C4

USER MANUAL

VERSION 2.0

SMARTRISE

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Document History

Date	Version	Summary of Changes
March 28, 2019	1.0	Initial Submittal
August 15, 2019	2.0	Updated cover page Added Menu Structures Added Soft Limit Added Sabbath Operation Added Load Weigher Added Alarms Added In-depth process descriptions Added NTS/ETS Added Profile, Parameters, and Controlling Initial Start of Car Motion information to S-Curve Deleted Faults table and added reference to see C4 Faults and Alarms document

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1 C4 Traction Controller

The C4 Traction Controller is the state-of-the-art high-speed/high-rise controller designed for speeds up to 1400 fpm.

1.1 Overview

The C4 Traction Controller is built to learn and adapt.

The following is a list of C4 manuals included in the C4 package:

- *C4 User Manual* – A detailed description of the C4 Traction Controller including step by step procedures on how to configure the system.
- *C4 Faults and Alarms* – A list of faults and alarm codes, and resolutions.
- *C4 Testing Procedures* – Step by step procedure on how to test the C4 Traction Controller.
- *C4 Drive Startup* – Describes how to setup various drives that may be used within the C4 Traction Controller. The following is a list of drives that can be used on the C4:
  - DSD412
  - HPV900
  - M1000
  - KEB

1.2 C4 Traction Controller Components

The C4 Traction Controller consist of the following:

C4 Controller – Performs serial data exchange between the machine room, the top of the car, and the car panel.

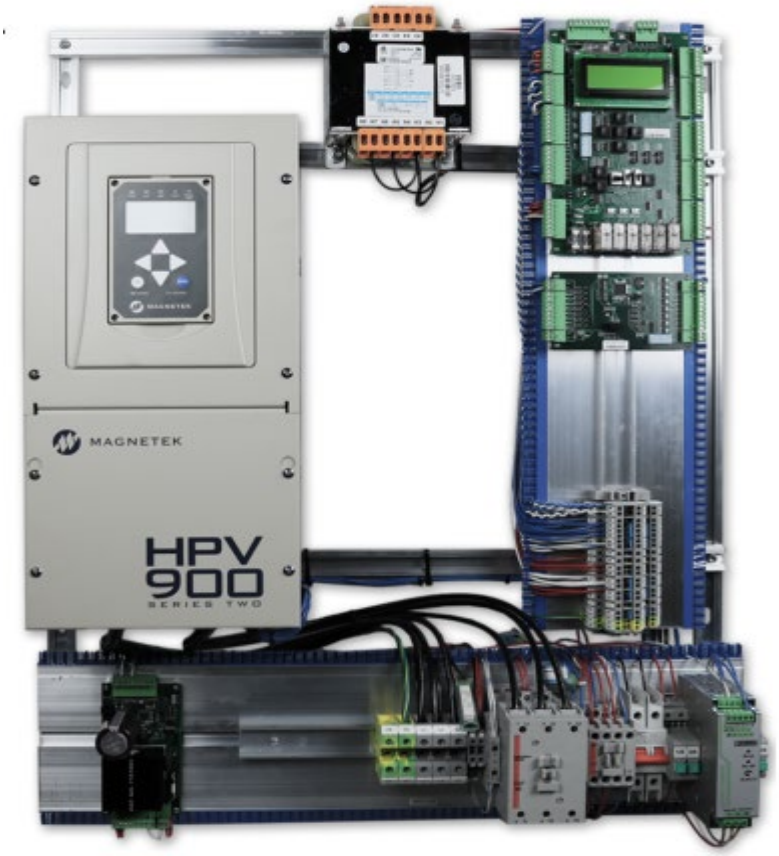

Figure 1: C4 Controller

Car Operating Panel Controller (COP) – Gathers localized inputs and outputs and connects to the Car Top Controller.

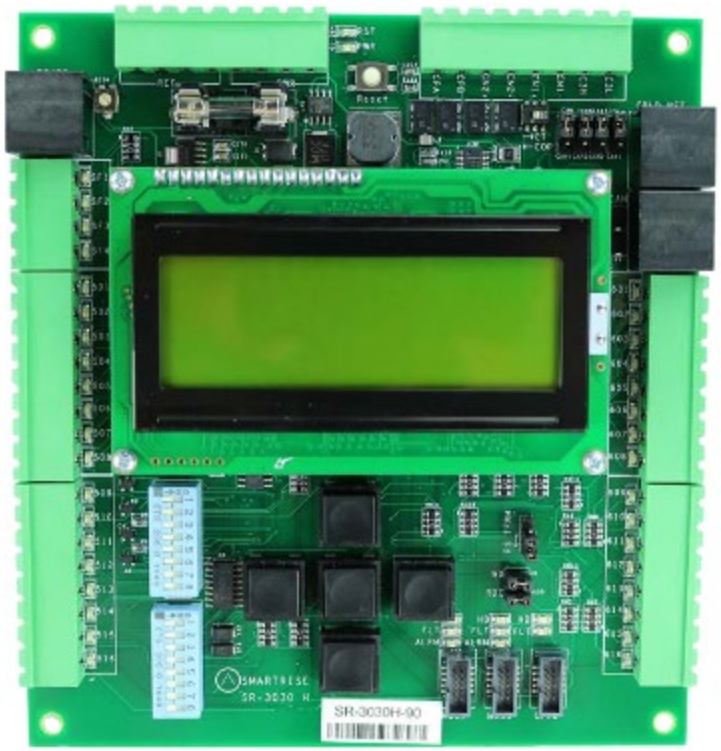

Figure 2: Car Operating Panel Controller

Car Top Controller (CT) – Manages part of the safety logic. The CT connects the top of the car components and the traveler cable.

Figure 3: Car Top Controller

Smart Positioning Landing System – Tracks elevator speed and position with high precision and superior reliability.

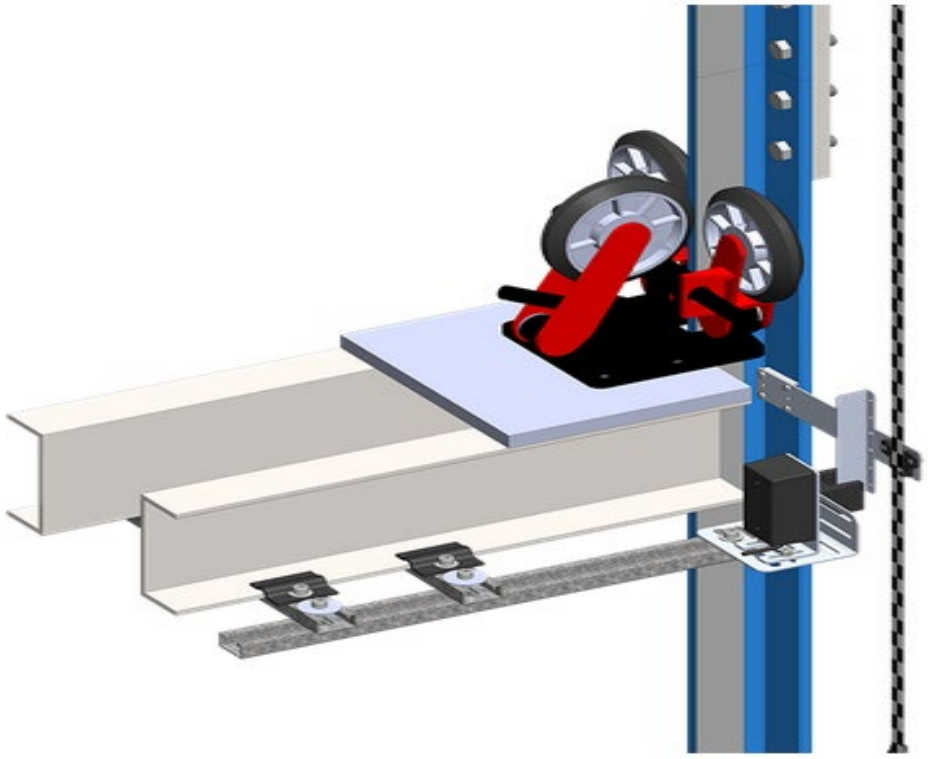

Figure 4: SmartPositioning Landing System

1.3 Safety

A proper and effective ground connection is required for the safe and successful operation of the C4 Controller.

Examples of a proper building-to-controller ground are as follows:

- Attach the ground wire to a grounding rod in the pit.
- Attach the ground wire to the street side of a water main.

  NOTE: Beware of grounding to any other water pipes.

The controller has one or more common ground bus terminal blocks.

Figure 5: Ground Bus Terminal Blocks

The building, motor, transformer, and filter(s) must all share a common ground. This removes ground loops, limits impedance, and routes noise into the ground.

1.4 Default Voltage Settings Prior to Installation

While Smartrise takes every measure to provide the customer with an out-of-box installation, sometimes incomplete information leads to default values being set on equipment and voltage settings. This is done to protect the equipment from overvoltage issues. For example, the door operator for that job might operate at 240 VAC but if Smartrise was not provided with that information when the job was developed, the DR breaker (door operator voltage supply) is set to 120 VAC for safety reasons.

Verify, according to the provided drawings, that all required voltages for the existing equipment matches the voltages set by Smartrise PRIOR to powering up the controller.

2 Controller Hardware

The Controller consists of the following boards:

- Machine Room (MR) board - SR3032
- Smartrise Universal (SRU) board - SR3030
- I/O board (Riser board) - SR 3031
- Hall board - SR1060
- Serial Brake board - SR3038

2.1 MR Board SR3032

The MR board is the main interface in the controller.

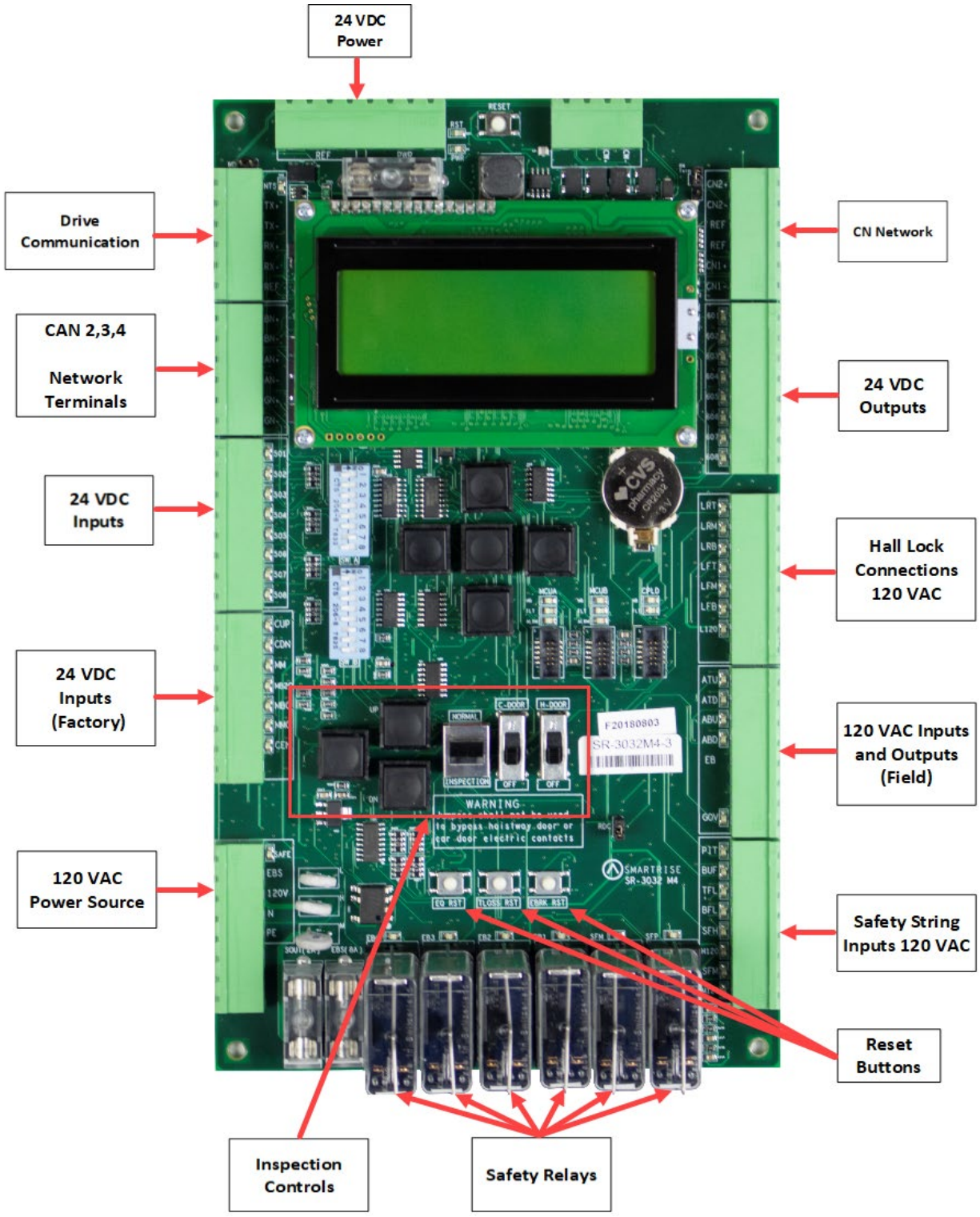

Figure 6: MR Board SR3032

There are two sets of DIP switch settings for the MR Board:

- Bank A (upper one)
- Bank B (lower one)

Each setting is configured for a different functionality.

The following table lists the functionality and configuration for the Bank A DIP Switch Setting.

Table 1: MR Board SR3032 Bank A DIP Switch Setting Configuration

DIP Switch	Functionality	Description
DIP 1	CPU Stop Switch	Halts parameters updates and used to reset fire and latched faults
DIP 2		
DIP 3	Capture Car/Disable Doors	Takes the car out of the group and completes all car calls before disabling the doors. Bypasses fire operation.
DIP 4	Enable GUI Edit (v1.02.54 and above)	Allows parameter edits from external GUI
DIP 5	Learn Mode	Activates learn mode on the controller to learn the hoistway
DIP 6	Enable Tune	Sends message to the drive to begin the tune process. Used after setting the drive in motor tune or encoder learn.
DIP 7	Pop-up Blocker	Disables the fault pop-up messages. Faults can still be viewed in the active and logged faults.
DIP 8	Bootloader Flag	Sets all boards in Bootloader mode to update software

The following table lists the functionality configuration for the MR Board SR3032 Bank B DIP Switch Setting.

Table 2: MR Board SR3032 Bank B DIP Switch Setting Configuration

DIP Switch	Functionality	Description
DIP 1		
DIP 2	Rear Doors	Must be set if rear doors are present
DIP 3		
DIP 4		

DIP Switch	Functionality	Description
DIP 5	Sync Params	Writes parameters from cartop to machine room. This switch is used when replacing the MR board.
DIP 6	Bypass Fire Srv (w/ 01-131)	Setting this along with parameter 01-0131 to ON bypasses fire service
DIP 7		
DIP 8	Unintended Movement Acceptance Test	Used during the unintended movement acceptance test

2.2 Navigation Buttons

The navigation buttons are the same on every SRU.

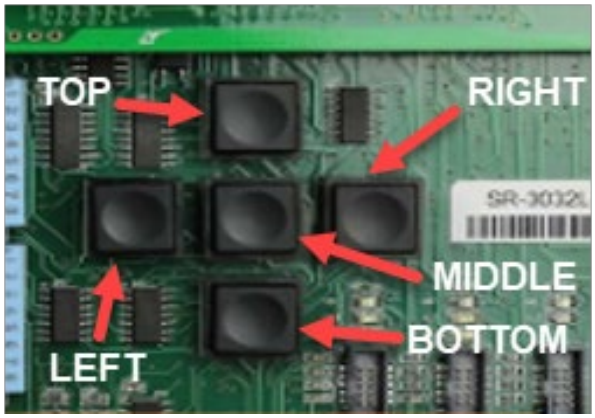

Figure 7: Navigation Buttons

The following table lists the Navigation Button descriptions.

Table 3: Navigation Button descriptions

Button	Description
Top	Scrolls up through selected menu.
Bottom	Scrolls down through selected menu
Left	Navigates back to Main Menu
Right	Navigates down to last series of menus used
Middle	Select the menu

The selected menu within the menu options is shown with a *.

Figure 8: Example of Selected Menu

See http://avtanski.net/projects/lcd/ for LCD images.

2.3 24 VDC Power Source

The 24 VDC power and reference connection to ground only requires having one terminal connected to the MR board. All other connections can be used for auxiliary sources, as needed.

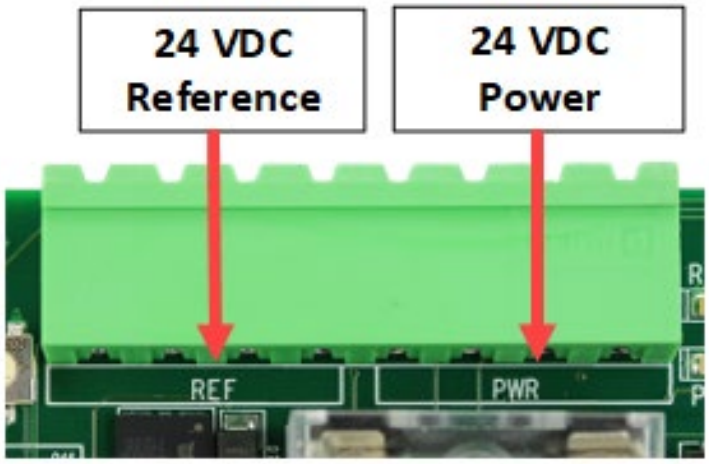

Figure 9: 24 VDC Connector

2.4 Reset Buttons

There are three reset buttons.

- EQ RST – Resets a seismic fault due to an earthquake.
- TLOSS TST – Resets traction loss fault.

- EBRK RST – Clears faults that require an emergency brake and the fault is latching, for example, governor and unintended movement.

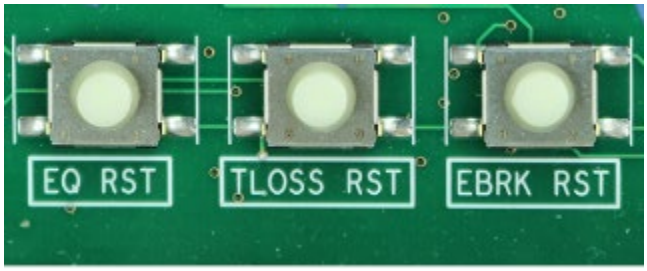

Figure 10: Reset Switches

2.5 Drive Communication

The drive communication connector is for transmitting and receiving signals to and from the drive (the type of drive is dependent on the application) as well as triggering the Normal Terminal Stop (NTS) operation.

Figure 11: Drive Communication Connector

RX And TX Terminals – Communication line to and from the drive. When O46 LED is lit, it indicates the activity of the NTS signal.

REF Terminal – A shield connection to connect to the drive, as applicable.

See the *C4 Controller* sheet *02 Machine Room I/O* for wiring information.

2.6 Network

The network is used for board to board communication between the Machine Room, Car Top, Car Operating Panel and Expansion boards.

CN Network Terminals – Uses both CN1 and CN2 for communication.

REF Terminal – Provides a ground to prevent noise on the CN1 and CN2 signals.

These connections must be made before going into inspection and normal operation.

Figure 12: CN Connector

Brake Network (BN) Terminals – Communication between the Machine Room and Brake board. This channel transits all brake commands to the Brake board.

Aux Network (AN) Terminals – Auxiliary communication between the Machine Room and any compatible third-party devices, for example, IE CE Drive board.

Group Network (GN) Terminals – Group communication. These connections connect all the cars together in a group setting.

Figure 13: CAN 1,2,3 Network Connector

2.7 120 VAC Inputs and Outputs (Factory)

WARNING

ALL CONNECTIONS ON THIS TERMINAL BLOCK ARE HIGH VOLTAGE. DISCONNECT POWER TO THE CONTROLLER BEFORE WIRING THESE TERMINALS.

Safe Terminal – Outputs power to the motor contactor. The safe terminal will not output voltage to the motor contactor coil until all safety checks have been completed. See *C4 Controller* sheet *02 Machine Room I/O* for wiring information.

When the SAFE LED is lit, it indicates there is an active signal to the motor contactor.

EBS Terminal – Connects the supply voltage for the emergency brake. Depending on the rope brake or disc ratings, this will either be 120 VAC or 240 VAC.

Figure 14: 120 VAC Connector

2.8 24 VDC Inputs and Outputs

24 VDC input is labeled 501-508.

Each input is activated when 24 VDC is applied to it. LEDs 501-508 are lit when active.

See the *C4 Controller* sheet *02 Machine Room I/O* for wiring information.

Figure 15: 24 VDC Input Connector

24 VDC output is labeled 601-608.

Each output sinks to REF when activated. LEDs 601-608 are lit when active.

See the *C4 Controller* sheet *02 Machine Room I/O* for wiring information.

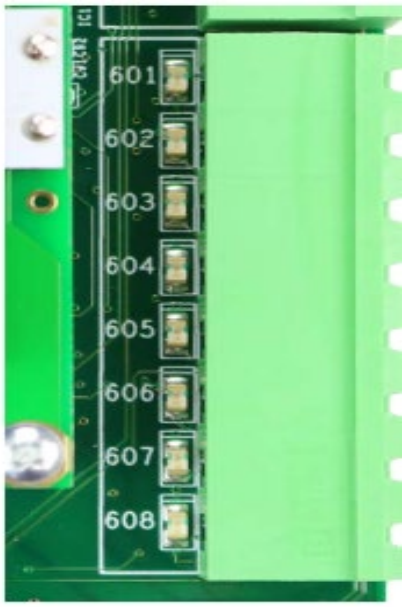

Figure 16: 24 VDC Output Connector

2.9 24 VDC Monitoring System

The monitoring connector is used to monitor the system. All terminals have a corresponding LED list when active.

CUP and CDN Inputs – Runs the car UP or DOWN using external run box.

MM Terminal – Puts the controller in either the Construction mode (when the INSPECTION switch is on) or Test mode (when the INSPECTION switch is off). To activate this input, a jumper must be installed from 24 VDC to the input.

MB2C Terminal – Monitors the status of the B2 contactor (if used).

MBC Terminal – Monitors the status of the B contactor.

MMC Terminal – Monitors the status of the M contactor.

CEN Terminal – Monitors the status of the enable contact on the external run box during Construction mode. This input must be enabled before the CUP and CDN buttons.

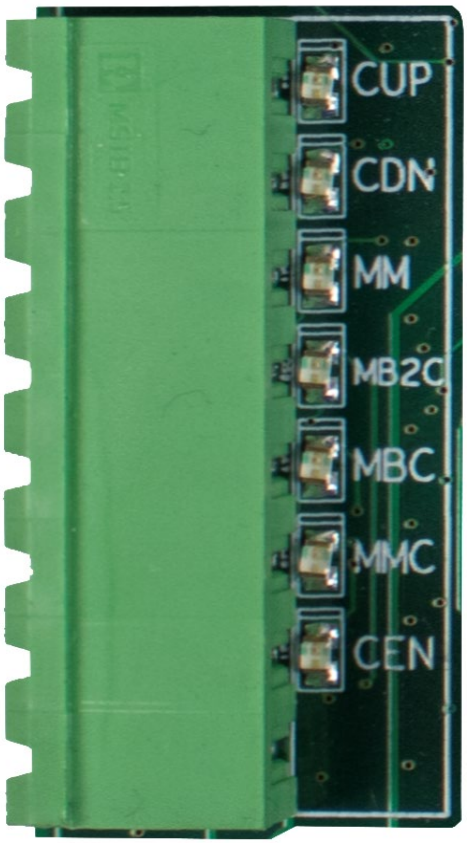

Figure 17: 24 VDC Monitoring System Connector

2.10 Safety String Inputs 120 VAC

WARNING

ALL CONNECTIONS ON THIS TERMINAL BLOCK ARE HIGH VOLTAGE. DISCONNECT POWER TO THE CONTROLLER BEFORE WIRING THESE TERMINALS.

This terminal block contains the connections for the controller safety string. Each input is always monitored (including Construction mode). The source and termination for all Machine Room and Hoistway safeties are located on this terminal block.

All terminals have a corresponding LED list when active.

PIT Terminal – Termination for the Pit switch. The primary side of the switch is connected to H120, and the secondary side is then wired back to the PIT terminal.

BUF Terminal – Termination for the Buffer switch. The primary side of the switch is connected to H120, and the secondary side is then wired back to the BUF terminal.

TFL Terminal – Termination for the Top Final Limit switch. The primary side of the switch is connected to H120, and the secondary side is then wired back to the TFL terminal.

BFL Terminal – Termination for the Bottom Final Limit switch. The primary side of the switch is connected to H120, and the secondary side is then wired back to the BFL terminal.

H120 Terminal – Internal fused source for all hoistway safeties. This is used to power the PIT, BUF, BFL, TFL, and any other addition hoistway safety devices.

See the *C4 controller* sheet *02 Machine Room I/O* wiring information.

SFM Terminal – Termination for all Machine Room safety devices that do not have a dedicated input, for example, Run/Stop switch, roper gripper contacts, and e-brake. All additional devices are wired in series and terminated to the SFM.

SFH Terminal – Termination for all hoistway safety devices that do not have a dedicated input. All additional devices are wired in series and terminated to the SFH.

See the *C4 Controller* sheet *02 Machine Room I/O* for wiring information.

M120 Terminal – Internal fused source for all Machine Room safeties.

See the *C4 Controller* sheet *02 Machine Room I/O* for wiring information.

Figure 18: Safety String Input Connector

2.11 120 VAC Inputs and Outputs (Field)

WARNING

ALL CONNECTIONS ON THIS TERMINAL BLOCK ARE HIGH VOLTAGE. DISCONNECT POWER TO THE CONTROLLER BEFORE WIRING THESE TERMINALS.

The following input terminals. See the *C4 Controller* sheet *02 Machine Room I/O* for wiring information.

ATU Terminal – Access Top Up controller termination

ATD Terminal – Access Top Down controller termination

ABU Terminal - Access Bottom Up controller termination

ABD Terminal – Access Bottom Down controller termination

GOV Input – Termination for the Governor switch. The primary side of the governor electrical switch is connected to M120 and the secondary side is wired back to this terminal.

The following is an output terminal.

EB Terminal – Voltage output to either the rope gripper or the secondary brake contactor. In case of the rope gripper, this terminal is connected to the primary or hot side of the rope gripper. If a secondary sheave brake is being used, this is factory wired to the B2 contactor.

Figure 19: 120 VAC Input and Output Connector

2.12 Hall Lock Connections

WARNING

ALL CONNECTIONS ON THIS TERMINAL BLOCK ARE HIGH VOLTAGE. DISCONNECT POWER TO THE CONTROLLER BEFORE WIRING THESE TERMINALS.

LRT Terminal – Terminates the rear top lock. The primary side of the lock is connected to L120 and the secondary side is wired back to this terminal.

LRM Terminal – Terminates the rear middle locks. The primary side of the lock is connected to L120 and the secondary side is wired back to this terminal.

LRB Terminal – Terminates the rear bottom lock. The primary side of the lock is connected to L120 and the secondary side is wired back to this terminal.

LFT Terminal – Terminates the front top lock. The primary side of the lock is connected to L120 and the secondary side is wired back to this terminal.

LFM Terminal – Terminates the front middle locks. The primary side of the lock is connected to L120 and the secondary side is wired back to this terminal.

LFB Terminal – Terminates the front bottom lock. The primary side of the lock is connected to L120 and the secondary side is wired back to this terminal.

L120 Terminals – Internally fused source for all lock voltages.

Figure 20: Hall Lock Connector

2.13 Inspection Controls

ENABLE Button – Enables power to the direction commands for inspection operation. This button must be pressed prior to issuing a direction to move on inspection.

INSPECTION Switch – Toggles between inspection and normal operation. When the MM input signal is high and the switch is set to INSPECTION, the system is in Construction mode. If the switch is set to NORMAL, the system is in test mode.

UP and DOWN Buttons – Moves the car either up or down on Inspection and Construction mode.

CAR and HALL DOOR BYPASS Switches – Bypasses the hall locks and Gate switch only on CT and IC inspection. These switches are used instead of jumpers to reduce the risk of accidentally leaving a jumper still connected. These switches are not used in Construction mode and the controller faults out if used any time outside CT or IC inspection.

CAPTURE Button – Captures the car when in automatic operation. Pressing the CAPTURE button takes the car out of the group (it can no longer accept hall calls) but will continue to service car calls. Once the car stops moving, the user can take control of the car as no one is left inside. To activate, press and hold the CAPTURE button until the LED above the button is flashing. When no more car calls are available, the LED turns solid and the car is captured. The car remains in the captured state for 20 seconds and then goes back into service. For capturing the car for a longer period, turn DIP 3A ON or put the car on inspection.

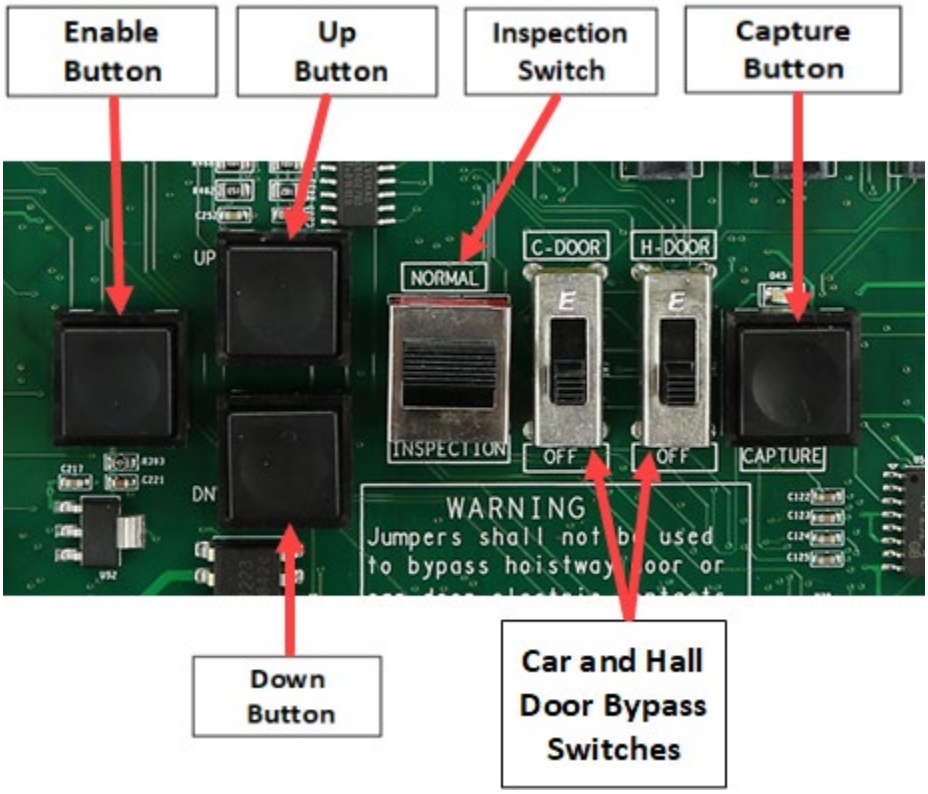

Figure 21: MR Board SR3032 Inspection Control

2.14 Safety Relays

The following describe the safety relays.

SFM – The force guided relay that is controlled by the main processor. The status of the relay is monitored by both the main processor and the safety processor. When the relay is active, contacts that are in series with SFP output voltage to the SAFE terminal are used to control the motor contactor.

SFP – The force guided relay that is controlled by the safety processor. The status of the relay is monitored by both the main processor and the safety processor. When the relay is active, contacts that are in series with SFM output voltage to the SAFE terminal are used to control the motor contactor.

EB1 – The force guided relay that is controlled by the safety processor. The status of the relay is monitored by both the main processor and the safety processor. When the relay is active, contacts that are in series with EB2 pass through voltage from the EBS terminal to the EB terminal.

EB2 – The force guided relay that is controlled by the main processor. The status of the relay is monitored by both the main processor and the safety processor. When the relay is active, contacts that are in series with EB1 pass through voltage from the EBS terminal to the EB terminal.

EB3 – The force guided relay that is controlled by the safety processor. The status of the relay is monitored by both the main processor and the safety processor. When the relay is active, contacts that are in series with EB3 pass through voltage from the EBS terminal to the EB terminal.

EB4 – The force guided relay that is controlled by the main processor. The status of the relay is monitored by both the main processor and the safety processor. When the relay is active, contacts that are in series with EB1 pass through voltage from the EBS terminal to the EB terminal.

NOTE: EB3 and EB4 are only used during preflight operation to bypass EB1 and EB2 relays so they can be toggled without dropping the emergency brake.

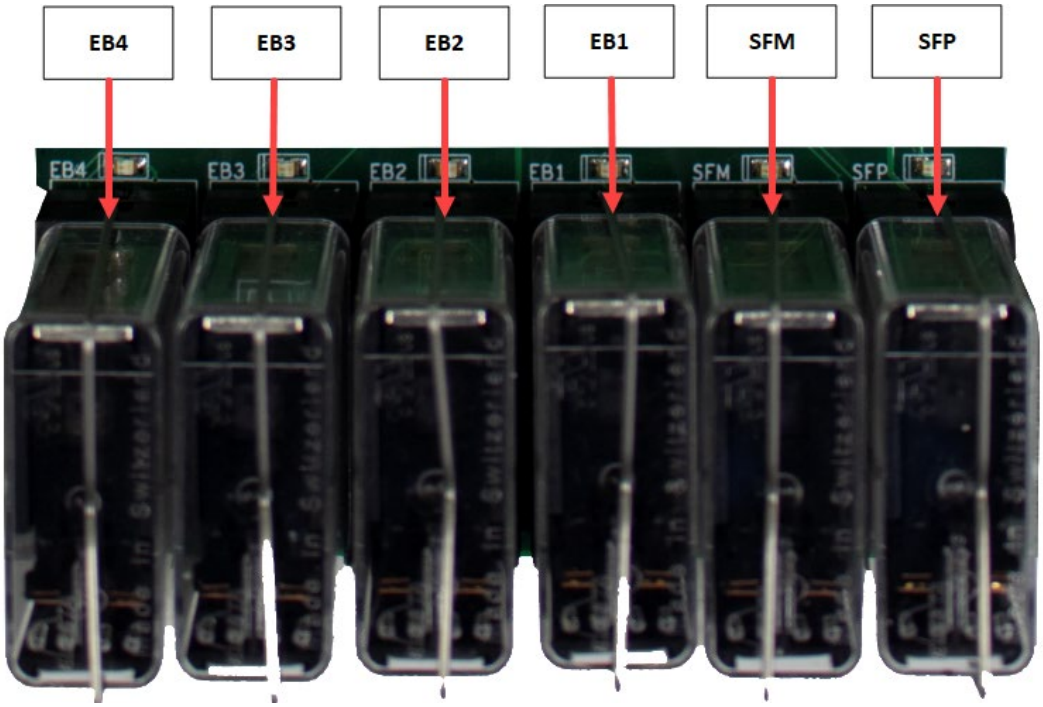

Figure 22: MR Board SR3032 Safety Relays

2.15 SRU Board SR3030

The LEDs on the SRU board are either red, yellow, or green dependent upon the terminal and status. Each color represents the following:

- **Red** – Indicates a fault has been detected or the board is resetting.
- **Yellow** – Indicates an active output terminal and alarm on the processors.
- **Green** – Shows power on an input terminal, power to the board, and as a "heartbeat" to show the software is running on the processors.

Each LED on the SRU board has a reference designator.

The input terminals are labeled 501 through 5XX (508 on the MR board). 24 VDC is connected to the input terminals to run the logic circuitry.

WARNING

DO NOT APPLY AC CURRENT TO THE INPUT TERMINALS. APPLYING AC CURRENT WILL DAMAGE THE BOARD.

The output terminal is connected to the negative side of the load and provides a reference (REF) signal. The positive side of the load is connected to a 24 VDC power source.

If the yellow LED is not lit, the output transistors have no output and there is no load actuation.

WARNING

DO NOT APPLY 24 VDC DIRECTLY TO THE OUPUT TERMINAL WITHOUT A CURRENT LIMITING DEVICE. THIS WILL CAUSE DAMAGE TO THE OUTPUT TRANSISTORS.

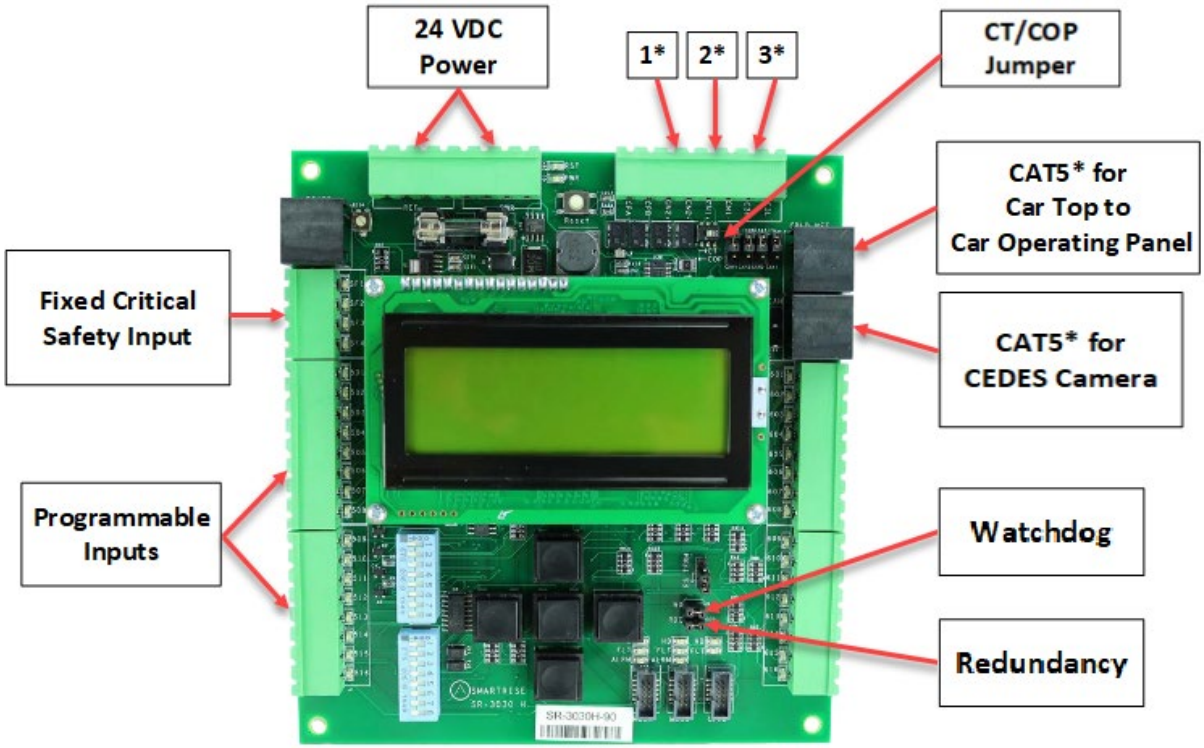

Figure 23: SRU Board SR3030

The serial communication is as follows:

- 1* (CN2+ CN2-) – Serial communication from the CT to the MR board for safety network.
- 2* (CN1+ CN1-) – Serial communication for devices on the car network.
- 3* C3H and C3L – Serial communication to third-party devices, for example, the fixture driver board.

CAT5* – The CAT5 supplies power and two serial communication channels.

There are two sets of DIP switch settings for the SR3030 board. Bank A (upper) and Bank B (lower). Each setting is configured for a different functionality.

The following table list the functionality and configuration for the SRU Board SR3030 Bank A DIP Switch setting.

Table 4: SRU Board SR3030 Bank A DIP Switch Setting Configuration

DIP Switch	Functionality	Description
DIP 1	CPU Stop Switch	Halts parameter updates and used to reset fire and latched faults
DIP 2		
DIP 3		

DIP Switch	Functionality	Description
DIP 4		
DIP 5		
DIP 6		
DIP 7	Pop-up Blocker	Disables the fault pop-up messages. Faults can still be viewed in the active and logged faults.
DIP 8		

The following table list the functionality configuration for the SRU Board SR3030 Bank B DIP Switch setting.

Table 5: SRU Board SR3030 Bank B DIP Switch Setting Configuration

DIP Switch	Functionality	Description
DIP 1	COP (Not CT)	Must be turned on for COP operation and off for CT operation
DIP 2	Enable Rear Doors	Must be set if rear doors are present
DIP 3	Enable Landing Insp	Must be set when conducting landing maintenance
DIP 4	Enable Pit Insp	Must be set when conducting pit maintenance
DIP 5		
DIP 6		
DIP 7		
DIP 8		

2.16 IO Board/Riser Board SR3031

The SR3031 Board serves two purposes:

1. Designated as a Riser board (DIP 8 is ON) for fire service or emergency power connections and hall network connections.
    - Additional Riser boards are added by increasing the addressing by 1, for example, Riser board 2 has DIP 8 and DIP 1 ON. Up to four Riser boards can be used within the system.
2. Designated as an Expansion board (DIP 8 is OFF) to provide 24 VDC inputs and outputs that can be programmed as required.
    - Expansion boards are broken up into groups of 8. Up to 40 Expansion boards can be used within the system.

The Master/Slave switch is used to enable the secondary CAN network on the SR3031 board. When the switch is in the slave position, CAN1 and CAN2 terminals are identical and service the same network. When the switch is in the master position, CAN1 and CAN2 terminals are different and service different networks.

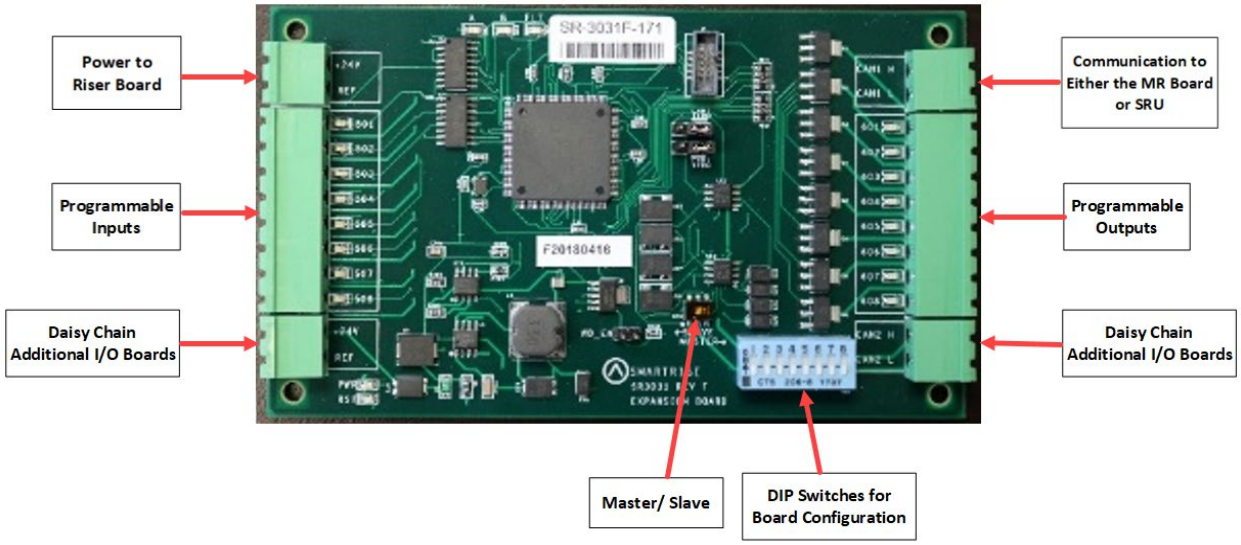

Figure 24: IO Board/Riser Board SR3031

The following table lists the IO Board SR3031 DIP Switch settings.

Table 6: IO Board SR3031 DIP Switch Settings

DIP Switch	Functionality
DIP 1	Slave ID 1
DIP 2	Slave ID 2
DIP 3	Slave ID 3
DIP 4	IO Maser ID 1
DIP 5	IO Maser ID 2
DIP 6	IO Maser ID 3
DIP 7	IO Maser ID 4
DIP 8	Riser Board

2.17 Hall Board SR1060

The Hall Board SR1060 is discretely wired. It is also used as the power source for the buttons and lamps on the fixture.

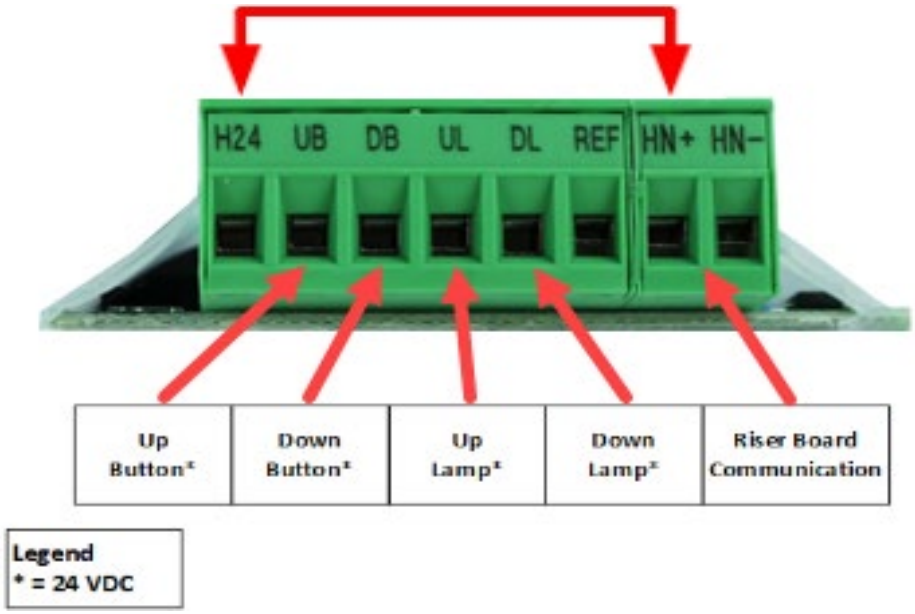

Figure 25: Hall Board SR1060

There are two ways to communicate with the Riser board:

- CAN bus via Twisted Pair
- CAT5

The following table lists the Hall Board SR1060 DIP Switch settings.

Table 7: Hall Board SR1060 DIP Switch Settings

DIP Switch	Functionality
DIP 1	Landing ID 1
DIP 2	Landing ID 2
DIP 3	Landing ID 3
DIP 4	Landing ID 4
DIP 5	Landing ID 5
DIP 6	Landing ID 6
DIP 7	Function ID 1
DIP 8	Function ID 2
DIP 9	Function ID 3

DIP Switch	Functionality
DIP 10	CAN Termination

2.18 Brake Board SR3038

The version of the Brake board is dependent upon the current used in the system.

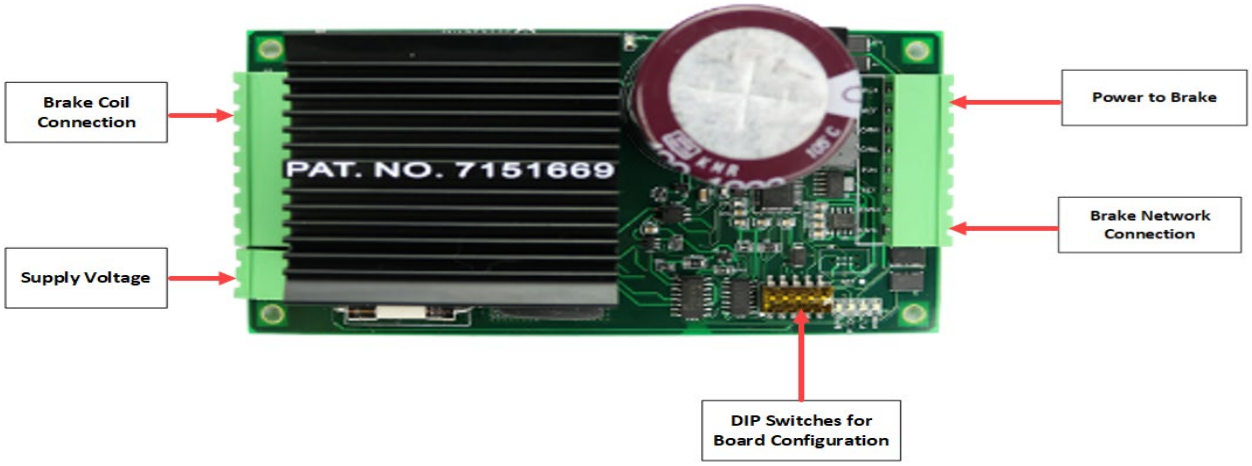

Figure 26: Brake Board SR3038

The following table lists the Brake Board SR3038 DIP Switch settings.

Table 8: Brake Board SR3038 DIP Switch Settings

DIP Switch	Functionality
DIP 1	Emergency Brake
DIP 2	ID1 (Disable MOSFET Fault)**
DIP 3	ID2 (120 VAC Supply)
DIP 4	WDT Off*
DIP 5	CAN Bus Termination

*DIP 4 set will cause the Fault LED to toggle every second.

**If DIP 2 is set at start-up, the Brake board will not function.

The following table lists Troubleshooting Tips.

Table 9: Troubleshooting Tips

Fault (System Subfault)	Trigger	LED	Solution
Unknown (1)	Undefined fault	Toggle 250 ms	Replace board
Power On/Reset (3)	Board reset	Solid	

Fault (System Subfault)	Trigger	LED	Solution
Watchdog Reset (4)	CAN bus error or processor stalled	Solid	Check CAN bus connections for miswiring
Communication (5)	No communication for 2 seconds	Toggle 500 ms	Check CAN bus connection for miswiring Check bus termination
MOSFET Failure (7)	MOSFET output feedback signal deviates from input signal by > 20% for greater than 2 seconds	Toggle 250 ms	Check wiring for brake coil, BRC, and AC supplied voltage to the Brake board Check brake coil for a short Replace Brake board
CAN Bus Offline (8)		Toggle 500 ms	Check CAN bus connections for miss wiring
Duplicate Brake (9)	Multiple Brake boards with same DIP addressing	Toggle 250 ms	Check Brake boards for identical DIP switch setting Remove and reconnect power to the Brake board
Brown Out Reset (10)	Voltage rail DIP causing processor reset	Solid	Verify sufficient power supply rating for the Brake board

3 Menu Structure

The following figures display the menu options for the C4 Traction Controller.

3.1 Status, Faults, and Alarms

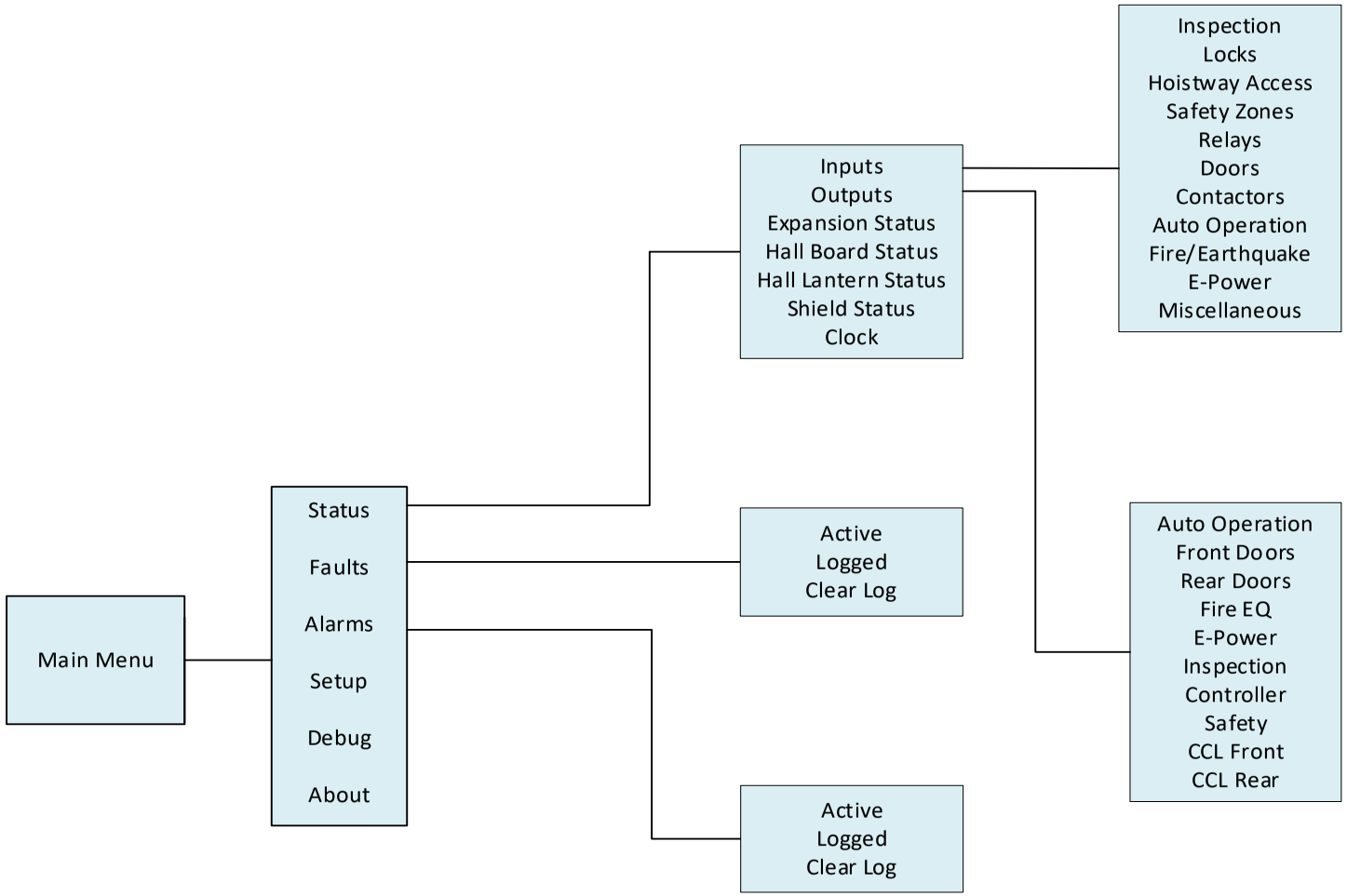

Figure 27: Status, Faults, and Alarms Menus

The table below lists the Status, Faults, and Alarm menu structures.

Table 10: Status, Faults, and Alarm Menu Structures

Menu	Description
Main Menu	
Status	Displays information about the current state of the controller
Faults	Displays a list of faults with the newest at the top of the list
Alarms	Displays a list of alarms with the newest at the top of the list
Status	
Inputs	Shows the status of all programmed inputs to the MR board
Outputs	Shows the status of all programmed outputs from the MR board
Expansion Status	Shows communication status for a group of Expansion boards
Hall Board Status	Shows communication status for all Hall boards
Hall Lantern Status	Shows communication status for all Hall Lantern boards
Shield Status	Shows the status of DAD unit
Clock	View current clock setting on the system
Inputs	
Inspection	Shows the status of inspection related inputs
Locks	Shows the status of all locks
Hoistway Access	Shows the status of all hoistway accesses
Safety Zones	Shows the status of safety inputs
Relays	Shows the status of all active relays
Doors	Shows the status of all door operator signals
Contactors	Shows the status of all contactor monitoring signals
Auto Operation	Shows the status inputs under auto operation category
Fire/Earthquake	Shows the status of fire/earthquake inputs
E-Power	Shows the status E-Power inputs
Miscellaneous	Shows the status of various other inputs
Outputs	
Auto Operation	Shows the outputs that are in auto operation
Front Doors	Shows the status of front door outputs
Rear Doors	Shows the status of rear door outputs
Fire EQ	Shows the status of fire/earthquake outputs
E-Power	Shows the status of E-Power outputs
Inspection	Shows the status of inspection outputs
Controller	Shows the status of control outputs
Safety	Shows the status of safety outputs
CCL Front	Shows the status of front car call lamps
CCL Back	Shows the status of rear car call lamps

Menu	Description
Faults	
Active	Displays current active faults that are preventing the car from running
Logged	Displays the 32 latest faults stored in the systems non-volatile memory with the most recent faults at the top
Clear Log	Clears the fault log history
Alarms	
Active	Displays current active alarms
Logged	Displays the 32 latest faults stored in the systems non-volatile memory with the most recent faults at the top
Clear Log	Clears the alarm log history

3.2 Setup

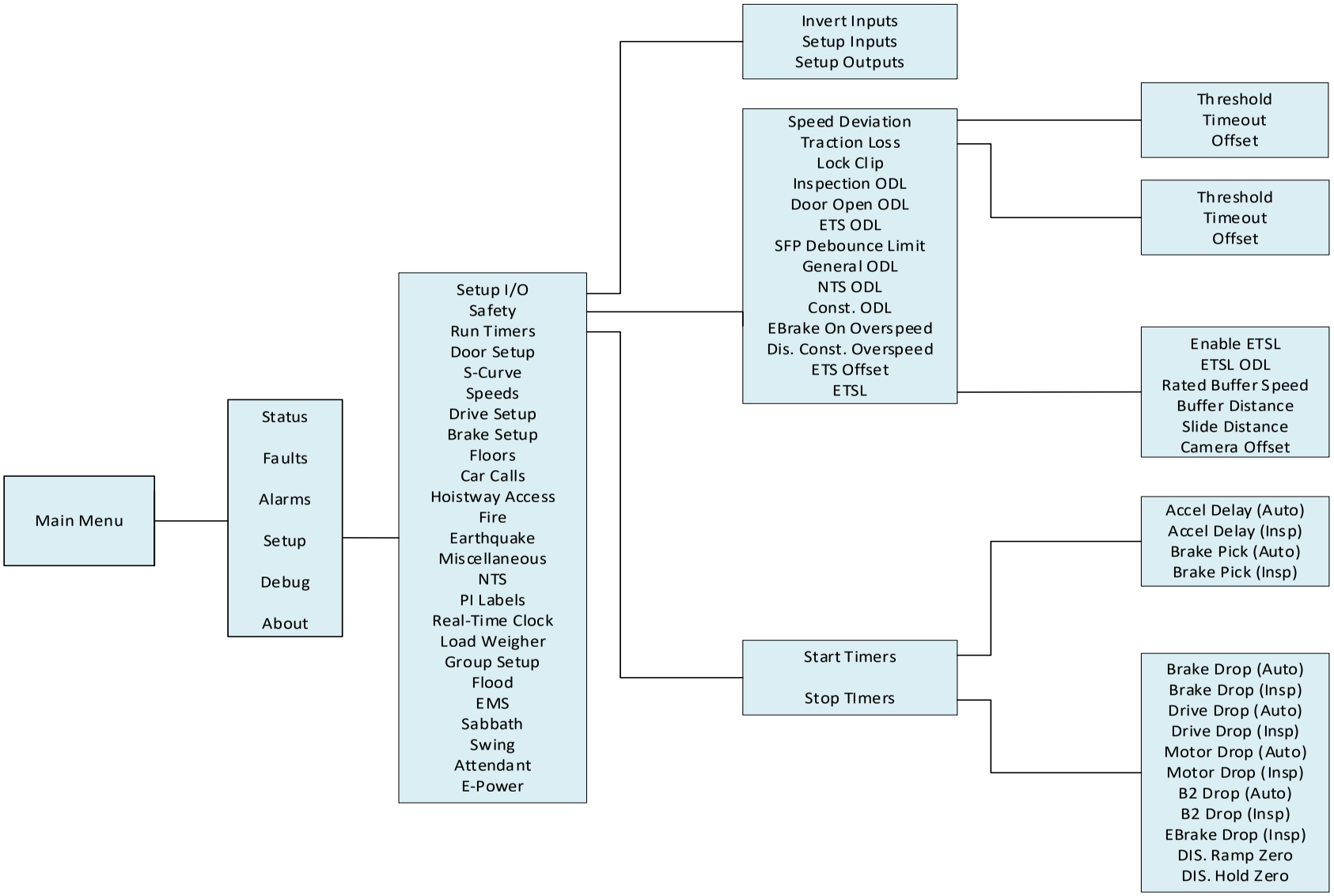

Figure 28: Setup – Setup I/O, Safety, and Run Timers Menus

The table below lists the Setup – Setup I/O, Safety, and Run Timers menu structures.

Table 11: Setup – Setup I/O, Safety, and Run Timers Menu Structures

Menu	Description
Main Menu	
Setup	Allows the user to setup the elevator configuration
Setup	
Setup I/O	Configure inputs and outputs
Safety	Allows the user to adjust safety related functions
Run Timers	Adjust start sequence and stop sequence timers
Setup I/O	
Invert Inputs	Invert selected inputs
Setup Inputs	Assign inputs
Setup Outputs	Assign outputs
Safety	
Speed Deviation	Adjust speed deviation options
Traction Loss	Adjust traction loss options
Lock Clip	The amount of time the controller disregards an open hall lock. This prevents intermittent interlock faults and for safety reasons, this timer should not exceed five seconds
Inspection ODL	Inspection overspeed debounce limit
Door Open ODL	Door open overspeed debounce limit
ETS ODL	ETS overspeed debounce limit
SFP Debounce Limit	Relay feedback debounce limit
General ODL	General overspeed debounce limit
NTS ODL	NTS overspeed debounce limit
Const. ODL	Construction overspeed debounce limit
EBrake on Overspeed	Sets the emergency brake on overspeed faults
Dis. Const. Overspeed	Disables construction overspeed setting
ETS Offset	Shifts learned ETS position by user defined offset
ETSL	Option for reduced stroke buffer
Speed Deviation	
Threshold	The speed which speed deviation detection is activated
Timer	How long speed deviation is detected before triggering fault
Offset	Percent change between feedback and command speed for triggering the speed deviation fault
Traction Loss	
Threshold	The speed which traction loss detection is activated
Timer	Amount of time for traction loss to be present before a fault is issued

Menu	Description
Offset	Percent offset between drive and position system speed feedback
Run Timers	
Start Timers	Timers used for motion start sequence
Stop Timers	Timers used for motion stop sequence
ETSL	
Enable ETSL	Enable/Disables ETSL operation
ETSL ODL	ETSL overspeed debounce limit. Sets of sensitivity of the ETSL device. This setting is only increased to avoid nuisance tripping.
Rated Buffer Speed	Rated speed of the buffer installed
Buffer Distance	Distance from the bottom of the cab to the buffer
Slide Distance	Slide distance when both brakes are set. This is determined by the ETSL slide distance test.
Camera Offset	Camera offset between main camera and ETSL camera. This is automatically calculated during learn operation.
Start Timers	
Accel Delay (Auto)	Sets a delay before moving into acceleration stage of pattern on automatic operation. This holds the car at zero speed (or at min accel speed if set).
Accel Delay (Insp)	Sets a delay before moving into acceleration stage of pattern on inspection operation. This holds the car at zero speed (or at min accel speed if set).
Brake Pick (Auto)	Delays the lifting of the main brake on automatic operation
Brake Pick (Insp)	Delays the lifting of the main brake on inspection operation
Stop Timers	
Brake Drop (Auto)	Sets delay between reaching zero speed and dropping the primary brake on automatic operation
Brake Drop (Insp)	Sets delay between reaching zero speed and dropping the primary brake on inspection operation
Drive Drop (Auto)	Sets delay between checking BPS and dropping drive control on automatic operation
Drive Drop (Insp)	Sets delay between checking BPS and dropping drive control on inspection operation
Motor Drop (Auto)	Sets delay between dropping drive control and dropping the M contactor on automatic operation
Motor Drop (Insp)	Sets delay between dropping drive control and dropping the M contactor on inspection operation
B2 Drop (Auto)	Sets delay between dropping the secondary brake and dropping the B2 contactor while on automatic operation

Menu	Description
B2 Drop (Insp)	Sets delay between dropping the secondary brake and dropping the B2 contactor on inspection operation
EBrake Drop (Insp)	Sets delay between reaching zero speed and dropping the secondary brake on automatic operation
DIS Ramp Zero	When ON, disables ramping down command speed from leveling speed to 1 fpm prior to dropping a run. This option must be off for KEB drives.
DIS Hold Zero	When ON, disables stop sequence check for encoder speed to read below 1 fpm prior to dropping the brake. Turning this option off may increase floor level accuracy.

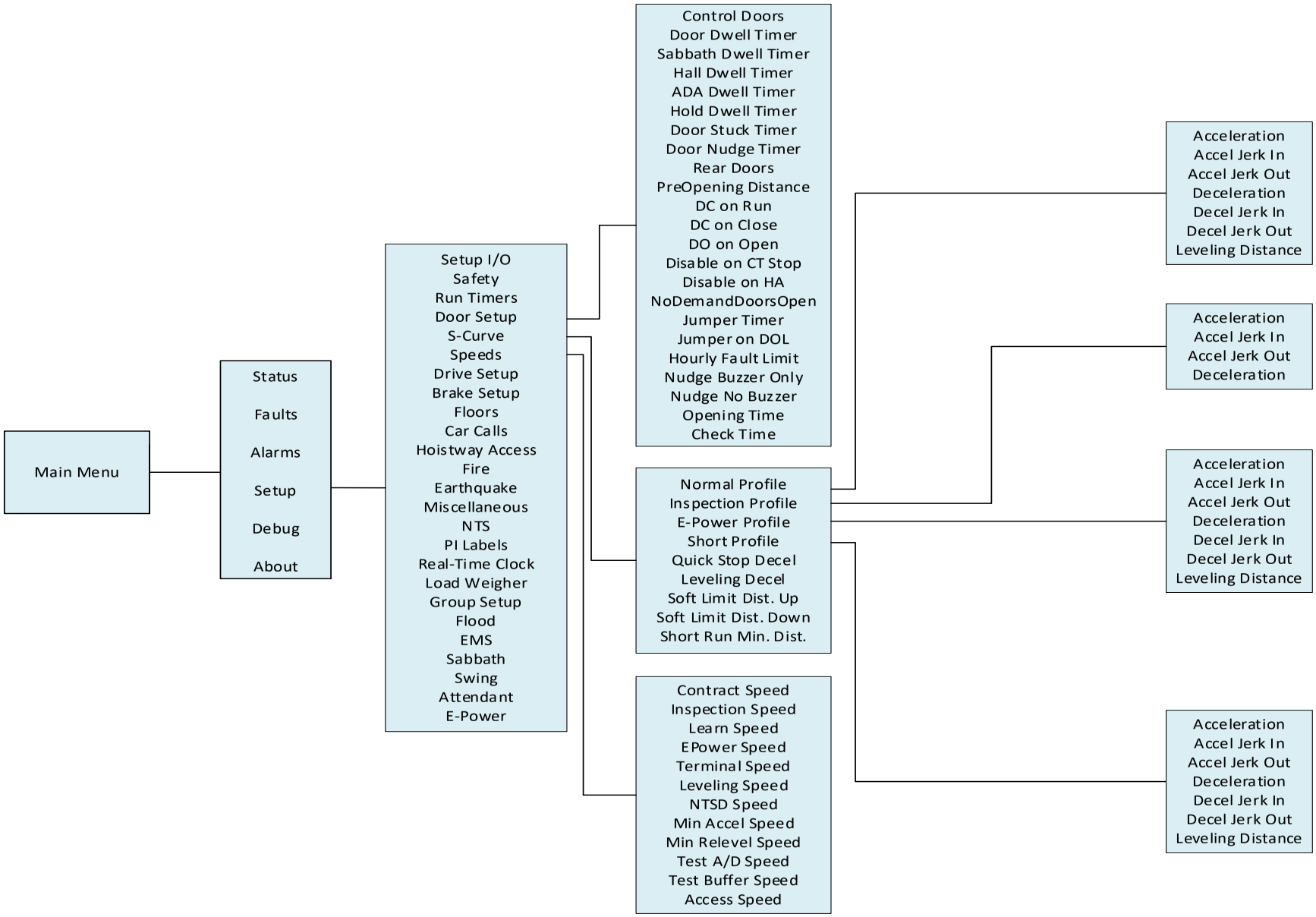

Figure 29: Setup – Door Setup, S-Curve, and Speeds Menus

The table below lists the Setup – Door Setup, S-Curve, and Speeds menu structures.

Table 12: Setup – Door Setup, S-Curve, and Speeds Menu Structures

Menu	Description
Setup	
Door Setup	Configure door parameters
S-Curve	Configure S-Curve parameters
Speeds	Configure speed parameters
Door Setup	
Control Doors	Allows for manually opening and closing the doors through the UI
Door Dwell Timer	Time car doors remains open when answer car calls
Sabbath Dwell Timer	Time car doors remains open when on Sabbath operation
Hall Dwell Timer	Time car doors remain open when answering hall calls
ADA Dwell Timer	Time car doors remain open when answering ADA calls
Hold Dwell Timer (1 sec)	Time car doors remain open when responding to door hold button requests
Door Stuck Timer (1 sec)	Time limit for a door to complete an opening or closing request before faulting
Door Nudge Timer (1 sec)	Time doors spend trying to close before transitioning to nudging which ignores photoeye. If set to zero, nudging is disabled.
Rear Doors	Enable or disable rear doors
PreOpening Distance (.019”)	The distance from a floor to start preopening doors. If zero, preopening is disabled.
DC on Run	Activates door close output while in motion
DC on Close	Activates door close output while the doors are in closed state
DO on Open	Activates door open output while the doors are in open state
Disable on CT Stop	When set ON, door outputs are supressed when the car top stop switch is active
Disable on HA	When set ON, door outputs are supressed when the on hoistway access inspection
NoDemanandDoorsOpen	Doors remain open while the car is idle
Jumper Timer (100 ms)	Timer for jumper on Gate switch (F98/F107) and jumper on lock (F99/F108) faults. This value is added to a minimum timeout of 1.6 seconds.
Jumpers on DOL	When set ON, detects jumper on open DOL instead of GSW

Menu	Description
Hourly Fault Limit	The number of door faults allowed within 1-hour window before the car goes out of service. If the car goes out of service, it will remain out of service until the hour window elapses. If set to zero, this feature is disabled.
Nudge Buzzer Only	When set ON, during nudging the NDG output is supressed and only the buzzer sounds.
Opening Time (100ms)	The estimated time it takes the doors to go from fully closed to fully open. This value is learned after performing a run with preflight disabled (01-64) and the learn opening time bit is ON (01-165). This can help improve dwell time delays when preflight is on. If set to zero, this option is disabled.
Check Time (100ms)	Sets the time that that car doors must be seen as safe before the car is allowed to start a run on automatic operation. Time is set in 100 ms counts. If zero, defaults to 300 ms.
S-Curve	
Normal Profile	Set pattern parameters used on normal profile runs. The normal profile is selected in all automatic operation runs longer than minimum short profile distance, with exception of emergency power.
Inspection Profile	Set pattern parameters used on inspection profile runs
E-Power Profile	Set pattern parameters used on E-Power profile runs
Short Profile	Set pattern parameters used on short profile runs
Quick Stop Decel	The rate of deceleration used during an NTS trip. During an NTS trip, the drive will ignore the controller's commanded speed and both will ramp down their speeds independently.
Leveling Decel	Sets the rate of decel from leveling speed
Soft Limit Dist. Up (1 ft)	Distance away from the top terminal floor that car switches to terminal speed during manual operation
Soft Limit Dist. Dn (1 ft)	Distance away from the bottom terminal floor that car switches to terminal speed during manual operation
Short Run Min. Dist. (1 ft)	Distance below which the short motion profile is used instead of the normal motion profile
Normal Profile	
Acceleration	Sets the max acceleration rate used on normal profile runs
Acceleration Jerk In	Sets starting rate of acceleration change on normal profile runs
Acceleration Jerk Out	Sets the rate of acceleration change when approaching max speed on normal profile runs

Menu	Description
Deceleration	Sets the max deceleration rate used on normal profile runs
Decel Jerk In	Sets the starting rate of deceleration change on normal profile runs
Decel Jerk Out	Sets the rate of deceleration change when approaching a floor on normal profile runs
Leveling Distance	Sets the distance from a floor at which the car transitions to leveling speed on normal profile runs
Inspection Profile	
Acceleration	Sets the max acceleration rate used on inspection profile runs
Acceleration Jerk In	Sets starting rate of acceleration change on inspection profile runs
Acceleration Jerk Out	Sets the rate of acceleration change when approaching max speed on inspection profile runs
Deceleration	Sets the max deceleration rate used on inspection profile runs
E-Power Profile	
Acceleration	Sets the max acceleration rate used on emergency power profile runs
Acceleration Jerk In	Sets starting rate of acceleration change on emergency power profile runs
Acceleration Jerk Out	Sets the rate of acceleration change when approaching max speed on emergency power profile runs
Deceleration	Sets the max deceleration rate used on emergency power profile runs
Decel Jerk In	Sets the starting rate of deceleration change on emergency power profile runs
Decel Jerk Out	Sets the rate of deceleration change when approaching a floor on emergency power profile runs
Leveling Distance	Sets the distance from a floor at which the car transitions to leveling speed on emergency power profile runs
Short Profile	
Acceleration	Sets the max acceleration rate used on short profile runs
Acceleration Jerk In	Sets starting rate of acceleration change on short profile runs
Acceleration Jerk Out	Sets the rate of acceleration change when approaching max speed on short profile runs
Deceleration	Sets the max deceleration rate used on short profile runs

Menu	Description
Decel Jerk In	Sets the starting rate of deceleration change on short profile runs
Decel Jerk Out	Sets the rate of deceleration change when approaching a floor on short profile runs
Leveling Distance	Sets the distance from a floor at which the car transitions to leveling speed on short profile runs
Speeds	
Contract Speed	Maximum speed of the elevator
Inspection Speed	Set the speed at which the car runs for all inspection modes
Learn Speed	Sets the speed used during hoistway learn operation
EPower Speed	Sets the maximum speed during emergency power operation
Terminal Speed	Sets the speed the car will use while in inspection and within the configured soft limit distance of a terminal floor
Leveling Speed	Sets the speed used in automatic operation when leveling into a floor. If leveling distance is zero, this has no effect.
NTSD Speed	Set the target speed used during NTS. This option is independent of the target speed on the drive and the lowest value is used by the drive.
Min Accel Speed	Sets the minimum commanded speed used during acceleration. Necessary for quick recovery from rollback and cases of limited drive control at low speeds.
Test A/D Speed	Sets the speed used during Ascending/Descending Overspeed tests
Test Buffer Speed	Sets the speed used during buffer test
Access Speed	Sets the speed used during hoistway access

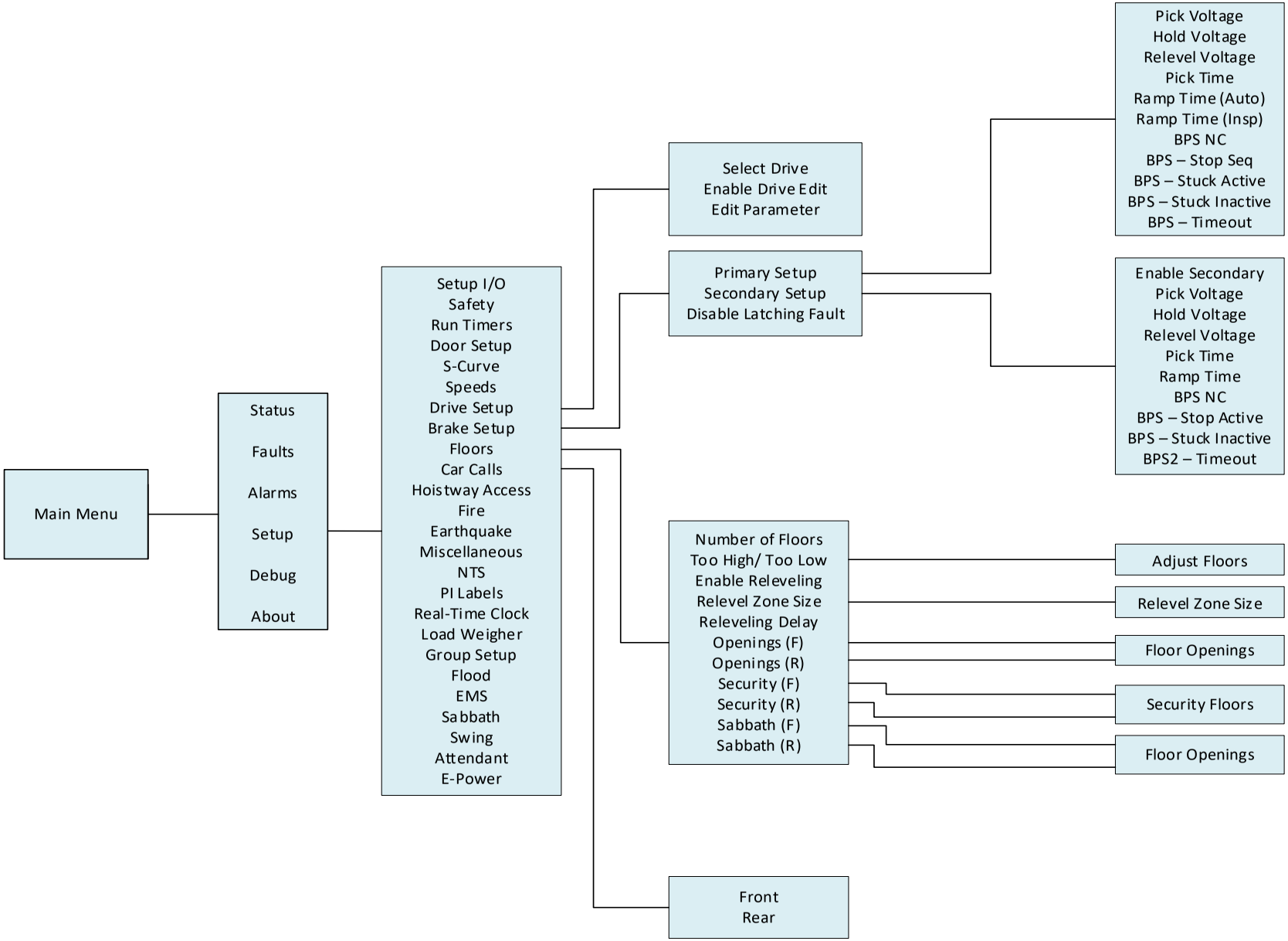

Figure 30: Setup – Drive Setup, Brake Setup, Floors, and Calls Menus

The table below lists the Drive Setup, Brake Setup, Floors, and Calls menu structures.

Table 13: Drive Setup, Brake Setup, Floors, and Calls Menu Structures

Menu	Description
Setup	
Drive Setup	Setup drive related parameters
Brake Setup	Setup brake related parameters
Floors	Setup floor related parameters
Car Calls	Enter car calls
Drive Setup	
Select Drive	Allows for selecting the type of drive used
Enable Drive Edit	Enables the remote editing of the drive parameters
Edit Parameters	Allows for editing the parameters for the drive according to the configuration information
Brake Setup	
Primary Setup	Configuration setup for the primary brake system
Secondary Setup	Configuration setup for the secondary brake system, if applicable
Disable Latching Fault	When set ON, primary and secondary brake's MOSFET faults are not latching. When set to OFF, the faults require a reset of the MR board (F199 and F210).
Primary Setup	
Pick Voltage	Set the pick voltage of the primary brake
Hold Voltage	Set the hold voltage of the primary brake
Relevel Voltage	Set the releveling voltage of the primary brake. This voltage should be set to where the brake barely lifts during releveling to allow the sheave to turn under the brake.
Pick Time	Amount of time pick voltage is maintained before switching to hold voltage
Ramp Time (Auto)	Amount of time the brake scales to full pick voltage on automatic operation
Ramp Time (Insp)	Amount of time the brake scales to full pick voltage on inspection operation
BPS – NC	Brake Pick switch is Normally closed
BPS – Stuck Seq	Disables primary BPS check during the motion stop sequence
BPS – Stuck Active	Disables primary BPS stuck picked check
BPS – Stuck Inactive	Disables primary BPS stuck dropped check
BPS – Timeout (1 sec)	Sets the timeout for primary BPS stuck active and stuck inactive faults (F189/F190). Minimum of three seconds.

Menu	Description
Secondary Setup	
Enable Secondary	Enables secondary brake
Pick Voltage	Set secondary brake pick voltage
Hold Voltage	Set secondary brake hold voltage
Relevel Voltage	Set the releveling voltage of the secondary brake. This voltage should be set to where the brake barely lifts during releveling to allow the sheave to turn under the brake.
Pick Time	Amount of time pick voltage is maintained before switching to hold voltage
Ramp Time	Amount of time the brake scales to full pick voltage on automatic operation
BPS – NC	Brake Pick switch is Normally closed
BPS – Stuck Active	Disables primary BPS stuck picked check
BPS – Stuck Inactive	Disables primary BPS stuck dropped check
BPS – Timeout	Sets the timeout for primary BPS stuck active and stuck inactive faults (F189/F190) to be asserted. Minimum of three seconds.
Floors	
Number of Floors	Allows for setting the number of floors within the building
Too High/ Too Low	Used to adjust the learned position of the floor when setting floor levels
Enable Releveling	Enables releveling operation
Relevel Zone Size (.02”)	Sets the size of the releveling zone (dead zone)
Relevel Delay	The time the controller waits before engaging a Relevel command while in a door zone’s dead zone
Openings (F)	Allows for setting the floors the front door opens
Openings (R)	Allows for setting the floors the rear door opens
Security (F)	Allows for setting the security parameters for front door
Security (R)	Allows for setting the security parameters for rear door
Sabbath (F)	Sets the front opening floors to be serviced during Sabbath operation
Sabbath (R)	Sets the rear opening floors to be serviced during Sabbath operation
Too High/ Too Low	
Adjust Floors	Use for floor level adjustment
Relevel Zone Size	
Relevel Zone Size (.02”)	Sets the size of the releveling zone (dead zone)

Menu	Description
Opening (F and R)	
Floor Openings	Set the landings that the controller services during Sabbath operation
Security (F and R)	
Active	Enable or disable security at the selecting landing
Sabbath	
Floor Openings	Set the landings that the controller services during Sabbath operation
Car Calls	
Front	Register front car calls on the system
Rear	Register rear car calls on the system

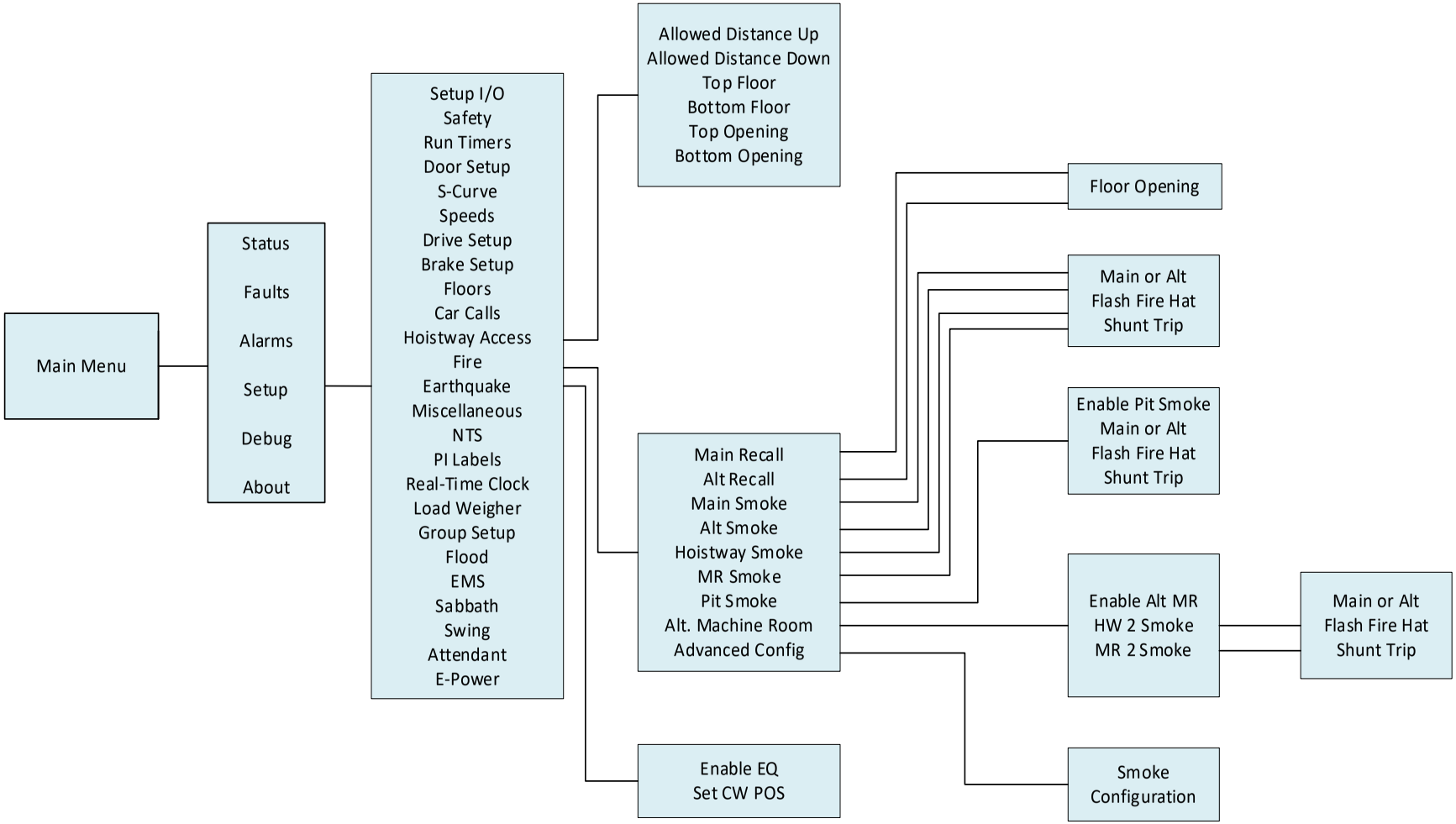

Figure 31: Setup – Hoistway Access, Fire, and Earthquake Menus

The table below lists the Hoistway Access, Fire, and Earthquake menu structures.

Table 14: Hoistway Access, Fire, and Earthquake Menu Structures

Menu	Description
Setup	
Hoistway Access	Hoistway access setup menu
Fire	Fire operation setup menu
Earthquake	Earthquake operation setup menu
Hoistway Access	
Allowed Distance Up (1 ft)	Sets the distance below the top hoistway access floor that the car is allowed to move while on top hoistway access
Allowed Distance Down (1 ft)	Sets the distance above the bottom hoistway access floor that the car is allowed to move while on bottom hoistway access.
Top Floor	Sets the top hoistway access floor. This value is zero based, so the bottom most floor is zero. This value's upper bound is the configured number of floors.
Bottom Floor	Sets the bottom hoistway access floor. This value is zero based, so the bottom most floor is zero.
Top Opening	When nonzero, configures the top hoistway access to use the rear opening
Bottom Opening	When nonzero, configures the bottom hoistway access to use the rear opening
Fire	
Main Recall	Sets the main recall floor
Alt Recall	Sets the designated alternate recall floor
Main Smoke	Main smoke options
Alt Smoke	Alternate smoke options
Hoistway Smoke	Hoistway smoke options
MR Smoke	Machine room smoke options
Pit Smoke	Pit smoke options
Alt Machine Room	Secondary machine room smoke
Advanced Config	Additional fire features
Main Recall	
Floor Opening	Sets the main fire recall floor. This value is zero based, so the bottom most floor is zero
Alt Recall	
Floor Opening	Sets the alternate fire recall floor. This value is zero based, so the bottom most floor is zero

Menu	Description
Main Smoke	
Main or Alt	Sets whether the elevator will recall to the main or alternate landing when the main smoke is active
Flash Fire Hat	Flash fire hat when main smoke is active
Shunt Trip	Activates fire shunt output during Phase 1 recall if triggered by main smoke input
Alt Smoke	
Main or Alt	Sets whether the elevator will recall to the main or alternate landing when the alternate smoke is active
Flush Fire Hat	Flash fire hat when alternate smoke is active
Shunt Trip	Activates fire shunt output during Phase 1 recall if triggered by alternate smoke input
Hoistway Smoke	
Main or Alt	Sets whether the elevator will recall to the main or alternate landing when the hoistway smoke is active
Flush Fire Hat	Flash fire hat when hoistway smoke is active
Shunt Trip	Activates fire shunt output during Phase 1 recall if triggered by hoistway smoke input
MR Smoke	
Main or Alt	Sets whether the elevator will recall to the main or alternate landing when the machine room smoke is active
Flush Fire Hat	Flash fire hat when machine room smoke is active
Shunt Trip	Activates fire shunt output during Phase 1 recall if triggered by machine room smoke input
Pit Smoke	
Enable Pit Smoke	Enables pit smoke
Main or Alt	Sets whether the elevator recalls to the main or alternate landing when the pit smoke is active
Flush Fire Hat	Flash fire hat when pit smoke is active
Shunt Trip	Activates fire shunt output during Phase 1 recall if triggered by pit smoke input
Alt Machine Room	
Enable at MR	Enables alternate machine room fire operation setup menu
HW 2 Smoke	Alternate hoistway smoke options
MR 2 Smoke	Alternate machine room smoke options
HW 2 Smoke	
Main or Alt	Sets whether the elevator recalls to the main or alternate landing when alternate machine room smoke is active
Flash Fire Hat	Flash fire hat when alternate machine room smoke is active

Menu	Description
Shunt Trip	Activates fire shunt output during Phase 1 recall if triggered by alternate machine room smoke input
MR 2 Smoke	
Main or Alt	Sets whether the elevator recalls to the main or alternate landing when the alternate machine room smoke is active
Flash Fire Hat	Flash fire hat when alternate machine room smoke is active
Shunt Trip	Activates fire shunt output during Phase 1 recall if triggered by alternate machine room smoke input
Advanced Config	
Smoke Configuration	Additional smoke configuration options
Earthquake	
Enable EQ	Enables earthquake options
Set CW POS	Set the CW midpoint position

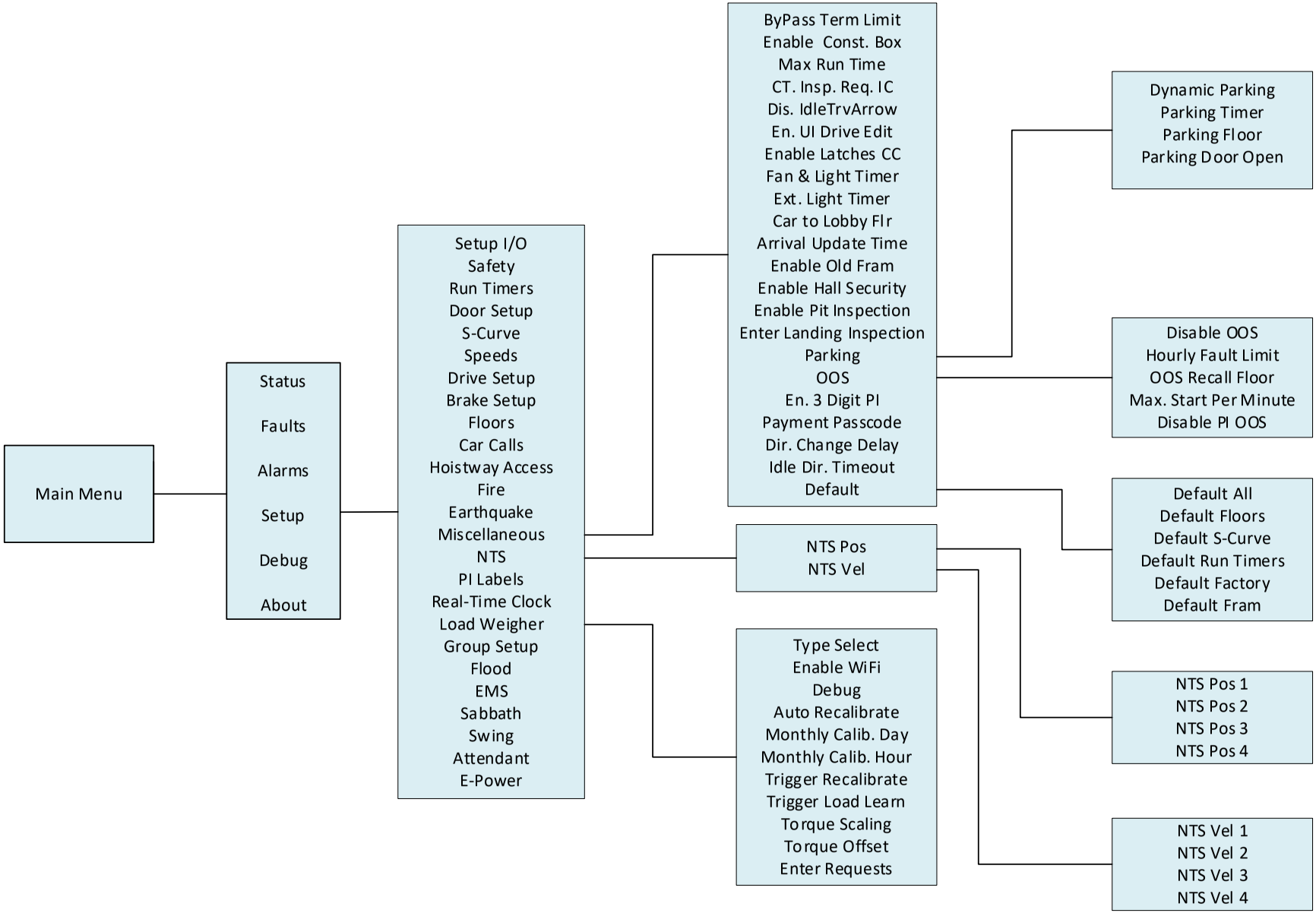

Figure 32: Setup – Miscellaneous, NTS, and Load Weigher Menus

The table below lists the Miscellaneous, NTS, and Load Weigher menu structures.

Table 15: Miscellaneous, NTS, and Load Weigher Menu Structures

Menu	Description
Setup	
Miscellaneous	Miscellaneous menu options
NTS	Normal Terminal Slowdown menu option
PI Labels	Set Position Indicator labels
Real-Time Clock	Set internal clock time for fault identification
Load Weigher	Load Weigher menu options
Miscellaneous	
ByPass Term Limit	Bypasses terminal limit faults. This option is automatically turned off when in automatic operation.
Enable Const. Box	Enable/Disable Construction Box. When enabled, onboard inspection buttons are ignored on construction operation.
Max Run Time	Sets the max run time allowed in automatic operation before the car faults (F116). If set to zero, this fault is supressed.
CT. Insp. Req. IC	Require in-car inspection to enable car top inspection
Dis. IdleTrvArrow	When set ON, CE travel arrows reflect the motion direction of the car. When set OFF, the arrows reflect the motion direction of the car and the arrival direction after a run.
En. UI Drive Edit	Enables editing of drive parameters from the machine room SRU UI or the GUI
Enable Latches CC	When set ON, car call enables a latch a car call
Fan & Light Timer	Enable/Disable fans and lights in the car
Ext. Light Timer	Sets the time the car may be idle before its fan and light output is turned off. If a shorter timer is needed, the fan and light timer (08-115) should be used instead. Units are in minutes.
Car to Lobby Flr	Sets the floor the car moves to when the car to lobby input is activated. This value is zero based.
Arrival Update Time	Sets the time before arriving at a floor to update arrival lantern outputs. If set to zero, arrival outputs updates when doors begin to open. Units are in seconds.
Enable Old Fram	When set ON, the MR board is configured to work with old FRAM hardware
Enable Hall Security	Enables hall call security
Enable Pit Inspection	Enables pit inspection
Enter Landing Inspection	Enables landing inspection
Parking	Parking options

Menu	Description
OOS	Car out of service options
En. 3 Digit PI	Enables 3-digit PI
Payment Passcode	Controller passcode
Dir. Change Delay	Sets the time to delay car direction changes. Allows time for passengers to enter their car calls. Units are in 1 second counts
Default	Parameter default options
Parking	
Dynamic Parking	Enable dynamic parking
Parking Timer (1 sec)	Sets the time it takes before an idle car is parked. If set to zero, parking is disabled.
Parking Floor	Floor the car parks at
Parking Door Open	Enables parking with doors open
OOS	
Disable OOS	Disables the controller from going out of service due to reoccurring faults
Hourly Fault Limit	Sets the number of faults allowed within a 1-hour window before the car goes out of service. If the car goes out of service, it remains out of service until the hour window elapses.
OOS Recall Floor	Floor the controller recalls to when out of service
Max. Start Per Minute	Specifies how many times the car may attempt to start a run in automatic operation during a 1-minute window. If the controller attempts additional runs, the car goes out of service until the real-time clock increments to the next minute. Set this parameter to zero to disable the feature.
Disable PI OOS	When set ON, OOS does flash on the PI when the car is out of group
Default	
Default All	Defaults all parameters except Floors, S-Curve, and Run Timers values
Default Floors	Default learned floor values
Default S-Curve	Default S-curve values
Default Run Timers	Default Run Timers values
Default Factory	Restore all parameters to factory settings
Default Fram	Set ON to default the FRAM chip. This option is self-resetting. This clears fault/alarm logs, latched faults, emergency bits, and run counter.
NTS	
NTS Pos	Calculated NTS positions

Menu	Description
NTS Vel	Calculated NTS velocities
NTS Pos	
NTS Pos 1	Calculated NTS position 1 – normal profile
NTS Pos 2	Calculated NTS position 2 – inspection profile
NTS Pos 3	Calculated NTS position 3 – emergency power profile
NTS Pos 4	Calculated NTS position 4 – short profile
NTS Vel	
NTS Vel 1	Calculated NTS velocity 1 – normal profile
NTS Vel 2	Calculated NTS velocity 2 – inspection profile
NTS Vel 3	Calculated NTS velocity 3 – emergency power profile
NTS Vel 4	Calculated NTS velocity 4 – short profile
Load Weigher	
Type Select	Select the type of load weigh device used
Enable WiFi	Enables WiFi connection to load weigh device
Debug	When set ON, allows for viewing of load weighing device packet receive counts and raw load values
Auto Recalibrate	When set ON, the car regularly recalibrates its load weigher device
Monthly Calib. Day	Day of the month the C4 is set for monthly automatic load recalibration
Monthly Calib. Hour	Time of the day the C4 is set for monthly automatic load recalibration
Trigger Recalibrate	When set ON, the car performs a load weighing device empty load recalibration
Trigger Load Learn	When set ON, the car performs load weighing device full load calibration
Torque Scaling	Sets a scaling value to multiply by the torque output of the Smartrise load weighing device. The value is a signed 8-bit integer in percentage format.
Torque Offset	Sets an offset to add to the Smartrise load weighing device torque percentage output. Value is a signed 8-bit integer.
Enter Requests	Commands sent to load weigh device

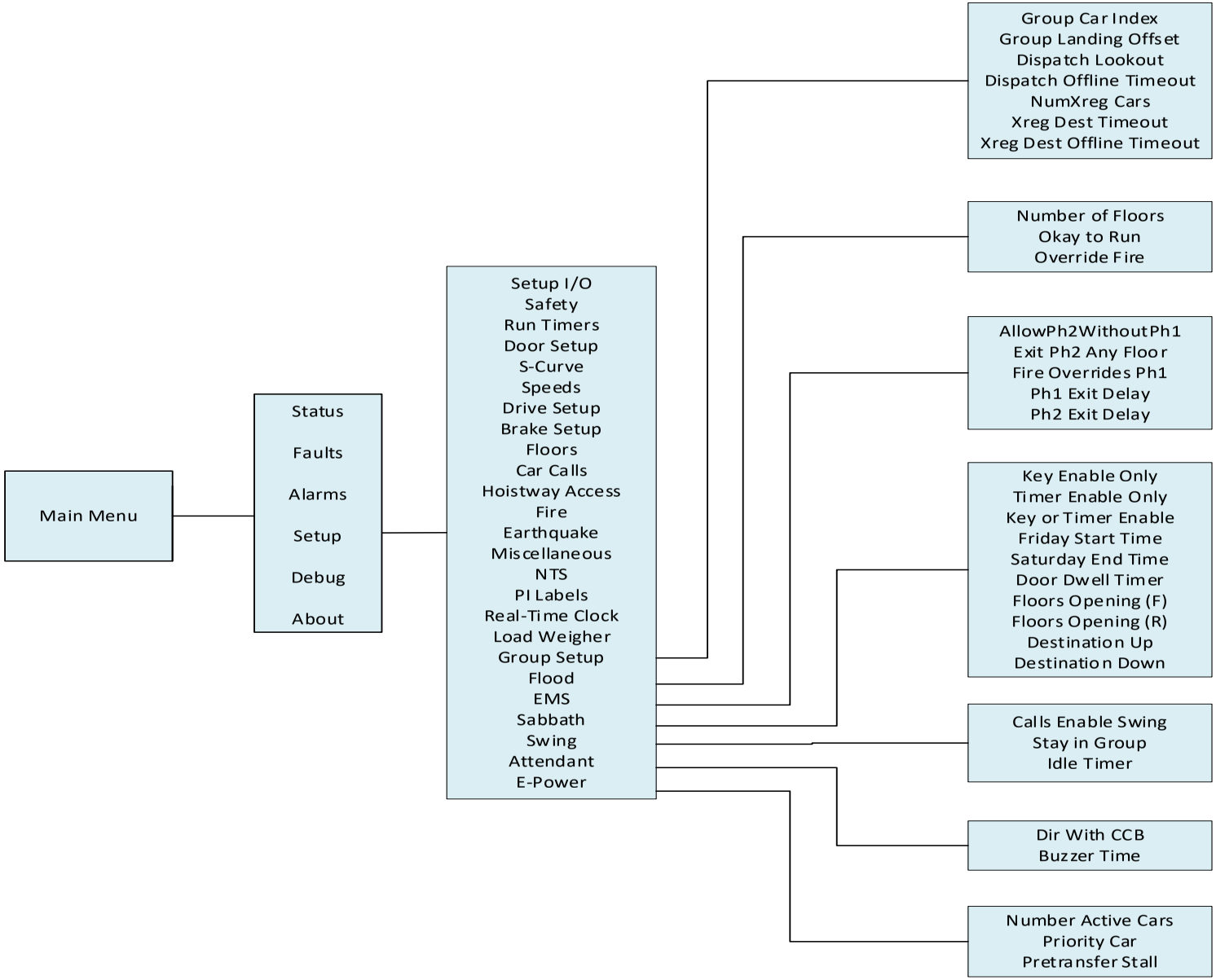

Figure 33: Setup – Group Setup, Flood, EMS, Sabbath, Swing, Attendant, and E-Power Menus

The table below lists the Group Setup, Flood, EMS, Sabbath, Swing, Attendant, and E-Power menu structures.

Table 16: Group Setup, Flood, EMS, Sabbath, Swing, Attendant, and E-Power Menu Structures

Menu	Description
Setup	
Group Setup	Group setup parameters
Flood	Flood options
EMS	Emergency medical service options
Sabbath	Sabbath operation options
Swing	Swing operation options
Attendant	Attendant service options
E-Power	Emergency power options
Group Setup	
Group Car Index	Sets the car's group ID. This value is zero based.
Group Landing Offset	Sets the number of floors below the lowest serviced floor that are serviced by other group cars. This allows calls between different cars to be aligned so they refer to the same landing and is vital to proper dispatching.
Dispatch timeout (1 sec)	Sets the time the car has to respond to a destination assignment before it temporarily removes itself from the group and the call is be reassigned. This prevents excessive delays in answering hall calls due to someone holding open the car door. If either the dispatch timeout or dispatch offline are set to zero, this feature is disabled.
Dispatch Offline (1 sec)	Sets the time the car removes itself from the group after failing to take an assigned call. If either the dispatch timeout or dispatch offline are set to zero, this feature is disabled.
NumXreg Cars	Sets the number of X-Reg cars to include in dispatching
Xreg Dest Timeout (10 sec)	When nonzero, if an assigned XREG destination has not been cleared for the XREG Dest. Timeout, the car is removed from the group for the time set by XREG Dest. Offline.
Xreg Dest Offline Timeout (10 sec)	When nonzero, if an assigned XREG destination has not been cleared for the XREG Dest. Timeout, the car is removed from group for the time set by XREG Dest. Offline.

Menu	Description
Flood	
Number of Floors	Used in conjunction with the flood switch input. If a flood is detected, then this parameter tells the controller which floors to avoid. If set to zero, the elevator can go to all floors. If the flood switch is active and this parameter is set to one, then the car is not allowed to go to the bottom floor. If set to two, then elevator cannot go to bottom two floors, etc.
Okay to Run	Allows car to continue to run above the configured flood sensor floor
Override Fire	Allows flood operation to take priority over fire operation
EMS	
Allow Ph2WithoutPh1	Allows activation of Medical Phase 2 even if the car was never placed on Phase 1
Exit Ph2 Any Floor	Allows exiting of EMS Phase 2 at any floor. Jobs with full hospital service should have this parameter turned ON. Jobs with EMT service should have this parameter OFF.
Fire Overrides Ph1	When set ON, the activation of a smoke or Fire Phase 1 key causes a car that is currently on EMS Phase 1 to exit medical service and go on Fire Phase 1 recall. When turned OFF, the car remains on EMS Phase 1.
Ph1 Exit Delay (1 sec)	When a car is called to a landing by an EMS Phase 1 key, this parameter specifies how long it will remain there before returning to normal operation if no one places it on EMS Phase 2.
Ph2 Exit Delay (1 sec)	Specifies how long to wait after exiting EMS Phase 2 before returning to normal operation. A programmable delay allows time for the patient to be removed from the elevator if EMS Phase 2 were turned off prior to removing the patient.
Sabbath	
Key Enable Only	When set ON, Sabbath operations is only activated by keyswitch input
Timer Enable Only	When set ON, Sabbath operation is activated by only the configured Sabbath Start Time and Sabbath End Time
Key or Timer Enable	When set ON, Sabbath operation is activated by either keyswitch input or configured Sabbath Start Time and Sabbath End Time
Friday Start Time	Sets the Friday start time for Sabbath when timer enable is set. Format is HHMM, for example 12:34 PM would be 1234.

Menu	Description
Saturday End Time	Sets the Saturday end time for Sabbath when timer enable is set. Format is HHMM, for example, 12:34 PM would be 1234.
Door Dwell Timer (1 sec)	Sets the time car doors remain open while in Sabbath operation
Floors Opening (F)	Front openings when on Sabbath operation
Floors Opening (R)	Rear openings when on Sabbath operation
Destination Up	Set which floors to stop at during Sabbath up operation
Destination Down	Set which floors to stop at during Sabbath down operation
Swing	
Calls Enable Swing	Allows swing calls to activate swing operation
Stay in Group	Allows the car to continue to take regular hall calls while in swing operation
Idle Timer (1 sec)	If Swing mode is entered by a button press, this timer specifies how long to remain in Swing operation once the car is idle
Attendant	
Dir With CCB	Pressing a car call button assigns direction when on Attendant Service. This can be used instead of dedicated UP and DOWN direction buttons on the COP panel.
Buzzer Time (100ms)	Specifies how long to sound the buzzer to alert the attendant that a hall call was pressed
E-Power	
Number of Active Cars	Sets the number of cars allowed to run during emergency power operation
Priority Car	Sets the first car selected when on emergency power and when the auto select input is active.
Pretransfer Stall	When set ON, if the Emergency Power Pretransfer input is active, cars stop in a faulted state wherever they are. When set to OFF, cars instead move to the nearest landing and go out of service with the door open. This option is used when the system is wired to use pretransfer input to delay cars both at the transfer into and out of emergency power.

3.3 Debug and About

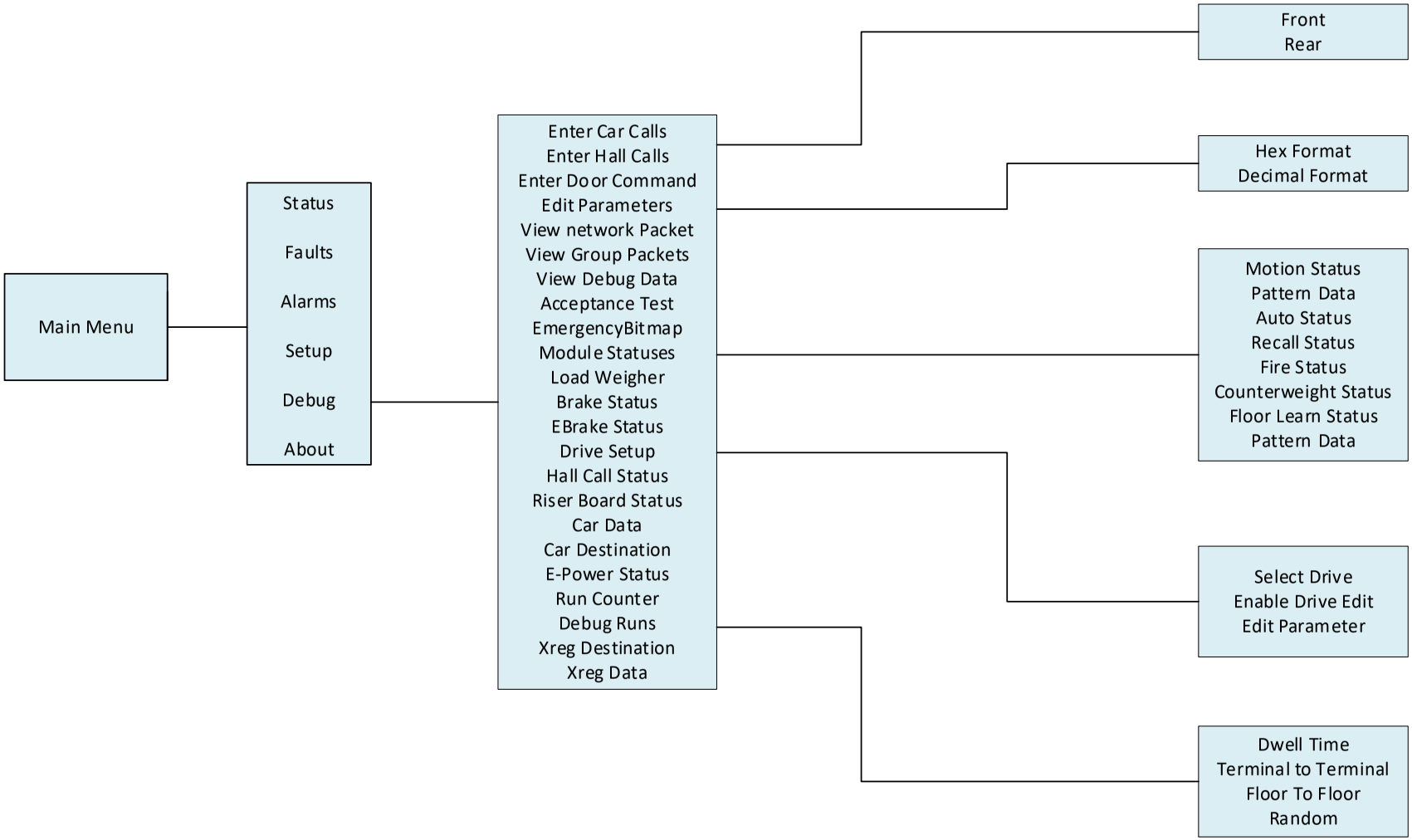

Figure 34: Debug and About Menus

The table below lists the Debug and About menu structure.

Table 17: Debug and About Menu Structures

Menu	Description
Main Menu	
Debug	Debug menu options
About	View job name and software version
Debug	
Enter Car Calls	Enter car calls
Enter Hall Calls	Enter hall calls
Enter Door Command	Enter door commands
Edit Parameters	Edit parameters in hex or decimal
View Network Packet	Debug option to view network packets
View Group packets	Debug option to view group packets
View Debug Data	Debug option to view various controller data
Acceptance Test	Acceptance testing options
EmergencyBitmap	Emergency power debug option
Module Statuses	Debug option to view module status
Load Weigher	Load weigher options
Brake Status	View Brake board status
EBrake Status	View secondary Brake board status
Drive Setup	Drive setup options
Hall Call Status	View hall call status
Riser Board Status	View Riser board status
Car Data	View car data
Car Destination	View car destination data
E-Power Status	Emergency power status
Run Counter	View number of runs car completed
Debug Runs	Random run generator
Xreg Destination	Cross registration destination data
Xreg Data	Miscellaneous cross registration data
Enter Car Calls	
Front	Generate front car calls
Rear	Generate rear car calls
Edit Parameters	
Hex Format	Edit parameters in Hex format
Decimal Format	Edit parameters in Decimal format
Module Statuses	
Motion Status	Motion sequence status
Pattern Data	Pattern mode status

Menu	Description
Auto Status	View status of auto operation
Recall Status	View status of car recall operation
Fire Status	View status of fire service operation
Counterweight Status	View status of counterweight derailment
Floor Learn status	View status of floor learn operation
Pattern Data	View status of pattern data
Drive Data	
Select Drive	Allows for selecting the type of drive used
Enable Drive Edit	Enables editing of drive parameters
Edit Parameter	Allows for editing the parameters for the drive according to the configuration information
Debug Runs	
Dwell Time	Time between debug car calls for random call generator
Terminal to Terminal	Enables terminal to terminal runs
Floor to Floor	Enables floor to floor calls
Random	Generates random car calls

4 Construction Mode

There will be a supplemental document provided with your controller to explain the start-up procedure for the drive used. This will be attached to the end of this document. These additional steps must be performed before the car runs.

4.1 Main Power Setup

Perform the following procedure on how to setup the Main Power:

1. Verify that the main disconnect switch is in the OFF position and Locked-Out/Tagged-Out (LOTO).
2. Verify all green push breakers are in the up position (OFF).

Figure 35: Breakers in the OFF Position

3. Verify the L1/L2 breaker is in the OFF position.
    - Green =OFF
    - Red = ON

Figure 36: L1/L2 Breaker

4. Connect the main line power connection to terminal block L1/L2/L3.

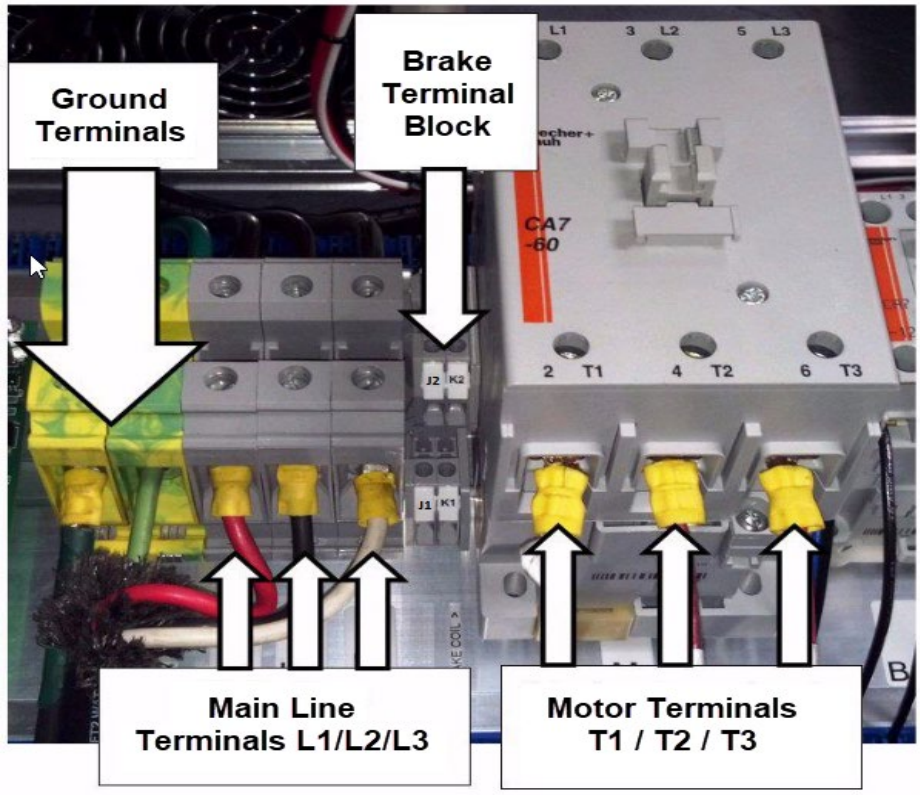

Figure 37: Control Panel

5. Connect the ground wire to the yellow/green ground terminal block next to the L1/L2/L3 terminals. See Figure 37.

   NOTE: For connecting a proper ground, see section 1.3 Safety.

6. Connect motor leads to the M contactor on terminals T1/T2/T3. See Figure 37.
7. Connect the main brake wires to terminals K1 and K2. See Figure 37.
8. Is a rope gripper being used?
   a. If a rope gripper is being used, make sure it is pinned open and go to step 9.
   b. If a gripper is not being used, go to step 9.
9. Is a secondary sheave brake being used?
   a. If a secondary sheave brake is being used, connect it to terminals J1 and J2 and the process ends. See Figure 37.
   b. If a secondary sheave brake is not being used, the process ends.

4.2 MR Board Connection

All connections regarding safety are functional during Construction mode.

Perform the following procedure on how to connect the MR Board prior to beginning the Construction mode. See the *C4 Controller* sheet *04 Motor and Drive Connections* for wiring information.

1. Connect a jumper from L120 to terminals LFT, LFM, and LFB.
2. Are there rear doors?
   a. If there are rear doors, connect L120 to terminals LFT, LFM, and LFB and go to step 3.
   b. If there are no rear doors, go to step 3.
3. Is a Run/Stop switch being used?
   a. If a Run/Stop switch is used, go to step 4.
   b. If a Run/Stop switch is not used, go to step 6.
4. Connect a wire from the MR board H120 pin to one side of the Construction Box Run/Stop switch.
5. Connect a wire from the MR Board SFH pin to the other side of the Construction Box Run/Stop switch. Go to step 7.

   NOTE: A closed switch indicates run and an open switch indicates stop.

6. Connect a jumper from H120 to SFH.
7. Connect a jumper from H120 to PIT, BUF, BFL, and TFL.
8. Is the run bug being used?
   a. If the run bug is being used, perform the following:
      - Connect the UP button to the input of the CUP
      - Connect the DOWN button to the input of the CDN
      - Connect the Enable to CEN (jump high if not available)
      - Go to step 9
   b. If the run bug is not being used, go to step 15.
9. Press the right button to access the Main Menu.
10. From the MAIN MENU, scroll and select Setup.

Figure 38: MAIN MENU – Setup

11. From the SETUP menu, scroll and select Miscellaneous.

Figure 39: SETUP MENU – Miscellaneous

12. From the MISC menu, scroll and select Enable Const. Box.

Figure 40: MISC Menu – Enable Const. Box

13. From the Enable Const. Box menu, set the Const. Box to ON.

Figure 41: ENABLE CONTS.BOX MENU

14. Scroll right and press Save.
15. Connect a jumper from 24 VDC to MM.
16. Verify the Car Door Bypass and Hoistway Bypass switches are in the OFF position.
17. Verify the mode of operation is Construction.
18. Place the INSPECTION switch to INSPECTION.
19. Power on the controller by removing the LOTO, turning on main power by pressing in all push breakers, and turning on the L1/L2 breaker.

4.3 Brake Board Settings

Smartrise sets the brake pick and hold settings in the factory prior to shipping. Prior to running, verify the data. For the default or factory set data. See the *C4 Controller* sheet *01 Getting Started.*

The following table lists an example of the Data Settings.

Table 18: Example of Data Settings

Car	Doors	DR Breaker Voltage	Brake Pick	Brake Hold	Brake Ohm	Brake Amp
1	1	120	90	45	44	2.05

If the actual brake data is different from the specifications, use the UI menu to adjust the data configuration. See section 4.4. Adjust Brake Using the Onboard UI.

4.4 Adjust Brake Using the Onboard UI

From the home screen of the Onboard UI, you can configure the data setting of the Brake board.

The following is an example of how to adjust the Brake Pick Voltage.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.

3. From the SETUP menu, scroll and select Brake Setup.

Figure 42: SETUP Menu – Brake Setup

4. From the BRAKE SETUP menu, scroll and select Primary Setup.

Figure 43: BRAKE SETUP Menu – Primary Setup

5. From the PRIMARY SETUP menu, scroll and select Pick Voltage.

Figure 44: PRIMARY SETUP Menu – Pick Voltage

6. From the BRAKE PICK VOLTAGE menu, enter the correct data setting.

Figure 45: BRAKE PICK VOLTAGE Menu

7. Scroll right and press Save.

4.5 Drive Setup

The setup to run the controller in Construction mode is dependent upon the drive that is being used. Follow the steps in the *C4 Drive Startup Manual* for completing the motor tune operation.

If the elevator is running at slow speed after completing all the Construction mode setup, usually 10 fpm, then the drive is in NTSD operation and needs to be disabled while on Construction mode.

- KEB – Set input 1 function LI04 to no function from ESD or NTS 1.
- M1000 – Verify NTSD MODE is set to EXTERNAL in the C1 menu. Set logic input 3 to NO FUNCTION from NTS INPUT 1.

5 Inspection Mode

Prior to running on inspection operation, all connections need to be made from the MR to the CT and CT to COP. See the *C4 Controller* sheet *02 Machine Room I/O*, sheet *07 Traveler/Safety String,* sheet *08 Car Board I/O,* and sheet *09 COP Connections* for wiring information.

5.1 Standard Modes of Inspection

Machine room inspection is available using the MR INSPECTION switch. The car can be run from the UP and DOWN buttons located on the MR board. This form of inspection is overridden by the Hoistway Access and CT inspection.

Figure 46: MR INSPECTION Switch

Car Top inspection it the highest mode of inspection and overrides all other forms of inspection. The car is placed on CT inspection using the INSPECTION switch located on the top of the car run box. A run can be asserted by using the enable and UP and DOWN commands from the run box.

Figure 47: Car Run Box

Hoistway Access or Inspection HA is a form of inspection used to run the car with the doors open at a terminal landing. The Hoistway Access inputs are discretely wired back to each controller's MR board. To use this form of inspection, the car must be at a terminal landing.

5.2 Inspection Run Options and Adjustments

Th C4 controller uses pattern generation to conduct all runs, including inspection runs. This means that there is an inherent ramp up to the inspection speed when beginning the run and a ramp back to zero speed when the run is released. The inspection run options are configurable.

The following is an example of how to verify the inspection speed of the car.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Speeds.

Figure 48: SETUP Menu – Speeds

4. From the SPEEDS menu, select Inspection Speed.

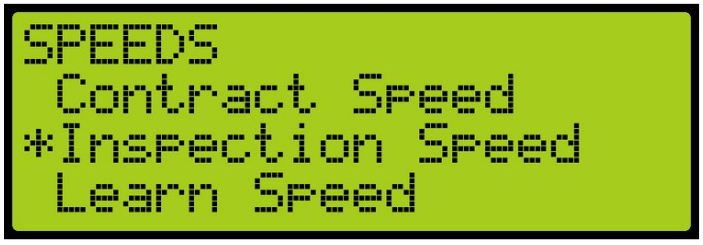

Figure 49: SPEEDS Menu – Inspection Speed

5. Verify the inspection speed. The value of the inspection speed can be set from 0 to 150 fpm. If the value is set > 150 fpm, the controller will fault until the parameter is adjusted to a value ≤ 150 fpm.

Figure 50: INSPECTION SPEED Menu

6. Scroll right and press Save.

6 Adjusting S-Curve

There are eight standard options for adjusting the S-Curve.

- Acceleration – Maximum acceleration for the profile.
- Accel Jerk In – How quickly the profile transitions from minimum acceleration speed to full acceleration. Higher values result in a sharper start.
- Accel Jerk Out – How quickly the profile transitions from maximum acceleration to zero acceleration.
- Deceleration – Maximum acceleration for the profile.
- Decel Jerk In – How quickly the profile transitions from zero deceleration to maximum decelerations.
- Decel Jerk Out – How quickly the profile transitions from maximum deceleration to leveling speed.
- Leveling Speed – The speed at which the elevator levels into the floor.
- Leveling Distance – The stabilized distance the elevator travels before arriving at the destination floor.

NOTE: Decel Jerk In and Decel Jerk Out are not shown during Inspection mode.

The following is a graphical image of the parameters that are being adjusted.

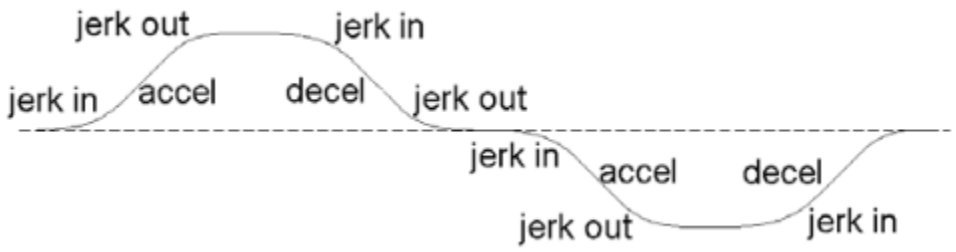

Figure 51: Graphical Representation of an S-Curve

The following is an example on how to adjust the S-Curve.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.

3. From the SETUP menu, scroll and select S-Curve.

Figure 52: SETUP Menu – S-Curve

4. From the S-CURVE menu, scroll and select Inspection Profile.

Figure 53: S-CURVE Menu – Inspection Profile

5. From the INSPECTION PROFILE menu, select the parameter that is to be adjusted.

Figure 54: INSPECTION PROFILE Menu

6.1 Profile

There are 4 programmable profiles.

- Normal Profile – Used under normal operating conditions.
- Inspection Profile – Used when the system is placed on Inspection/Access and construction operation.
- Emergency Power Profile – Used when the Emergency Power input (EP) is activated, indicating the car is running on generator power.
- Short Profile – Used when the minimum short distance is set.

6.2 Setting Pattern Parameters

Contract Speed Tracking – The following drive adjustments are:

- **F5 drive** – See Drive Startup KEB for proper drive setup.
  - Set parameter LS02 High Speed to the car contract speed.
  - Check LC03/LC04 proportional gain vales are not set too low. Lower values (less than 1000) may result in loose control and overshoot of the command speed.
  - Check LC08/LC09 Integral gain values are not set too high. High values can result in pulsations during acceleration, deceleration, or at contract speed. Lower values result in the speed to lag command.

- **HPV900** – See Drive Startup HPV900 for proper drive setup.
  - Set Contract Car SPD to the car contract speed in the A1 menu.
  - Verify Contract MTR SPD in the A1 matches the motor manufacturer name plate. If the car is traveling too fast then reduce this value, if too slow then increase it.
  - Increase Inertia in the A1 menu.

- **M1000** - See Drive Startup Manual M1000 for proper drive setup.
  - Set Contract Car SPD to the car contract speed in the A1 menu.
  - Verify Contract MTR SPD in the A1 matches the motor manufacturer name plate. If the car is traveling too fast then reduce this value, if too slow then increase it.
  - Increase Inertia in the A1 menu.

- **DSD412** – See Drive Startup Manual DSD412 for proper drive setup.
  - Set Rated Car Speed #17 to the car contract speed.
  - Verify Motor RPM #11 matches the motor manufacturer name plate. If the car is traveling faster than commanded then reduce this value, if too slow then increase it.
  - Check Per-Unite Inertia #41 value is not set too low which will result in velocity overshoot. If value is set too high, it will result in velocity undershoot.

Motor Current Limiting – If running out of motor current near the end of Acceleration becomes a problem, as is evidenced by the AC motor current on the drive keypad during a full load UP operation:

- F5 drive – Set parameter LC.30 Maximum Torque = 300 (3x LF.17). This will automatically adjust the current limit.

- Magnetek – Increase A1 > Mtr Torque Limit.
- If this does not help, reduce the value of Acceleration. Another possibility is to decrease the value of accel jerk out so that there is a smooth transition from maximum acceleration to contract speed.
- Slope of Acceleration / Deceleration – Ideally, the slope of acceleration should be equal to or slightly greater than the slope of deceleration. To get approximately equal acceleration and deceleration speeds in a system where tracking accuracy is very good, Acceleration can be equal to Deceleration. If tracking is less accurate, set Acceleration greater than Deceleration to get the same effective rate of deceleration as acceleration.

Approaching the Floor – Final approach to the floor can be customized in many different ways. If tracking accuracy is very good, you can set the following:

- Leveling speed – The desired leveling speed. A typical number is from 2 to 5.
- Leveling distance – The distance of choice. A typical number is from 1 to 2.

  If ideal tracking is not obtained, begin to introduce values in the Leveling Speed and Distance that allows for molding the shape of the last few inches of approach.

Increase in Deceleration Rate – If observing an increase of deceleration as the floor is approached, it is generally due to inaccurate tracking.

- Improve tracking or lower the value of the Decel jerk out parameters.

6.3 Controlling Initial Start of Car Motion

Gearless application may experience rollback at the start of car motion. To control rollback at the start of the run:

- Implement pre-torque to the system
- Make brake adjustments
- Apply synthetic speed torque
- Adjust run timers

6.3.1 Pre-Torque Adjustments

For jobs with the Smartrise serial load weigher device (LWD), load information can be used to provide pre-torqueing of the motor to accommodate for load changes and prevent rollback. See section 25.1 Calibration for calibrating the LWD.

6.3.2 Brake adjustment

Brake adjustments can be done to allow for rollback control using slow picking of the brake. Increase the brake ramp time in the Brake Setup menu to allow for slow picking of the brake and for the sheave to move under the brake. See section 4.3 Brake Board Settings to adjust the brake.

Brake pick delay in the run timers can also be increased to allow time for the drive to hold the car at zero speed.

6.3.3 Synthetic Speed Torque

Adjust the value of the MIN ACCEL Speed in the Speed menu to a value between 2 and 4 to overcome rollback. Use this in conjunction with the brake adjustments for best ride quality. The Min releveling speed value might also need to be adjusted. Force the car to relevel to verify no roll back occurs during releveling operation.

Note: This speed is applied instead of 0 speed at the beginning of the run. While it will help overcome rollback, it also causes the car to jerk forward when traveling in the direction of least resistance.

6.4 Adjusting Run Timers

There are a variety of start and end of run timers used to maximize the quality of the run for each car.

The table below lists the Types of Start and End Run Timers.

Table 19: Types of Start and End Run Timers

Timer Type	Description
Start Timers	
Accel Delay (Auto)	Sets a delay before moving into acceleration stage of pattern on automatic operation. This holds the car at zero speed (or at min accel speed if set).
Accel Delay (Insp)	Sets a delay before moving into acceleration stage of pattern on inspection operation. This holds the car at zero speed (or at min accel speed if set).
Brake Pick (Auto)	Delays the lifting of the main brake on automatic operation
Brake Pick (Insp)	Delays the lifting of the main brake on inspection operation
Stop Timers	
Brake Drop (Auto)	Sets delay between reaching zero speed and dropping the primary brake on automatic operation
Brake Drop (Insp)	Sets delay between reaching zero speed and dropping the primary brake on inspection operation

Timer Type	Description
Drive Drop (Auto)	Sets delay between checking BPS and dropping drive control on automatic operation
Drive Drop (Insp)	Sets delay between checking BPS and dropping drive control on inspection operation
Motor Drop (Auto)	Sets delay between dropping drive control and dropping the M contactor on automatic operation
Motor Drop (Insp)	Sets delay between dropping drive control and dropping the M contactor on inspection operation
B2 Drop (Auto)	Sets delay between dropping the secondary brake and dropping the B2 contactor while on automatic operation
B2 Drop (Insp)	Sets delay between dropping the secondary brake and dropping the B2 contactor on inspection operation
EBrake Drop (Insp)	Sets delay between reaching zero speed and dropping the secondary brake on automatic operation
DIS Ramp Zero	When ON, disables ramping down command speed from leveling speed to 1 fpm prior to dropping a run. This option must be off for KEB drives.
DIS Hold Zero	When ON, disables stop sequence check for encoder speed to read below 1 fpm prior to dropping the brake. Turning this option off may increase floor level accuracy.

The following is an example of how to adjust the Run Timers:

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Run Timers.

Figure 55: SETUP Menu – Run Timers

4. Adjusting start of run timers or end of run timers?

Figure 56: TIMERS Menu

   a. If adjusting start of run timers, from the TIMERS menu, click Start Timers and go to step 5.

   b. If adjusting end of run timers, from the TIMERS menu, click Stop Timers and go to step 6.

5. Adjusting Accel Delay or Brake Pick Delay?

Figure 57: START TIMERS Menu

   a. If adjusting Accel Delay, click Accel Delay and adjust the value. Go to step 7.

   b. If adjusting Brake Pick, click Brake Pick Delay and adjust the value. Go to step 7.

6. Adjusting Brake Drop Delay (Insp), Drive Drop Delay (Insp), Motor Drop Delay (Insp), B2 Drop Delay (Insp), or Emergency Brake Drop Delay (Insp)?

   a. If adjusting Brake Drop Delay (Insp), scroll and select Brake Drop (Insp), and adjust the value. Go to step 7.

Figure 58: STOP TIMERS Menu

   b. If adjusting Drive Drop Delay (Insp), scroll and select Drive Drop (Insp), and adjust the value. Go to step 7.

c. If adjusting Motor Drop Delay (Insp), scroll and select Motor Drop (Insp), and adjust the value. Go to step 7.

d. If adjusting B2 Drop Delay (Insp), scroll and select B2 Drop (Insp), and adjust the value. Go to step 7.

e. If adjusting Emergency Brake Drop Delay (Insp), scroll and select EBrake Drop (Insp), and adjust the value. Go to step 7.

7. Scroll right and press Save.

7 SmartPositioning Landing System

The SmartPositioning Landing system tracks elevator speed and position with high precision and superior reliability. It incorporates a contact-less dual infrared sensor system, QR Code Tape, and a SmartClip consolidated mounting system that reduces installation time and maintenance. The system increases performance and reliability. See Figure 4 for the SmartPositioning Landing System.

The SmartPositioning Landing system consists of:

- Tape
- Camera Assembly
- Tape Clip Assembly
- Tape Mount Assembly

7.1 Tape

The tape is a special coded tape that provides the absolute positioning feedback to the CEDES camera.

Figure 59: Coded Tape

WARNING

THE TAPE EDGE IS SHARP. CUT-PROOF GLOVES MUST BE WORN WHILE HANDLING THE TAPE.

Figure 60: Gloves Required

The following procedure describes how to install the tape.

1. Open the tape box at the top corner, being mindful of the sharp end or edges, and pull the amount of tape as needed.

   CAUTION: Do not pull too much tape out of the box as excessive bending can occur and damage the tape.

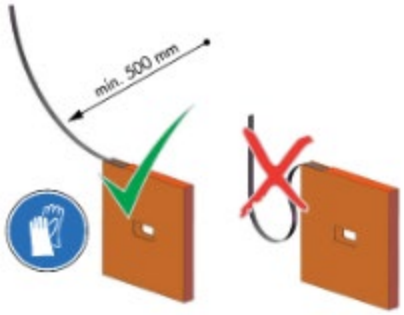

Figure 61: Dispense Tape

2. Serpentine and secure the tape through the bracket.

   NOTE: Verify the words Left are on the left side of the tape with the barcode facing out towards the camera.

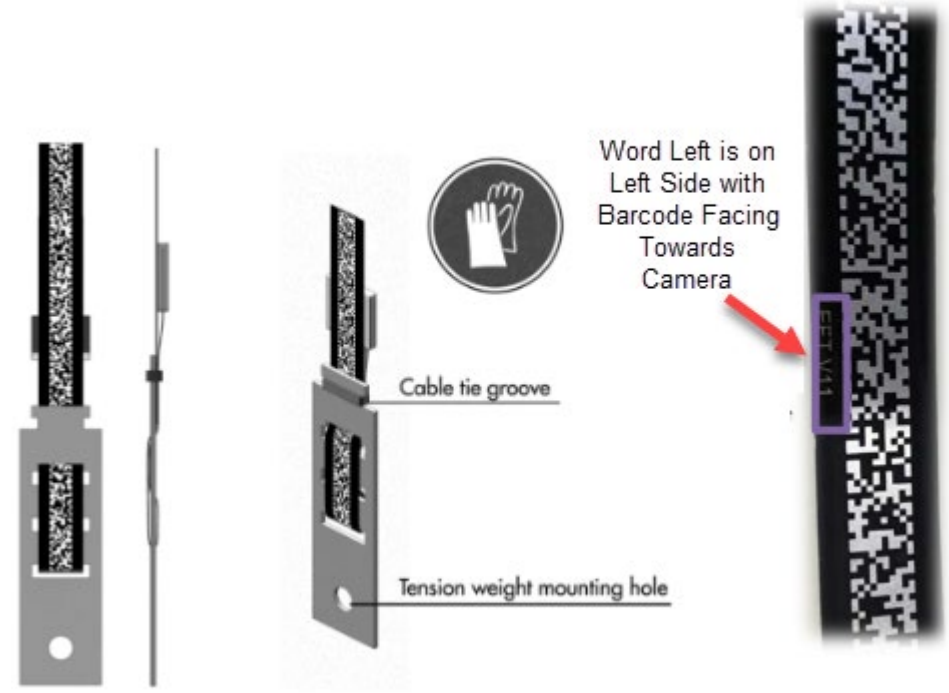

Figure 62: Routing Tape

7.2 Camera Assembly

The sensor assembly contains the CEDES Optical Sensor, Optical Sensor mounting brackets, CEDES Exact Position GLS Reader, Sensor Array mounting bracket, and associated hardware.

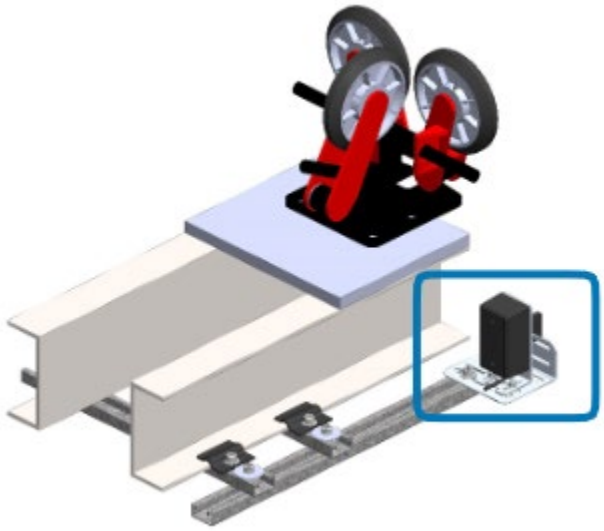

Figure 63: Camera Assembly

When assembling, connect the CEDES Optical Sensor and GLS Reader to the CT SRU board and secure cabling.

NOTE: Sensors can be oriented differently if corresponding tape and blades are aligned correctly.

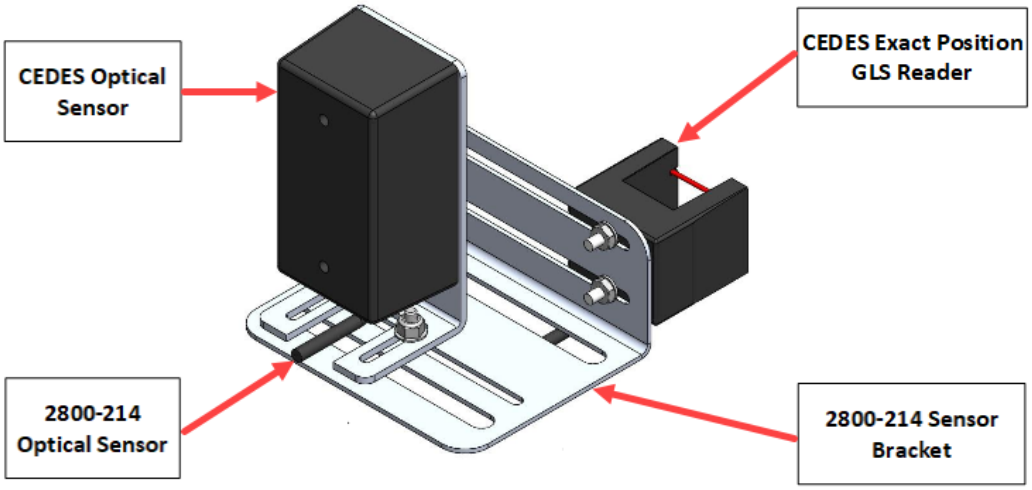

Figure 64: Sensor Assembly

The following procedure describes how to secure the Sensor Shelf Assembly to the Car Top Frame C-Channel.

NOTE: Exact positioning and lengths of the Unistrut can be adjusted as needed if the Sensor Array is positioned as shown in Figure 66.

1. Cut the lengths of Unistrut as follows:
   - Two 18”
   - One 24”
2. Bolt the two 18” lengths of Unistrut to the C-Channel.

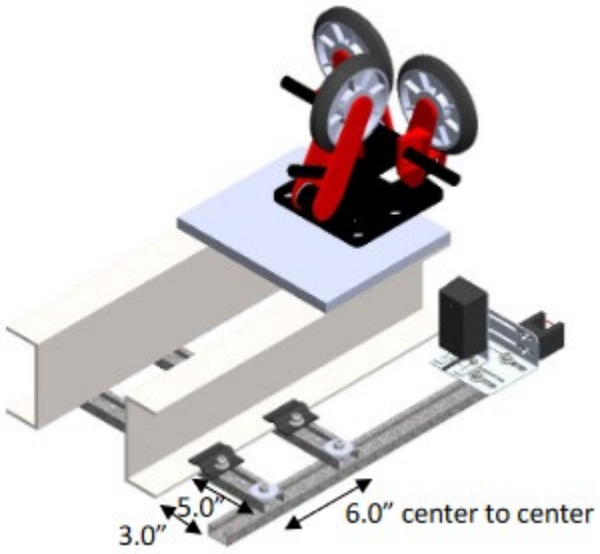

Figure 65: Unistrut Installation

3. Bolt the 24” length of Unistrut to the two 18” lengths of Unistrut. See Figure 65.

   NOTE: The 24” length of Unistrut may be bolted to the top of the two 18” lengths of Unistrut if desired.

4. Temporarily affix a Tape Clip Assembly on the guide rail to use as an alignment for the Sensor Array Assembly.

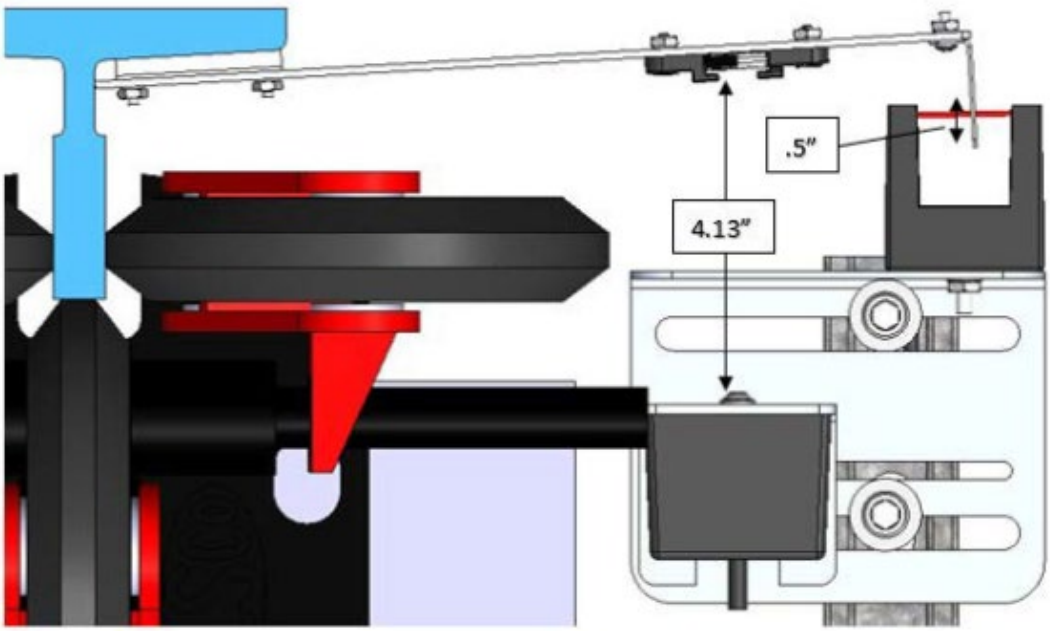

Figure 66: Sensor Shelf Assembly to Car Top Frame

5. Set the end of the 24” length Unistrut at 3.0” from the rear surface of the guide rail. See Figure 66.
6. Loosely bolt the Sensor Array Assembly onto the 24” length of Unistrut with the Door Zone Blade centered horizontally in the GLS Reader. See Figure 66.
7. Position the Sensor Array according to the values shown in Figure 66 then tighten all bolts.

   NOTE: The Optical Sensor Mount bolts may be loosened if needed to adjust the position of the sensor.

With space permitting, the Sensor Array Shelf may be installed on top of the C-Channel beams.

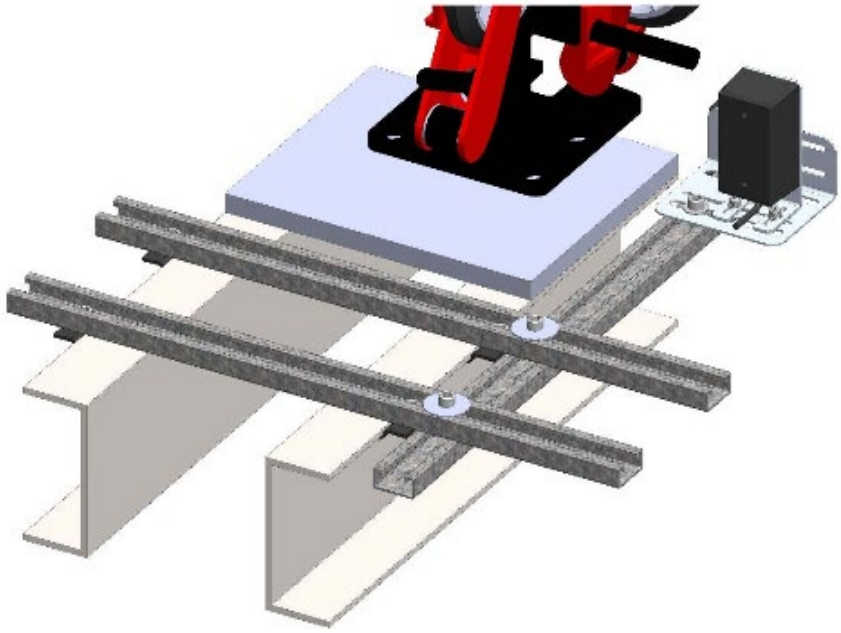

Figure 67: Alternate Unistrut Installation

7.3 Tape Clip Assembly

As you descend, unspool the tape, install the Tape Clip Assemblies, and set the Door Zones.

The Tape Clip Assembly includes:

- Tape guide clip
- Door zone (DZ) blade
- Mounting magnets (preassembled)

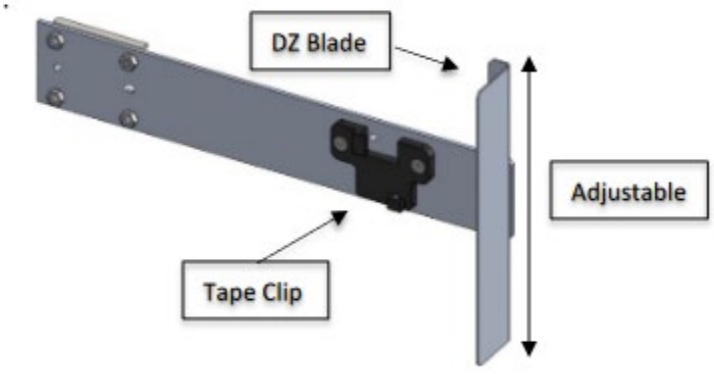

Figure 68: Tape Clip Assembly

NOTE: In applications where there is 15 ft. of distance between door zones, an extra bracket needs to be placed between those door zones. The bracket will only contain the tape clip and NOT the DZ blade. This will minimize tape twisting caused by long distances between the door zones. These extra tape clip brackets will be provided as needed.

The following procedure describes how to install the Tape Clip Assembly.

1. Bring the car to floor level.
2. Wipe the rail clean where the Tape Clip Assembly is being attached.
3. Holding the Tape Clip Assembly with one hand and the tape with the other, rotate the tape into the tape clip.

   CAUTION: Do not twist or bend the tape as this may damage the tape.

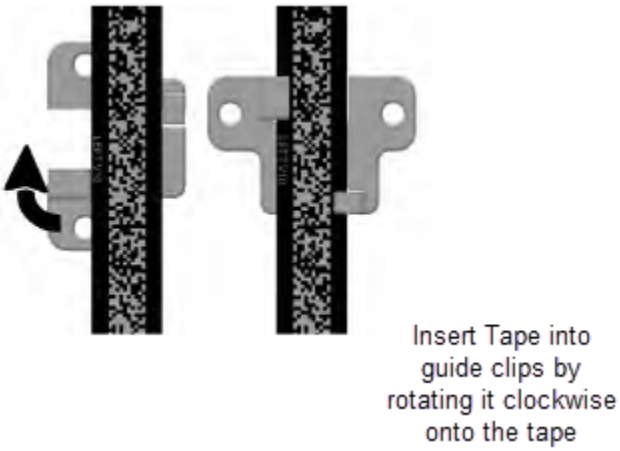

Figure 69: Tape Clip Insertion

4. Place the Tape Clip Assembly on the guide rail so that the DZ blade is vertically centered with the GLS Reader optical axis.

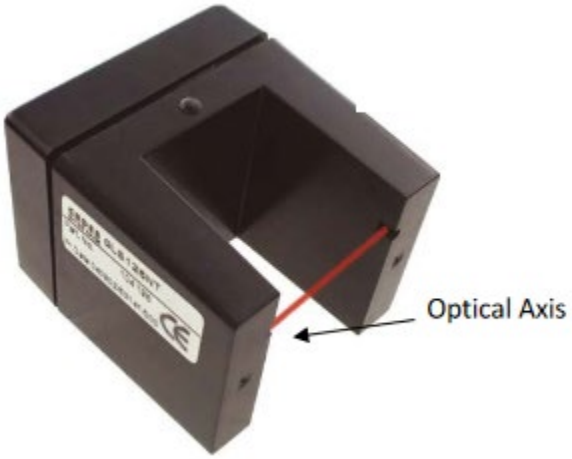

Figure 70: Optical Axis

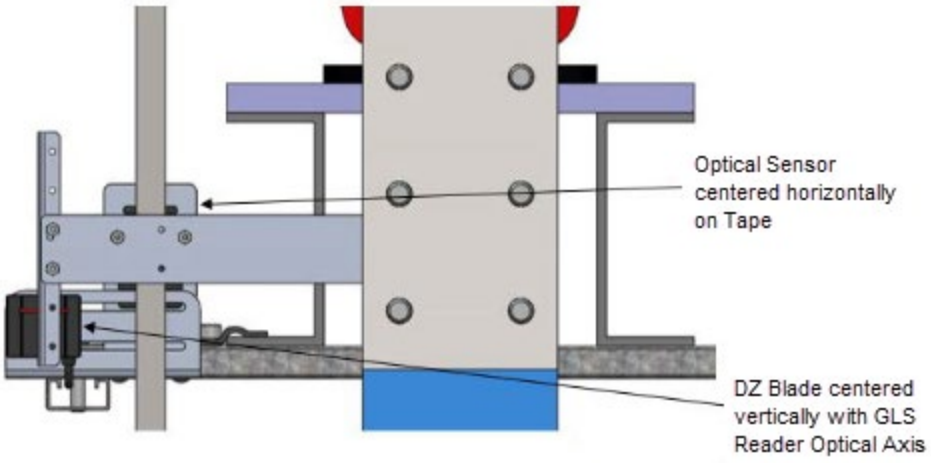

Figure 71: Tape Clip Assembly Placement (Rear View)

5. Are there any obstructions preventing the Tape Clip Assembly to be placed where needed?
   a. If there are bolts or other obstructions, remove the two screws, washers, and nuts securing the DZ blade and adjust the blade up or down. Go to step 6.
   b. If there are no obstructions, go to step 6.
6. Is an extension arm required?
   a. If an extension arm is not required, got to step 7.
   b. If an extension arm is required, go to step 8.
7. Verify the Tape Clip Assembly is sitting flush to the rail and go to step 9.

   CAUTION: Do not remove the bracket from the rail by pulling the bracket from the far end as this may bend the bracket.

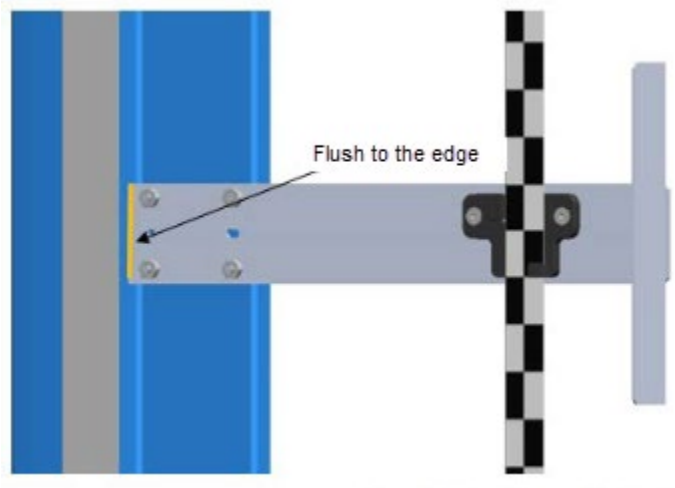

Figure 72: Tape Clip Assembly Alignment

8. Install extension arm as follows:
   - Remove the DZ blade from the Tape Clip Assembly.
   - Install the door zone extension arm using the same screws, nuts, and washers. See Figure 71.

   NOTE: An extension arm is provided it the Tape Clip Assembly cannot be placed where desired.

9. Using two more screws, nuts, and washers provided in the install kit, mount the DZ blade to the DZ extension arm at the desired location.

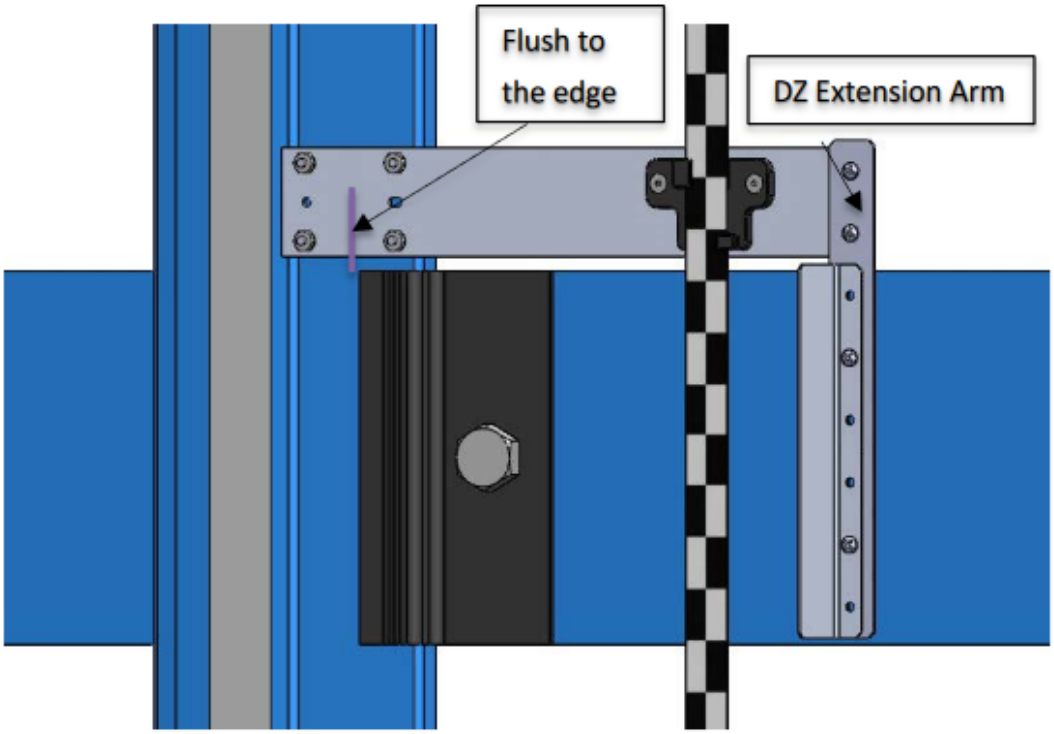

Figure 73: Tape Clip Assembly Alignment

10. Verify the Tape Clip Assembly is sitting flush to the rail.
11. Continue down the hoistway, placing the Tape Clip Assembly at each landing.

7.4 Tape Mount Assembly

The Tape Mount Assembly consists of:

- Upper (Top) Tape Mount Assembly
- Lower (Bottom) Tape Mount Assembly
- Emergency Tape Break Assembly (Optional)

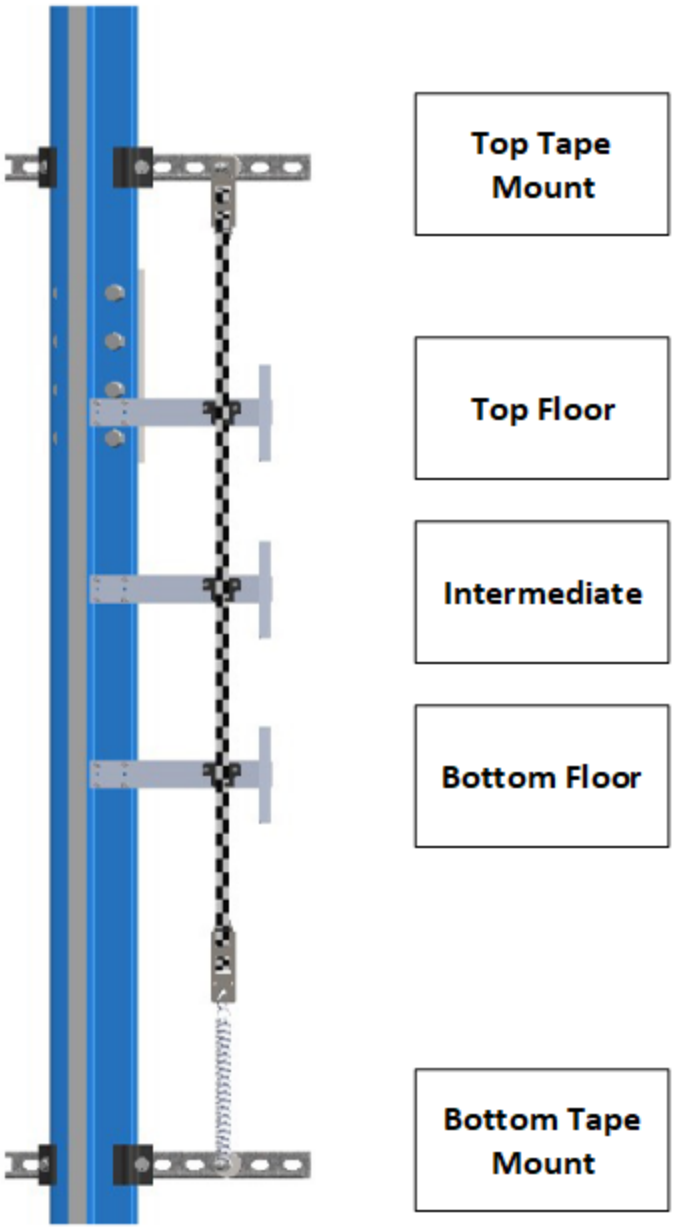

Figure 74: Tape Mount Assembly

7.5 Upper Tape Mount Assembly

The following procedure describes how to install the Upper Tape Mount Assembly.

1. Affix an 18” length of Unistrut to the top of the guide rail.

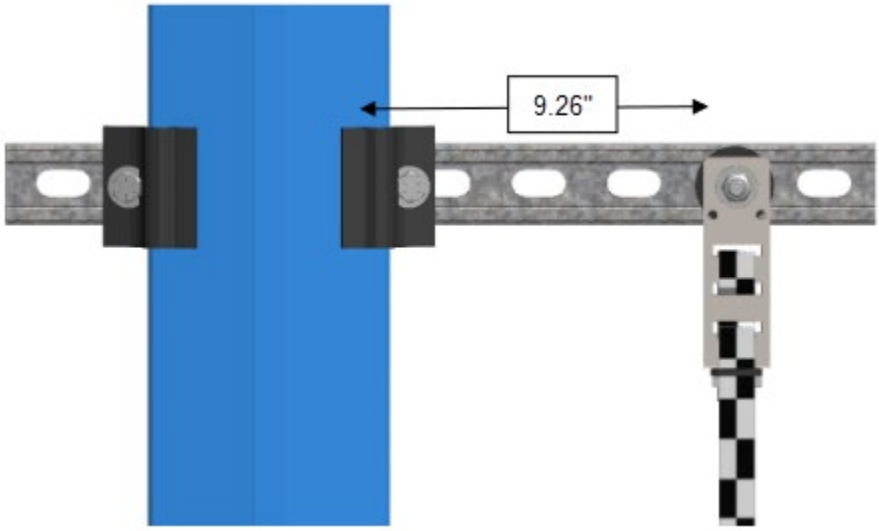

Figure 75: Upper Tape Unistrut Installation

2. Loosely attach the hardware to the Upper Tape Mount Assembly.

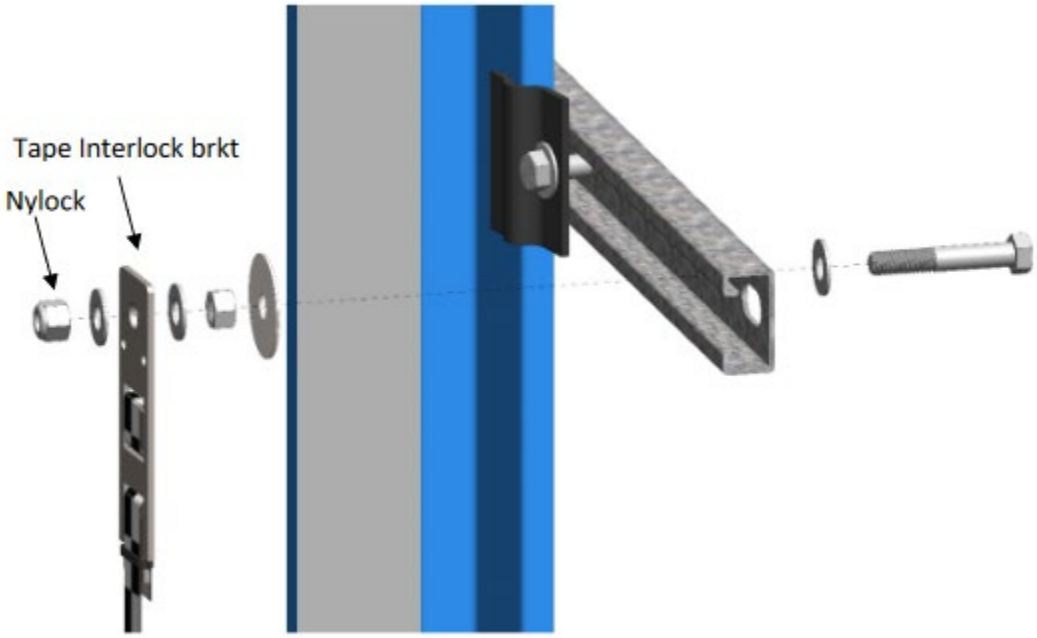

Figure 76: Hardware

3. Position the Upper Tape Mount assembly 9.26” from the surface of the guide rail to the center of the 3/8” bolt. See Figure 75.
4. Tighten the first hex nut to secure the assembly in place.

5. Thread the nylock nut on the bolt until there is a 0.2” gap between the two flat washers that are on either side of the Tape Interlock bracket. This gap is required to relieve twist in the tape.

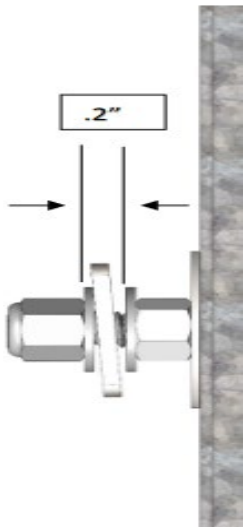

Figure 77: Gap Verification

7.6 Lower Tape Mount Assembly

The following procedure describes how to install the Lower Tape Mount Assembly.

1. Affix an 18” length of Unistrut to the bottom of the guide rail.

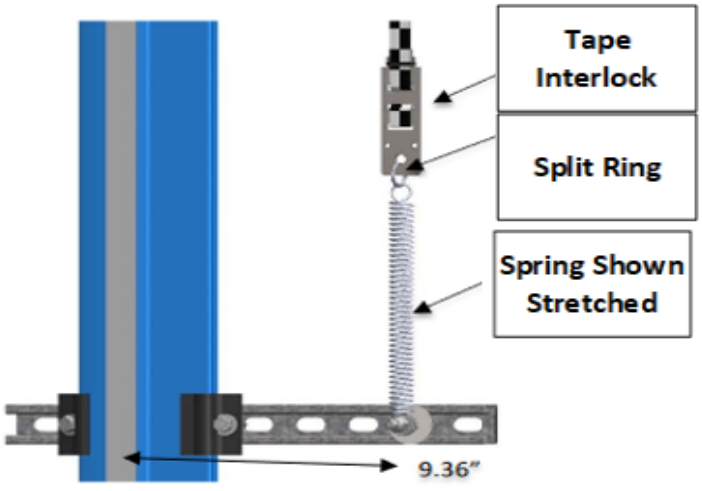

Figure 78: Lower Tape Mount Assembly

2. Loosely attach the hardware to the Lower Tape Mount Assembly.

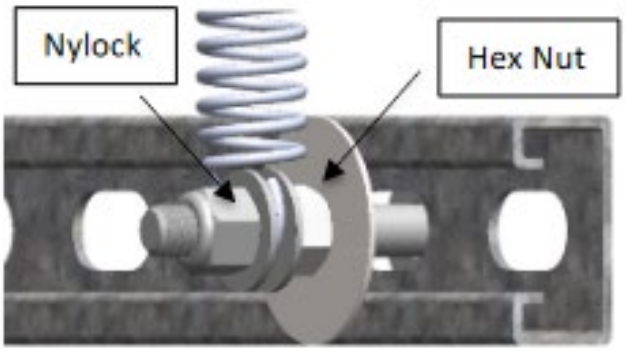

Figure 79: Hardware to Lower Tape Mount Assembly

3. Position the Lower Tape Mount Assembly 9.36” from the surface of the guide rail to the center of the 3/8” bolt. See Figure 78.
4. Tighten the first hex nut to secure the Lower Tape Mount Assembly in place.
5. Thread the Nylock nut onto the bolt until the two flat washers located on each side of the spring are just touching the spring loop.
6. Connect the spring to the tape interlock bracket using the split ring. See Figure 78.
7. Adjust the spring tension by raising or lowering the Unistrut mounting point so that the spring is stretched to approximately 3”.

7.7 Emergency Tape Break (ETB) Switch Assembly

The ETB Switch Assembly is optional.

The ETB switch is installed in the safety string in **series** with the Buffer switch.

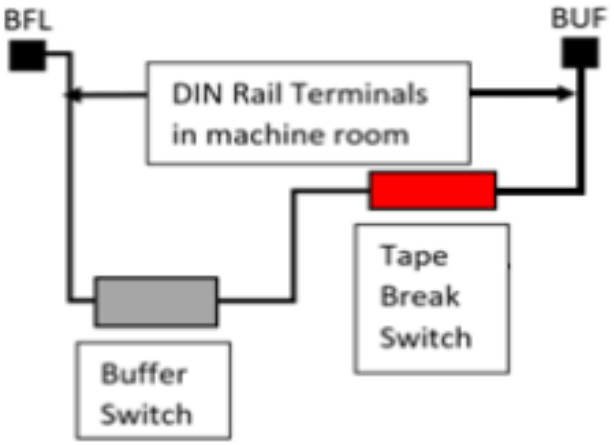

Figure 80: Emergency Tape Break Switch in Series with Buffer Switch

There is slack in the wire when the tape tension spring is fully extended. This slack allows for tape and/or building movement. If the tape breaks, the tension spring retracts and pulls the cable attachment out of the ETB switch, opening the safety string. Verify that the cable length allows the tab to pull out of the ETB switch when the spring is retracted. See Figure 82.

The following procedure describes how to install the ETB Switch Assembly.

1. Affix a 12” length of Unistrut to the bottom of the guide rail approximately 20” above the Lower Tape Mount Assembly Unistrut.

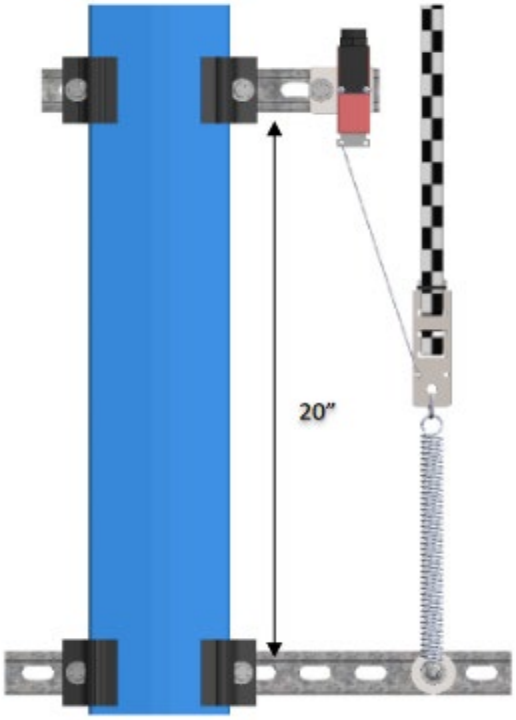

Figure 81: Unistrut to Lower Tape Mount Assembly

2. Attach bracket and ETB switch to the Unistrut.
3. Link the ETB switch to the tape interlock via the cable kit provided. Leave 1-2“ for slack in the cable.

   NOTE: The switch can be mounted vertically as well as by inserting a switch pull tab into the bottom end, pull should always face downward.

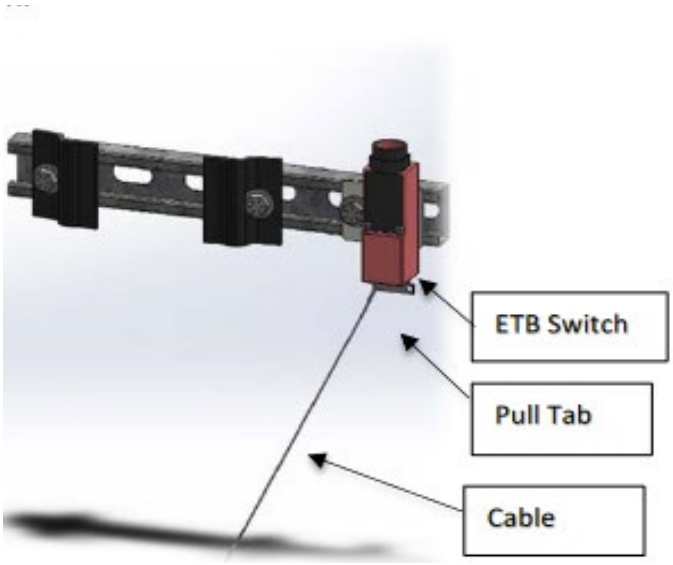

Figure 82: Emergency Tape Break Switch

7.8 Camera Alignment

The camera assembly must be aligned.

7.9 Fine Tune

After the camera is in place, the position must be verified.

Power the APS camera via a RJ45 cable to the CT SRU board so a red array can be seen on the tape to allow for alignment. If there is no red array on the tape, reset the power by disconnecting and reconnecting the RJ45 cable to the SRU board CAT5 connector.

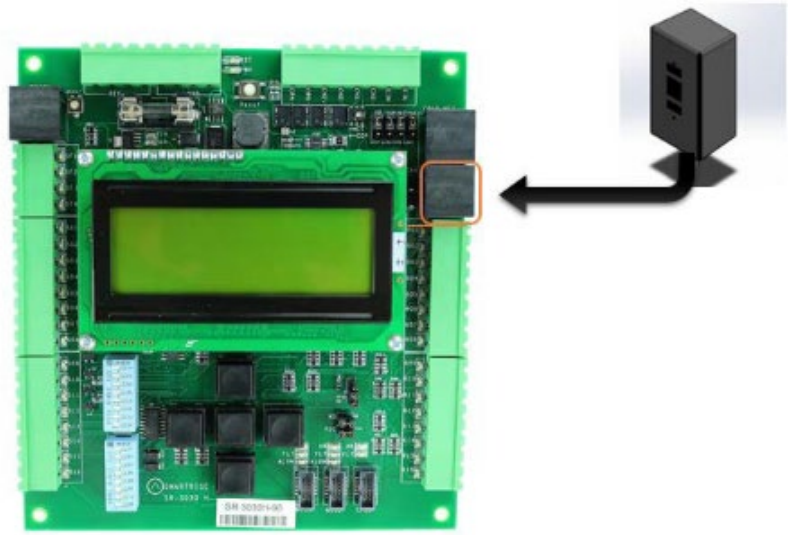

Figure 83: RJ45 Connection

Proceed on inspection up and down the hoistway and adjust each tape guide clip to the correct in-line position with respect to the sensor assembly.

The camera powers up when the CT station is powered up.

7.10 Alignment

Alignment and Position Status LEDs are located on top of the camera. These LEDs are used to align the camera to the tape.

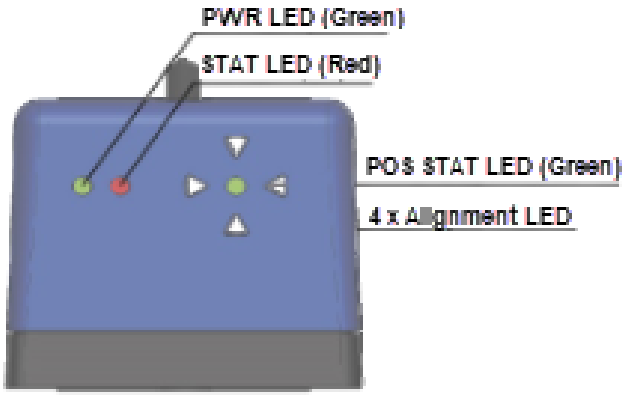

Figure 84: Camera LEDs

When the camera needs to be aligned, the red arrow LEDs indicate which way to move the camera.

The following procedure describes how to align the camera.

1. Loosen the two mounting bolts on the camera mounting plate to adjust the cameras position, as required.
2. Position the camera according to the LEDs.

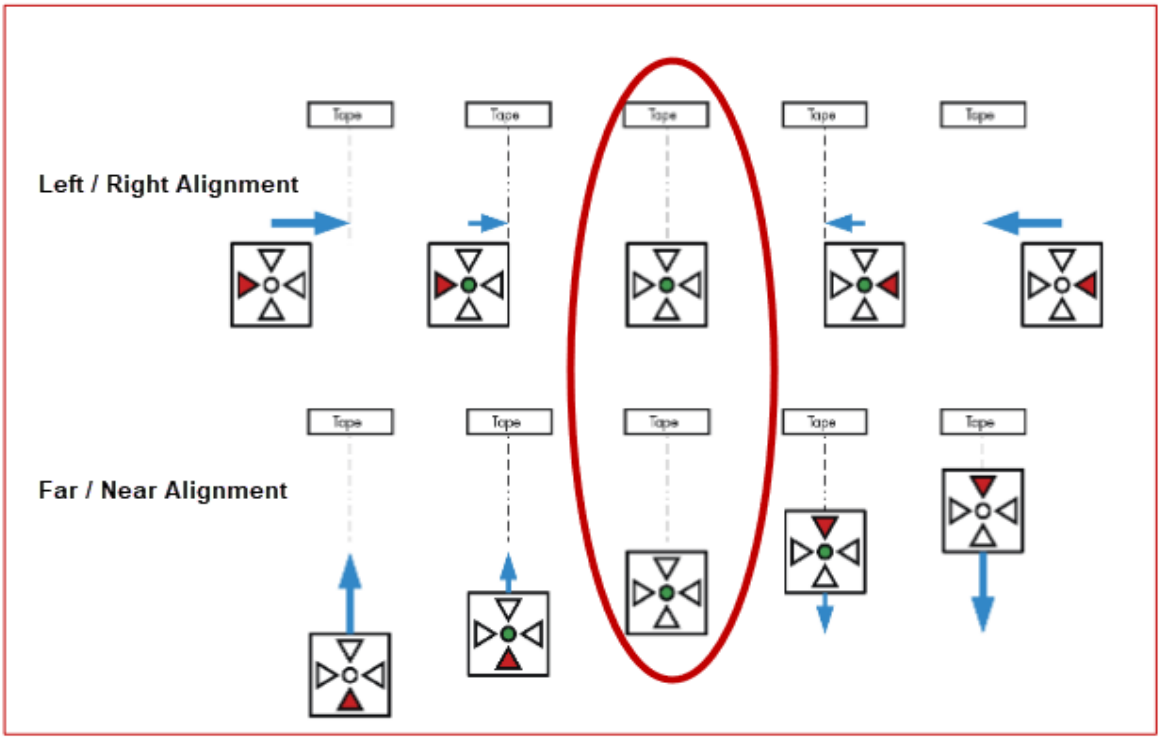

Figure 85: Alignment Arrows

Left / Right Alignment – Using the direction arrows on top of the camera, move the camera left or right until only the green POS STAT LED is on.

Far / Near Alignment – Using the directional arrows on top of the camera, move the camera closer to or further away from the tape until only the green POS STAT LED in on.

3. Once the camera is aligned, tighten the two mounting bolts to the mounting plate.
4. Run the car on INSPECTION from terminal-to-terminal while watching the POS LED on top of the camera.
5. Is the camera aligned with the tape for the entire length of travel?
   a. If the camera is aligned, the process ends.
   b. If the camera is not aligned, go to step 1.

   NOTE: As the car runs up and down the hoistway, the red alignment arrow LEDs may flash on and off. This is OK if the center green LED stays on.

8 Reduced Stroke Buffer

A reduced stroke buffer is a speed limiting device used in case of emergencies. These options need to be set only if the speed rating of the buffer installed is below the elevator contract speed.

The following is an example of how to verify the speed and distance for the reduced stroke buffer.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Safety.

Figure 86: SETUP Menu – Safety

4. From the SAFETY menu, scroll and select ETSL.

Figure 87: SAFETY Menu – ETSL

5. From the ETSL menu, scroll and select Rated Buffer Speed.

Figure 88: ETSL Menu – Rated Buffer Speed

6. From the Rated Buffer Speed menu, enter the rated buffer speed.

Figure 89: RATED BUFFER SPEED Menu

7. Scroll right and press Save.
8. Press the left button until the ETSL menu displays.
9. From the ETSL menu, scroll and select Buffer Distance.

Figure 90: ETSL Menu – Buffer Distance

10. From the Buffer Distance menu, enter buffer distance.

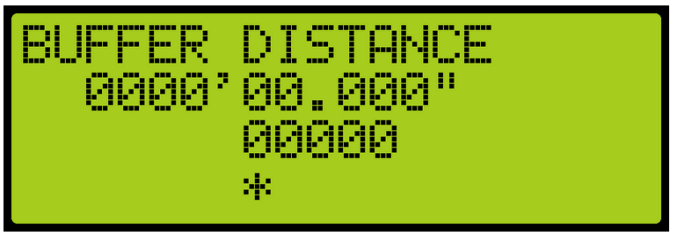

Figure 91: BUFFER DISTANCE Menu

11. Scroll right and press Save.

9 Learn Speed

Learn speed is used during the learning the hoistway operation. The following is an example of how to adjust the learn speed.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, select Speeds. See Figure 48.
4. From the SPEEDS menu, select Learn Speed.

Figure 92: SPEEDS Menu – Learn Speed

5. From the Learn Speed menu, verify the learn speed.

Figure 93: LEARN SPEED Menu

10 Learning the Hoistway

The following is an example of how to learn the hoistway.

NOTE: Verify the number of floors and openings is correct before starting a learn. See section 12.2 Floor Openings.

1. Bring the car to the top or bottom floor terminal.
2. Check if the DZ input to the CT SRU board is high by:
   - Checking the top right corner of the Main screen.
   - Viewing status menus.
3. Checking by Main screen?
   a. If checking by Main screen, go to step 9.

Figure 94: Check Status by Main Screen Method

   b. If checking by Status menus, go to step 4.
4. Press the right button to access the Main Menu.
5. From the MAIN MENU, scroll and select Status.

Figure 95: MAIN MENU – Status

6. From the STATUS menu, scroll and select Inputs.

Figure 96: STATUS Menu – Inputs

7. From the INPUTS BY FUNCTION menu, scroll and select Doors.

Figure 97: INPUTS BY FUNCTION Menu – Doors

8. From the DOORS menu, verify Door Zone is marked with an X.

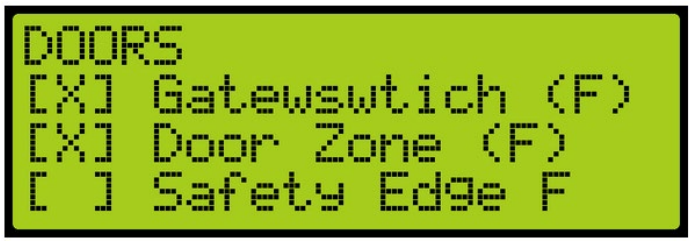

Figure 98: DOORS Menu

9. On the MR board, turn on DIP 5A.
10. The Main screen changes from Normal to Hold UP/DN To Start.

    NOTE: Verify the Fire Service signals are active, or the elevator will go into fire service after the Hoistway learn is complete.

Figure 99: Normal to Hold UP/DN To Start

11. Is the car at the top landing or bottom landing?
    a. If the car is at the top landing, hold Enable and Down until the car starts moving. Go to step 12.
    b. If the car is at the bottom landing, hold Enable and Up until the car starts moving. Go to step 12.
12. When the car stops, the screen shows Learn Complete.

Figure 100: Learn Complete

13. On the MR board, turn off DIP 5A.

11 NTS/ETS

The NTS and ETS points are automatically calculated by the system based on the S-curve values that are programmed in the S-curve menu.

There are three profiles that have NTS and ETS points calculated based on their S-curve values.

- P1 – Normal profile
- P3 – Emergency profile
- P4 – Short profile

NTS points are generated after the hoistway is learned and as a result, during Construction mode or before the hoistway is learned, NTS may get triggered. See section 4.5 Drive Setup to bypass NTS on the drive while on Construction mode.

An NTS signal, located near the drive connections on the MR board, can be either a 24 VDC source or sink. The NTS LED is in source mode when lit and in sink mode when not lit. the LED will change states when NTS status changes. The functionality may change based on the job and can be inverted using parameter 01-0067. If the elevator is moving at NTS speed, this may be the cause.

Parameters are provided to reduce the sensitivity of ETS and NTS tripping points.

NTS ODL – Used to reduce the sensitivity of the NTS trip points. Increase this value by 3 – 5 points to reduce nuisance tripping if elevator tracking is off at the terminal floors.

ETS OLD – Used to reduce the sensitivity of the ETS trip points. Increase this value by 3 – 5 points to reduce nuisance tripping if elevator tracking is off at the terminal floors.

ETS Offset – Sets the position offset from generated NTS trip points to be applied to ETS trip points. Units are in 0.2 counts per inch (CPI). This can be used if the ETS points need to be shifted further from the terminal landing.

12 Floors

Floors need to be set for landing, the door that opens at each floor (if it opens), and other commands.

12.1 Floor Adjustment

The floor adjustment allows for adjusting the stopping point of the elevator.

The following is an example of how to adjust the floor level.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Floors.

Figure 101: SETUP Menu – Floors

4. From the FLOORS MENU, scroll and select Too High/Too Low.

Figure 102: FLOORS Menu – Too High/Too Low

5. From the ADJUST FLOORS menu, scroll and select the adjustment for the floor.

   NOTE: The value is displayed in feet and inches as the count is adjusted.

   - If the car is too low, increase the count by the amount the car is to move up by.
   - If the car is too high, decrease the count by the amount the car is to move down by.

Figure 103: ADJUST FLOORS Menu

6. Scroll right and press Save.

12.2 Floor Openings

Front and rear floor openings must be set to either open the front or rear door.

12.3 Front Floor Openings

The following is an example of how to set the floor the front door opens.

1. Press the right arrow to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Floors. See Figure 101.
4. From the FLOOR menu, scroll and select Openings (F).

Figure 104: FLOOR Menu – Openings Front

5. From the FLOOR OPENING (FRONT DOOR) menu, scroll and select the floors the front door is going to open.

Figure 105: FLOOR OPENING (FRONT DOOR) Menu

6. Scroll right and press Save.

12.4 Rear Floor Openings

The following is an example of how to set the floor the rear door opens.

1. Press the right arrow to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Floors. See Figure 101.
4. From the FLOOR menu, scroll and select, Openings (R).

Figure 106: FLOOR Menu – Openings Rear

5. From the FLOOR OPENING (REAR DOOR) menu, scroll and select the floors the rear door is going to open.

Figure 107: FLOOR OPENING (REAR DOOR) Menu

6. Scroll right and press Save.

12.5 Opening Map Status

The opening map status verifies the door that is opened for the floor. The front opening mask marks the landings that have front openings and are located under address 32-0000 - 32-0002. The rear opening mask marks the landings that have rear openings and are located under addresses 32-0004 – 32-0006.

12.6 Front Opening Map Status

The following is an example of viewing the front opening map status.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Debug.

Figure 108: MAIN Menu – Debug

3. From the DEBUG menu, scroll and select Car Data.

Figure 109: DEBUG Menu – Car Data

4. From the Car Data Overview status, click the right button.

Figure 110: Car Data Overview Status

5. From the Hall Mask status, click the right button.

Figure 111: Hall Mask Status

6. View the Front Opening Map status.

Figure 112: Front Opening Map Status

12.7 Rear Opening Map Status

The following is an example of viewing the rear opening map status.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Debug. See Figure 108.
3. From the DEBUG menu, scroll and select Car Data. See Figure 109.
4. From the Car Data Overview status (see Figure 110), click the right button.
5. From the Hall Mask status (see Figure 111), click the right button.
6. From the Front Opening Map status (see Figure 112), click the right button.
7. View the Rear Opening Map status.

Figure 113: Rear Opening Map Status

12.8 Security Setting

Front and rear door security settings must be set for the correct opening at the landing. The front and rear door setting are located 32-00012 – 32-0014.

12.9 Front Security

The following is an example of how to setup security for front car calls.

1. Press the right arrow to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Floor. See Figure 101.
4. From the FLOORS menu, scroll and select, Security (F).

Figure 114: FLOORS Menu – Security

5. From the SECURITY FLOORS (FRONT DOOR) menu, scroll and select the floors the front door is going to open.

Figure 115: SECURITY FLOORS (FRONT DOOR) Menu

6. Scroll right and press Save.

12.10 Rear Security

The following is an example of how to setup rear car calls security.

1. Press the right arrow to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Floor. See Figure 101.

4. From the FLOORS menu, scroll and select Security (R).

Figure 116: FLOORS Menu – Rear Security

5. From the SECURITY FLOORS (REAR DOOR) menu, scroll and select the floors the rear door is going to open.

Figure 117: SECURITY FLOORS (REAR DOOR) Menu

6. Scroll right and press Save.

12.11 Security Map Status

The security map status verifies the landings that are secure. The front security mask marks the landings that are secured and are located under address 32-0008 - 32-0010. The rear opening mask marks the landings that are secured and are located under addresses 32.0012 – 32-0014.

12.12 Front Security Map Status

To following is an example of viewing the front security map status.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Debug. See Figure 108.
3. From the DEBUG menu, scroll and select Car Data. See Figure 109.
4. From the Car Data Overview status (see Figure 110), click the right button.
5. From the Hall Mask status (see Figure 111), click the right button.
6. From the Front Opening Map status (see Figure 112), click the right button.
7. From the Right Opening Map status (see Figure 113), click the right button.

8. View the Front Security Map status.

Figure 118: Front Security Map Status

12.13 Rear Security Map Status

To following is an example of viewing the rear opening map status.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Debug. See Figure 108.
3. From the DEBUG menu, scroll and select Car Data. See Figure 109.
4. From the Car Data Overview status (see Figure 110), click the right button.
5. From the Hall Mask status (see Figure 111), click the right button.
6. From the Front Opening Map status (see Figure 112), click the right button
7. From the Right Opening Map status (see Figure 113), click the right button.
8. From the Front Security Map status (see Figure 118), click the right button.
9. View the Rear Security Map status.

Figure 119: Rear Security Map Status

12.14 Paired Hall Call Map Status

The paired hall call masks are used to tie together the lamps of separate hall buttons. Each paired mask must be set to the sum of the hall call masks for each of the paired boards. The paired hall call parameters addresses are located at 08-0178 – 08-0181.

The following is an example of viewing the paired hall call mask status.

1. Press the right button to access the Main Menu.

2. From the MAIN MENU, scroll and select Debug. See Figure 108.
3. From the DEBUG menu, scroll and select Car Data. See Figure 109.
4. From the Car Data Overview status (see Figure 110), click the right button.
5. From the Hall Mask status (see Figure 111), click the right button.
6. From the Front Opening Map status (see Figure 112), click the right button
7. From the Right Opening Map status (see Figure 113), click the right button.
8. From the Front Security Map status (see Figure 118), click the right button.
9. View the Rear Security Map status (see Figure 119), click the right button.
10. View the Paired Hall Call Mask status.

    NOTE: The following example shows:

    - First mask (PM1) pairs the front Hall Call boards
    - Second mask (PM2) pairs the rear Hall Call boards

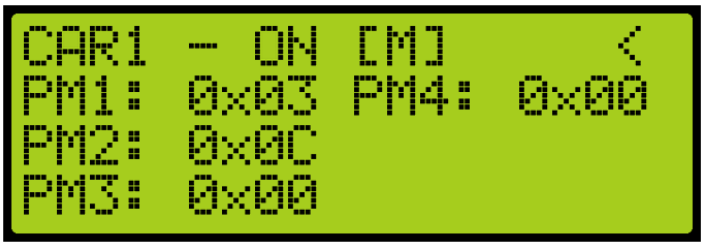

Figure 120: Paired Hall Call Mask Status

12.15 Sabbath Operation

There are two ways to initiate Sabbath operation:

- Turn on a key that is configured to an input on the MR board.
- If the clock on the controller reaches the Sabbath start time on Friday.

Once in Sabbath operation, the car goes to each door that has a valid Sabbath opening and skip those without a valid Sabbath opening. Sabbath operation has a separate door dwell timer. The door remains open based on the Sabbath timer and not the original door dwell timer. The car exits Sabbath operation if the Sabbath key is turned off or once the controller clock reaches the Sabbath end time on Saturday.

The table below lists the Sabbath Parameters.

Table 20: Sabbath Parameters

Number	Name	Description
01-029	KeyEnableOnly	Enables Sabbath on key

Number	Name	Description
01-030	KeyOrTimerEnable	Enables Sabbath on key or timer
01-031	TimerEnableOnly	Enables Sabbath on timer
08-007	DoorDwellSabbathTimer	Sets the door dwell timer for Sabbath
24-193	SabbathStartTime	Sets the Friday Sabbath start time
24-194	SabbathEndTime	Sets the Saturday Sabbath end time
32-023	SabbathDestinationUp 0	Sets the destinations of the car going up (1 - 32)
32-024	SabbathDestinationUp 1	Sets the destinations of the car going up (33 - 64)
32-023	SabbathDestinationDown 0	Sets the destinations of the car going down (1 - 32)
32-024	SabbathDestinationDown 1	Sets the destinations of the car going down (33 - 64)
32-037	SabbathOpeningF 0	Sets front opening map for Sabbath (1 - 32)
32-038	SabbathOpeningF 1	Sets front opening map for Sabbath (33 - 64)
32-039	SabbathOpeningR 0	Sets rear opening map for Sabbath (1 - 32)
32-040	SabbathOpeningR 1	Sets rear opening map for Sabbath (33 - 64)

The table below lists the I/O That Affects Sabbath Operation.

Table 21: I/O That Affects Sabbath Operation

Number	Name	Description
501-508	Auto Operation - Sabbath	Configures input for Sabbath key

The following is an example of how to set the Sabbath operation.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. Is the Sabbath operation being setup by Key Enable Only, Timer Enable Only, or Key 0r Timer Enable?
    a. If the Sabbath operation is being set by Key Enable Only, go to step 4.
    b. If the Sabbath operation is being set by Timer Enable Only, go to step 37.
    c. If the Sabbath operation is being set by Key or Timer Enable, go to step 53.

4. From the SETUP menu, scroll and select Setup I/O.

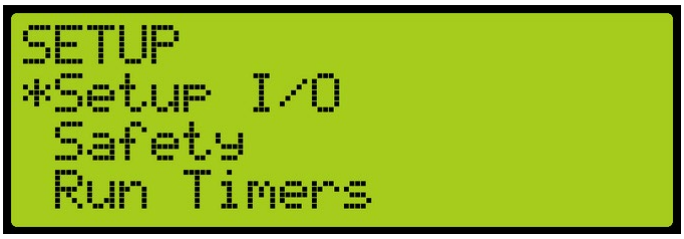

Figure 121: SETUP I/O Menu – Setup I/O

5. From the SETUP I/O menu, scroll and select Setup Inputs.

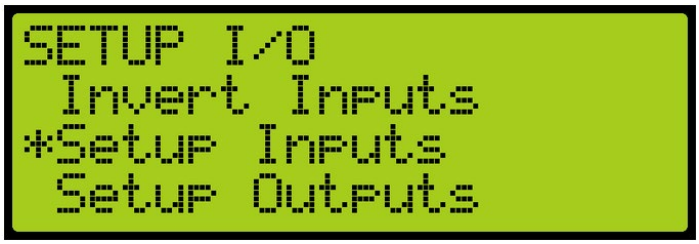

Figure 122: SETUP I/O Menu – Setup Inputs

6. From the SELECT BOARD menu, scroll and select Machine Room.

Figure 123: SELECT BOARD Menu – Machine Room

7. From the Input menu, scroll and select the configuration to be used as the Sabbath input.

   NOTE: The X input is a representation of a number between 1-8.

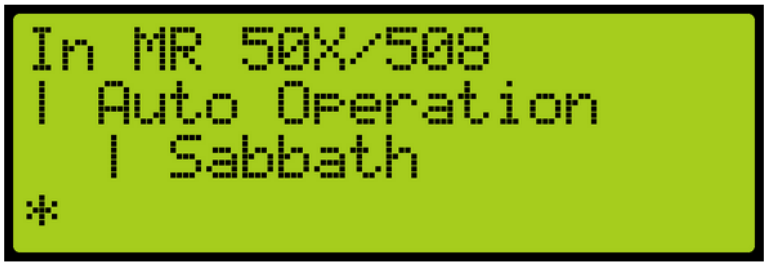

Figure 124: Input Menu

8. Scroll right.

9. Scroll and select Auto Operation. See Figure 124.
10. Scroll right.
11. Scroll and select Sabbath. See Figure 124.
12. Scroll right and press Save.
13. Press the left button until the SETUP menu displays.
14. From the SETUP menu, scroll and select Sabbath.

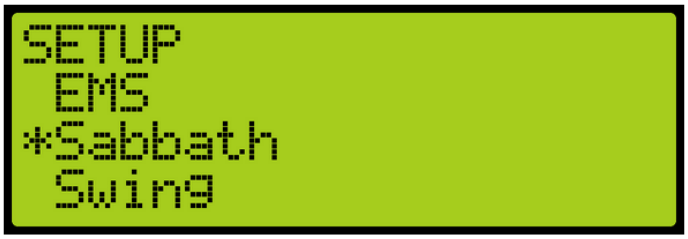

Figure 125: SETUP Menu – Sabbath

15. Is the Sabbath operation being setup for Key Enable Only or key or Timer Enable Only?
    a. If the Sabbath Operation is being setup for Key Enable Only, go to step 16.
    b. If the Sabbath Operation is being setup for Key or Timer Enable, go to step 20.
16. From the SABBATH menu, scroll and select Key Enable Only.

Figure 126: SABBATH Menu – Key Enable Only

17. From the KEY ENABLE ONLY menu, press the up button and select On.

Figure 127: KEY ENABLE ONLY Menu

18. Scroll right and press Save.
19. Press the left button until the SABBATH menu is displayed.

20. From the SABBATH menu, scroll and select Floors Opening (F).

Figure 128: SABBATH Menu – Floors Opening (F)

21. From the FLOOR OPENING (Front) menu, scroll and select the front doors for each floor that opens during the Sabbath.

    NOTE: The doors, that open, have to be set to On.

Figure 129: Floors Opening (Front) Menu

22. Scroll right and press Save.
23. Press the left button until the SABBATH menu is displayed.
24. From the SABBATH menu, scroll and select Floors Opening (R).

Figure 130: SABBATH Menu – Floors Opening (R)

25. From the FLOOR OPENING (Rear) menu, scroll and select the rear doors for each floor that opens during the Sabbath.

Figure 131: Floors Openings (Rear) Menu

26. Scroll right and press Save.
27. Press the left button until the SABBATH menu is displayed.
28. From the SABBATH menu, scroll and select Destinations Up.

Figure 132: SABBATH Menu – Destinations Up

29. From the UP DESTINATIONS menu, scroll and select the up destination for the Sabbath.
    - Ensure the highest down destination is below the highest up destination.
    - Ensure the lowest down destination is above the lowest up destination.
    - Up destinations should be different from down destinations.

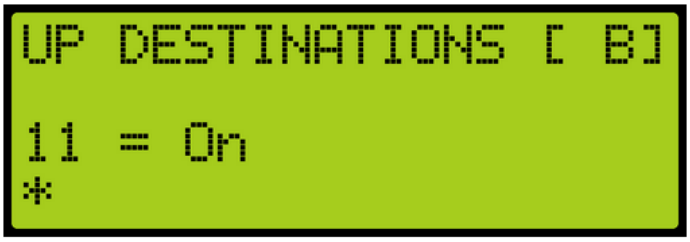

Figure 133: UP DESTINATIONS Menu

30. Scroll right and press Save.
31. Press the left button until the SABBATH menu is displayed.

32. From the SABBATH menu, scroll and select Destinations Down.

Figure 134: SABBATH Menu – Destinations Down

33. From the DOWN DESTINATIONS menu, scroll and select the down destination for the Sabbath.

Figure 135: DOWN DESTINATION Menu

34. Is the Sabbath Operation being setup for Key Enable Only, Timer Enable Only, or Key or Timer Enable?
    a. If the Sabbath Operation is being setup for Key Enable Only, go to step 35.
    b. If the Sabbath Operation is being setup for Timer Enable Only, go to step 35.
    c. If the Sabbath Operation is being setup for Key or Timer Enable, go to step 36.
35. Scroll right and press Save.
36. Has the Sabbath Operation setup for Key or Timer Enable complete?
    a. If the setup for Sabbath for Key or Timer Enable is complete, the process ends.
    b. If the setup for Sabbath for Key or Timer Enable is not complete go to step 40.
37. From the SETUP menu, scroll and select Sabbath. See Figure 125.
38. From the Sabbath menu, scroll and select Timer Enable Only.

Figure 136: SABBATH Menu – Timer Enable Only

39. From the TIMER ENABLE ONLY menu, press the up button and select On.

Figure 137: TIMER ENABLE ONLY Menu

40. Scroll right and press Save.
41. Press the left button until the SABBATH menu is displayed.
42. From the SABBATH menu, scroll and select Friday Start Time.

Figure 138: SABBATH Menu – Friday Start Time

43. Scroll and select the time the Sabbath starts.

d

Figure 139: FRIDAY START TIME Menu

44. Scroll right and press Save.
45. Press the left button until the SABBATH menu is displayed.

46. From the SABBATH menu, scroll and select Saturday End Time.

Figure 140: SABBATH Menu – SATURDAY END Time

47. Scroll and select the time the Sabbath ends.

Figure 141: SATURDAY END TIME Menu

48. Scroll right and press Save.
49. Press the left button until the SABBATH menu is displayed.
50. From the SABBATH menu, scroll and select Door Dwell Time.

Figure 142: SABBATH Menu – Door Dwell Time

51. From the DOOR DWELL TIMER menu, scroll and select the amount of time the door stays open.

Figure 143: DOOR DWELL TIMER Menu

52. Scroll right and press Save. Go to step 19.
53. From the SETUP menu, scroll and select Sabbath. See Figure 125.
54. From the Sabbath menu, scroll and select Key or Timer Enable.

Figure 144: SABBATH Menu – Key or Timer Enable

55. From the KEY OR TIMER ENABLE menu, press the up button and select On.

Figure 145: Key or Timer Enable Menu

56. Scroll right and press Save.
57. Press the left button until the SETUP menu is displayed and go to step 4.

13 Car Calls

Car calls are entered from the MR board or CT SRU. The front door or rear door opens, if available, to the selected door and floor.

The following is an example of how to set up a car call.

1. Press the right arrow to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Car Calls.

Figure 146: SETUP Menu – Car Calls

4. From the ENTER CAR CALLS menu, select the front or back door that is being latched.

Figure 147: ENTER CAR CALLS Menu – Front or Rear

5. From THE ENTER CAR CALL menu, press up or down to scroll through available floors.

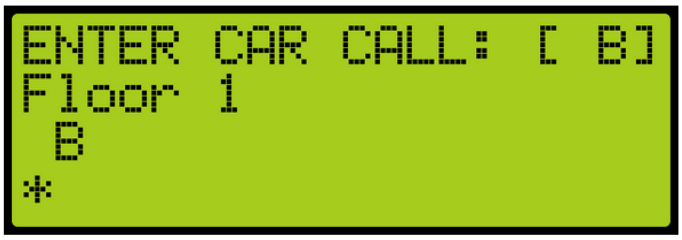

Figure 148: ENTER CAR CALL Menu

6. Press the middle button to register the call. Latched call is displayed on the screen.

14 Doors

The following is an example of how to make door adjustments.

1. Press the right arrow to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Door Setup.

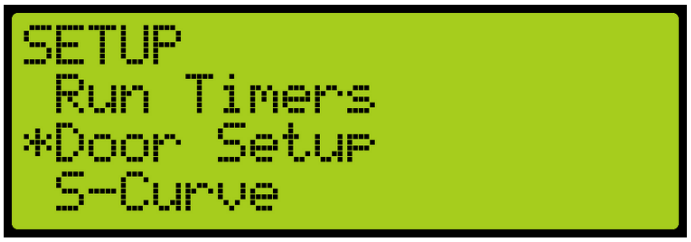

Figure 149: SETUP Menu – Door Setup

The table below lists the Symbols for Each State.

Table 22: Symbol for Each State

State	Symbol
Unknown	“[?]”
Closed	“[|]”
Closed With DC	“>|<”
Opening	“[<>]”
Opening With GSW	“[<|>]”
Opening With PHE	“[<*>]”
Open	“[ ]”
Open_With_DO	“< >”
Open_With_PHE	“[*]”
Open_With_PHE_DO	“< * >”
Partially Open	“[| |]”
Partially Open with PHE	“[|*|]”
Closing	“[><]”
Closing With GSW	“[>|<]”
Closing With PHE	“[>*<]”
Nudging	“[>!<]”

15 Car Data

The Car Data can be used to view important dispatching and car status information passed between grouped cars. It can be used to debug dispatching issues. The Car Data software for the Car Data is available for software v1.02.63a and later.

15.1 Car Status Overview

The following is an example of how to view the car status overview.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Debug. See Figure 108.
3. From the DEBUG menu, scroll and select Car Data. See Figure 109.
4. View the Car Data Overview status.

Figure 150: Car Data Overview Status

The Car status overview shows:

Car ID – Displays the selected cars ID number. Valid from 1 to 8.

Online Status – Displays ON if the car is online and broadcasting on the group network, otherwise it reads OFF.

Master Status – Displays [M] if the car is acting as the master dispatcher for the group.

Class and Mode of Operation – Displays the cars class of operation as a single letter abbreviation, followed by the mode of operation.

In Group Status – Displays IN GRP if the car is in group and currently accepting hall calls.

Current Landing – Displays the car's current landing number, preceded by C-.

Destination Landing – Displays the car's destination landing number, preceded by D-.

Reachable Landing – Displays the car's estimated closest reachable landing number, preceded by R-. This landing is calculated based on the cars ability to slow down with current S-curve values.

Motion Status – Displays the car's motion status. If the car is not moving up (M-UP) or moving down (M-DN), then the car motion displays M-ST.

Direction Priority – Displays the car's direction priority. If the car is serving up calls it appears as P-UP, otherwise it will appear P-DN.

The table below lists the Car Status Codes.

Table 23: Car Status Codes

Code	Description
Unknown	
U-UNK	Unknown
Manual	
M-UNK	Unknown
M-INV	Invalid
M-NON	None
M-CT	Car Top Inspection
M-IC	In-Car Inspection
M-HA	Hoistway Access
M-MR	Machine Room Inspection
M-PIT	Pin Inspection
M-LND	Landing Inspection
M-CON	Construction
M-HAT	Hoistway Access (Top)
M-HAB	Hoistway Access (Bottom)
Learn	
L-UNK	Unknown
L-INV	Invalid
L-NON	None
L-G_2T	Go to Terminal
L-RB_1	Invalid
L-RB_2	Invalid
L-BHA	Bypass Term Limits
L-RHA	Ready Hoistway Learn
L-LB_1	Invalid
L-LB_2	Invalid
L-LHU	Learning Hoistway Up
L-LHD	Learning Hoistway Down
L-EBP	Invalid
L-CMP	Learn Complete
L-RLD	Invalid

Code	Description
L-LLD	Invalid
Automatic	
A-UNK	Unknown
A-NON	None
A-NORM	Normal
A-FIR_1	Fire Phase 1
A-FIR_2	Fire Phase 2
A-EMS_1	EMS Phase 1
A-EMS_2	EMS Phase 2
A-ATTD	Attendant
A-INDP	Independent Service
A-SEIS	Seismic
A-CWDR	Counterweight Derail
A-SABB	Sabbath
A-EPWR	Emergency Power
A-EVAC	Invalid
A-OOS	Out-of-Service
A-BATL	Battery Lowering
A-BATR	Battery Rescue
A-PRS1	Prison Transport 1
A-PRS2	Prison Transport 2
A-INV	Invalid
A-WG	Wanderguard
A-HUGS	HUGS
A-CSW	Invalid
A-TEST	Test Mode
A-WIND	Wind Operation
A-FLD	Flood Operation
A-SWING	Swing Operation
A-CUST	Custom Operation

15.2 Front Door State

The front door state displays the car's front door state. For front door codes see Table 22.

15.3 Rear Door State

The rear door state displays the car's rear door state. For rear door codes see Table 22.

16 Hall Network

The hall network is a group of Hall boards connected by a CAN bus.

16.1 CAN Bus

Each Hall board communicates over a CAN bus to a Riser board located in the machine room.

The figure below shows a standard CAN network. For optimal performance, the cable stub lengths should be kept short and only node 1 and node 4 on the CAN bus line should be terminated.

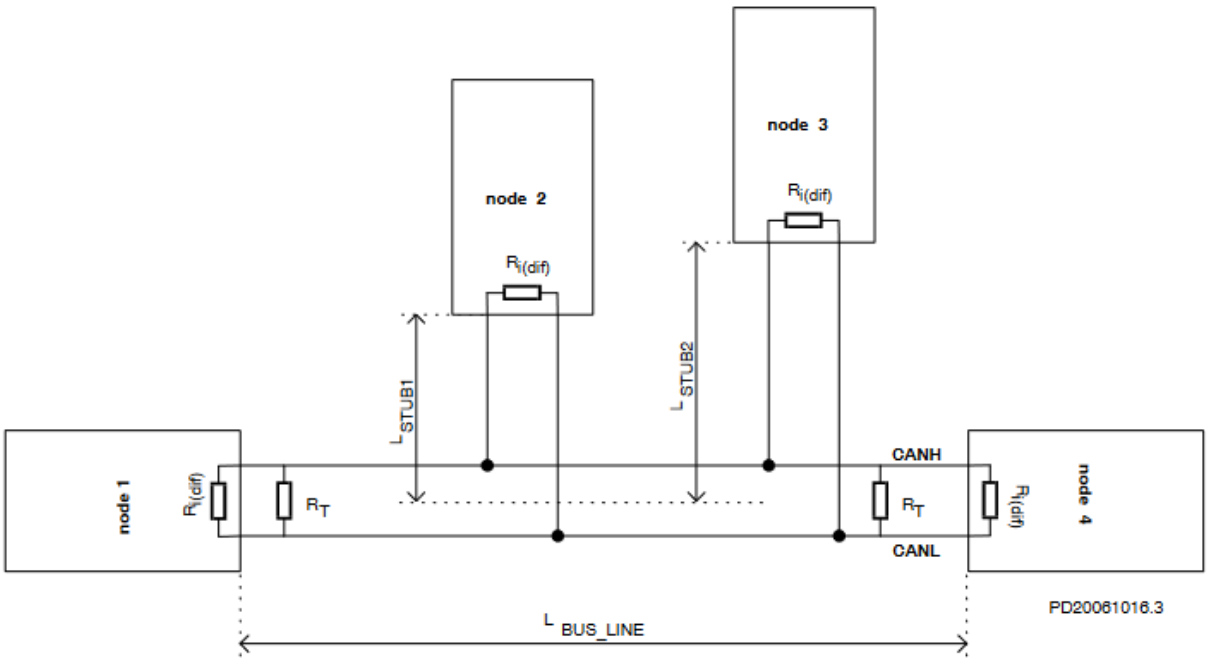

Figure 151: Standard CAN Bus[1]

Termination – The first and last boards within each CAN network are terminated. See section 2.16 IO Board/Riser Board SR3031 for more information.

- Example 1 – A single set of hall buttons are wired to Riser board 1.
  - The Riser board's CAN2 termination and the bottom landing Hall board's termination is set.
- Example 2 – Two sets of Hall buttons are both wired to Riser board 1.

[1] See https://www.onsemi.com/pub/Collateral/AND8376-D.PDF for CAN Bus with Unterminated Stubs

- The bottom landing Hall board for each Hall board set is terminated. The Riser board's CAN2 is NOT terminated. For tall buildings, the second set of Hall boards may need to be split off and connected to a second Riser board. Both networks are terminated as described in example 1.

  NOTE: For most C4 PCB boards, a jumper is used to terminate the CAN bus. For Hall boards, the termination is set by switching DIP 10 to ON.

Stub Length – A CAN bus resembles a long branch with only short 'stubs' coming out of it. These stubs are kept shorter than 1 ft in length. See Figure 151.

Connections – A twisted pair is used over CAT5 splitters whenever possible. For networks with over 20 Hall boards, additional power and REF connections will be needed to mitigate voltage drops.

16.2 DIP Switch Settings

The following table lists the Hall Board DIP Switch settings.

Table 24: Hall Board DIP Switch Settings

DIP Switch	Functionality
DIP 1	Landing ID 1
DIP 2	Landing ID 2
DIP 3	Landing ID 3
DIP 4	Landing ID 4
DIP 5	Landing ID 5
DIP 6	Landing ID 6
DIP 7	Function ID 1
DIP 8	Function ID 2
DIP 9	Function ID 3
DIP 10	CAN Termination

16.3 Hall Board Status

If problems occur due to hall calls, start by checking the Hall board Status UI menu.

The Hall board status display gives information on each board's communication status, error state, connected Riser board, I/O, and DIP addressing.

The following is an example of how to verify Hall board status.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Status. See Figure 95.

3. From the STATUS menu, scroll and select Hall Board Status.

Figure 152: STATUS MENU – Hall Board Status

4. The example below shows the Status of the Hall board configured for the 64th landing.

Figure 153: Hall Board Status for the 64th Landing

- The 64th Landing example shows the following:
  - Belongs to the first function range of Hall boards
  - Connected to Riser board 1 in the machine room
  - There are no errors
  - Both up and down button are currently being pressed
  - Both up and down lamps are currently lit

The figure below shows an example of the status of an uninitialized Hall board.

Figure 154: Uninitialized Hall Board Status

NOTE: Once communication has been established with a Hall board and the communication is lost, the com status is 0% instead of N/A.

16.4 Errors

The following are possible errors that can occur:

- **UNK** – The board is uninitialized
- **NONE** – The board has no errors
- **POR** – The board is starting up
- **WDT** – The board stalled and triggered a reset
- **POR** – The board power was insufficient and triggered a reset
- **COM** – The board is not receiving commands
- **DIP** – The board has the same address as another board on the network
- **BUS** – The board is resetting its CAN transceiver

16.5 Hall Call Masks

Hall call mask must be set to enable regular hall calls for a car. The hall call mask setting is located under address 32-0028 – 32-0031. The value for the address varies depending on the function IDs of the Hall board installed.

The following is an example of how to set the hall call mask decimal format.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Debug. See Figure 108.
3. From the DEBUG menu, scroll and select Edit Parameters.

Figure 155: DEBUG Menu – Edit Parameters

4. From the PARAMETER EDIT menu, select Decimal Format.

Figure 156: PARAMETER EDIT Menu – Decimal Format

5. From the EDIT AS BINARY menu, edit the address.

Figure 157: EDIT AS BINARY Menu

6. Scroll right and press Save.

To determine the value of the address, use the table below and add the corresponding values of each of the function IDs serviced by the car.

The following table lists the Hall Mask Mappings.

Table 25: Hall Mask Mappings

DIP Switch 7-8-9	Function ID	Mask Value (Decimal)
OFF-OFF-OFF	1	1
ON-OFF-OFF	2	2
OFF-ON-OFF	3	4
ON-ON-OFF	4	8
OFF-OFF-ON	5	16
ON-OFF-ON	6	32
OFF-ON-ON	7	64
ON-ON-ON	8	128

To configure the Hall Call boards to serve as rear calls, set the hall rear door mask located under address 32-0030 to the corresponding value. Use the values in Table 25 to determine the value by adding the mask values of each of the function IDs that serve as rear calls.

For example, if a single riser exists for front calls with function ID 1 and a second riser for rear calls with function ID 3. Parameter 32-0028 is set to 5 and parameter 32-0030 is set to 4.

16.6 Hall Call Mask Status

The following is an example of viewing the hall mask status.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Debug. See Figure 108.
3. From the DEBUG menu, scroll and select Car Data. See Figure 109.
4. From the Car Data Overview status (see Figure 110), click the right button.
5. The Hall Mask status displays. see Figure 111.

The table below lists the Hall Mask Status Definitions.

Table 26: Hall Mask Status Definitions

Hall Mask Code	Definition	Description
HMF	Front hall mask	Marks which front hall calls can be taken
HMR	Rear hall mask	Marks which rear hall calls can be taken
HML	Latchable hall mask	Marks which hall calls can be latched

To view hall mask errors, see section 16.4 Errors.

16.7 Pairing Hall Buttons

To get two sets of hall buttons to light up together, the paired hall mask parameter must be set. This parameter is set on each group car. This setting is located under address 08-0178. The value of the parameter varies the function IDs of the paired Hall boards. If additional pairings are required, addresses 08-0179 to 08-0181 are available for use.

Example 1 – Paired Hall boards with function ID 0 (DIP 7, DIP 8, and DIP 9 OFF) and function ID 2 (DIP 7 ON). Set 08-0178 to x03 (3 in decimal).

Example 2 – Paired Hall boards with function ID 3 (DIP 8 ON) and function ID 4 (DIP 7 and DIP 8 ON). Set 08-0178 to x0C (12 in decimal).

The following is an example of how to set the hall call mask hexadecimal format.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Debug. See Figure 108.
3. From the DEBUG menu, scroll and select Edit Parameters. See Figure 155.

4. From the PARAMETER EDIT menu, select Hex Format.

Figure 158: PARAMETER EDIT Menu – Hex Format

5. From the EDIT AS BINARY menu, edit the address. See Figure 157.
6. Scroll right and press Save.

16.8 Compatibility

The V2 Hall board and C4 Hall board are NOT compatible. The C4 Hall boards have serial numbers starting in SR1060 and have 10 or 12 DIP switches, while V2 Hall boards have 8 DIP switches.

NOTE: 10 DIP switch Hall boards in a system cannot be interchanged with 12 DIP switch Hall boards.

17 Serial Hall Lanterns

Serial Hall Lantern Hall boards, which are interchangeable with Hall Call boards, connect to the CAN network of the MR board. Since the Serial Hall Lantern Hall boards and the Hall Call boards share the same hardware and software, this manual references Hall boards.

17.1 CAN BUS

The Serial Hall Lantern Hall board CAN bus follows the same CAN bus guidelines as the Hall boards.

By default, the CAN network is terminated on the MR board so only terminate the lowest landings Serial Hall Lantern Hall board. If a CE Driver board is being used within the network, the termination on this board is removed.

17.2 Serial Hall Lantern Hall Board Status

If any issues occur with the Serial Hall Lantern Hall boards, start by checking the Hall Lantern status. The Status menu displays information about each board's communication status, error state, I/O, and DIP addressing.

The following procedure describes how to verify Hall Lantern status.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Status. See Figure 95.
3. From the STATUS menu, scroll and select Hall Lantern Status.

Figure 159: STATUS MENU – Hall Lantern Status

4. The example below shows the status of the Hall Lantern configured for the 64th landing.

Figure 160: Hall Lantern Status for the 64th Landing

The figure below shows an example of the status of an uninitialized Hall Lantern Status.

Figure 161: Uninitialized Hall Lantern Status

17.3 Errors

For Serial Hall Lantern Hall Board errors see section 16.4. Errors.

17.4 Hall Lantern Masks

To enable hall lantern communications, the car's hall lantern mask must be set. The setting is located under address 32-0035. The value for the address varies depending on the function IDs of the Serial Hall Lantern Hall boards installed. To determine the value of the address, use Table 25 and add the corresponding values of each of the function IDs serviced by the car. See section 16.5 Hall Call Masks, Hall Call Mask Decimal Format procedure to set the decimal for Hall Lantern Masks.

To configure the Serial Hall Lantern Hall Call boards to serve as rear calls, set the rear hall lantern mask located under address 32-0036 to the corresponding value. Use the values in Table 25 to determine the value by adding the mask values of each of the function IDs that serve as rear calls.

18 C4 Data Acquisition Device (D.A.D) Unit

Each Smartrise C4 Controller comes wired to a D.A.D unit that comes equipped with a Graphical User Interface Application (GUI). The following section explains how to connect wirelessly to the D.A.D unit and access its application using a laptop or a tablet.

18.1 Wireless Connection to D.A.D Unit

The following procedure describes how to perform a wireless connection to the D.A.D. unit.

1. Power on the C4 Controller.

   NOTE: A green LED will start flashing on the D.A.D unit.

2. Using a laptop, find the SSID (WIFI name) of the D.A.D unit.
   - The SSID should be related to the jobsite's name.
   - Depending on the Operating System (Windows or Mac), the next step might ask you to enter an eight-digit pin. Select the option to enter a PASSWORD instead.

     The password is **SmartriseWebMRM**.

     NOTE: The password is case sensitive**.**

3. Once connected, open any web browser (Internet Explorer, Google Chrome, or Firefox).
4. Enter the following URL address 192.168.0.1:5900 and press ENTER.
5. The GUI is displayed.

18.2 Uploading Revision Board Software

The following procedure describes how to upload revision board software.

1. Click the SELECT BOOTLOADER button and choose the update file.
   - The updated file should be named Smartrise.sbf.
     NOTE: The file name may change but the extension remains as an .sbf file**.**
2. Turn on DIP 8A.
3. Red and green LEDs start flashing on the MRUA and MRUB processors.
4. Click the "Start BOOTLOADER" button.
5. Hit RESET on the MR Board. The bootloader begins incrementing its percentage.
6. When Bootloading reaches 100%, turn off DIP 8A and recycle power.
7. The controller is updated.

18.3 Troubleshooting

If turning on DIP 8A does not put the car in the Bootloading ready-state, check if the Watchdog jumpers are OFF. On the MR board, this jumper can be found on the upper left corner with the initial WD. On the CT/COP boards, the watchdog jumper is to the right of the direction buttons. Like the MR board, the jumper has the initials WD.

19 Assigning Inputs and Outputs

Like previous Smartrise controllers, the C4 retains the ability to change, add, remove, or move inputs and outputs if they are not fixed (inputs/outputs that cannot be changed due to safety issues). Any UNUSED input or output can be assigned a feature if the installer needs additional features or needs to move an input or output.

Inputs can only be assigned to the 500's and outputs to the 600's. As such, if an output is being searched for and attempting to assign it to a 500 section, the feature will not be found.

19.1 Adding an Input or Output

The following is an example of how to add an input or output.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Setup I/O. See Figure 121.
4. From the SETUP I/O menu:
   a. Select Setup Inputs for the Input menu. See Figure 122.
   b. Select Setup Outputs for the Output menu.

   NOTE: The input and output steps are the same.

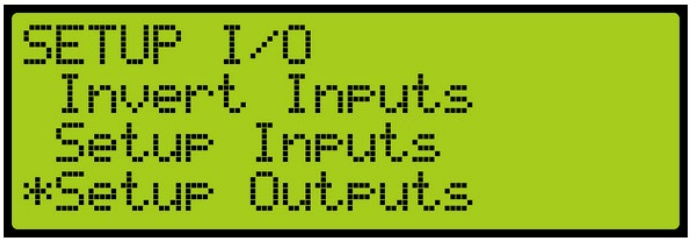

Figure 162: SETUP I/O Menu –Setup Outputs

5. From the SELECT BOARD menu, select which board the input or output is assigned to. See Figure 123.
6. Press the up button until there is an unused input/output available.

Figure 163: Unused Input/Output

- The second and third lines display unused.
- The number on top indicates which input/output is currently being viewed. For example, Figure 163 shows an example of an unused input.
  - 503 is the input that is currently being viewed.
  - 508 states how may inputs there are for that specific board.

7. Scroll right.
8. Scroll and select the desired category of the input or output. See Table 27 or Table 28 for types of inputs and outputs.

   NOTE: The category is the second line.

Figure 164: Category and Input

9. Scroll right.
10. Scroll and select the desired input or output. Figure 164 shows the Auto Operation category to assign Car to Lobby to an unused input.
11. Scroll right and press Save.

19.2 Removing an Input or Output

The following is an example of how to remove an input or output.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Setup I/O. See Figure 121.
4. From the SETUP I/O menu:
   a. Select Setup Inputs for the Input menu. See Figure 122.
   b. Select Setup Outputs for the Output menu. See Figure 162.

      NOTE: The input and output steps are the same.

5. From the SELECT BOARD menu, select which board the input or output is being removed from. See Figure 123.
6. Scroll and select the input or output to be removed. See Figure 164.

7. Scroll right.
8. Scroll and select the current input or output to unused.
9. Scroll right.
10. Scroll and select the desired category of the input/output to unused.
11. Scroll right and press Save.

19.3 Type of Inputs

The table below lists the Types of Inputs per Category.

Table 27: Types of Inputs per Category

Category	Type of Input
AUTO OPERATION	Attd Byp Attd Down Attd On Attd Up Car To Lobby Custom Operation EMS2 On Enable All CC Enable All HC Enable Swing Independent Service Light Load Sabbath Unused EMS2 Offline WanderGuard
DOORS F	DCB DCL DOB DOL DPM HOLD PHE
DOORS R	DCB DCL DOB DOL DPM HOLD PHE

Category	Type of Input
FIRE EQ	Fire Recall Off Fire Recall Reset Fire2 Cncl Fire2 Hold Fire2 Off Fire2 On Remote Fire Key Seismic Smoke HA Smoke Main Smoke MR Smoke Other Smoke Pit
INSPECT/ACCESS	IL DOWN IL UP IP DOWN IP UP
CONTROLLER	Auto Rescue Battery Power Fan and Light OOS Rec Trv On Rec Try Dir Regen Flt
Safety	Flood Full Load Overload
CC Button	Buttons 1-31
CC Enable	Keys 1-31
CC Button Rear	Buttons 1-31
CC Enable Rear	Keys 1-31

Category	Type of Input
E POWER	Autoselect EP ON E-Power Select1 Select2 Select3 Select4 Select5 Select6 Select7 Select8 Up to Speed

19.4 Types of Outputs

The table below lists the Types of Outputs per Category.

Table 28: Types of Outputs per Category

Category	Type of Output
AUTO OPERATION	Accelerating Buzzer Car To Lobby Chime Decelerating In Service In Use Lamp Attd Above Lamp EMS Lamp Indp Srv Overloaded Travel Dn Travel Up

Category	Type of Output
FRONT DOORS	Arrival Down Arrival Up CAM DC DCP DO DOL GATE RELEASE Hold Lamp NDG Restrictor
REAR DOORS	Arrival Down Arrival Up CAM DC DCP DO DOL GATE RELEASE Hold Lamp NDG Restrictor
Fire EQ	Fire Shunt Lamp EQ Lamp Fire Lobby Lamp Fire
Inspection	Lamp Inspection
Controller	Battery Pwr Drive HW Enable Light Fan Rec Trv Dir Regen Enable Regen Reset
Safety	Lamp Flood
CCL Front	Lamps 1-31
CCL Rear	Lamps 1-31

Category	Type of Output
E-Power	Lamp on EP 1 Select1 Select2 Select3 Select4 Select5 Select6 Select7 Select8

20 Installing a New Board

If one of the boards become mechanically or electrically faulty, a replacement board is needed. The set parameters (timers, learned floor, etc.) can be retained after the board is replaced.

NOTE: Verify that the replacement boards received have the correct version programmed on them.

20.1 Retain Parameters for a Replaced MR Board

The following procedure describes how to transfer the parameters from the CT to the replaced MR board.

1. Turn off power to the controller.
2. Install and replace the MR board and reattach the connector terminals.

   NOTE: Leave group connections OFF until process is complete.

3. Turn on DIP 5B and DIP 7A.
4. Power up the Controller.
5. On power up, the MR board displays SYNC IN PROGRESS (the car will be Out of Service).
6. When complete, SYNC COMPLETE is displayed.
7. Turn off the controller.
8. Turn off DIP 5B. Dip 7A is a popup blocker and can remain in the on position if desired.
9. Turn on the controller. The car resumes normal operation.
10. Reconnect group connections.

20.2 Retain Parameters for a Replaced CT or COP Board

The following procedure describes how to transfer the parameters from the MR board to the replaced CT or COP board.

1. Remove power from the controller and perform LOTO.
2. Disconnect the connectors and remove the CT or COP board.
3. Install and replace the CT or COP board and reattach the connector terminals.

   NOTE: Ensure all DIP switches are correct.

4. Turn the CT/COP switch to either the CT or COP that is being replaced.

   NOTE: The switch is located on the upper right corner of the board**.**

5. Remove LOTO and apply power to the controller.
6. The Sync Process automatically begins due to a checksum that consistently compares parameters between all three boards.

   NOTE: There is no SYN IN PROGRESS displayed.

7. When complete, the CT/COP board is in normal operation with all parameters retained.

21 Manual Traction Rescue

The rescue operation safely and securely moves the car to the nearest floor and allow the passengers to exit if the car ever loses power.

The Smartrise C4 Controller uses two forms of rescue:

- **Auto Rescue** – The Auto Rescue is ON and has been implemented into the system (Done on the Engineering Data Forms). The car automatically moves in the direction of least resistance determined by the system. It moves at leveling speed and stops at the nearest opening.
- **Manual Rescue** – If Auto Rescue is OFF, the car remains faulted until Manual Rescue is initiated.

21.1 Manual Rescue Test Operation

The following procedure describes how to perform the manual rescue test operation.

1. Position the car between two openings.
2. With the car in Automatic Mode, set the Battery Power input ON.

   NOTE: Car Mode changes to Battery Rescue and remains in faulted state.

3. Press the Brake Release button.

   NOTE: SAFETY_RESCUE output remains off.

4. Move the car to construction mode and close hall doors.

   NOTE: SAFETY_RESCUE output turns on and Rescue fault clears.

5. Verify the Hold Voltage is equal to the Relevel Voltage.
6. Confirm the Enable Construction Box is OFF (see section 4.2 MR Board Connection) for it to be bypassed in the software.
7. Hold the MR ENABLE and UP button.
8. The B1 contactor picks, the brakes lift, and the car drifts to the nearest opening and goes out of service with its doors opened.

22 Hoistway Access

The hoistway access safely and securely moves the car at the terminal landings to gain access to either the pit or the top of the hoistway. Normally, this is done with a key switch that enables the top or bottom access inputs on the controller.

The following is an example of how to access the hoistway.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Hoistway Access.

Figure 165: SETUP Menu – Hoistway Access

4. Is the hoistway being accessed from the top of the hoistway or the pit?
   a. If the hoistway is being accessed from the top of the hoistway, go to step 5.
   b. If the hoistway is being accessed from the bottom of the hoistway, go to step 16.
5. From the HOISTWAY ACESS menu, select Allowed Distance (Top).

Figure 166: HOISTWAY ACCESS – Allowed Distance (Top)

6. From the ALLOWED DISTANCE – TOP menu, scroll and select the distance from the car to the hoistway.

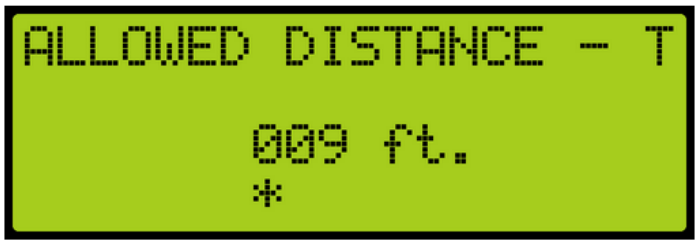

Figure 167: ALLOWED DISTANCE – TOP Menu

7. Scroll right and press Save.
8. Press the left button until the HOISTWAY ACCESS menu displays.
9. From the HOISTWAY ACCESS menu, scroll and select Top Floor.

Figure 168: HOISTWAY ACCESS – Top Floor

10. From the TOP FLOOR menu, select the top floor just below the hoistway.

Figure 169: TOP FLOOR Menu

11. Scroll right and press Save.
12. Press the left button until the HOISTWAY ACCESS menu displays.

13. From the HOISTWAY ACCESS menu, scroll and select Top Opening.

Figure 170: HOISTWAY ACCESS – Top Opening

14. From the TOP OPENING menu, scroll and select the top floor the car opens just below the hoistway. For floor openings, see section 12.3. Front Floor Openings.

Figure 171: TOP OPENING Menu

15. Scroll right and press Save.
16. From the HOISTWAY ACCESS menu, select Allowed Distance (Bottom).

Figure 172: HOISTWAY ACCESS – Allowed Distance (Bottom)

17. From the ALLOWED DISTANCE – BOTTOM menu, scroll and select the distance from the car to the pit.

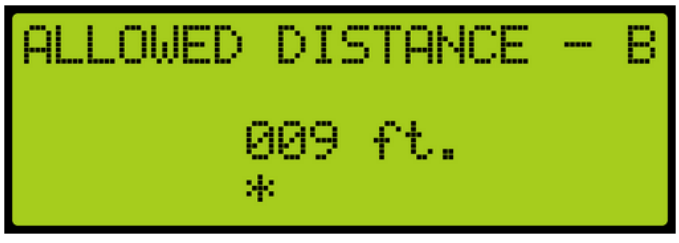

Figure 173: ALLOWED DISTANCE – BOTTOM Menu

18. Scroll right and press Save.
19. Press the left button until the HOISTWAY ACCESS menu displays.
20. From the HOISTWAY ACCESS menu, scroll and select Bottom Floor.

Figure 174: HOISTWAY ACCESS – Bottom Floor

21. From the BOTTOM FLOOR menu, select the bottom floor just above the pit.

Figure 175: BOTOM FLOOR Menu

22. Scroll right and press Save.
23. Press the left button until the HOISTWAY ACCESS menu displays.
24. From the HOISTWAY ACCESS menu, scroll and select Bottom Opening.

Figure 176: HOISTWAY ACCESS – Bottom Opening

25. From the BOTTOM OPENING menu, scroll and select the bottom floor the car opens just above the pit. For floor openings, see section 12.4 Rear Floor Openings.

Figure 177: BOTTOM OPENING Menu

26. Scroll right and press Save.

22.1 Soft Limit

The soft limit distance sets the distance away from the top or bottom terminal floor that car will switch to inspection terminal speed during manual operation.

The following is an example of how to set the top and bottom soft limit.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select S-Curve. See Figure 52.
4. Is the distance being setup for the top or bottom terminal floor?
   a. If the distance is being setup for the top terminal floor, go to step 5.
   b. If the distance is being setup for the bottom terminal floor go to step 8.
5. From the S-CURVE menu, scroll and select Soft Limit Dist. Up.

Figure 178: S-CURVE Menu – Soft Limit Dist Up

6. From the SOFT LIMIT DIST. UP menu, scroll and select the distance the top terminal floor switches to inspection terminal speed during manual operation.

Figure 179: SOFT LIMIT DIST UP Menu

7. Scroll right and press Save. The process ends.
8. From the S-CURVE menu, scroll and select Soft Limit Dist. Down.

Figure 180: S-CURVE Menu – Soft Limit Dist Down

9. From the SOFT LIMIT DIST. DOWN menu, scroll and select the distance the bottom terminal floor switches to inspection terminal speed during manual operation.

Figure 181: SOFT LIMIT DIST DOWN Menu

10. Scroll right and press Save. The process ends.

23 Swing Operation

The swing operation takes a car out of the group and allows it to answer calls from the swing riser. The car will complete the car call demand and go to the swing hall call.

23.1 Configuring Swing Operation Input

If swing is activated by a switch, the inputs to the controller must be entered for swing operation. The following is an example of how-to configure the inputs for swing operation.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Setup I/O. See Figure 121.
4. From the SETUP I/O, scroll and select Setup Inputs. See Figure 122.
5. From the SELECT BOARD menu, scroll and select the board that is going to be assigned. See Figure 123.
6. From the Input menu, scroll and select an unused input. See Figure 163.

   NOTE: The X input is a representation of a number between 1-8.

7. Scroll right.
8. Scroll and select Auto Operation.

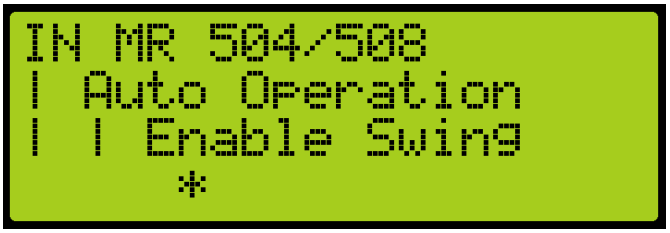

Figure 182: Input Menu – Enable Swing

9. Scroll right.
10. Scroll and select Enable Swing. See Figure 182.
11. Scroll right and press Save.
12. Wire the key switch to the input.

When 24 VDC is supplied to the input, the car enters Swing Operation, and takes calls only from the designated riser.

23.2 Calls Enable Swing

The following is an example of how-to configure swing operation to be activated by the swing riser call.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Swing.

Figure 183: SETUP Menu – Swing

4. From the Swing menu, scroll and select Calls Enable Swing.

Figure 184: SWING Menu – Calls Enable Swing

5. From the SWING ENABLE menu, scroll and select On.

Figure 185: SWING ENABLE Menu

6. Scroll right and press Save.

23.3 Stay Active in Group

When a car is setup to stay active in the group, the car can be operated by any riser in the system during swing operation. The setup for inputs is required. If the inputs are not setup for the controller, see 23.1 Configuring Swing Operation Input.

The following is an example of how to configure the car to stay active in the group.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Swing. See Figure 183.
4. From the Swing menu, scroll and select Stay In Group.

Figure 186: SWING Menu – Stay In Group

5. From the STAY IN GROUP menu, scroll and select On.

Figure 187: STAY IN GROUP Menu

6. Scroll right and press Save.

23.4 Idle Timer

The idle timer is set to depict the amount of time the car stays in swing operation after all calls have been serviced. The setup for inputs is required. If the inputs are not setup for the controller, see 23.1 Configuring Swing Operation Input.

The following is an example of how to configure the idle timer.

1. Press the right button to access the Main Menu.

2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Swing. See Figure 183.
4. From the Swing menu, scroll and select Idle Timer.

Figure 188: SWING Menu – Idle Timer

5. From the IDLE TIMER menu, scroll and select On.

Figure 189: IDLE TIMER Menu

6. Scroll right and press Save.

24 Emergency

Emergency situations can occur due to natural or other conditions.

24.1 Emergency Power

The emergency power option allows one or more cars to run on a generator during a power outage.

The table below lists the Inputs Used by the Controller for Emergency Power.

Table 29: Inputs Used by the Controller for Emergency Power

Option	Description
On Emergency Power	Signals the controller that the car is on emergency power. When this input is active, the controller stops the car until the Generator Up to Speed is active.
Generator Up to Speed	Signals the controller that the generator is supplying the power to operate the car(s). When this input is active, the car goes into normal operation if selected by the user or dispatcher.
Pre-Transfer	Changes from generator power to normal power or vice versa. When this input is active, the controller comes to a stop to the nearest landing and opens the door.

24.2 Fire

A shunt output is designed to trip a breaker shutting off the main power to the controller in case of a fire in the machine room.

The following is an example of how to set up the parameters in case smoke is detected.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Fire.

Figure 190: SETUP Menu – Fire

4. From the FIRE SERVICE menu, scroll and select MR Smoke.

Figure 191: FIRE SERVICE Menu – MR Smoke

5. From the MR SMOKE menu, scroll and select Shunt Trip.

Figure 192: MR SMOKE Menu – Shunt Trip

6. From MR: SHUNT ON RECALL menu, scroll and select On.

Figure 193: MR: SHUNT ON RECALL Menu

7. Scroll right and press Save.

24.3 Earthquake

During an earthquake, the elevator stops at the closest landing.

The following is an example to enable earthquake mode.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.

3. From the SETUP menu, scroll and select Earthquake.

Figure 194: SETUP Menu – Earthquake

4. From the Earthquake menu, select Enable Eq.

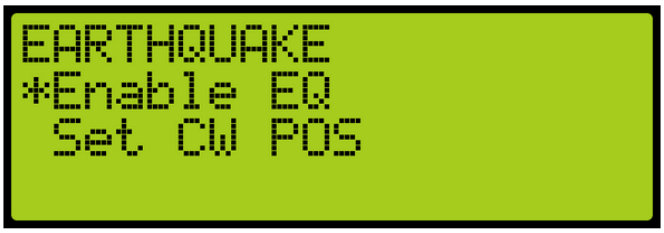

Figure 195: EARTHQUAKE Menu – Enable Eq.

5. From the ENABLE EQ menu, scroll and select enable earthquake.

Figure 196: ENABLE EQ Menu

6. Scroll right and press Save.

25 Load Weigher

The load weighing device monitors the weight of the car.

Sensors:

- Crosshead Deflection – Load cells sense the load at the crosshead. This includes weigh of the car, load inside the car, the traveling cable, and compensation cables.
- Rope Tension – Load cells sense the tension of the wire ropes.
- Load cell sensors are wired directly to the LWD.

Installing the crosshead deflection load cells:

- Move the car to the lowest floor before installing load cells.
- Install Crosshead sensors according to manufacturer recommendations on top of the cross head beam.

The following is an example of verifying the correct installation of each sensor by checking each output.

1. Connect just one of the crosshead sensors to the LWD.
2. Press the right button to access the Main Menu.
3. From the MAIN MENU, scroll and select Setup. See Figure 38.
4. From the SETUP menu, scroll and select Load Weigher.

Figure 197: SETUP Menu – Load Weigher

5. From the LOAD WEIGHING SETUP menu, select Enter Requests.

Figure 198: LOAD WEIGHER SETUP Menu – Enter Requests

6. From the Requests menu, scroll and select LOAD CELL. After a short delay a nonzero value should appear on the screen. Record this value.

Figure 199: LOAD CELL Menu – Initial Value

7. Add weight to the car and record the new load cell value.

   NOTE: Verify that both values do not read zero or 16,777,000, and that the second value is greater than the first.

Figure 200: LOAD CELL Menu – New Load Cell Value

8. Have all sensors been tested?
   a. If all sensors have been tested, go to step 10.
   b. If all sensors have not been tested, go to step 9.
9. Verify both values do not read zero or 16,777,000, and the second number is greater than the first.
   a. If both values do not read zero or 16,777,000, and the second number is greater than the first, remove the weight from the car and go to step 6 for the new sensors.
   b. If both values read zero or 16,777,000, or the second number is not greater than the first, double check the sensor wiring.
      - If the value is unchanged this could indicate the crosshead beam is not level, or the sensor is over or under tightened. Go to step 6.
      - If the polarity of the signals is wrong, which can occur if the sensor is installed on the wrong side of the crosshead, the black and red wires of the sensor can be swapped at the LWD. Go to step 6.
10. After each sensor's installation has been verified, wire each sensor in parallel to the LWD.

25.1 Calibration

The load weighing device has to be calibrated after connecting the LWD and sensors.

The following is an example of how to calibrate the LWD.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Load Weigher. See Figure 197.
4. From the LOAD WEIGHER SETUP menu, select Type Select.

Figure 201: LOAD WEIGHER SETUP Menu – Type Select

5. Is the LWD connected to Aux Network of the MR board?
   a. If the LWD is connected to the Aux Network of the MR board, go to step 6.
   b. If the LWD is not connected to the Aux Network of the MR board, go to step 8.
6. From the LOCATION SELECT menu, press the down button for SERIAL MR.

Figure 202: LOCATION SELECT Menu – Serial MR

7. Scroll right and press Save. Go to step 10.

8. From the LOCATION SELECT menu, press the up button for Serial CT.

Figure 203: LOCATION SELECT Menu – SERIAL CT

9. Scroll right and press Save.
10. Press the left button until LOAD WEIGHER SETUP menu displays.
11. From the LOAD WEIGHER SETUP menu, select Debug.

Figure 204: LOAD WEIGHER SETUP Menu – Debug

12. From the DEBUG LWD menu, click the up button to select On.

Figure 205: DEBUG LWD Menu

13. Scroll right and press Save.
14. Press the left button until LOAD WEIGHER SETUP menu displays.

15. From the LOAD WEIGHER SETUP menu, select Enable WiFi.

Figure 206: LOAD WEIGHER SETUP Menu – Enable WiFi

16. From the ENABLE WIFI menu, click the down button to select Off.

Figure 207: ENABLE WIFI Menu

17. Scroll right and press Save.
18. Press the left button until LOAD WEIGHER SETUP menu displays.
19. From the LOAD WEIGHING SETUP menu, select Enter Requests. See Figure 198.
20. From the Requests menu, scroll and select MAX CAPACITY.

Figure 208: MAX CAPACITY Menu

From the Requests menu, the following can be adjusted:

- Pressing up and down with the cursor on the left most position changes which setting is selected.

  NOTE: The string on the first line will adjust accordingly.
- Press up and down with the cursor on the second position from the left to adjust the command:

- RD = Read
- WR = Write
- GN = Generate

- Press up and down with the cursor on a position further to the right to adjust the value on the second line. This value is written to the LWD if the command is set to WR and the enter key is held.
- The value on the bottom line is the value read from the LWD.

21. Scroll right.
22. Scroll and select the WR command.
23. Scroll right.
24. Scroll and select the maximum capacity of the load.
25. Press Enter to write the information to the LWD.
26. Press the left button until the cursor is on the left most position.
27. Scroll and select CW PERCENT.

Figure 209: CW PERCENT Menu

28. Scroll right.
29. Scroll and select the WR command.
30. Scroll right.
31. Scroll and select the counterweight percentage of the maximum capacity of the load.
32. Press Enter to write the information to the LWD.
33. Press the left button until the cursor is on the left most position.

34. Scroll and select ROPE COUNT.

Figure 210: ROPE COUNT Menu

35. Scroll right.
36. Scroll and select the WR command.
37. Scroll right.
38. Scroll and select the rope count.
39. Press Enter to write the information to the LWD.
40. Press the left button until the cursor is on the left most position.
41. Scroll and select ROPE DIAMETER.

Figure 211: ROPE DIAMETER Menu

42. Scroll right.
43. Scroll and select the WR command.
44. Scroll right.
45. Scroll and select the diameter of the rope.
46. Press Enter to write the information to the LWD.
47. Press the left button until the cursor is on the left most position.

48. Scroll and select TORQUE OFFSET.

Figure 212: TORQUE OFFSET Menu

49. Scroll right.
50. Scroll and select the WR command.
51. Scroll right.
52. Scroll and set the torque value to zero.
53. Press Enter to write the information to the LWD.
54. Press the left button until the cursor is on the left most position.
55. Scroll and select FULL LOAD LB.

Figure 213: FULL LOAD LB Menu

56. Scroll right.
57. Scroll and select the WR command.
58. Scroll right.
59. Scroll and set the full load value to 15000 pounds.
60. Press Enter to write the information to the LWD.
61. Press the left button until the cursor is on the left most position.

62. Scroll and select OVER LOAD LB.

Figure 214: OVER LOAD LB Menu

63. Scroll right.
64. Scroll and select the WR command.
65. Scroll right.
66. Scroll and set the over load value to 15000 pounds.
67. Press Enter to write the information to the LWD.
68. Empty the car.
69. Press the left button until the LOAD WEIGHER SETUP menu displays.
70. From the LOAD WEIGHING SETUP menu, select Trigger Recalibrate.

Figure 215: LOAD WEIGHER SETUP Menu – Trigger Recalibrate

71. From the Trigger Recalibrate menu, scroll and select On.

Figure 216: TRIGGER RECALIBRATE Menu – On

72. Scroll right and press Save.

    NOTE: The car is captured and moves from floor to floor to learn the empty load weight starting at the bottom floor.

    The TRIGGER RECALIBRATE turns to Off when the process is complete.

Figure 217: TRIGGER RECALIBRATE Menu – Off

73. Place a full load in the car.
74. Press the left button until the LOAD WEIGHER SETUP menu displays.
75. From the LOAD WEIGHING SETUP menu, select Trigger Load Learn.

Figure 218: LOAD WEIGHER SETUP Menu – Trigger Load Learn

76. From the TRIGGER LOAD LEARN menu, scroll and select On.

Figure 219: TRIGGER LOAD LEARN Menu – On

77. Scroll right and press Save.

    NOTE: The car is captured and moves from floor to floor to learn its full load weight.

    The TRIGGER LOAD LEARN turns to Off when the process is complete.

Figure 220: TRIGGER LOAD LEARN Menu – Off

78. Press the left button until the Main Menu is displayed.
79. From the MAIN MENU, scroll and select Debug. See Figure 108.
80. From the DEBUG menu, scroll and select Load Weigher.

Figure 221: DEBUG Menu – Load Weigher

81. The accurate weight is shown on the LOAD WEIGHER menu.

Figure 222: LOAD WEIGHER Menu – 100%

82. Remove load from the car and position it at the top landing.
83. Press the left button until the Main Menu displays.
84. From the MAIN MENU, scroll and select Setup. See Figure 38.
85. From the SETUP menu, scroll and select Load Weigher. See Figure 197.
86. From the LOAD WEIGHER MENU SETUP menu, scroll and select Enter Requests. See Figure 198.

87. From the Requests menu, scroll and select TORQUE SCALING.

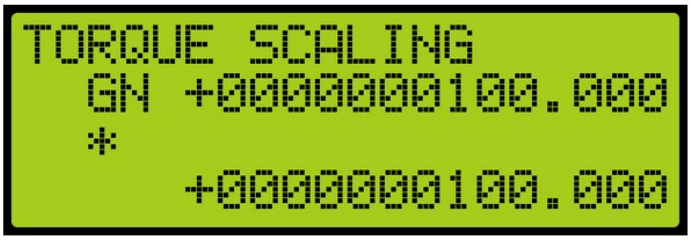

Figure 223: Request Menu – TORQUE SCALING

88. Scroll right.
89. Scroll and select command GN.
90. Press Enter to generate torque scaling.
91. Press the left button until Main Menu is displayed displays.
92. From the MAIN MENU, scroll and select Debug. See Figure 108.
93. From the DEBUG menu, scroll and select Load Weigher. See Figure 221.
94. Verify the Torque is 100%. See Figure 222.
95. Position the car just below the top landing and enable torque.
96. Press the left button until the Main Menu displays.
97. From the MAIN MENU, scroll and select Setup. See Figure 38.
98. From the SETUP menu, scroll and select Load Weigher. See Figure 197.
99. From the LOAD WEIGHING SETUP menu, scroll and select Torque Scaling.

Figure 224: LOAD WEIGHER SETUP Menu – Torque Scaling

100. From the TORQUE SCALING menu, scroll and select the scale is set to 100%.

Figure 225: TORQUE SCALING Menu

101. Scroll right and press Save.
102. Turn on pretorque on the drive.
    - DSD – Function 114 Pre-Torque Enable to 1 (on)
    - KEB – Set LC01 control mode to Closed Loop Digital Pretorque(4)
    - M1000 – Set Trq Comp Cmd Src in the C1 menu to Serial HPV
        - Set one of the analog inputs to Torque Comp in C5 menu
103. To allow rollback, press the left button until the Main Menu is displayed.
104. From the MAIN MENU, scroll and select Setup. See Figure 38.
105. From the SETUP menu, scroll and select Speeds. See Figure 48.
106. From the SPEEDS menu, scroll and select Inspection Speed. See Figure 50.
107. From the INSPECTION SPEED menu, press the down button to set inspection speed to 0.0 fpm.

Figure 226: INSPECTION SPEED Menu

108. Scroll right and press Save.
109. Press the left button until the SETUP menu displays.
110. From the SETUP menu, scroll and select Run Timers. See Figure 55.
111. From the TIMERS menu, select Start Timers. See Figure 56.
112. From the START TIMERS menu, scroll and select Accel Delay (Auto).

Figure 227: START TIMERS Menu – Accel Delay (Auto)

113. From the ACCEL DELAY (AUTO) menu, press the down button to set the acceleration delay to 0.0 msec.

Figure 228: ACCEL DELAY (AUTO) Menu

114. Scroll right and press Save.
115. Press the left button until the START TIMERS menu displays.
116. From the START TIMERS menu, scroll and select Accel Delay (Insp).

Figure 229: START TIMERS Menu – Accel Delay (Insp)

117. From the ACCEL DELAY (INSP) menu, press the down button to set the acceleration delay to 0.0 msec.

Figure 230: ACCEL DELAY (INSP) Menu

118. Scroll right and press Save.
119. Press the left button until the START TIMERS menu displays.
120. From the START TIMERS menu, scroll and select Brake Pick (Auto).

Figure 231: START TIMERS Menu – Brake Pick (Auto)

121. From the BRAKE PICK DELAY (AUTO) menu, press the down button to set the brake pick speed to 0.0 msec.

Figure 232: BRAKE PICK DELAY (AUTO) Menu

122. Scroll right and press Save.
123. Press the left button until the START TIMERS menu displays.
124. From the START TIMERS menu, scroll and select Brake Pick (INSP).

Figure 233: START TIMERS Menu – Brake Pick (Insp)

125. From the BRAKE PICK DELAY (INSP) menu, press the down button to set the brake pick speed to 0.0 msec.

Figure 234: BRAKE PICK DELAY (INSP) Menu

126. Scroll right and press Save.

127. Press the left button until the SETUP menu displays.
128. From the SETUP menu, scroll and select Brake Setup. See Figure 42.
129. From the BRAKE SETUP menu, scroll and select Primary Setup. See Figure 43.
130. From the (PRIMARY) BRAKE SETUP menu, Ramp Time – Auto.

Figure 235: (PRIMARY) BRAKE SETUP Menu – Ramp Time – Auto

131. From the BRAKE RAMP TIME (AUTO) menu, press the down button to set the ramp time speed to 100 msec.

Figure 236: BRAKE RAMP TIME (AUTO) Menu

132. Scroll right and press Save.
133. Press the left button until the (PRIMARY) BRAKE SETUP menu displays.
134. From the (PRIMARY) BRAKE SETUP menu, scroll and select Ramp Time – Insp.

Figure 237: (PRIMARY) BRAKE SETUP) Menu – Ramp Time – Insp

135. From the BRAKE RAMP TIME (INSP) menu, press the down button to set the ramp time speed to 100 msec.

Figure 238: BRAKE RAMP TIME (INSP) Menu

136. Scroll right and press Save.
137. Press the left button until the BRAKE SETUP menu displays.
138. From the BRAKE SETUP menu, scroll and select Secondary Setup.

Figure 239: BRAKE SETUP Menu – Secondary Setup

139. From the SECONDARY BRAKE SETUP menu, scroll and select Ramp Time.

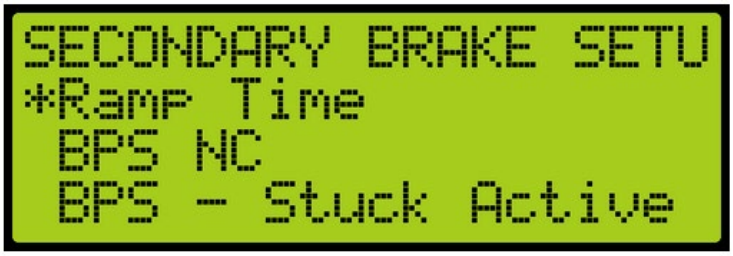

Figure 240: SECONDARY BRAKE SETUP Menu – Ramp Time

140. From the BRAKE RAMP TIME menu, scroll and select the ramp time speed to 100 msec.

Figure 241: BRAKE RAMP TIME Menu

141. Scroll right and press Save.
142. Perform test inspection runs in the down direction while tweaking the torque scaling value on the drive until the torque is just high enough to eliminate rollback by the following:
143. Is the torque scaling being adjusted on the drive or the C4 system?
    a. If the torque scaling is being adjusted on the drive go to step 143.
    b. If the torque scaling is being adjusted on the C4 system go to step 144.
144. Adjust the torque scale on the drive until the torque is just high enough to eliminate rollback. Go to step 145.
145. Adjust the torque scale on the C4 system.

    NOTE: It may be necessary to change the pretorque scaling to 100%. See steps 100 – 102.

146. Place the car at the bottom landing with a full load in the car.
147. Perform zero speed and releveling test runs while adjusting the CW percent until the torque is just enough to prevent rollback. See steps 27 – 31. Decreasing the CW percent value will increase pretorque while increasing the CW percent value lowers the pretorque.
148. Perform the same zero speed and releveling test runs at various floors to verify ride quality.
149. Calibration is complete

25.2 Verification of Load Weigher

The following is an example to verify load weigher after calibration.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Debug. See Figure 108.
3. From the DEBUG menu, scroll and select Load Weigher. See Figure 221.
4. The accurate car weight can be viewed in the LOAD WEIGHER MENU – ON.

   NOTE: Scroll down to view all the LOAD WEIGHER menu lines.

Figure 242: LOAD WEIGHER Menu Part 1 of 2

Figure 243: LOAD WEIGHER Menu Part 2 of 2

The table below lists the LOAD WEIGHER Menu Definitions and Solutions.

Table 30: LOAD WEIGHER Menu Definitions and Solutions

Line Number	Definition	Solution
1	Displays ON if the LWD is online. If not, then the display shows OFF.	If this line shows OFF, check the wiring of the LWD communication lines. Verify the location. See section 25.1 Calibration steps 5-9.
2	Displays the torque output of the LWD after applying the scaling and offset values settings. See section 25.1 Calibration Torque Offset steps 48-53 and Torque Scaling steps 87-90. This is the value sent to the drive. The value seen is in parenthesis ( ) is the raw unscaled torque value from the LWD.	Value is only visible if DEBUG LWD is set to ON. See section 25.1 Calibration Debug steps 11-13.
3	Displays the current in car weight.	The car weight updates only when in DZ, unless DEBUG is set to ON. See section 25.1 Calibration Debug steps 11-13.
4	Displays the statuses from left to right: • LL – Light Load • FL – Full Load • OL – Over Load	N/A

Line Number	Definition	Solution
5	Displays the error state of the load weigher.	**POR** – The LWD has experienced loss of power. **WDT** – The LWD has experienced a stall which has triggered a board reset. **BOR** – The LWD has experienced a power dip which has triggered a board reset. **COM SYS** – The LWD has not seen communication from the C4 system. Check communication bus communication and termination. **COM LOAD** – The LWD internal communication is failing. Contact support. **BUS RST** – The LWD communication bus is experiencing errors and has reset. Check communication line wiring and terminations. **WD DIS** – The LWD watchdog jumper is missing. Restore the jumper and cycle power to the board.
6	Displays a counter of the packets received from the LWD. This counter is only active DEBUG is ON. See section 25.1 Calibration steps 11-13.	If this counter is still not incrementing, the communication line wiring and termination should be checked.

25.3 Monthly Recalibration

The C4 system can automatically be set for monthly calibration. This causes the empty load to automatically be relearned once a month on a specified day and time. The calibration is performed on the first occurrence of the configured day once a month.

The following is an example of how to set automatic recalibration.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Setup. See Figure 38.
3. From the SETUP menu, scroll and select Load Weigher. See Figure 197.

4. From the LOAD WEIGHER SETUP menu, scroll and select Auto Recalibrate.

Figure 244: LOAD WEIGHER SETUP Menu – Auto Recalibrate

5. From the AUTO RECALIBRATE menu, press the up button and select On.

Figure 245: AUTO RECALIBRATE Menu – On

6. Scroll right and press Save.
7. Press the left button to display the LOAD WEIGHER SETUP menu.
8. From the LOAD WEIGHER SETUP menu, scroll and select Monthly Calib. Day.

Figure 246: LOAD WEIGHER SETUP Menu – Monthly Calibration Day

9. From the MONTHLY CALIB. DAY menu, scroll and select the day of the week the calibration occurs.

Figure 247: MONTHLY CALIBRATION DAY Menu

10. Scroll right and press Save.
11. Press the left button to display the LOAD WEIGHER SETUP menu.
12. From the LOAD WEIGHER SETUP menu, scroll and select Monthly Calib. Hour.

Figure 248: LOAD WEIGHER SETUP Menu – Monthly Calibration Hour

13. From the MONTHLY CALIB. HOUR menu, scroll and select the hour of the day the calibration occurs.

Figure 249: MONTHLY CALIBRATION HOUR Menu

14. Scroll right and press Save.

26 Debug

The Debug menu allows for viewing various statuses.

26.1 View Debug

The View Debug Data menu can be used to view important debugging information passed from the main system processors MR, CT, and COP boards and can be navigated to view from each board's UI. The View Debug Data software for Debug is v1.02.63a and later.

The View Debug Data menu (see Figure 251) displays the number of bus errors detected since startup. It also displays a rough estimate of the percentage of bus throughput currently in use. This data can be used to diagnose communication issues caused by transmission problems and excessive bus traffic.

The following is an example of viewing the debug data.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Debug. See Figure 108.
3. From the DEBUG menu, scroll and select View Debug Data.

Figure 250: DEBUG Menu – View Debug Data

4. From the View Debug Data menu, scroll and select the debug data of the system to be viewed.

Figure 251: View Debug Data Menu

The table below lists the Data Index for MR, CT, and COP Board Communication.

Table 31: Data Index for MR, CT, and COP Board Communication

Data Index	Name	Description
1	MR CAN 1	MR board CAN1, Car Network (CN1+/-)
2	MR CAN 2	MR board CAN2, Brake Network (BN+/-)
3	MR CAN 3	MR board CAN3, Aux Network (AN+/-)
4	MR CAN 4	MR board CAN 4, Group Network (GN+/-)
5	MR A NET	MR board A processor RS232 Network. Shows errors in packets received by the A processor, sent by the B processor.
6	MR B NET	MR board B processor RS232 Network. Shows errors in packets received by the B processor, sent by the A processor.
7	MR RS485	MR board RS485 Drive network (RX+/-)
8	CT CAN 1	CT board CAN1, Car Network (CN1+/-)
9	CT CAN 2	CT board CAN2, CEDES camera channel 2
10	CT CAN 3	CT board CAN3, Aux Network (C3H/L)
11	CT CAN 4	CT board CAN4, CEDES camera channel 1
12	CT A NET	CT board A processor RS232 Network. Shows errors in packets received by the A processor, sent by the B processor
13	CT B NET	CT board B processor RS232 Network. Shows errors in packets received by the B processor, sent by the A processor.
14	CT RS485	CT board RS485 network
15	COP CAN 1	COP board CAN1, Car Network (CN1+/-)
16	COP CAN 2	COP board CAN2, CEDES camera #2 channel 2
17	COP CAN 3	COP board CAN3, Aux Network (C3H/L)
18	COP CAN 4	COP board CAN4, CEDES camera #2 channel 1
19	COP A NET	COP board A processor RS232 Network. Shows errors in packets received by the A processor, sent by the B processor.
20	COP B NET	COP board B processor RS232 Network. Shows errors in packets received by the B processor, sent by the A processor.
21	COP RS485	COP board RS485 Network

27 Faults

The Faults menu shows the faults reported by the software and hardware.

The faults listed are either active or logged. The faults can also be cleared.

The following is an example of how to clear the log.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Faults.

Figure 252: MAIN MENU – Faults

3. From the FAULTS MENU, select Clear Log.

Figure 253: FAULTS Menu – Clear Log

4. From the Clear Faults Menu, scroll and select Yes.

Figure 254: CLEAR FAULT LOG Menu – Clear Log

The table below lists the Faults Reported by Software or Hardware.

Table 32: Faults Reported by Software or Hardware

Option	Description
CPLD	Depict faults generated by hardware system
MRA	Depict faults generated on processor A of the MR board
MRB	Depict faults generated on processor B of the MR board
CTA	Depict faults generated on processor A of the CT board
CTB	Depict faults generated on processor B of the CT board
COPA	Depict faults generated on processor A of the COP board
COPB	Depict faults generated on processor B of the COP board

For a list of the faults and resolutions see *C4 Faults and Alarms* section *1 Faults*.

28 Alarms

The Alarms menu shows the alarms reported by the hardware.

The faults listed are either active or logged. The faults can also be cleared.

The following is an example of how to clear the alarm log.

1. Press the right button to access the Main Menu.
2. From the MAIN MENU, scroll and select Alarms.

Figure 255: MAIN MENU – Alarms

3. From the ALARMS MENU, select Clear Log.

Figure 256: ALARMS Menu – Clear Log

4. From the Clear ALARM LOG Menu, scroll and select Yes.

Figure 257: CLEAR ALARM LOG Menu – Clear Log

For a list of the faults and resolutions see *C4 Faults and Alarms* section *2 Alarms*.