change the inspection speed to 3 fpm during the inspection run. This allows the car to be positioned at exactly floor level. The inspection speed will return to the value set for “Inspect Speed” in the “Car Motion” Sub Menu when the door open button is not pressed.

- Adjust the J-hook bracket and guide clip so the door zone bridge is positioned at the midpoint between the two APS cameras. If the alignment spotlights are not visible, temporarily obstruct the field of view of the APS camera for 5 seconds, and then remove the obstruction. Two red alignment spotlights should appear on the encoded tape. See Figures 2-15 and 2-20.

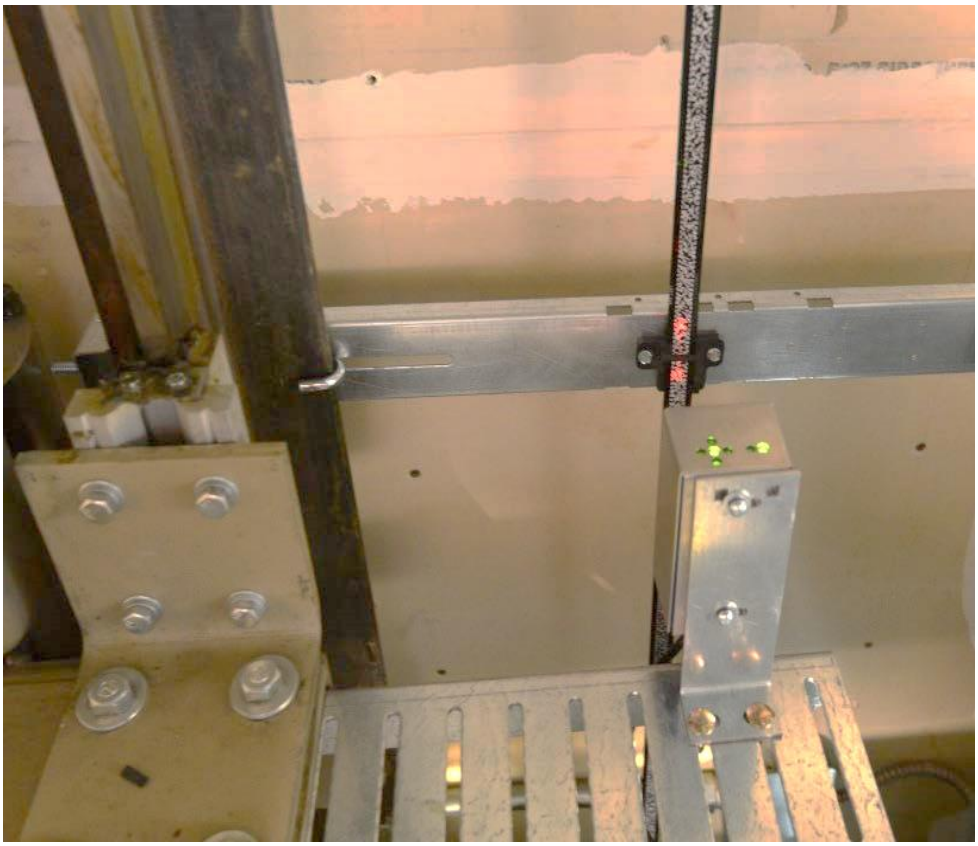


Figure 2-20: APS Selector Alignment Spotlights

- To record the floor position, press the buttons on the car operating panel in the following sequence.

  - Press the 2nd floor car call button
  - Press the 1st floor car call button
  - Press the 2nd floor car call button
  - Press the 1st floor car call button
  - Press the Door close button

  The car call light for floors 1 and 2 will illuminate momentarily and then turn off.
  After the two car call lights turn off, press the following button on the car operating panel.

  - Press the car call button for the floor where the car is currently located.

  This car call light will flash on and off for approximately 5 seconds and then remain off. This indicates that the floor position was recorded successfully. If the car call light does not flash, but remains illuminated, the floor was not recorded successfully. If the floor position was not recorded successfully, verify that the APS SEL adjustable variables are set properly.

The 1st floor car call is the car call for the bottom terminal landing. The 2nd floor car call is the car call for the landing that is one floor above bottom terminal landing. The actual floor markings for these floors may not be “1” and “2”.

- Repeat this process until all valid floors have been recorded.

Set the car door bypass switch to the OFF position.

- The hoistway learn is now complete.
- Proceed to section 3.3.3.

Section 3 - GALaxy Startup and Adjustment

3.1 Procedure for Initial Power-up of Controller

3.1.1 Checking Main Line Voltage

Prior to powering up the controller or attempting to run the hydraulic pump motor, the following steps should be completed:

- Familiarize yourself with the wiring schematics.

All safety precautions, including precautions related to electrical safety, must be followed to ensure the safety of elevator personnel and the general public.

- Before applying power to the controller, the following items should be verified by the **proper electrical authority**.
    - Verify that the disconnecting means is properly sized and is lockable.
    - Verify that the voltage supplying the elevator controller is correct as indicated on the “Controller Input” of the controller data tag.
    - Verify that the conductors supplying the disconnecting means are properly sized.
    - Verify that the conductors from the disconnecting means to the controller are properly sized.
    - Verify that power supply feeding the controller has the proper fuse protection or circuit breaker protection.

Verify that the power supply feeding the controller is properly grounded and that the grounding conductor is properly sized.

3.1.2 Check Controller Voltage

Turn the main line disconnect to the on position. Check the voltage at R, S, and T on the Soft-Starter. Verify that all three phases are present. Check the voltage at fuses L1 and L2 on controller. If correct, check that the voltage at terminals “S10” and “L120” with respect to “GND” reads 120 VAC. Check that the voltage across terminals “C24V” to “C24C”and “L24V” to “L24C” each reads 24 VDC. If any of these voltages are not correct, check wiring diagram to determine problem before continuing. Verify what the voltage for “FEP” and “HCP” match the voltage specified on the schematic.

3.1.3 Verify the Main CPU is Operating

Check to make sure that the “axy” of GALaxy on the Main CPU LCD interface is blinking. If the “axy” is blinking, continue to the next step. If not, check voltage at terminals 5V to 0V on the 1121 Main I/O board to insure 5VDC. If 5VDC is present and the “axy” on the Main CPU LCD interface is not blinking, then contact factory.

3.2 Start-Up Procedures

3.2.1 Requirements for a running platform during initial startup

1) Wire Hydraulic Pumping Unit and Main Line Power as shown in the job connection diagrams.
2) If elevator requires a Governor, install and wire the Governor as shown in the job connection diagrams.
3) Add temporary connections on the GALX-1121 Main I/O Board and on the I/O expansion boards as shown in Figures 1, 2, and 3.
4) Set the toggle switches on the Main I/O Board as shown in Figure 3.
5) Place CN18 on pins 2 and 3, in the temporary “Test Mode” configuration, on the GALX-1121 Main I/O Board, as shown in Figure 3.

All temporary connections must be removed before placing the elevator in service.

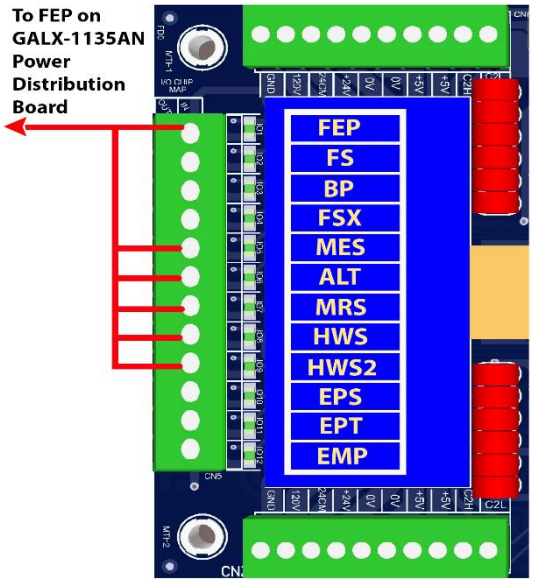


Figure 3-0: Typical I/O Expansion Board Fire I/O Board

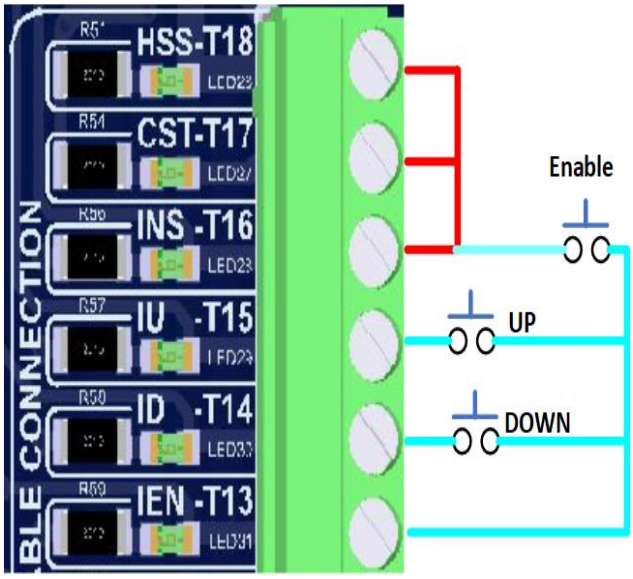


Figure 3-1: GALX-1121 Main I/O Board With Run Bug. See Figure 3-2 For Run Bug Stop Switch.

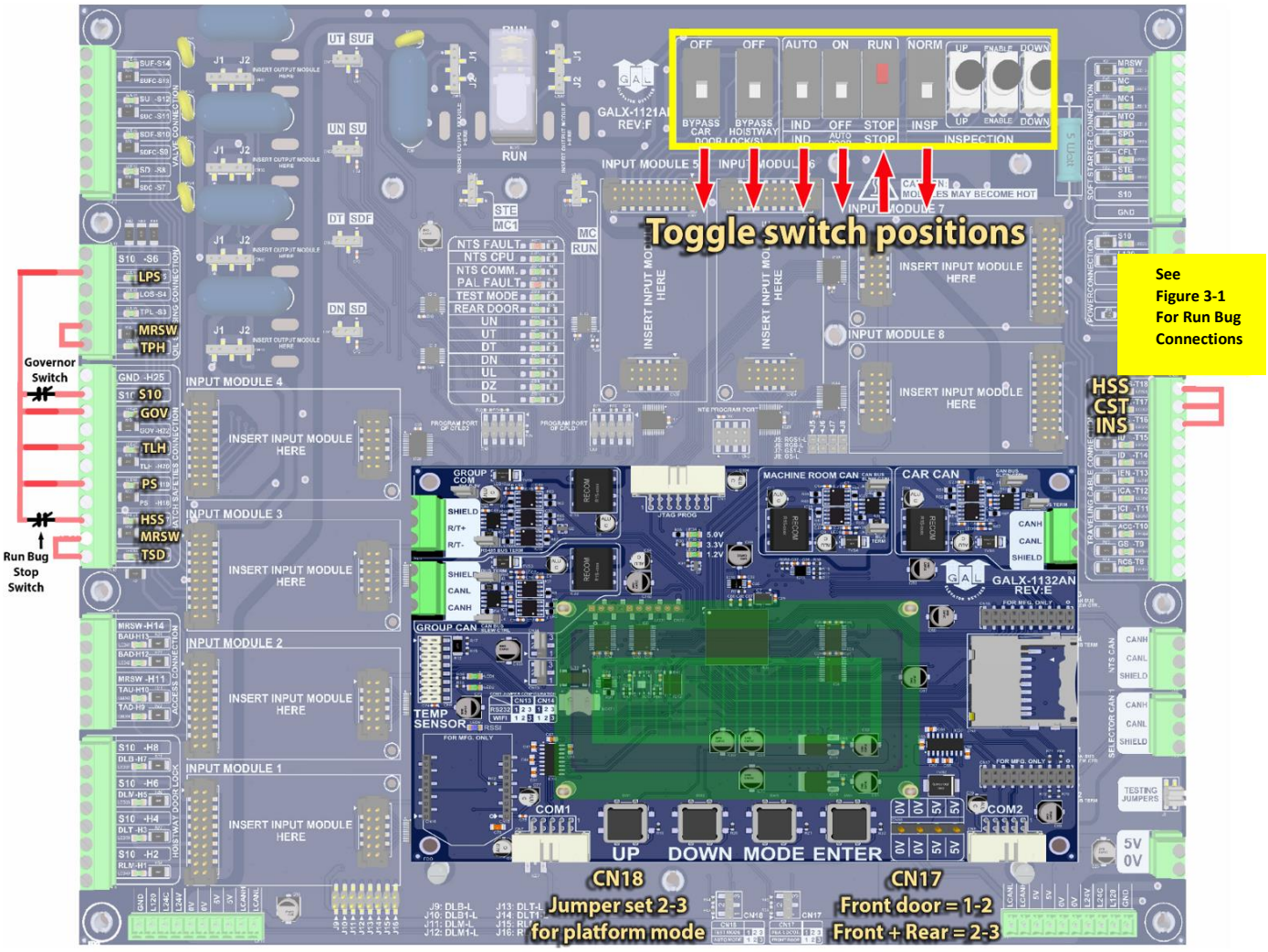


Figure 3-2: GALX-1121 Main I/O Board

6) Check/set parameters in the controller LCD user interface. See “eHydro Controller Settings” in Table 3-0.

Preset the following parameters from the LCD User Interface “Adjustable Variables” menu.

Adjustable Variables - Car Motion	**Adjustable Variables - System Options**
APS Dead Zone = 0.25 inches	Hall Lan Baud = 3 (19,200)
Stop On PosCnt = 0 (To be set in final setup)	**Adjustable Variables - NTS Processor**
High Spd Ins = 0 (0=slow speed inspection)	Top Speed = Contract Speed
	Number Valid Fl = Number of Valid Floors
	UT Limit Dist = 0
	DT Limit Dist = 0

Table 3-0: eHydro Controller Settings

7) Preset the hydraulic valve according to the manufacturer’s instructions.
8) Verify that the hydraulic pumping unit motor rotates in the correct direction.
9) If the motor rotation is not correct, disconnect power and swap the motor starter wires connected to the “Softstarter” terminals 1-L1 and 3-L2. After swapping these wires, re-apply power and verify that the motor rotates in the correct direction.
10) If the Sprecher Schuh Softstarter generates a “Phase Reversal” fault, verify that dip switch 9 on the Softstarter is set properly. See the Sprecher Schuh Softstarter manual for instructions on the proper setting for dip switch 9.

- Verify that the elevator is safe to operate as a running platform and that all individuals are clear of moving machinery.
- Make sure all hoistway and car doors are closed.

11) Adjust the speed of the platform in the up and down directions according to the hydraulic valve manufacturer’s instructions.

3.2.2 Complete the Installation of Equipment

Before beginning the adjustment process, the installation of all equipment should be complete including the following items. See Section 2 for the installation procedures.

- All field wiring, safety circuits, and safety devices should be installed.
- The APS selector system should be installed including the “door zone bridge” guide clips.
- All Terminal Limit switches should be installed.
- All car doors and car door electric contacts or car door interlocks should be installed.
- All hoist doors and hoistway door interlocks should be installed.

3.3 Adjustment Procedures

- Remove all temporary connections.
- Verify that all safety circuits and safety devices are installed and functioning properly.
- Verify that all car door electric contacts or car door interlocks are functioning properly.
- Verify that all hoistway door interlocks are functioning properly.
- Verify that all hoistway doors and car doors are closed.
- Verify that the elevator is safe to operate and that all individuals are clear from moving equipment.

3.3.1 Set Toggle Switches

Set all toggle switches on the 1121 Main I/O board as follows:

- DOOR LOCKS - "OFF"
- IND - "IND"
- AUTO DOOR - "OFF"
- STOP - "RUN"

3.3.2 Ready the Car to Run on Inspection

The car should be ready to run on inspection if all is wired correctly. Select the “Elevator Status” on the Main CPU LCD interface. The display should show INS on the car service area of the first main display. Pressing the DOWN button to the next display will show the type of inspection the car is on as in the list below:

- Machine Room
- Car Top
- Access
- In-Car
- Car Top Lock Bypass
- Car Top Gate Bypass
- Car Top G & L Bypass
- COB HW Setup Jumper

To run the car from the machine room, Machine Room inspection should be displayed.
The “inspection string” consists of contacts from the inspection switches and the gate and lock bypass switches in series as shown in Figure 3-3. One and only one of the five inspection inputs should be on for the car to run..

NOTE: Any one of the following conditions will generate an inspection error.

- More than one inspection input is on
- No inspection input is on
- Gate or Lock Bypass switch in the BYPASS position when the car is not on car top inspection

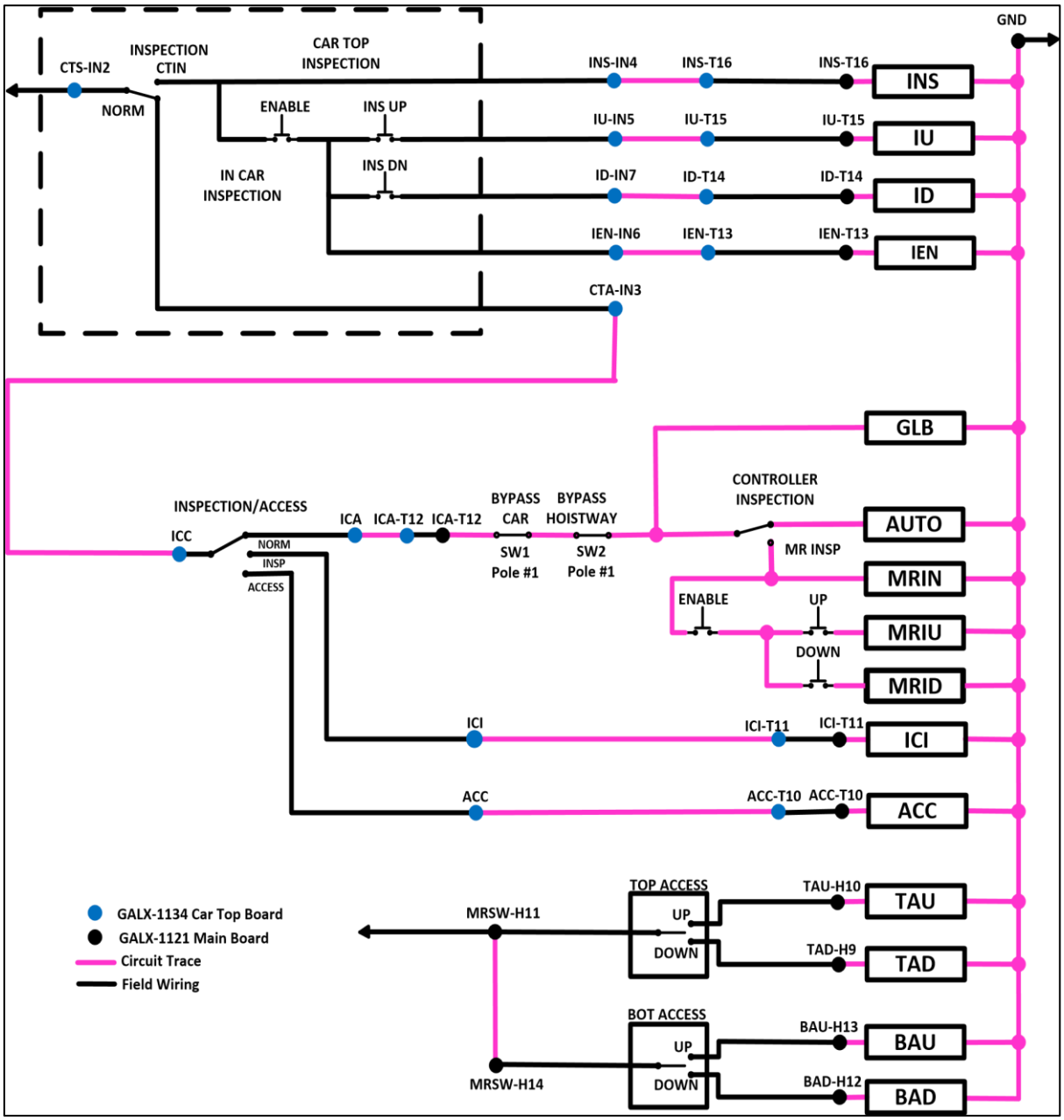


Figure 3-3: Inspection String Circuit

3.3.3 Prepare for the Car for Hoistway Learn

Return to section 2.7.2.1, “Veirfy that the APS Selector Camera is installed Correctly and Communicating”. Complete sections 2.7.2.1 through 2.7.2.4. After completing section 2.7.2.4, return to this section, 3.3.3, and complete the following items.

- Place the RUN/SETUP jumper on the GALX-1134AN COP Interface Board to the RUN position.
- Place the CN18 jumper on the GALX-1121An MAIN I/O board to No Test Mode 1 – 2.
- Check that all the floor positions have been learned by selecting “Hoistway Tables”->” Dpy APS Sel Valid Floors”. The display should show a bit set for each valid floor.

Even though the car may start at floor 2 or 3 and even skip floors, the selector always starts from one and increments the floors consecutively to show only valid floors. If there are 5 valid floors, 5 bits must be set.

- If a bit is zero, then run the car on inspection to that floor, make sure the car is dead level and learn the floor from the procedure in sections 2.7.2.1 through 2.7.2.4., or from the LCD Interface, “Elevator Setup”->” Learn Hoistway”. Follow the prompt from the LCD display and make sure not to mistakenly clear the hoistway table if floors have already been learned. Select to NO when prompted to “Clear HW Table<U/D>? No”.

3.3.4 Verify the Hoistway

With all the floors learned, run the car on inspection from bottom to top and verify that door zone signals (UL, DL and DZ) and the NTS limit output modules (UN, DN, UT and DT) all work as expected.

The NTS top and bottom limits are set automatically from a table when the top or bottom floor is learned respectively.

To manually change the NTS limits, perform the following items.

- Change the “UT Limit Dist” or “DT Limit Dist” value from the “Adjustable Variables”->” NTS Proc Adj Vars”->” menu. The value is set in inches from the terminal floor.

- Run the car to the top or bottom floor, learn the floor and then run to the opposite floor and again learn the floor. The new distances will be used at each terminal landing.

The selector will use the internal table value if limit distance parameter that is set to zero.

3.4 Adjust the Elevator

3.4.1 Automatic Run

- Turn the "AUTO DOOR" switch to the "OFF" position and the "IND" switch to the "IND" position.
- Take the car off of inspection operation to allow it to relevel to a floor. If the learn procedure was successful, the elevator should be ready to make an automatic run.

- From the Main CPU LCD interface, press the MODE button until the Elevator Status display is shown. See Figure 3-4.

Pressing ENTER from any screen in the Elevator Status display will access the car call popup window.

- Press ENTER, select a car call floor and press ENTER again. The elevator should run to answer the call.
- When the elevator levels in and stops at the floor, the doors will remain closed. The speed of the car can be monitored on this screen with each run as well as the pump motor " ", the direction " ▲ ", the slow speed valve " ⋈ " and the high-speed valve "f" (up fast or down fast).

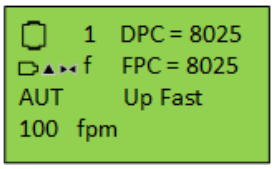


Figure 3-4: Elevator Status Display

- Press the UP or DOWN button until the Accel/Decel screen is displayed as shown in Figure 3-5.

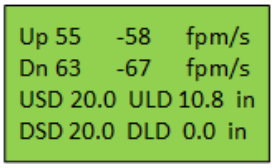


Figure 3-5: Accel/Decel Display

Each time the car runs, the Accel/Decel screen will show the acceleration rate and deceleration rate in the up or down direction. The deceleration rate is displayed as a negative number. In the example above, the up direction run acceleration rate is 55 fpm/s and the deceleration rate is 58 fpm/s. The down direction run accel and decel rates are 63 and -67, respectively. Also shown on the screen are the up and down slowdown distances (USD, DSD) displayed as 20.0 inches each and the up and down leveling distances (ULD, DLD) displayed as 10.8 and 0 inches. The ULD or DLD values are only valid after the car levels into the floor in the respective direction.

The displayed values on each of the above status screens can be used to aid in adjusting the slow speed and high-speed valves.

3.4.2 Adjust the Slowdown Distances

When the hoistway floor positions are initially set to zero, the slowdown values are also set to zero. Then when the hoistway learn is complete, any slowdown values that are zero are set from an internal slowdown table to give the mechanic a starting point.

To adjust the slowdown, run the car on automatic to each floor, and adjust the hydraulic valve to provide a smooth deceleration and leveling speed into the floor.

After setting the deceleration rate on the hydraulic valve, the slowdown distances can be adjusted to provide approximately 2 to 3 inches of stabilized leveling speed. Refer to the hydraulic valve manufacturer's adjustment procedure to properly adjust the hydraulic valve.

To adjust the individual floor slowdown distances can be adjusted by changing the individual floor up or down slowdown count values by navigating to the "Hoistway Tables" menu and then "Floor & SD

Count" display. See Figure 3-6. From this screen, Down Slowdown (DS) count, the floor count and Up Slowdown (US) count can be set.

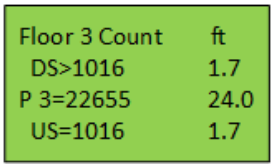


Figure 3-6: Accel/Decel Display

Press UP or DOWN to access the desired floor and then press ENTER to go into edit mode. Use the UP and DOWN buttons to position the cursor ">" to the desired DS slowdown or US slowdown count, and then press ENTER again to edit that count. After the value is changed, press ENTER to save the value. Press MODE to exit out of this menu. The slowdown counts can be changed for any floor.

3.4.3 Adjust the Stop

When at floor level, the "UL, DL, & DZ" LEDs should be on. If the elevator continually tries to seek floor level by leveling up and down, try the following steps to correct the problem:

- Reduce the leveling and re-leveling velocity by adjusting the leveling speed adjustment on the valve.
- Increase the APS Dead Zone parameter in the Car Motion menu.

If the car stops hard, readjust the final stop on the valve. Again, refer to the adjustment procedure of the valve manufacturer. Make sure the "Soft Stop Time" parameter is set to about 1.5 seconds.

The floor level positions are set by placing the car at the exact floor location and then selecting to learn the floor position. When the floor position is learned, the count value is automatically placed in the Hoistway Table as a count that is read from the tape.

The UL and DL locations are calculated to be 8 inches apart + or – the APS Dead Zone distance parameter. No door zone magnet is used. An exact stop can be achieved with setting the car to stop on pulse counts.

With "Stop On Pos Cnt = 1", adjustment for the Up or Down Level Distance is found in the "UL & DL Distance" menu in "Hoistway Tables". See Figure 3-7. The Pulses/Inch (PPI=50.8) is also display on this screen. Be familiar with how much each pulse will affect the stop.

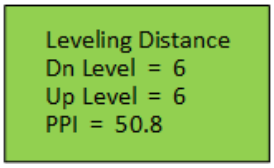


Figure 3-7: UL & DL Distance Display

The variables "Dn Level" and "Up Level" are used as the number of pulse counts to continue moving before issuing a stop sequence after the exact level position of the door zone is reached (UL and DL both on). "Dn Level" is used when the car is running down and "Up Level" when the car is running up. Changing the "Dn Level" and the "Up Level" variables will change the leveling distance at all floors.

To make floor position count changes at individual floors select the "Hoistway Tables" menu and then the "Floor & SD Count" screen. See Figure 3-8. Hit UP or DOWN to access the desired floor and then press ENTER to go into edit mode. Change the floor count to the desired location and then run the car away from the floor and then back again.

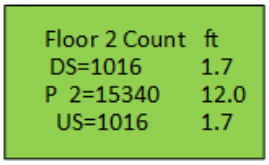


Figure 3-7: Floor and SD Count Display

If the car stops in the desired level position, place the car on inspection and learn the floor from the procedure in section 2.7.2. The floor position can also be relearned in the Machine Room from the LCD Interface, “Elevator Setup”->” Learn Hoistway”. Follow the prompt from the LCD display and make sure not to mistakenly clear the hoistway table if floors have already been learned, i.e., select NO when prompted to “Clear HW Table<U/D>? No”. When the new value for the floor is learned, the floor count value is also updated in the NTS Processor. This will make sure that the door zone positions for both the Main CPU and the NTS Processor turn on at the same time.

3.4.4 Verify Proper Operation of All Safety Circuits and Signal Devices

- Remove all temporary connections.
- Verify that all safety circuits and safety devices are installed and functioning properly.
- Verify that all car door electric contacts or car door interlocks are functioning properly.
- Verify that all hoistway door interlocks are functioning properly.
- Verify that all signal devices are functioning properly.

3.4.5 Perform Required Tests

Complete all required inspections and tests before placing the elevator in service.

Section 4 Troubleshooting

4.1 General Information

The GALaxy controller is equipped with a number of features that aid in troubleshooting any problems that may occur. The physical layout of the controller provides ready access to all I/O to make voltage measurements. All I/O boards, except for the Main I/O board, have LED's that monitor the state of the input. The controller is equipped with an LCD interface on the Main CPU board that displays the I/O status of Main I/O board, Safety PAL (FPGA) and the NTS Processor. The LCD Interface section describes the use of the Main CPU LCD interface. In this section, the basic points of troubleshooting will be detailed.

4.2 Microprocessor CPU

The CPU is very reliable and normally trouble free. With power turned on, the "axy" in GALaxy on the Main CPU LCD interface should be blinking at one second intervals to indicate that the CPU is running. If it is not blinking, then check voltage at the 5V terminal with respect to the 0V terminal on the Main I/O board. This voltage should read 5VDC. If not, then check the input and output voltage of the DC power supply. If the "axy" is not blinking and 5VDC is present at the 5V terminal with respect to the 0V terminal, then contact the factory. All job parameters that are field adjustable are stored in a non-volatile MRAM chip on the Main CPU board.

4.3 Input/Output Boards

The two main sections of all the I/O boards are the low voltage and the high voltage sections. The low voltage section consists of all the digital interfacing necessary for the CPU to communicate with the field components. The high voltage section consists of the field components (buttons, switches, lights, relays and sensors) and their associated input and output signals. The standard voltage for the Main I/O board and the COP board is 120VAC. However, the I/O expansion boards can accept a voltage range from 24 VAC, 24 VDC and 120 VAC. Serial Hall Call and Hall lantern board are only 24 VDC.

It is very important that the wiring schematics are reviewed in order to determine the voltages for which the controller was designed before applying power. The majority of problems that may arise with the control system are due to faulty inputs or outputs on the high voltage side of the system. For example, having a limit switch not feeding voltage or an acknowledgment light turning on. The GALaxy control system is designed to enable the technician to check both the high voltage section and the low voltage section to correct the problem.

The high voltage section is checked with a digital voltmeter, or if available, with the individual LEDs that are associated with the input. Depending on the particular input or output, the voltage measured at the terminal will either be "high" or "low" with respect to its reference point. For example, to determine if the car top inspection input switch was conducting, the voltage should be measured at terminal "INS" with respect to "GND". If the switch is feeding it should read 120VAC. If the switch is open, the voltage should read less than 50VAC.

The previous example determines whether or not the field component is functioning properly. However, to determine if the signal is actually being communicated to the CPU, the signal must be checked on the low voltage section of the board. The low voltage section is checked from the Main CPU LCD interface. Using the previous example, from the Main CPU LCD interface, navigate to the "Inputs and Outputs" menu, "Car Inputs and Outputs" and scroll through the I/O list until the "INS" input is located. The LCD will display "INS◆ " if the inspection switch is feeding and "INS◇ " if the switch is open.

All of the I/O's are optically isolated between the high voltage section and the low voltage section. The inputs on the GALX-1121 Main I/O board and the GALX-1134 COP board are separated into 8 inputs per board (GALX4-0048N input board) that mounts on the larger boards. If an input is determined to be faulty, the GALX4-0048N board is replaced instead of the input opto-isolator chip. The outputs that are plugged into the GALX-1121 Main I/O board are short circuit protected and can withstand a direct short across the terminals. There are two outputs per output board and are covered with a red plastic protective case. If an output on the MAIN I/O board is determined to be faulty, then the GALX4-0049N output board is replaced.

The input opto-isolators and the output solid-state relays on the 1106 and 1107 I/O boards are socketed IC's that are labeled on the silk screen of the various I/O boards with a "U" number (for example U45). If it is determined through the previous troubleshooting procedures that the input signal is present at the terminal, but is not being communicated to the CPU, the input opto-isolator may be defective and can be replaced in the field. If it is determined that the CPU is communicating the output signal to the solid-state relay, but the voltage does not go high at the terminal, the solid-state relay may be defective and can be replaced in the field.

The 1123 I/O board has current limiting inputs and short circuit protected outputs. If it is determined that any I/O on the 1123 board is faulty, the board must be replaced.

Any time IC's or I/O boards are replaced, the power should be turned off and care should be taken in removal of the old chip or board and replacement of the new one. All of the I/O and their associated IC's or boards are listed in the wiring schematics.

4.4 Run Sequence

The following diagram in Figure 4-0 shows the run sequence of the controller for an up and down run. Note that the RUN relay picks before SU or SD but drops at the same time as SU or SD.

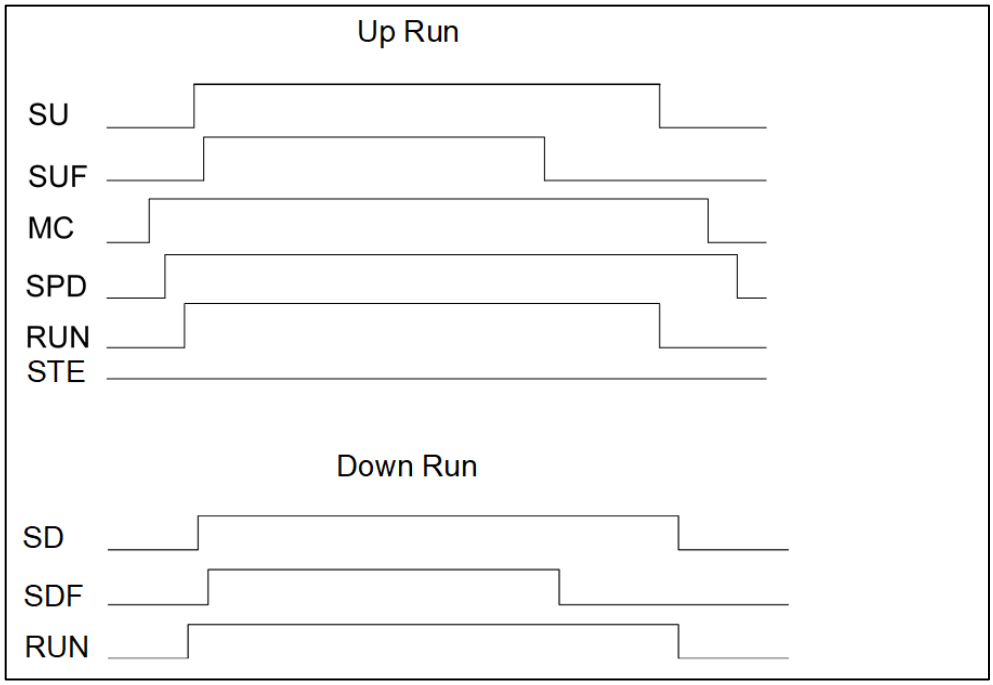


Figure 4-0: RUN Sequence

4.5 The Safety PAL Functions

The Safety PAL monitors the Main CPU RUN and Door Zone outputs, the NTS Terminal Limit and Door Zone outputs, car Inspection and Door Gate/Lock inputs, and the speed outputs from both the Main CPU and the NTS. The Safety PAL's job is to interrupt or prevent a run operation in case of an unsafe conditions.

Run Control - CPU Control outputs gated by Safety PAL:

SU – Solenoid Up Command
SD – Solenoid Down Command
SUF – Solenoid Up Fast Command
SDF – Solenoid Down Fast Command
MC – Motor Contactor
MC1 – Dual Motor Contactor
STE – Soft-Starter Enable
RUN – Run Relay Command

Door Zone Status – CPU Control and NTS MCU Control UL – Up Level

DL – Down Level
DZ – Door Zone
SEL_OK – Communications to Selector OK and no Selector Fault
SPD150 – Speed greater than 150 fpm
SPD75 – Speed greater than 75 fpm

Door Status:

DLT – Door Lock Top
DLM – Door Lock Middle
DLB – Door Lock Bottom
GBP – Gate Bypass
LBP – Lock Bypass
GS – Car Gate Switch or Lock
RLM – Rear Lock Middle
RGS – Rear Gate Switch or Lock
GLB – Gate/Lock Bypass

Inspection Status & Control:

AUTO– Automatic Operation
ICI – In Car Inspection
ACC – Access
TAU – Top Access Up
TAD – Top Access Down
BAU – Bottom Access Up
BAD – Bottom Access Down
INS– Car Top Inspection
IU – Car Top Inspection Up
ID – Car Top Inspection Down
MRIN – Motor Room Inspection
MRIU – Motor Room Inspection UP
MRID – Motor Room Inspection Down

Terminal Limit Status – NTS MCU Control outputs gated by Safety PAL:

UN – Up Normal Limit
UT – Up Terminal Slowdown
DN – Down Normal Limit
DT – Down Terminal Slowdown

Figure 4-1 illustrates all the Main CPU, NTS Processor and Safety PAL functions:

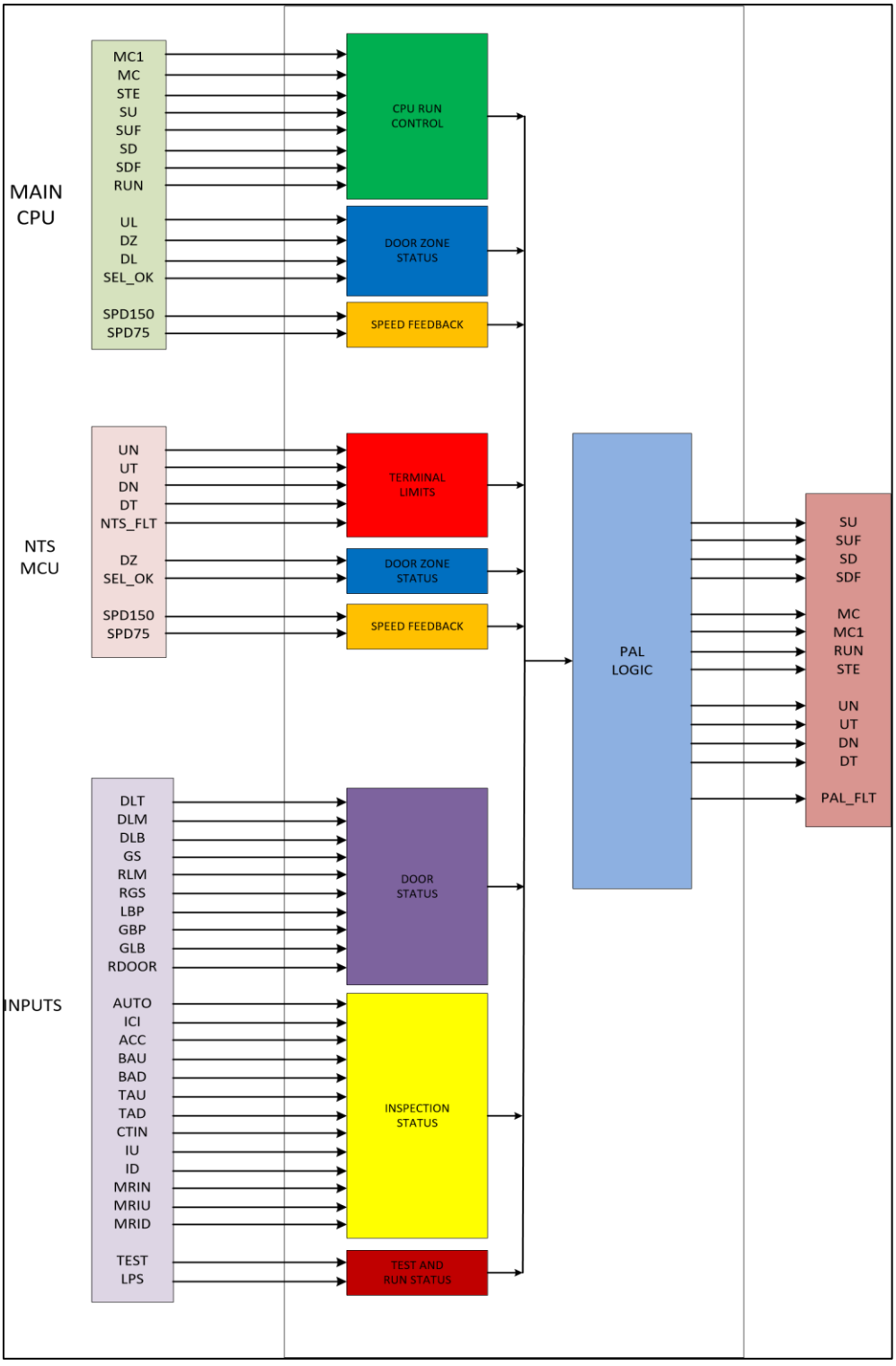


Figure 4-1: Main CPU, NTS and Safety PAL System

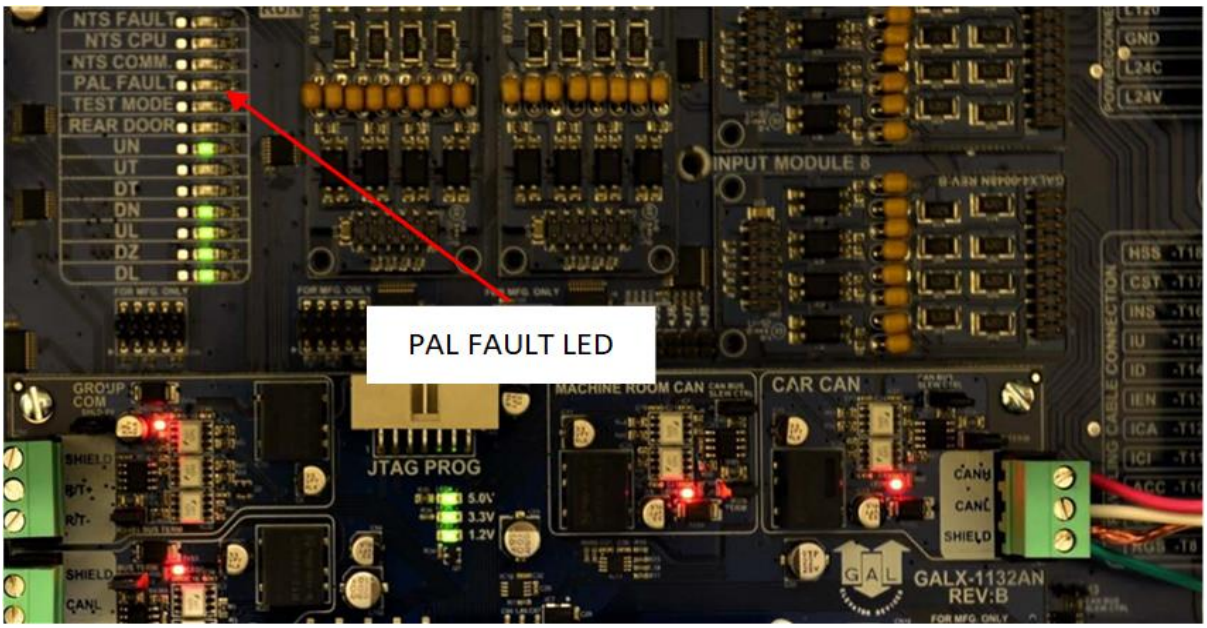


Figure 4-2: GALX-1121 Main I/O Board

4.6 Safety PAL

The Safety PAL has a fault LED located in the middle left of the board that indicates there is a PAL fault. See Figure 4-2.

Important: When the LED is on, the car is prevented from running.

The Safety PAL performs the following functions:

- Verifies that the Up or Down Fast solenoid turns off when the terminal limits are activated
- Verifies that the doors are closed and safe to run
- Verifies all inspection operations
- Verifies that the car velocity is not greater than 150 fpm in the door zone and with the doors open or running on inspection.

While the Safety PAL cannot turn on any run control signals, it can turn off the follow signals from the Main CPU: RUN, SU, SUF, SD, SDF, MC, MC1, STE and from the NTS Processor: UN, UT, DN, and DT.

When troubleshooting errors detected by the Safety PAL, take the following steps:
Check LED status of the PAL FAULT.

- Check the NTS CPU and NTS COM are blinking at one second intervals. Check that the NTS CPU FAULT LED is off.
- From the Main CPU LCD interface, navigate to the "NTS Inputs and Outputs" menu, and view all of the I/O status of the NTS CPU. Navigate to the “PAL Inputs and Outputs” menu and view all of the I/O status of the Safety PAL.
- From the Main CPU LCD interface, navigate to the "Fault Log" menu, and view the recorded faults for any fault related to the NTS processor or I/O’s that are input to the Safety PAL.

4.7 System Faults

Faults that are detected by the Main CPU can be viewed on the Main CPU LCD interface by navigating to the "Fault Log" menu, "View Fault Log". The lists of possible faults detected by the Main CPU are listed in section 6, Main CPU Faults. By pressing the "ENTER" button on the Main CPU LCD interface when the particular fault is being displayed, the interface will display detailed information for that fault in the same format as the Elevator Status Screens.

In general, when a fault occurs, the system records the state of 168 bytes of data and stores the data in two different buffers, the normal and long-term fault buffers. The normal fault buffers can hold the last 50 faults that occurred, and the long-term fault buffer holds the last 350 faults that occurred. The data in the normal fault buffer is accessed from the “Fault Log” menu. The long-term fault buffer can be copied to the SD Card and viewed from a PC using a text editor such as Word Pad.

4.8 Main CPU Inputs and outputs

Table 4-1: Main CPU Inputs & Outputs

Name	Description
1CA-nCA	1st – Nth Floor Car Call Acknowledge Outputs
1CAR-nCAR	1st – Nth Floor Rear Car Call Acknowledge Outputs
1C-nC	1st – Nth Floor Car Call Inputs
1CR-nCR	1st – Nth Floor Rear Car Call Inputs
1U-(n-1) U	1st – (Nth-1) Floor Up Hall Call Inputs
1UA-(n-1) UA	1st – (Nth-1) Floor Up Hall Call Acknowledge Outputs
1UAR-(n-1) UAR	1st – (Nth-1) Floor Rear Up Hall Call Acknowledge Outputs
1UR-(n-1) UR	1st – (Nth-1) Floor Rear Up Hall Call Inputs
2DA-nDA	2nd – Nth Floor Down Hall Call Acknowledge Outputs
2DAR-nDAR	2nd – Nth Floor Rear Down Hall Call Acknowledge Outputs
2D-nD	2nd – Nth Floor Down Hall Call Inputs
2DR-nDR	2nd – Nth Floor Rear Down Hall Call Inputs
ACC	Access Operation Input
AD	Automatic Door Switch Input
ALM	COP Alarm Input
ALMR	Rear COP Alarm Input
ALT	Alternate Fire Smoke Detector Sensor Input
ATT	Attendant Operation Input
ATTDN	Attendant Down Input
ATTUP	Attendant Up Input
AUTO	Automatic Operation Input
BAD	Bottom Access Down Input
BAU	Bottom Access Up Input
BF	Bottom Final Input
BP	Fire Phase I Smoke Detector Bypass Input
BUZ	Machine Room Buzzer Output

Table 4-1: Main CPU Inputs & Outputs	
Name	Description
CDL	Cab Down Lantern Output
COL	Counter Weight Collision Switch Input (Traction Elevators)
CS	In Car Stop Switch Input
CSPI1-3	Car Spare Input 1 – 3
CSPO1-3	Car Spare Output 1 – 3
CSS	Car Safety String Input
CST	Car Stop Switch Input
CTA	Car Top Automatic Input
INS	Car Top Inspection Input
CTS	Car Top Stop Switch Input
CUL	Cab Up Lantern Output
DC	Door Close Output
DCB	Door Close Button Input
DCBR	Door Close Button Rear Input
DCC	DAC Clear Output
DCL	Door Close Limit Input
DCLR	Door Close Limit Rear Input
DCR	Door Close Rear Output
DDA	Down Direction Arrow Output
DET	Detector Edge Input
DETR	Rear Detector Edge Input
DL or DLc	Down Level Position from Main CPU position reference
DLB	Door Lock Bottom Input.
DLB-1	Door Lock Bottom Secondary Input
DLM	Door Lock Middle Input
DLM-1	Door Lock Middle Secondary Input
DLO or DLcO	Down Level Output LED from Main CPU
DLT	Door Lock Top Input
DLT-1	Door Lock Top Secondary Input
DN	Down Normal Limit NTS Processor Output
DNi	Down Normal Limit Input from NTS Processor Output
DN-1 or DNc	Down Normal Output from Main CPU position reference
DO	Door Open Output
DOB	Door Open Button Input
DOBR	Door Open Button Rear Input
DOL	Door Open Limit Input
DOLR	Door Open Limit Rear Input
DOR	Door Open Rear Output
DPM	Door Protect Monitor Input
DT	Down Terminal Limit NTS Processor Output
DTi	Down Terminal Limit Input from NTS Processor Output

Table 4-1: Main CPU Inputs & Outputs	
Name	Description
DT-1 or DTc	Down Terminal Slowdown Output from Main CPU position reference
DZ	Door Zone Input from Safety PAL (And of NTS and Main CPU)
DZ-1 or DZc	Door Zone Output from Main CPU position reference
DZA or DZAc	Door Zone Output from Main CPU position reference
DZO or DZcO	Door Zone Output LED from Main CPU
ED	Extended Door Time Input
EE	Electric Eye Input
EER	Electric Eye Rear Input
EMP	Emergency Power Input
EPS	Emergency Power Select Input
EPT	Emergency Power Transfer Input
EQ	Earthquake Sensor Input
EXT	Car Top Exit Switch Input
FAN	Cab Fan Output
FB	Fire Buzzer Output
FBNB	Fire Buzzer/Nudging Buzzer Output
FF	Full Field Pilot Output
FFS	Fire Fighters Stop Switch Input
FL	Fire Phase I Light Output
FS	Fire Phase I On Hall Switch Input
FS2	Fire Switch Phase II On Input
FS2C	Fire Switch Phase II Call Cancel Input
FS2H	Fire Switch Phase II Hold Input
FST	Fire Stop Switch Override Output
FSTi	Fire Stop Switch Override Input
FSTP	Fire Stop Switch Override Output
GBP	Gate Switch Bypass Input.
GLB	Gate or Lock Bypass Open
GOV	Governor Switch Input
GS	Car Gate Switch Input
GS-1	Gate Switch Secondary Input.
GSPI1-3	Group Spare Input 1 – 3
GSPO1-3	Group Spare Output 1 – 3
GTS	Rope Gripper Trip Switch Input.
HB	Handicap Buzzer Output
HBE	Handicap Buzzer Enable Input
HSS	Hatch Safety String Input
HWLRN	Hoistway Learn
HWS	Hoistway Smoke Sensor Input
HWS2	Hoistway Smoke Sensor 2 Input
HWSET	COP Hoistway Setup Mode Jumper Input

Table 4-1: Main CPU Inputs & Outputs	
Name	Description
ICI	In-Car Inspection Input.
ICR	Inconspicuous Riser Input
ID	Car top Inspection Down Input
IEN	Car Top Inspection Enable
IFB	Inspection Fire Buzzer Output
IFL	Inspection Fire Light Output
IND	Independent Input
INDC	Independent Input in COP
ISER	In Service Output
ISPD	Inspection Speed Output
IU	Car Top Inspection Down Input
L120	Lantern 120 VAC
L120B	Lantern 120 VAC Secondary Input
LBP	Lock Bypass Input
LD	Down Hall Lantern Output
LDR	Rear Down Hall Lantern Output
LIG	Cab Light Output
LOS	Low Oil Switch Input
LPS	Low Pressure Switch Input
LU	Up Hall Lantern Output
LUR	Rear Up Hall Lantern Output
LWA	Load Weighing Anti-nuisance
LWB	Load Weighing Bypass Input
LWD	Load Weighing Dispatch
MC	Motor Contactor Output
MC1	Dual Motor Contactor Output
MC1i	Dual Motor Contactor Input.
MCi	Motor Contactor Input.
MES	Main Egress Smoke Detector Sensor Input
MRID	Motor Room Inspection Down Input.
MRIE	Motor Room Inspection Enable Input
MRIN	Motor Room Inspection Input.
MRIU	Motor Room Inspection Up Input.
MRS	Motor Room Smoke Sensor Input
MRSW	Motor Room Stop Switch
MSPI1-3	Machine Room Spare Input 1 – 3
MSPO1-3	Machine Room Spare Output 1 – 3
MTO	Motor Overload
NBFB	Nudging/Fire Buzzer Output
NTSCM	NTS Com COP LED Output
NTSF	NTS Processor Fault

Table 4-1: Main CPU Inputs & Outputs	
Name	Description
NUD	Door Nudging Output
NUDR	Door Nudging Rear Output
OVL	Overload Input
P1-Pn	1ST – Nth Discrete Floor Position Indicator Outputs
PALF	Safety PAL Fault
PS	Pit Switch Input
RDOOR	Rear Door Jumper
RGS	Rear Car Gate Switch Input.
RGS-1	Rear Car Gate Switch Secondary Input
RLM	Rear Lock Middle Input.
RLM-1	Rear Lock Middle Secondary Input
RPM	Rear Door Protection Monitor
RST	Reset Drive Output
RTL	Return to lobby Input
RUN	Run Output Relay Control
RUNi	Run Input
S10	Run Control 120 VAC
S10	Controller Power Input
SD	Solenoid Down Run Output
SDF	Solenoid Down Fast Output
SDFi	Solenoid Down Fast Input
SDi	Solenoid Down Run Input
SE	Safety Edge Input
SELCM	Selector Com COP LED Output
SELOK	Selector Okay
SER	Safety Edge Rear Input
SP150	Speed Greater than 150 fpm
SP75	Speed Greater than 75 fpm
SPD	Motor Up to Speed
STE	Soft-Starter Enable
SU	Solenoid Up Output
SUF	Solenoid Up Fast Output
SUFi	Solenoid Up Fast Input
SUi	Solenoid Up Input
TAD	Top Access Down Input.
TAU	Top Access Up Input.
TF	Top Final Input
TPH	Oil Temperature High
TPL	Oil Temperature Low
TPL	Temp Low Input (Hydraulic Elevators)
TSD	Terminal Speed Device

Table 4-1: Main CPU Inputs & Outputs	
Name	Description
TSTM	Test Mode Jumper
UDA	Up Direction Arrow Output
UL or ULc	Up Level Position from Main CPU position reference
ULO or ULcO	Up Level Output LED from Main CPU
UN	Up Normal Limit NTS Processor Output
UNi	Up Normal Limit Input from NTS Processor Output
UN-1 or UNc	Up Normal Output from Main CPU position reference
UT	Up Terminal Limit NTS Processor Output
UTi	Up Terminal Limit Input from NTS Processor Output
UT-1 or UTc	Up Terminal Slowdown Output from Main CPU position reference

4.9 NTS Processor Inputs and Outputs

Table 4-2: NTS Processor Inputs & Outputs	
Name	Description
DL	Down Level Position (internal)
DN	Down Normal Limit Output
DNo	Down Normal Output (internal)
DT	Down Terminal Slowdown Limit Output
DTo	Down Terminal Slowdown Output (internal)
DZ	Door Zone Position Output
DZA	Door Zone Auxiliary (internal)
DZC	Door Zone Clip Output
DZo	Door Zone Output (internal)
SOK	Selector Okay Output
TST	Test Mode Input Jumper
UL	Up Level Position (internal)
UN	Up Normal Limit Output
UNo	Up Normal Output (internal)
UT	Up Terminal Slowdown Limit Output
UTo	Up Terminal Slowdown Output (internal)

4.10 Relocate I/Os

Special Relocation I/O's are located on the Machine Room CAN bus, the Car Top CAN bus and the Group CAN bus. Each CAN bus has three inputs and three outputs for this purpose and are named as follows:

MRCAN		CTCAN		GRCAN	
Inputs	Outputs	Inputs	Outputs	Inputs	Outputs
MSPI1	MSPO1	CSPI1	CSPO1	GSPI1	GSPO1
MSPI1	MSPO2	CSPI2	CSPO2	GSPI2	GSPO2
MSPI3	MDPO3	CSPI3	CSPO3	GSPI3	GSPO3

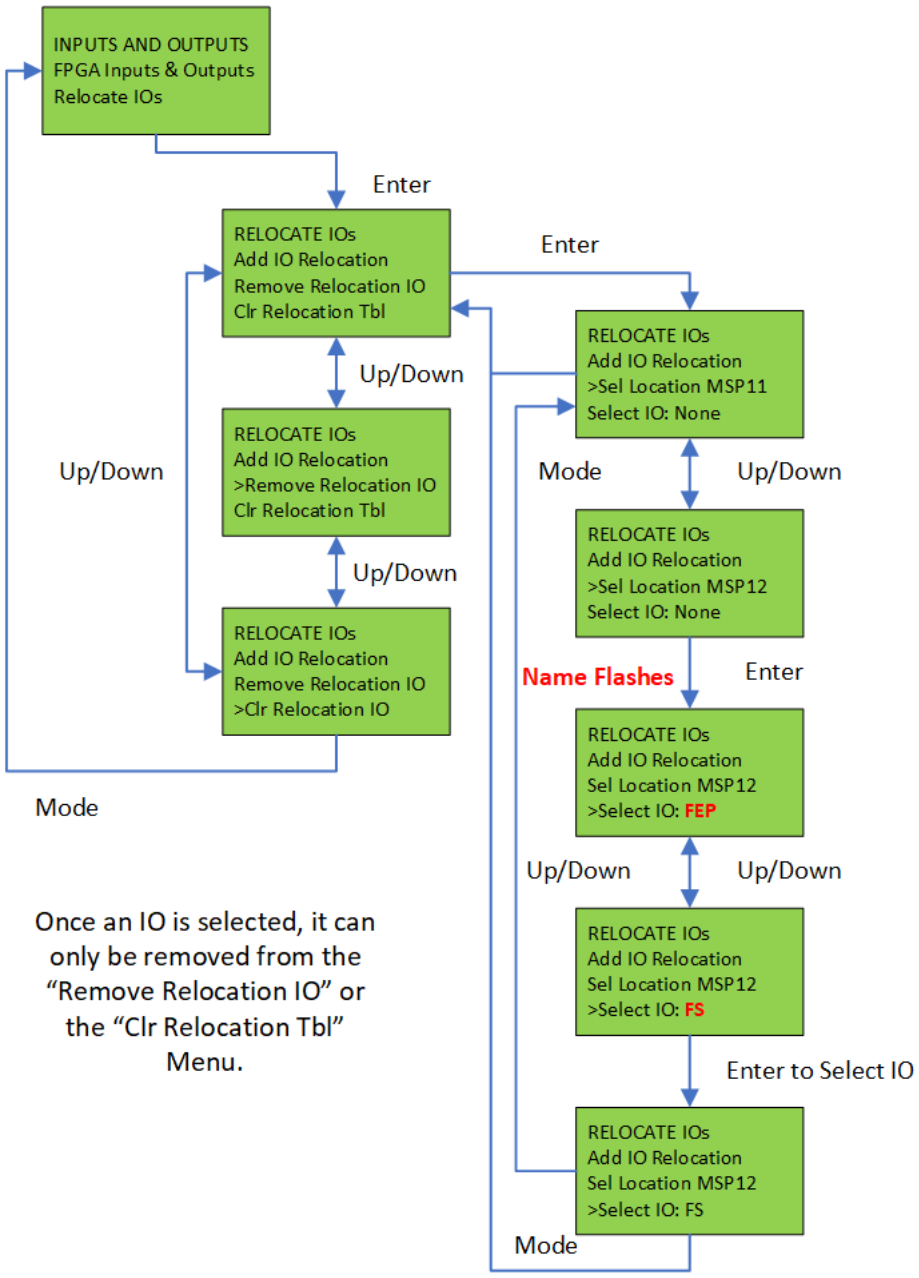
Table 4-3: I/O Relocation Table

The locations of these I/O are preset in the io.dat file and can be viewed on the diagnostic I/O display or on the board electronic ink label.

4.10.1 Relocate I/Os – Add IO Relocation

Figure 4-3:

Relocate I/Os – Add I/O Relocation



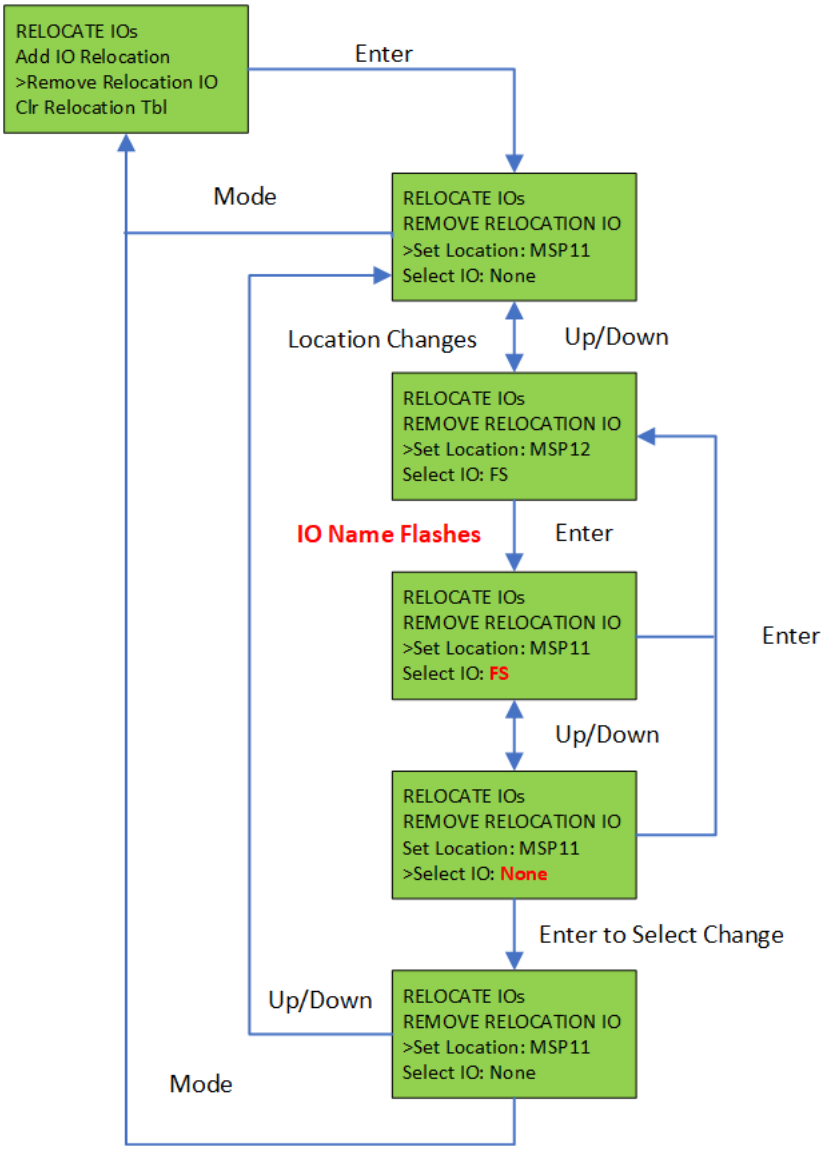
To relocate the I/O, select the "Relocate IOs" menu from the "Inputs and Outputs" menu. Then select the "Add I/O Relocation". Use the Up or Down button to select the input type and location such as CSPI1, (CTCAN car spare input 1). The type is an input and CSPI1 is located where the desired Input will be relocated. Hit the Enter button and then the Up or Down to select the I/O to be relocated. Only I/O's allowed on the selected bus will be displayed. When you reach the I/O to be relocated, then hit

the Enter button again. Once an I/O has been selected, power must be cycled on the controller for the relocation to take place.

4.10.2 Relocate I/Os – Remove Relocation IO

Figure 4-4:

Relocate IOs – Remove Relocation IO



To remove an individual I/O from the relocation table, select the “Remove Relocation IO” menu and then hit the Up/Down buttons to select the I/O location (Machine Room Spare Input 2 – MSPI2) and then hit the Enter Button. Use the Up/Down buttons change the IO selection to None (Select I/O: None) and then hit enter. Again, power must be cycled for the IO change to take place. To remove all I/O relocations, select the “Clear Relocation Table” menu and hit enter.

4.10.3 Car Trace Screen

The controller continually stores 168 bytes of critical data every 20 milliseconds (can be set to 10, 20, 30 or 40) in a 500-frame circular trace buffer. This continues until a command is given to stop storing in which 35 additional frames are stored and then the update is stopped. The purpose of this buffer is to capture 465 frames of data prior to an event and then 35 frames after the event.

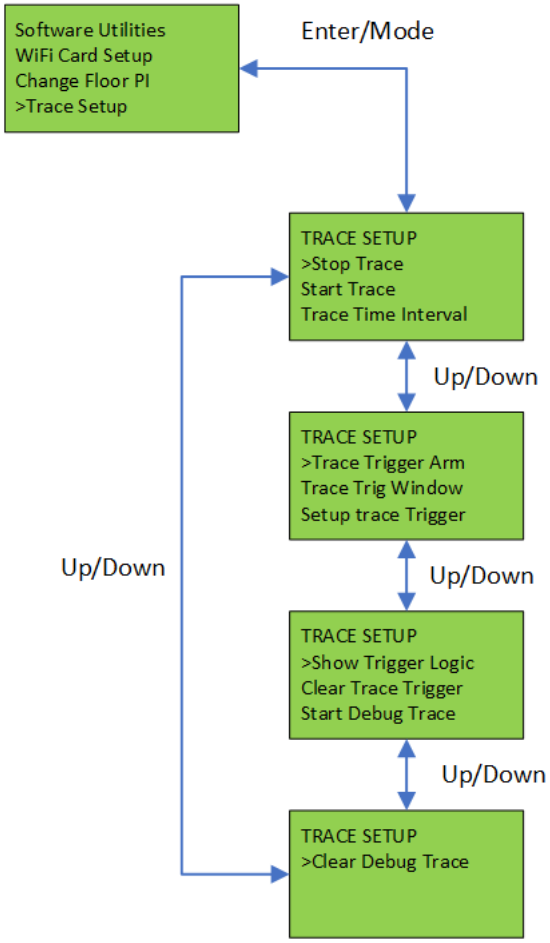
The user can manually stop the trace buffer while viewing data in the Elevator Status display by pressing ENTER and then Mode for the Trace Popup window and then hitting ENTER to stop the trace. The trace can also be stopped by setting up a trace trigger from an occurrence of a fault or state change.

Once the trace buffer is stopped, the Elevator Status screens becomes the Trace buffer screens. The Elevator Status screen will stay in the trace mode until the trace is restarted.

The trace update rate and trigger parameters can be altered by the user to enable the capture data for a specific problem. The trace setup is accessed from the Software Utilities menu and is shown below:

Figure 4-5:

Car Trace Screen



A description of each trace setup menu is show below:

- Stop Trace – Stops the trace recording.

- Start Trace – Starts the trace recording.

- Trace Time Interval – Modify the time interval from 10 to 20, 30 or 40 msec. Extends the trace time from 5 seconds to 10, 15 or 20 seconds respectively.

- Trace Trigger Arm – Arm the trace for a condition after power up. The arm condition has to be met before the trigger condition is checked. The Arm conditions are show below:

  o Always Armed
  o Power Up Reset
  o Initial At Floor
  o Motion Start
  o Initial Stop
  o Relevel Start
  o Front Door Open Start
  o Front Door Dwell Start o Front Door Close Start o Rear Door Open Start
  o Rear Door Dwell Start o Rear Door Close Start
  o Inspection Start
  o Safety String Start

- Trace Trigger Window – Time window for logic events to be considered valid. When the trigger condition is set for more than one condition and a trigger condition occurs momentarily, this is the duration of time that the momentary condition is considered valid. A value of 35 should work fine.

- Setup Trace Trigger – The logic condition for the trace trigger to occur. There is an “AND” trigger variable and an “OR” trigger variable. When a trigger condition is selected, the user must set it in the “AND” or “OR” trigger variable. A trigger condition cannot be set in both trigger variables. The trigger occurs when all the “AND” conditions are met or any of the “OR” conditions are met. In addition, the trigger ARM must also be active. Trigger conditions can be set from the following:

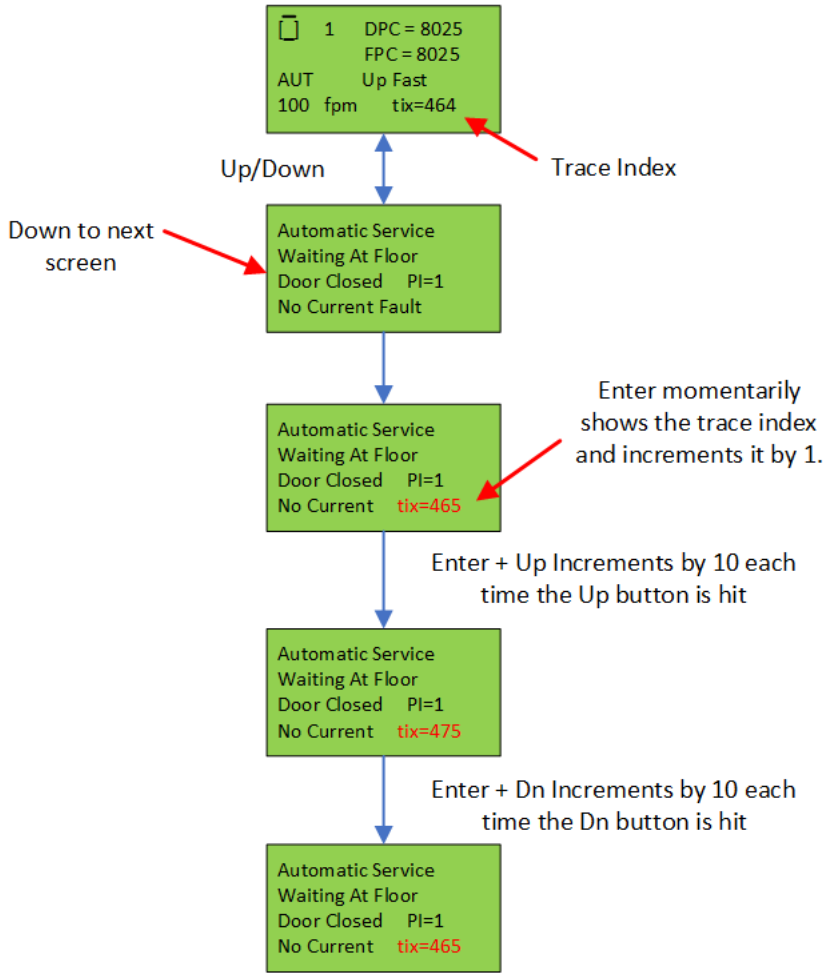
  o Fault Change
  o Fault Match
  o Service Change
  o Service Match
  o Procedure Change
  o Procedure Match
  o Run Status Change
  o Run Status Match
  o Slowdown Change
  o Slowdown Match
  o Rear Slowdown Change
  o Rear Slowdown Match
  o Status Change
  o Status Match
  o Status 2 Change
  o Status 2 Match
  o Fault Bits 0 Change
  o Fault Bits 0 Match
  o Fault Bits 1 Change
  o Fault Bits 1 Match
  o Fault Bits 2 Change
  o Fault Bits 2 Match
  o Fault Bits 3 Change
  o Fault Bits 3 Match
  o NTS Status 1 Change
  o NTS Status 2 Change
  o NTS Command 1 Change o NTS Command 2 Change o NTS Door Zone Change
  o NTS Limit Change
  o Status 3 Change
  o Status 4 Change

- Show Trace Trigger Logic – Displays the trace trigger logic.
- Clear Trace Trigger Logic – Clears the trace trigger logic.

The Trace Screen is the “Elevator Status Screen” but it is not being continuously updated. Instead the trace screen allows the user to step through each buffer frame to catch extremely quick changes in the status while the car was running. To keep track of which frame is being viewed, the trace index (tix) is displayed on the main status screen and then momentarily on all other status screens.

Figure 4-6:

Car Trace Screen



To navigate the trace screens, hit the UP or DOWN buttons to change to the next status screen. To increment to the next trace frame, hit the ENTER button. Hitting the ENTER button will cause the trace index to increment by 1. To increment or decrement quickly through each frame, hit and hold the ENTER button and then hit the UP button to increment the index by 10 or the DOWN button to decrement by 10.

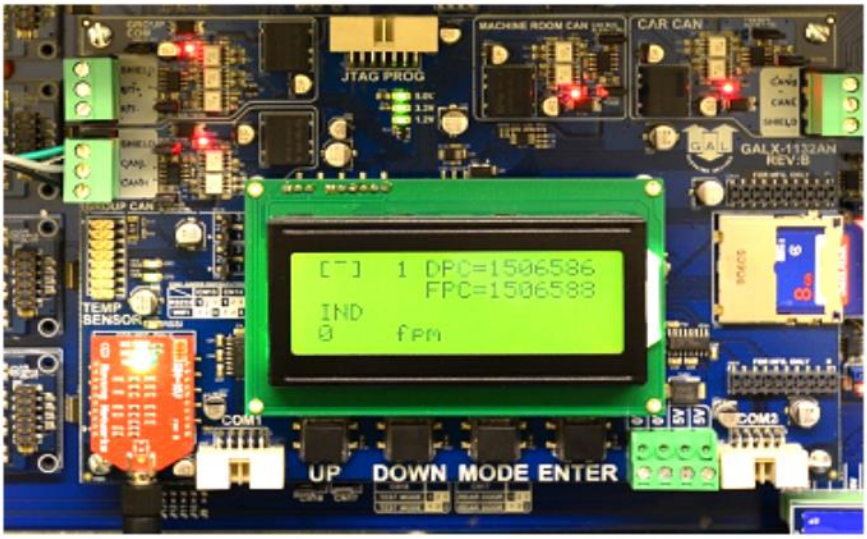
The trace time interval is defaulted to 20 milliseconds and can be change to 10, 20, 30 or 40 milliseconds. Each time the trace index is incremented, the frame displayed shows data that occurred

20 milliseconds later. If the time interval is set to 10 milliseconds, then the next frame displayed would show data that is 10 milliseconds later. Note, changing the time interval while the trace is stopped will cause the trace data to be lost and the trace will be restarted.

When the trace buffer is triggered (stopped) and the Elevator Status screen is viewed, the trace index (tix) will equal 464, the point at which the trigger occurred. Since the index starts at 0 and ends at 499 (500 frames), 464 is at the 465th location and there are 35 more trace frames until the trace index rolls over to the beginning at 0.

Section 5 LCD Interface

5.1 Operating the LDC Interface



UP button is used to scroll up to the next menu item or to increment a data value.

DOWN button is used to scroll down to the next menu item or to decrement a data value.

MODE button is used to go back to the previous menu or to select a digit of a data value.

ENTER button is used to select the menu item or to complete the operation of changing a data value.

Figure 5-0: LCD Interface

The LCD interface uses a 4 line by 20-character display and four buttons. This interface allows the user to adjust parameters, view critical controller information, to implement the controller setup and to view the elevator status. Upon power-up the Elevator Status screen is displayed. Hitting the mode button twice will bring you out to the main menu showing a blinking GALaxy name to indicate the controller is running.

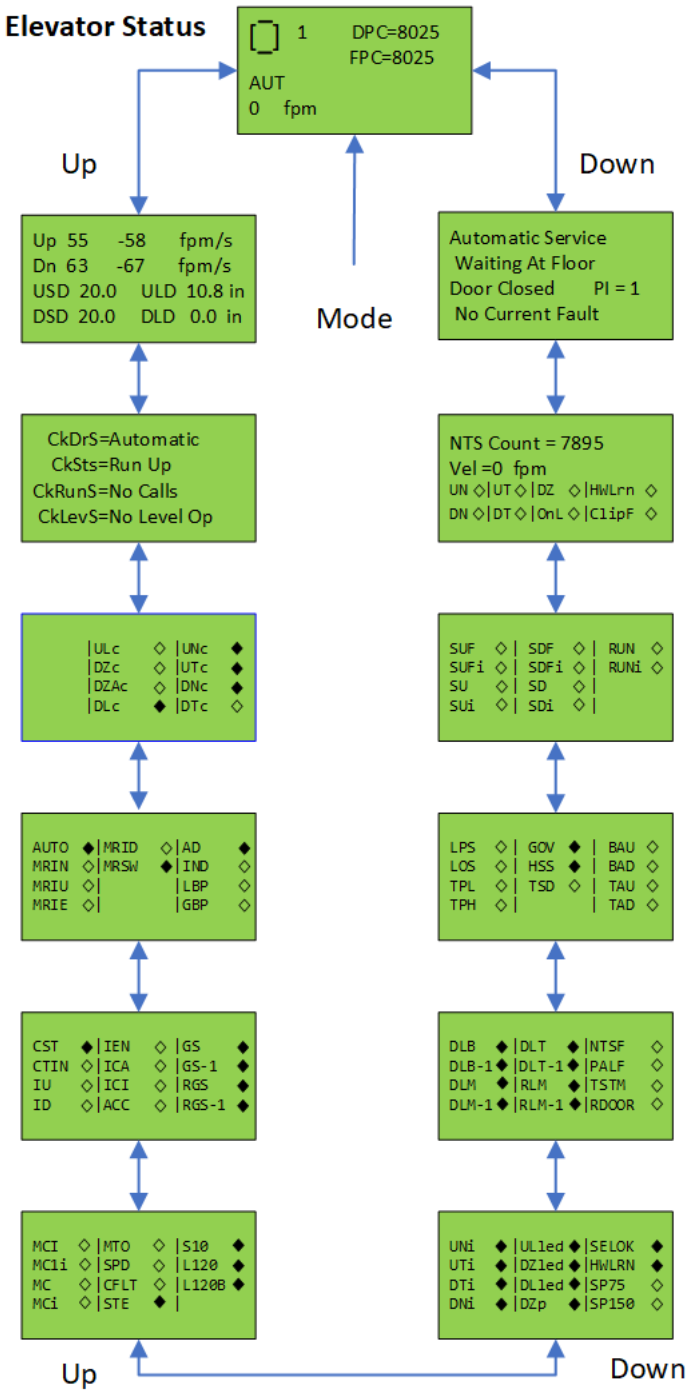
The four buttons used with the LCD display are, UP, DOWN, MODE and ENTER. The UP and DOWN buttons are used to scroll up and down to each menu item. When an appropriate menu item is reached, the ENTER button is used to select the item. Some menu items, once selected, show a second menu. Again, use the UP and DOWN buttons to scroll through the menu items and the ENTER button to select the item. The MODE button is used to go back to the previous menu. When a menu item is an adjustable variable, select the item with the ENTER button and change the variable with the UP or DOWN button. The MODE button is used to move the cursor to the next digit. When the appropriate value is reached, used the ENTER button to complete the variable change operation and return to the current menu.

To adjust the brightness of the display, the Adjust LCD Display menu allows the user to adjust the contrast and the brightness. The LCD Menus are show in the following section.

5.2 LCD Menus

5.2.1 Elevator Status

Figure 5-1:



5.2.1.1 Elevator Status Screens:

The Elevator Status Display is show immediately after a power up. Critical information for the controller is displayed in several screens that are continuously updated. These screens show the car status, control I/O's and fault information. The Up and Down buttons allow the user to rotate to each status screen. To get back to the initial status screen, press the Mode button. To exit the Elevator Status Display and to view the Main menu, press the Mode button while in the initial status screen.

The following information is displayed on the status screens:

Figure 5-2:
Elevator Status Display

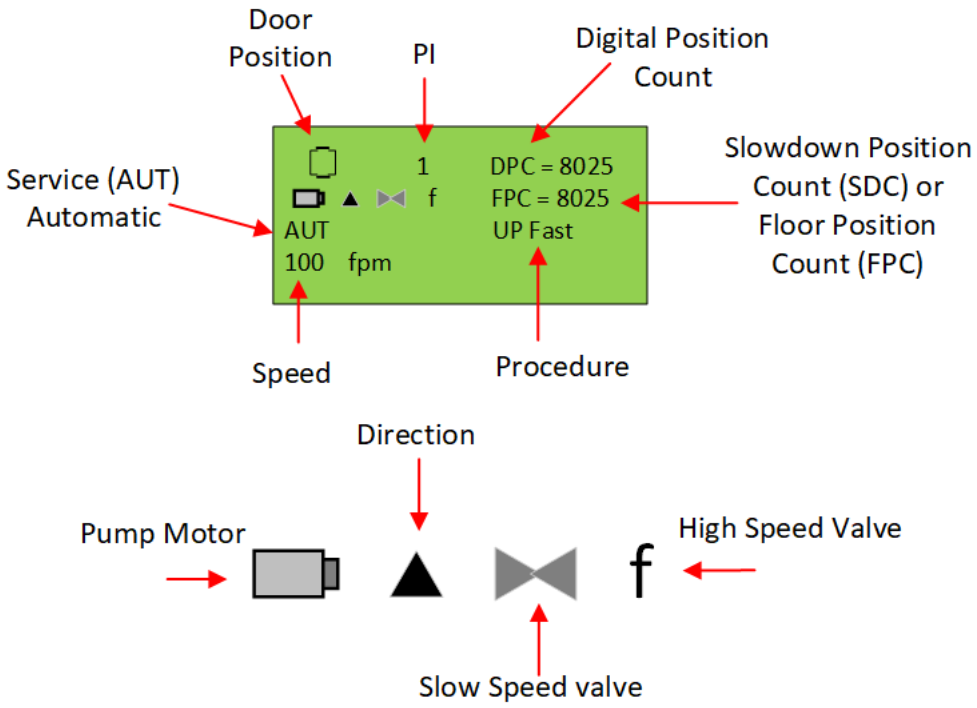


Table 5-0: Elevator Service	
= (SAF) Safety String	= (LPR) Low Pressure
= (INS) Inspection	= (HOT) Hot Oil Operation
= (RST) Reset Mode	= (ADO) Auto Door Off
= (TST) Test Mode Service	= (ROT) Riot Control
= (HSU) Hoistway Setup	= (CEO) Car Sw Elevator Off
= (FFS) Fire Fighter's Stop Switch	= (HEO) Hall Sw Elevator Off
= (MRS) Machine Room Stop Switch	= (COF) Car Off Switch
= (MOS) Motion Stop	= (RTL) Return To Lobby
= (AFS) At Floor Shutdown	- (IND) Independent Service
= (CMF) Comm Fail	= (VIP) Priority VIP Service
= (DCF) Door Close Fail	= (LWC) Calibrate Load Weigher
= (DPS) Door Protection Svc	= (JAK) Jack Reset Service
= (STA) Stalled Out Of Svc	= (OVL) Load Weigh Overload
= (Low Oil Service	= (LWB) Load Weighing Bypass
= (EAQ) Earthquake Service	= (EDT) Extended Door Time
= (EMP) Emergency Power Service	= (RSU) Reset Going Up
= (FS2) Fire Service Phase 2	= (RSD) Reset Going Dow
= (FSM) Fire Phase 1 Main Return	= (SEC) Security Recall
= (FSA) Fire Phase 1 Alt Return	= (TUG) TUG Service
= (EPR) Emergency Power Recall	= (SAB) Sabbath Service
= (HSV) Hospital Service	= (ATT) Attendant Service
= (MED) Medical Emergency Service	= (HOM) Homing
= (CBL) Code Blue	= (AUT) Automatic Service

Table 5-1: Elevator Procedure	
1 = Reset Mode	12 = Safety String Open
2 = Inspection	13 = Elevator Off Line
3 = Motion Mode: Up Fast	14 = Elevator Parked
4 = Motion Mode: Up Transition	15 = Waiting At Floor
5 = Motion Mode: Leveling Up	16 = Doors Procedure
6 = Motion Mode: Down Fast	17 = Elevator Stalled (or Low Oil)
7 = Motion Mode: Down Transition	18 = Elevator Resetting Hydro Jack
8 = Motion Mode: Leveling Down	19 = Elevator on Low Oil Pressure mode
9 = Motion Mode: Emergency Stop	20 = Elevator is in Automatic Learn Hoistway
10 = Motion Mode: Not Used	21 = Elevator is in Emergency Power Recovery
11 = Motion Mode: Emergency Slowdown	22= Hot Oil Mode

When a system fault occurs, it will be displayed on the bottom line of the second status display screen in place of “No Current Fault”. The fault will remain for 60 seconds if not additional fault occurs.

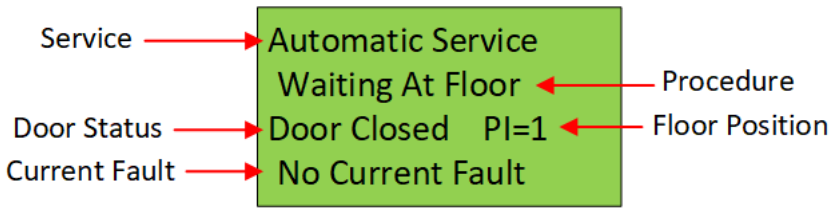


Figure 5-3: Second Status Display

Table 5-2: Fault Status
See the CPU FAULTS Section

Table 5-3: Door Status		
Elev Door Closed	F2CPO Door Opening	F2HLD Door Opening
Elev Door Opening	F2CPO Door Closed	F2HLD Door Closed
Elev Door Dwelling	F2CPO Door Closing	F2HLD Door Closing
Elev Door Open	F2CPC Door Open	F2MBC Door Open
Elev Door Closing	F2CPC Door Opening	F2MBC Door Opening
Elev Door Nudging	F2CPC Door Closed	F2MBC Door Closed
F1RET Door Open	F2CPC Door Closing	F2MBC Door Closing
F2CPO Door Open	F2HLD Door Open	

Table 5-4: Rear Door Status		
Rear Door Closed	F2CPO RDor Opening	F2HLD RDor Opening
Rear Door Opening	F2CPO RDor Closed	F2HLD RDor Closed
Rear Door Dwelling	F2CPO RDor Closing	F2HLD RDor Closing
Rear Door Open	F2CPC RDor Open	F2MBC RDor Open
Rear Door Closing	F2CPC RDor Opening	F2MBC RDor Opening
Rear Door Nudging	F2CPC RDor Closed	F2MBC RDor Closed
F1RET RDor Open	F2CPC RDor Closing	F2MBC RDor Closing
F2CPO RDor Open	F2HLD RDor Open	

Table 5-5: STATUSF: Control Status Flag (Pops up over current fault)	
Bit 0: (sfS10) NO S10 power	Bit 17:
Bit 1: (sfHC) NO HC power	Bit 18:
Bit 2: (sfSS) NO SS input	Bit 19:
Bit 3:	Bit 20:
Bit 4:	Bit 21: (sfSHD) Shutdown (too many run attempts with faults)
Bit 5: (sfIO) I/O error during redundancy check	Bit 22: (sfAST) Annual Safety Test
Bit 6: (sfINS) Inspection or lock bypass fault	Bit 23: (sfSAF) Waiting for Safe (Door Locks and Gate)
Bit 7: (sfBPI) Binary Position Input Error	Bit 24: (sfTLM) UT or DT limit error
Bit 8: (sfPOS) Position Error	Bit 25:
Bit 9: (sfAD) No automatic Doors	Bit 26: (sfDZF) UL, DL and DZ off at floor
Bit 10: (sfSTP) Stop switch open	Bit 27:
Bit 11: (sfDZ) Door Zone fault	Bit 28: (sfFST) Fire Fighter Stop Switch
Bit 12: (sfGDL) Gate or Door lock fault	Bit 29: (sfSEL) Selector Can error
Bit 13:	Bit 30: (sfUDL) UL or DL fault
Bit 14: (sfDCL)No DCL	Bit 31: (sfLEV) Leveling fault
Bit 15: (sfDCC) No Door Close Contact	
Bit 16:	

Table 5-6: STATUSF2: Control Status Flag (Pops up over current fault)	
Bit 0: (sfHWI) Hardware Init fault	Bit 16:
Bit 1: (sfFDC) Front Door Closing Fault	Bit 17: (sfIOT) IO Test in progress
Bit 2: (sfRDC) Rear Door Closing Fault	Bit 18:
Bit 3: (sfLVF) Line Voltage Fault	Bit 19:
Bit 4: (sfDVF) Door Voltage Fault	Bit 20: (sfNIT) Non Interference timer
Bit 5:	Bit 21: (sfDRQ) Door open request
Bit 6: (sfDMO) Door motor overload	Bit 22: (sfDPM) Waiting for DPM
Bit 7: (sfHWL) Learn Hoistway Fault	Bit 23: (sfRPM) Waiting for RPM
Bit 8:	Bit 24: (sfVSC) Viscosity operation
Bit 9:	Bit 25: (sfLVR) Leveling request
Bit 10:	Bit 26:
Bit 11: (sfAFS) At Floor Shutdown	Bit 27:
Bit 12:	Bit 28: (sfEES) Front EE Test failed fault
Bit 13: (sfRSR) Reset run fault	Bit 29: (sfERS) Rear EE Test failed fault
Bit 14:	Bit 30:
Bit 15: (sfCOP) COP can comm error	Bit 31:

Table 5-7: STATUSF3: Control Status Flag (Pops up over current fault)	
Bit 0:	Bit 16:
Bit 1:	Bit 17:
Bit 2:	Bit 18:
Bit 3: (sfASC) APS Selector CAN Fault	Bit 19:
Bit 4: (sfNAC) NTS APS Selector CAN Fault	Bit 20:
Bit 5: (sfMSP) MC/SPD I/O Fault	Bit 21:
Bit 6: (sfSSA) Stop Switch Anti-Creep Releveling	Bit 22:
Bit 7:	Bit 23:
Bit 8:	Bit 24:
Bit 9:	Bit 25:
Bit 10:	Bit 26:
Bit 11:	Bit 27:
Bit 12:	Bit 28:
Bit 13:	Bit 29:
Bit 14:	Bit 30:
Bit 15:	Bit 31:

The Elevator State Machine screen shows the last state that was executed when checking the Doors, when checking to determine if a Run is required, checking to Start a run and checking to relevel the car.

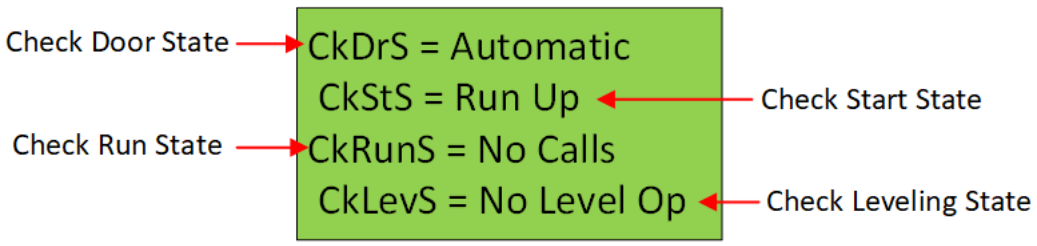


Figure 5-4: Elevator State Machine Screen

Table 5-7: CkStS: Check Start Status State	
0 = No Start Op	20 = SUF Fail Off
1 = CCF Off Up	21 = SUF On w/SU
2 = CPU UN Off	22 = Run Up
3 = FSTU Fail On	23 = CPU DN Off
4 = SPD Failed On	24 = FSTD Fail On
5 = MC Failed On	25 = RUND Fail On
6 = MC Failed Off	26 = RUND Fail Off
7 = SPD Fail Off	27 = CPU Out On Dn
8 = RUNU Fail On	28 = CCF On w/RunD
9 = RUNU Fail Off	29 = NTS Out On Dn
10 = CPU Out On Up	30 = NTS DN Off
11 = CCF On w/RunU	31 = SD Failed On
12 = NTS Out On Up	32 = CPU DT Off
12 = NTS UN Off	33 = NTS DT Off
14 = SU Failed On	34 = SDF Failed On
15 = CPU UT Off	35 = SD Failed Off
16 = NTS UT Off	36 = CCF On w/SD
17 = SUF Failed On	37 = SDF Fail Off
18 = SU Failed Off	38 = SDF On/W SD
19 = CCF On w/SU	39 = RUN Down

Table 5-8: CkLevS: Check Level Start Status State	
0 = No Level Op	10 = Level Up
1 = CPU UN Off	11 = CPU DN Off
2 = MC Failed Off	12 = RUND Fail On
3 = SPD Fail Off	13 = RUND Fail Off
4 = RUNU Fail On	14 = CPU Out On Dn
5 = RUNU Fail Off	15 = NTS DN Off
6 = CPU Out On Up	16 = SD Failed Off
7 = NTS UN Off	17 = SDF Failed On
8 = SU Failed Off	18 = Level Down
9 = SUF Failed On	

Table 5-9: CkDrS: Check Door Status State	
0 = No Door Op	21 = At Floor Chk
1 = Fire Door	22 = Front DPM
2 = Med Em Svc	23 = Rear DPM
3 = EAQ Door Open	24 = CodeBlue RCL
4 = EMP Wait DC	25 = CodeBlue Svc
5 = EMP Home DO	26 = VIP Recall
6 = EMP Home DC	27 = VIP Service
7 = EMP RCL Door	28 = Independent
8 = Stall Op Door	29 = Overload
9 = Hot Oil Door	30 = Elevator Off
10 = MedEm RCL @Fl	31 = Prison Svc
11 = MedEm RCL	32 = Push Button
12 = MedEm Wait Sw	33 = Attendant
13 = MedEm Svc Op	34 = Extended Door
14 = Hospital Svc	35 = Sabbath
15 = CB Ovr FS RCL	36 = RTL Door Cl
16 = CB Ovr FS Svc	37 = Lobby Recall
17 = F1 Recall @FL	38 = Car Elev Off
18 = F1 Recall	39 = HW Elev Off
19 = F1 Complete	40 = Automatic
20 = F1 or F2	

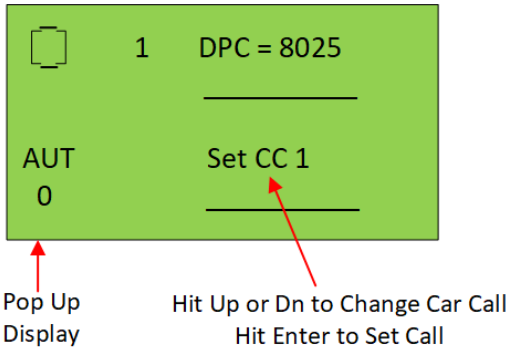
Table 5-10: Front SD (FSd): Front Slowdown Flags	
Bit 0: (UC) Up Hall Call Slowdown	Bit 8: (IU) IR Up Hall Call Slowdown
Bit 1: (DC) Down Hall Call Slowdown	Bit 9: (ID) IR Down Hall Call Slowdown
Bit 2: (CC) Car Call Slowdown	Bit 10:
Bit 3:	Bit 11:
Bit 4: (UD) Up Call Door Open Request	Bit 12:
Bit 5: (DD) Down Call Door Open Request	Bit 13:
Bit 6: (CD) Car Call Door Open Request	Bit 14:
Bit 7:	Bit 15:

Table 5-11: Rear SD (RSd): Rear Slowdown Flags	
Bit 0: (UC) Up Hall Call Slowdown	Bit 8: (IU) IR Up Hall Call Slowdown
Bit 1: (DC) Down Hall Call Slowdown	Bit 9: (ID) IR Down Hall Call Slowdown
Bit 2: (CC) Car Call Slowdown	Bit 10:
Bit 3:	Bit 11:
Bit 4: (UD) Up Call Door Open Request	Bit 12:
Bit 5: (DD) Down Call Door Open Request	Bit 13:
Bit 6: (CD) Car Call Door Open Request	Bit 14:
Bit 7:	Bit 15:

5.2.1.2 Car Call Popup Display

From any screen on the Elevator Status display, hitting Enter cause a Car Call Popup display to appear. Use the Up and Down buttons to select the desired car call and then press Enter to activate the call. Use the Mode button to exit the Car Call Popup display without entering a call.

Figure 5-5: Car Call Popup Display



5.2.1.3 Trace Popup Display

To enter the Trace Popup display press and hold the ENTER button and then press the MODE button. The Trace Popup display allows the user to either stop/start the trace buffer or to exit the Elevator Status Display. To stop the trace buffer, press ENTER and then Mode for the Trace Popup window and then press ENTER to stop the trace. After the trace buffer is stopped, the Elevator Status display becomes the Trace Display. See the next section on how to navigate the Trace Display. To restart the trace buffer, press ENTER and then MODE button to view the Trace Popup display and then press ENTER to start the trace.

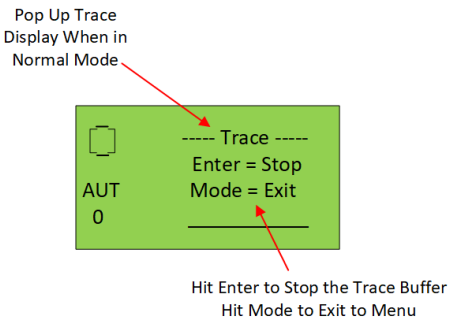


Figure 5-6: Stop Trace Popup Display

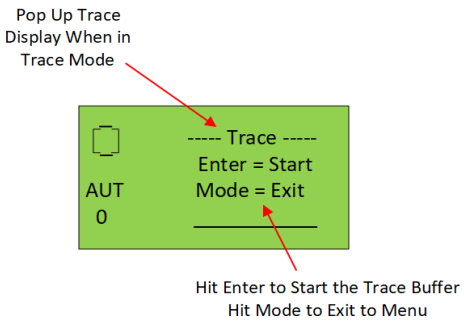


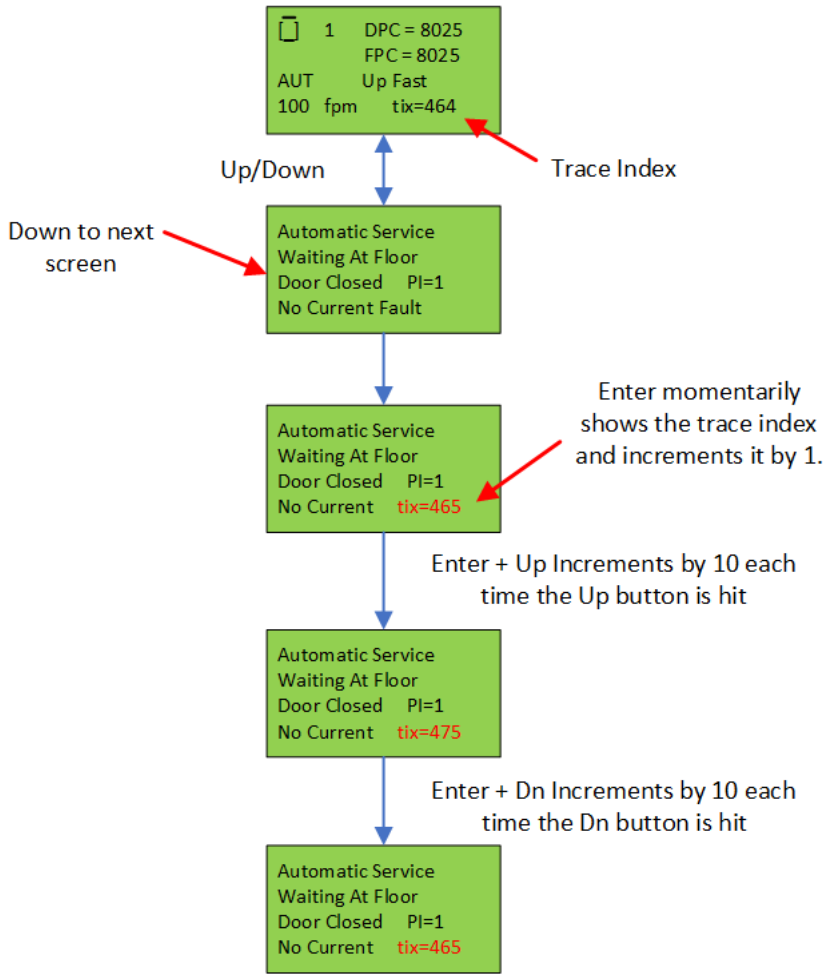
Figure 5-7: Start Trace Popup Display

5.2.1.4 Trace Display

The controller continually stores 168 bytes of critical data every 20 milliseconds (can be changed to 10, 20, 30 or 40) in a 500-frame circular trace buffer. This continues until a command is given to stop storing data in which 35 additional frames are stored and then the update is stopped. The purpose of this buffer is to capture 465 frames of data prior to an event and then 35 frames after the event. The frame number of the trace screens being displayed is show as the trace index (tix) and it ranges from 0 to 499. When the trace screens are initially displayed, the index will start at 464, the frame where the command to stop was made.

Figure 5-8:

Car Trace Screen

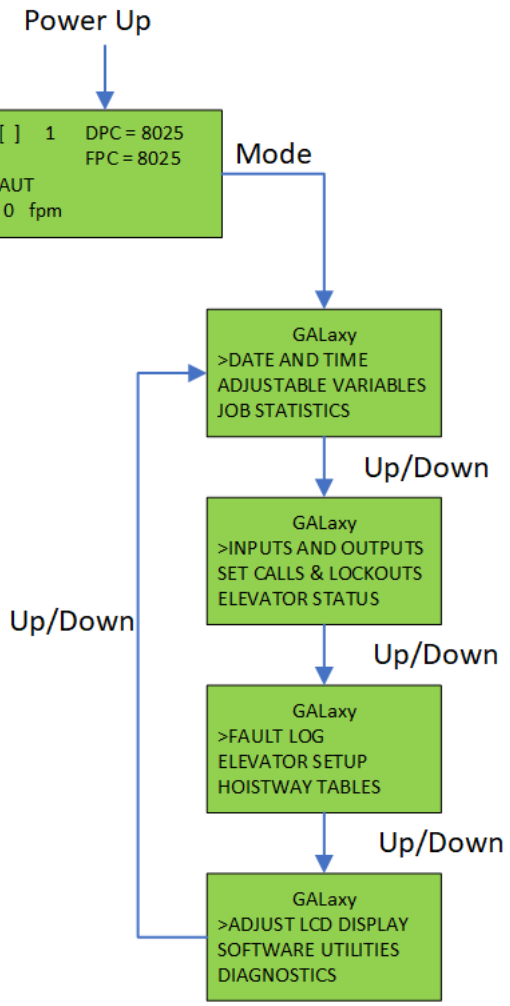


To navigate the trace screens, press the UP or DOWN buttons to change to the next screen. To increment to the next trace frame, press the ENTER button. Pressing the ENTER button will cause the trace index to increment by 1. To increment or decrement quickly through each frame, press and hold the ENTER button and then press the UP button to increment the index by 10 or the DOWN button to decrement by 10. When viewing the trace screens, keep in mind that the data is not live but recorded. Also, on the initial trace screen, the trace index (tix=) is displayed as part of that screen. On all other trace screens, the trace index pops up while pressing the ENTER button but goes away to allow viewing of the entire screen.

5.2.2 Main Menu

The LCD Main Menu give the user access to all parameters and diagnostics information. Once in the menu from the exiting the Elevator Status Screen, the menu is accessed from the UP, DOWN, MODE and ENTER buttons. The LDC Main Menu is show below:

Figure 5-9: Main Menu

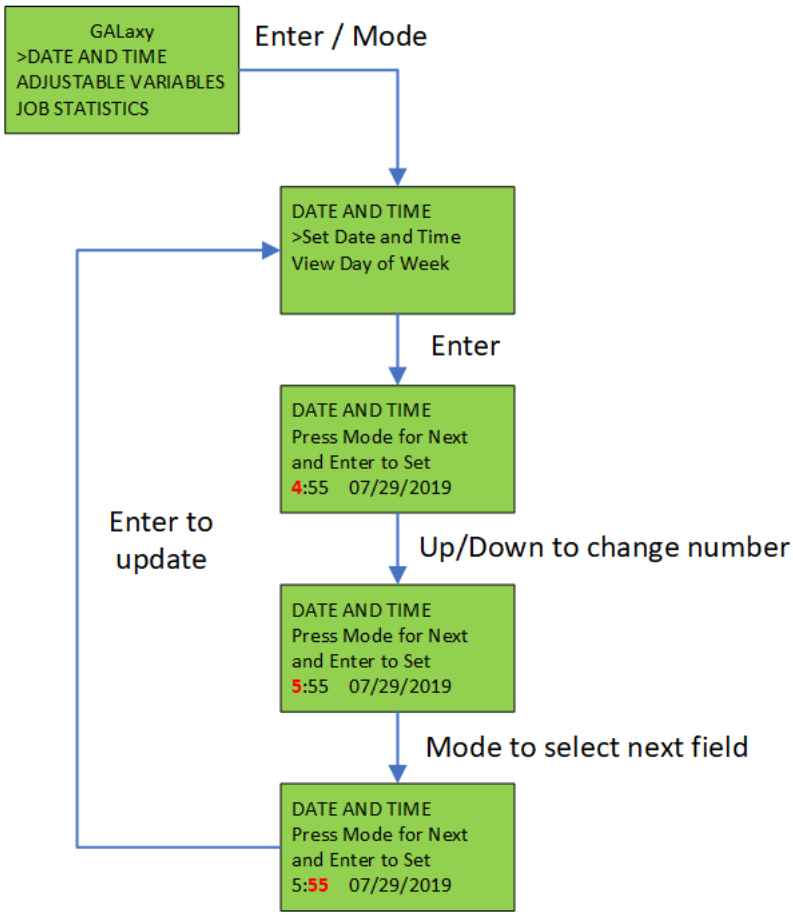


5.2.3 Date and Time

The Date and Time menu allows the user to set the controller real-time calendar clock date and time. It is important to set the date and time to local values so that all faults are displayed in the fault log with accurate information.

Figure 5-10:

Date and Time



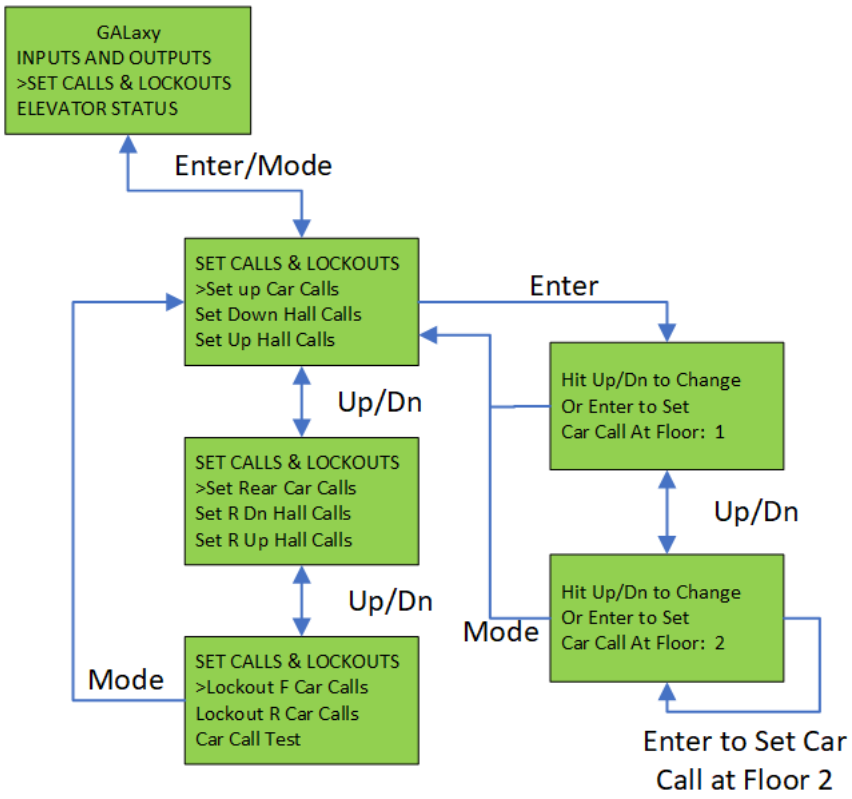
5.2.4 Set Calls and Lockouts

5.2.4.1 Set Car Calls

The user can set car and hall calls from the Set Calls & Lockout menu. Note that hall call can only be set from this menu if this car is acting as the group car. Rear car calls and lockouts are displayed only when the car has a rear door.

Figure 5-11:

Set Car Calls

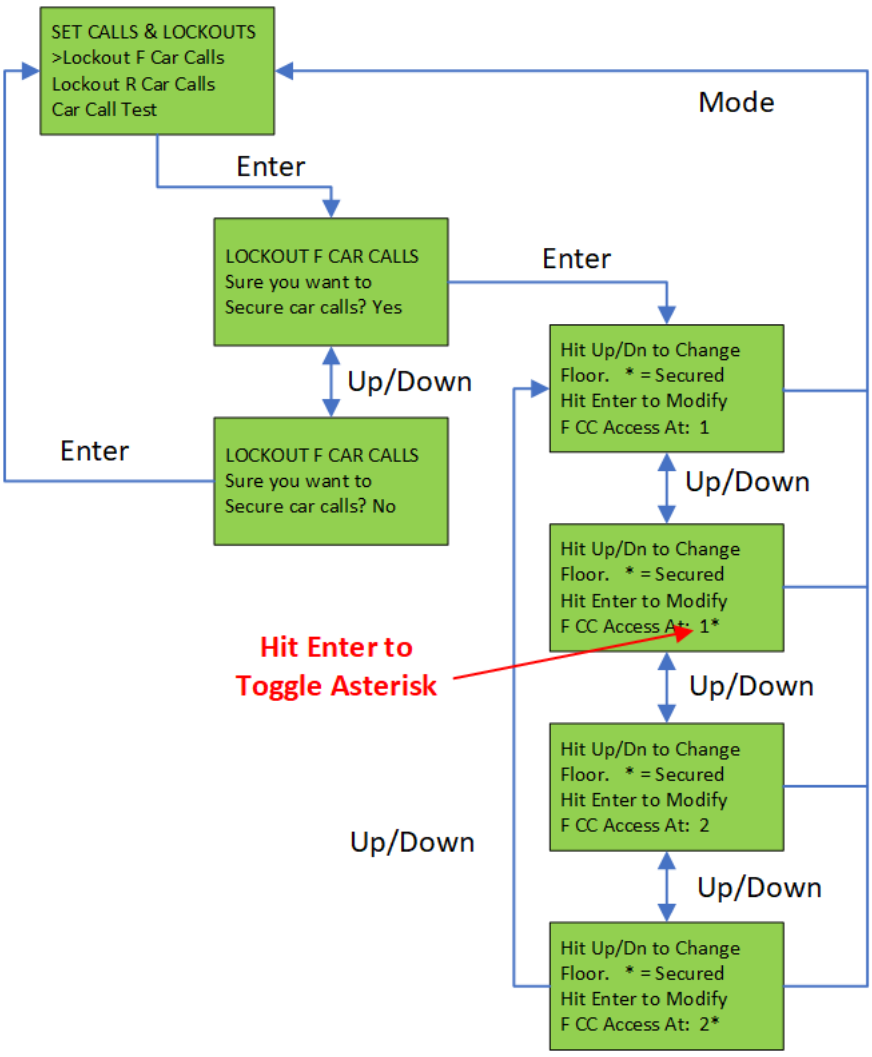


5.2.4.2 Car Call Lockouts

The Car Call can be locked out from the Car Call Lockout menu. Select the floor using the UP and DOWN buttons and then hit ENTER to lockout the call. The locked-out call will display an asterisk next to the floor number. Hitting ENTER a second time will unlock the call and remove the asterisk.

Figure 5-12:

Set Car Call Lockouts

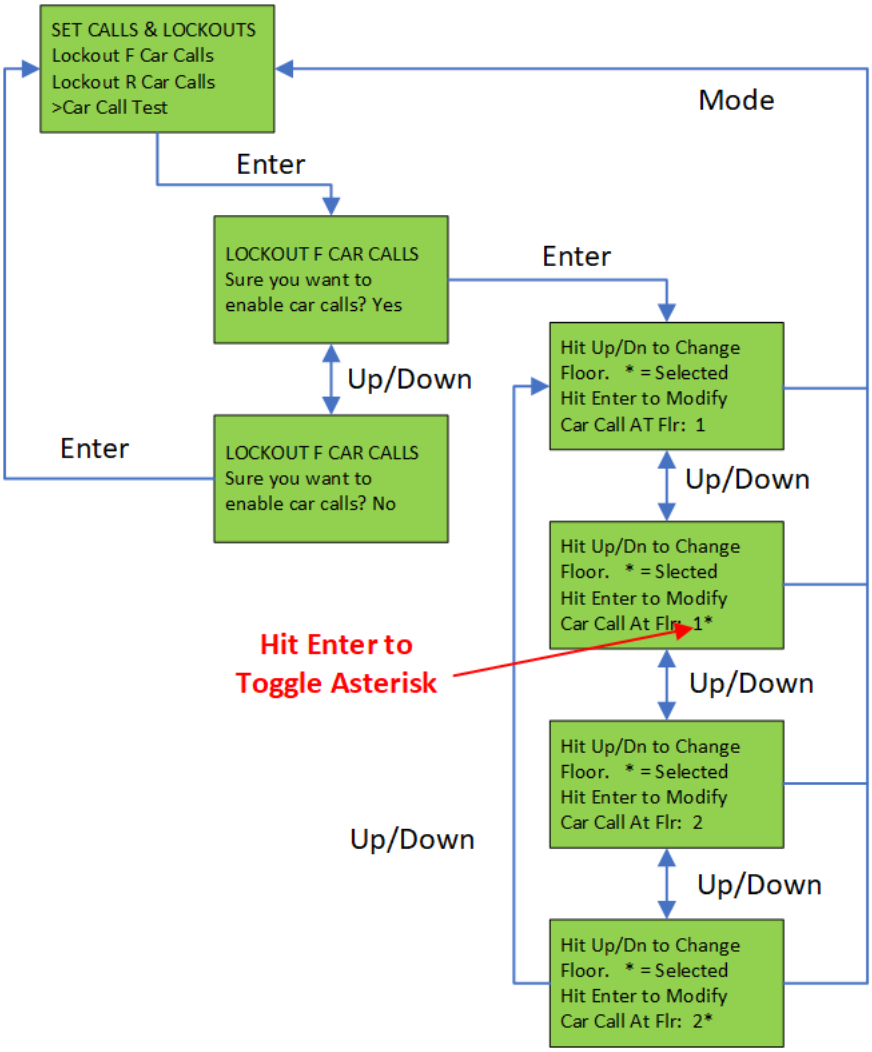


5.2.4.3 Car Call Test

This menu allows the mechanic to initiate a continuous test of the elevator. The test can be conducted with the “AUTO DOORS” switch set to “ON” or “OFF”. By following the instructions from the menu, the “Car Call Test” can be initiated or discontinued. When performing the “Car Call Test”, the car will answer all the registered calls in one direction. When the last call has been answered, the calls will be reinitiated automatically, and the car will answer the calls in the opposite direction.

Figure 5-13:

Set Car Call Test



This operation will continue until the test is discontinued from the LCD interface, the car is taken out of automatic operation, or a fault occurs.

The car will not perform the Car Call Test if it is on Independent Service.

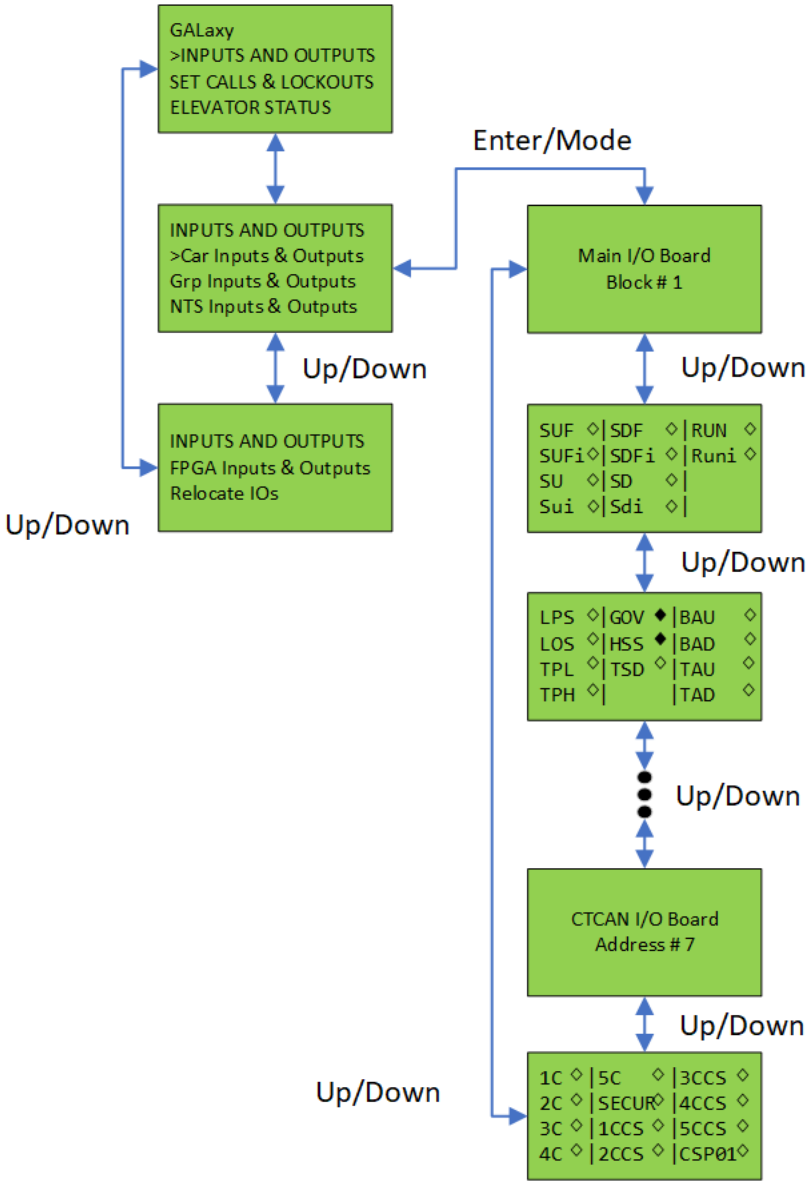
When performing the Car Call Test with the “AUTO DOORS” switch set to “OFF”, it is recommended to set the non-interference time (Car Timers->Non Interfer T) to at least 5 seconds.

5.2.5 Inputs and Outputs

The Input and Output menus show the status of all inputs and outputs for the MAIN CPU, the GROUP, the NTS processor and the Safety PAL. The status of the I/O is shown as a closed diamond "◆" for ON and an open diamond "◇" for OFF. A description every input and output used on the controller and the board it is located on is shown in the Troubleshooting section. The controller determines which boards are used depending on the options selected and the number of front and rear floors. All I/O locations are determined from an io.dat file on the SD Card. I/O's on lines 0-13 and 138-146 of the io.dat file are placed at hardware dependent locations and their table location should never be changed.

Figure 5-14:

Inputs and Outputs

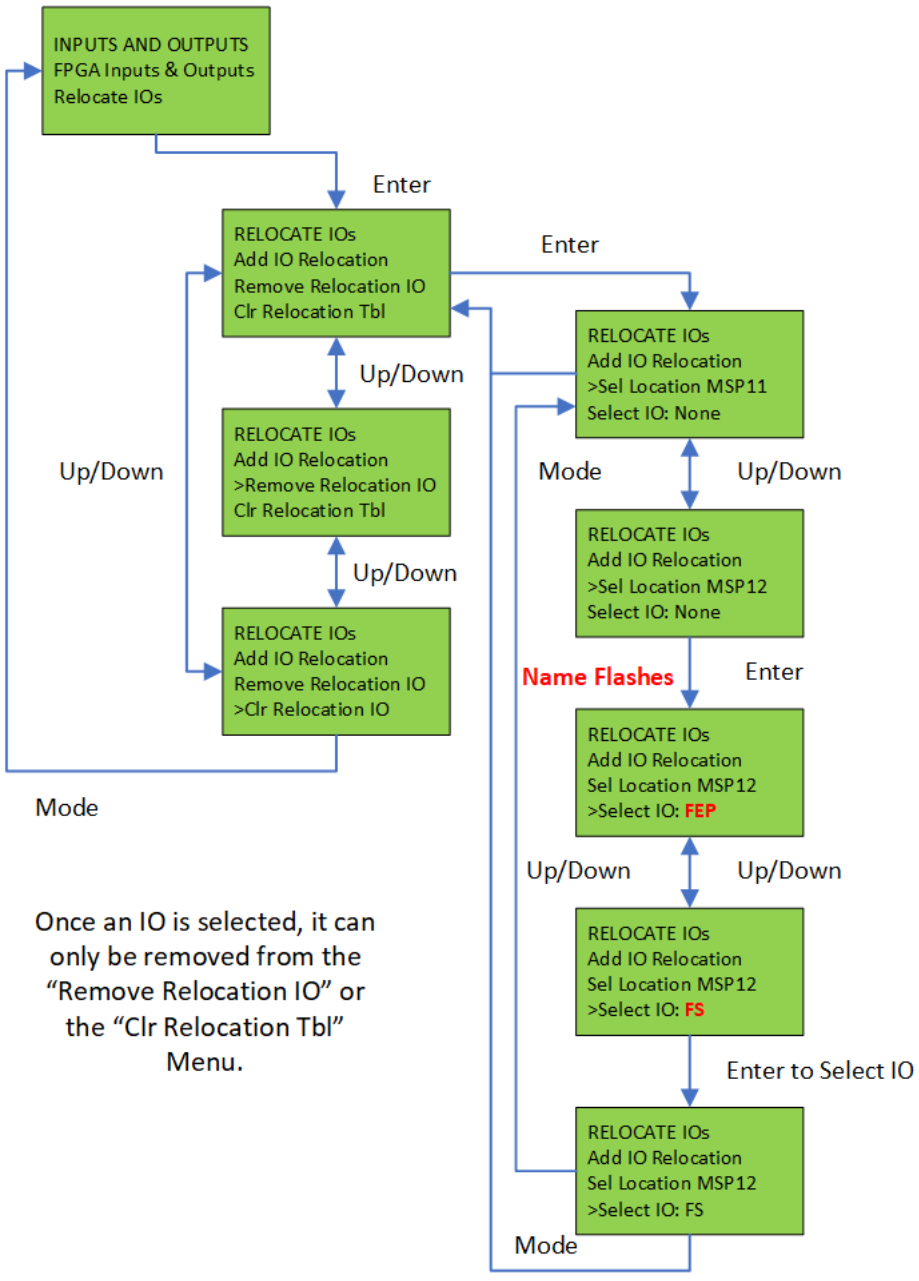


5.2.5.1 Relocate I/Os

The Relocation I/O menus allow the user to relocate up to three inputs and three outputs on each of the Machine Room CAN bus, the Car Top CAN and the Group CAN bus. Details of relocating the I/Os are described in the troubleshooting section of this manual.

Figure 5-15:

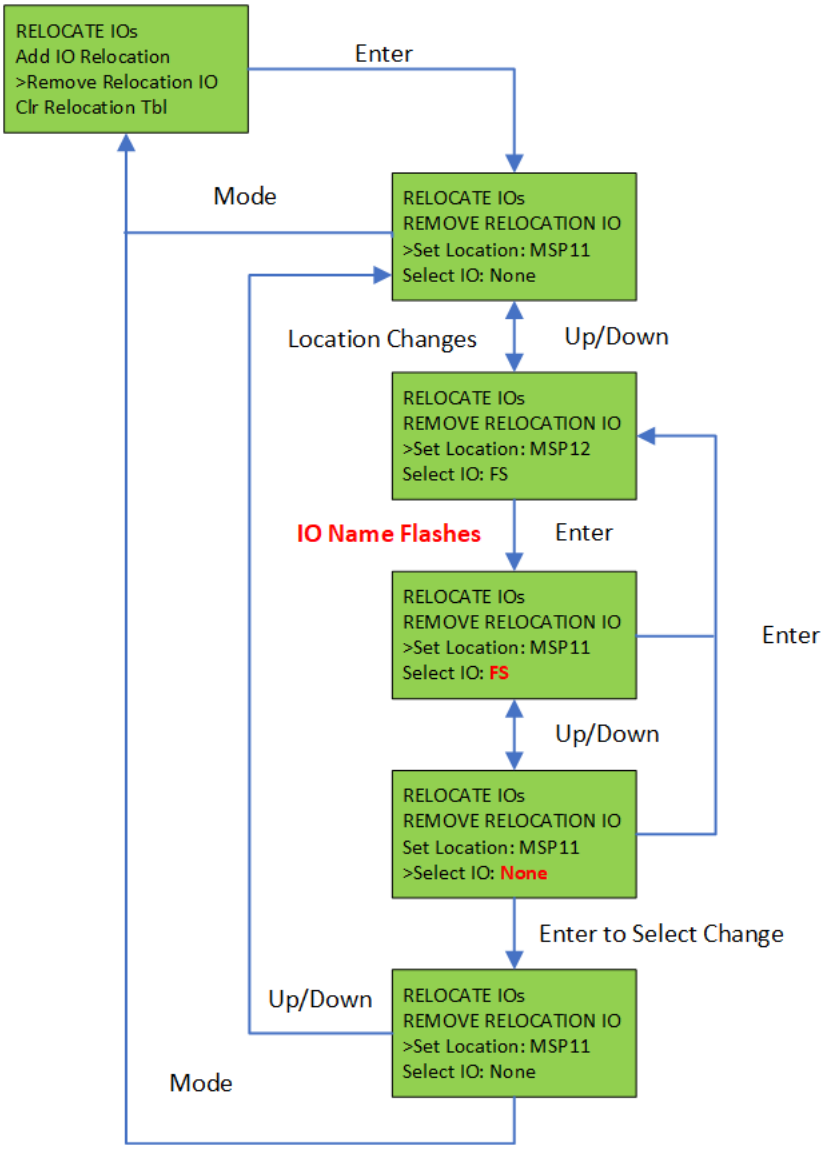
Relocate I/Os – Add I/O Relocation



5.2.5.2 Remove Relocation I/O

Figure 5-16:

Relocate IOs – Remove Relocation IO

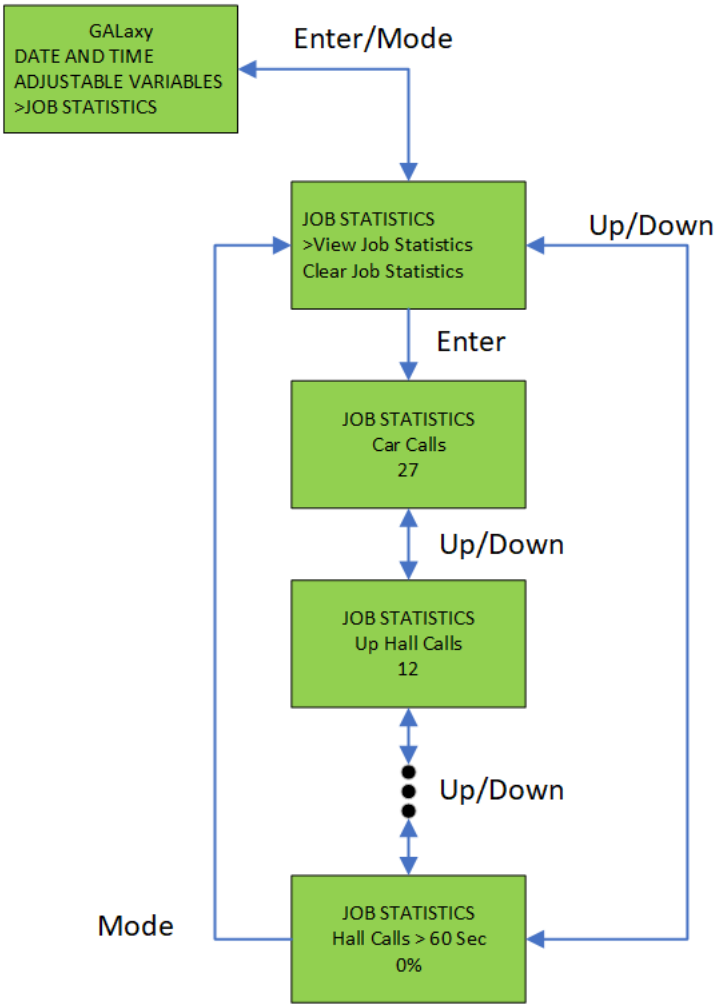


5.2.6 Job Statistics

The Job Statistics menu shows the number car calls and the number and percent of hall calls serviced since the job was started or since the job statistics were cleared.

Figure 5-17:

Job Statistics



Listed are all the categories maintained:

# of Car Calls # of Up Hall Calls # of Down Hall Calls # of Up Hall Calls < 15 sec # of Up Hall Calls < 30 sec # of Up Hall Calls < 45 sec	# of Up Hall Calls < 60 # of Up Hall Calls > 60 sec # of Down Hall Calls < 15 sec # of Down Hall Calls < 30 sec # of Down Hall Calls < 45 sec # of Down Hall Calls < 60 sec	# of Down Hall Calls > 60 % of Hall Calls with < 15 sec % of Hall Calls with < 30 sec % of Hall Calls with < 45 sec % of Hall Calls with < 60 sec % of Hall Calls with > 60 sec

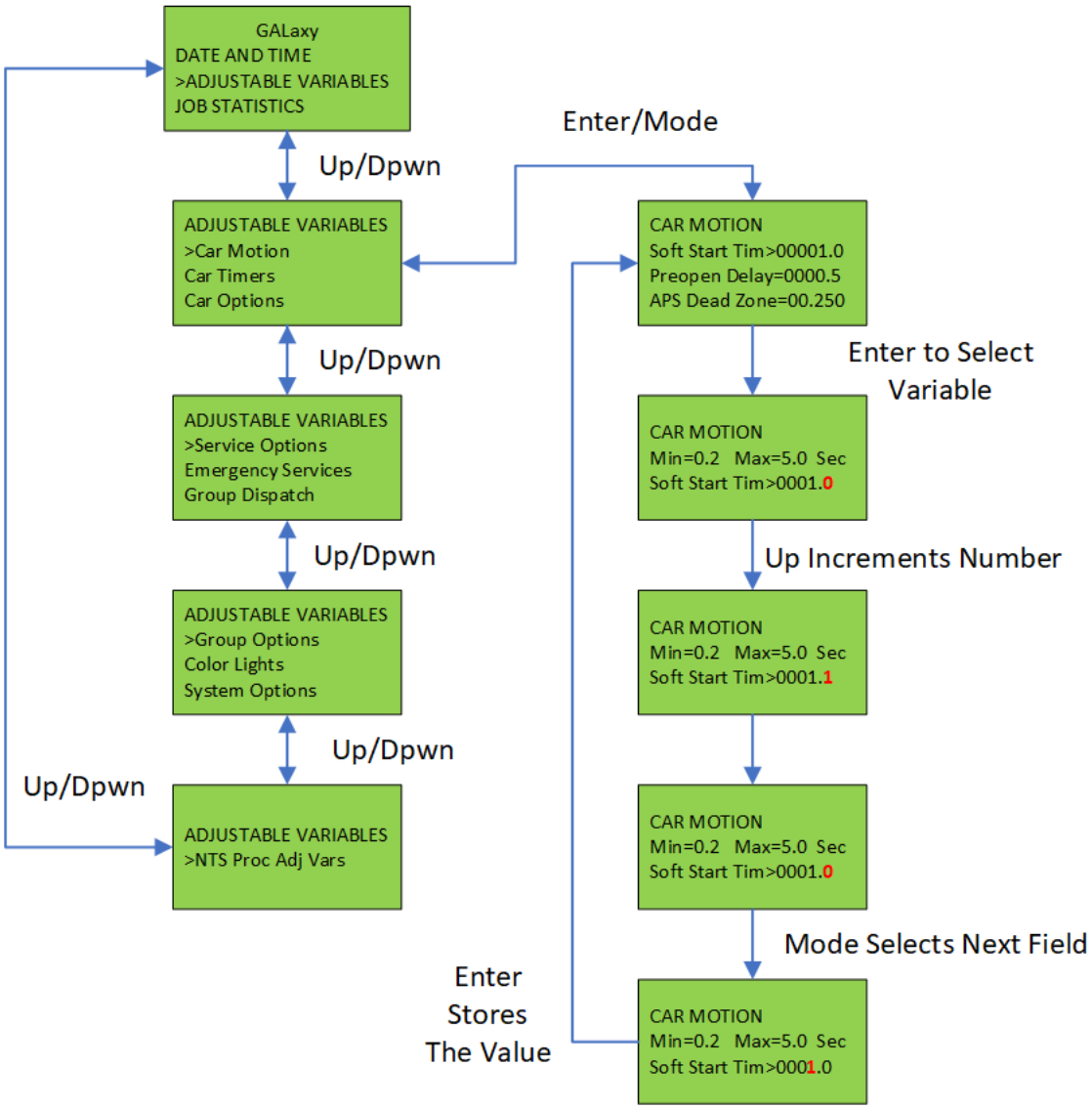
Table 5-12: Job Statistics

5.2.7 Adjustable Variables

This Adjustable Variables menu allows modification of numerous field adjustable parameters for the Main CPU and the NTS Processor. Refer to the Adjustable Variables section for a list of all parameters and their functions.

Figure 5-18:

Adjustable Variables

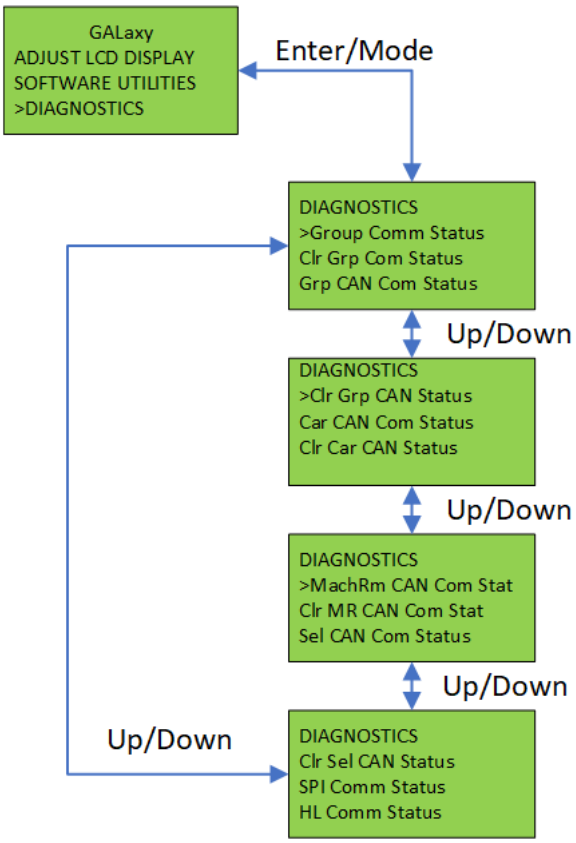


5.2.8 Diagnostics

The diagnostics menu shows the communications status to all serial devices. For most devices, the device version and the transmit/receive counts are displayed. The transmit/receive counts should always be incrementing for all devices. All CAN bus communications ports show a “TxErr” and “RxErr” error counts that should always be zero. A non-zero value of the error count on a CAN channel or a receive counter not incrementing on any serial channel indicates a poor cable connection or electrical noise on the cable.

Figure 5-19:

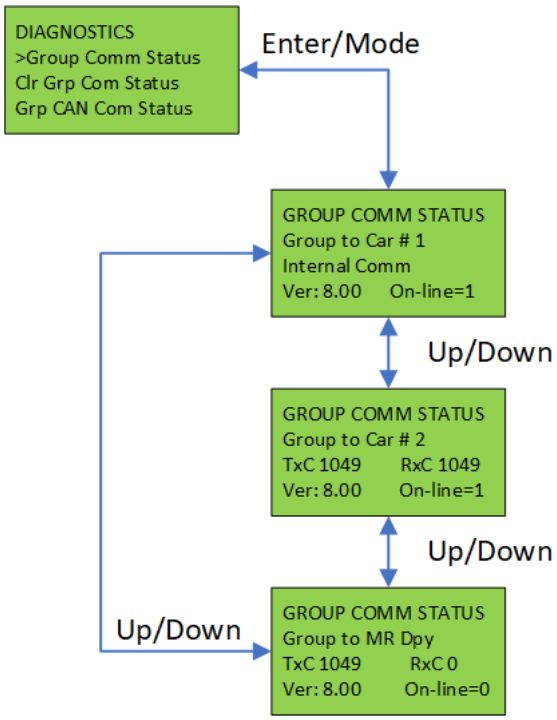
Diagnostics



5.2.8.1 Group Comm Status

Figure 5-20:

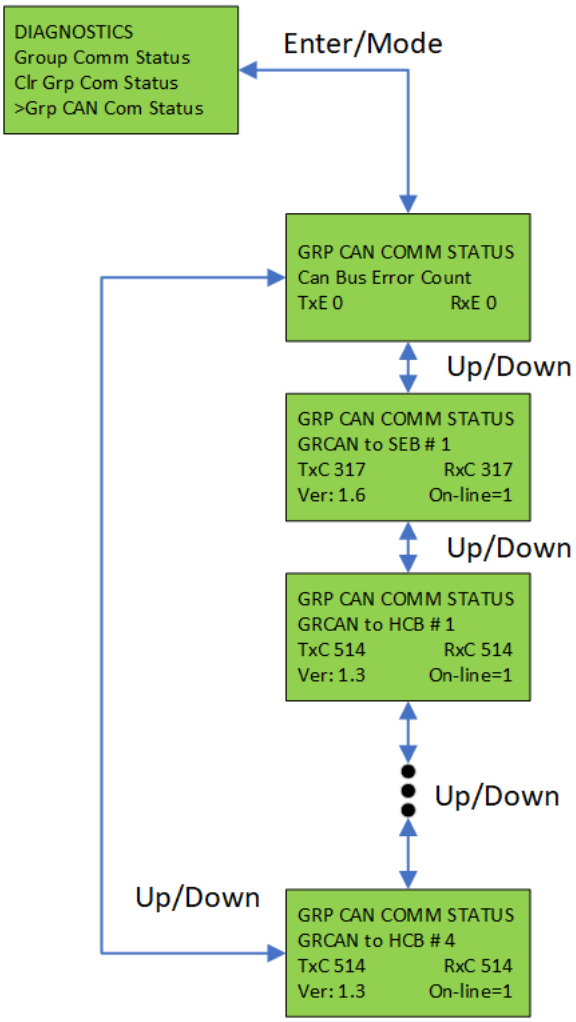
Group Comm Status



5.2.8.2 Group Can Comm Status

Figure 5-21:

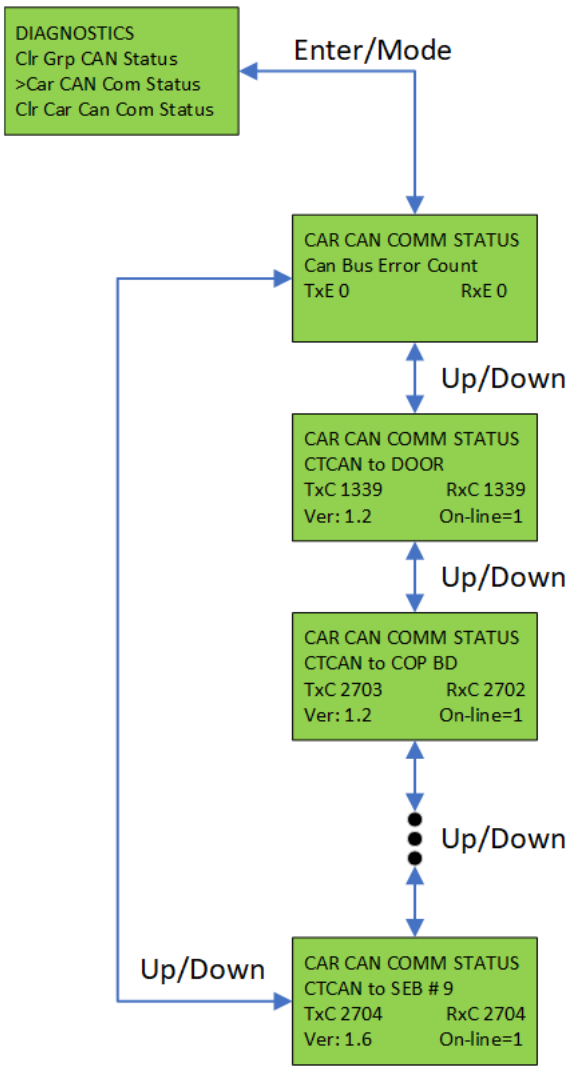
Group CAN Comm Status



5.2.8.3 Car Can Comm Status

Figure 5-22:

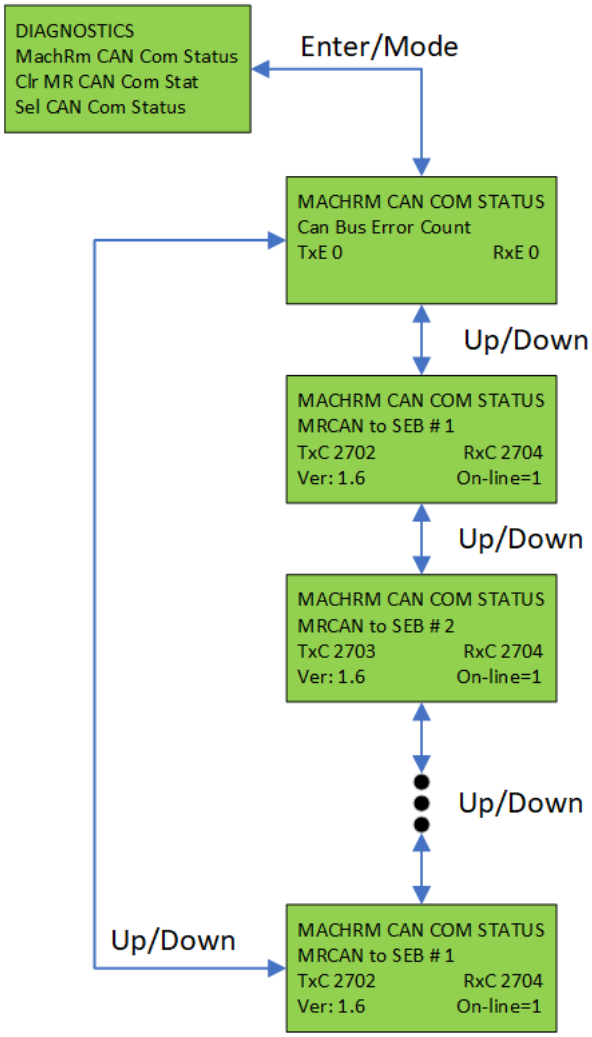
Car CAN Comm Status



5.2.8.4 Machine Room Can Comm Status

Figure 5-23:

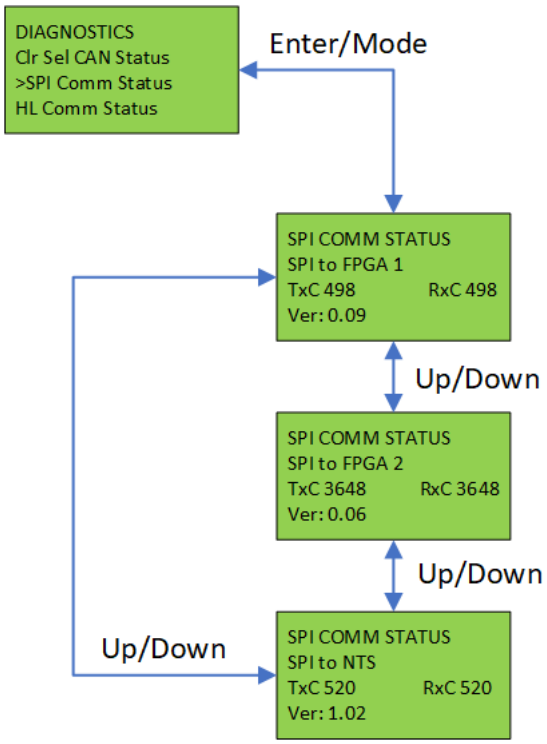
Machine Room CAN Comm Status



5.2.8.5 SPI Comm Status

Figure 5-24:

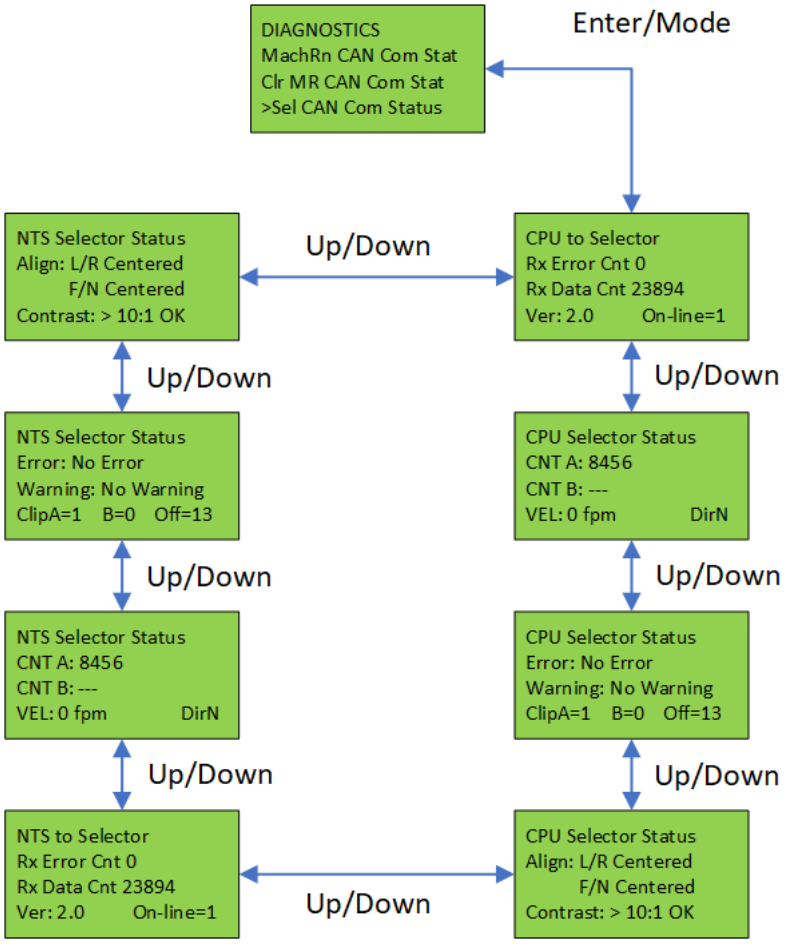
SPI Comm Status



5.2.8.6 APS Selector Comm Status

Figure 5-25:

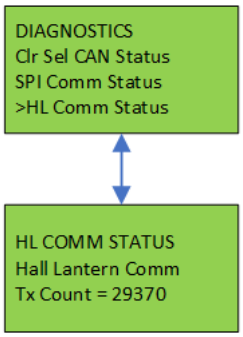
Selector CAN Comm Status



5.2.8.7 Hall Lantern Comm Status

Figure 5-26:

Hall Lantern Comm Status

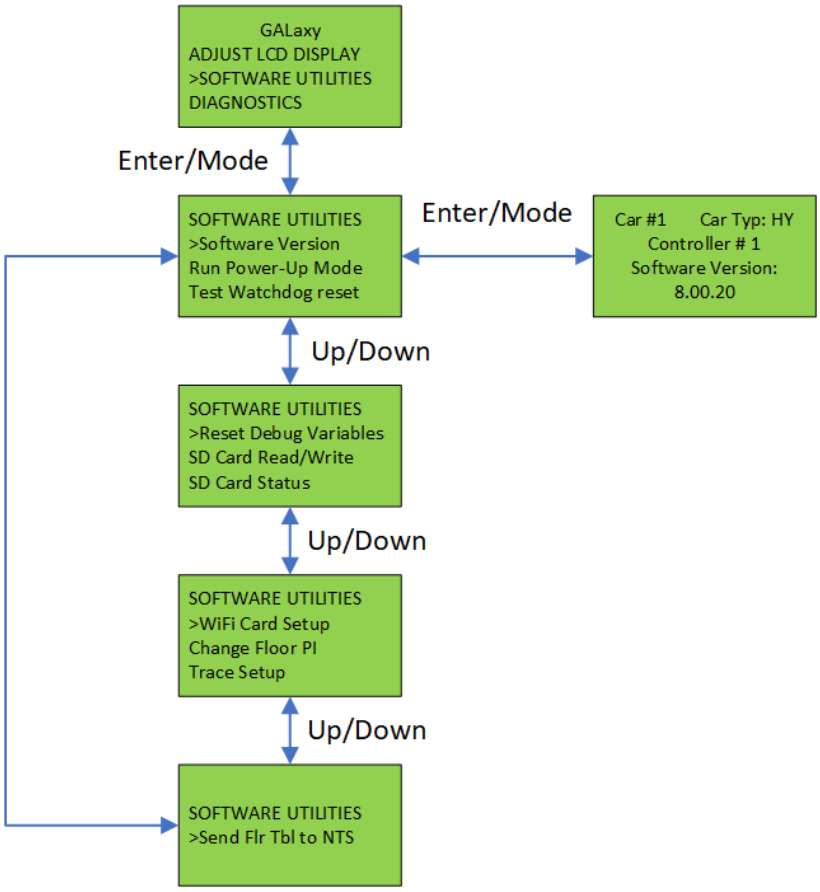


5.2.9 Software Utilities

The software utilities menu allows the user to view the controller software version, run power-up mode, test the CPU watchdog timer, access SD Card operations, access WiFi setup, change the floor PIs, setup the trace buffer trigger conditions and copy floor tables to the NTS processor.

Figure 5-27:

Software Utilities



Software Version: Display the software version, revision and interim revision in the form 8.00.20.

Run Power-Up Mode: The Power-Up Mode is a program that executes first upon power up of the controller. It checks that there is a valid controller program in memory and that a valid cons.dat file is on the SD Card. Once this is validated, the power up program runs the controller program. If the power up program is executed from the controller program or if during power up, the user presses and holds the enter and mode buttons, this routine does not run the controller program but stays in the power up routine to allow for updates of the controller program. The Power-Up Mode is also used to upload new controller software for the Main CPU from the SD Card.

Test Watchdog Reset: The watchdog is a CPU timer that must be updated periodically in software to confirm that the program is still running correctly. If the watchdog is not updated, the timer will expire and cause the CPU to do a hard reset to allow the program to restart. To test the watchdog timer, when the command is given, the controller program sits in an infinite software loop without updating the watchdog time to test that the reset function works.

Reset Debug Variables: The debug variables are set by a software engineer to aid in debugging a software problem. Some problems are especially difficult to catch because they occur infrequently or at seemingly random times. The debug variables are displayed in the detailed Elevator Status Menu so that a mechanic can view the variable and report back to the software engineer. The reset debug variables menu allows the mechanic to reset the variables to zero to aid in debugging.

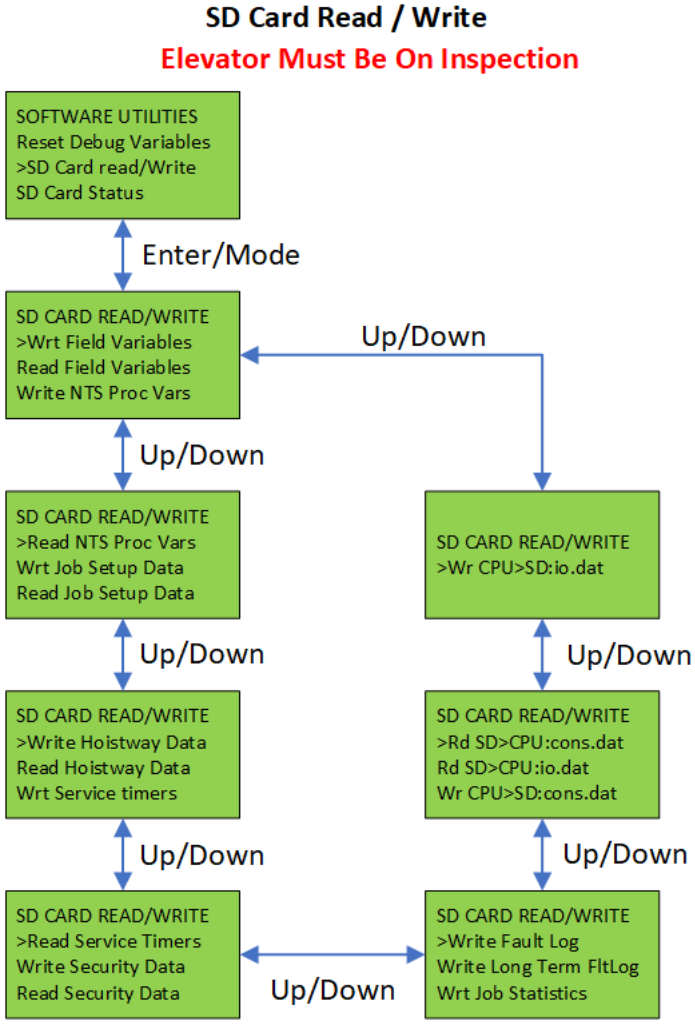
SD Card Read/Write Data: This menu is explained in detail in the next section.

SD Card Status: This is the Secured Digital Card Status showing if the card has been initialized (Init=1), if it is standard or High Capacity (HC=1), and if it can operate at an acceptable voltage level (VStat=1).

5.2.9.1 SD Card Rear/Write Data

This menu item allows the user to read and write controller data to and from the SD Card.

Figure 5-28:

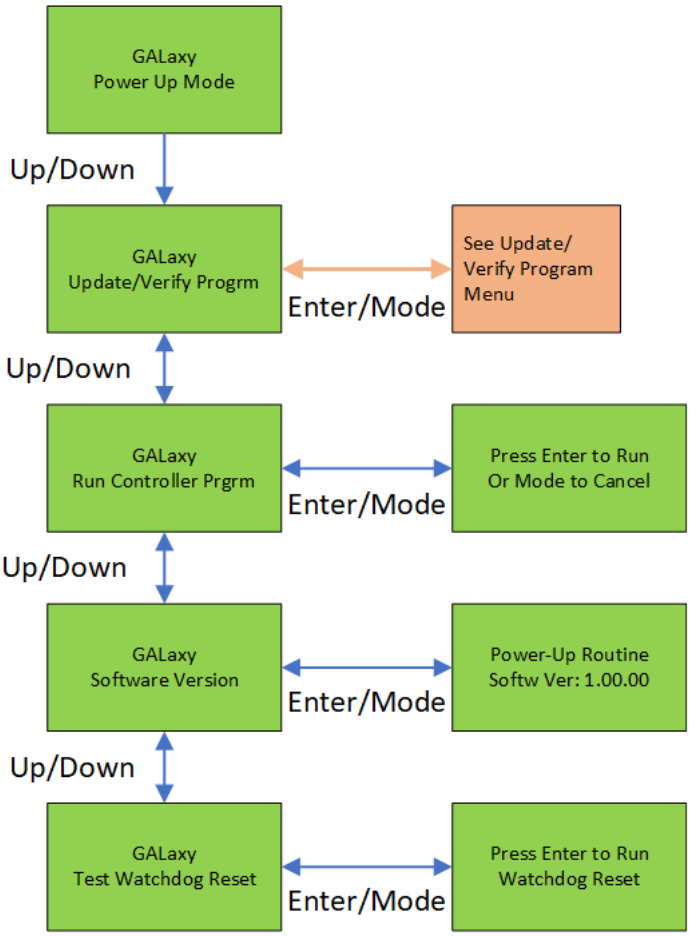


5.2.9.2 Power-Up Mode

When the Main CPU powers up, it runs a power-up routine that verifies the checksum of the controller program in local flash memory and then verifies that the job configuration file is on the SD Card. If all is okay, the power-up routine jumps to the controller program. If the power up does not pass verifications, program control stays in the power-up routine and the elevator is not allowed to run. To enter power-mode (run the power-up routine), cycle the power while pressing the ENTER and MODE buttons on the LCD Display Interface and then release the button when the display indicates to do so. Alternately, this mode can also be entered by placing the car on inspection and selecting the Run Power Up Mode sub-menu item located in the Software Utilities menu.

Figure 5-29:

Power Up Mode

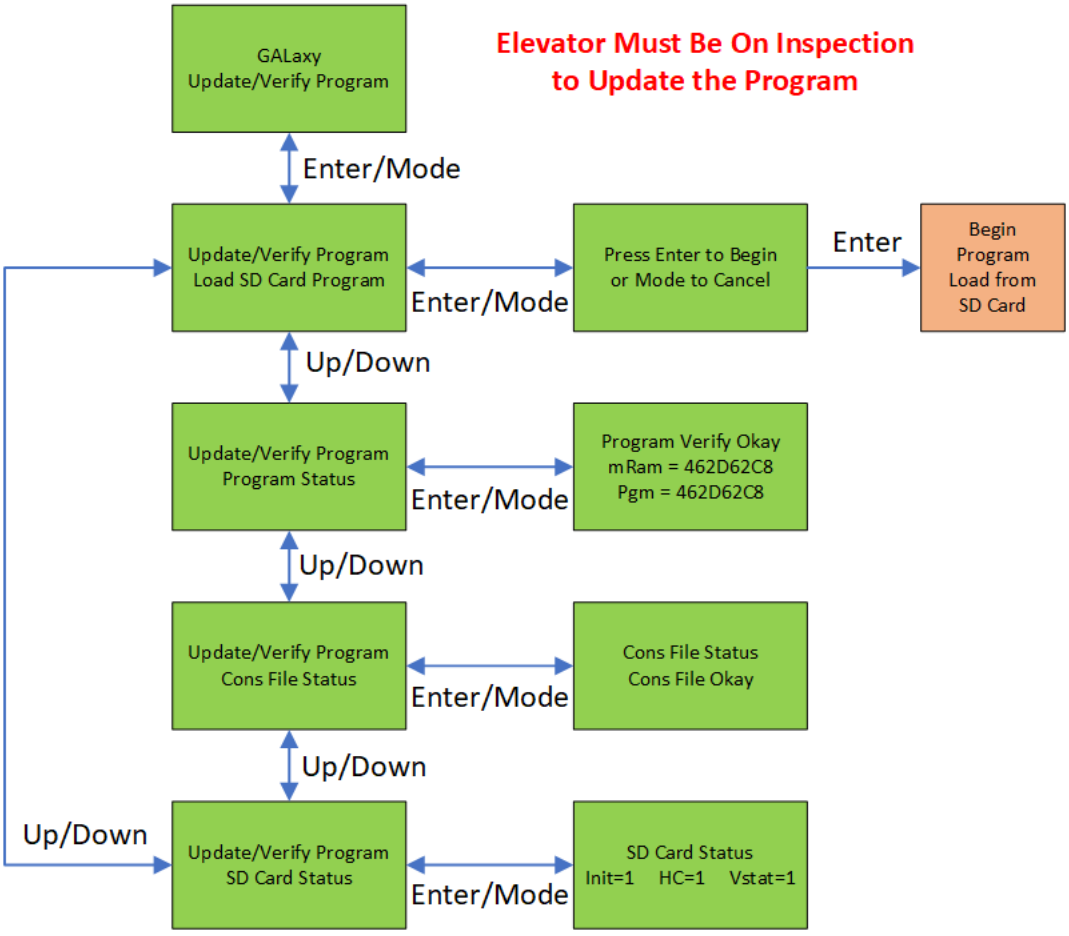


5.2.9.3 Update Verify Program

This menu is used to check the integrity of the CONS file, the controller program and the SD card itself. It is also used to update the controller software. To update controller software, make sure the car is on inspection, make sure the SD Card is installed with the latest controller software and then follow the menu to Load SD Card Program.

Figure 5-30:

Update/Verify Program

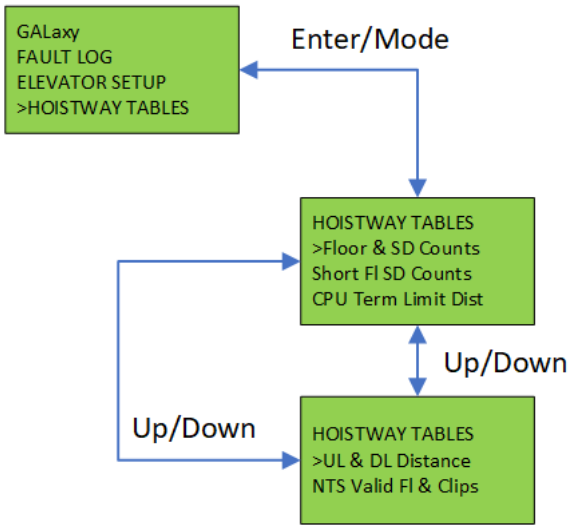


5.2.10 Hoistway Tables

The Hoistway Tables menu show the normal Floor Position Count, normal Slowdown Counts, the Short Floor Slowdown Counts, the CPU Terminal Limit Distanced Counts, the UL and DL Distances Counts for the Main CPU and the Valid Floors and Clips for the NTS Processor.

Figure 5-31

Hoistway Tables

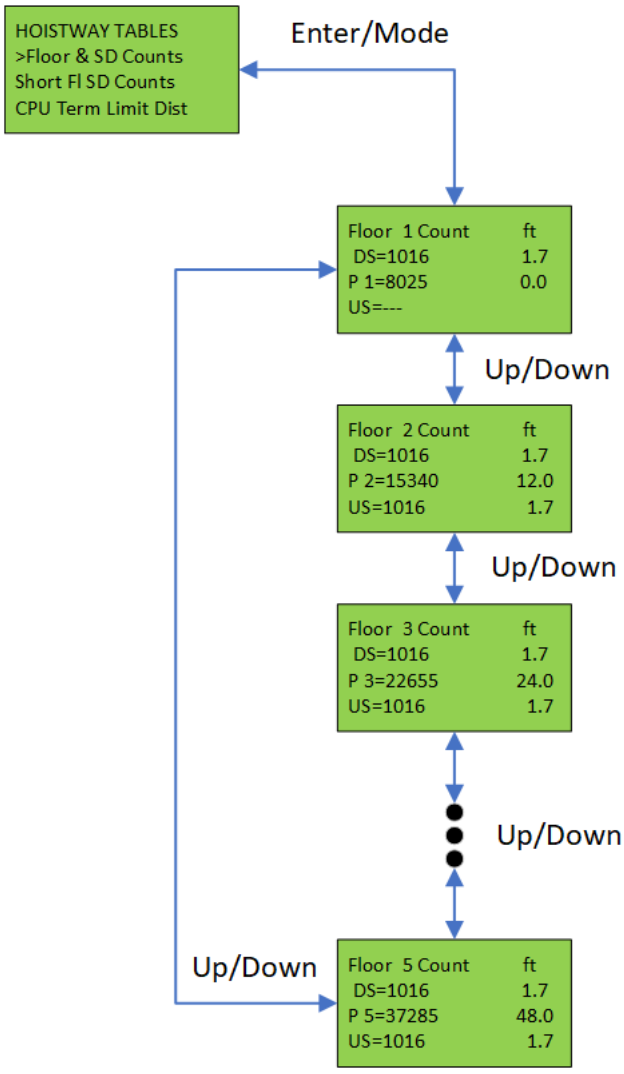


5.2.10.1 Floor & Slowdown Counts

This menu is useful for checking the position count and set the slowdown count values for each floor. Use the UP and DOWN buttons to select the floor and then ENTER to edit values for that floor. The initial values for the slowdown counts for each floor are calculated from the velocity of the car when the learn hoistway procedure is completed. If the position count for a floor is zero, the hoistway has not finished being learned or has not been retained in memory. The Short FL SD Counts menu table are use only at the short floor locations.

Figure 5-32:

Floor & SD Counts

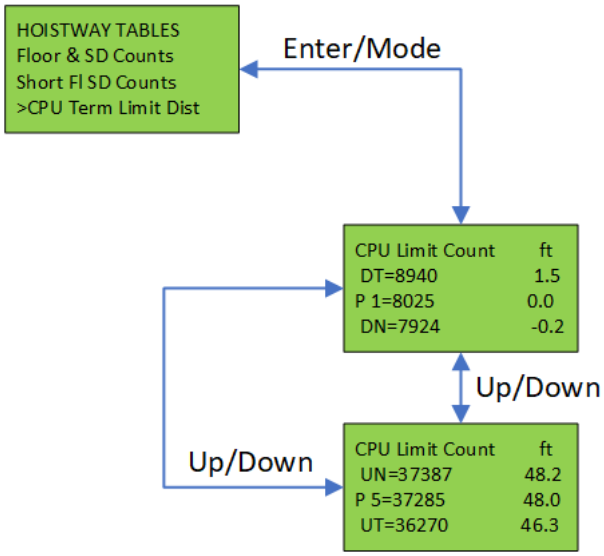


5.2.10.2 CPU Terminal Limit Distance

The CPU Terminal Limit Distance Counts show the Main CPU's normal terminal limit slowdown values. When the hoistway learn is completed, this table is updated according to the car velocity and will match the slowdown value that are used by the NTS processor. This table cannot be edited from this menu. To alter the slowdown values, change the slowdown values for the NTS processor and relearn the top and bottom floors.

Figure 5-33:

CPU Limit Count

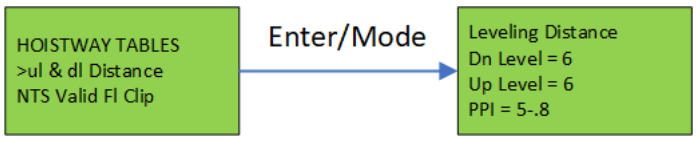


5.2.10.3 UL & DL Distance Counts

When the "Stop On Pulse Counts" parameter is set to 1 and the car hits the dead level position of the floor count, i.e. when both UL and DL are on, the controller will continue to run until the count for the UL or DL Level counts is reached (UL if going up and DL if going down). This menu allows the UL and Dl Level count to be modified.

Figure 5-34:

UL & DL Distance

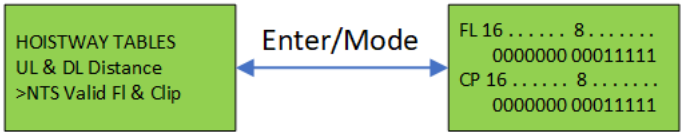


5.2.10.4 NTS Valid Floors & Clips

The NTS Valid Floors and Clips menu shows the valid floors learned in the NTS Processor's hoistway table during setup and the valid clips read at each floor while running. The clip locations are learned after the car has been setup and is running on automatic at which time the NTS Processor creates a table of floors with valid clips. If the car stops at a floor and does not read a valid clip for three consecutive stops, the car will shut down with NTS DZ Clip Fault.

Figure 5-34:

NTS Valid Floors & Clips

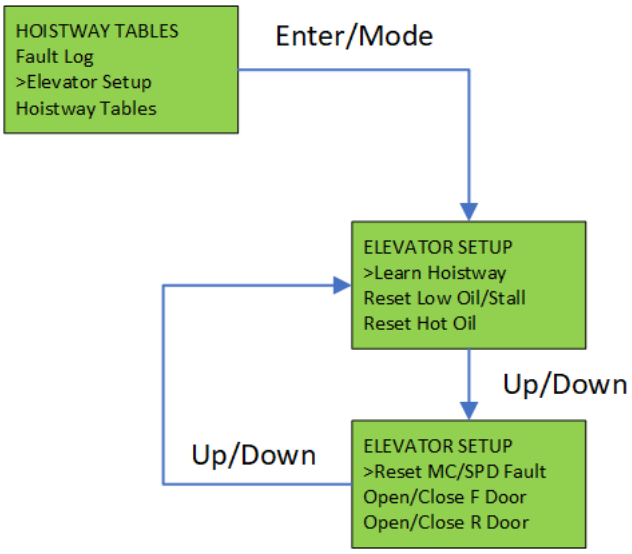


5.2.10.5 Elevator Setup

The Elevator Setup menu allows the user to learn the hoistway floor locations, reset fault conditions and open or close the door on inspection.

Figure 5-35:

Elevator Setup



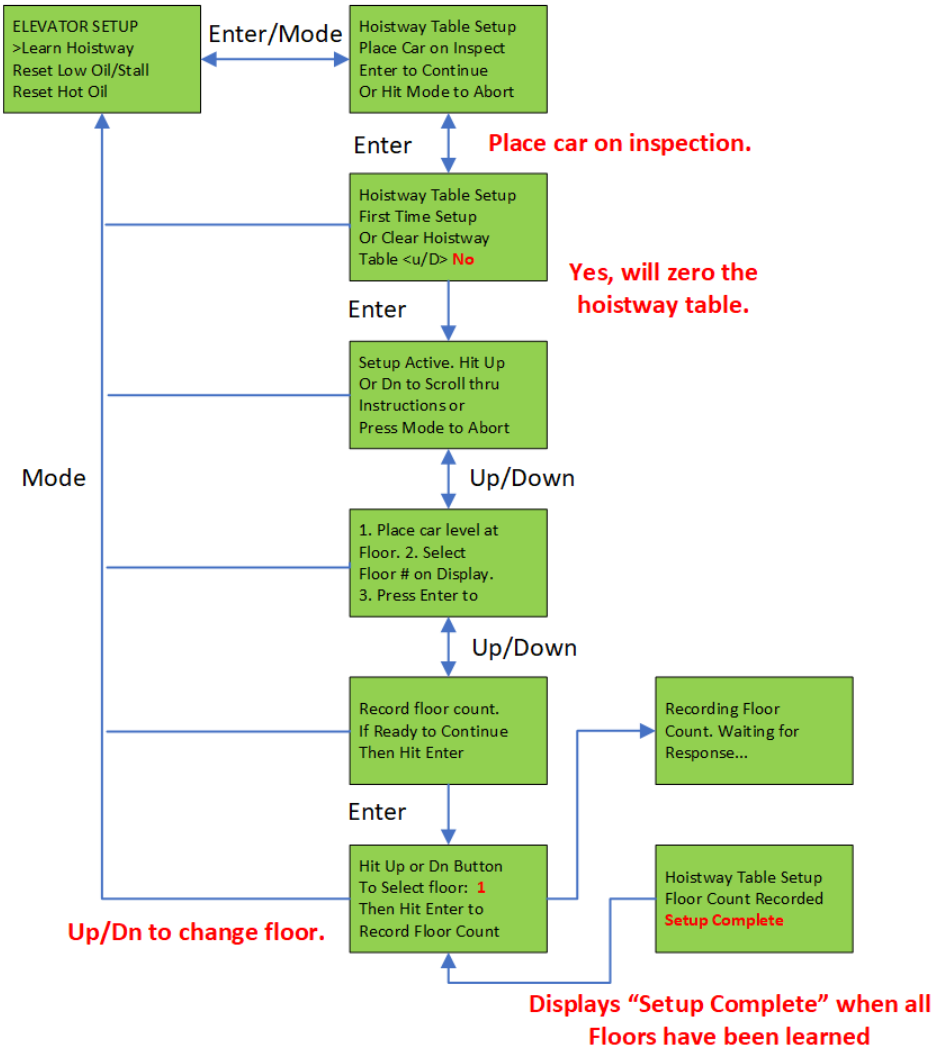
5.2.10.6 Learn Hoistway

The controller uses an absolute position tape to maintain the position of the elevator. There are two mechanisms to learn the position count for each floor, one from the machine room using this menu and the second from the car operating station with the COP setup jumper installed. During the initial installation, the floor positions would typically be setup from the car station. See section 2 for the APS Selector Floor Position Setup.

Once the floors have been learned but the terminal limits positions have to be modified, it is convenient to follow the learn hoistway menu to relearn the top and bottom floors in order to record the new limit positions. The mechanic can run the car to the top or bottom floor, set the UT or DT Limit count position from the NTS Proc Adj Vars menu and then learn the floor. The new value for the normal terminal limit is then setup in the NTS processor and the Main CPU. To set the opposite terminal limit, the mechanic would run the car to the opposite terminal floor and then again relearn the floor. Note: The UT limits are learned only when the top floor is learned and the DT limit when the bottom floor is learned.

Figure 5-36:

Learn Hoistway

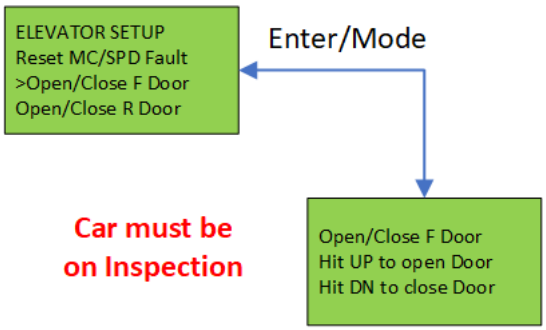


5.2.10.7 Open/Close Door

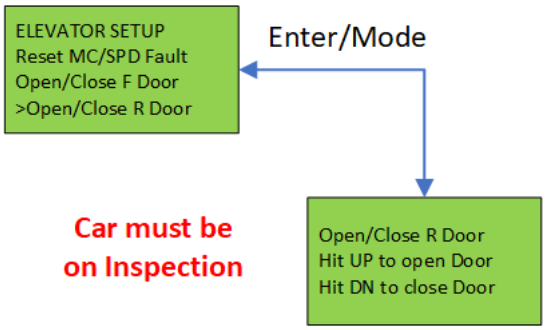
The menu is used to open or close the front or rear door while the car is in a valid door zone and the car is on inspection.

Figure 5-37:

Open/Close Front Door



Open/Close Rear Door

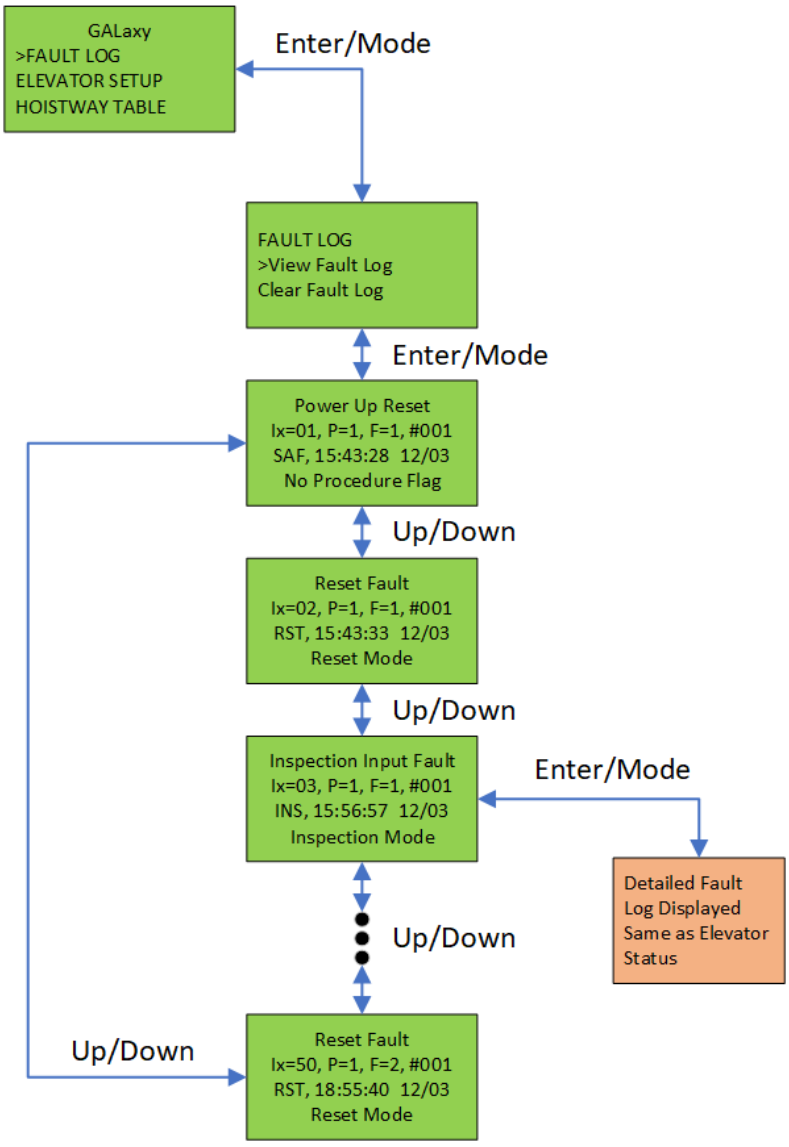


5.2.11 Fault Log

This menu allows the user to view or clear the fault log. The View Fault Log menu displays the fault, the car PI "P", the building floor position "F", the number of occurrences, the car service, time and date the fault occurred and the process mode. Faults are displayed in the order of occurrence with the index number displayed on the left as the "ix" number (ix=2, index = 2nd fault). The largest index number signifies the last fault that has occurred. Faults are stored in a circular buffer that fits up to 50 faults. Once the buffer is full, the next fault overwrites the oldest fault. Refer to the CPU Faults section for a detailed description, possible causes and corrective actions of the faults.

Figure 5-38:

Fault Log



Section 6 - Main CPU Faults & Detailed Faults

6.1 Main CPU Faults

Table 6-0: Main CPU Faults

Faults	Description	Possible Cause/Suggested Fix
APS Sel CAN Bus Off	APS (Absolute Position System) CAN Bus Comm Off Fault	• From the LCD user interface, select the Diagnostic menu and then the Sel CAN Com Status menu. The Rx Error Cnt should be zero and the Rx Data Cnt should be incrementing. If the selector board is not communicating it will show with the online status equal to 0. If the Rx Error Cnt is not zero, there is most likely a connection problem from the COP to the Main I/O board. • Verify that the APS Camera CAT-6 Ethernet cable is connected to the Ethernet jack on the COP board. • Check the terminal connection for the twisted pair wires. Verify that CANH and CANL on the 1134 COP board are wired to CANH and CANL on the 1121 Main I/O board respectively. • Make sure the CAT-6 cable is not run in parallel with any high voltage wires. • Noise on the CAN Bus, verify that the shield wire is connected according to the job print.
APS SEL CAN Com Err	APS selector communication error.	• From the LCD user interface, select the Diagnostic menu and then the Sel CAN Com Status menu. The Rx Error Cnt should be zero and the Rx Data Cnt should be incrementing. If the selector board is not communicating it will show with the online status equal to 0. If the Rx Error Cnt is not zero, there is most likely a connection problem from the COP to the Main I/O board. • Verify that the APS Camera CAT-6 Ethernet cable is connected to the Ethernet jack on the COP board. • Check the terminal connection for the twisted pair wires. Verify that CANH and CANL on the 1134 COP board are wired to CANH and CANL on the 1121 Main I/O board respectively.
APS Selector CAN Err	APS (Absolute Position System) Selector CAN comm error	• Verify that the APS Camera CAT-6 Ethernet cable is connected to the Ethernet jack on the COP board. • Check the terminal connection for the twisted pair wires. Verify that CANH and CANL on the 1134 COP board are wired to CANH and CANL on the 1121 Main I/O board respectively. • Make sure the CAT-6 cable is not run in parallel with any high voltage wires. • Noise on the CAN Bus, verify that the shield wire is connected according to the job print.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
APS Selector Fault	APS (Absolute Position System) Selector Fault. This fault may occur due to either an internal error, communications error, position validation error, velocity validation error on the APS Selector.	• From the LCD user interface, select the Diagnostic menu and then the Sel CAN Com Status menu. The Rx Error Cnt should be zero and the Rx Data Cnt should be incrementing. If the selector board is not communicating it will show with the online status equal to 0. If the Rx Error Cnt is not zero, there is most likely a connection problem from the COP to the Main I/O board.• From the LCD user interface, verify that the NTS processor is also communicating properly with the APS Selector.• Possible solution is to clean the APS tape with damp soft cloth.• Check the APS Camera and make sure both LEDs on the camera are green. If not refer to the installation procedure to adjust the camera alignment to the tape.
ASV Time- out Car 1	Automatic Service Time-out Car 1	• Car was not able to answer group hall call within the automatic service time-out timer. Look for fault condition on car.
ASV Time- out Car 2	Automatic Service Time-out Car 2	• Car was not able to answer group hall call within the automatic service time-out timer. Look for fault condition on car.
ASV Time- out Car 3	Automatic Service Time-out Car 3	• Car was not able to answer group hall call within the automatic service time-out timer. Look for fault condition on car.
ASV Time- out Car 4	Automatic Service Time-out Car 4	• Car was not able to answer group hall call within the automatic service time-out timer. Look for fault condition on car.
ASV Time- out Car 5	Automatic Service Time-out Car 5	• Car was not able to answer group hall call within the automatic service time-out timer. Look for fault condition on car.
ASV Time- out Car 6	Automatic Service Time-out Car 6	• Car was not able to answer group hall call within the automatic service time-out timer. Look for fault condition on car.
ASV Time- out Car 7	Automatic Service Time-out Car 7	• Car was not able to answer group hall call within the automatic service time-out timer. Look for fault condition on car.
ASV Time- out Car 8	Automatic Service Time-out Car 8	• Car was not able to answer group hall call within the automatic service time-out timer. Look for fault condition on car.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
At Floor Shutdown	At floor shutdown	• Car faulted out while at floor. Look at the fault log for a different fault at the same time to determine cause of failure
Aut Swg Fr Door Open	Automatic Swing Front Door Open Fault. The swing door can only close by removing the door open signal and allowing the door to close mechanically. With this fault the door stayed open when the open signal was removed.	• Verify that the door that the ADO output has not failed on. If so then replace the output chip.• Verify that the door is not binding and is preventing from closing.
Aut Swg Rr Door Open	Automatic Swing Rear Door Open Fault. The swing door can only close by removing the door open signal and allowing the door to close mechanically. With this fault the door stayed open when the open signal was removed.	• Verify that the door that the ADOR output has not failed on. If so then replace the output chip. • Verify that the door is not binding and is preventing from closing.
Bot Door Lock Fault	The Bottom Door Lock failed on while the door was open.	• Faulty door lock. • Door lock not adjusted properly. • Jumper placed on door lock circuit. • Faulty wiring to DLB input. • Faulty DLB and DLB-1 inputs (For this to occur both DLB and DLB-1 inputs must fail on). • DOL input failed. Replace DOL input chip. • Door operator open limit DOL is not adjusted properly
Car 1 Comm Loss	The group car is not communicating with Car 1.	• Faulty wiring from R/T+ and R/T- from car to car. • Faulty U6 driver chip on 1132 board. • Noise on shield wire. Connect shield only on one end. • Noise on the communication wires. Run wires in separate conduit.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Car 2 Comm Loss	The group car is not communicating with Car 2.	• Faulty wiring from R/T+ and R/T- from car to car. • Faulty U6 driver chip on 1132 board. • Noise on shield wire. Connect shield only on one end. • Noise on the communication wires. Run wires in separate conduit.
Car 3 Comm Loss	The group car is not communicating with Car 3.	• Faulty wiring from R/T+ and R/T- from car to car.• Faulty U6 driver chip on 1132 board.• Noise on shield wire. Connect shield only on one end.• Noise on the communication wires. Run wires in separate conduit.
Car 4 Comm Loss	The group car is not communicating with Car 4.	• Faulty wiring from R/T+ and R/T- from car to car. • Faulty U6 driver chip on 1132 board. • Noise on shield wire. Connect shield only on one end. • Noise on the communication wires. Run wires in separate conduit.
Car 5 Comm Loss	The group car is not communicating with Car 5.	• Faulty wiring from R/T+ and R/T- from car to car. • Faulty U6 driver chip on 1132 board. • Noise on shield wire. Connect shield only on one end. • Noise on the communication wires. Run wires in separate conduit.
Car 6 Comm Loss	The group car is not communicating with Car 6	• Faulty wiring from R/T+ and R/T- from car to car. • Faulty U6 driver chip on 1132 board. • Noise on shield wire. Connect shield only on one end. • Noise on the communication wires. Run wires in separate conduit.
Car 7 Comm Loss	The group car is not communicating with Car 7	• Faulty wiring from R/T+ and R/T- from car to car. • Faulty U6 driver chip on 1132 board. • Noise on shield wire. Connect shield only on one end. • Noise on the communication wires. Run wires in separate conduit.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Car 8 Comm Loss	The group car is not communicating with Car 8	• Faulty wiring from R/T+ and R/T- from car to car. • Faulty U6 driver chip on 1132 board. • Noise on shield wire. Connect shield only on one end. • Noise on the communication wires. Run wires in separate conduit.
Car Call Light Fuse	Car Call Light Fuse Blown	• Check for short on the Car Call Light circuit.
Car Call Power Fuse	Car Call Power Fuse Blown	• Check for short on Car Call Power circuit.
Car Com Device Reset	Serial Car board reset unexpectedly. Usually caused by loss of power to the individual board.	• Usually caused by loss of power to the individual board. Check for loose connection on power to board.• Faulty I/O board.
Car Gate Safe Fault	Car Gate safe fault	• The car was either running or preparing to run and lost a car gate or car lock input. Check the adjustment of the door.
Car Safe Fault	The Car Safe Fault occurs from the wanting to run but does not have a critical input energized. Some of the conditions for a car safe fault will also cause other faults to be logged.	• The car does not have the gate or lock inputs and is running or trying to run • The stop switch is open • An inspection string input fault. Only one input should be on in the inspection string (AUTO, CTI, ICI, ACC or MRI) • Gate or Lock Bypass switch is on when not on car top inspection
Car Safe Fault Preop	The car had a car safe fault while pre-opening the door.	• The car lost the DZ input while leveling into the floor and the door was open.
Car Safe Fault Start	The car had an onward call, had the door close limit but the car gate or door locks did not make after a 3 second time-out.	• The locks are not making properly when the door closes. • The door is not closing properly.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Car Safety Sw. Fault	Car Safety Switch Fault	• Verify that the car safety is not tripped. • Faulty wiring in the car safety circuit (CSS input).
Car Top Exit Switch	Car Top Exit Switch Off fault. The car top exit switch input is off.	• Refer to the schematic for the safety string circuit.
Car Top Stop Switch	Car top stop switch	• Indicates that the Car Top Stop Switch opened the safety string. Safety String Fault. Refer to Safety String section on the job schematics. • Check the safety string points with a meter, if there is voltage on the input but the input is not on, replace the input board.
CCB Device Fault	Car Call Board Device Fault. On the LCD Interface, this fault is display as an abbreviated device name and device fault. Please see the device faults forfurther information.	• Look at the details of the fault. The device name and the error code that caused the fault are listed.• Look up the fault code for the device for debugging information.
CCB No Comm Aux Bd 1	Car Call Board local aux board 1 comm loss	• Comm loss to RGB Auxiliary Car Call Board. Check wiring and bus termination jumpers on boards. If problem persists, check Car Comm Status under diagnostics.
CCB No Comm Aux Bd 2	Car Call Board local aux board 2 comm loss	• Comm loss to RGB Auxiliary Car Call Board. Check wiring and bus termination jumpers on boards. If problem persists, check Car Comm Status under diagnostics.
CCB No Comm Board 1	Car Call Board local board 1 comm loss	• Comm loss to RGB Car Call Board. Check wiring and bus termination jumpers on boards. If problem persists, check Car Comm Status under diagnostics.
CCB No Comm Board 2	Car Call Board local board 2 comm loss	• Comm loss to RGB Car Call Board. Check wiring and bus termination jumpers on boards. If problem persists, check Car Comm Status under diagnostics.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
CCF Input Failed Off	Contact Confirm Fault input failed off. This input is used with an electronic Bucher valve. The CCF input did not turn on during start.	• Faulty CCF input. Replace the input board. • Faulty Valve Interface. Please refer to schematic for interface circuit.
CCF Input Failed On	Contact Confirm Fault input failed on. This input is used with an electronic Bucher valve. The CCF input did not turn on during start.	• Faulty CCF input. Replace the input board. • Faulty Valve Interface. Please refer to schematic for interface circuit.
CFLT Fail Off Fault	CFLT Input Failed OFF. The soft-starter fault relay is check once a day from the controller by cycling the STE, Starter Enable, output off and then on. When STE is turned off the CFLT input should go on. After the CFLT input turns on, STE is turned back on and CFTL is expected to turn back off. If CFLT turns on and does not turn back on, this fault is logged.	• Faulty soft-starter fault relay. Replace the fault relay.• Faulty CFLT input. Replace the input board.• Faulty STE output. Check that the STE output cycles off and on by placing the car on inspection, change the time on the Set Date and Time menu to 23:59 and then wait a minute for the timer to roll over. Place the car on automatic and watch the STE output. Once the flag is set from the date rollover and the car does a redundancy test, the output will be cycled. After STE turns off and then back on, the soft-starter fault relay should cycle as well leaving the fault relay energized and the CFLT input off. If the STE output does not cycle, replace the output module.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
CFLT Failed On Fault	CFLT Input Failed ON. The soft-starter fault relay is check once a day from the controller by cycling the STE, Starter Enable, output off and then on. When STE is turned off the CFLT input should go on. After the CFLT input turns on, STE is turned back on and CFTL is expected to turn back off. If CFLT stays on and does not turn back off, this fault is logged.	• Faulty soft-starter fault relay. Replace the fault relay. • Faulty CFLT input. Replace the input board. • Faulty STE output. Check that the STE output cycles off and on by placing the car on inspection, change the time on the Set Date and Time menu to 23:59 and then wait a minute for the timer to roll over. Place the car on automatic and watch the STE output. Once the flag is set from the date rollover and the car does a redundancy test, the output will be cycled. After STE turns off and then back on, the soft-starter fault relay should cycle as well leaving the fault relay energized and the CFLT input off. If the STE output does not cycle, replace the output module.
COP CAN Com Error	COP Board Can Communication Error.	• Faulty Can communication wire connection. Verify proper twisted pair wires to the traveling cable CANH and CANL terminals on the Main I/O board and on the COP board. • Noise on the Can bus. Verify that the shield wire is connected according to the job print. • Verify the proper placement of the CAN Bus termination resistors. It is best to have only one termination resistor at each end of the serial link. Too many resistors will pull the line down.
CPU APS DZOff Fault	The DZ-1/DZc input is set from a position count from the APS Selector. This fault occurs if the DZ-1/DZc input is not on when the DZ input from the SAFETY PAL is on.	• The DZ/DZp output from the SAFETY PAL comes from the combination of the following signals: NTS dz output, NTS communicating with APS selector, Main CPU dz output and Main CPU communicating with APS selector.• The Main CPU dz output is DZO/DZcO and is set from the status of DZ-1/DZc (the selector position count). DZO/DZcO and DZ-1/DZc will always match. When DZO/DZcO is on, DZ from the SAFETY PAL can be off due status of the DZ signal from the NTS processor. However, when DZO/DZcO is off, DZ from the SAFETY PAL must also be off. Contact the factory if this fault occurs.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
CPU DN Off Fault	CPU DN-1 Failed Off during start or leveling. The controller is attempting to run the car high speed in the up direction but the UT input is off.	• Faulty Communications with the APS selector. Check for APS selector CAN faults. Follow the possible cause/suggested fix for the APS SEL CAN Com Err fault. • Improper learn of the hoistway. Make sure the hoistway learn has been completed for every floor. Check the Hoistway table for errors.
CPU DT Off Fault	CPU DT-1 Failed Off during start. The controller is attempting to run the car high speed in the up direction but the UT input is off.	• Faulty Communications with the APS selector. Check for APS selector CAN faults. Follow the possible cause/suggested fix for the APS SEL CAN Com Err fault. • Improper learn of the hoistway. Make sure the hoistway learn has been completed for every floor. Check the Hoistway table for errors.
CPU UN Off Fault	CPU UN-1 Failed Off during start or leveling. The controller is attempting to run the car high speed in the up direction but the UT input is off.	• Faulty Communications with the APS selector. Check for APS selector CAN faults. Follow the possible cause/suggested fix for the APS SEL CAN Com Err fault. • Improper learn of the hoistway. Make sure the hoistway learn has been completed for every floor. Check the Hoistway table for errors.
CPU UT Off Fault	CPU UT-1 Failed Off during start. The controller is attempting to run the car high speed in the up direction but the UT input is off.	• Faulty Communications with the APS selector. Check for APS selector CAN faults. Follow the possible cause/suggested fix for the APS SEL CAN Com Err fault. • Improper learn of the hoistway. Make sure the hoistway learn has been completed for every floor. Check the Hoistway table for errors.
CTCan Bus Off Error	CTCan Bus Off Error. The Can bus has been inactive for too long a period of time.	• Faulty CAN bus wiring. Check the Can bus terminal connections on all boards.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
CTCAN Device Fault	Device on the Car Top CAN Port has a Fault. On the LCD Interface, this fault is display as an abbreviated device name and device fault. Please see the device faults for further information.	• Look at the details of the fault. The device name and the error code that caused the fault are listed. • Look up the fault code for the device for debugging information.
CTCAN Device Reset	Device on the Car Top CAN Port has reset. On the LCD Interface, this fault is display as an abbreviated device name and device fault. Please see the device faults for further information.	• Look at the details of the fault. The device name and the error code that caused the fault are listed. • The device requested an initialization packet from the main CPU. Typically, this occurs during power up or from a power cycle of the individual device. • Ignore the error if the controller power has been cycled. Otherwise, check the device communications and power connections.
DL Failed On Fault	DL Failed On Fault. The DL leveling input did not turn off during a run. The DL input is set from a count from the APS selector.	• The APS selector did not change count during a run. Check for faults related to the APS selector. Verify that the APS selector counts change while the car is running. • The elevator did not leave the floor on a run attempt. Verify that the elevator can run from the landing. Check the fault log for another fault that could prevent the car from running.
DL20 Phone Test Failed	Phone Test from DL20 phone monitoring device indicated a failure	• Refer to the manufacturers troubleshooting guide for the DL20.
DLB & DLB-1 Opposite	Input failure on one of the Door Lock Bottom (DLB) inputs.	• Faulty DLB or DLB-1 input (replace input chip).
DLM & DLM-1 Opposite	Input failure on one of the Door Lock Middle (DLM) inputs.	• Faulty DLM or DLM-1 input (replace input chip).
DLT & DLT-1Opposite	Input failure on one of the Door Lock Top (DLT) inputs.	• Faulty DLT or DLT-1 input (replace input chip).

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Dn Directional Fault	Car unexpectedly hit the Down Normal Limit while running down.	• The Safety PAL detected a fault condition and turned off the UN output from the NTS processor. • The NTS processor detected a fault condition and turned off the UN output. • APS Selector communications loss to the Main CPU. • APS Selector communications loss to the NTS processor. • Selector not reading the correct position from the tape.
Door Close Fault	The door did not reach the Door Close Limit within the door close protection time.	• Door Close Limit (DCL) not adjusted properly. • Faulty Door Close Limit (DCL). Replace DCL input chip. • Trash in the door track preventing door from closing.
Door Lock Safe Fault	Door lock safe fault	• The car was either running or preparing to run and lost a door lock input. Check the adjustment of the door.
Door Low Voltage Flt	Door Line Voltage Low	• Voltage Sensor Board Related. Voltage being monitored for Door Operator dropped below the setting for parameter 'Low Door Volt '
Door Motor Overload	Door Motor Overload	• Door Motor Overload signal tripped. Check Input chip for DMO signal
Door Open Fault	The door did not reach the Door Open Limit within the door open protection time.	• Door Open Limit (DOL) not adjusted properly. • Faulty Door Open Limit (DOL). Replace DOL input chip.
Door Zone Aux On Flt	The auxiliary door zone DZA/DZAc set from the position count of the APS selector did not go off during a run.	• The APS selector did not change count during a run. Check for faults related to the APS selector. Verify that the APS selector counts change while the car is running. • The elevator did not leave the floor on a run attempt. Verify that the elevator can run from the landing. Check the fault log for another fault that could prevent the car from running.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Door Zone Off Fault	Door Zone Off Fault occurs when the car does not have DZ when UL and DL are on.	• The DZ/DZp output from the SAFETY PAL comes from the combination of the following signals: NTS dz output, NTS communicating with APS selector, Main CPU dz output and Main CPU communicating with APS selector.• Verify that the Main CPU and the NTS processor are communication with the APS selector.• Verify that the Main CPU and the NTS processor have valid floor tables.
Door Zone On Fault	The door zone input DZ is set from the count of the APS selector and the DZ input did not turn off during a run.	• The APS selector did not change count during a run. Check for faults related to the APS selector. Verify that the APS selector counts change while the car is running. • The elevator did not leave the floor on a run attempt. Verify that the elevator can run from the landing. Check the fault log for another fault that could prevent the car from running.
DoorZone Aux Off Flt	Door Zone Auxiliary Off Fault occurs when the car does not have DZA/DZAc when UL and DL are on.	• Verify that the Main CPU is communicating with the APS selector. • Verify that the Main CPU has a valid floor table.
DPM Input Fault	The DPM input fault occurs when door opens and the DPM input did not go off.	• DPM switch not setup properly on the door operator. • Faulty DPM input. Replace DPM input chip.
DPM Off/GS or DL On	DPM Off with Gate Switch or Door Lock On. The Door Protection Module input must go on before gate switch or door lock inputs go on.	• The DPM switch on the door operator is not setup properly. DPM should turn on before the Gate Switch is made. • There is no DPM input on the door operator. Jump the DPM input to the GS-1 terminal. • Fault DPM input. Replace the DPM input chip.
DT Failed On Fault	DT I/O Failed On. The car is on a door zone and at the bottom floor but the DT-1 input (from the Main CPU count) did not activate (go off).	• The down slowdown count for the bottom floor is set incorrectly. Review the hoistway slowdown table and if this value is incorrect, relearn the bottom floor position.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
DT Limit Fault	DT Limit from the NTS processor turned off before the normal slowdown point was reached.	• The DT limit from the NTS processor is too far from the bottom landing. Adjust the DT limit closer to the landing by changing the NTS DT limit count and the relearning the bottom floor.• The slowdown position is set too close to the bottom landing. Adjust the bottom floor slowdown count in the Hoistway Table Floor & SD Counts menu.
DTc Limit Fault	DTc Limit from the Main CPU turned off before the normal slowdown point was reached.	• The DT limit from the Main CPU is too far from the bottom landing. Adjust the DTc limit closer to the landing by changing the NTS DT limit count and the relearning the bottom floor. • The slowdown position is set too close to the bottom landing. Adjust the bottom floor slowdown count in the Hoistway Table Floor & SD Counts menu.
DZ Off Redundancy Ck	The door zone input went off during the redundancy check.	• Check that the elevator is holding in the door zone. • The DZ/DZp output from the SAFETY PAL comes from the combination of the following signals: NTS dz output, NTS communicating with APS selector, Main CPU dz output and Main CPU communicating with APS selector. A loss from any of these signals could cause the DZ/DZp output from the SAFETY PAL to turn off unexpectedly. Check for faults related to the APS selector.
EE Tst EE1 Failed OFF	Electric Eye Test. Freight door electric eye input EE1 failed off.	• Verify that the electric eye input EE1 pulses on during the electric eye test. • Possible faulty electric eye device. • Possible faulty EE1 input - replace the input.
EE Tst EE1 Failed ON	Electric Eye Test. Freight door electric eye input EE1 failed on.	• Verify that the electric eye input EE1 is off before the electric eye test. • Possible faulty electric eye device. • Possible faulty EE1 input - replace the input.
EE Tst EE2 Failed OFF	Electric Eye Test. Freight door electric eye input EE2 failed off.	• Verify that the electric eye input EE2 pulses on during the electric eye test. • Possible faulty electric eye device. • Possible faulty EE2 input - replace the input.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
EE Tst EE2 Failed ON	Electric Eye Test. Freight door electric eye input EE2 failed on.	• Verify that the electric eye input EE2 is off before the electric eye test. • Possible faulty electric eye device. • Possible faulty EE2 input - replace the input.
EE Tst EER1Faild OFF	Electric Eye Test. Freight rear door electric eye input EER1 failed off.	• Verify that the electric eye input EER1 pulses on during the electric eye test.• Possible faulty electric eye device.• Possible faulty EER1 input - replace the input.
EE Tst EER1 Faild ON	Electric Eye Test. Freight rear door electric eye input EER1 failed on.	• Verify that the electric eye input EER1 is off before the electric eye test. • Possible faulty electric eye device. • Possible faulty EER1 input - replace the input.
EE Tst EER2 Faild OFF	Electric Eye Test. Freight rear door electric eye input EER2 failed off.	• Verify that the electric eye input EER2 pulses on during the electric eye test. • Possible faulty electric eye device. • Possible faulty EER2 input - replace the input.
EE Tst EER2 Faild ON	Electric Eye Test. Freight rear door electric eye input EER2 failed on.	• Verify that the electric eye input EER2 is off before the electric eye test. • Possible faulty electric eye device. • Possible faulty EER2 input - replace the input.
Emrgncy Dispatch Flt	Controllers went in emergency Dispatch Operation	• Loss of communication with the hall call boards • Loss of communication with the group • Losing the HCP input
EP Recall Car 1 OTS	Emergency Power Recall Car Out of Service Car 1. Car 1 was out of service while elevators were in an Emergency Power Recall Sequence.	• Check faults for car 1

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
EP Recall Car 2 OTS	Emergency Power Recall Car Out of Service Car 2. Car 2 was out of service while elevators were in an Emergency Power Recall Sequence.	• Check faults for car 2
EP Recall Car 3 OTS	Emergency Power Recall Car Out of Service Car 3. Car 3 was out of service while elevators were in an Emergency Power Recall Sequence.	• Check faults for car 3
EP Recall Car 4 OTS	Emergency Power Recall Car Out of Service Car 4. Car 4 was out of service while elevators were in an Emergency Power Recall Sequence.	• Check faults for car 4
EP Recall Car 5 OTS	Emergency Power Recall Car Out of Service Car 5. Car 5 was out of service while elevators were in an Emergency Power Recall Sequence.	• Check faults for car 5
EP Recall Car 6 OTS	Emergency Power Recall Car Out of Service Car 6. Car 6 was out of service while elevators were in an Emergency Power Recall Sequence.	• Check faults for car 6

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
EP Recall Car 7 OTS	Emergency Power Recall Car Out of Service Car 7. Car 7 was out of service while elevators were in an Emergency Power Recall Sequence.	• Check faults for car 7
EP Recall Car 8 OTS	Emergency Power Recall Car Out of Service Car 8. Car 8 was out of service while elevators were in an Emergency Power Recall Sequence.	• Check faults for car 8
EPRecall Car1 Tim-ot	Emergency Power Recall Time-out Car 1. Car 1 timeout while it was in Emergency power recall mode.	• Make sure the field variable 'Recall Timeout' is set properly to allow the car enough time to recover if it is between floors and away from Emergency Power Floor• Verify the speed of the car during recovery operation.
EPRecall Car2 Tim-ot	Emergency Power Recall Time-out Car 2. Car 2 timeout while it was in Emergency power recall mode.	• Make sure the field variable 'Recall Timeout' is set properly to allow the car enough time to recover if it is between floors and away from Emergency Power Floor • Verify the speed of the car during recovery operation.
EPRecall Car3 Tim-ot	Emergency Power Recall Time-out Car 3. Car 3 timeout while it was in Emergency power recall mode.	• Make sure the field variable 'Recall Timeout' is set properly to allow the car enough time to recover if it is between floors and away from Emergency Power Floor • Verify the speed of the car during recovery operation.
EPRecall Car4 Tim-ot	Emergency Power Recall Time-out Car 4. Car 4 timeout while it was in Emergency power recall mode.	• Make sure the field variable 'Recall Timeout' is set properly to allow the car enough time to recover if it is between floors and away from Emergency Power Floor • Verify the speed of the car during recovery operation.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
EPRecall Car5 Tim-ot	Emergency Power Recall Time-out Car 5. Car 5 timeout while it was in Emergency power recall mode.	• Make sure the field variable 'Recall Timeout' is set properly to allow the car enough time to recover if it is between floors and away from Emergency Power Floor • Verify the speed of the car during recovery operation.
EPRecall Car6 Tim-ot	Emergency Power Recall Time-out Car 6. Car 6 timeout while it was in Emergency power recall mode.	• Make sure the field variable 'Recall Timeout' is set properly to allow the car enough time to recover if it is between floors and away from Emergency Power Floor • Verify the speed of the car during recovery operation.
EPRecall Car7 Tim-ot	Emergency Power Recall Time-out Car 7. Car 7 timeout while it was in Emergency power recall mode.	• Make sure the field variable 'Recall Timeout' is set properly to allow the car enough time to recover if it is between floors and away from Emergency Power Floor • Verify the speed of the car during recovery operation.
EPRecall Car8 Tim-ot	Emergency Power Recall Time-out Car 8. Car 8 timeout while it was in Emergency power recall mode.	• Make sure the field variable 'Recall Timeout' is set properly to allow the car enough time to recover if it is between floors and away from Emergency Power Floor• Verify the speed of the car during recovery operation.
Estop Fault	An emergency stop occurred while moving or attempting to move. This fault is recorded after three emergency stops occurred in a row.	• Lost UN while running up at contract speed. • Lost DN while running down at contract speed. • The MC contactor did not energize or dropped out while running • The MC input did not turn on or dropped out while running. • The stop switch was pulled while running. • The car was not safe usually from clipping a door lock. See Car Safe Fault. • Low Pressure Switch activated during the run. • Low Oil Switch activated during the run. • High Temperature sensor activated during the run. • The stall protection timer timed-out. • An emergency power recall was initiated while the car was running up.
FDoor Close Cont Flt	Door Close Contact safe fault	• The car was either running or preparing to run and lost a front door close contact input. Check the adjustment of the door.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
FEP Fuse Blown Fault	Fire/Emergency Circuit Fuse is Blown	• Short Circuit on the FEP Circuit. Refer to the schematic and check the circuit with a meter.
FETST OFF Fault	Front Door Electric Eye Test Failed OFF. Output is turned on cause the electric eye outputs to controller input EE1 and EE2 to pulse.	• FETST output or FETST input failed in the off state. • Replace the FETST output chip. • Replace the FETST input chip.
FETST ON Fault	Front Door Electric Eye Test Failed ON. Output is turned on cause the electric eye outputs to controller input EE1 and EE2 to pulse.	• FETST output or FETST input failed in the on state. • Replace the FETST output chip. • Replace the FETST input chip.
Field Vars Deflt Ini	Field Variables Default Initialization. Field adjustable variables are being initializedfor the first time.	• Job related parameters are invalid. This error occurs on the first time the GALX-1132 CPU board is being powered up.
Fire Fighter Stop Sw	Fire Fighter Stop Sw	• Fire Fighter Stop switch is pulled. • Faulty wire connection in the Fire Fighter stop switch circuit.
Front Det Edge Fault	Front Detector Edge Time-out	• The Electric Eye signal stayed on continuously for longer than the parameter 'EE Time-out' is set to.
FST I/O Failed Off	The FST input on the 1134 COP board did not pick up when expected.	• Faulty FST output chip. Replace output chip. • Faulty FSTI input chip. Replace input chip.
FST I/O Failed On	The FST input on the 1134 COP board did not drop out when expected.	• Faulty FST output chip. Replace output chip. • Faulty FSTI input chip. Replace input chip.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
FSTP I/O Failed Off	The FSTP input on the 1134 COP board did not pick up when expected.	• Faulty FST1 output chip. Replace output chip. • Faulty FSTI input chip. Replace input chip.
FSTP I/O Failed On	The FSTP input on the 1134 COP board did not drop out up when expected	• Faulty FST1 output chip. Replace output chip. • Faulty FSTI input chip. Replace input chip.
FVARS Backup Init	Field Variables Backup Init. Field variables backed up for the first time. Older software did not backup the field variables. When new software replaces the older software, this error will be displayed.	• If this error occurs every time the CPU powers up, then the CPU may be faulty and should be replaced.
FVARSBackup Tbl Cksm	Field Variables Backup Table Checksum Error. The verification checksum for the backup field variable table has failed. During power outages or brown-outs, enough noise can be generated on the 5V DC supply to cause an error in reading the field variables table on power up. For this reason, we keep the data in two separate tables. If only one table checksum error occurs, then valid data will be restored.	• No action is required.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
FVARS Backup Tbl Err	Field Variables Backup Table Error. The field variables from the backup MRAM table does not match the variable read into memory from the main MRAM table. Most likely, if this error occurs, other FVARS errors will also occur.	• A once-in-a-while occurrence of this error can be ignored if it is not accompanied by the following errors: FVARS Both Tbl Chksum error or FVARS Tbl Chksum Error. • If either error occurs with this error, the main CPU board should be replaced.
FVARS Both Tbl Chksum	Field Variables Both Table Checksum Table error. The verification checksum for both the main field variable table and backup table has failed. Field Variable data is stored in two separate MRAM tables and a checksum of each table is stored in a separate location. When the system powers up, the checksum of each table is verified. If one table fails verification, the field variables are copied from the table that passed verification and then both tables are updated with valid data. If both checksum verifications fail, data is copied from the main table and an error code is displayed.	• If this fault occurs, replace the main CPU board.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
FVARS Tbl Chksum Err	Field Variables Table Checksum Error. The verification checksum for the main field variable table has failed. During power outages or brown-outs, enough noise can be generated on the 5V DC supply to cause an error in reading the field variables table on power up. For this reason, we keep the data in two separate tables. If only one table checksum error occurs, then valid data will be restored.	• No action is required.
Gate Switch Fault	The Gate Switch failed on while the door was open.	• Gate switch not adjusted properly. • GS input failed on. Replace GS input on 1102 board.
Gate/Lock Byp Sw Flt	The gate or lock bypass switch was on while the car was NOT on car top inspection.	• Gate or Lock bypass switch on the controller 1121 board is in the on position.• Gate or Lock bypass input failed on. Replace GBP OR LBP input chip on 1121 board.
Governor Switch Flt	Governor Switch Tripped.	• Verify that the governor switch is set properly.
GOVRi Input On Fault	GOVRi input failed on.	• The GOVRi input chip failed. Replace the chip. • The governor reset switch is stuck on. • The GOVRi input is jumped on.
GRCan Bus Off Error	GRCan Bus Off Error. The Can bus has been inactive for too long a period of time.	• Faulty CAN bus wiring. Check the Can bus terminal connections on all boards.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
GRCAN Device Fault	Device on the Group CAN Port has a Fault. On the LCD Interface, this fault is display as an abbreviated device name and device fault. Please see the device faults for further information.	• Look at the details of the fault. The device name and the error code that caused the fault are listed. • Look up the fault code for the device for debugging information.
GRCAN Device Reset	Device on the Group CAN Port has reset. On the LCD Interface, this fault is display as an abbreviated device name and device fault. Please see the device faults for further information.	• Look at the details of the fault. The device name and the error code that caused the fault are listed. • The device requested an initialization packet from the main CPU. Typically, this occurs during power up or from a power cycle of the individual device. • Ignore the error if the controller power has been cycled. Otherwise, check the device communications and power connections.
Group Comm Loss	The car that was acting as the group car has stopped communicating.	• Faulty wiring from TX+/TX- from car to car. • Faulty U6 driver chip on the GALX-1132 CPU board (next to the connector for the group comm). Call GAL. • Noise on shield wire. Connect shield only on one end. • Noise on the communication wires. Run wires in separate conduit.
GS & GS_1Opposite	Input failure on one of the Gate Switch (GS) inputs.	• GS or GS-1 input failed on. Replace GS or GS-1 input chip.• Check status of input from Input and Output menu on the LCD interface.
Hall Call Light Fuse	Hall Call Light Fuse Blown	• Check for short on the Hall Call Light circuit.
Hatch Safety Fault	Hatch Safety Fault. The HSS input is off.	• A device contact in the hatch safety string has opened. • The HSS input has failed off.
HC Com Device Reset	Serial Hall Call board reset unexpectedly. Usually caused by loss of power to the individual board.	• Usually caused by loss of power to the individual board. • Faulty power connection to board. • Fault hall call board.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
HC DrvBd Rx from Bot	The Hall Call Driver Board is not receiving packets from the bottom station.	• Cable is bad or disconnected • Cables going to wrong port (i.e., switched TO ABOVE and TO BELOW) • Transmitter from device above or below is bad, check faults for that device. • Receiver on board is bad – replace device
HC DrvBd Tx to Bot	The Hall Call Driver Board is cannot internally read information that it transmitter to the bottom station	• Cable connecting two devices could be flip- flopped (i.e., gray wire goes from pin 1 on one end to pin 8 on the other end). Disconnect cable, and if fault changes to Rx Fault, the problem is the cable. • Cables going to wrong port (i.e., switched TO ABOVE and TO BELOW) • Transmitter is bad – replace the Device.
HC DvrBd Rx from Top	The Hall Call Driver Board is not receiving packets from the top station.	• Cable is bad or disconnected • Cables going to wrong port (i.e., switched TO ABOVE and TO BELOW) • Transmitter from device above or below is bad, check faults for that device. • Receiver on board is bad – replace device
HC DvrBd Too Few Dev	The Hall Call Driver Board has too few stations detected based on the controller configuration. This fault will only trigger if loop is closed.	• Check configuration and number of stations
HC DvrBd TooMany Dev	The Hall Call Driver Board has too many stations detected based on the controller configuration.	• Check configuration and number of stations

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
HC DvrBd Tx to Top	The Hall Call Driver Board cannot internally read information that it transmitted to top station.	• Cable connecting two devices could be flip- flopped (i.e., gray wire goes from pin 1 on one end to pin 8 on the other end). Disconnect cable, and if fault changes to Rx Fault, the problem is the cable. • Cables going to wrong port (i.e., switched TO ABOVE and TO BELOW) • Transmitter is bad – replace the Device.
HC Fuse Blown Fault	The HC input is off. No power on HC.	• Make sure that the hall call power for each car is in phase. During a power up for car 1 while car 2 is powering the hall call power could cause a momentary short if the hall call power for each car is not in phase. • Short circuit in the hall call lighting circuitry.
HCB Device Fault	Hall Call Board Device Fault. On the LCD Interface, this fault is display as an abbreviated device name and device fault. Please see the device faults for further information.	• Look at the details of the fault. The device name and the error code that caused the fault are listed. • Look up the fault code for the device for debugging information.
Hoist Motor Overload	Hoist Motor Overload	• Hoist Motor Overload signal tripped. Check Input chip for HMO input
Hoistway Default Ini	Hoistway Default Initialization. Hoistway values are being initialized for the first time.	• Job related hoistway setup information is invalid. This occurs on the first time the GALX- 1132 CPU board is being powered up.
Hoistway Learn Fault	Car is on automatic and the hoistway has not been learned.	• Hoistway learn procedure needs to be performed. • Faulty ram-flash memory chip. • Faulty APS Selector.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Hoistway Update Init	Hoistway Update Initialization. Table of door zone positions for hoistway used to update position count while traveling has been initialized for the fires time.	• Job related hoistway setup information is invalid. This occurs on the first time the GALX- 1132 CPU board is being powered up.
Hot Oil Fault	Hot Oil Fault	• The hot oil detection TPH input is turned Off. The input is in series with the normally closed Hot Oil Thermostat. Check for defective input or defective sensor. • Refer to the schematics and check the wiring from the MRSW terminal to the thermostat and from the thermostat to the TPH input terminal.
HW Count Read Fault	Hoistway Count Read Fault. The position count read from the selector changed by more than 4 inches in less than 3 milliseconds. The type of error would occur from an incorrect read of the position count.	• Check the APS selector tape for debris, oil or grease. Wipe the tape down with al clean soft cloth.
HWSlowdown Cnt Flt	Hoistway Slowdown Count Fault. During the verification of the slowdown table in flash memory, a normal up or down slowdown count was greater than 50 inches or a short floor up or down slowdown count was greater than 30 inches.	• Review the hoistway slowdown tables and correct the out-of-range slowdown count.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
IHS I/O Failed Off	Inspection High Speed I/O Failed Off. This input is used with an electronic Bucher valve. The IHS input or output failed off.	• Faulty IHS input. Replace or relocate the input board. • Faulty IHS output. Replace or relocate the output.
IHS I/O Failed On	Inspection High Speed I/O Failed On. This input is used with an electronic Bucher valve. The IHS input or output failed on.	• Faulty IHS input. Replace or relocate the input. • Faulty IHS output. Replace or relocate the output.
Inspection Input Flt	More than one input is on in the inspection string. The inspection string condition is also shown on the safety processor.	• Faulty Top of Car inspection wiring. Verify voltage on CTA and ICA terminals when car top inspection switch is in the run position. Verify INS input when switch in the inspection position. • Verify that one and only one inspection string inputs is on: AUTO, MRI, INS, ICI and ACC. • Faulty inspection string input: AUTO, MRI, INS, ICI or ACC. Replace faulty input chip
Inspection Up/Dn Sw	An up or down inspection run input was on when first entering into inspection operation. This caused from a faulty inspection up or down switch or from someone holding the up or down run button when placing the car on inspection.	• Faulty inspection up or down input: IU, ID, MRIU, MRIU, BAD, BAU, TAD or TAU. Replace faulty input chip. • Faulty inspection wiring keeping an inspection up or down input on. • Placing the car on inspection while holding an up or down run button
Invald DT or DT1 Cnt	Invalid DT or DT1 Count. The position count for DT is greater than the count for DT1	• Invalid hoistway learn or the hoistway learn is not complete. Re-learn the hoistway or complete the hoistway learn.• The bottom terminal floor limits are calculated and stored when the bottom floor is learned. Bring the car to the bottom floor and re-learn the floor position.• If this problem is not corrected with a hoistway learn, contact the factory

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Invalid DN or DT Cnt	Invalid DN or DT Count. The position count for DN is greater than the count for DT	• Invalid hoistway learn or the hoistway learn is not complete. Re-learn the hoistway or complete the hoistway learn. • The bottom terminal floor limits are calculated and stored when the bottom floor is learned. Bring the car to the bottom floor and re-learn the floor position. • If this problem is not corrected with a hoistway learn, contact the factory
Invalid Floor Count	Invalid Floor Count. The floor count of the floor above must always be larger than the floor below. An above floor count was lower than the floor below in the floor hoistway table.	• Invalid hoistway learn or the hoistway learn is not complete. Re-learn the hoistway or complete the hoistway learn. • Check the hoistway table and verify that the floor position counts are getting larger as the floor number increases, i.e., the third floor should be a larger number than the second floor. • If this problem is not corrected with a hoistway learn, contact the factory
Invlid Top Floor Cnt	Invalid Top Floor Count. The top floor count is zero.	• Invalid hoistway learn or the hoistway learn is not complete. Re-learn the hoistway or complete the hoistway learn. • Verify that the top floor count is correct distance from the bottom. • Bring the car to the top floor and re-learn the floor position. • If this problem is not corrected with a hoistway learn, contact the factory
L1 Low Line Voltage	L1 Line Voltage Low	• Voltage Sensor Board Related. Voltage being monitored on L1 dropped below the setting for parameter ' Low Line Volt '
L2 Low Line Voltage	L2 Line Voltage Low	• Voltage Sensor Board Related. Voltage being monitored on L2 dropped below the setting for parameter ' Low Line Volt '
L3 Low Line Voltage	L3 Line Voltage Low	• Voltage Sensor Board Related. Voltage being monitored on L3 dropped below the setting for parameter ' Low Line Volt '
Level Stop Cnt Fault	Leveling stop fault occurred from incorrect count. As the car was leveling off the pulses, UL or DL turned off.	• The UL or DL Distance value set too high or the APS Dead Zone parameter is set to small. Increase the dead zone or decrease the UL or DL distance setting.• This fault can sometimes occur from multiple re-levels. Check the leveling setup of the car.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Load Weigh Var Init	Load weigher init	• Invalid load weigher table on power up. The load weigher table will be re-initialized to zero and the load weigher must be re-setup. • If this error persists, the MRAM on the CPU board is faulty. Replace the CPU board. • Ignore this error if the load weigher is not being used.
Lobby Hall Call Fuse	Lobby Call common fuse	• Lobby Common fuse blown. Check Input chip for LHC
Low Pressure Fault	Low Oil Pressure Fault. The low oil pressure switch has been activated.	• Low oil in the tank. • Faulty LOS input if low oil switch option is being used. Replace the LOS input chip. • Faulty Low Oil Switch. If low oil switch option is being used. • Verify the operation of the low oil switch.
Lowoil Switch Fault	Low Oil Switch Fault. The low oil switch became active	• Low oil in the hydraulic tank • Faulty wiring to the low oil input • Faulty low oil input. Replace LOS input.
LW Calibration Error	Load Weigher Calibration Error. The load weigher attempted to do an automatic calibration and could not be calibrated.	• The load weigher device should be re- calibrated according to the manufacturer's instructions.
LW Load Table Fault	A fault was detected in the Load weigher load tables. The empty load value was greater than or equal to the full load value at a valid floor.	• The load weigher might not be calibrated properly • The load weigher setup might have been interrupted before being completed. • Faulty load weigher device. • The load weigher device is not setup. • The load weigher data was not stored properly in the MRAM memory or was not read in properly on power up. • Invalid load weigher data read from or written to the SD card during an SD card job setup read.
Machine Room Stop Sw	Machine Room Stop Switch is Opened	• Turn off the Machine Room Stop Switch.• Faulty Machine Room Stop Switch

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
MC I/O Failed Off	The MC input or output has failed off.	• Faulty MCCi input chip. Replace input chip. • Faulty MCC output chip. Replace output chip. • No Power at the MRSW terminal. Refer to the schematics and check the circuit with a meter.
MC I/O Failed On	The MC input or output has failed on.	• Faulty MCi input chip. Replace input chip. • Faulty MC output chip. Replace output chip.
Mid Door Lock Fault	The Middle Door Lock failed on while the door was open.	• Faulty door lock. • Jumper on door lock circuit. • Door lock not adjusted properly. • Faulty wiring to DLM input. Faulty DLM and DLM-1 inputs (For this to occur both DLM and DLM-1 inputs must fail on). • DOL input failed. Replace DOL input chip. • Door operator open limit DOL is not adjusted properly
Motion Exit Ins Flt	Emergency motion exit from inspection	• Car was in motion before going in inspection Mode. Check for inspection inputs faulting out or Automatic input going low. • The car inspection switch was turned on while the car was on automatic and in motion.
MRAM Hardware Fault	MRAM Fault	The MRAM is tested on power up and has failed the test. Replace the CPU board.
MRAM Write Error	MRAM Write Error. After parameter data RAM has been modified through the user interface, the data is automatically written to MRAM for non-volatile storage. After the data is store it is compared with the original parameter data. If it does not match a fault is recorded.	• This error should not occur. If it does occur, the problem is either a fault CPU board or MRAM chip. Replace the CPU board.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
MRCan Bus Off Error	MRCan Bus Off Error. The Can bus has been inactive for too long a period of time.	• Faulty CAN bus wiring. Check the Can bus terminal connections on all boards.
MRCAN Device Fault	Device on the Machine Room CAN Port has a Fault. On the LCD Interface, this fault is display as an abbreviated device name and device fault. Please see the device faults for further information.	• Look at the details of the fault. The device name and the error code that caused the fault are listed. • Look up the fault code for the device for debugging information.
MRCAN Device Reset	Device on the Machine Room CAN Port has reset. On the LCD Interface, this fault is display as an abbreviated device name and device fault. Please see the device faults for further information.	• Look at the details of the fault. The device name and the error code that caused the fault are listed. • The device requested an initialization packet from the main CPU. Typically, this occurs during power up or from a power cycle of the individual device. • Ignore the error if the controller power has been cycled. Otherwise, check the device communications and power connections.
NTS DN Failed Off	NTS DN I/O Failed Off during start or leveling. The controller is attempting to run the car in the down direction but the UN input is off.	• The DN output failed. Replace the DN output module. • The DN input failed. Replace the DN input board. • The NTS processor has turned the DN output off. Check for errors from the NTS processor. • The NTS processor has a position error from the APS selector. Verify the setup of the APS selector and that the NTS processor is communicating with the selector. • The Safety PAL has determined that it is unsafe to run the car such as the doors are open. Check for a Safety Pal Fault and check the status of the I/Os of the Safety PAL.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
NTS DNFailed On	NTS DN I/O Failed On during start. As part of the redundancy check, the Main CPU sends a command to the NTS processor to turn of the UN, DN, UT and DT outputs prior to turning on any valve outputs to verify that the NTS outputs have not faulted on. During this process, the DN output or the DN input stayed on.	• DN output shorted on. Replace the output module.• DN input failed on. Replace the input board.• DN test jumper left on the module. Remove the test jumper.
NTS DT Failed Off	NTS DT I/O Failed Off during start. The controller is attempting to run the car high speed in the down direction but the DT input is off.	• The DT output failed. Replace the DT output module. • The NTS processor has turned the DT output off. Check for errors from the NTS processor. • The NTS processor has a position error from the APS selector. Verify the setup of the APS selector and that the NTS processor is communicating with the selector. • The Safety PAL has determined that it is unsafe to run the car such as the doors are open. Check for a Safety Pal Fault and check the status of the I/Os of the Safety PAL.
NTS DT Failed On	NTS DT I/O Failed On during start. As part of the redundancy check, the Main CPU sends a command to the NTS processor to turn of the UN, DN, UT and DT outputs prior to turning on any valve outputs to verify that the NTS outputs have not faulted on. During this process, the DT output or the DT input stayed on.	• DT output shorted on. Replace the output module. • DT input failed on. Replace the input board. • DT test jumper left on the module. Remove the test jumper.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
NTS UNFailed Off	NTS UN I/O Failed Off during start or leveling. The controller is attempting to run the car in the up direction but the UN input is off.	• The UN output failed. Replace the UN output module.• The UN input failed. Replace the UN input board.• The NTS processor has turned the UN output off. Check for errors from the NTS processor.• The NTS processor has a position error from the APS selector. Verify the setup of the APS selector and that the NTS processor is communicating with the selector.• The Safety PAL has determined that it is unsafe to run the car such as the doors are open. Check for a Safety Pal Fault and checkthe status of the I/Os of the Safety PAL.
NTS UN Failed On	NTS UN I/O Failed On during start. As part of the redundancy check, the Main CPU sends a command to the NTS processor to turn of the UN, DN, UT and DT outputs prior to turning on any valve outputs to verify that the NTS outputs have not faulted on. During this process, the UN output or the UN input stayed on.	• UN output shorted on. Replace the output module. • UN input failed on. Replace the input board. • UN test jumper left on the module. Remove the test jumper.
NTS UT Failed Off	NTS UT I/O Failed Off during start. The controller is attempting to run the car high speed in the up direction but the UT input is off.	• The UT output failed. Replace the UT output module. • The NTS processor has turned the UT output off. Check for errors from the NTS processor. • The NTS processor has a position error from the APS selector. Verify the setup of the APS selector and that the NTS processor is communicating with the selector. • The Safety PAL has determined that it is unsafe to run the car such as the doors are open. Check for a Safety Pal Fault and check the status of the I/Os of the Safety PAL.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
NTS UTFailed On	NTS UT I/O Failed On during start. As part of the redundancy check, the Main CPU sends a command to the NTS processor to turn of the UN, DN, UT and DT outputs prior to turning on any valve outputs to verify that the NTS outputs have not faulted on. During this process, the UT output or the UT input stayed on.	• UT output shorted on. Replace the output module.• UT input failed on. Replace the input board.• UT test jumper left on the module. Remove the test jumper.
NTS Vars Setup Fault	An NTS variable is setup incorrectly. When the Main CPU sent a floor setup command to the NTS processor it detected that either the number of valid floors or top speed of the car did not meet the job configuration values.	• Correct the valid number of floor and tops speed parameters in the NTS processor.
PALF Input Failed Off	PALF Input Failed to turn on as expected	• Safety PAL device did not operate as expected. Replace the MAIN I/O Board.
PALF Input Failed On	PALF Input Failed to turn off as expected	• Safety PAL device did not operate as expected. Replace the MAIN I/O Board.
Position Fault	The Terminal limits do not match the car position (UT or DT is hit but the car position is not at the top or bottom floor).	• NTS selector not setup properly. • CPU APS selector not setup properly. • Improper adjustment of UT or DT limit counts

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Power Up Reset	Whenever power is cycled on the controller this error will indicate that the controller CPU was reset	• This error code is normal for a power loss. If power was not lost and the CPU re-boots, verify the +5VDC on the CPU power connector reads in the range of 4.90 and 5.1 VDC. If out of range, adjust the 5VDC supply pot for the correct voltage.
Pulse Error > 75 fpm	Pulse count shows a travel distance less than 2 inches while the car demand velocity is greater than 75 fpm.	• Make sure that the APS selector is working properly. Check for APS selector faults and make the appropriate corrections.
RCM / Lock Flt	Retiring Cam/Lock fault. Job has door contacts and door lock inputs as well as retiring cam output. Door locks are not coming on when trying to leave the floor.	• Door Contacts were already closed and the controller attempted to energize the retiring cam (RCM) several times and the door locks did not turn on. After 4 attempts, it will declare this fault. Check locks or retiring cam device.
RDoor Close Cont Flt	Rear Door Close Contact safe fault	• The car was either running or preparing to run and lost a rear door close contact input. Check the adjustment of the door.
Rear Bot Lock Fault	The Rear Bottom Door Lock failed on while the door was open (door on the rear door open limit).	• Faulty door lock. • Jumper placed on door lock circuit. • Rear door lock not adjusted properly. • Faulty wiring to DLB input. Faulty DLB and DLB-1 inputs (For this to occur both DLB and DLB-1 inputs must fail on). • DOLR input failed. Replace DOLR input chip. • Rear door operator open limit is not adjusted properly
Rear Det Edge Fault	Rear Detector Edge Time-out	• The Rear Electric Eye signal stayed on continuously for longer than the parameter 'EE Time-out' is set to.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Rear Door Close Flt	The rear door did not reach the Rear Door Close Limit within the door close protection time.	• Rear Door Close Limit (DCLR) not adjusted properly. • Faulty Rear Door Close Limit (DCLR). Replace DCRL input. • Trash in door track preventing door from closing.
Rear Door Open Fault	The rear door did not reach the Rear Door Open Limit within the door open protection time.	• Rear Door Open Limit (DOLR) not adjusted properly.• Faulty Rear Door Open Limit (DOLR). Replace DOLR input.
Rear Gate Sw Fault	The Rear Gate Switch failed on while the door was open.	• Rear Gate switch not adjusted properly. • RGS input failed on. Replace RGS input.
Rear Mid Lock Fault	The Middle Door Lock failed on while the door was open.	• Faulty door lock. • Jumper placed on door lock circuit. • Rear door lock not adjusted properly. • Faulty wiring to RLM input. Faulty RLM and RLM-1 inputs (For this to occur both RLM and RLM-1 inputs must fail on). • DOLR input failed. Replace DOLR input chip. • Rear door operator open limit is not adjusted properly
Rear Top Lock Fault	The Rear Top Door Lock failed on while the door was open.	• Faulty door lock. • Jumper placed on door lock circuit. • Rear door lock not adjusted properly. • Faulty wiring to DLT input. Faulty DLT and DLT-1 inputs (For this to occur both DLT and DLT-1 inputs must fail on). • DOLR input failed. Replace DOLR input chip. • Rear door operator open limit is not adjusted properly

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Reset Fault	Anytime the system detects one of the following faults or conditions, a reset fault is logged: • Power is cycled • Controller finds itself out of the door zone. • Terminal limits do not match the current position. • Car has been switched off of inspection. • After an open safety string has been closed.	• This fault is logged under normal conditions. Check the fault log for error that would indicate a fault condition prior to the reset fault.
RETST OFFFault	Rear Door Electric Eye Test Failed OFF. Output is turned on cause the electric eye outputs to controller input EER1 and EER2 to pulse.	• RETST output or RETST input failed in the on state.• Replace the RETST output chip.• Replace the RETST input chip.
RETST ON Fault	Rear Door Electric Eye Test Failed ON. Output is turned on cause the electric eye outputs to controller input EER1 and EER2 to pulse.	• RETST output or RETST input failed in the on state. • Replace the RETST output chip. • Replace the RETST input chip.
RGS & RGS-1 Opposite	Input failure on one of the Rear Gate Switch (RGS) inputs.	• Faulty RGS or RGS-1 input. Replace input chip.
RLM & RLM-1 Opposite	Input failure on one of the Rear Lock Middle (RLM) inputs	• Faulty RLM or RLM-1 input. Replace input chip.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
RPM Input Fault	RPM Input Fault. The Rear Door Protection input stayed on when the rear door reached full open.	• RPM switch not setup properly on the door operator. Faulty RPM input. Replace RPM input chip.
RPM Off/RGS or DL On	RPM Off with Rear Gate Switch or Door Lock On. The Rear Door Protection Module input must go on before rear gate switch or door lock inputs go on.	• The RPM switch on the door operator is not setup properly. • There is no RPM input on the door operator. Jump the RPM input to the RGS terminal. • Faulty RPM input. Replace the RPM input chip.
Run Fault: Shutdown	Run Fault: Shutdown. If the car attempts to run 4 consecutive times and incurs a specific type of emergency stop without making a successful run, the car is shut down and this error code is shown. The specific types of emergency stops to cause this fault are as follows: **1.** The car attempted to run and the position counts changed in the wrong direction.**2**. The car went on low oil while running.**3.** The car went on Hot Oil while running.	• Verify that the position counts change in the appropriate direction while the car is running. A pulse direction fault will also be recorded.• For a low oil condition, check the oil level in the tank. Check the operation of the Low Oil Switch. A low oil fault will also be recorded.• For Hot Oil, check the operation of the TPH sensor and verify that the input is working properly. A hot oil fault will also be recorded.
RUN I/O Failed Off	The RUN input or output has failed off.	• The RUN relay failed to pick or the RUN relay contact has failed to close. Replace the RUN relay. • Faulty RUNi input. Replace the RUNi input chip. • Faulty RUN output. Replace the RUN output chip. • Voltage feed through one of the valve solenoids. Refer to the schematic and check the circuit with a meter.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
RUN I/O Failed On	The RUN input or output has failed on.	• The RUN relay has failed on or RUN relay contact has failed in the closed position. Replace the RUN relay. • Faulty RUNi input. Replace the RUNi input chip. • Faulty RUN output. Replace the RUN output chip. • The solenoid common is shorted to GND. Refer to the schematic and check the circuit with a meter.
Run Inhibit Rset Cnt	Run inhibit from reset count	• Once the car is in Reset mode, the controller attempted 5 times to come off reset but it keeps being sent back to the reset mode because of a fault condition.
S10 Fuse Blown Fault	The S10 input is off. No Power on S10	• Short from S10 to GND.
Safety String Fault	Safety string fault occurs from the following conditions:• The safety string is open from one of the following inputs being off: GOV, HSS, EXT, CSS, CTS, FFS, CST, MRSW.	• The safety string is open (One or more of the safety inputs are off). Refer to the job prints and check all circuits ahead of the MRSW input.
SD I/O Failed Off	The SD input or output has failed off.	• Faulty SDi input. Swap input board to see if SDi input chip is bad and replace input board if necessary. • The SD solenoid is shorted to GND at the SD terminal. Refer to the schematic and check the circuit with a meter. • Faulty SD output. Swap the output with another device to verify if the output is bad and replace if necessary.
SD I/O Failed On	The SD input or output has failed on.	• Faulty SDi input. Swap input board to see if SDi input chip is bad and replace input board if necessary. • The SD test jumper was left on the output after an I/O test. Remove test jumper. • Voltage back feed through the SD coil. Verify that the SD solenoid is connected to the solenoid common. Refer to the schematic and check the circuit with a meter. • Faulty SD output. Swap the output with another device to verify if the output is bad and replace if necessary.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
SDF I/O Failed Off	The SDF input or output has failed off	• Faulty SDFi input. Swap input board to see if SDFi input chip is bad and replace input board if necessary. • The SDF solenoid is shorted to GND at the SDF terminal. Refer to the schematic and check the circuit with a meter. • Faulty SDF output. Swap the output with another device to verify if the output is bad and replace if necessary.
SDF I/O Failed On	The SDF input or output has failed on.	• Faulty SDFi input. Swap input board to see if SDFi input chip is bad and replace input board if necessary. • The SDF test jumper was left on the output after an I/O test. Remove test jumper. • Voltage back feed through the SDF coil. Verify that the SDF solenoid is connected to the solenoid common. Refer to the schematic and check the circuit with a meter. • Faulty SDF output. Swap the output with another device to verify if the output is bad and replace if necessary.
SDF I/O OnFault	SDF I/O Failed on when stopped at the floor. After the car stops at the floor and the RUN output drops, the SUF and SDF I/Os are check to verify that they have turned off.	• Verify that the LED on the output module has turned off. If not, then replace the output module.• Check for voltage on the solenoid terminal. If there is no voltage then replace the appropriate input board.• If there is voltage on the solenoid terminal, remove the output module. If the voltage goes away with the removal of the output module, replace the output module.
Shutdown Alarm	Shutdown Alarm: The controller is out of service from a fault condition for a time period greater than adjustable shutdown alarm timer.	• This error is logged so the system can send notification from the Galileo Monitoring System. Check the previous error that was logged to determine the cause.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
SPD I/O Off Fault	SPD I/O Failed off fault. The Up to Speed input SPD did not turn on when the soft-starter was turned on to start the motor.	• The input failed off. With the car on inspection, momentarily jump the SPD input to 120 VAC and monitor the input status on "Inputs and Outputs" status screen of the LCD Display. If the SPD input turns on, the input is fine and if not then replace the input board. • The Up to Speed output from the soft-starter did not turn on. If the motor is rotating at rated rpm, the output from the soft-starter is bad. Contact Tech Support. • If the motor does not start, verify that the MC contactor is turning on, verify that the motor is wired per the job schematic and verify that the motor is the proper voltage.
SPD I/O On Fault	SPD I/O Failed on fault. The Up to Speed input SPD was on before the soft-starter was turned on by the MC output.	• The Up to Speed input SPD failed on. Replace the input board. • The Up to Speed contact failed on in the soft- starter. Read the voltage on the output of the Up to Speed contact to GND. If 120 VAC is present, contact Tech Support.
SPD Off Fault Moving	Up to Speed SPD Input Off Fault while Moving.	The SPD input went off while the car trying to run up and the MC output was on. • Faulty SPD input. Replace the input board. • Faulty connection from the soft-starter Up to Speed output to the SPD input on the Main I/O board. Check the wiring and the terminal connection. • Faulty Up to Speed output on the soft-starter. Contact Tech Support.
Speed Control Exit	Speed Control Exited from a fault condition.	• The Electrical Safety String was open during a run. Check the safety string inputs.• The S10 input turned off. Possible short in traveling cable or bad S10 input. Correct short condition or replace S10 input on 1102 board.• Inspection Switch applied during run.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
Stalled Fault	Stall Fault occurs if the motion run timer exceeds the stall protection time. The motion run timer is incremented while the car is trying to run.	• The elevator may have stalled from an improper valve adjustment. Verify the valve adjustment during high speed and leveling in both directions. • Increase Stall Timer on the controller under Adjustable Variables and Car Timers. Set the timer to allow the car to run the entire hoistway at the recovery speed. • The recovery speed parameter may need to be increased to 50 fpm or higher. Typically, do not set higher than 80 fpm. If the recovery speed parameter has been changed. Run the car in between floors on inspection and then return the car to automatic. Verify that the car recovers to a landing without overshooting the floor.
Stop Switch Fault	Stop switch is pulled while the car is in motion.	• Stop switch is pulled. • Faulty wire connection in the stop switch circuit.
SU I/O Failed Off	The SU input or output has failed off	• Faulty SUi input. Swap input board to see if SUi input chip is bad and replace input board if necessary. • The SU solenoid is shorted to GND at the SU terminal. Refer to the schematic and check the circuit with a meter. • Faulty SU output. Swap the output with another device to verify if the output is bad and replace if necessary.
SU I/O Failed On	The SU input or output has failed on.	• Faulty SUi input. Swap input board to see if SUi input chip is bad and replace input board if necessary. • The SU test jumper was left on the output after an I/O test. Remove test jumper. • Voltage back feed through the SU coil. Verify that the SU solenoid is connected to the solenoid common. Refer to the schematic and check the circuit with a meter. • Faulty SU output. Swap the output with another device to verify if the output is bad and replace if necessary.
SUF I/OFailed Off	The SUF input or output has failed off.	• Faulty SUFi input. Swap input board to see if SUFi input chip is bad and replace input board if necessary.• The SUF solenoid is shorted to GND at the SUF terminal. Refer to the schematic and check the circuit with a meter.• Faulty SUF output. Swap the output with another device to verify if the output is bad and replace if necessary.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
SUF I/O Failed On	The SUF input or output has failed on.	• Faulty SUFi input. Swap input board to see if SUFi input chip is bad and replace input board if necessary. • The SUF test jumper was left on the output after an I/O test. Remove test jumper. • Voltage back feed through the SUF coil. Verify that the SUF solenoid is connected to the solenoid common. Refer to the schematic and check the circuit with a meter. • Faulty SUF output. Swap the output with another device to verify if the output is bad and replace if necessary.
SUF I/O On Fault	SUF I/O Failed on when stopped at the floor.	After the car stops at the floor and the RUN output drops, the SUF and SDF I/Os are check to verify that they have turned off. • Verify that the LED on the output module has turned off. If not then replace the output module. • Check for voltage on the solenoid terminal. If there is no voltage then replace the appropriate input board. • If there is voltage on the solenoid terminal, remove the output module. If the voltage goes away with the removal of the output module, replace the output module.
Top Door Lock Fault	The Top Door Lock failed on while the door was open.	• Faulty door lock. • Jumper on door lock circuit. • Door lock not adjusted properly. • Faulty wiring to DLT input. • Faulty DLT and DLT-1 inputs (For this to occur both DLT and DLT-1 inputs must fail on). • DOL input failed. Replace DOL input chip. • Door operator open limit DOL is not adjusted properly
Trace Trigger	The Data Trace has been triggered. This is not a fault	
UL and DL Off Fault	Both UL and DL level inputs are off when car is at a floor. These two inputs are set from counts from the APS selector.	• Verify that the Main CPU is communicating with the APS selector.• Verify that the Main CPU has a valid floor table.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
UL DL Dist Too Large	The UL and DL distance settings are the number of counts the car runs after the UL and DL dead level inputs are active. If the UL or DL distance is set greater than 2 inches, the controller will get this error when it attempts to verify the hoistway table.	• The UL and DL distances are set in the Hoistway Tables menu on the LCD display interface. Select the UL & DL Distance menu and then set the UL or DL distance to the proper value.
UL Failed On Fault	UL Failed On Fault. The UL input did not go off during a run. The UL input is set from a count from the APS selector.	• The APS selector did not change count during a run. Check for faults related to the APS selector. Verify that the APS selector counts change while the car is running. • The elevator did not leave the floor on a run attempt. Verify that the elevator can run from the landing. Check the fault log for another fault that could prevent the car from running.
UL, DL & DZ Off at FL	UL, DL & DZ inputs off at floor. The car thinks it should be at a floor or is at a floor and all the floor inputs have turned off.	• Verify that the Main CPU is communicating with the APS selector. • Verify that the Main CPU has a valid floor table.
Up Directional Fault	Car unexpectedly hit the Up Normal Limit while running up.	• The Safety PAL detected a fault condition and turned off the UN output from the NTS processor. • The NTS processor detected a fault condition and turned off the UN output. • APS Selector communications loss to the Main CPU. • APS Selector communications loss to the NTS processor. • Selector not reading the correct position from the tape.
User Variable Init	User variable initialization	User related parameters such a password and telephone numbers are being initialized. This error occurs on the first time the GALX-1132 CPU board is being powered up.

Table 6-0: Main CPU Faults		
Faults	**Description**	**Possible Cause/Suggested Fix**
UT Failed On Fault	UT I/O Failed On	The car is on a door zone and at the top floor but the UT-1 input (from the Main CPU count) did not activate (go off). • The Up slowdown count for the top floor is set incorrectly. Review the hoistway slowdown table and if the value is incorrect, relearn the top floor position.
UT Limit Fault	UT Limit from the NTS processor turned off before the normal slowdown point was reached.	• The UT limit from the NTS processor is too far from the top landing. Adjust the UT limit closer to the landing by changing the NTS UT limit count and the relearning the top floor. • The slowdown position is set too close to the top landing. Adjust the top floor slowdown count in the Hoistway Table Floor & SD Counts menu.
UTc Limit Fault	UTc Limit from the Main CPU turned off before the normal slowdown point was reached.	• The UT limit from the Main CPU is too far from the top landing. Adjust the UTc limit closer to the landing by changing the NTS DT limit count and the relearning the top floor. • The slowdown position is set too close to the top landing. Adjust the top floor slowdown count in the Hoistway Table Floor & SD Counts menu.
Wrong Dir Pls Run Dn	Wrong Direction Pulses while car running down. The pulse counts should be counting down while the car is running down.	• Make sure that the APS selector is working properly. Check for APS selector faults and make the appropriate corrections.
Wrong Dir Pls Run Up	Wrong Direction Pulses while car running up. The pulse counts should be counting up while the car is running up.	• Make sure that the APS selector is working properly. Check for APS selector faults and make the appropriate corrections.

6.2 Device Fault in Fault Log

This section describes the specific device faults from devices on the Machine Room CAN BUS (MRCAN), Car Top CAN BUS (CTCAN) and Group CAN BUS (GRCAN) serial ports.

When a device sends a fault to the Main CPU, the Main CPU logs the fault according to the CAN BUS port that the device is connected. For example, if a device on the Machine Room Can bus (MRCAN) has a fault, the fault is logged as a MRCAN Device Fault. When the fault is received from a device on a Hall Call Driver Board or a Car Call Driver Board, the fault is logged as an HCB Device Fault or a CCB Device Fault, respectively. The actual fault that occurred on the device is stored as part of the fault data and can be viewed when selecting the details of the fault from the Galileo or the fault log that is stored on the SD Card.

When viewing the faults on the LCD Display Interface, instead of showing an MRCAN Device Fault, a GRCAN Device Fault, a CTCAN Device Fault, an HCB Device Fault or a CCB Device fault, an abbreviation of the device name and bus is displayed followed by the actual device fault. The format for the data displayed on the LCD Interface is as follows:

DevP## FAULT

Where Dev is the device name such as SEB (serial expansion board) and P## is the port and address number if applicable. The CAN BUS ports are listed as G=GRCAN, C=CTCAN and M=MRCAN. The ## is the device number having a value between 1 and 99. FAULT is the specific device fault. A list of the device names is show below:

NTS – NTS Processor
DOOR – Front Door Operator on CTCAN port
RDOR – Rear Door Operator on CTCAN port
LW M – Load Weighing Device on MRCAN port
LW C – Load Weighing Device on CTCAN port
VS M – Voltage Sensing Device on MRCAN port
VS C – Voltage Sensing Device on CTCAN port
VS G – Voltage Sensing Device on GRCAN port
PI M – PI Device on MRCAN port
PI C – PI Device on MRCAN port
SEBM – Serial Expansion Board on MRCAN port
SEBC – Serial Expansion Board on CTCAN port
SEBG – Serial Expansion Board on GRCAN port
COP – Car Operating Board on CTCAN port
HCD – Hall Board on HC Driver Board on GRCAN port
HCB – Hall Call Board on GRCAN port

An example of an APS Com Fault for the NTS processor device would be displayed as “NTS APS Com Fault”. In addition, a stuck Up button on a hall call driver board device would be displayed as “HCD 14 Stck Up Buttn”. To troubleshoot the device fault, look up the FAULT portion of the message and follow the described suggestion.

Similarly, when a device is reset on one of the CAN BUS ports, the device name, port and address number is displayed the same as described above but with the FAULT section being shown as “Device Reset”. An example of a Serial Expansion Board #05 device reset on the group can bus (GRCAN) would be “SEBG05 Device Reset”.

The device faults are listed in the following tables:

Table 6-1: Device Faults from the CTCAN, GRCAN and MRCAN Serial Ports		
Fault	**Description**	**Possible Cause/Suggested Fix**
APS Com Fault	NTS Processor has a communications fault with the APS selector head.	• Faulty communications from the NTS CAN terminals on the 1121 MAIN I/O board to the NTS CAN terminals on the 1134 COP board. Make sure the CANH and CANL wires match. • Termination resistors are usually place at the far end of each BUS. Verify the placement of the Termination resistors. • Check the RJ-45 connection from the 1134 COP board to the APS selector camera. • Try moving the termination resistors to other locations. • Faulty device, try replacing each board individually, the 1121 Main I/O board, the 1134 COP board and APS selector camera.
Comm Fault	Device has a communications fault.	• Faulty communications wiring to the device. • Termination resistors are usually place at the far end of each BUS. Verify the placement of the Termination resistors. • Try moving the termination resistors to other locations. • Faulty device, replace board.
DZ Clip Fault	The NTS processor has a DZ clip fault. The NTS processor keep track of when the door zone clip is read at each floor. If it enters a floor and the clip is not read at that floor three times in a row, this fault is logged.	• Check the placement of the clip when the car is dead level to the floor. The clip should be in between the two channels of APS cameras. Momentarily place your hand in front of the camera to cause the red LED markers to turn on. The clip should be roughly in the middle of the red LED markers. • Verify that the clip is not broken or that the correct clip is installed. Replace or install the correct clip.
HW Fl Cnt Inv	Hoistway Floor Count is Invalid on the NTS processor. One or more floor count of an above floor is less than the floor below.	• The hoistway floor table is not setup properly. Check the valid floor table of the NTS processor on the LCD Interface in the Hoistway Table Valid Floor and Clips menu. Run car to the floor with the position of the invalid floor or floors and learn the floor position. • Complete the setup process. • Faulty NTS processor. Replace the 1121 Main I/O board. Contact Tech Support.

Table 6-1: Device Faults from the CTCAN, GRCAN and MRCAN Serial Ports		
Fault	**Description**	**Possible Cause/Suggested Fix**
HW Fl Cnt=0 F	Hoistway Floor Count = 0 Fault on the NTS processor. The hoistway floor table is not setup properly.	• Check the valid floor table of the NTS processor on the LCD Interface in the Hoistway Table Valid Floor and Clips menu. Run car to the floor with the position of the invalid floor or floors and learn the floor position. • Complete the setup process. • Faulty NTS processor. Replace the 1121 Main I/O board. Contact Tech Support.
HW Valid Fl F	Hoistway Valid Floor Fault on the NTS processor. The device hoistway table has the hoistway learn flag set, indicating that it had been setup but the but one or more floor is not valid. The hoistway floor table is not setup properly.	• Check the valid floor table of the NTS processor on the LCD Interface in the Hoistway Table Valid Floor and Clips menu. Run car to the floor with the position of the invalid floor or floors and learn the floor position. • Complete the setup process. • Faulty NTS processor. Replace the 1121 Main I/O board. Contact Tech Support.
SPI Com Fault	NTS Processor has a communications fault on the SPI bus to the 1132 Main CPU Board.	• Check that the 1132 Main CPU board is installed properly on the 1121 Main I/O board. • Faulty 1132 Main CPU board. Replace the board. • Faulty 1121 Main I/O board. Replace the board.

Table 6-2: Faults from the Hall Call Driver Board Devices on the GRCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
Ax Dn In Ovld	HCB Aux Down input overload	• Controller detected overload in the input from the Aux terminal at the station. To identify fault device refer to Detailed Fault Log 'dev' and 'dv2' will provide address for Serial Driver address and Station where the fault was generated.
Ax Up In Ovld	HCB Aux Up input overload	• Controller detected overload in the input from the Aux terminal at the station. To identify fault device refer to Detailed Fault Log 'dev' and 'dv2' will provide address for Serial Driver address and Station where the fault was generated.
Dev Comm Loss	The Driver does not see this HCB device	• Comm faults above and below a device – check wiring • Board not powering up – check 24VAC and MCU on device • Fuses blown on driver
Dev Comm Loss	The Driver does not see this HCB device	• Comm faults above and below a device – check wiring • Board not powering up – check 24VAC and MCU on device • Fuses blown on driver
Device Reset	The HCB has just comeback online	• Fixed previous problem. There is a power/communication problem, where the board is either resetting (power) or temporarily losing communication on both ports.
Device Reset	The HCB has just comeback online	• Fixed previous problem. There is a power/communication problem, where the board is either resetting (power) or temporarily losing communication on both ports.
Dn FET Open	HCB fet open down	• Replace GALX-1054AN
Dn FET Open	HCB fet open down	• Replace GALX-1054AN
Dn FET Short	HCB fet short down	• Replace GALX-1054AN
Dn FET Short	HCB fet short down	• Replace GALX-1054AN

Table 6-2: Faults from the Hall Call Driver Board Devices on the GRCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
Dn Input Ovld	HCB Down input overload	• Controller detected overload in the input from the LED board at the station. To identify fault device refer to Detailed Fault Log 'dev' and 'dv2' will provide address for Serial Driver address and Station where the fault was generated.
Dn LED Open	HCB led open down	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
Dn LED Open	HCB led open down	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
Dn LED Short	HCB led short down	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
Dn LED Short	HCB led short down	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
FET Open BluD	HCB fet open blue down	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
FET Open BluU	HCB fet open blue up	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
FET Open GrnD	HCB fet open green down	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.

Table 6-2: Faults from the Hall Call Driver Board Devices on the GRCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
FET Open GrnU	HCB fet open green up	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
FET Open RedD	HCB fet open red down	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
FET Open RedU	HCB fet short red up	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
FET Shrt BluD	HCB fet short blue down	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
FET Shrt BluU	HCB fet short blue up	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
FET Shrt GrnD	HCB fet short green down	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
FET Shrt GrnU	HCB fet short green up	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
FET Shrt RedD	HCB fet short red down	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
FET Shrt RedU	HCB fet short red up	• Replace the GALX-1093AN board – dev / dev 2 can pinpoint which 1093 is at fault.
Invalid Floor	HCB has invalid floor	• This fault is only intended for internal use to identify floors that need to be skipped in diagnostics. It should never occur
Invalid Floor	HCB has invalid floor	• This fault is only intended for internal use to identify floors that need to be skipped in diagnostics. It should never occur

Table 6-2: Faults from the Hall Call Driver Board Devices on the GRCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
LED Open BluD	HCB led open blue down	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Open BluU	HCB led open blue up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Open GrnD	HCB led open green down	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Open GrnU	HCB led open green up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Open RedD	HCB led open red down	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Open RedU	HCB led short red up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.

Table 6-2: Faults from the Hall Call Driver Board Devices on the GRCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
LED Shrt BluD	HCB led short blue down	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Shrt BluU	HCB led short blue up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Shrt GrnD	HCB led short green down	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Shrt GrnU	HCB led short green up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Shrt GrnU	HCB led short green up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Shrt RedD	HCB led short red down	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.

Table 6-2: Faults from the Hall Call Driver Board Devices on the GRCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
LED Shrt RedU	HCB led short red up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
LED Shrt RedU	HCB led short red up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
Low Sply Volt	Hall call board has low supply voltage	• Low voltage at Hall call device level. To identify fault device refer to Detailed Fault Log 'dev' and 'dv2' will provide address for Serial Driver address and Station where the fault was generated.
No Dn LED Brd	HCB No Down Led Board Detected	• HCB board could not detect an LED board • Replace LED board (GALX-1085AN)
No Dn LED Brd	HCB No Down Led Board Detected	• HCB board could not detect an LED board • Replace LED board (GALX-1085AN)
No Up LED Brd	HCB No Up Led Board Detected	• HCB board could not detect an LED board • Replace LED board (GALX-1085AN)
No Up LED Brd	HCB No Up Led Board Detected	• HCB board could not detect an LED board • Replace LED board (GALX-1085AN)
Rx<-above fl	HCB rx fault up to above floor	• Receiver on board is bad – replace device • Cable is bad or disconnected • Cables going to wrong port (i.e., switched to above and to below) • Transmitter from device above is bad.

Table 6-2: Faults from the Hall Call Driver Board Devices on the GRCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
Rx<-above fl	HCB rx fault up to above floor	• Receiver on board is bad – replace device • Cable is bad or disconnected • Cables going to wrong port (i.e., switched to above and to below) • Transmitter from device above is bad.
Rx<-below fl	HCB rx fault down from below floor	• Receiver on board is bad – replace device • Cable is bad or disconnected • Cables going to wrong port (i.e., switched to above and to below) • Transmitter from device below is bad.
Rx<-below fl	HCB rx fault down from below floor	• Receiver on board is bad – replace device • Cable is bad or disconnected • Cables going to wrong port (i.e., switched to above and to below) • Transmitter from device below is bad.
Stck Dn Buttn	HCB stuck button down	• Button is physically stuck – fix button • Input is stuck on or shorted – replace device
Stck Dn Buttn	HCB stuck button down	• Button is physically stuck – fix button • Input is stuck on or shorted – replace device
Stck Up Buttn	HCB stuck button up	• Button is physically stuck – fix button • Input is stuck on or shorted – replace device
Stck Up Buttn	HCB stuck button up	• Button is physically stuck – fix button • Input is stuck on or shorted – replace device
Tx->above fl	Can't internally read information from Transmitter to device above	• Cable connecting two devices could be flip- flopped (i.e., gray wire goes from pin 1 on one end to pin 8 on the other end). Disconnect cable, and if fault changes to Rx Fault, the problem is the cable. • Transmitter is bad, Replace the Device

Table 6-2: Faults from the Hall Call Driver Board Devices on the GRCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
Tx->above fl	Can't internally read information from Transmitter to device above	• Cable connecting two devices could be flip- flopped (i.e., gray wire goes from pin 1 on one end to pin 8 on the other end). Disconnect cable, and if fault changes to Rx Fault, the problem is the cable. • Transmitter is bad, Replace the Device
Tx->below fl	Can't internally read information from Transmitter to device below	• Cable connecting two devices could be flip- flopped (i.e., gray wire goes from pin 1 on one end to pin 8 on the other end). Disconnect cable, and if fault changes to Rx Fault, the problem is the cable. • Transmitter is bad, Replace the Device
Tx->below fl	Can't internally read information from Transmitter to device below	• Cable connecting two devices could be flip- flopped (i.e., gray wire goes from pin 1 on one end to pin 8 on the other end). Disconnect cable, and if fault changes to Rx Fault, the problem is the cable. • Transmitter is bad, Replace the Device
Up FET Open	HCB fet open up	• Replace GALX-1054AN
Up FET Open	HCB fet open up	• Replace GALX-1054AN
Up FET Short	HCB fet short up	• Replace GALX-1054AN
Up FET Short	HCB fet short up	• Replace GALX-1054AN
Up Input Ovld	HCB Up input overload	• Controller detected overload in the input from the LED board at the station. To identify fault device refer to Detailed Fault Log 'dev' and 'dv2' will provide address for Serial Driver address and Station where the fault was generated.
Up LED Open	HCB led open up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.

Table 6-2: Faults from the Hall Call Driver Board Devices on the GRCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
Up LED Open	HCB led open up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
Up LED Short	HCB led short up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.
Up LED Short	HCB led short up	• Make Sure there is a GALX-1056AN attached to the proper connector (Up LED always attached to CN5, Down LED attached to CN5 if only down call at that station (like the top floor), otherwise attached via ribbon at CN6. • Replace GALX-1056AN for the associated up or down call.

Table 6-3: Faults from the COP Board Devices on the CTCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
FET Open Blue	Car Call Board FET open blue	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
FET Open Grn	Car Call Board FET open green	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
FET Open Red	Car Call Board FET open red	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
FET Short Grn	Car Call Board FET short green	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
FET Short Red	Car Call Board FET short red	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
FET Shrt Blue	Car Call Board FET short blue	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.

Table 6-3: Faults from the COP Board Devices on the CTCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
LED Open Blue	Car Call Board LED open blue	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
LED Open Grn	Car Call Board LED open green	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
LED Open Red	Car Call Board LED open red	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
LED Short Red	Car Call Board LED short red	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
LED Shrt Blue	Car Call Board LED short blue	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
LED Sht Green	Car Call Board LED short green	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.

Table 6-3: Faults from the COP Board Devices on the CTCAN Serial Port		
Fault	**Description**	**Possible Cause/Suggested Fix**
No LED Board	Car Call LED board missing	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.
Stuck Button	Car Call Board stuck button	• Faulty LED signal from RGB Board. Look at detailed car faults log to determine device. 'dev' gives you address for global CAN device, 'dv2' gives you local CAN device and 'pf1' the number for the IO location within the local board.

6.3 Detailed Faults Data and Description

Example of data stored on the SD Card for the standard or long-term fault log:

8 Inspection Input Flt 11:54:21 2/06/2016 Position = 1 Occurrences = 1 srv=001, prc=002, drf=000, rdf=000, dpr=000, dir=000, emp=000, med=000 cbl=000, equ=000, fir=000, rfi=000, hsf=000, stf=000, cal=000, esp=000 nst=000, rlv=000, ste=001, dfs=000, st0=000, ins=01h, nds=000, dev=00h pf1=00h, pf2=00h, dv2=00h, io0=55h, io1=01h, io2=03h, io3=ffh, io4=b0h io5=c8h, io6=15h, io7=33h, io8=f0h, io9=21h, ioA=f1h, ioB=7fh, ioC=ffh ioD=ffh, ioE=f5h, ioF=01h, ioG=4dh, ioH=ffh, ioI=00h, ioJ=00h, ioK=00h
ioL=00h, ioM=00h, ioN=00h, ioO=05h, ioP=16h, ioQ=00h ioR=00h, ioS=09h, ioT=16h statusf=00000040h, statusf2=00000000h statusf3=00000000h, statusf4=00000000h
DPP Count = 8025, Floor Count = 8025, SD Count = 0
Enc Vel = 0, Enc Dir = 0
Flt Bits 1 = 0h, Flt Bits 2 = 0h, Flt Bits 3 = 0h, Flt Bits 4 = 0h
SS Status=0000h, PWR Status=0000h, Run Status=30805ff8h
NTS Poscnt = 7895, NTS Vel = 0
NTS Cmd1 = 0h, NTS Cmd2 = 10h, NTS Stat1 = 0h, NTS Stat2 = 80h
NTS DoorZone = 0h, NTS Limits = 0h
Nudg Flags=00h, Door Req=08h, Call Flags=00h
Chk Run=1bh, Chk Start=00h, Chk Level=00h, Chk Door=28h
Front SD=0000h, Rear SD=0000h, Motion Tmr=00001
PAL Status=00h, Inspect Svc=000
Percent Load= 0

SRV: SRV Service Flag	
0 = Safety String	23 = Low Pressure
1 = Inspection	24 = Hot Oil
2 = Reset Mode	25 = Auto Door Off
3 = Configuration Mode	26 = Riot Control
4 = Hoistway Setup	27 = Car Sw Elevator Off
5 = Fire Fighters Stop Switch	28 = Hall Sw Elevator Off
6 = Machine Room Stop Switch	29 = Car Sw Elevator Off2
7 = Motion Stop	30 = Return to Lobby
8 = AT Floor Shutdown	31 = Independent Service
9 = Comm Fail	32 = Priority Service
10 = Door Close Fail	33 = Calibrate Load Weigher
11 = Gate and Lock	34 = Reset Jack Service
12 = Stalled	35 = Load Weigh Overload
13 = Low Oil	36 = Load Weighing Bypass
14 = Earthquake	37 = Extended Door Time
15 = Emergency Power	38 = Reset Going Up
16 = Fire Phase 2	39 = Reset Going Down
17 = Fire Phase 1 Main	40 = Security Recall
18 = Fire Phase 1 Alt	41 = TUG Service
19 = Emergency Power Recall	42 = Sabbath Service
20 = Hospital Service	43 = Attendant Service
21 = Medical Emergency Service	44 = Homing
22 = Code Blue	45 = Automatic Service

PRC: Process Flag	
1 = Reset Mode	12 = Safety String Open
2 = Inspection	13 = Elevator Off Line
3 = Motion Mode: Up Fast	14 = Elevator Parked
4 = Motion Mode: Up Transition	15 = Waiting At Floor
5 = Motion Mode: Leveling Up	16 = Doors Procedure
6 = Motion Mode: Down Fast	17 = Elevator Stalled (or Low Oil)
7 = Motion Mode: Down Transition	18 = Elevator Resetting Hydro Jack
8 = Motion Mode: Leveling Down	19 = Elevator on Low Oil Pressure mode
9 = Motion Mode: Emergency Stop	20 = Elevator is in Automatic Learn Hoistway
10 = Motion Mode: Not Used	21 = Elevator is in Emergency Power Recovery
11 = Motion Mode: Emergency Slowdown	22= Hot Oil Mode

DRF: Front Door Flag	RDF: Rear Door Flag
0 = Door Closed 1 = Door Opening 2 = Door Dwelling 3 = Door Closing 4 = Door Nudging Closed	0 = Door Closed 1 = Door Opening 2 = Door Dwelling 3 = Door Closing 4 = Door Nudging Closed

DPR: Direction Preference Flag	DIR: Car Direction Flag
0 = None 1 = Up 2 = Down	0 = None 1 = Up 2 = Down

EMP: Emergency Power Flag	
0 = Not on Emergency Power 1 = On Emergency Power Waiting 2 = On Emergency Power Waiting with Doors Open 3 = On Emergency Power Returning Home 4 = On Em. Power Returned Home with Doors Open	5 = On Em. Power Returned Home with Doors Closed 6 = On Emergency Power and Selected to Run 7 = On Emergency Power waiting with Doors Closed

MED: Medical Emergency	
0 = No Medical Emergency Service 1 = Recall Car to Medical Emergency Recall Floor 2 = At Return Floor with Door Open (Return Complete)	4 = On EMS Car Call Service 5 = On EMS Car Hold Service (key off but not at the recall floor)

CBL: Code Blue Flag	
0 = No Code Blue 1 = Recall to Emergency Floor 2 = At Code Blue Floor	3 = At Code Blue Floor with Door Open 4 = Finished Code Blue

EQU: Earthquake Flag	
0 = Not on Earthquake Operation 1 = Earthquake Sensor Activated 2 = Counterweight Derailment Sensor Activated	3 = Recover Away from the Counterweight 4 = Stopped at a Floor

FIR: Fire Flag	
0 = Not on Fire Service 1 = Phase 1 Main Egress Return 2 = Phase 1 Alternate Egress Return 3 = Phase 1 Completed 4 = Phase 2 Door Hold	5 = Phase 2 Constant Pressure Door Open 6 = Phase 2 Constant Pressure Door Close 7 = Phase 2 Door Hold 8 = Phase 2 Momentary DCB Door Close

RFI: Rear Fire Flag	
0 = Not on Fire Service 1 = Phase 1 Main Rear Egress Return 2 = Phase 1 Alternate Rear Egress Return 3 = Phase 1 Completed 4 = Phase 2 Rear Door Hold	5 = Phase 2 Constant Pressure Rear Door Open 6 = Phase 2 Constant Pressure Rear Door Close 7 = Phase 2 Rear Door Hold 8 = Phase 2 Momentary DCB Rear Door Close

HSF: High Speed Flag	STF: Start Flag
0 = No High Speed 1 = High Speed	0 = Not valid Start 1 = Start of Run

CAL: Direction of Calls	
0 = No Call 1 = Above Call	2 = Below Call 3 = Above and Below Calls

ESP: Emergency Stop Flag	NST: Need to Stop Flag
1 = Emergency Stop	1 = Car need to stop at next floor

RLV: Re-level Flag	STE: Step Flag
1 = Car in re-leveling	1 = Step to the next position (non-distance feedback)

DSF (dsf): Door Status Flags	
Bit 0: (preDO) Pre-open Door Flag	Bit 4: (rdsUP) Rear Door Open Sequence Up Pilot
Bit 1: (dsUP) Door Open Sequence Up Pilot	Bit 5: (rdsDP) Rear Door Open Sequence Dn Pilot
Bit 2: (dsDP) Door Open Sequence Down Pilot	Bit 6: (rdsNP) Rear Door Open Sequence No Pilot
Bit 3: (dsNP) Door Open Sequence No Pilot	Bit 7:

STO: Next Stop Floor – Floor Number of next stop

INS: Inspection Status Flag (Status bit set to “1” when switch is on)	
Bit 0: (INS) Car Top Inspection	Bit 4: (LBP) Lock Bypass
Bit 1: (MRIN) Machine Room Inspection	Bit 5: (GBP) Gate Bypass
Bit 2: (ACC) Access	Bit 6: (AUTI) Not in Automatic (AUTO==0)
Bit 3: (ICI) In Car Inspection	

NDS: Next Car Up Door Sequence	
0 = Initiate Next Up Door Open	3 = Allow door close for onward call
1 = Opening Next Up Door	4 = Allow door close while on next up
2 = Door full open on Next Up	

DEV: Device Number	DV2: Device 2 Number

PF1: Program Flag 1	PF2: Program Flag 2

STATUSF: Control Status Flag (Status bit set to “1” when status active)	
Bit 0: (sfS10) NO S10 power	Bit 17:
Bit 1: (sfHC) NO HC power	Bit 18:
Bit 2: (sfSS) NO SS input	Bit 19:
Bit 3:	Bit 20:
Bit 4:	Bit 21: (sfSHD) Shutdown (too many run attempts
Bit 5: (sfIO) I/O error during redundancy check	with faults)
Bit 6: (sfINS) Inspection or lock bypass fault	Bit 22: (sfAST) Annual Safety Test
Bit 7: (sfBPI) Binary Position Input Error	Bit 23: (sfSAF) Waiting for Safe (Door Locks and
Bit 8: (sfPOS) Position Error	Gate)
Bit 9: (sfAD) No automatic Doors	Bit 24: (sfTLM) UT or DT limit error
Bit 10: (sfSTP) Stop switch open	Bit 25:
Bit 11: (sfDZ) Door Zone fault	Bit 26: (sfDZF) UL, DL and DZ off at floor
Bit 12: (sfGDL) Gate or Door lock fault	Bit 27:
Bit 13:	Bit 28: (sfFST) Fire Fighter Stop Switch
Bit 14: (sfDCL) No DCL	Bit 29: (sfSEL) Selector Can error
Bit 15: (sfDCC) No Door Close Contact	Bit 30: (sfUDL) UL or DL fault
Bit 16:	Bit 31: (sfLEV) Leveling fault

STATUSF2: Control Status Flag (Status bit set to “1” when status active)	
Bit 0: (sfHWI) Hardware Init fault	Bit 16:
Bit 1: (sfFDC) Front Door Closing Fault	Bit 17: (sfIOT) IO Test in progress
Bit 2: (sfRDC) Rear Door Closing Fault	Bit 18:
Bit 3: (sfLVF) Line Voltage Fault	Bit 19:
Bit 4: (sfDVF) Door Voltage Fault	Bit 20: (sfNIT) Non-Interference timer
Bit 5:	Bit 21: (sfDRQ) Door open request
Bit 6: (sfDMO) Door motor overload	Bit 22: (sfDPM) Waiting for DPM
Bit 7: (sfHWL) Learn Hoistway Fault	Bit 23: (sfRPM) Waiting for RPM
Bit 8:	Bit 24: (sfVSC) Viscosity operation
Bit 9:	Bit 25: (sfLVR) Leveling request
Bit 10:	Bit 26:
Bit 11: (sfAFS) At Floor Shutdown	Bit 27:
Bit 12:	Bit 28: (sfEES) Front EE Test failed fault
Bit 13: (sfRSR) Reset run fault	Bit 29: (sfERS) Rear EE Test failed fault
Bit 14:	Bit 30:
Bit 15: (sfCOP) COP can comm error	Bit 31:

STATUSF3: Control Status Flag (Status bit set to “1” when status active)	
Bit 0:	Bit 16:
Bit 1:	Bit 17:
Bit 2:	Bit 18:
Bit 3: (sfASC) APS Selector CAN Fault	Bit 19:
Bit 4: (sfNAC) NTS APS Selector CAN Fault	Bit 20:
Bit 5: (sfMSP) MC/SPD I/O Fault	Bit 21:
Bit 6: (sfSSA) Stop Switch Anti-Creep Releveling	Bit 22:
Bit 7:	Bit 23:
Bit 8:	Bit 24:
Bit 9:	Bit 25:
Bit 10:	Bit 26:
Bit 11:	Bit 27:
Bit 12:	Bit 28:
Bit 13:	Bit 29:
Bit 14:	Bit 30:
Bit 15:	Bit 31:

STATUSF4: Control Status Flag (Status bit set to “1” when status active)	
Bit 0:	Bit 16:
Bit 1:	Bit 17:
Bit 2:	Bit 18:
Bit 3:	Bit 19:
Bit 4:	Bit 20:
Bit 5:	Bit 21:
Bit 6:	Bit 22:
Bit 7:	Bit 23:
Bit 8:	Bit 24:
Bit 9:	Bit 25:
Bit 10:	Bit 26:
Bit 11:	Bit 27:
Bit 12:	Bit 28:
Bit 13:	Bit 29:
Bit 14:	Bit 30:
Bit 15:	Bit 31:

DPP Count (DPC): Position counts in pulses	Floor Count (FPC) = Floor Count in pulses

Slowdown Count (SDC): Slowdown counts in pulses

Enc Vel: Velocity feedback from Encoder in fpm	Enc Dir: Encoder Direction 0=none, 1=up,2=down

Flt Bits 1 (FltB1): Faults Bits 1 (Byte 0)	
Bit 0: (fHWLN) Hoistway Not Learned (1=fault)	Bit 4:
Bit 1: (fHWI) Hardware Init Fault (1=fault)	Bit 5:
Bit 2:	Bit 6:
Bit 3:	Bit 7:

Flt Bits 2 (FltB2): Fault Bits 2 (Byte 1)	
Bit 0: (fCOPC) COP CAN COM error	Bit 4:
Bit 1: (fSPBC) NTS SPI COM error	Bit 5: (fSELC) APS Selector CAN COM error
Bit 2:	Bit 6:
Bit 3:	Bit 7:

Flt Bits 3 (FltB3): Fault Bits 3 (Byte 2)	
Bit 0:	Bit 4:
Bit 1:	Bit 5:
Bit 2: (fMTOL) Door Motor Overload	Bit 6:
Bit 3:	Bit 7:

Flt Bits 4 (FltB4): Fault Bits 4 (Byte 3)	
Bit 0:	Bit 4:
Bit 1:	Bit 5:
Bit 2:	Bit 6:
Bit 3:	Bit 7:

SS Status: Safety String Status	
Bit 0: (ssGOV) Governor input open	Bit 8: (ssFFS) Fire Fighter Stop Switch
Bit 1:	Bit 9: (ssCST) Car Stop Switch
Bit 2:	Bit 10: (ssMRS) Machine Room Stop Switch
Bit 3:	Bit 11:
Bit 4: (ssHSS) Hoistway Safety	Bit 12: (ssEXT) Car Exit Switch open
Bit 5: (ssCTS) Car Top Stop switch open	Bit 13:
Bit 6: (ssCSS) Car Safety Switch open	Bit 14:
Bit 7:	Bit 15:

PWR Status: Power Status	
Bit 0: (psHC) Hall call power loss	Bit 8:
Bit 1: (psHCL) Hall call light power loss	Bit 9:
Bit 2: (psCC) Car call power loss	Bit 10:
Bit 3: (psCCL) Car call light power loss	Bit 11:
Bit 4: (psLHC) Lobby Hall common power loss	Bit 12:
Bit 5: (psFEP) Fire/Emergency Power Loss	Bit 13:
Bit 6:	Bit 14:
Bit 7:	Bit 15:

Run Status: Control Run Status Flag (Status bit set to “1” when status active)	
Bit 0: (rsRUN) Car is running	Bit 16: (rsEE) Electric eye or Detector Edge
Bit 1: (rsDNR) Down run signal	Bit 17: (rsSE) Safety Edge
Bit 2: (rsUP) Up run signal	Bit 18: (rsEER) Rear Electric eye or Detector edge
Bit 3: (rsDL) Down door zone Limit	Bit 19: (rsSER) Rear Safety Edge
Bit 4: (rsUL) Up door zone limit	Bit 20: (rsHSF) High Speed Flag
Bit 5: (rsDZ) Door Zone	Bit 21: (rsSTF) Start Flag
Bit 6: (rsDLT) Door Lock Top	Bit 22: (rLSTF) Leveling Start Flag
Bit 7: (rsDLM) Door Lock Middle	Bit 23: (rsDZA) Door Zone OR'd
Bit 8: (rsDLB) Door Lock bottom	Bit 24: (rsDO) Door Open
Bit 9: (rsGS) Gate Switch	Bit 25: (rsDC) Door Close
Bit 10: (rsRLM) Rear Door Lock Middle	Bit 26: (rsDOR) Rear Door Open
Bit 11: (rsRGS) Rear Gate Switch	Bit 27: (rsDCR) Rear Door Close
Bit 12: (rsDOL) Door open limit (0=active)	Bit 28: (rsUN) Up Normal Limit
Bit 13: (rsDCL) Door Close Limit (0=active)	Bit 29: (rsDN) Down Normal Limit
Bit 14: (rDOLR) Rear door open limit (0=active)	Bit 30:
Bit 15: (rDCLR) Rear door close limit (0=active)	Bit 31:

NTS Count: NTS Processor Position count in pulses	NTS Vel: NTS Processor Velocity in fpm

NTS Cmd: NTS Processor Command1	
Bit 0: 1 = Mark Floor	Bit 4:
Bit 1: 1 = Bottom Floor	Bit 5: 1 = Clear Hoistway Table
Bit 2: 1 = Top Floor	Bit 6:
Bit 3: 1 = Enter HW Learn Mode	Bit 7: 1 = Reset Fault

NTS Cmd: NTS Processor Command2	
Bit 0: 1 = NTS Test	Bit 4:
Bit 1: 1 = Automatic Door Disable	Bit 5: 1 = Reset tx/rx count
Bit 2:	Bit 6: 1 = Set NTS Down Slowdown
Bit 3:	Bit 7: 1 = Set NTS Up Slowdown

NTS Stat: NTS Processor Status1	
Bit 0: (HWLrn) Hoistway Learn	Bit 4: NTS APS Selector OK
Bit 1: APS Can Fault	Bit 5:
Bit 2: (ClipF) DZ Clip Fault	Bit 6: NTS APS Setup Fault
Bit 3:	Bit 7:

NTS Stat: NTS Processor Status2	
Bit 0: Direction Up	Bit 4: Velocity Fault
Bit 1: Direction Down	Bit 5:
Bit 2: Direction Fault	Bit 6: Setup/Test Jumper
Bit 3: Limit (EMSD) Fault	Bit 7: Rear Door Jumper

NTS Stat: NTS Processor Door Zone	
Bit 0: (UL) Up Door Zone Limit	Bit 4: (DZ Clip) Door Zone Clip
Bit 1: (DZ) Door Zone	Bit 5:
Bit 2: (DZA) Door Zone Auxiliary	Bit 6:
Bit 3: (DL) Down Door Zone Limit	Bit 7:

NTS Stat: NTS Processor Limits	
Bit 0: (UN) Up Normal Directional Limit	Bit 4: (DN) Down Normal Directional Limit
Bit 1: (UT) Up Terminal Slowdown Limit	Bit 5: (DT) Down Terminal Slowdown Limit
Bit 2:	Bit 6:
Bit 3: (DL) Down Door Zone Limit	Bit 7:

Nudg Flags (Nud): Door Nudging Flags	
Bit 0: (ngUP) Nudging Closed with Up Pilot	Bit 4: (rngUP) Rear Nudging Closed with UP
Bit 1: (ngDP) Nudging Closed with Down Pilot	Bit 5: (rngDP) Rear Nudging Closed with Down
Bit 2: (ngNP) Nudging Closed with No Pilot	Bit 6: (rngNP) Rear Nudging Closed with No Pilot
Bit 3:	Bit 7:

Door Req (DRq): Door Request Flags	
Bit 0: (doRQ) Front Door Open Request	Bit 4: (rdoRQ) Rear Door Open Request
Bit 1: (dbRQ) Front Door Open Button Request	Bit 5: (rdbRQ) Rear Door Open Button Request
Bit 2: (cdRQ) Front Car Call Door Open Request	Bit 6: (rcdRQ) Rear Car Call Door Open Request
Bit 3: (doEN) Front Door Open Enable	Bit 7: (rdoEN) Rear Door Open Enable

Call Flags (CFg): Onward Call Flags	
Bit 0: (dcAB) Directional Call Above	Bit 4: (occAB) Onward Car Call Above
Bit 1: (dcBL) Directional Call Below	Bit 5: (occBL) Onward Car Call Below
Bit 2: (owcAB) Onward Call Above	Bit 6: (ohcAB) Onward Hall Call Above
Bit 3: (owcBL) Onward Call Below	Bit 7: (ohcBL) Onward Hall Call Below

CkRunS: Check Run Status State	
0 = No Run Op	17 = Door Request
1 = HW Learn Flt	18 = Door Open
2 = PAL Fault	19 = Door Closing
3 = Comm Error	20 = PreTq NewPref
4 = IO Test	21 = DC No DO Seq
5 = Norm Stop Tmr	22 = UC No DO Seq
6 = ATT No DC CC	23 = LC No DO Seq
7 = ATT No UP/DN	24 = RDC No DO Seq
8 = ATT No DClose	25 = RUC No DO Seq
9 = No ATT UP	26 = Viscosity
10 = No ATT No DC	27 = Relevel Req
11 = CarSw No DC	28 = No Calls
12 = CarSw DC Hold	29 = Earthquake
13 = Man Door Time	30 = No DCl
14 = SafeTest Year	31 = No Rear DCL
15 = SafeTst Month	32 = No SAFE
16 = SafeTest Day	33 = Running

CkStS: Check Start Status State	
0 = No Start Op	20 = SUF Fail Off
1 = CCF Off Up	21 = SUF On w/SU
2 = CPU UN Off	22 = Run Up
3 = FSTU Fail On	23 = CPU DN Off
4 = SPD Failed On	24 = FSTD Fail On
5 = MC Failed On	25 = RUND Fail On
6 = MC Failed Off	26 = RUND Fail Off
7 = SPD Fail Off	27 = CPU Out On Dn
8 = RUNU Fail On	28 = CCF On w/RunD
9 = RUNU Fail Off	29 = NTS Out On Dn
10 = CPU Out On Up	30 = NTS DN Off
11 = CCF On w/RunU	31 = SD Failed On
12 = NTS Out On Up	32 = CPU DT Off
12 = NTS UN Off	33 = NTS DT Off
14 = SU Failed On	34 = SDF Failed On
15 = CPU UT Off	35 = SD Failed Off
16 = NTS UT Off	36 = CCF On w/SD
17 = SUF Failed On	37 = SDF Fail Off
18 = SU Failed Off	38 = SDF On/W SD
19 = CCF On w/SU	39 = RUN Down

CkLevS: Check Level Start Status State	
0 = No Level Op	10 = Level Up
1 = CPU UN Off	11 = CPU DN Off
2 = MC Failed Off	12 = RUND Fail On
3 = SPD Fail Off	13 = RUND Fail Off
4 = RUNU Fail On	14 = CPU Out On Dn
5 = RUNU Fail Off	15 = NTS DN Off
6 = CPU Out On Up	16 = SD Failed Off
7 = NTS UN Off	17 = SDF Failed On
8 = SU Failed Off	18 = Level Down
9 = SUF Failed On	

CkDrS: Check Door Status State	
0 = No Door Op	21 = At Floor Chk
1 = Fire Door	22 = Front DPM
2 = Med Em Svc	23 = Rear DPM
3 = EAQ Door Open	24 = CodeBlue RCL
4 = EMP Wait DC	25 = CodeBlue Svc
5 = EMP Home DO	26 = VIP Recall
6 = EMP Home DC	27 = VIP Service
7 = EMP RCL Door	28 = Independent
8 = Stall Op Door	29 = Overload
9 = Hot Oil Door	30 = Elevator Off
10 = MedEm RCL @Fl	31 = Prison Svc
11 = MedEm RCL	32 = Push Button
12 = MedEm Wait Sw	33 = Attendant
13 = MedEm Svc Op	34 = Extended Door
14 = Hospital Svc	35 = Sabbath
15 = CB Ovr FS RCL	36 = RTL Door Cl
16 = CB Ovr FS Svc	37 = Lobby Recall
17 = F1 Recall @FL	38 = Car Elev Off
18 = F1 Recall	39 = HW Elev Off
19 = F1 Complete	40 = Automatic
20 = F1 or F2	

Front SD (FSd): Front Slowdown Flags	
Bit 0: (UC) Up Hall Call Slowdown	Bit 8: (IU) IR Up Hall Call Slowdown
Bit 1: (DC) Down Hall Call Slowdown	Bit 9: (ID) IR Down Hall Call Slowdown
Bit 2: (CC) Car Call Slowdown	Bit 10:
Bit 3:	Bit 11:
Bit 4: (UD) Up Call Door Open Request	Bit 12:
Bit 5: (DD) Down Call Door Open Request	Bit 13:
Bit 6: (CD) Car Call Door Open Request	Bit 14:
Bit 7:	Bit 15:

Rear SD (RSd): Rear Slowdown Flags	
Bit 0: (UC) Up Hall Call Slowdown	Bit 8: (IU) IR Up Hall Call Slowdown
Bit 1: (DC) Down Hall Call Slowdown	Bit 9: (ID) IR Down Hall Call Slowdown
Bit 2: (CC) Car Call Slowdown	Bit 10:
Bit 3:	Bit 11:
Bit 4: (UD) Up Call Door Open Request	Bit 12:
Bit 5: (DD) Down Call Door Open Request	Bit 13:
Bit 6: (CD) Car Call Door Open Request	Bit 14:
Bit 7:	Bit 15:

Motion Tmr: Motion Timer – Timer while the car is in or attempting motion. 100 msec

PAL Stat: Safety PAL Status	
Bit 0: PAL Fault	Bit 4: NTS Speed >= 75 fpm
Bit 1: Test Mode Jumper	Bit 5: NTS Speed >= 150 fpm
Bit 2: Rear Door Jumper	Bit 6: NTS Selector OK
Bit 3: NTS Fault	Bit 7: NTS Door Zone

Inspect Svc: Inspection Service	
0 = Invalid Inspection Input 1 = Car Top Inspection 2 = Machine Room Inspection 3 = Access Inspection 4 = In-Car Inspection	5 = Car Top Inspection Lock Bypass 6 = Car Top Inspection Gate Bypass 7 = Car Top Inspection Gate and Lock Bypass

% Load: Percent Load Calculated load value from the load weigher

6.3.1 Detailed Fault I/O Data Example

The data in the I/O block is read from left to right with the left-most bit being the MSB (Most Significant Bit) and the right-most bit being the LSB (Least Significant Bit). Each bit represents the state (on or off) of the corresponding I/O. The table below provides the HEX number and the associated Binary number.

CONVERSION TABLE

HEX	BINARY	DECIMAL
0	0 0 0 0	0
1	0 0 0 1	1
2	0 0 1 0	2
3	0 0 1 1	3
4	0 1 0 0	4
5	0 1 0 1	5
6	0 1 1 0	6
7	0 1 1 1	7
8	1 0 0 0	8
9	1 0 0 1	9
A	1 0 1 0	10
B	1 0 1 1	11
C	1 1 0 0	12
D	1 1 0 1	13
E	1 1 1 0	14
F	1 1 1 1	15

The example below shows how to interpret the detailed fault data for the I/O blocks. Given that IO0 is a value of “D1” hex. Place the “D” in the first hex value block and then the “1” in the second hex value block. Follow the red arrows below. Go to the next diagram to convert the inputs to binary.

HEX	BINARY
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

I/O BLOCK	IO0							
HEX VALUE	D				1			
BINARY Inputs 0=OFF 1=ON **Outputs 0=On 1=Off**								
I/O NAME	SDi	SD	SDF	SDFi	SUi	SU	SUFi	SUF

Place the Binary value for D (1101) in the first four bit locations and then place the binary value for 1 (0001) in the last four bit locations.

HEX	BINARY
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

I/O BLOCK	**IO0**							
HEX VALUE	**D**				**1**			
BINARY Inputs 0=OFF 1=ON **Outputs 0=On 1=Off**	**1**	**1**	**O**	**1**	**0**	**0**	**0**	1
I/O NAME	SDi	SD	SDF	SDFi	SUi	SU	SUFi	SUF

6.3.2 Detailed Fault I/O Data Form

I/O BLOCK	IO0							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	SDi	**SD**	SDFi	**SDF**	SUi	**SU**	SUFi	**SUF**

I/O BLOCK	IO1							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	TPH	TPL	LOS	LPS			RUNi	**RUN**

I/O BLOCK	IO2							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	TAD	TAU	BAD	BAU		TSD	HSS	GOV

I/O BLOCK	IO3							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	RLM-1	RLM	DLT-1	DLT	DLM-1	DLM	DLB-1	DLB

I/O BLOCK	IO4							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	DNi	DTi	UTi	UNi	RDOOR	TSTM	PALF	NTSF

I/O BLOCK	IO5							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	SP150	SP75	HWLRN	SELOK	DZp	DLled	DZled	ULled

I/O BLOCK	IO6							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	**STE**	CFLT	SPD	MTO	MCi	**MC**		

I/O BLOCK	IO7							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	ID	IU	INS	CST		L120B	L120	S10

I/O BLOCK	IO8							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	RGS-1	RGS	GS-1	GS	ACC	ICI	ICA	IEN

I/O BLOCK	IO9							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME			MRSW	MRID	MRIE	MRIU	MRIN	AUTO

I/O BLOCK	IOA							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME					GBP	LBP	IND	AD

I/O BLOCK	IOB							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	DTc	DNc	UTc	UNc	DLc	DZAc	DZc	ULc

I/O BLOCK	IOC							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME								

I/O BLOCK	IOD							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME								

I/O BLOCK	IOE							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	HWS	MRS	ALT	MES	FSX	BP	FS	FEP

I/O BLOCK	IOF							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME					EMP	EPT	EPS	HWS2

I/O BLOCK	IOG							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	HWSET	FFS	DETR	FSTi	CTS	EXT	DET	CSS

I/O BLOCK	IOH							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	**FSTP**	FST	CDL	DUL	FAN	LIG	IFB	IFL

I/O BLOCK	IOI							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME								

I/O BLOCK	IOJ							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME								

I/O BLOCK	IOK							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME								

I/O BLOCK	IOL							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME								

I/O BLOCK	IOM							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME								

I/O BLOCK	ION							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME								

I/O BLOCK	IOO							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME				SE	DCL	DOL	EE	DPM

I/O BLOCK	IOP							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME		RVD	REV	DO	HVD	DC	NUD	

I/O BLOCK	IOQ							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME		INDC*	ALM*	DOB	DCB	FS2C	FS2H	FS2OF

I/O BLOCK	IOR							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME	8C	7C	6C	5C	4C	3C	2C	1C

I/O BLOCK	IOS							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME				SER	DCLR	DOLR	EER	RPM

I/O BLOCK	IOT							
HEX VALUE								
BINARY Inputs 0=OFF 1=ON **Outputs 0=On** **1=Off**	**MSB**							**LSB**
I/O NAME		RVDR	REVR	DOR	HVDR	DCR	NUDR	

Note: I/O location depends on specific job.

Section 7 - Main CPU Adjustable Variables

This section includes all the CPU Adjustable Variables as well as the NTS Adjustable Variables, and the Velocity Slowdown Table.

Table 7-1: Car Motion					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
Acc DT Dist	0	120	24	inches	**Access DT Distance**. Distance from DT limit for the bottom access limit to be software activated. The controller counts pulses from the DT limit.
Acc UT Dist	0	120	24	inches	**Access UT Distance.** Distance from UT limit for the top access limit to be software activated. The controller counts pulses from the UT limit.
APS Dead Zone	0.1	0.5	0.25	inches	**APS Selector Dead Zone.** This is the distance that the car can move without calling for a relevel.
High Spd Ins	0	1	0	-	**High Speed Inspection.** Set to run car on high speed while on inspection.
Preopen Delay	0	3200	0.5	sec	**Preopen Delay.** Delay time to preopen the door starting from when the car reaches 3 inches from dead level and the door can safely be opened.
Short Fl hsf	0	1	0	-	**Short Floor hsf (high speed flag)** with no high speed valve. Controller makes a run but only with one valve. 0=HS Output 1=No HS Out
ShortFl Cntrl	0	7	0	-	**Short Floor Control.** 0 = Default is that the car relevels to the short floor. +1 = Car will make a run between very short floors instead of re- leveling. +2 = Short floor slowdown magnets between short floors (non-distance feedback). +4 = Mid Short floor slowdown magnets between short floors (non-distance feedback).

Table 7-1: Car Motion					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
Shrt Fl Dn SD	0	30	0	sec	**Short Floor Down Slowdown.** Hydro - There are no slow down magnets between short floors. This is a timer to run down high speed in seconds. If the timer is set to zero, controller will immediately level looking for the other zone. This parameter should only be used if second selector is utilized.
Shrt Fl Up SD	0	30	0	sec	**Short Floor Up Slowdown.** Hydro - There are no slow down magnets between short floors. This is a timer to run up high speed in seconds. If the timer is set to zero, controller will immediately level looking for the other zone. This parameter should only be used if second selector is utilized.
ShrtMidF DnSD	0	30	0	sec	**Short Mid Floor Down Slowdown.** Hydro - To be used in second and higher short floor. There are no slow down magnets between short floors. This is a timer to run down high speed in seconds. If the timer is set to zero, controller will immediately level looking for the other zone. This parameter should only be used if second selector is utilized.
ShrtMidF UpSD	0	30	0	sec	**Short Mid Floor Up Slowdown.** Hydro - To be used in second and higher short floor. There are no slow down magnets between short floors. This is a timer to run up high speed in seconds. If the timer is set to zero, controller will immediately level looking for the other zone. This parameter should only be used if second selector is utilized.
Soft Stop Tim	0.2	5	1	sec	**Soft Stop Time.** The time the motor is kept running after the valve is turned off.
StopOn PosCnt	0	1	0	-	**Stop On Position Count.** Enable to stop the elevator on position pulse count. Used only for tapeless application. This requires cons file setting to be enabled and readjustment of leveling sensors for it to work.

Table 7-2: Car Timers					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
AdvDoor EnTim	0	240	0	sec	**Advanced Door Enable Time.** Door open advance enable time to open the opposite door when operating with non-simultaneous doors. If there is a request for both doors, instead of waiting for the first open door to close completely before opening the second door, the second door starts to open after the advance door enable time while the first door is closing.
Att Buz Delay	0	900	60	sec	**Attendant Buzzer Delay.** Buzzer sounds if a hall call is entered and the car has not started moving within this delay time. This function is disabled when set to zero.
AttBuz On Tim	1	30	5	sec	**Attendant Buzzer On Time.** Cycle on timer to turn attendant buzzer on and off once attendant delay time function has been met (See ATTBuz Delay).
AttBuzOff Tim	0	30	0	sec	**Attendant Buzzer Off Time.** Cycle off time to turn attendant buzzer on and off once attendant delay time function has been met (See ATT Buz Delay). Buzzer will stay on continuously if this timer set to zero.
AutoSwg DODly	0	10	1	sec	**Auto Swing Door Open Delay.** Delay time to enable the auto swing door open output.
CB Door Time	1	3200	60	sec	**Code Blue Door Time.** Door time for Code Blue operation once elevator is at the emergency floor before EMS is energized
CC Dwell	1	60	2	sec	**Car Call Dwell.** Door open dwell time when answering a car call only.
Chime on CC T	0.1	2	0.2	sec	**Chime on Car Call Time.** Handicap buzzer on CC. Length of beep time.

Table 7-2: Car Timers					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
CL Pulse Time	0	320	5	sec	**Car Lantern Pulse Time**
Door Dly Time	0	1.5	0	sec	**Door Delay Time.** Delay time between DO and DC to switch when opening or closing the door.
Door Fail Tim	10	3200	25	sec	**Door Fail Time.** Time with power on the door without getting the door open limit.
EE Test Time	0	2	0.2	sec	**Electric Eye Test for Automatic Freight Doors**
EE Time-out	0	3200	40	sec	**Electric Eye Time-out Time.** If the Electric Eye or detector edge is on continuously for this amount of time, it will be flagged as timed-out and the controller will ignore the EE input and close the door on nudging. When set to zero, this feature is disabled.
F1 DC Tim-out	10	60	20	sec	**Fire phase 1 Door Close Time-out.** The amount of time it will take before the car doors start to close while the car is on Independent or Attendant service prior to recalling the elevator on Fire Phase 1.
Fault Time	0	10	2	sec	**Fault Time.** Delay time before allowing the car to run after a fault occurs.
FR DC Tim-out	1	3200	1	sec	**Freight Door Close Time-out.** The amount of time prior to closing the doors on automatic freight door operation.
FR Pwr DO Tim	0	30	1	sec	**Freight Door Power Door Open Time.** The amount of time to turn on the power door open relay on automatic freight door operation.

Table 7-2: Car Timers					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
Hall Lant Dly	0	15	0	sec	**Hall Lantern Delay Time.** By default, when set to zero, hall lanterns go off as soon as the car starts to slow down to arrive at a floor. When set to a nonzero value, this will be used as a timer for the hall lantern to go off prior to arriving at the floor. For example, if set to three seconds, hall lanterns will turn on approximately three seconds before the car arrives to the floor regardless of the speed of the car. We recommend to set this parameter for high speed cars.
Handicap Dwll	1	120	25	sec	**Handicap Dwell.** Extended door time from pressing the ED button in the car.
HC Dwell	1	60	4	sec	**Hall Call Dwell.** Door open dwell time when answering a hall call or both a hall and car call.
HEOF AutoRstT	0	3200	0	sec	**HEOF Auto Reset Time.** When the hall elevator off function is activated from the HEOF input being turned on, the car will be taken out of service until the input is turned off. Once the input is off, the car will stay out of service until the auto reset timer times out.
IND Rcl2Lby T	10	60	20	sec	**Independent Recall to Lobby Timer.** Recall delay for car in Independent when 'IND Rcl to Lby ' is set.
Lant Off Time	0	2	0.2	sec	**Lantern Off Time.** Used for double stroke gongs. The lantern off time is the delay time after the lantern first turns on until it turns off.
Lant On Time	0	2	0.7	sec	**Lantern On Time.** Used for double stroke gongs. The lantern will turn on, turn off and then turn on again. The Lantern on time is the delay time from when the lantern first turns on until it turns on the second time.

Table 7-2: Car Timers					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
Lobby Dwell	1	60	5	sec	**Lobby Dwell.** Door open dwell time for a car at the lobby.
Lt/Fan Time	30	3200	360	sec	**Generator Run/Cab Light/Fan Time.** Length of time to leave the generator running or the Cab light and fan on after there is no longer a demand to run.
ManDo Buz Dly	0	900	0	sec	**Manual Door Buzzer Delay.** On a car with manual doors, sound the buzzer if the door is left open and a call is entered after this time delay. This function is disabled when set to zero.
Mx Door Hld T	0	3200	0	sec	**Maximum Door Hold Time.** Maximum time to be allowed when the extended dwelling input (ED) is pressed. If set to zero, there will be no limit on how long the car will be held on ED. When set to a value, this will be the maximum allowed time for the car to be held by ED input, then car will go on regular dwelling timers (car or hall call dwelling timers)
NonInterfer T	1	60	2	sec	**Non-Interference Time.** Time between when you stop and when you can run again.
Nudging Time	20	3200	60	sec	**Nudging Time.** Delay time for a door to be held before going into nudging.
OSER BtwFlr T	0	900	60	sec	**Out of Service Between Floors Time.** Timer to control the OSERL output. Used with OSERL Control option 1 for 'between floors for over a minute' set to 2.
OSER NoCall T	0	900	600	sec	**Out of Service Not Responding to Calls Time.** Timer to control the OSERL output. Used with OSERL Control option 1 for 'not responding to calls' set to 1.

Table 7-2: Car Timers					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
OSER SSopen T	0	900	60	sec	**Out of Service Safety String Open Time.** Time to control the OSERL output. Used with OSERL control option 1 for ' SS open' set to 4.
Pas Chime Tim	0.2	2	0.5	sec	**Floor Passing Chime Time.** Length of time the floor passing chime will sound when a floor is passed.
RC Pick Delay	0	7	0	sec	**Retiring Cam Pick Delay.** The amount of delay time for the retiring cam to pick once the doors are closed.
RCDrop Fail T	0.5	5.5	0.5	sec	**Retiring Cam Drop Fail Time.** Retiring cam drop fail safe delay for manual doors. Delay time when car arrives to the floor before it drops the output.
Relev Dly Tim	0	2	1	sec	**Relevel Delay Time.** The amount of delay time before the car will re-level. This would be used for jobs that have excessive rope stretch.
Reset Time	0	10	5	sec	**Reset Time.** Delay time in the reset mode before allowing the car to run.
RTL Dwell Tim	1	60	8	sec	**Return To Lobby Dwell Time.** If Return To Lobby is set to cycle doors at the lobby, use this timer to control how long they will dwell before closing in return to lobby mode.
Run Cycle Tim	0	300	0	hours	**Run Cycle Time.** Used to initiate a run when the elevator has been sitting idle for a period of time. Used for jobs that have high friction bearing machines.
Sabb Buzz Dly	1	10	5	sec	**Sabbath Door Buzzer Timer** (prior to doors closing). Jobs where the light curtain is disabled in Sabbath operation require a buzzer prior to the door closing sequence. This timer warns people the light curtains are about to be enabled (output name: SABUZ)

Table 7-2: Car Timers					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
Sabbath Dwell	1	60	10	sec	**Sabbath Door Dwell Time.** Car will wait this amount of time on every floor for Sabbath operation except at the lobby where it will follow the handicap dwell door time (separate timer).
Sec Dis Time	0	3200	0	sec	**Security Disable Time.** This timer is used with a security disable input button at the lobby. When the button is pressed, the car call security is disabled for the time value set from this parameter.
Shrt Dwll Tim	0	60	1	sec	**Short Door Dwell Time.** Door open dwell time when the doors re-open on a door open button, electric eye, safety edge or door hold button.
Shutdn Alrm T	5	1500	120	sec	**Shutdown Alarm Timer.**
Stall Time	20	3200	60	sec	**Stall Time.** Maximum time a run is requested but the car is not moving.
VIP Door Time	1	3200	20	sec	**VIP Door Time.** The amount of time the car will park at the VIP recall floor prior to going to automatic service.
Y Delta Time	1	5	1.5	sec	**Y-Delta Time.** Transfer time to change motor from Y start to Delta run. Timer also used for DEL or MCX turn on time with controllers without y-delta starters.

Table 7-3: Car Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
2nd Risr Lant	0	1	0	-	**Second Riser Lantern.** Turn on cab lantern only when IR call answered. If this parameter is set cab lanterns will only turn on when answering second riser calls.

Table 7-3: Car Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
Arrival Lant	0	1	0	-	**Arrival Lantern.** 1 = Activate lant/gong without onward call
Behnd CC Canc	0	1	0	-	**Behind Car Call Cancel.** When enabled the elevator will not latch any car calls in the opposite direction of travel.
Cab Lant Ctrl	0	2	0	-	**Cab Lantern Control.** The default is for the cab lanterns to go off when the door is fully open. This allows the cab lanterns to go off earlier. +1 = Ring cab lanterns as soon as door starts to open +2 = Ring the cab lanterns when the door reaches DPM point.
ClGate NoPref	0	1	0	-	**Close Gate (Swing Door) W**hen No Onward **Preference.** The gate on a swing door normally stays open until a call is placed. This bit causes the gate to close while the car is sitting at the floor.
COP/Remote CC	0	7	0	-	**COP/Remote Car Call Select.** 0 = Both COP and Remote Car Call Station used to enter calls. 1 = Separate: COP only or Remote CC only used to enter car calls. +2 = C-R: Car calls entered on the COP sets the acknowledgment light on the Remote station. +4 = R-C: Car calls entered on the Remote station sets the acknowledgment light on the COP.
COP/RM Dis	0	14	0	-	**COP/Remote Disable.** +1 = Up Direction Disable COP, +2 = Down Direction Disable COP, +4 = Up Direction Disable Remote Panel, +8 = Down Direction Disable Remote Panel
DCB Canc Dwll	0	1	0	-	**Door Close Button Cancel Dwell Time.** When this parameter is set to 1 we do not allow DCB to cancel the door dwell time. This basically disables DCB to shorten door dwell time.

Table 7-3: Car Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
DO No ActvDOL	0	1	0	-	**Door Open Output When No Active DOL.** When the door is fully open and hits the DOL, the DO is turned off and stays off even if the door drifts off of DOL. With this bit set, the DO output will turn on any time the DOL is lost.
DOB Over Nudg	0	1	0	-	**DOB Over Nudging.** If set, the door open button will open the door when the door is nudging closed.
DoorOpenL Ctl	0	16	0	-	**Door Open Light Control.** The way 'DoorOpenL Ctrl' parameter works is as below: +1 = Set OPENL on phase 1 completed +2 = Set OPENL on RTL return to lobby +4 = Set OPENL on emp returned home with doors open, also sets OPENL on emp and selected to run +8 = Set OPENL on when Lobby Floor +16 = Set OPENL all the time
Double Stroke	0	1	1	-	**Double Stroke Gong Selection.** Select 1 or 2 gongs for down hall calls. 0 = 1 gong 1 = 2 gongs.
EE Canc Dwell	0	1	0	-	**Electric Eye Cancel Dwell.** By turning this parameter on you disable the short dwelling door time from the electric eye signal (EE). By default the short dwelling time is enabled.
Handcap T Flr	Bottom Floor	Top Floor	1	floor	**Handicap Time Floor.** If the job is configured to have an extended door input at a hall station, this parameter configures the floor number when parameter will change door timing. It will operate for EDHL only
HB/PI DisNoFl	0	1	0	-	**Handicap Buzzer/PI Display Control.** When set to 1, do not sound HB or update floor PI when passing an invalid floor.

Table 7-3: Car Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
Invert CLF	0	1	1	-	**Invert The Logic For The Car Light Fan.** If set to 0 car light fan is normally open. If set to 1 car light fan is normally closed.
Invert LOS	0	1	0	-	**Invert Low Oil Switch** (LOS)
Invert LPS	0	1	0	-	**Invert Low Pressure Switch** (LPS)
Invert TPL	0	1	0	-	**Invert Temperature Low Switch** (TPL)
ISER Outp Ctl	0	7	0	-	**Invert In Service Output.** 1 = The in service light output is turned off when the car is in service instead of turned on. 2 = The ISER output will function as an elevator in use light. 4 = This output functions as out of service from a shutdown and does not include independent, inspection or recovery mode.
Lant Pref Dly	0	3	0	sec	**Lantern Preference Change Delay.** When the direction preference for the elevator changes, we clear the lanterns and wait for this amount of time before the lanterns are turned on again.
LbyLan NCU/IR	0	1	0	-	**Lobby Lantern NCU/IR.** 0 = Light the lanterns on IR service at each floor. The lantern will not light at the lobby if next up operation is selected because the IR car will not be selected to be the next up car. 1 = The IR car will light the lantern at all the floors and the lobby even with the system on next up operation.
Min Door T En	0	1	0	-	**Minimum Door Time Enable.** 0 = Disabled 1 = The minimum door time for a car call or a hall call is set from the car or hall call dwell timers and cannot be shortened by the Door Close button.

Table 7-3: Car Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
NCU Lant Ctrl	0	3	0	-	**Next Up Direction Lantern Control.** +1 = Turn off hall lantern after next up time. +2 = Turn off cab lantern after next up time.
NCU Pref Ctrl	0	1	0	-	**Next Up Preference Control.** When set allows direction preference to change before the door starts to close after the next up door time.
NoHC Dor Reop	0	3	0	-	**No Hall Call Button Door Reopen.** When set do not reopen the door from an at floor hall call.
Non-Simul Dor	0	2	0	-	**Non-Simultaneous Doors.** 0 = Both front and rear doors will open at the same time if there is a demand at both the front and rear openings. 1 = The front doors will open first before the rear doors open if there is a demand to open. 2 = The rear doors will open first before the front doors open if there is a demand to open.
Nudg No Calls	0	1	0	-	**Nudge with No Calls.** If set the doors will close on nudging even if the elevator has no onward calls.
Nudge Dis Ctl	0	7	0	-	**Nudging Disable Control.** +1 = Do not turn on the NUD output when doors are in nudging close mode, basically you are disabling nudging output. +2 = When doors are in nudging close mode and SE input is ON, keep doors open and also keep FB/NB output latched. +4 = Sound the nudging buzzer but do not close the doors on nudging.

Table 7-3: Car Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
OSERL OutCtl1	0	7	0	-	**Out of Service Light Control.** +1 = Not responding to calls; +2 = Between floors for over a minute +4 = SS open. When this parameter as well as OSERL OutCtrl 2 is set to zero, the output will just operate as an Out of service light.
OSERL OutCtl2	0	1	0	-	**Out of Service Light Control.** + 1= Alarm. When this parameter as well as OSERL OutCtrl 2 is set to zero, the output will just operate as an Out of service light.
Preopen Doors	0	3	0	-	**Preopen Doors.** +1 = Will enable preopening of the doors. If retiring cam used with auto door, RCM will also turn on at the preopening point. +2 = Exclude short floors.
RCF Output En	0	1	0	-	**Retiring Cam for Freight Output Enable.** When you turn on this parameter a retiring cam output will be created in the controller, RCF, that mirrors the signal from RCM. You need to reboot CPU every time you change this parameter for change to take effect.
RCM Control	0	3	0	-	**Retiring Cam Control.** 1 = Hold the retiring cam up at the floor if there is no pilot to open the door (manual doors). The retiring cam will drop after 5 minutes. 2 = RCM output turns on when DZ hit to advance the RCM ahead of the door open (auto door with retiring cam) otherwise the default is that RCM turns on when dead level. If preopening is set RCM and DO turn on when DZ hit.

Table 7-4: Service Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
Acc Door Cls	0	1	0	-	**Access Door Close.** When on access operation the car runs with the Door Lock and GS open. By turning this parameter on, the car needs to have the gate switch signal ON in order to run. It should be used on hoistways where the car door will physically hit something if moved on access operation
Access Bot Fl	Bottom Floor	Top Floor	1	floor	**Access Bottom Floor.** Floor for bottom access
Access Top Fl	Bottom Floor	Top Floor	2	floor	**Access Top Floor.** Floor for bottom access
Att Buz ctrl	0	1	1	-	**Attendant Buzzer Control.** 0 = Hall Calls only 1 = Hall Calls and Car Calls
Att CC frm HC	0	1	0	-	**Attendant Car Call from Hall Call.** 1 = When the car is on Attendant service the respective car call will register when a hall call is registered.
CCPBS Grp Sec	0	1	0	-	**CCPBS On Group Car Call Security.** This variable enables Car Call Push Button Security with group car call lockout switches. The configuration file (CONS) setting for security type and car call push button security must also be set.
CCS on Sabb	0	1	0	-	**Car Call Security on Sabbath.** When this parameter is enabled, sabbath car calls will not latch on floors that have been secured using car call lockouts security
CEOF Cntrl 2	0	15	0	-	**Car Elevator Off Options 2:** +1= Keep doors Closed (do not cycle on reversal), +2 = Do not blink Elevator Off Light, +4 = Elevator Off Auto Reset With Timer, +8 = Enable Elevator Off Light to indicate the car finished recall of elevator off mode

Table 7-4: Service Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
CEOF Control	0	7	0	-	**Car Elevator Off Options.** +1 = Recall +2 = Keep Door Open +4 = Turn off CLF
DOB Over Sec	0	5	0	-	**DOB Override Security.** This parameter allows the car to open the door at a secured floor when the car is secured from the following conditions: 1 = The DOB will be allowed to open the door at any secured floor. 2 = The DOB can open the door at floors secured from group security floor mask table. 3 = Allows the DOB to open the front door at floors secured by car call lockout security (switches or card reader). 4 = Allows the DOB to open the rear door at floors secured from rear car call lockout security. 5 = Allows the DOB to open the door at floors locked out by group security floor mask tables when the car is also on independent.
Door Hold Msg	0	1	0	-	**Door Hold Message.** Set to enable Extended Door Time Message Indicator in CE Driver board
ElevOff RetFl	0	Top Floor	0	floor	**Elevator Off Return Floor.** Related to HEOF input. This setting is to be used in conjunction with 'Elev Off Ctl = +1'. If the elevator is configured to recall, this parameter will determine what floor the car should be recalled to in elevator off mode. if Parameter is set to zero, car will be returned to the Lobby.

Table 7-4: Service Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
Emer Dispatch	0	7	0	-	**Emergency Dispatch.** This parameter is applied to both the car that is selected as the dispatcher and also the non-dispatcher cars. **Dispatcher Car** = If set to 1 and hall call power lost, the dispatcher car will set down hall calls above the lobby and up hall call at and below the lobby. **Non-Dispatcher Cars** = If set to a 1, and communications is lost to the dispatcher car, the car will dispatch itself to down hall calls above the lobby and up hall calls below the lobby. The front hall call and rear hall call bits settings are only used for the dispatcher car and when set, if communication is lost to a particular hall call board, hall calls are set for the affected floors.
HC Ack Buz	0	1	0	-	**HC Acknowledge Attendant Buzzer.** Buzz once (for one sec) every time a call comes in. 0 = Disable 1 = Enable
HEOF Cntrl 2	0	15	0	-	**Hall Elevator Off Options 2.** +1= Keep doors Closed (do not cycle) +2 = Do not blink HEOFL, +4 = Auto Reset when input off and timer expires. +8 = Use HEOFL to indicate car finished recall.
HEOF Cntrl 3	0	1	0	-	**Hall Elevator Off Options 3.** +1 = Only activate if doors are closed. See other Hall Elevator Off Options as well.
HEOF Control	0	7	0	-	**Hall Elevator Off Control.** +1 = Recall car when key switch activated. +2 = Keep door open at the shutdown floor. +4 = Allow the cab light and fan to time-out even though the door is open but the car is shut down.

Table 7-4: Service Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
HEOF Override	0	3	0	-	**Hall Elevator off Override.** 1= Override Independent Service after timer expires and then recall the car. 2 = Override Attendant Service after timer expires and then recall the car.
IND DoorCl CC	0	1	0	-	**Independent Door Close Car Call.** Enable to close the doors from a car call when the elevator is on Independent.
Ind Over Sec	0	7	0	-	**Independent Overrides Security.** 1 = Allow independent service to override security car call lockouts. 2 = Override Security Floor Mask configurations. 4 = Override remote car call station.
IND Rcl 2 Lby	0	1	0	-	**Independent Recall to Lobby.** Forces the car to recall to the lobby when on independent and no calls are made
Ins Door Clos	0	1	0	-	**Inspection Door Close.** 1 = The door close output will turn on when the up or down inspection run button is pressed.
INSEC Out Ctl	0	1	0	-	**INSEC - In Security Output Invert.** Output located on the car call security Board. 0 = Disabled 1 = Enabled
Lobby Floor	Bottom Floor	Top Floor	1	floor	**Lobby Floor.**
LW Anti-nuisn	0	50	0	count	**Load Weighing Anti-Nuisance.** Set to the maximum number of car calls that can been entered before all car calls are cancelled without the load switch LWA input on. Once the load switch is on, all car calls will stay latched. 0 = Disabled.

Table 7-4: Service Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
Manual Dir En	0	4	0	-	**Attendant Manual Direction Enable.** 1 = Works in conjunction with the ATTUP and ATTDN to determine direction of travel. 2 = Reads the ATTUP input and use it as a START button. 4 = Will not allow car calls to be registered until the door is fully closed.
No Psg RunCnt	0	10	0	count	**No Passenger Run Count.** When set to a number other than zero, the car call antinuisance feature is activated. This count is the number of times the car will run from a car call without detecting that a passenger has broken the detector edge. Once the count is reached, all remaining car calls will be cancelled.
PI Serv Msg 1	0	Max Service	0	Svc #	**PI Service Message 1.** When the car service matches this number, user message 1 is sent to the PI display. This will correspond to user PI display message 17.
PI Serv Msg 2	0	Max Service	0	Svc #	**PI Service Message 2.** When the car service matches this number, user message 2 is sent to the PI display. This will correspond to user PI display message 18
PI Serv Msg 3	0	Max Service	0	Svc #	**Service Message 3 Display.** Used for Custom messages. Need to be programmed by CE electronics and GAL for special messages
Retrn To Lbby	0	7	0	-	**Return to Lobby Option.** +1 = Cycle door at lobby, +2 = Cancel car calls when activated, +4 = Cycle door on reversal.

Table 7-4: Service Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
RTL Door Sel	0	2	0	-	**Return To Lobby Door Select.** This variable allow you to specify door open type on 'Return to Lobby' service. 0 = The car will open only front door 1 = The car will open only rear doors 2 = The car will open both front and rear
Sabb Dis Ctl	0	7	0	-	**Sabbath Disable Control Variable.** - Add all numbers of the features you want to disable while in Sabbath operation: +1 = PIs, +2 = Lanterns, +4 = Directional arrows
Sabb En Ctl	0	7	0	-	**Sabbath Enable Control Variable.** **0 = D**isables all options. +1 = Allow IR momentarily to override Sabbath operation. +2 = Lobby Dwell time in Sabbath follows handicap door dwell time instead of the lobby dwell time. +4 = Wait until car is at lobby to turn off Sabbath operation
Sabb En Ctl2	0	7	0	-	**Sabbath Enable control:** +1 = When the car is placed on Sabbath operation, it waits to go to the lobby before switching to Sabbath Operation, +2 = Uses the cab lanterns as directional arrows. This allows people on the hall ways to know direction of travel for the elevator
Sabbath Mode	0	1	0	-	**Sabbath Collective Mode.** 0 = Down collective car calls 1 = Up collective car calls.

Table 7-4: Service Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
Sec ReasignCC	0	3	0	-	**Security Reassign Car Call.** Re-assign secured car call to opposite door. Used with security configuration cons.dat file setting: cons[SecFlCfg] = 2. 0 = Disabled, +1 = In case front CC are secured, reassign them as rear, +2 = In case rear CC are secured, reassign them as front.
Sec Recall 2	0	2	0	-	**Security Recall Control 2.** 0 = Out of group on first recall. 1 = Out of group on all recalls. 2 = No out of group recalls.
Security Flr	0	Top Floor	1	floor	**Security Floor.** The security recall floor. This is the floor where the security guard would be stationed. This floor would not be locked out when on security.
Security Rcl	0	15	0	-	**Security Recall Selection.** 0 = No: No Recall, +1 = Recall to Security Floor on activation of security. +2 = Cycle front door once recalled to the Security Floor. +4 = Cycle rear door once recalled to the Security Floor. +8 = Always recall to security floor after each run.
SR CCSec Dir	0	2	0	-	**Second Riser Car Call Security by Direction.** Allows calls in the one direction but disables them in the other. 1 = Allow calls in the up direction (above the floor) but disable them going down, 2 = Allow calls in the down direction (below the floor) but disable then going up.

Table 7-4: Service Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
Stop At Lobby	0	15	0	-	**Stop at Lobby.** 0 = do not automatically stop at lobby, +1 = The car will stop at the lobby when the car is traveling up and the car is below the lobby floor. +2 = The car will stop at the lobby when the car is traveling down and the car is above the lobby floor. +3 = The car will stop at the lobby when traveling in either direction. +4 = Stop at lobby with any onward call past the lobby. +8 = Recall to the lobby
Svc Light Ctl	0	Max Service	0	Svc #	**Service Light Control.** When the configuration file parameter cons[servOUT] is set to 1 or 2, the service output SERVO will turn on when the car service matches the car service number in this parameter.
VIP Lant Ctrl	0	3	0	-	**VIP lantern Control.** 0 = Do not ring lanterns on VIP, 1 = Ring up or down lantern at VIP floor when the door is fully open, 2 = Ring up or down lantern at VIP floor before the door is opened.
VIP multicall	0	1	0	-	**VIP Multiple Calls.** 0 = VIP feature works as single call 1 = The car will be allowed to make multiple VIP calls until no more car calls are entered and until the VIP sequence time-out timer is expired.
VIP Operation	0	3	0	-	**VIP (Priority Call) Operation.** +1 = Cancel hall call if no cars available for VIP call. +2 = Cancel car call upon initiation of being selected as the VIP car.

Table 7-5: Emergency Services					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
ALT Fire Flr	Bottom Floor	Top Floor	2	floor	**Alternate Fire Floor.**
AltRcl FS Off	0	3	0	-	**Alternate Floor Recall Fire Service Off.** +1 = Have the elevator recall back to the alternate floor when the lobby fire switch is turned to the off position and car recalled to the main fire floor. +2 = Allows the car to return to the alternate landing even if sensor was reset
Aux. Fire Sw	0	1	0	-	**Auxiliary Fire Switch.** When set, the controller expects an auxiliary hall fire switch to be used.
CB Buzz ctrl	0	1	0	-	**Code blue Buzzer Control.** 1 = Turn buzzer on while in code blue recall
CB over FS	0	1	0	-	**Code Blue over Fire Service.** +1 Enable to have code blue prevent car from recalling in FS
CB Over Ind	0	1	0		**Code Blue Override Independent.** 1 = Wait for timer to expire and then recall the car
CB SingleCall	0	1	0	-	**Code Blue Single Car Call.** 0 = Car on Code Blue operation allows multiple car calls on Hospital Service. 1 = Allow only a single call once place on Hospital Service.
ClDoor F1 Rcl	0	1	0	-	**Close Door After Fire phase 1 Recall.** 1 = Elevator will close the doors after phase 1 recall and reopen from a hall call (Denver Fire service amendment)
Em Pwr Floor	Bottom Floor	Top Floor	1	floor	**Emergency Power Recall Floor.**

Table 7-5: Emergency Services					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
EMS/HSafterCB	0	1	0	-	**EMS (Emergency Medical Service)/HS(Hospital Service) after Code Blue.** This is a Code Blue bypass control. 0 = Car goes from Auto to Hospital service, bypassing the code blue sequence, when EMS switch is turned on. 1 = Hospital service only activates after a code blue recall.
F1 DC Tim-out	10	60	20	sec	**Fire Phase 1 Door Close Time-out.** The amount of time it will take before the car doors start to close while the car is on Independent or Attendant service prior to recalling the elevator on Fire Phase 1.
F1 Door Dwell	1	90	60	sec	**Fire Phase 1 Door Dwell time.** Fire Service Phase one complete dwell time when 'Cl Door F1 Rcl' parameter is set. (Denver FS phase1 dwell time)
F2 STP Recovr	0	1	0	-	**Fire Service Phase 2 Recovery.** After special device that prevents the car from running up has been activated. These devices are the Low Oil Switch, Hot Oil Switch, and battery backup lowering. Hydro Only
F2DOB ovr DCB	0	1	0	-	**Fire Phase 2 Door Open Button Overrides the Door Close Button.** 1 = Allows Door Open Button will override Door Close Button on phase 2.
Fire Main Flr	Bottom Floor	Top Floor	1	floor	**Fire Main Floor**
Fire Option	0	3	0	-	**Fire Option.** Recall Reset Selection: 0 = Reset fire service phase 1 after hall switch is turned off and car returns to fire floor. 1 = Reset phase 1 immediately after hall switch is turned off.

Table 7-5: Emergency Services					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
Fire Option 2	0	3	1	-	**Fire Option 2.** +1 = Initiate a phase 2 recall only when the door is open (Chicago fire). +2 = Disable flashing FL on phase 2 (Chicago fire).
Fire Sw Loc	0	4	0	-	**Fire Switch Location.** Location of fire hall switch. 0 = Main/Alt Front, 1 = Main Rear/Alt Front, 2 = Main Front/Alt Rear, 3 = Main/Alt Rear, 4 = Set from Dispatcher Car selection.
FireL Em Pwr	0	1	1	-	**Fire Light Control During Emergency Power.** Enable to cause the fire light FL to turn off if the car is not selected to run.
FireL OTS Ret	0	1	0	-	**Fire light Control for Out of Service Cars.** Enabling this parameter will turn off the fire light in the event the car cannot recall for being out of service. It could be in Earthquake, low oil, stall, etc.
Flash CBLight	0	1	0	-	**Flash Code Blue Light.** When set to 1 the code blue light inside the car station will flash.
Hall Fire Lt	0	4	0	-	**Hall Fire Light.** The variable controls the FLH output on the controller so it can be used for a hall fire light or a fire security override. The default operation is that FLH turns on while the car is on phase 1 or phase 2 fire service. +1 = On while phase 1 is in effect, +2 = Flash FLH at 1 second intervals while activated, +4 = FLH follows the Fire Light (FL) logic.
Hoistw FirRet	0	1	0	-	**Hoistway Fire Sensor Return Floor Selection.** 0 = Return to the Main fire floor, 1 = Return to the Alternate fire floor.

Table 7-5: Emergency Services					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
HSV DoorCl CC	0	1	0	-	**Hospital Service Close door Car Call.** Close the doors from a car call when the car is on Hospital Service.
HWS2 Fire Loc	0	1	50	-	**Fire Service Hoistway HWS2 Sensor Location .** 0 = Same HW 1 = Separate hoistway
HWS2 Fire Ret	0	1	0	-	**Second Hoistway Fire Service Sensor Return Option.** 0 = Main recall floor 1 = Alternate recall floor.
MachRm FirRet	0	1	0	-	**Machine Room Fire Sensor Return Floor Selection.** 0 = Return to the Main fire floor, 1 = Return to the Alternate fire floor.
Med CCS Ovrrd	0	1	0	-	**Medical Service Override Car Call Security.** 1 = Medical service car will override car call security.
Med Em Floor	Bottom Floor	Top Floor	1	floor	**Medical Emergency Return floor.**
Med Em Sw Loc	0	1	0	-	**Medical Emergency Switch Location.** Selects the switch location for the front or rear door. 0 = Front 1 = Rear
MedDoorReopen	0	2	0	-	**Medical service Door Reopen.** When car is on medical Service, this parameter determines the door open sequence for re-open: 0 = Stop, 1 = Constant pressure, 2 = Momentary to DOL
MedInd Ovrrid	0	2	0	-	**Medical Service Overrides Independent Control:** 0 = Immediate, 1 = After Delay, 2 = No override

Table 7-5: Emergency Services					
Field Variable	**Min**	**Max**	**Initial**	**Units**	
Rcl frm F1Alt	0	1	0	-	**Recall From Fire Phase 1 Alternate floor.** If the car has returned to the alternate floor from a smoke sensor and when two fire hall switch are used, both must be on to recall the car from the alternate floor to the main floor. 1 = The car will recall from the alternate floor to the main floor from either hall fire key switch. (set to 1 for Mass. fire service.)
Recall Reset	0	3	0	-	**Recall Reset Selection.** 0 = Reset fire service phase 1 after hall switch cycled through reset and turned off and car returns to fire floor. 1 = Reset phase 1 immediately after hall switch is cycled through reset and then turned off. 2 = Reset fire service without cycling fire switch through reset but turned off only if the smoke sensors were not activated.
Recall Reset2	0	1	0	-	**Recall Reset Selection 2:** 0 = Reset fire service phase 1 with car at any floor. 1 = Reset phase 1 only if car at fire recall floor.

Table 7-6: Group Dispatch					
Field Variable	**Min**	**Max**	**Initial**		
Alt Lbby Flr	1	Top Floor	1		**Alternate Lobby Floor.** Galaxy groups can be configured to have an alternate lobby. Switching between regular lobby and alternate lobby can be done by means of liftnet, Galileo, controller input or service timer. Once the alternate lobby is enabled, controllers will use this landing as the lobby floor for all dispatching purposes.
Alt Parkin Fl	1	Top Floor	1		**Alternate Parking Floor.** Normally, during parking operation, one elevator is always parked at the lobby. With alternate parking floor operation, a free car is parked at the alternate parking floor instead of the lobby floor. This operation is controlled by an input or from a service timer.

Table 7-6: Group Dispatch					
Field Variable	**Min**	**Max**	**Initial**		
Asgn ParkF DO	0	1	0		**Assign Parking Floor with Door Open.** By default, we only park cars that have the doors closed after a time delay. This parameters allows to re-assign parking to cars with doors open as long as they do not have a direction to run.
AutoSVC tot T	10	3200	120		**Auto Service Time Out Time.** This time, in seconds, is used in conjunction with 'Auto SVC tm-out' and is the amount of time that the group will wait before setting a 'not moving/responding' car as timed out.
AutoSVC T-out	0	1	0		**Auto Service Time-out.** 0 = Disable, 1 = Enable When this parameter is enabled and 'Auto SVC tot TM' parameter time is set accordingly, each car is checked for answering assigned hall calls. If the car does not move to answer calls in the required time, it is put into AST service. Hall calls that are assigned to that car are reassigned to working cars in the group. The group then periodically assigns hall calls to the AST car to verify if it can be put back into the group for normal operation.
Dis Opp HC T	10	30	10		**Disable Opposite Hall Call Time.** Specify amount of time the opposite hall call will be disabled.
Disabl Opp HC	0	15	0		**Disable Opposite Hall Call after initial hall call is entered.** When the first up or down hall call is registered, disable opposite call for the time set; +1 = Front HC riser, +2 = Rear HC riser, +4 = IR front HC riser,+8 = IR rear HC riser
DnPeak Contrl	0	1	0		**Down Peak Control** 0 = Normal down peak 1 = Heavy down peak

Table 7-6: Group Dispatch					
Field Variable	**Min**	**Max**	**Initial**		
DnPk Trig Cnt	1	100	12		**Down Peak Trigger Count.** Number of down hall calls above the lobby that are set within the down peak trigger time to place the system on down peak operation.
DnPk Trig Tim	0	3200	60		**Down Peak Trigger Time.** The time interval to count the number of down hall calls above the lobby to activate down peak operation.
DownPeak Pool	0	Number Cars	0		**Down Peak Pool.** Number of cars to be utilized for down peak.
DownPeak Time	0	3200	180		**Down Peak Duration Time.** The duration time for down peak operation once down peak is activated.
ETA Co CC Tim	0	60	15		E**TA Coincident Car Call Time.** Hall calls will be assigned to the car with the coincident car call unless the car without the coincident car call can reach the call faster then ETA Coincident Car Call Time.
ETA Min Time	0	60	6		**ETA Minimum Time.** Minimum time for a hall call to be assigned to a new car, the difference in ETA must be greater than the ETA Minimum Time.
Grp TimerPark	0	Number Cars	0		**Group Service Timer Park Cars.** This is the number of parking cars when parking is set from the Service Activation Timer for Group parking.
Lobby Floor	Bottom Floor	Top Floor	1		**Lobby Floor.**
Lobby Req Ctl	0	1	0		**Lobby Request Control.** If the lobby request variable is set to non-zero, then that is how many cars are requested to the lobby all the time. When this flag is set to 1, the lobby request is only used when next up is active. Next Up can be active all the time, from a dedicated input or from Up Peak.

Table 7-6: Group Dispatch					
Field Variable	**Min**	**Max**	**Initial**		
Lobby Request	0	Number Cars	0		**Lobby Request.** Number of Cars Requested to the Lobby floor. Used with Next Car Up operation.
Next Car Up	0	7	0		**Next Car Up.** Set to 1 or 2 will activate the Next Car Up operation. 1 = The next up car will open its door at the lobby and keep it open. The car is allowed to leave the floor after the Lobby Dwell time expires but will remain at the floor with the door open until an onward call is assigned to it. 2 = The next up car will close its door after the Lobby Dwell time expires and go off of next up but will remain at the lobby. An up hall call at the lobby will cause the car to open its door and go on next up. 4 = Next up is activated on Up Peak detection only. Next up can also be activated from an input.
Park Dly Time	0	120	8		**Parking Delay Time.** Time delay an idle car waits before being parked.
Parking	0	Number Cars	1		**Number of Cars to Park.** One car is parked at the lobby. The remaining cars are parked at the most used floors of the building. If set to zero, no cars are parked.
Parking Flr 1	0	Top Floor	0		**Parking Floor 1.** Floor to park the idle car. If set to zero, the group will use number of hall call history to decide where to park the car. The parking variable must be set to at least 1 for this function to work. See also Parking Type.
Parking Flr 2	0	Top Floor	0		**Parking Floor 2.** Floor to park the idle car. If set to zero, the group will use number of hall call history to decide where to park the car. The parking variable must be set to at least 1 for this function to work. See also Parking Type.

Table 7-6: Group Dispatch					
Field Variable	**Min**	**Max**	**Initial**		
Parking Flr 3	0	Top Floor	0		**Parking Floor 3.** Floor to park the idle car. If set to zero, the group will use number of hall call history to decide where to park the car. The parking variable must be set to at least 1 for this function to work. See also Parking Type.
Parking Flr 4	0	Top Floor	0		**Parking Floor 4.** Floor to park the idle car. If set to zero, the group will use number of hall call history to decide where to park the car. The parking variable must be set to at least 1 for this function to work. See also Parking Type.
Parking Flr 5	0	Top Floor	0		**Parking Floor 5.** Floor to park the idle car. If set to zero, the group will use number of hall call history to decide where to park the car. The parking variable must be set to at least 1 for this function to work. See also Parking Type.
Parking Type	0	3	0		**Parking Type.** Determines the type of parking operation that is implemented by the group. 0 = Park free cars to floors with the most hall calls for that 15 minute period. 1 = Divide the hoistway by the number of cars and place a car in each zone starting with the lobby. 2 = Park cars according to the adjustable variable parking floor. Note that during parking, a car is always parked at the Lobby except when the option for alternate parking floor is selected through an input.
Parking Width	0	Top Floor	0		**Parking Width.** The number of floor that a car is within to be considered parked at the parking floor. See also Parking Type.

Table 7-6: Group Dispatch					
Field Variable	**Min**	**Max**	**Initial**		
Priorty Floor	0	Top Floor	0		**High Priority Floor.** When this parameter is set to a floor number other than zero the high priority operation is activated. If there is a call latched at the high priority floor and the timer set from the 'High Priority TM' expires, the group will choose the best car by considering only car calls. It will remove all hall calls on that best car except for the priority floor hall call. The car will serve all car calls and then service the priority floor before being assigned another hall call from the group.
Priorty Flr T	6	254	60		**High Priority Time.** Works in conjunction with parameter 'High Priority Floor', it is the amount of time to wait before removing hall calls assigned to the selected best car.
Up Peak Pool	0	Number Cars	1		**Up Peak Pool.** Number of cars to be utilized for up peak.
Up Peak Time	0	3200	180		**Up Peak Duration Time.** The duration time for up peak operation once up peak is activated. If set to zero, up peak operation will never turn on.
Up Pk Contrl	0	1	0		**Up Peak Control.** 0 = Normal up peak 1 = Heavy up peak
UpPk CC Count	1	40	3		**Up Peak Car Call Count.** Number of car calls the car must have when leaving the lobby to count as an up peak trigger.
UpPk Trig Cnt	1	100	3		**Up Peak Trigger Count.** The number of up peak triggers that are set within the up peak trigger time to activate up peak operation. Up peak triggers are counted when the car leaves the lobby with the load dispatch input set or with the more car calls than the up peak car call count.

Table 7-6: Group Dispatch					
Field Variable	**Min**	**Max**	**Initial**		
UpPk Trig Tim	0	3200	60		**Up Peak Trigger Time.** The time interval to count the number of up peak triggers.

Table 7-7: Group Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
1st Rcl EPSF2	0	Number Cars	2	Car	**First Return Car Emergency Power Service Feeder 2.** This will be the first car recalled in Emergency Power (the rest are done sequentially in a loop) for power feeder 2
1st Run EPSF2	0	Number Cars	2	Car	**First Run Car Emergency Power Service Feeder 2.** This will be the first car selected to run on emergency power (the rest are done sequentially in a loop) for power feeder 2
1stEP Run Car	0	Number Cars	1	Car	**First Emergency Power Run Car.** This is the first car selected to run. If this car cannot run, the next consecutive car is selected.
1stRecall Car	0	Number Cars	1	Car	**First Recall Car.** This is the first car allowed to recall during the emergency power recall sequence. The recall sequence continues in consecutive order and then loops around until all cars are recalled.
2nd IR Car	0	Number Cars	0	Car	**2nd Inconspicuous Riser Car.** Set this option to have a second car answer the Inconspicuous Risers.
2nd Riser Ctl	0	Number Cars	0	Car	**Second Riser Control.** Defines the second riser operation. 0 = Car defined for second riser answer second riser call and standard hall calls. 1 = Car defined for second riser answer only second riser calls. 2 = Second riser call or'ed with standard riser calls if second riser operation not selected from input.

Table 7-7: Group Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
ATT Pref Time	0	60	0	Sec	**Attendant ETA Preference Time.** When set to nonzero, the car not on attendant service has this time added to its ETA time. This causes the attendant car to be given a preference for the hall call.
CB Button Loc	0	2	0	-	**Code Blue Location.** 0 = CB on CB, 1 = CB on HCB, 2 = CB on IR
CB Car 2	0	Number Cars	0	Car	**Code Blue Car #2.** When a Code Blue call is initiated, this will be the car to be sent to respond in the event that first 'Code Blue Car' is not available, see variables 'Code Blue Car' and 'CB Rcll Any Car' for more options.
CB IR Penalty	0	60	10	sec	**IR Car Code Blue Penalty Time.** It is used to calculate and give preference to cars in fully automatic operation
CB Rcl anycar	0	1	0	-	**Code Blue Recall Any Call.** 0= Disable 1 = Enables dispatcher to recall any car If Code Blue Cars 1 and 2 are not available. If you want to select any car as your primary option, make Code Blue Car and Code Blue Car #2 equal to zero and enable this setting.
CB Req IndCar	0	1	0	-	**Code Blue Request Independent Car.** Code blue request for car on independent operation. Set to 1 in dispatcher in all cars so the car could be requested (flash EML) if the car is in independent mode.
CB Sel IR Car	0	1	0	-	**Code Blue Over IR Car**
CB SRiser Car	0	Number Cars	0	Car	**Code Blue Second Riser Car Select.**

Table 7-7: Group Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
Code Blue Car	0	Number Cars	0	Car	**Code Blue Car.** When a code blue call is initiated, this will be the first car to be sent to respond. If car is not available, see variables 'Code Blue Car#2' and 'CB Rcll Any Car' for more options.
Em Power Cars	1	Number Cars	1	Car	**Number of Emergency Power Cars.** that can run at the same time on the emergency power source.
Em Pwr Floor	Bottom Floor	Top Floor	1	Floor	**Emergency Power Recall Floor.**
Emer Dispatch	0	7	0	-	**Emergency Dispatch.** This parameter is applied to both the car that is selected as the dispatcher and also the non-dispatcher cars. Dispatcher Car = If set to 1 and hall call power lost, the dispatcher car will set down hall calls above the lobby and up hall call at and below the lobby. Non-Dispatcher Car = If set to a 1, and communications is lost to the dispatcher car, the car will dispatch itself to down hall calls above the lobby and up hall calls below the lobby. The front hall call and rear hall call bits settings are only used for the dispatcher car and when set, if communication is lost to a particular hall call board, hall calls are set for the affected floors.
EmPwr Op Outp	0	3	0	-	**Emergency Power Operation LED.** This parameter controls the group outputs for emergency power status for each car. 0 = Outputs are on for cars that are operational. 1 = Outputs on for cars on normal power. 2 = Outputs on for car on emergency power. 3 = Outputs on for cars that are being recalled.
EmPwr Pk Outp	0	2	0	-	**Emergency Power Park LED.** This parameter controls the group outputs for emergency power parked status for each car. 0 = Cars are parked on emergency power. 1 = Cars are parked or selected to run.

Table 7-7: Group Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
EP ATTcar 1st	0	1	0	-	**Emergency Power Attendant Car First.** Select and Prioritize the attendant car for running on emergency power service. It won't be recalled. After recall is complete for the group, It recovers and goes back in service
EP Man Sel En	0	3	1	-	**Emergency Power Manual Select Enable.** 0 = The recall sequence is aborted and any moving car will stop at the next floor to allow the selected car to run. +1 = Car is selected to run when the currently selected car completes its recall. +2 = Makes the selected car wait for all the cars to recall before being selected to run.
EP Rcl Out En	0	1	0	-	**Emergency cars finished Recalling Output Enable.** It enables an output in the hall call board for Emergency Power Complete (EPCOM). This setting is only read in power up so after changing this setting you need to reboot the controller.
EP Recall Dly	0	3200	30	Sec	**Emergency Power Recall Delay Time.** Time delay before the group starts the emergency power recall sequence.
EP Recovr Tim	1	60	20	Sec	**Emergency Power Recover Time.** When elevators are in Emergency Power recall, this is the time that the dispatcher will wait for each car to recover to a floor. If the car is in the middle of a blind shaft, you need to calculate the time each car may take to get to a floor in emergency power recovery speed.
GrpCC Ovrride	0	1	0	-	**Group Car Call Override.** Normally visitor access allows the car call security to be overridden momentarily from a push button in an owners apartment. With this parameter set to 1, the security override works directly from a key switch input.

Table 7-7: Group Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
GrpCC Sec OvT	1	240	60	Sec	**Group Car Call Security Override Timer.** This is the amount of time that the car call security is overridden when a group car call security override button is pressed.
Handicap Wait	0	255	0	Sec	**Handicap Car Wait Time.** Special operation that when a passenger presses a handicap hall button, the group adds this time to the ETA of all cars that do not have enough capacity. See Handicap Capacity in car options. Normally, if a car is at the floor of the handicap hall call, it will get the assignment regardless of the handicap capacity unless this value is set to 255.
HC Secur ctrl	0	2	0	-	**Hall Call Security Control.** Set what riser the hall call security inputs work with: 0 = Only standard hall calls 1 = Standard hall calls and Second Riser hall calls 2 = Only Second Riser hall calls
HC X-AssignEn	0	5	0	-	**Hall Call Cross Assignment Enable.** 1 = Front **Hall Call Cross Assignment** is enabled. 4 = Rear **Hall Call Cross Assignment** is enabled. 5 = Front and rear H**all Call Cross Assignment** is enabled. The group will look for cross assignment calls as well as hall calls. Power should be cycled on controller after this variable is modified so all communications to all devices are made. 2 = **Hall Call Cross Cancellation** is used and hall calls are are not cancelled when all cars are out of service. A setting of 3 for both hall call assignment and cancellation **is not valid** and may cause unpredictable results.

Table 7-7: Group Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
HCasg SecType	0	15	0	-	**Hall Call Assignment Security Type.** Use with Special Priority Service. Determines what hall calls should be given a special priority. Settings are 1 = Up 2 = Down 4 = Up Rear 8 = Down Rear
HCX-AssignETA	0	500	60	Sec	**Hall Call Cross Assignment ETA Limit.** If ETA for hall call assignment is greater than this ETA limit, the hall call will be cross-assigned to the old group controller.
Invert HC Sec	0	1	0	-	**Invert Hall Call Security.** 1 = Hall call security inputs are secured when the security input goes off from a normally closed switch. Normally, the security input must be on to secure the hall call.
IR Car	0	7	0	Car	**Inconspicuous Riser Car.** This car is assigned all the IR hall calls.
IR Control	0	7	0	Car	**Inconspicuous Riser Control.** This parameter alters how IR riser service is activated or deactivated. 0 = IR active from ICR or RICR input. +1 = IR activated when any IR call is activated.. +2 = Finish car calls then answer IR calls, +4 = Finish car call before going off IR.
Nmbr Vip Cars	0	7	1	car	**Number of VIP Cars.** Number of cars allow to service VIP (priority service) calls at one time.
OTS No HCCanc	0	1	0	-	**Out of Service No Hall Call Cancelled.** Do not cancel hall calls if cars are out of service. This is used in accordance with cross assignment feature.

Table 7-7: Group Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
Recall Timout	1	600	60	Sec	**Recall Time-out.** The time allowed for the car to reach the recall floor during the emergency power recall sequence. If this timer expires, the next car is selected to recall.
Sabb Restart	0	3200	8	Sec	**Sabbath Restart Delay Time.** The amount of time after the elevator answered the last sabbath call to restart the process.
Single AutoPB	0	5	0	-	**Single Automatic Push Button Operation.** 0 = Manual Doors (this would be the normal operation for cars with manual doors). 1 = Enable SAPB operation for simplex car with automatic doors. 2 = Disable SAPB operation for cars with manual doors. 3 = Invalid setting. 4 = Allow only one car call to be entered at floor for cars with manual doors regardless of the door position. 5 = Allow only one car call to be entered at floor for cars with automatic doors. This feature normally allows only hall calls and car calls to register when the doors are closed.
SkpCar@RcFLDO	0	1	0	-	**Skip Car at Recall Floor with Door Open.** While on Emergency Power Recall sequence: if enabled, out of service cars at the Emergency Power Recall floor with door open will be given a chance to run, 0 = Override immediately 1 = Override after timedelay. Time delay defined by variable 'EP Recover Tim'.
SkpCarN@RcFDO	0	1	0	-	**Skip Car Not at Recall Floor with Door Open.** While on Emergency Power Recall sequence: if enabled, out of service cars at the Emergency Power Recall floor with door open will be given a chance to run, 0 = Override immediately 1 = Override after timedelay. Time delay defined by variable 'EP Recover Tim'.

Table 7-7: Group Options					
Field Variable	**Min**	**Max**	**Initial**	**Units**	**Description**
Vid Pos Car 1	1	Number Cars	1	Car	**Video Position Car 1.** The column where the car is displayed on the dispatch screen starts from left to right for positions 1 through 6 (8 for high rise cars). Car 1 through 6 positions are defaulted to display positions 1 through 6 respectively. Changing the car's video position changes the column where the car is displayed.
Vid Pos Car 2	1	Number Cars	2	Car	**Video Position Car 2.** See Video Position Car 1 for an explanation.
Vid Pos Car 3	1	Number Cars	3	Car	**Video Position Car 3.** See Video Position Car 1 for an explanation.
Vid Pos Car 4	1	Number Cars	4	Car	**Video Position Car 4.** See Video Position Car 1 for an explanation.
Vid Pos Car 5	1	Number Cars	5	Car	**Video Position Car 5.** See Video Position Car 1 for an explanation.
Vid Pos Car 6	1	Number Cars	6	Car	**Video Position Car 6.** See Video Position Car 1 for an explanation.
VIP Buttn Loc	0	2	0	-	**VIP Button Location.** 0 = VIP on VIP 1 = VIP on HCB, 2 = VIP on IR
VIP Operation	0	3	0	-	**VIP (Priority Call) Operation.** +1 = Cancel hall call if no cars available for VIP call. +2= Cancel car call upon initiation of being selected as the VIP car.
X-Assign Cars	0	Number Cars	0	Car	**Cross Assignment Cars.** Number of cars in the old group to assign calls using cross assignment system.

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
Backlight Lt	0	63	0		**Enable Backlight Output Lights for RGB Style Output Lights in COP.** Bit0: Fire, Bit1: Medical, Bit2: Emergency, Bit3: OTS, Bit4: Att Up/Dn Light, Bit5: Non-CC
CB Off Bright	0	100	20		**Hall Call CB Light Off Brightness**
CB Off Color	0	15	0		**Hall Call CB Light Off Color.** 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White
CB On Bright	0	100	100		**Hall Call CB Light On Brightness**

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
CB On Color	0	15	0		**Hall Call Code Blue Light On Color.** 0 Based on Parameters1 Red2 Orange 3 Yellow4 Chartreuse 5 Green6 Aquamarine 7 Cyan8 Azure 9 Blue 10 Violet11 Magenta 12 Rose13 Rose White 14 Warm White 15 Cool White
CC Light Ctl	0	3	0		This configures the options for **Flashing Car Call Lights.** +1 = Flash Car Call Security +2 = Flash Attendant Annunciator Sequence
CC Off Bright	0	100	20		**Car Call Output Off Brightness for LED**
CC Off Color	0	15	15		**Car Call Button Light Off Color.** 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
CC On Bright	0	100	100		**Car Call Output On Brightness for LE**D
CC On Color	0	15	15		**Car Call Button Light On Color.** 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White
CC Sec Bright	0	100	100		**Car Call Security Light Brightness**
CC Sec Color	0	15	15		**Car Call Button Security Color.** 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
CCAttDn Color	0	15	0		**Car Call Button Attendant Down Light Color.** 0 Based on Parameters1 Red2 Orange 3 Yellow4 Chartreuse 5 Green6 Aquamarine 7 Cyan8 Azure 9 Blue 10 Violet11 Magenta 12 Rose13 Rose White 14 Warm White 15 Cool White
CCAttDnBright	0	100	100		**Car Call Button Attendant Down Brightness**
CCAttUp Color	0	15	0		**Car Call Button Attendant Up Light Color.** 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White
CCAttUpBright	0	100	100		**Car Call Button Attendant Up Light Brightness**
Em Lt Bright	0	100	100		**Emergency Light Brightness**

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
Emer Lt Color	0	15	0		**Emergency Light Color.** 0 Based on Parameters1 Red2 Orange 3 Yellow4 Chartreuse 5 Green6 Aquamarine 7 Cyan8 Azure 9 Blue 10 Violet11 Magenta 12 Rose13 Rose White 14 Warm White 15 Cool White
Fir Lt Bright	0	100	100		**Fire Light Brightness**
Fire Lt Color	0	15	0		**Fire Light Color.** 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White
HC Off Bright	0	100	20		**Hall Call Off Brightness.** Select the brightness for LED hall call button, when button is NOT pressed. Used only with GAL serial hall button fixtures.

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
HC On Brght	0	100	100		**Hall Call On Brightness for LED Hall Call Buttons.** Used only with GAL serial hall button fixtures.
HC Sec Bright	0	100	100		**Hall Call Security Brightness for Secured Floors.**
HC Sec Color	0	15	15		**Select what color to illuminate the hall buttons when the system is on security.** Used only with GAL serial hall button fixtures. 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White
HC Sec Ctl	0	7	0		**Hall Call Button Security Light.** 1 = Invert security, +2 = Flash security, +4 = Master Security Enabled
HCD Off Brght	0	100	20		**Hall Call Light Off Brightness for LED Hall Call Buttons.** Used only with GAL serial hall button fixtures.

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
HCD Off Color	0	15	15		**Select what color LED to illuminate on hall call button when button is NOT pressed.** Used only with GAL serial hall button fixtures. 0 Based on Parameters1 Red2 Orange 3 Yellow4 Chartreuse 5 Green6 Aquamarine 7 Cyan8 Azure 9 Blue 10 Violet11 Magenta 12 Rose13 Rose White 14 Warm White 15 Cool White
HCDn On Color	0	15	15		**Hall Call Down On Light Color.** Select what color to illuminate On hall call button when button is pressed. Used only with GAL serail hall button fixtures. 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
HCDn OnBright	0	100	100		**Hall Call Light On Brightness for LED hHll Call Buttons.** Used only with GAL serial hall button fixtures.
HCU Off Brght	0	100	20		**Hall Call Output Off Brightness for LED** (higher number is brighter)
HCU Off Color	0	15	15		**Hall Call Button Up Light Off Color.** Based on RGB intensity parameters. 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White
HCU On Bright	0	100	0		**Hall Call Output Up On Brightness for LED** (higher number is brighter)

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
HCUp On Color	0	15	15		**Hall Call Button Up Light On Color.** Based on RGB inyensity parameters 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White
IR Color Ctrl	0	1	0		**IR Light Color Control.**0 = IR Color, 1 = HC Color until IR activated
IRD Off Brght	0	100	20		**Hall Call IR Down Light Off Brightness**
IRD Off Color	0	15	15		**Hall Call IR Down Light Off Color.** 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
IRD On Bright	0	100	20		**Hall Call IR Down Light On Brightness**
IRDn On Color	0	15	15		**Hall Call IR Down Light On Color.**0 Based on Parameters1 Red2 Orange 3 Yellow4 Chartreuse 5 Green6 Aquamarine 7 Cyan8 Azure 9 Blue 10 Violet11 Magenta 12 Rose13 Rose White 14 Warm White 15 Cool White
IRU Off Brght	0	100	100		**Hall Call IR Up Light Off Brightness**
IRU Off Color	0	15	15		**Hall Call IR Up Light Off Color.** 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White
IRU On Bright	0	100	100		**Hall Call IR Up On Brightness**

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
IRUp On Color	0	15	15		**Hall Call IR Up On Color.**Base on RGB intensity parameters.0 Based on Parameters1 Red2 Orange 3 Yellow4 Chartreuse 5 Green6 Aquamarine 7 Cyan8 Azure 9 Blue 10 Violet11 Magenta 12 Rose13 Rose White 14 Warm White 15 Cool White
Med Lt Bright	0	100	100		**Medical Light Brightness**
Med Lt Color	0	15	0		**Medical Light Color.** 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White
OTS Lt Bright	0	100	100		**Out of Service Light Brightness**

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
OTS Lt Color	0	15	0		**Out of Service Light Color.**0 Based on Parameters1 Red2 Orange 3 Yellow4 Chartreuse 5 Green6 Aquamarine 7 Cyan8 Azure 9 Blue 10 Violet11 Magenta 12 Rose13 Rose White 14 Warm White 15 Cool White
Vip Off Brght	0	100	20		**Hall Call VIP Light Off Brightness.**
Vip Off Color	0	15	0		**Hall Call VIP Light Off Color.** 0 Based on Parameters 1 Red 2 Orange 3 Yellow 4 Chartreuse 5 Green 6 Aquamarine 7 Cyan 8 Azure 9 Blue 10 Violet 11 Magenta 12 Rose 13 Rose White 14 Warm White 15 Cool White
Vip On Bright	0	100	100		**Hall Call VIP Light On Brightness.**

Table 7-8: Color Lights					
Field Variable	**Min**	**Max**	**Initial**		
Vip On Color	0	15	0		**Hall Call VIP Light On Color.**0 Based on Parameters1 Red2 Orange 3 Yellow4 Chartreuse 5 Green6 Aquamarine 7 Cyan8 Azure 9 Blue 10 Violet11 Magenta 12 Rose13 Rose White 14 Warm White 15 Cool White

Table 7-9: System Options					
Field Variable	**Min**	**Max**	**Initial**		
AP SSID Nmb	1	9	1		**Network SSID Number.** 1-9 sets the number to be appended to the SSID for AP WiFi cards
Auto Flt Dpy	0	1	0		**Automatic Fault Display.** Enable to automatically display a fault on the LCD screen.
AutWifi Setup	0	1	1		**Automatic WiFi Setup.** Turns on option to have controller automatically update wifi board for galileo if connection is lost. 0 = Disable, 1 = Enable
CAN Baud Rate	0	1	0		**CAN Baud Rate.** Set to zero and do not change. Special jobs uitilize a different baud rate for CAN Bus. All devices need to be reconfigured for new rate. CAN Baud Rate, 0=115.2K, 1=57.6K

Table 7-9: System Options					
Field Variable	**Min**	**Max**	**Initial**		
CAN Sync Cnt	0	7	4		**CAN Sync Count.** Frequency to update CAN Bus devices. Units are 1/4 seconds. It sets Synchronization Count in 250 millisecond increments
COM1 Baud	0	9	6		**Com 1 User Interface Baud Rate.** Selects the bit rate of the COM 1 serial port. 0 = 2400 bps, 1 = 4800 bps, 2 = 9600 bps, 3 = 19200 bps, 4 = 38400 bps, 5 = 57600 bps, 6 = 115200 bps, 7 = 219254 bps, 8 = 226562.5 bps, 9 = 234375 bps.
COM1 Port Sel	0	7	6		**Com 1 Port Select.** Selects the operation of COM 1 port. 0 = Comm Diag, 1 = Comm Debug, 2 = Galcom, 3 = DL20, 4 = Galcom Wireless, 5 = Galcom Ethernet, 6 = Galcom Wireless Flow Control, 7 = Galcom Ethernet Flow Control
COM2 Baud	0	9	3		**Com 2 User Interface Baud Rate.** Selects the bit rate of the COM 2 serial port. 0 = 2400 bps, 1 = 4800 bps, 2 = 9600 bps, 3 = 19200 bps, 4 = 38400 bps, 5 = 57600 bps, 6 = 115200 bps, 7 = 219254 bps, 8 = 226562.5 bps, 9 = 234375 bps.

Table 7-9: System Options					
Field Variable	**Min**	**Max**	**Initial**		
COM2 Port Sel	0	7	0		**Com 2 Port Select.** Selects the operation of COM 2 port. 0 = Comm Diag, 1 = Comm Debug, 2 = Galcom, 3 = DL20, 4 = Galcom Wireless, 5 = Galcom Ethernet, 6 = Galcom Wireless Flow Control, 7 = Galcom Ethernet Flow Control
COM3 Baud	0	3	2		**COM3 Baud Rate.** 0 = 2400 1 = 4800 2 = 9600 3 = 19200
Cpu Timg Outp	0	7	0		**CPU Timing Output.** The CPU has three test point pins that outputs timing signals depending upon the setting of this parameter. These are 5 Volt signals that can be monitored by an oscilloscope. 0 = Z6 LED 1 second pulse 1 = Inctime 2 = GrpIO 4 = 10 msec.
Display T-out	0	3200	0		**Display Time-out.** Turn off the LCD Display after this timer times out. This function is disabled when set to zero.
ExclusionFLT1	0	Max Faults	0		**Exclusion fault 1.** Set to fault code number. This prevents faults from being recorded in the fault log. It should only be set for nuisance and noncritical faults. Controller stills goes through all the logic for each fault code except, a call is not recorded in the fault log

Table 7-9: System Options					
Field Variable	**Min**	**Max**	**Initial**		
ExclusionFLT2	0	Max Faults	0		**Exclusion fault 2.** Set to fault code number. This prevents faults from being recorded in the fault log. It should only be set for nuisance and noncritical faults. Controller stills goes through all the logic for each fault code except, a call is not recorded in the fault log
ExclusionFLT3	0	Max Faults	0		**Exclusion fault 3.** Set to fault code number. This prevents faults from being recorded in the fault log. It should only be set for nuisance and noncritical faults. Controller stills goes through all the logic for each fault code except, a call is not recorded in the fault log
ExclusionFLT4	0	Max Faults	0		**Exclusion fault 4.** Set to fault code number. This prevents faults from being recorded in the fault log. It should only be set for nuisance and noncritical faults. Controller stills goes through all the logic for each fault code except, a call is not recorded in the fault log
ExclusionFLT5	0	Max Faults	0		**Exclusion fault 5.** Set to fault code number. This prevents faults from being recorded in the fault log. It should only be set for nuisance and noncritical faults. Controller stills goes through all the logic for each fault code except, a call is not recorded in the fault log
ExclusionFLT6	0	Max Faults	0		**Exclusion fault 6.** Set to fault code number. This prevents faults from being recorded in the fault log. It should only be set for nuisance and noncritical faults. Controller stills goes through all the logic for each fault code except, a call is not recorded in the fault log

Table 7-9: System Options					
Field Variable	**Min**	**Max**	**Initial**		
Hall Lan Baud	0	6	0		**Hall Lantern COM Baud Rate.** 0 = 2400, 1 = 4800 2 = 9600 3 = 19.2K 4 = 38.4K 5 = 57.6K 6 = 115.2K bits per second.
Low Door Volt	0	600	198		**Low Door Voltage.** Settings for Line Voltage Monitor Board. It sets the value of voltage for 'Door Low Voltage Fault' to be triggered.
Low Line Volt	0	600	198		**Low Line Voltage.** Settings for Line Voltage Monitor Board. It sets the value of voltage for a 'Low Line Voltage Fault' to be triggered.
Password	0	9999	0		**Password Code** to modify and adjust field variables
Pword Tim-out	0	3200	300		**Password Time-out.** The amount of inactive time for the LCD to lock out the field variables.
Safe Test Day	1	31	0		**Safety Test Day.**
SafeTest Year	2000	2999	0		**Safety Test Year.**
SafeTst Month	1	12	0		**Safety Test Month.**

Table 7-10: NTS Processor Adjustable Variables					
Field Variables	**Min**	**Max**	**Initial**		
Can Baud Rate	0	1	0		**CAN Baud Rate.** Set to zero and do not change. Special jobs uitilize a different baud rate for CAN Bus. All devices need to be reconfigured for new rate. CAN Baud Rate, 0 = 115.2K, 1 = 57.6K
Debug Mode	0	7	0		**Debug Mode**
Number Valid Fl	2	Top Floor	2		**Number of Valid Floors.**
Top Speed	0	1600	200		**Top Speed** or Contract Speed of the car.
UT Limit Dist	0	50	0		**Up Terminal Limit Distance**
DT Limit Dist	0	50	0		**Down Terminal Limit Distance**

Table 7-11: Velocity Slowdown Table				
FPM	**UN/DN ***	**UT/DT ***	**TSD**	**TLH**
50	2" above top floor and below bottom floor	5"	4"	4" above top floor
75		9"	7"	
100		12"	10"	
150		21"	17"	
200		30"	22"	

Section 8 - Appendix A

Every safety precaution, whether or not specifically stated in this document, must be implemented when installing, adjusting, or servicing elevator equipment. All safety precautions must be followed to ensure the safety of elevator personnel and the general public.

The test procedures outlined in this Appendix provide a guide for elevator personnel to perform the specific tests in this Appendix. These test procedures are not intended to override or circumvent any procedure or test that is mandated by the applicable codes and the Authority Having Jurisdiction.

All temporary connections must be removed before placing the elevator in service.

If there are any questions in regard to the procedures for performing these tests with a GALaxy eHydro controller, please call GAL Manufacturing toll free at 1-(877) 425-7778 for free technical assistance.

8.1 Testing Stall Mode & Low Oil Operation

Turn the power of on the controller.
Temporarily remove SU-S12 and SUC-S11 connections from the controller.
Restore power to the controller.

If Return To Lobby is set to cycle doors at the lobby, set
The “RTL Dwell Tim” to control how long the doors will dwell before closing in return to lobby mode.

Temporarily set the “Stall Time” to 20.

Place a call in the UP direction.
The car will start going up, but when it changes to approach speed it will stall and then return to the lobby and cycle the door.

After finishing the test remove power from the controller.
Replace SU-S12 and SUC-S11 connections on the controller.
Set the “Stall Time” to a value that will allow the elevator to make a complete run from the bottom floor to the top floor.

Restore power to the controller.

8.2 Reset Low Oil, Hot Oil, or MC/SPD Fault

To reset a Low Oil, Hot Oil or MC/SPD fault, first verify that the cause of the fault has been corrected and then follow the directions below:

- Place the car on machine room inspection.
- From the LCD Interface, select the Elevator Setup menu and press the enter button.
- Use the up or down button to select the appropriate reset menu and press enter.
- Follow the directions on the screen to press the appropriate buttons to reset the device

8.3 Performing a Stop Ring Test

- Place a call to the top floor.
- Put the car on machine room INSPECTION.
- Turn off the power to the controller
- Place the jumper CN18 on TEST MODE (position 2-3).
- Turn on power to the controller.
- Run the car UP on inspection from the machine room until the car stops on the “Top Terminal Limit”.
- Turn off power to the controller.
- Install a temporary connection between GOV-H22 and TLH-H21.
- Turn on power to the controller.
- Run the car UP on inspection to perform the stop ring test.
- After the stop ring test is completed, run the car DOWN on inspection until the car is level at the top floor.
- Turn off power to the controller.
- Remove the temporary connection between GOV-H22 and TLH-H21.
- Place the jumper CN18 on AUTO MODE (position 1-2).
-

8.4 Testing NTSD

The NTS processor has a separate CAN channel to the SIL 3 APS selector head. The NTS processor controls “UN”, “UT”, “DT”, “DN”.

In “HOISTWAY TABLES”, “SET SLOWDOWN COUNTS”, “SET SLOWDOWN COUNTS FOR ALL”, set “UP” to a count of 102 or 2 inches. This distance is closer than the UT distance. With the car at the bottom floor set a call to the top floor. Notice the car slowdown normally but a “UT Limit Fault” is logged. Reset the “UP” count back to its prior value. Place the car on Inspection mode this will render the normal elevator stopping means inoperative. Run the car up on inspection verify the car stops 2 inches above the top floor.

In “HOISTWAY TABLES”, “SET SLOWDOWN COUNTS”, “SET SLOWDOWN COUNTS FOR ALL”, set “DOWN” to a count of 102 or 2 inches. This distance is closer than the DT distance. With the car at the top floor set a call to the bottom floor.

Notice the car slowdown normally but a “DT Limit Fault” is logged. Reset the “DOWN” count back to its prior value. Place the car on Inspection mode this will render the normal elevator stopping means

inoperative. Run the car down on inspection verify the car stops 2 inches below the bottom floor. Place the controller inspection switch into the auto position.

8.5 Testing Terminal Speed Reducing Device

The terminal speed reducing device shall be installed for the up direction where the car speed exceeds 0.25m/s (50ft/min) to ensure the plunger does not strike its solid limit of travel at a speed in excess of .25m/s (50 ft/min).

With the car at the bottom floor, place a call one floor above. While the car is running CAREFULY remove the wire from the TSD terminal. The TSD switch is directly in series with the UP Fast Solenoid. Verify the car immediately starts to slow down. The switch is independent of the normal stopping means, and normal terminal stopping device. Replace the wire back in the TSD. If the car ran longer than the low oil timer. To restore the car to normal operation, remove the jumper or replace the wire back, move the controller inspection switch to the inspection position, on the LCD Board GALX-1005 push the up button to go to “RESET FAULTS”, push the enter button, push the up button to go to the “Reset Low Oil” push the enter button, then place the controller inspection switch into the auto position.

8.6 Testing the Load Weighing Device

With (100 or 125%) full load in car verify that the load weighing device does not interfere with Phase 1 [2.27.3.1.6] or Phase II [2.27.3.31(i)].

Where applicable, with the car on normal, automatic operation away from the designated level, simulate a full load (method varies according to device used); then activate Phase I and make sure that the car responds in accordance with Phase I requirements.
Where applicable with the car on Phase II operation, simulate a full load (method varies according to device used), and make sure that the car responds in accordance with Phase II requirements.

8.7 Testing Phase 2 Operation With a Ground or Short Circuit

Test that a ground or short circuit in electrical parts located at landing side of H/W enclosure and associated wiring will not disable Phase II operation after it is activated [2.27.3.4]

1) While the car is on Phase II, short to ground the HCP in the landing fixture. HCP is the controller power for all smoke detector contacts and Phase I switches. Verify that Phase II operation remains unaffected.

8.8 Testing Phase 1 & 2 Operation After Power Interruption and Restoration

1. Power off the controller while the car is on Phase I at any floor away from the designated landing. Restore power to the controller. The car will remain on Phase I and proceed to the designated level.
2. Power off the controller while the car is on Phase I at the designated landing. Restore power to the controller. The car will remain on Phase I at the designated landing.
3. Power off the controller at any landing while the car is on Phase II. Restore power to the controller. The car will remain on Phase II at that landing until the firefighter enters a call.

4. Power off the controller while the car is moving between floors and on Phase II. Restore power to the controller. The car will move to an available floor and stop. It will remain on Phase II at that landing until the firefighter enters a call.

8.9 Testing Recycling Operation

With the car at the bottom floor, with the doors closed and no calls registered, from the GALX-1005 board change the time to 2:01 AM. The car should move down at leveling speed. While the car is leveling down register a hall call above the bottom floor. The car will continue to level down until the car rests on the springs. The car will level up to the bottom floor.

8.10 Testing Plunger Gripper Operation

Test that the gripper will remain operational during a power failure. While the elevator is running down, remove power from the controller and verify the gripper sets.

8.11 Testing Phase 1 Operation Under Special Conditions

While the car is at the top floor, **CAREFULLY** install a temporary connection from S10 terminal to LOS terminal. If a normally closed switch is used, then **CAREFULLY** remove the wire from the LOS terminal. This will initiate a low oil return or a plunger follower guide protection. While the car is returning, turn the fire service Phase I hall switch to the ON position. If the elevator is above the recall floor the elevator will stop at the recall floor and open its doors. If the elevator is below the recall floor the elevator will stop at the bottom floor and open its doors. The doors will close after the door time. Press the door open button and verify that the doors will open. To restore the car to normal operation, remove the temporary connection from S10 to LOS. If a normally closed switch is used, replace the wire back on LOS. Move the controller inspection switch to the inspection position, on the LCD Board GALX-1005 push the up button to go to “RESET FAULTS”, push the enter button, push the up button to go to the “Reset Low Oil” push the enter button, then place the controller inspection switch into the auto position. Turn the fire service Phase I switch to the RESET position then back to the OFF position.

While the car is at the top floor, **CAREFULLY** install a temporary connection from FEP terminal to EMP terminal. This will initiate an auxiliary power lowering return. While the car is returning, turn the fire service Phase I hall switch to the on position. If the elevator is above the recall floor the elevator will stop at the recall floor and open its doors. If the elevator is below the recall floor the elevator will stop at the bottom floor and open its doors. The doors will close after the door time. Press the door open button and verify that the doors will open. To restore the car to normal operation, remove the temporary connection. Turn the fire service Phase I switch to the RESET position then back to the OFF position.

While the car is at the top floor, turn the fire service Phase I hall switch to the ON position. While the car is returning, **CAREFULLY** install a temporary connection from S10 terminal to LOS terminal. If a normally closed switch is used, then **CAREFULLY** remove the wire from the LOS terminal. If the elevator is above the recall floor the elevator will stop at the recall floor and open its doors. If the elevator is below the recall floor the elevator will stop at the bottom floor and open its doors. The doors will close after the door time. Press the door open button and verify that the doors will open. To restore the car to normal operation, remove the temporary connection from S10 to LOS. If a normally closed switch is used, replace the wire back on LOS. Move the controller inspection switch to the inspection position, on the LCD Board GALX-1005 push the up button to go to “RESET FAULTS”, push the enter button, push the up button to go to

the “Reset Low Oil” push the enter button, then place the controller inspection switch into the auto position. Turn the fire service Phase I switch to the RESET position then back to the OFF position.

While the car is at the top floor, turn the fire service Phase I hall switch to the ON position. While the car is returning, **CAREFULLY** install a temporary connection from FEP terminal to EMP terminal. If the elevator is above the recall floor the elevator will stop at the recall floor and open its doors. If the elevator is below the recall floor the elevator will stop at the bottom floor and open its doors. The doors will close after the door time. Press the door open button and verify that the doors will open. To restore the car to normal operation, remove the temporary connection from FET to EMP. Turn the fire service Phase I switch to the RESET position then back to the OFF position.

Turn the fire service Phase I hall switch to the ON position. After the elevator has returned to the recall floor and opened the doors, **CAREFULLY** install a temporary connection from S10 terminal to LOS terminal. If a normally closed switch is being used, then **CAREFULLY** remove the wire from the LOS terminal. Verify that the doors close and the fire light flashes on and off. To restore the car to normal operation, remove the temporary connection from S10 to LOS. If a normally closed switch is used, replace the wire back on LOS. Move the controller inspection switch to the inspection position, on the LCD Board GALX-1005N push the up button to go to “RESET FAULTS”, push the enter button, push the up button to go to the “Reset Low Oil” push the enter button, then place the controller inspection switch into the auto position. Turn the fire service Phase I switch to the RESET position then back to the OFF position.

Turn the fire service Phase I hall switch to the ON position. After the elevator has returned to the recall floor and opened the doors, **CAREFULLY** install a temporary connection from FEP terminal to EMP terminal. Verify that the doors close and the fire light flashes on and off. To restore the car to normal operation, remove the temporary connection from FEP to EMP. Turn the fire service Phase I switch to the RESET position then back to the OFF position.

8.12 Testing Phase 2 Operation Under Special Conditions

Turn the fire service Phase I hall switch to the ON position. After the elevator has returned to the recall floor and opened the doors turn the In Car Fire Service Phase II switch to the ON position. **CAREFULLY** install a temporary connection from LC terminal to LOS terminal. If a normally closed switch is used, then **CAREFULLY** remove the wire from the LOS terminal. Verify the fire light flashes on and off. Verify that only calls below the elevator will register. To restore the car to normal operation, remove the temporary connection from LC to LOS. If a normally closed switch is used, replace the wire back on LOS. Move the controller inspection switch to the inspection position, on the LCD Board GALX-1005 push the up button to go to “RESET FAULTS”, push the enter button, push the up button to go to the “Reset Low Oil” push the enter button, then place the controller inspection switch into the auto position. Turn the fire service Phase II switch to the OFF position. Turn the fire service Phase I switch to the RESET position then back to the OFF position.

Turn the fire service Phase I hall switch to the ON position. After the elevator has returned to the recall floor and opened the doors turn the in car fire service phase II switch to the ON position. **CAREFULLY** install a temporary connection from FEP terminal to EMP terminal. Verify the fire light flashes on and off. Verify that only calls below the elevator will register. To restore the car to normal operation, remove the temporary connection from FEP to EMP. Turn the fire service Phase II switch to the OFF position. Turn the fire service Phase I switch to the RESET position then back to the OFF position.

8.13 Testing Plunger Following Guide Protection

While the car is at the top floor, **CAREFULLY** install a temporary connection from S10 terminal to LOS terminal. If a normally closed switch is being used, then **CAREFULLY** remove the wire from the LOS terminal. This will initiate a plunger follower guide protection. The elevator will return to the bottom floor and open its doors. The doors will close after the door time. Press the door open button and verify that the doors will open. To restore the car to normal operation, remove the temporary connection from S10 to LOS. If a normally closed switch is used, replace the wire back on LOS. Move the controller inspection switch to the inspection position, on the LCD Board GALX-1005 push the up button to go to “RESET FAULTS”, push the enter button, push the up button to go to the “Reset Low Oil” push the enter button, then place the controller inspection switch into the auto position.

8.14 Testing the Auxiliary Power Supply With the Disconnect Switch Open

Test that the auxiliary power supply will be interrupted when the main power supply disconnect switch is open [3.26.10].

Turn off the main disconnect switch and verify that the LCD display on the GALX-1005 board is off. With a voltage meter verify that there is no voltage between the LIN terminal and the GND terminal. To restore the car to normal operation, turn on the disconnect switch.

8.15 Testing Low Pressure Switch

If the pressure switch is normally closed:

While the car is at the top floor, **CAREFULLY** remove the wire from the LPS terminal. This will simulate a low pressure condition. Try to register a down call. The elevator should not move down. Press a hall call at the top floor. The doors should not open. To restore the car to normal operation, replace the wire back on LPS.

8.16 Testing Low Pressure Switch

Were Applicable, simulate emergency power by installing a temporary connection from terminal FEP to terminal EMP. Make sure that the elevators comply with 2.27.2. To restore to normal operation, remove the temporary connection from EMP.