SMARTRISE™

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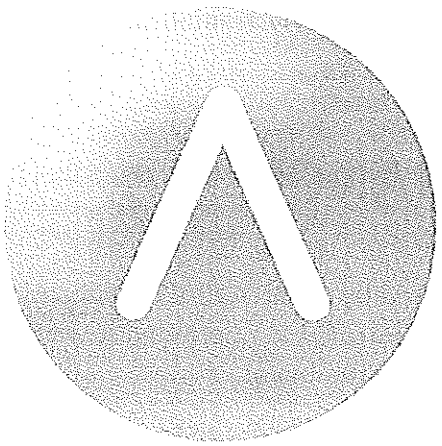
EQUIPMENT INSTALLATION MANUAL

Hydraulic Controllers
AC Traction Controllers
DC Traction Controllers

Version 2.40

This manual contains information for software version 2



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WARRANTY

Products sold by Smartrise Engineering (Smartrise) are warranted to be free from defects in workmanship and material for a period of fifteen (15) months from the date of shipment. Any products defective in workmanship or material shall, at the discretion of Smartrise, be repaired or replaced at no charge to the Buyer. Determination as to whether a product is defective and eligible for an authorized return rests with Smartrise. The obligation of Smartrise shall be limited solely to that of repairing or replacing of defective products returned to Smartrise by the Buyer. It is the obligation of the Buyer to return defective products to Smartrise with all parts and documentation. A return merchandise authorization (RMA) number must be obtained from Smartrise prior to returning products.

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LIMITATIONS OF LIABILITY

In no event shall Smartrise Engineering be liable for loss of profit, indirect, consequential, or incidental damages whether arising out of warranty, breach of contract or tort. Failure to understand the elevator control system could result in damage to the system and possibly even danger to the passengers. Only properly trained and qualified personnel should attempt to work on the system.

CODE COMPLIANCE

Smartrise controllers are certified by ASME A17/CSA B44 and the State of California. Depending on the jurisdiction where the controller is operating, it will be configured per the specific local code requirements as specified by the buyer.

PERSONAL SAFETY: PERSONAL INJURY AND/OR DEATH MAY OCCUR

Smartrise Engineering controllers should only be installed by qualified, licensed, trained elevator personnel familiar with the operation of microprocessor-based elevator controls. All safety devices, known as electronic protective devices (limits, governors, hoistway locks, car gate, etc.) shall be tested to be fully functional prior to attempting to run the elevator. Never operate the system with any safety device rendered inoperative in any way. The User is responsible for compliance with the current National Electrical Code with respect to the overall installation of the equipment, and proper sizing of electrical conductors connected to the controls. The User is responsible for understanding and applying all current Local, State, Provincial, and Federal Codes which govern practices such as controller placement, applicability, wiring protection, disconnections, over current protection, and grounding procedures. To prevent the risk of personal shock, all equipment should be securely grounded to earth ground as outlined in the National Electrical Code. Failure to obtain an actual earth ground source may result in electrical shock to personnel.

EQUIPMENT SAFETY

All equipment chassis should be securely grounded to earth ground as outlined in the National Electrical Code. Improper grounding is the most common cause of electrical component failures and electrically noise-induced problems. All component replacement must be done with the main line power off. Unauthorized modifications to circuits or components should not be attempted without Smartrise Engineering authorization to ensure all safety features are maintained. Care should be taken when using test leads and jumpers to avoid applying high voltage or ground to low voltage microprocessor circuits.

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** READ FIRST! **

***** A quick reference that's good to remember as you install the equipment. *****

1) Make sure to connect the shield of the Traveler shielded pair (CN+, CN- to reference (REF) on both ends. This communication cable is located between the machine room and car top boards.

2) A red LED flashing on the Board means a Fault or an Alarm condition exists. At power up, these LEDs will flash, but after initial startup the LEDs will turn green if there are no faults.

3) All Smartrise boards **Only Receive 24vdc inputs** and provide **Reference via programmed outputs.**

4) The programming of a specific input/output is viewed by looking at **MAIN MENU | SETUP | LOCAL INPUTS** or **LOCAL OUTPUTS** on the LCD of a given board. For instance, to find out which input is programmed as the gate switch, look at the **MAIN | SETUP | LOCAL INPUTS** on the car top board.

5) To find out if a particular input port is operating normally, look at **MAIN MENU | STATUS | I/O | INPUT GROUPS** on the LCD; [x] indicates the input is powered or active; [ ] indicates that the input has no power or is not active.

6) If the Controller gets stuck in a non-normal mode (i.e. Fire Phase I, Earthquake, etc.), verify the required inputs are connected, put **Dip Switch 1 to ON and then press the RESET button on the SRU board**. After pushing **RESET turn Dip Switch 1** off. See board layouts on next page for the Dip Switch 1 location that matches your board type.

Performing this on either the Machine Room board or the Car Top board will clear latched faults.

7) When the LCD displays **Axx** (A57, for example) this indicates an **Alarm Condition**. This is not an active fault but rather an information message indicating a condition to be addressed.

8) When the LCD displays **Fxx** (F49, for example) this indicates an **Active Fault**. The car will not run so long as an active fault is present. This condition must be corrected before the car may resume operation.

9) The faults are logged under **MAIN MENU | FAULTS | LOGGED**. If the car does not move, look under **MAIN MENU | FAULTS | ACTIVE** and record the fault number (Fxx).

10) To test communication on a hall board turn on Dip Switch 8. When it is set to ON (pushed down), the two green LEDs on that hall board blink indicating it is receiving communication from the machine room. This is a test dip switch only. Do this one floor at a time when installing the hall boards; it will confirm that the wiring and board are good. Always do this before moving onto the next floor.

11) If the condition (mode) of the controller is unknown, exit out of any menu (done by pressing the left arrow button) and look at the LCD home screen to see what mode the controller is in: Normal, Inspection (CT) for car top, Inspection (IC) for in-car, Inspection (MR) for machine room, Inspection (HA) for hoistway access, Fire Recall or Phase II.

12) If the drawings show a normally closed contact for an Input your system does not require, apply a jumper from 24vdc to the specified Input terminal.

13) Command the front or rear doors to open or close (nudge) from any Smartrise station by using **MAIN | MENU | DOOR SETUP | MANUAL OPEN & CLOSE**. However, the controller must be in Inspection Mode and in a door zone to operate.

14) Machine room Dip Switch A (Rev 8) quick reference:

   A. Dip Switch 1 (on top) is CPU stop switch used with RESET button. This will clear the CPU from a latched state (Fire, etc...)

   B. Dip Switch 2 is to bypass over-speed or to go into LEARN MODE (which is used when learning the Hoistway)

   C. Dip Switch 3 is to disable door operation

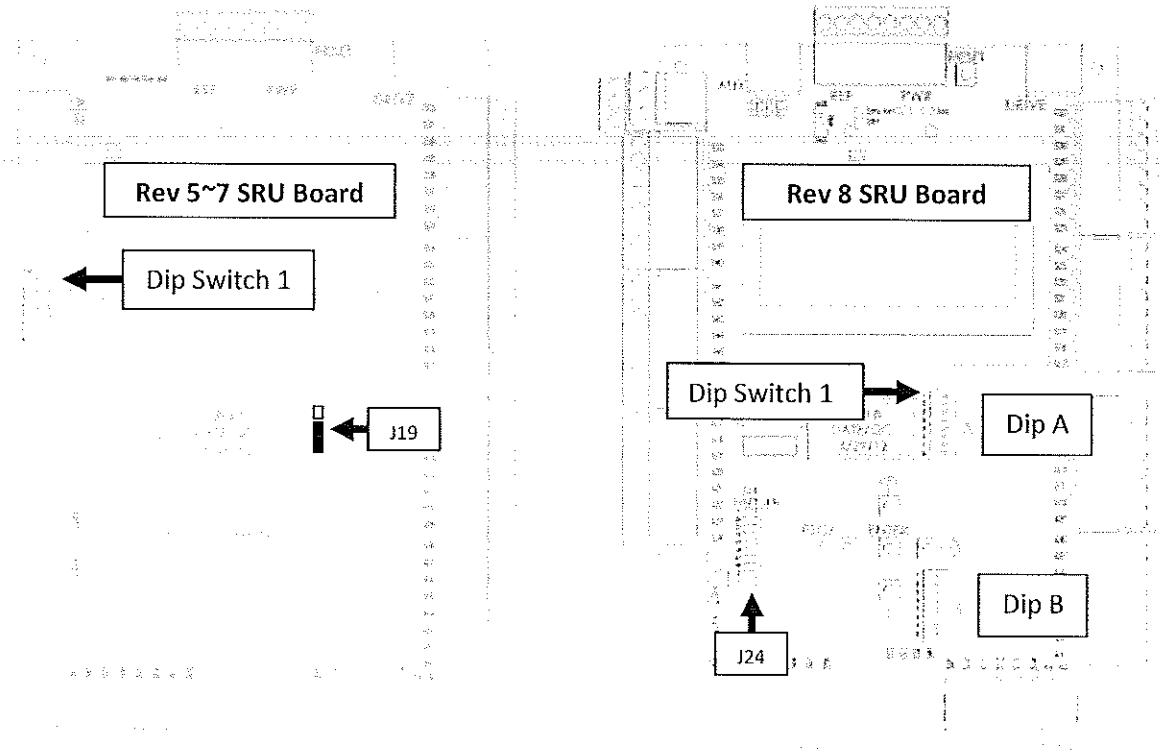
   D. Dip Switch 6 is to disable the pop-up message (faults, and alarms)

15) DIP B quick reference (Rev 8 boards):

   A. Refer to the controller prints. See each board's drawing for specific settings.

16) J24 Jumper settings (Rev 8 boards) or J19 for (Rev 5-7 boards):

   A. Refer to the controller prints. See each board's drawing for specific settings.



***** Note: Before getting started, take a few minutes learning to navigate the LCD reader of the Smartrise board. The board is the same for all locations (MR, CT or COP) *****

THE JOB BINDER

OVERVIEW

The job binder is a 1" white binder that contains specific information about the job you are installing. The cover contains the job name and job number that is required for technical support with Smartrise Engineering. This binder should be kept at the jobsite at all times for future reference and troubleshooting.

COMPONENTS

The following components are included in each job binder.

1. **Software CDs**
   a. There are 2 cds that contain all the software, drawings and programs needed for each specific job. One of these disks may be kept at the installer's office and the other should be left in the binder at all times. For more information on what's included on the disks see Addendum I.
2. **Drawings or Prints**
   a. There are anywhere from 3 to 15 sheets of drawings that pertain to each job. These prints may include an index indicating the job specifics, tables that show correct dip switch settings, jumper settings for individual boards, and wiring diagrams as well as generic wiring references. The **solid lines** on the prints show wiring installed by Smartrise manufacturing and the **dashed lines** show installer supplied wiring.
   b. If you have any questions about correct voltages or wiring regarding your job please contact Smartrise Engineering for clarification before powering up.
3. **Manual**
   a. Smartrise Engineering strives to make their systems easy to install and we work very hard to try to assist in timely, accurate installations. The manual we provide obtains many useful items such as how the boards operate, menu navigation, installation, adjusting and testing and much, much more.
   b. We've also provided installation sheets for the installer to record all settings for future reference.
   c. If you feel that the manual you're using might be outdated please contact Smartrise for a new copy of our latest release.
4. **IO Sheets**
   a. All binders include an IO sheet that shows each board and its assigned terminal designations. This is very useful when locating a specific Input/Output for installation and/or troubleshooting.
5. **Drive, Door Operator**, and **other operating manuals** (optional)

INTRODUCTION

OVERVIEW

This part of the manual is intended for anyone new to Smartrise controllers or those looking for a general understanding of our system. If you are already familiar with our system and are ready to begin your installation, skip to the Hydraulic installation section or the Traction installation section.

COMPONENTS

Before you begin installing your controller, it is important to become familiar with the individual components. The following sections will describe the various parts that make up a Smartrise elevator control system. Not every installation will require all the components described below. You should also be aware that the pictures and diagrams used in this manual may differ from the actual equipment you received. The purpose of this manual is to provide general guidance in the setup and use of our equipment. Always refer to your jobs specific drawings when installing and servicing the elevator as they will provide your most accurate source of information.

MACHINE ROOM CONTROLLER (MR)

This is the primary control unit and usually the largest piece of equipment in the system. The machine room controller is the enclosure containing the transformer, 24vDC power supply, soft starter (hydros), AC/DC Drive (traction), Machine Room SRU board, and various other components. It is where the 3-phase, main line power connects to the system. Connections for the communication networks servicing the car and the hall calls (or the group controller) are also made here.

CAR BOARD (CT/COP)

The Car SRU board interfaces with the car call buttons, the door open and close buttons and other COP mounted devices. It also monitors and controls the opening and closing of the car doors and receives position information from the landing system. The board includes the same user interface as the machine room SRU to allow you to view the controller status and make adjustments while inside the elevator.

GROUP CONTROLLER

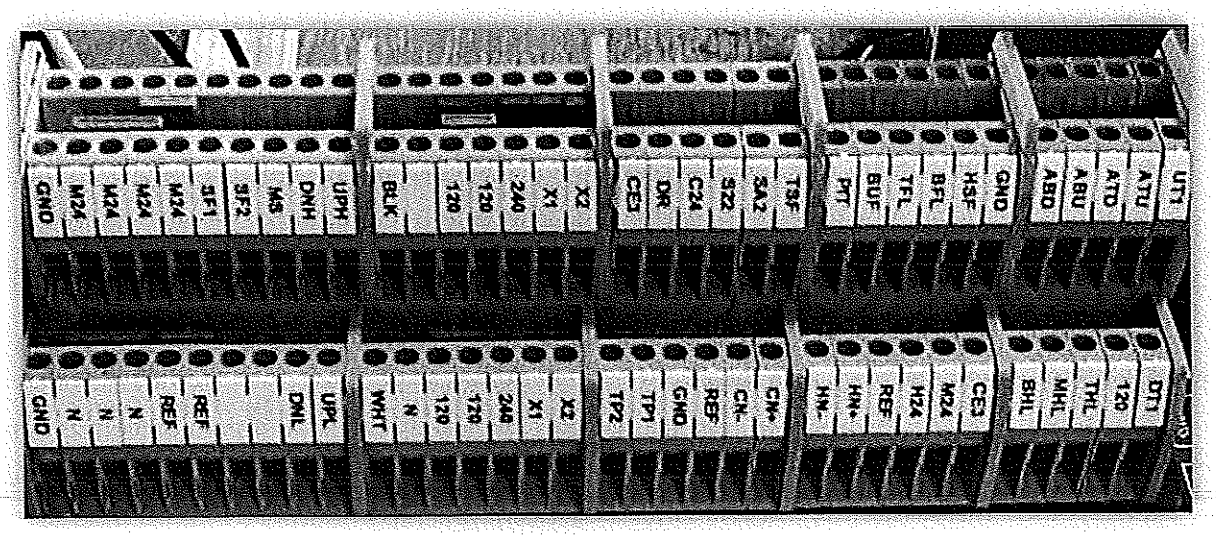
If your elevator is part of a group then a separate Group Controller will be provided. The Group Controller will generally be a Group SRU board mounted in its own small enclosure with a row of terminal blocks. The Group Controller does not have its own power supply but instead receives its power from the cars. Terminals for power, network connections to the cars, hall stations, and remote monitoring equipment are provided.

DIN RAIL

The Din Rail is the mounting terminals for all installer supplied wiring. These terminals are pre-wired to the required IOs and power supplies. They are labeled on the prints as a square box at the end of a line or on a line where a jumper can be applied. All jumpers should go between Din Rail terminals and not the actual terminals on the relays.

The same Din Rail terminals that are next to each other are connected with a blue jumper. The same terminals that are above each other are connected by a black jumper. These jumpers are installed by the factory and should not be moved.

EXAMPLE DIN RAIL CONFIGURATION (HYDRO SHOWN)



LANDING SYSTEM

Most Smartrise controllers use an IP8300 position system from Interface Products. This system uses a perforated steel tape to provide continuous speed and direction information as well as magnetic sensors to provide door zone and other position information. Consult your drawings of this manual for placement of magnets on the tape.

A Cat5 cable connects the reader head of the IP8300 to a "breakout board" with screw terminals. Consult your job prints for which terminals if any need to be connected on your job.

Some landing systems use a governor encoder instead of the steel tape. With this type of system a governor records the position of the car and external magnets are installed for terminal limits and door zones on the steel hoistway beams.

HALL BOARDS AND CABLING

The Smartrise Hall Board is a small computer board used to control the hall call stations, lanterns, lobby fire key switch, and other devices mounted at the landings. Each hall board has two input terminals – **UB** and **DB** – and two output terminals – **UL** and **DL**. **UB** stands for "up button" and **DB** stands for "down button". These are the inputs that get powered when the call button is pressed. Likewise, **UL** stands for "up lamp" and **DL** stands for "down lamp".

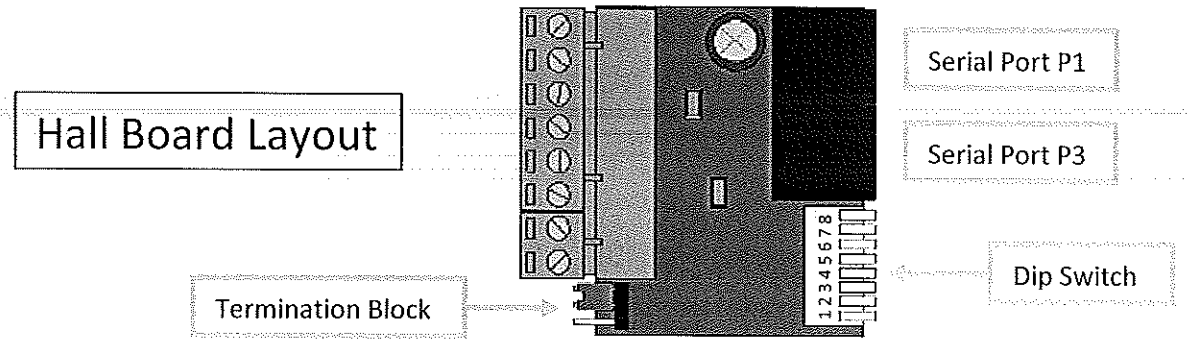
These are the outputs that, when active, ground one side of the call lamp to illuminate the button.

Although the terminal names denote call button connections, the Hall Board can be used for other devices too. When driving a hall lantern, only the **UL** and **DL** terminals are used with **UL** grounding one side of the up arrow lantern and **DL** grounding the down.

For the lobby fire station, the two inputs are used for the key switch (center position is assumed if neither left nor right is active) and one of the outputs is used for the fire lamp.

Other devices may also be controlled by a hall board so check the drawings for proper configuration of each board.

The Hall Boards themselves are connected to the hall network (usually denoted as "**HN+, HN-**" on the drawings). Smartrise recommends using Cat5 type cables when networking the hall boards together. Cat5 cables are easy to connect and because their internal wiring uses twisted-pairs, they provide good noise immunity. The RJ45 connectors on the Hall Board have pins for both power and data, allowing a single cable to provide a complete interface. If for some reason Cat5 cabling is not practical, all the power and data signals from the RJ45 connectors are also available as screw terminals on the hall board.



The DIP switches on the Hall Board are used for network addressing and debugging. Switches 1-7 provide a network address. Your job prints will have a table explaining how to set these switches at each location. Switch 8 can be turned on for diagnostics. When switch 8 is on (along with the address switches 1-7), the board will activate the **UL** and **DL** outputs one at a time. Every time a valid message is received, the board will alternate which output is active. Two onboard LEDs indicate which output is on so you will see these LEDs alternate back and forth.

DOOR INTERFACE BOARD

For some door operators, direct interfacing with the Smartrise SRU board is not possible. In such cases an interface board is used. Smartrise typically uses the **D3000** board.

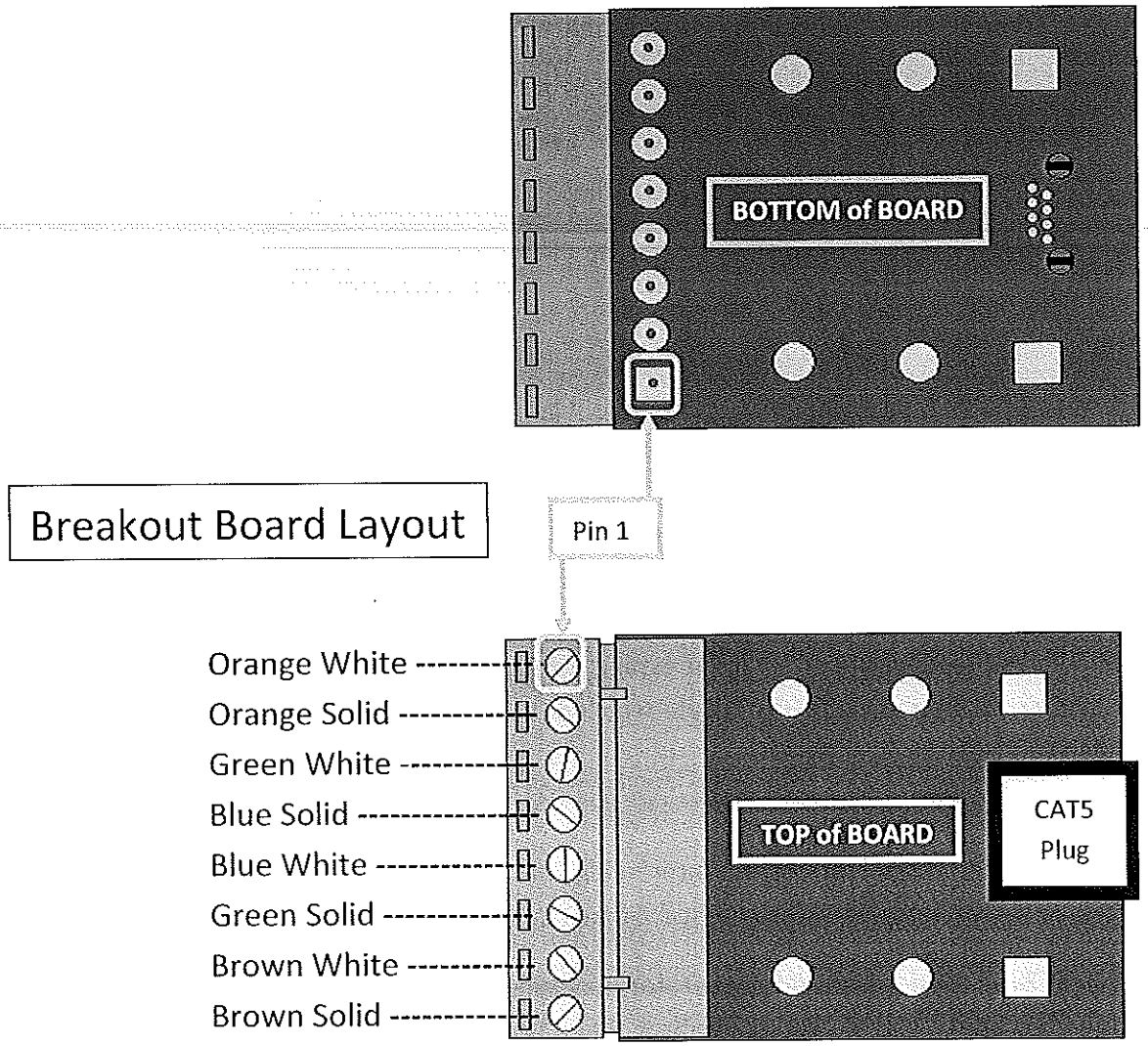
NOTE: Even though your door operator may run on 240vAC or more, the **D3000** is a **120vAC** powered board and should **never** be hooked up to the **DR** breaker if it is wired to 240vAC. ***Verify supply voltage is 120vAC to the DR breaker before connecting the D3000 board***. See your drawings for more connection information.

CARTOP INSPECTION STATION WITH SMARTCONNECT

If you ordered a cartop inspection station from Smartrise, it will include a "Smart Connect" cable for easy wiring to the car SRU board. The Smart Connect interface consists of a single Cat5 cable that runs from the inspection station on top of the car to the Car SRU board behind the COP panel. The Cat5 cable connects to a break out board with screw terminals for easy wiring.

The figures below show the pinouts available at the cartop inspection breakout board. If your board terminals are not labeled turn the board over and look at the solder terminals under the plug. They should all be round except for a square one on the end. The square solder terminal is Pin 1. Consult your job prints for the wiring connections required on your specific job.

Always check the physical board using the following picture with the pin layout on the drawings. If you want to use a Cat5 cable for wiring then plug one end into a breakout board and refer to the following cable layout for the other.



SYSTEM ARCHITECTURE

SRU BOARDS

Currently a typical Smartrise controller system will include three primary SRU boards – the Machine Room SRU board (**MR**), the Cartop SRU board (**CT**) and the COP SRU board (**COP**). If additional inputs or outputs are required (e.g. a building with a lot of floors), additional "expansion" SRU boards may also be included. Expansion SRU boards connect to one of the primary SRUs via a crossover Cat5 cable and are used to expand the number of available IOs. Most setup and adjustment functions can be made through any of the primary SRU boards.

The Machine Room SRU board will always be mounted inside the Machine Room Controller. The physical location of the Cartop SRU board can vary from job to job. In a two-board system the Cartop SRU is normally mounted inside the car station behind the COP panel.

The Machine Room SRU board controls the AC/DC Traction motor or valves and pump motor depending on application. It also decides where the car should go. The Cartop SRU board controls the doors and interfaces with the landing system. It also provides the IOs for the Safety String. In a two-board system it also interfaces with the call buttons and key switches located in the COP panel.

POWER BUS

Your Smartrise controller has several different power circuits used to power different parts of the system. The folowing is a summary of power bus designations sometimes found on the drawings. This information is not necessarily specific to your job so always consult the drawings that came with the job before making any wiring connections.

1. L1. L2, L3

This is the building's 3-phase AC power service. It should run through a fused disconnect box before connecting to the Machine Room Controller. **L1**, **L2**, and **L3** provide power to the drives or soft starter which in turn powers the motor or pump motor. Two of the service phases (usually **L1** and **L2**) provide power to the primary side of the transformer in the Machine Room Controller.

2. N, 120, 240, DR

These are the outputs (secondary side) from the transformer. **N** is the controller's AC neutral. It is the current carrying return path for most of the AC powered devices in the system (the cab fan and light are on a separate circuit). **N** is connected to the earth ground terminal in the Machine Room Controller and should **never** be connected to **REF**.

a. **120** is the 120vAC output from the transformer after it goes through a circuit breaker. It is normally used to power the safety string and is factory wired to power the controller's 24vDC power supply.

b. **240** is the 240vAC output from the transformer after it goes through a circuit breaker. The 240 bus may not be present on all controllers especially if the job has 120 volt valve coils. It can be used to power the safety string if the job uses 240 volt coils.

c. **DR** is the power for the door operator. It connects through its own circuit breaker to either the 120vAC (X2) or 240vAC (X1) terminal on the MR din rail. The voltage potential of **DR** depends upon what type of door operator is being used. For example, if the door operator is 240vAC the **DR** breaker will be wired to 240vAC. If the D3000 door interface board is used then you would wire the door operator to the **DR** terminal and the D3000 to the **120** terminal on the CT din rail.

NOTE: If no door operator voltage is specified when the job is ordered Smartrise defaults the DR breaker to 120vac for safety purposes.

3. **REF, M24, C24, H24**

a. **REF** is the 0 volt reference for all the 24vDC power busses. It is tied to the negative output of the 24vDC power supply in the Machine Room Controller. On most Smartrise controllers, **REF** is isolated from earth ground and from **N**. This is done to prevent damage to the low voltage SRU boards in the event that a high voltage AC wire is accidentally connected to one of the boards.

b. **M24** is the positive output from the 24vDC power supply after going through a dedicated circuit breaker. **M24** is used to power the Machine Room SRU board and to create most of the low voltage control signals used within the machine room.

c. **C24** is the positive output from the 24vDC power supply after going through a dedicated circuit breaker. **C24** is sent through the traveler cable to the elevator car and is used to power the Car SRU board and to create the low voltage control signals used within the car.

d. **H24** is the positive output from the 24vDC power supply after going through a dedicated circuit breaker. **H24** is sent through the hoistway wiring to the devices in the hoistway. It is also used to power the hall calls and other devices found at the hall landings.

4. **WHT, BLK**

The **WHT** (white) and **BLK** (black) power bus is used for the fan and light circuit inside the elevator cab. **BLK** is the "hot" wire and **WHT** is the neutral. This single phase AC power comes from the building's power service but has its own fused, disconnect switch. This allows the fan and light to remain on when the controller's power is shut off and vice versa. The Smartrise controller does not use this power bus other than to provide terminals in the machine room and in the car for landing the wires.

COMMUNICATION NETWORKS

A typical Smartrise controller has several communication networks. Networks link the Machine Room Controller to the car and to the hall stations. In a multi-car group, the Group Controller is linked to the cars over a communication network. The following sections describe the various networks used in the Smartrise controller system.

1. CAR NETWORK (CN)

This is the communication link between the machine room and the elevator car. Because Smartrise controllers send many of the elevator's safety signals serially, the **CN** network must always be working in order to run the car.

The **CN** network is a 2-wire network (CN+/-) that links pins 1 and 2 from the NET port of Machine Room SRU board to pins 1 and 2 of the Cartop SRU board. Factory wiring brings the NET pins via Cat5 cables to terminal blocks labeled **CN+** (pin 1) and **CN-** (pin 2). On most Cat5 cables, pin 1 (**CN+**) is an orange and white striped wire while pin 2 (**CN-**) is a solid orange wire.

To connect the **CN+** and **CN-** terminals from the machine room to the car, you must use a shielded pair in the traveling cable. Connect the shield to the REF terminals (not ground) at both ends.

2. HALL NETWORK (HN)

The **HN** or Hall Network is the 2-wire network (HN+/-) that links the machine room to the Hall Boards at each landing. The Hall Boards communicate information about the devices to which they are connected including hall call pushbuttons, lanterns, fire keys, and other landing equipment. The information from the Hall Boards is received by the Machine Room Controller for a simplex car or by the Group Controller in a multi-car setup.

Smartrise recommends daisy chaining the hall boards together using Cat5 cables. The hall boards themselves have two RJ45 connectors to allow for easy daisy chaining or you can use 3-way splitters (available from Smartrise). When 3-way splitters are used, you daisy chain the splitters in the hoistway and use the third jack of the splitter to connect to the Cat5 cable that will run through the wall to the Hall Board at a particular floor.

One important thing to remember is that the connection at the machine room must be done to the DIN rail screw terminals and not to the SRU board directly. The connectors on the Hall Boards and the SRU boards, while mechanically identical, are electrically different. **Damage may result if an SRU and Hall Board are directly connected via a Cat5 cable.**

3. AUXILIARY NETWORK (AN)

The **AN** or Auxiliary Network (AN+/-) is a car specific hall network. It is only found in a group setting. When a group controller is present, it will connect to the **HN** network hall boards to process hall calls for all cars in the group. The cars don't need to connect to the **HN** network directly since they talk to the group over a separate **GN** network. Some cars, however, are capable of "Swing Operation". At such a time, the car removes itself from

the group and acts as a simplex, answering calls from its own hall call riser. Since only that particular car can service those hall calls, they are brought directly to that car on the **AN** network.

If the elevator uses arrival lanterns at the landings the **AN** network provides the communication link and is wired exactly the same as the **HN** network except that it never connects to the group controller.

4. GROUP NETWORK (GN)

The **GN** or Group Network is the 2-wire network (GN+/-) that links the Group Controller to the individual car controllers. It allows the group to dispatch hall call assignments to the cars and to receive status information from them.

The network is formed by daisy chaining a shielded pair from car to car with the Group Controller appearing anywhere in the chain. The shield of this cable should be connected to the **REF** terminal of the group and of each car.

5. COP NETWORK (3-BOARD SYSTEMS ONLY)

Historically, this links the SRU board on top of the car (CT) to the SRU board behind the COP station. On 2-board systems, there is no SRU board on the cartop. In such a case, the COP Network would be the Cat5 cable linking the two SRU boards inside the car station. The COP Network is a non-critical network in that it carries no safety related signals. The car can run on Inspection with the COP Network down but usually not on automatic mode.

Although a standard Cat5 cable can be used for the COP Network, Smartrise recommends and supplies a special Cat5 cable with the ***orange pair cut*** to prevent potential noise problems that can affect the **CN** network. This is referred to as a **Modified Cat5 Cable**. See "Making Cat5 Cables" for more information on pinouts.

COP EXPANSION BOARD

This network is the same as the COP network but with an additional COP board for more inputs. The COP Expansion board is connected to the COP by a **Cross-Over** Cat5 cable. A standard Cat5 cable will not provide proper communication between the COP and the COP Expansion board.

SRU BOARD

OVERVIEW

The Smartrise Universal (SRU) board is the brains of the Smartrise controller. A typical control system contains 2 or 3 of these boards. Although all SRU boards are identical in terms of hardware, each contains unique software to provide location specific functionality. DIP switches and on board jumpers can also be used to configure the SRU for specific functions.

The current revision of the board (Rev 8) provides 48 input terminals, 24 output terminals, 4 comports and an LCD display. Each board contains two independent microcontrollers and special circuits for performing certain safety functions. Older revisions of the SRU board are similar but support only 32 inputs and 16 outputs.

POWER

The SRU board is designed to be powered by a 24vDC supply. The 8-position terminal block at the top of the board is for connection to the power supply. Although 24vDC is the recommended supply voltage, the board will operate from approximately 8-30vDC. Applying a voltage higher than 30vDC may damage the board.

*** Never apply AC voltage to any terminal on an SRU board. ***

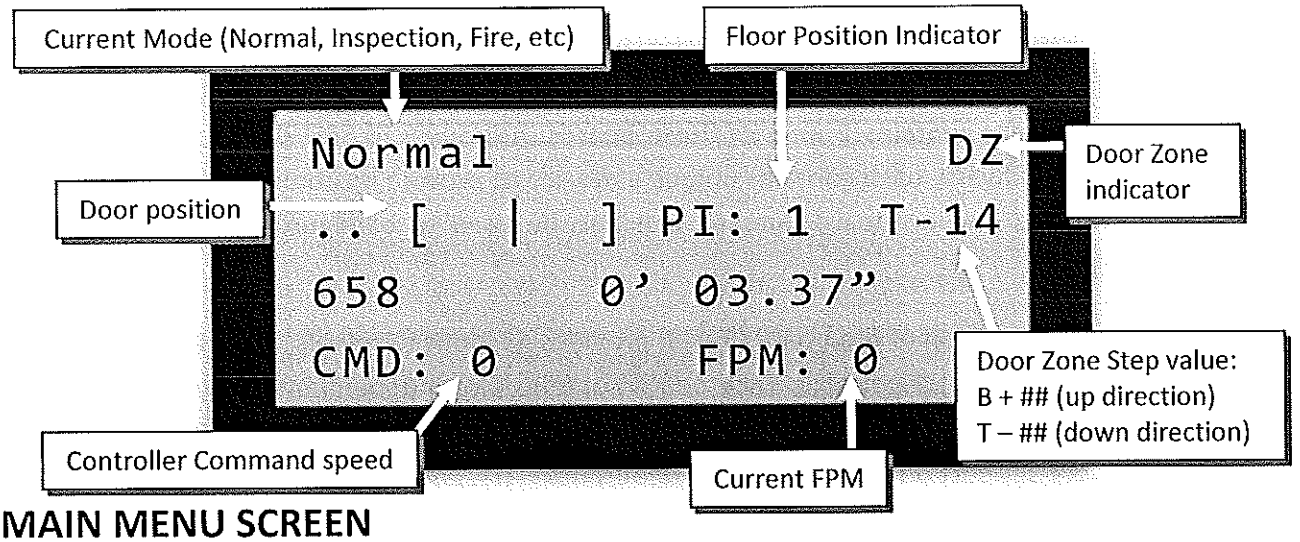
There are four terminals at the top of the board labeled PWR that are internally connected together. Power may be connected to any one of these terminals. You can use the remaining three terminals to distribute power to other parts of the system that use that same power bus. Typically, the SRU board in the machine room is powered by the **M24** bus while the SRU board in the car and COP is powered by **C24**.

The four **REF** terminals are also connected together internally. They provide a return path to the negative side of the DC power supply.

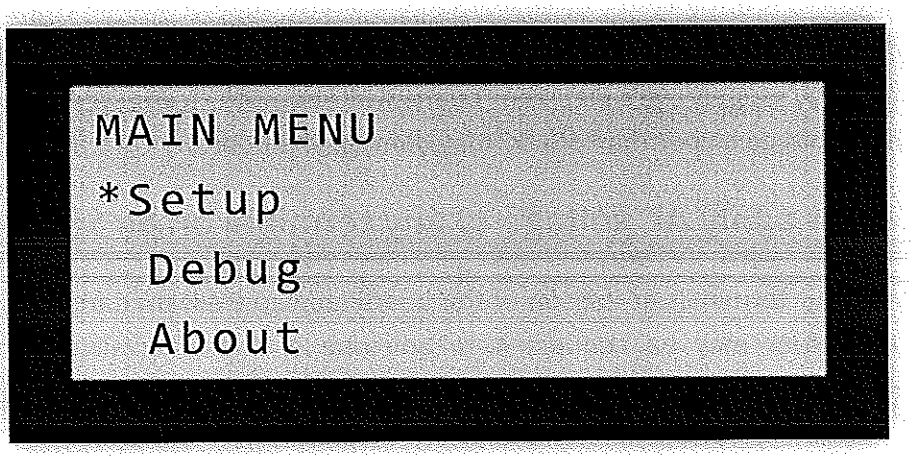
Be aware that the **PWR** and **REF** terminals are also routed to pins on the four comport connectors allowing other boards to be powered up just by connecting a Cat5 cable between the two.

SMARTRISE SRU LCD SCREEN VIEWS

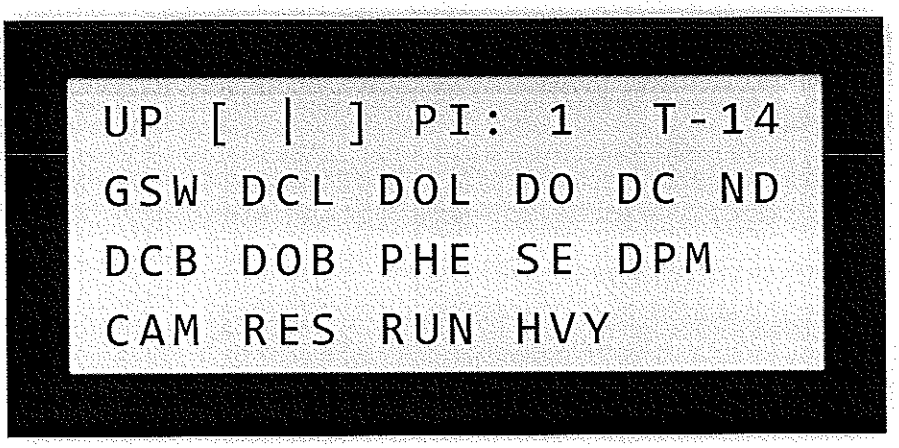
NORMAL VIEW SCREEN



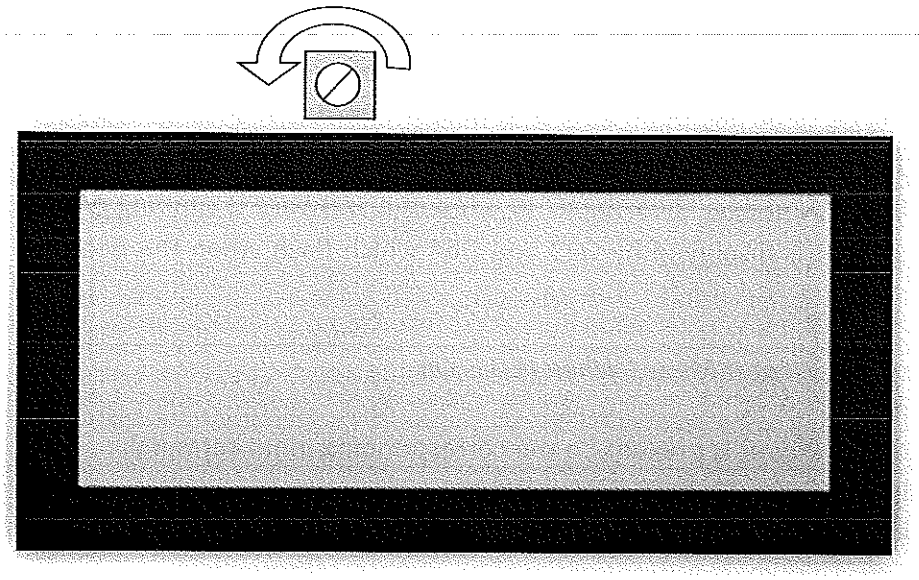
MAIN MENU SCREEN



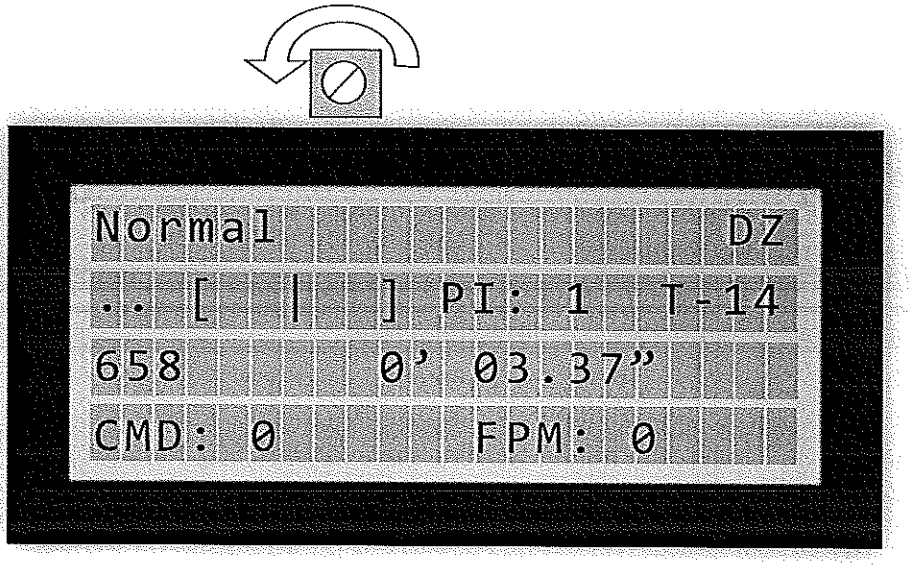
CAR DOOR DATA SCREEN (ALL FLAGS SHOWING)



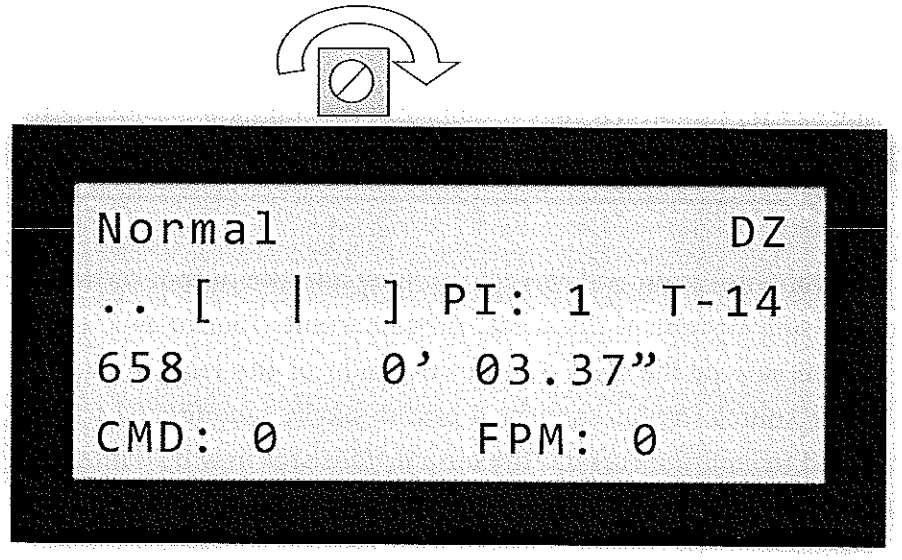
SMARTRISE SRU LCD SCREEN ADJUSTMENT



If the LCD screen is blank but the LEDs on the SRU board are lit then adjust Potentiometer R249 (located above the LCD screen) counter-clockwise.



Keep turning Potentiometer R249 counter-clockwise until the display comes on. Caution: Turning Potentiometer R249 too far will cause dark boxes to appear around the letters and may burn out the LCD screen prematurely.



Turn Potentiometer R249 clockwise until the dark boxes disappear but you can still read the screen.

LED INDICATORS

Each SRU board has about 80 LED indicators to provide quick status information. Each LED has a number or reference designator next to it. The table below explains the function of each LED. You will notice that the LEDs come in three colors: red, yellow, and green. Red indicates a problem. Either a fault has been detected or the board is resetting. Yellow is used to indicate an active output terminal. Green is used to show power on an input terminal, power to the board, and as a "heartbeat" to show the software is running on the two processors. The heartbeat is displayed by O63 and O64 which flash when the board is functioning.

Number or ReferenceDesignator	*LED Color*	*What It Means When LED is On*
501-548	Green	Power is present on the corresponding input terminal.
601-624	Yellow	Output terminal is turned on.
549	Green	Power is present of Car Door Bypass 1 terminal.
550	Green	Power is present of Car Door Bypass 2 terminal.
551	Green	Power is present of Hall Door Bypass 1 terminal.
552	Green	Power is present of Hall Door Bypass 2 terminal.
O61 and O62	Green	External power is applied to the board.
O63	Green	Software on CPU-B (J22) is running when flashing.
O64	Green	Software on CPU-A (J21) is running when flashing.
O65	Red	Software has detected a fault.
O71	Red	Board is resetting.
O91	Green	Safety hardware is functional when flashing.
O92	Red	Safety hardware has detected a fault.

INPUTS

Each SRU board has 48 inputs terminals. The inputs terminals are labeled 501 through 548. Each terminal has a green LED next to it which indicates when there is power present on the input. Inputs are designed for DC current only. **Putting AC current on an input will damage it.** Input terminals are rated for up to 30vDC but will activate at voltages as low as 3 or 4vDC.

Because the LEDs and opto-isolators require current to activate, the inputs are immune to electrical noise even at relatively high voltages.

OUTPUTS

The yellow LED indicates the transistor is on and current can flow into the output terminal. The output terminal can only sink current. It does not source current. That means it will always connect to the negative side of the load. The positive side of the load should be connected to a +24vDC power source. Never connect a power supply bus directly to the output terminal. Without a load to limit the current, the output transistor may be damaged. Output terminals are rated to sink up to 0.5 A.

When the yellow LED is off, it means the output transistor is also off. At that time, the transistor is in a high impedance state and acts like an open circuit. No current can flow through it and any load connected to it will not be actuated.

Several of the outputs have onboard shunt jumpers that affect how the output functions. For example, an output may require a jumper to be placed in one position when that output is used for a safety related function. Another board may use that same output terminal for a non-safety related function in which case the shunt jumper would need to be placed in a different position. You normally do not have to be concerned with this as the jumpers are set in the correct positions at the factory. If a board ever needs to be replaced in the field, you will need to be sure that the jumpers are set correctly.

DOUBLE STACK TERMINALS

The 6-position, double stack terminals at the upper left corner of the board provide 4 digital and 1 analog (2-wire) input.

The digital inputs work the same as inputs 501-548 but are reserved for use with the Car Door Bypass and Hall Door Bypass switches. The inputs will normally come prewired to these switches from the factory. LEDs 549-552 which are located near the bottom center of the board show when the inputs are powered.

The double stack terminals are currently used in the machine room only. SRU boards in other locations should not have anything connected to these terminals.

COMPORTS

NOTE: The following information refers to the comports on the SRU board only. The comports on the hall board are similar in appearance but have different pinouts. Never connect an SRU to a hall board with a Cat5 cable as you may damage the boards.

The SRU board features 4 comports which allow it communicate with various devices and other SRU boards. The comports are all similar in appearance but different in functionality. There are two RJ45 connectors at the lower left edge of the board labeled NET. Refer to the following table for information regarding these ports.

Connector	*Function of Pins*	*Remarks*
NET (both are identical)	1 = J21 U0 Data+ 2 = J21 U0 Data- 3 = J22 U0 Data+ 4 = PWR (board power) 5 = REF 6 = J22 U0 Data- 7 = PWR (board power) 8 = REF	These two comports are identical. Pins 1 and 2 support a half-duplex, RS485 network controlled by J21. Pins 3 and 6 support a similar network controller by J22. Jumping J26 puts a 120 ohm termination resistor between pins 1 and 2. Jumping J25 puts a 120 ohm resistor between pins 3 and 6.
DRIVE	1 = J21 U1 Tx+ 2 = J21 U1 Tx- 3 = J21 U1 Rx+	The Drive comport is a full-duplex RS422 serial port. This port is often used to communicate serially with the drive in the

	4 = PWR (board power) 5 = REF 6 = J21 U1 Rx- 7 = PWR (board power) 8 = REF	machine room but can be used for other purposes. The comport can be used as a half-duplex RS485 port by placing shunt jumpers fromJ20.5 to J20.6 and J20.7 to J20.8. The comport has a built-in 120 ohm termination resistor.
AUX	1 = J22 U1 Tx+ 2 = J22 U1 Tx- 3 = J22 U1 Rx+ 4 = PWR (board power) 5 = REF 6 = J22 U1 Rx- 7 = PWR (board power) 8 = REF	The Aux comport is a full-duplex RS422 serial port. The comport can be used as a half-duplex RS485 port by placing shunt jumpers from J20.1 to J20.2 and J20.3 to J20.4. The comport has a built-in 120 ohm termination resistor.

DIP SWITCHES AND JUMPERS (REV 8 BDS.)

The Revision 8 SRU board has two sets of DIP switches, each containing eight switches. The sets are labeled A and B and are located in the lower right area of the board. The table below explains their functions.

DIP A Switch	*Machine Room SRU Board*	*Car SRU Board*
1	CPU Stop Switch - Prevents car from running. When board is reset with switch on, it clears internal memory of latched faults and certain modes of operation (like Fire Service) that persist through a loss of power.	CPU Stop Switch Prevents car from running. Clears internal memory of latched faults and resets position count to 0 feet 0 inches.
2	Learn mode Puts car in Learn mode. Bypasses overspeed logic when on Inspection.	
3	Door Disable Turns off auto opening of car doors.	
4		
5		
6	Pop-up blocker Prevents fault and alarm messages from automatically being displayed. You can still view them from the Active Faults screen.	Same as Machine Room SRU
7		
8	Preflight on Inspection Normally the preflight test is only performed when the car is in automatic mode. This switch forces the test to be performed even after an inspection run.	

DIP B Switch	*Machine Room SRU Board*	*Car SRU Board*
1		
2		
3		
4		On = Car has In-Car Inspection Operation
5	On = Non-coupled (e.g. swing) hall doors	
6		On = Car has rear doors
7	On = hydro, Off = traction	
8	Always off	Always on

In addition to the DIP switches, there are numerous jumpers located at various places around the board. The function of each jumper is defined in the tables below.

Reference Designator	*Location*	*Description*
J25	Next to NET ports	Terminates network J21 U0. This is the CN network on the machine room SRU board.
J26	Next to input 504	Terminates network J22 U0. This is the HN or GN network on the machine room SRU board.

J24 Header Number	*Jumper Shunting Center to Left (Use for 3rd board in a 3-board system)*	*Jumper Shunting Center to Right (Always use this setting on 2-board systems)*
1	J21 controls output 601	J22 controls output 601
2	J21 controls output 602	J22 controls output 602
3	J21 controls output 603	J22 controls output 603
20	J21 controls output 620	Hardware controls output 620
21	J21 controls output 621	Hardware controls output 621
22	J21 controls output 622	Hardware controls output 622
23	J21 controls output 623	Hardware controls output 623
24	J21 controls output 624	Hardware controls output 624
47		Enables pull-up resistor on input 547
48		Enables pull-up resistor on input 548

Pins on Header J20	**Jumper Shunts in Place**	**Jumper Shunts Removed**
1-2 3-4	AUX comport is set for half-duplex mode. Jumping pin 1 to pin 2, ties the Rx+ and Tx+ signals together. Jumping pin 3 to pin 4, ties the Rx- and Tx- together. Both shunts must be in place for proper operation.	AUX comport is set for full-duplex mode. Comport can transmit and receive data simultaneously. All jumpers on pins 1-4 must be removed for proper operation.
5-6	DRIVE comport is set for half-duplex	DRIVE comport is set for full-duplex mode.

7-8	mode. Jumping pin 5 to pin 6, ties the Rx+ and Tx+ signals together. Jumping pin 7 to pin 8, ties the Rx- and Tx- together. Both shunts must be in place for proper operation.	Comport can transmit and receive data simultaneously. All jumpers on pins 5-8 must be removed for proper operation.

DOWNLOAD CONNECTORS

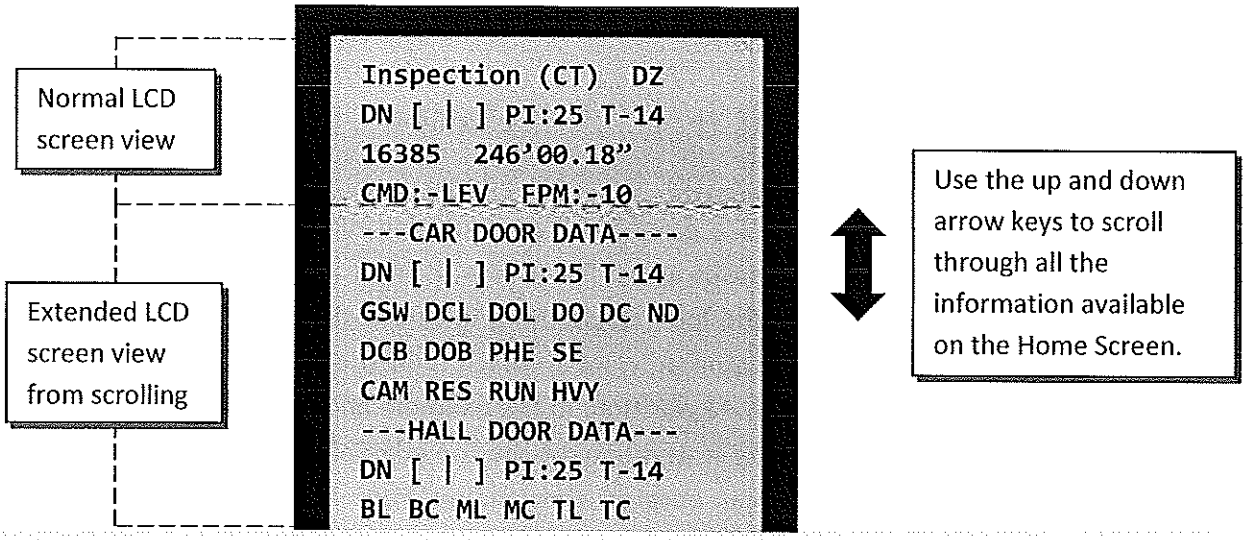
There are three connectors near the bottom left corner of the LCD. They are labeled J21, J22, and J23. Two of these connectors (J21 and J22) are referred to as JTAG connectors and are used for downloading software to the SRU board. Smartrise supplies a special programming pod that connects to these ports and allows new software to be downloaded from a PC. See Appendix E for programming information.

Connector J23 is for factory use only.

MENU NAVIGATION

HOME SCREEN

The Home Screen provides an overview of the elevator car's status. This includes the car's position, speed, operating mode, door and door zone status. This screen provides enough information to troubleshoot many problems. Use the Up and Down Arrow keys to scroll through all the information available on the Home Screen. Press the Right Arrow key to exit the Home Screen and go to the Main Menu.



The Home Screen contains several areas. The top four lines show general status. The area below that shows details about the car doors and the hall doors.

GENERAL STATUS

The first line shows the mode of operation and whether or not the car is in door zone. It looks something like this:

Inspection (CT) DZ

When car is in door zone, the letters "DZ" are shown. When not in door zone, two dots ("..") are shown instead. Other on/off indicator flags are shown the same way. When the signal is active, the indicator is shown. When inactive, dots are shown. You can hold down the Enter key to see all the indicator flags on the Home Screen. When you let go of the key, only the active flags will remain on.

The table below shows the various modes of operation you may see at the top of the Home Screen.

Mode of Operation	*Description*
Unknown	Controller cannot determine what mode it is in. This often happens if the Machine Room SRU board is not communicating with the Car SRU board and the controller is not configured for Construction mode.
Construction	Construction mode
Inspection (MR)	Machine Room Inspection
Inspection (CT)	Cartop Inspection

Inspection (IC)	In-Car Inspection
Inspection (HA)	Hoistway Access
Learn	Learn Mode (DIP switch A-2 is on)
Normal	Normal, automatic operation
Fire Recall	Fire Phase 1
Fire Phase II	Fire Phase 2
Independent Srv	Independent Service
Earthquake	Earthquake operation caused by a counterweight derailment of seismic input
Medical Recall	Emergency Medical Service (EMS) Phase 1
Medical Phase 2	Emergency Medical Service (EMS) Phase 2
Attendant	Attendant operation

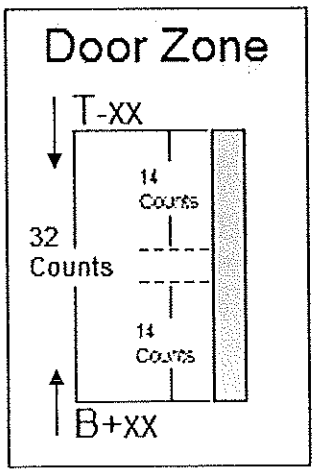
The door icon line is repeated several times on the Home Screen. The line looks something like this:

DN [|] PI: 25 T-14

At the left is the direction indicator. "DN" indicates a down demand while "UP" indicates an up demand. The door icon shows a graphical representation of the doors. See the table below for the meaning of the various icons. For cars with front and rear doors, two icons will be shown with the icon on the left representing the front doors and the icon on the right the rear. Next is the PI indicator showing at which floor the car currently is. The final indicator on this line is the door zone position. In the example above, "T-14" means the car is located 14 counts (of the landing system) below the top edge of the door zone magnet at floor 25. This implies that the car entered the landing from above (going down). The controller always keeps track of the car's relative position within the door zone magnet based on the most recent edge of the magnet it crossed. If the car came down into the door zone, you will always see a T- count for the relative position. If the car came up from below, you will see a B+ count.

B+ n means the car is "n" counts above the bottom edge of the door zone magnet.

T- n means the car is "n" counts below the top edge of the door zone magnet.



Door Icon	Meaning
[|]	Doors are fully closed
[< >]	Doors are opening
[ ]	Doors are fully open
[> <]	Doors are closing or nudging
[< | >]	Doors are opening but gate switch is still made
< >	Doors are fully open but the Door Open output is still on
[| |]	Doors are ajar

Position is shown as a count value followed by a feet and inches value. On the screen it will look something like this:

16385 246'00.18"

The relationship between the count value and the feet and inches will vary depending upon which landing system is used. For an IP8300, each count represents 3/16". Internally, the controller handles all positions as counts. Feet and inches are shown simply for the convenience of the user. To allow for the car to be run into the pit, count value 00000 is assumed to be 10 feet below the bottom door zone. This allows the count value to always be a positive number even when the car is run below the bottom floor. The feet and inches will show as a negative value when the car is in the pit.

The fourth line of the general status is the car speed. It looks something like this:

CMD: -LEV FPM: -10

It shows the commanded speed to the left, and the actual speed detected by the landing system to the right. The table below shows the various command speeds. If the car is being commanded to move down, a minus sign ("-") will appear in front of the commanded speed. The FPM indicator shows the actual, detected feet per minute as reported by the landing system. Again, a negative number indicates a car running down.

Cmd	*Meaning*
STOP	Controller is commanding the car to stop
LEV	Leveling (low) speed is being commanded
HIGH	High (contract) speed is being commanded
INSP	Inspection speed is being commanded (some versions of software will show LEV or HIGH when on inspection)

CAR DOOR DATA

Press the Down Arrow key to scroll from the general status part of the Home Screen to the car door data area. The first line in this area is a duplicate of the door icon line described above. The next three lines show the input and output flags related to the car doors. For cars with rear doors, the car door data area will appear twice – once as "front door data" and then as "rear door data".

The indicator flags for the car door inputs and outputs are described in the table below. If an input or output is not active, it the indicator will appear as dots ("...") instead of the abbreviation.

Indicator	*Meaning*
GSW	Gate switch is made (door is closed)
DCL	Door is on the Door Close Limit (door is closed). Be aware that for most door operators, the DCL contact opens and the input to our controller loses power when the DCL indicator is on.
DOL	Door is on the Door Open Limit (door is fully opened). Be aware that for most door operators, the DOL contact opens and the input to our controller loses power when the DOL indicator is on.
DO	Door Open output is on. Controller is trying to close the doors.
DC	Door Close output is on. Controller is trying to close the doors.
ND	Nudge output is on. Controller is trying to nudge the doors closed.
DCB	The Door Close Button is being pressed.
DOB	The Door Open Button is being pressed.

PHE	The photo-eye (infrared safety edge) is obstructed. Note that the photo-eye contact is normally closed. When someone stands in the beam the contact opens and the input to our controller loses power. The PHE indicator means the PHE input to our controller is not powered.
SE	Mechanical safety edge. Works the same as the PHE indicator. Mechanical safety edges are not common on passenger elevators and most Smartrise controllers do no supply an SE input by default.
CAM	The hall lock retiring cam output is on.
RES	The door restrictor output is on.
RUN	The DCP/RUN pilot output is on.
HVY	The heavy hall door output is on.

HALL DOOR DATA

Scrolling to the very bottom of the Home Screen reveals the Hall Door Data area. This area show the door icon line described above and also a line showing the status of the hall door locks and closed inputs which looks like this:

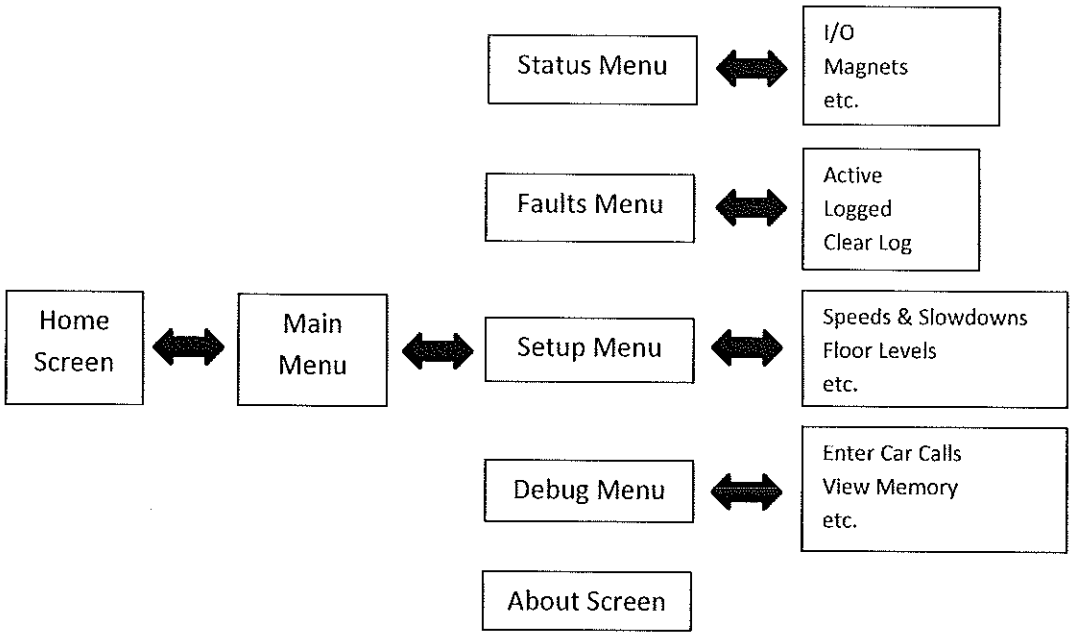
BL BC ML MC TL TC

The indicators are described in the table below.

Indicator	*Meaning*
BL	Bottom hall lock is made.
ML	Middle hall locks are all made.
TL	Top hall lock is made.
BC	Bottom hall door is closed. For most passenger elevators with coupled hall and car doors, this indicator comes on and off with the BL indicator. For cars with non-coupled doors, a separate Bottom Closed input is provided and this indicator shows the state of that input.
MC	All middle hall doors are closed. Functions similarly to BC.
TC	Top hall door is closed. Functions similarly to BC.

MAIN MENU

HIERARCHY



The user interface of the SRU board is arranged in a hierarchical fashion where navigating toward the right (pressing the Right Arrow Key) takes you deeper into the menu system while navigating left escapes back to the higher levels. The Home Screen is at the top level. Press the right arrow key once to get to the Main Menu. Press the Right Arrow key again to enter one of the submenus.

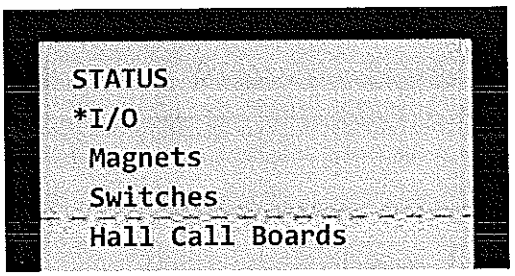
If you're ever lost just keep pressing the Left Arrow key until you get back to the Home Screen.

MAIN MENU

The Main Menu provides access to the four main submenus: Status, Faults, Setup, and Debug. It also provides access to the "About" screen which gives information about the installed software. Use the Up and Down Arrow keys to select a submenu and press the Right Arrow (or Enter) key to go there.

STATUS

The Status screen provides information about the current state of the controller. You can view which inputs are currently active, see the learned positions of hoistway magnets and switches, and get information about the Hall Network.

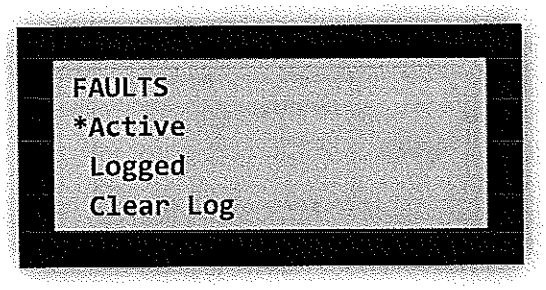


Use the up and down arrow keys to scroll through all the available options.

FAULTS

The Faults menu is a good place to go when troubleshooting. It allows you to see what is currently wrong with the elevator as well as a history of recent problems.

The menu has three options: view active faults, view logged faults, and clear the log.



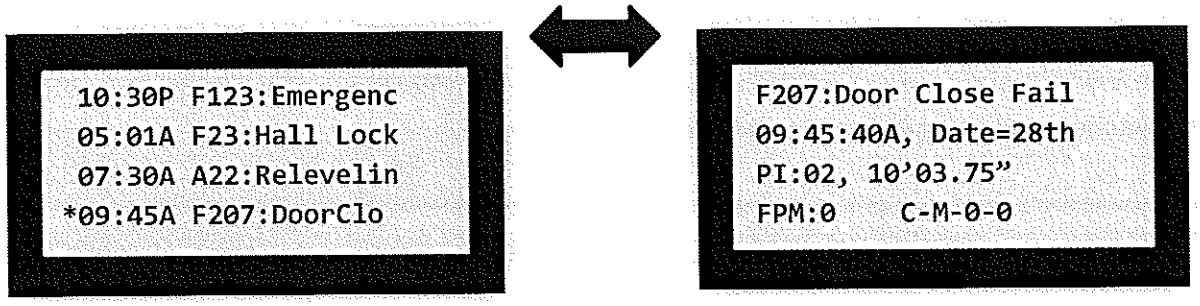
1. ACTIVE FAULTS

The Active Faults screen show any faults or alarms that are active at this moment. Faults are conditions that prevent the elevator from running. Alarms are informational messages that you should be aware of but don't necessarily prevent operation. If the red LED O65 is flashing, you have an active fault. The Active Faults screen is automatically displayed when a new fault or alarm occurs. You can disable that feature by turning on DIP switch A-6.

2. LOGGED FAULTS

The Logged Faults screen shows a history of approximately the last 15 faults that occurred. Scroll down to see the most recent faults and scroll up to see older ones. Pressing the Right Arrow key when a fault is selected takes you to the Fault Detail screen where you can see all the information that was recorded when the fault was logged.

Left and right arrow keys switch between fault log list and detailed views.



1) The first line of the Fault Detail screen shows the fault number and description;
2) The second line shows the time and date when the fault occurred.
3) The third line shows the PI and position of the car when the fault occurred.
4) The bottom line shows the speed of the car in feet per minute. The four characters after the speed are the CPU, ETS position, Extra Byte 1 and Extra Byte 2.

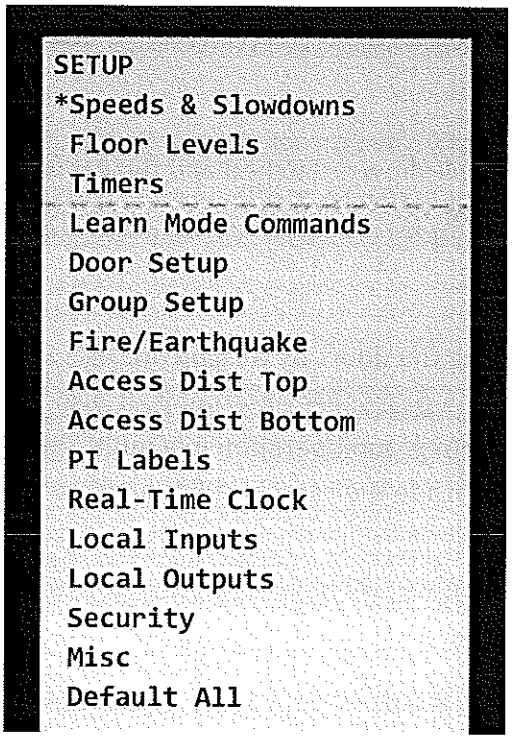
To ensure the fault log has the most accurate information, be sure to set the correct time and date under the **MAIN MENU | SETUP | REAL-TIME CLOCK** menu option.

3. CLEARING THE LOG

The third option on the Faults menu is for clearing the log. When this option is selected, you will be asked to confirm your choice. If you choose "yes" then the data recorded in the log will be erased. You are not required to clear the fault log as old faults are automatically erased when new ones are logged but it can sometimes be helpful when troubleshooting to clear out old faults.

SETUP

The Setup menu is the primary place to go to configure and adjust the car. It has options for setting speeds and slowdowns, adjusting floor levels, configuring the doors, and performing many other functions necessary to make the elevator run properly. You can also enable optional features like security and even change the function of certain input or output terminals.



Use the up and down arrow keys to scroll through all the available options.

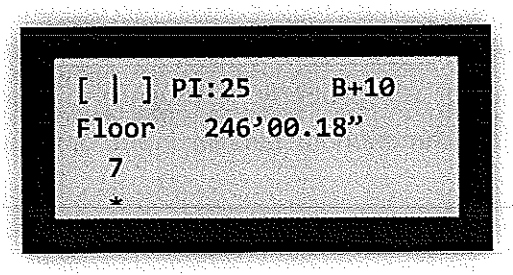
DEBUG

The Debug menu was originally designed for internal use by Smartrise during software development. It has options for viewing memory, checking communication network status, and adjusting parameters – including many that don't appear in the Setup menu. As more features were added to this menu, it became sort of an advanced setup and status area.

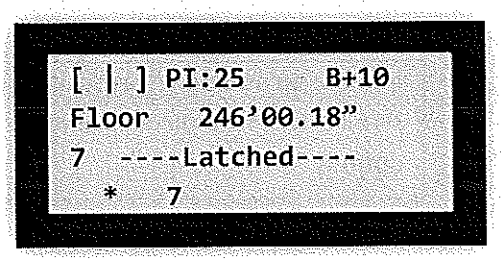
One of the most used features under Debug is the option to "**Enter Car Calls**". This allows you to send the car to any floor from the machine room. By using DIP switch A-3, you can disable the car doors to prevent anyone from entering the car while you're testing it. This is explained in more detail further on in this section.

ENTER CAR CALLS

You can enter car calls from the **MAIN MENU | DEBUG | ENTER CAR CALLS** screen. Use the up and down arrow keys to select which floor you want the car to go to and press the Enter key to latch the call. The message "Latched" will appear with the destination floor shown under it. If additional calls are entered or if there were other calls already in the system, they will also appear in the "Latched" area.



Press the up and down arrows to select where you want the car to go (in this case floor 7). Press the Enter key to latch the call.



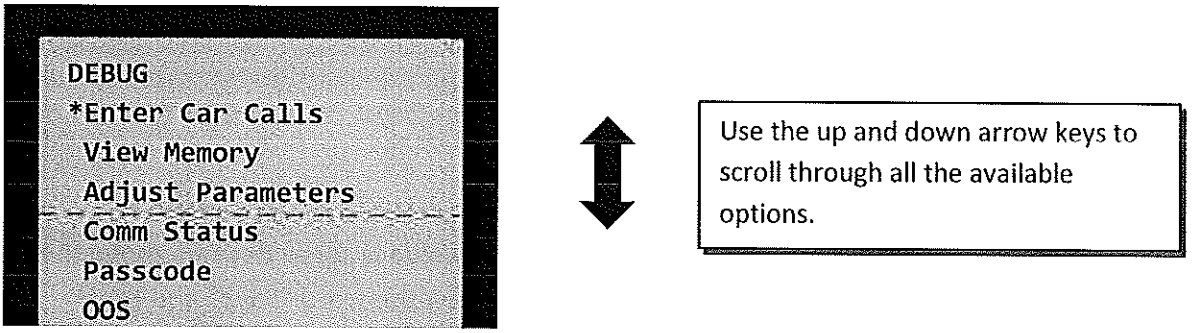
The call will show as latched and the car will go to the floor.

You can prevent the car from automatically opening the doors by turning on DIP switch A-3. This allows you to test the car without the risk of a passenger entering it. It also prevents the car from answering hall calls and removes it from group operation in a multi-car system. When DIP switch A-3 is on, the Door Open Button inside the car will still function to prevent an accidental entrapment.

PASSCODE

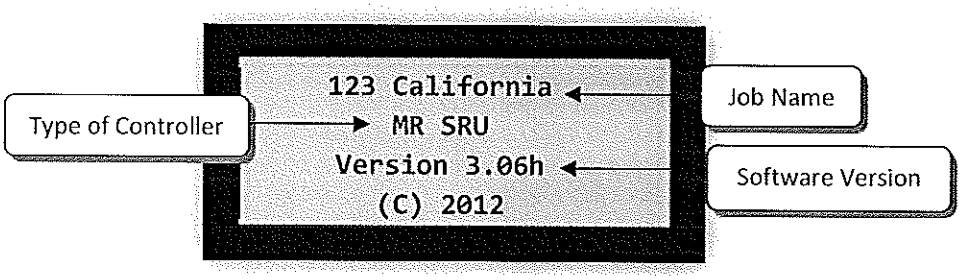
Most controllers that ship from Smartrise require that a **passcode** be entered prior to running on automatic operation. The passcode is obtained by calling Smartrise and is entered under the Passcode option of the Debug menu.

The **OOS** (Out Of Service) menu item is for the installer to input a date and time that the elevator will go out of service. This is password protected and will send the elevator into **OOS** until the password is entered, much like the passcode feature. Installers use this to put the elevator out of service in case of payment disputes between the installer and customer.

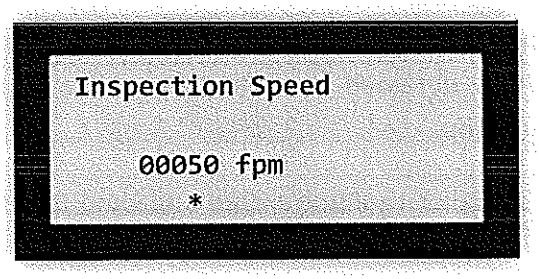


ABOUT

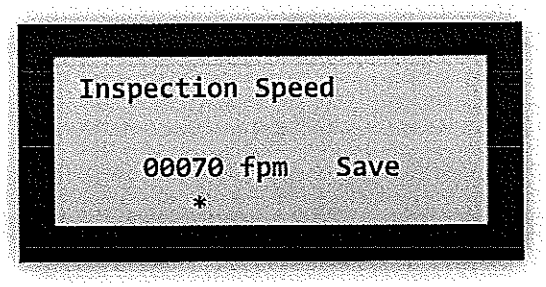
The About screen provides information about the controller. The job name and software version number can be found here.



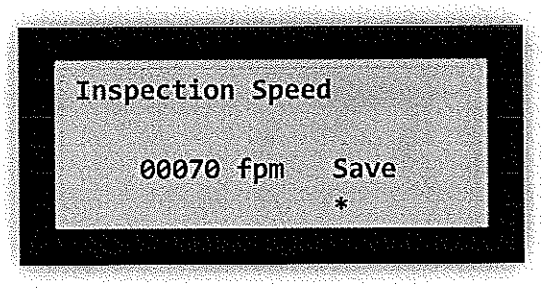
SAVING PARAMETERS



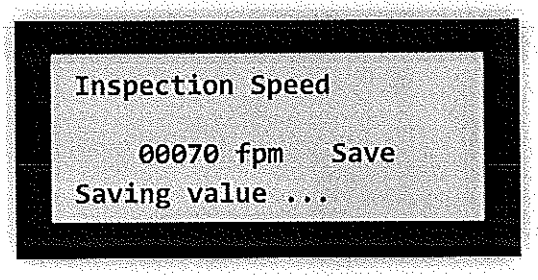
Use left and right arrow keys to move the cursor below the digit you wish to change.



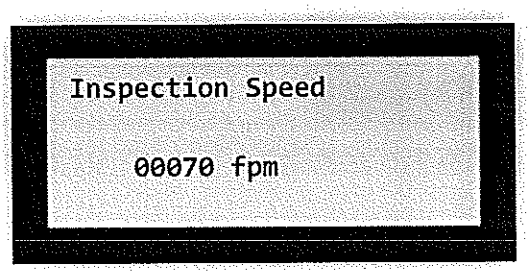
Press the up and down arrow keys to change the value.



When the value is set as desired, move the cursor below the word "Save" and press the Enter key.



Wait until the message "Saving value ..." goes away.



The new value is now saved.

Many screens (especially under Setup) allow you to change parameters. The method for changing them is the same no matter what screen you are on. Use the left and right arrow keys to move the cursor to the parameter field you wish to adjust. For a numeric parameter, this would be a particular digit within the number. Now use the up and down arrow keys to adjust the value. When you have the parameter set to the desired value, move your cursor to the right until it is under the word "Save". Now press the Enter key. The message "Saving value ..." will appear for a few seconds. When the message clears, the value has been saved.

If you adjust a value by mistake that's okay. As long as you have not saved it, you can press the Left Arrow key until you exit out of the screen. When you go back in, the original value will be displayed. The new value does not take effect until you save it.

Parameters can be changed from any of the controller's SRU boards. You don't have to be in the machine room. The saved value will be broadcast to all the other boards in the system.

Parameters cannot be saved while the car is running. If you attempt to save at that time or if the car begins a run in the middle of a save operation, the operation will be suspended and not allowed to complete until the car stops.

You may occasionally get a fault when you save a parameter. The most likely type of fault is a communication fault with a networked device. This occurs because the computer processor briefly stops while its internal flash memory is updated. This pause is sometimes detected by other devices and may cause them to fault. This is normal and the fault will clear after a few seconds.

HALL NETWORK

Hall call buttons, arrival lanterns, the Fire Phase 1 key and light and other hall mounted devices are normally connected to the controller via a Cat5 serial channel called the Hall Network or HN. In a multi-car setting, there may be more than one network. Call buttons and the fire key which are shared by all the cars will connect to the Group SRU board on the HN network. Arrival lanterns which are specific to a car will come directly to that car's din rail on a separate hall network called the Auxiliary Network or AN.

Regardless of whether the network is called HN or AN, they operate the same way. A hall board is placed at each device. The hall board has two input terminals and two output terminals so a single hall board can service both an up and down hall call button. Likewise a single hall board can drive both the up and down arrival lanterns at a floor. The fire recall key is usually a three position switch but since the center position can be assumed when the other two are off, a single hall board can handle it as well (with one of the outputs used to control the fire hat jewel).

Once a hall board has been connected to a device, that device can become part of the Hall Network.

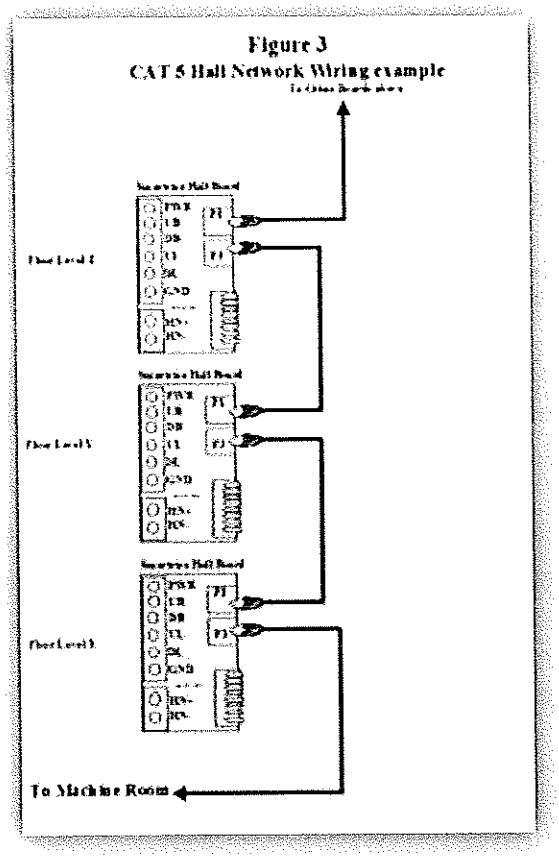
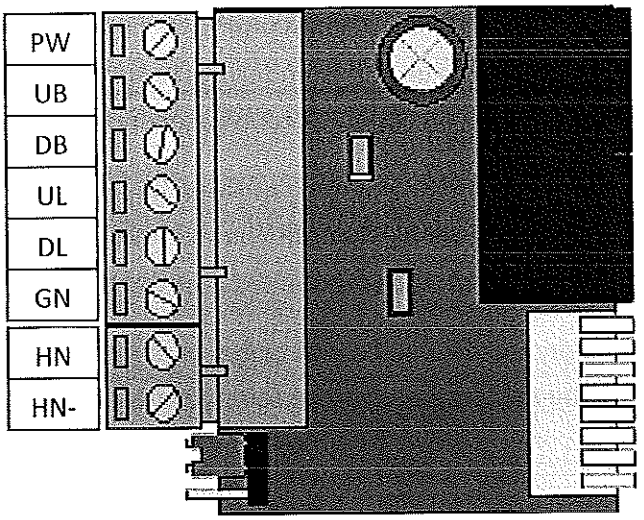
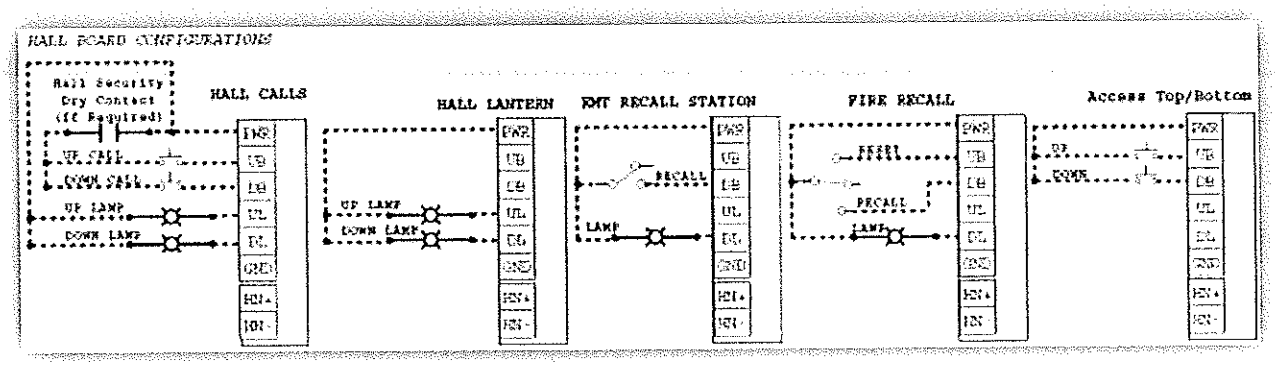


Figure 3
CAT 5 Hall Network Wiring example
To Machine Room


PW
UB
DB
UL
DL
GN
HN
HN-


HALL BOARD CONFIGURATIONS
Hall Security
Dry Contact
(If Required)
HALL CALLS
HALL LANTERN
EMT RECALL STATION
FIRE RECALL
Access Top/Bottom
UP CALL
DOWN CALL
UP LAMP
DOWN LAMP
RECALL
LAMP
PWR
UB
DB
UL
DL
GND
HN+
HN-

INSTALLATION

** IMPORTANT INSTALLATION NOTE **

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 your equipment from overvoltage issues.

[For example, the door operator for your job might operate on 240vac but Smartrise wasn't supplied with that information when the job was developed. Smartrise will set the DR breaker (door operator voltage supply) to 120vac for safety reasons.]

Please take a moment to verify that all required voltages for the existing equipment matches the voltages set by Smartrise. You can verify this with the drawings provided in your job binder.

GENERAL INSTALLATION

OVERVIEW

This part of the manual explains how to get the controller wired and running. This section will involve allowing the elevator to run in Construction mode. This is the simplest mode of operation and will enable the use of the elevator while installing the rest of the system.

MOUNTING

Mount the controller cabinet in a well ventilated area.

POWER

Ground the controller using the provided ground terminal lugs on the DIN rail.

Traction systems: connect your 3-phase power from the main disconnect to terminals **L1**, **L2**, and **L3** on the drive as shown on your job prints. Refer to the drive manufactures manual for additional wiring information. Use the proper wire and fuse size based on current and load considerations. Use Table 1 as a guide for wire gauge sizing.

Table 1: NEC Ampacity Rating for Insulated Wires*

Wire Size	60°C	**Disconnect Fuse Sizing
14	20A	35A
12	25A	43A
10	30A	50A
8	40A	65A
6	55A	88A
4	70A	110A
3	85A	133A
2	95A	148A
1	110A	170A
0	125A	193A
00	145A	223A
000	165A	253A
0000	195A	298A

*All wire sizes are in AWG per NEC 7.0. See NEC 7.0 See Article 310. p. 70-148 for clarification

**Listed fuse sizing is suggested only. Actual fuse sizing may vary depending on load requirements.

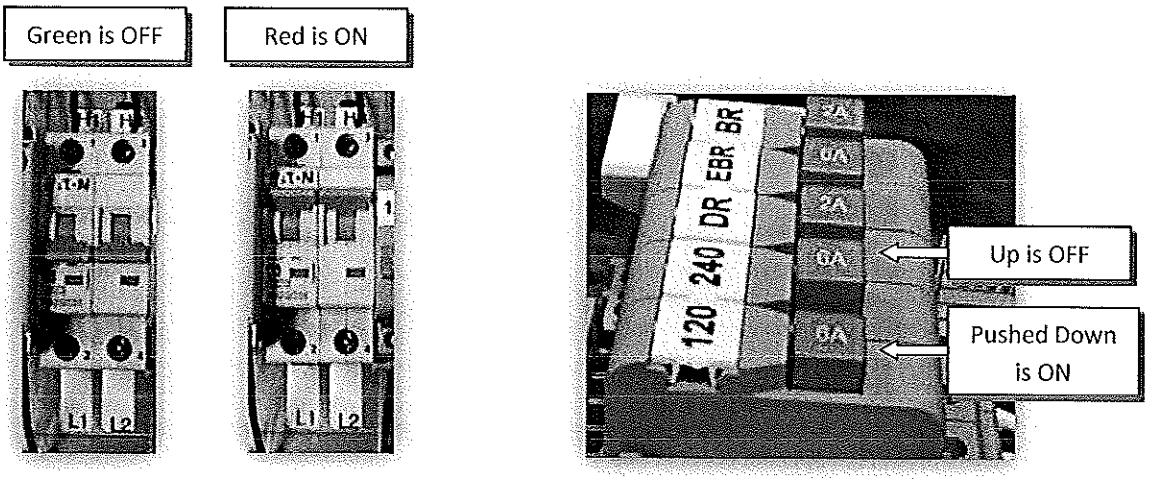
Hydro systems: wire **L1**, **L2** and **L3** line power inputs to the Soft Start using the provided manual and drawings. Use the proper wire and fuse size based on current and load considerations. Use Table 1 as a guide for wire gauge sizing.

Determine the appropriate Wye or Delta configuration for the specific motor application. **NOTE: Wye and Delta have different ratings. Make sure the Soft Start is sized correctly before changing configuration from what is on supplied drawings.**

1) Connect the motor leads to the Soft Start as shown in the Soft Start Manual. Refer to provided drawings.
2) Connect the motor ground to the soft start plate or DIN rail ground terminal.
3) Wire the valve solenoids to the Machine Room Din Rail terminals: **UPH** (up high speed valve), **UPL** (up leveling speed valve), **DNH** (down high speed valve), and **DNL** (down leveling speed valve). Refer to provided drawings for connections.

Make sure main disconnect breaker is turned off when attaching main line **L1** and **L2**. Also verify that all green push button breakers are in the up position (OFF). Do this for all 120vac, 240vac and 24vdc breakers.

After installing main power, turn on the main breaker first and then measure inputs on each auxiliary breaker for proper voltages before turning them on.



RUNNING ON CONSTRUCTION OVERVIEW

Construction Mode allows the car to run in the hoistway so that the hoistway switches, tape and magnets, and other items can be installed before all safety items are installed. **Since all safety items are bypassed in this mode care should be taken when operating the car.**

Your job prints should have a box labeled "Construction" that shows the wiring required to run in Construction mode. You basically need to wire a temporary run box with up and down buttons to the machine room controller and jump out a few safety inputs. You do not need to have the Car SRU board or anything wired to run the car in Construction mode.

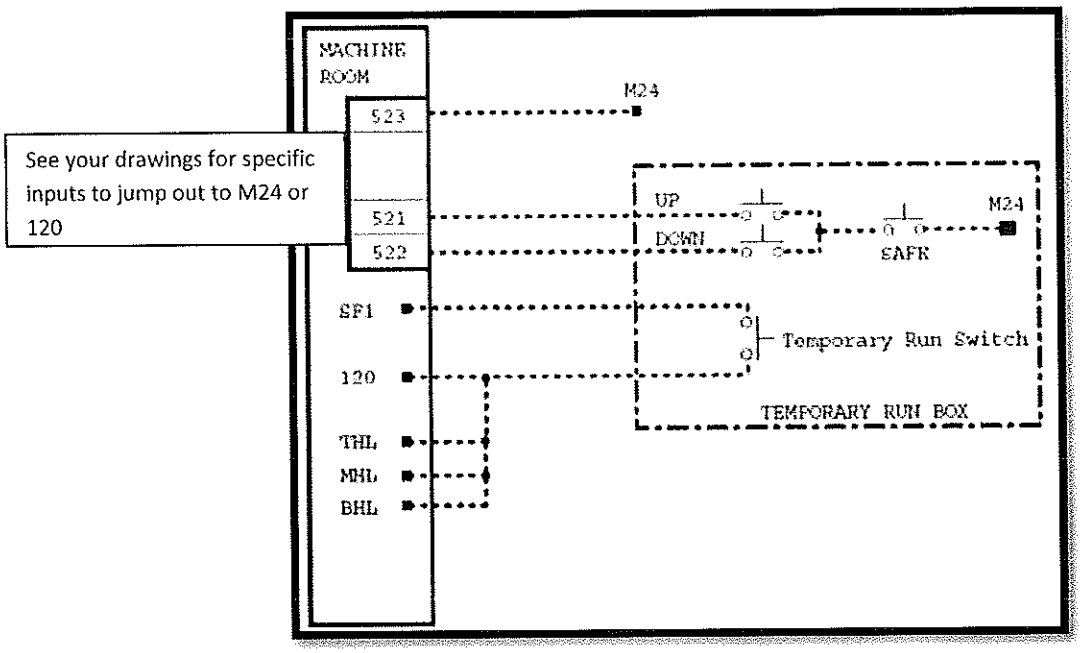
TEMPORARY JUMPERS TO INSTALL

As Construction mode is designed for use before most of the safety circuits have been installed, there are several safety inputs that must be manually bypassed using jumpers. Each jumper should be removed as soon as the safety circuit that it is bypassing is installed.

You will need to jump out the hall door lock inputs. This is typically done by jumping the **120** power bus to the individual hall lock DIN rail terminals (**THL**, **MHL**, and **BHL**). See your job prints to verify how your locks should be jumped out.

Also, you will need to jump the Construction input of the Machine Room SRU board to the **M24** power bus. The Construction input is terminal **523** of the Machine Room SRU board but check your job prints to verify this.

WIRING THE TEMPORARY RUN BOX



The Temporary Run Box is a control box with Up, Down, and Safe pushbuttons. There is also a Run/Stop switch to cut power in the event of an emergency. It is usually a handheld unit but is functionally similar to the cartop inspection station which will be installed later.

Your drawings will show how to wire the Temporary Run Box. In general, your Run/Stop switch will power the safety string input connecting the **120** and **SF1** terminals. This allows you to stop the car in case of an emergency. The Safe pushbutton provides 24 VDC (**M24**) power to the commons of the Up and Down push buttons which allow you to move the car as you would on Inspection. When the Safe and Up buttons are both pressed, 24vdc should be present on SRU terminal **521** and the car will run up. Likewise when Safe and Down are both pressed, 24 VDC should be present on **522** and the car should move down. Releasing either button cuts power to the terminal and stops the car.

Be sure the Machine Room Inspection switch is set to "Inspect".

Note: SRU terminals 521 and 522 will normally be factory wired to the machine room inspection controls. Remove these wires while the Temporary Run Box is connected to prevent the machine room controls from moving the car. Replace them when the Temporary Run Box is removed.

It is very important to verify that the Run/Stop switch connected to **SF1** cuts power to that terminal. This is your only safety device while running in Construction mode so be sure it is functional before attempting to run the car.

Verify that the when on the Home Screen, the SRU LCD displays "Construction" mode. If it shows "Inspection" or "Unknown", you may not have power on input **523**.

WIRING CONSTRUCTION MODE

1) For the following wiring connections on the machine room controller refer to the jobs provided drawings for a visual representation of connections.

    a. On the din rail, install a jumper from the **120** terminal to the **THL**, **MHL**, and **BHL** terminals. This will jump out the Hall Door Locks until the Hall Locks are wired permanently later on in this procedure.

    b. Install a jumper from **M24** (Machine Room 24vdc supply) on the din rail to Construction Mode Input (**523**) on the Machine Room board.

    c. Make sure the SRU board DIP Switch number 2 (Dip A) is in the ON position. This will bypass Inspection over-speed as you may not have installed the landing system and the cartop controller box.

    d. Wire the Temporary Run Bug Inspection Up / Down switch by running the following wires:

        i. Run one wire from the Machine Room board Inputs **521** (up) and **522** (down) to the appropriate normally open (NO) Temporary Switch positions.

        ii. Wire the common power to this switch (24vdc) by running a wire *from* Machine Room terminal **M24** to the *common side of this switch*.

    NOTE: These are temporary wirings only. This switch will be removed when the Cartop box is mounted and wired.

2) After wiring the temporary Run Bug stop switch between the **120** and **SF1** terminal blocks on the Machine Room Din rail, place this switch in the closed position.

3) Toggle the Inspection/Normal switch provided on the Machine Room panel to "Inspection".

4) Verify the Smartrise Machine Room board LCD is not showing an active fault and displays Construction mode.

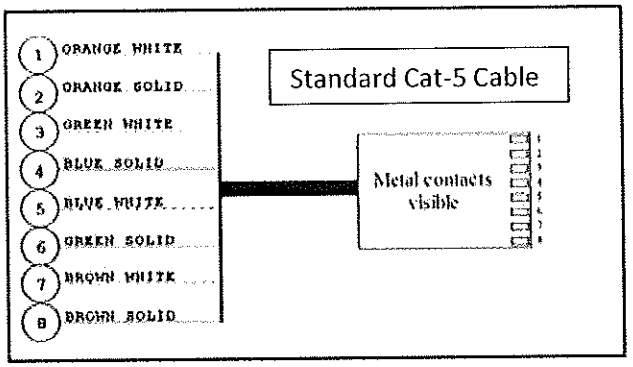
    a. If a fault is displayed, please refer to Appendix A for troubleshooting.

5) On the machine room controller go to **MAIN MENU | SETUP | MISC | BYPASS TERM LIMITS**, change this parameter to "YES" and save it. This function bypasses the ETS limit switches (UETS and DETS that are not yet installed) and the directional limits - which are derived from the edge of the door zone magnets (not yet installed) at the terminal landings. This only applies to Construction and Inspection Modes.

MAKING CAT5 CABLES

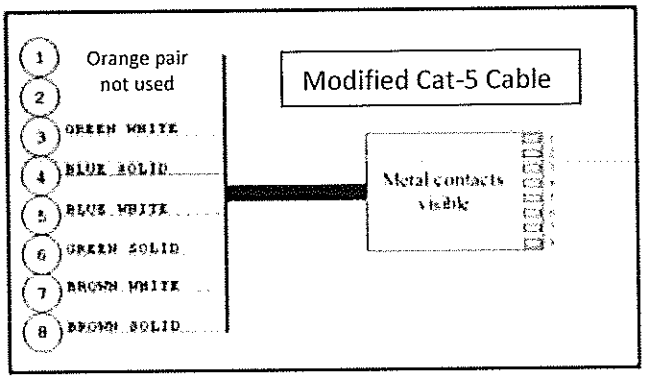
Standard

The standard Cat5 cables are used for most of the connections. It is used to connect the Hall and Lantern networks toe the MR or Group SRU, the Selector to the IP8300 breakout board and the Inspection station to the inspection breakout board at the Cartop or COP station. You can make your own using this diagram.



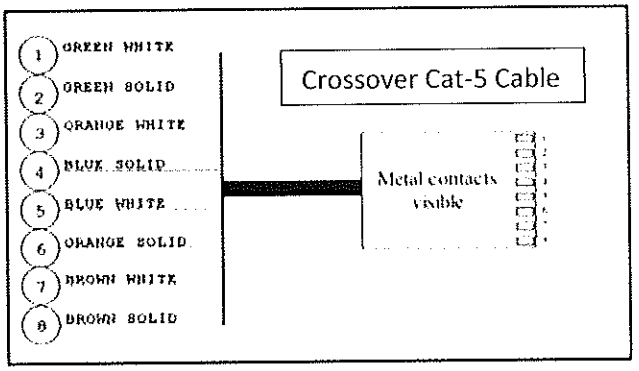
Modified

The modified Cat5 cable connects the CT SRU board to the COP SRU in a three board system. This cable has been modified by SM but cutting the Orange pair. You can make your own using this diagram.



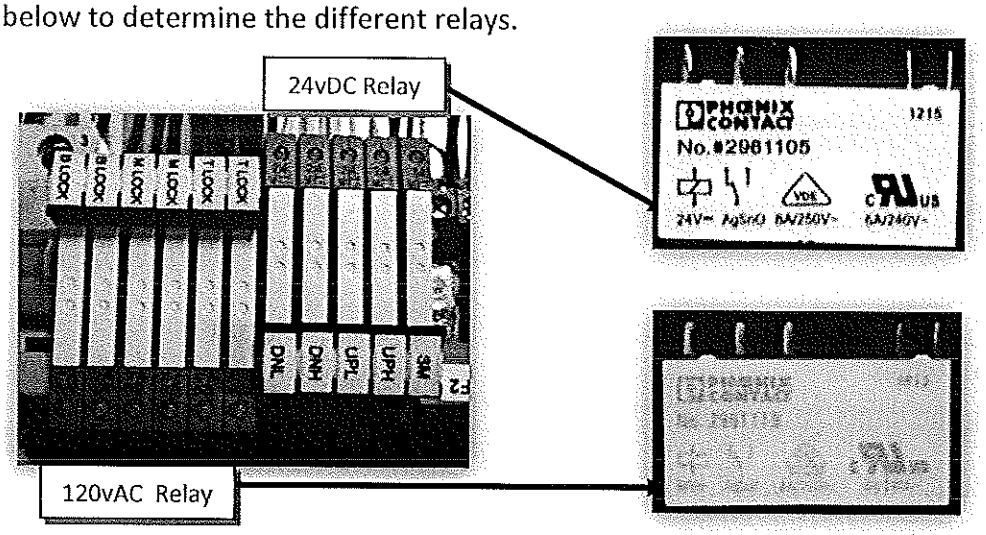
Crossover

The crossover Cat5 cable is only used when connecting one COP SRU board to a 2nd "Expansion" COP SRU board. You can make your own using this diagram. This cable has two pairs cross over from one plug to the other. One side will have the standard T-568B wiring and the other will have the Orange/Green pairs swapped like the following drawing shows.

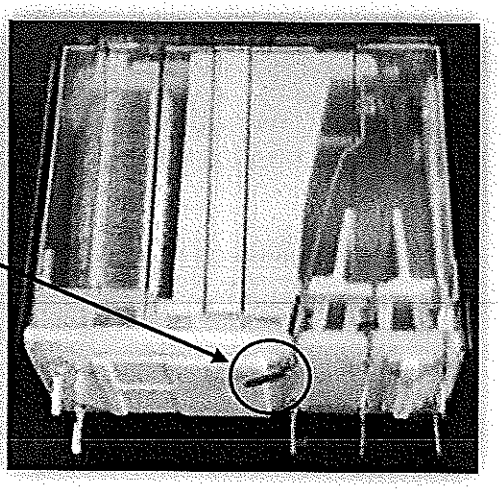


REPLACING RELAYS

1. If replacing relays make sure that the new relay you're installing is the same voltage as the old one. Smartrise uses 120vac and 24vdc relays that look similar. See the photos below to determine the different relays.

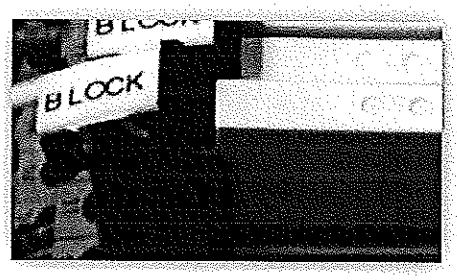


2. If a relay appears to activate (light comes on / contacts audibly close) but no output is detected then there might be a bent pin preventing circuit completion. Remove the relay and check for bent / missing pins.

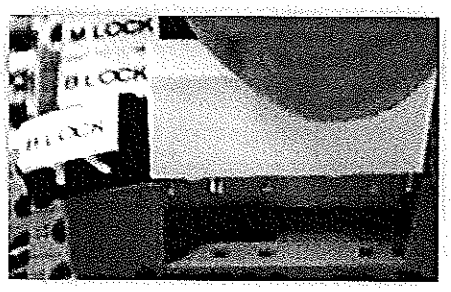


Slimline Relays

1. To replace a slimline relay push out on the black tab that contains the label.



2. Pull up on the white relay.



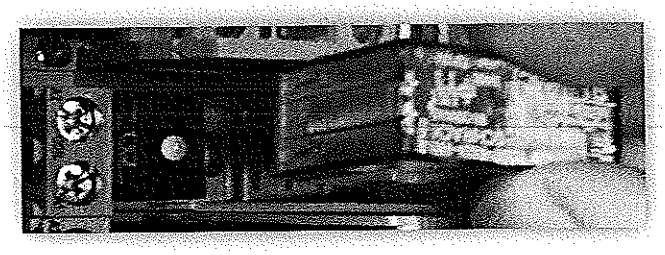
3. Install the relay the same way making sure you don't bend any pins when inserting it into the base. Pushing down on the relay will snap the black tab back into the locking position.

Force Guided Relays

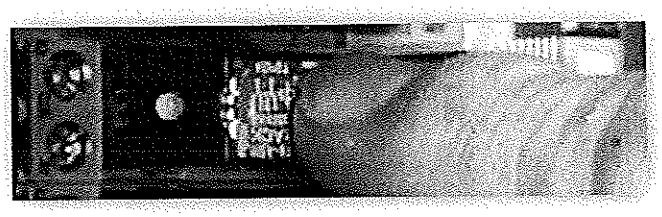
Replacing the larger Force Guided Relays (SF1, SF2, etc.) is similar to the slimline.

1. First, push the tab away from the relay.

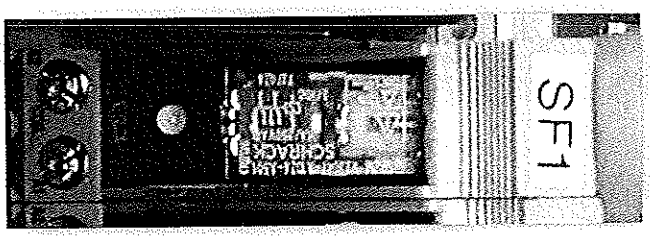
2. Next, pull up on relay to remove it from the base.



3. Replace relay making sure all 8 pins are straight before placing it into base.



4. Push locking tab back into position.



NOTES:

HYDRAULIC SYSTEMS

INITIAL WIRING

After mounting the Smartrise controller in an appropriate area, make sure power is not applied to any main lines per General Installation section.

Make sure the the Controller ground is connected properly. Use the Soft Start sub-plate as well as the factory provided grounding terminal on the DIN Rail to make the connection to Earth ground.

SOFT START SETUP

1) Apply Main Line Power.
    a. The LCD on the Smartrise board should come on.
    b. Verify the Soft Start is not showing a fault.
2) SIEMENS Soft Start setup:
    a. If the Soft Start is a Siemens, it will display "Fault" on the LCD. If the Soft Start displays a fault, refer to the provided Siemens manual for troubleshooting.
    b. If the initial fault is for an "out of line rotation" condition, remedy this by swapping motor wires (**T1** and **T3** with power off) or change the "line rotation" (ABC to CBA or vice versa) found in the Parameter Menu of the Soft Start.
    c. Proceed to step 4
3) SPRECHER + SCHUH Soft Start setup:
    a. Verify the motor line or delta configuration and ensure that DIP switch 15 on the Soft Starter reflects this configuration.
    b. If the Soft Start faults out upon initial up run command, check for a red-blinking LED on the Soft Start and count the number of times it illuminates sequentially before a brief pause.
    c. The most likely cause is a line rotation issue which can be resolved by switching **T1** & **T3** motor leads or change DIP switch 9 on the soft starter to its alternate position (refer to soft start manual for dip switch location).
    d. After changing the position of this switch, press the Reset Button adjacent to the DIP switch group.
    e. If problems persist, refer to the manual for all faults associated with the light.
4) If the pump is too noisy or the motor is running in the wrong direction, it can usually be fixed by swapping any two main lines.
5) If the car doesn't move verify that the valve relays are turning on when a direction is given (i.e. **UPL** and **SM** for Up direction, **DNL** for Down direction). If they are then check the wiring and voltages to the valves. Also check to see if valves need adjusting.
6) At this point the car should be able to run using Construction Mode. Use this mode while installing the traveler, tape, and the permanent safety string.

7) If you're still experiencing problems with Construction Mode setup then use the following checklist to verify wiring and setup.

HYDRAULIC CONSTRUCTION MODE CHECKLIST

- ☐ Clear all faults on controller and Soft Start
- ☐ Verify incoming power to controller and Soft Start
- ☐ Make sure "Bypass Term Limits" is set to "Yes"
- ☐ Turn Inspection Switch to "Inspection"
- ☐ **For 120vac valves:** Install jumper from **120** terminal to **SF1** terminal
- ☐ **For 240vac valves:** Install jumper from **240** terminal to **SF1** terminal
- ☐ Install jumper from **120** terminal to **TL**, **ML** & **BL** terminals
- ☐ Install jumper from **M24** to **Input 523** (Construction)
- ☐ Wire UP HIGH valve to **UPH** terminal on Din Rail
- ☐ Wire UP LOW valve to **UPL** terminal on Din Rail
- ☐ Wire DOWN HIGH valve to **DNH** terminal on Din Rail
- ☐ Wire DOWN LOW valve to **DNL** terminal on Din Rail

AC TRACTION SYSTEMS

AC MAGNETEK DRIVE SETUP

Refer to the provided drawings when attaching wiring to the Magnetek drive. The picture below shows general wiring connections to the drive.

1). Make sure your drive is configured for the correct mode you're operating in (Open Loop or Closed Loop).

2). If your car is moving very slowly (approx. < 5fpm), make sure that the encoder wires A and A/ are on the correct terminals. See the Magnetek manual for terminal block location.

3). **Never** connect main AC power to the drives output terminals: U, V, and W.

4). Verify that the input voltage matches the drive's rating.

5). Verify that the motor's wiring is correct for the application voltage and amperage.

6). Check that all control and signal wire terminations are also tight as they sometimes can come loose during the shipping process.

7). Make sure that the mainline **L1**, **L2** and **L3** connect to the **R**, **S** and **T** terminals on the drive and that the motor leads are connected to **T1**, **T2** and **T3**.

MAGNETEK ENCODER SETUP

All Smartrise Controllers and Drives are tested and configured for "CLOSED" loop operation using a 1024 PPR encoder. All HPV- 900 series (except series 2) drives require an encoder; however, HPV- 600 Series drives can be operated in the "OPEN" loop (no encoder present) or "CLOSED" loop mode (encoder present).

Refer to ADDENDUM I for Encoder tables that show a list of wiring color code connections.

1) For Closed Loop Set Up proceed to step 2. For Open Loop Set Up proceed to step 3.

2) Closed Loop Set Up:

   a. Locate the encoder pin-out sheet that identifies which colors correspond to the A / A-, B / B-, ground (V-) and power (V+) signals.

   b. Install, run and wire the encoder and the encoder Cable as specified in the Magnetek Manual.

   c. Identify the PPR rating of the encoder. This information should be included with the encoder. However, if it is not look at the encoder part number. The numbers "1024" or "2048" should be visible within the part number itself. If a question still exists contact Smartrise for assistance.

   d. Apply External Power

   e. The LCD on the Smartrise board and the Magnetek Drive should come on

   f. If the LCD on the Magnetek Key Pad fails to come on simply remove and reseat the Key Pad. The Key Pad should come on at this point.

   g. Toggle the Inspection/Normal switch to the "INSP" position

   h. On the Magnetek Key Pad press the Right Arrow key until "Adjust A0" appears

   i. Press the Down Arrow Key until "Drive A1" appears and press the Enter Key

   j. Press the Down Arrow Key until "Encoder Pulses" is displayed

   k. Press the Enter Key to change the setting as required by the encoder PPR specification.

   l. Use the key pad to change the encoder PPR setting and press Enter to save this parameter in the Magnetek Drive. Proceed to Step 4.

3) Open Loop Set Up (No Encoder) for HPV 600 Drives or HPV900 Series 2 ONLY:

   a. Apply external power

   b. The LCD on the Smartrise board and the Magnetek Drive should come on

   c. If the LCD on the Magnetek Key Pad fails to come on simply remove and reseat the Key Pad. The Key Pad should come on at this point.

   d. Toggle the Inspection/Normal switch to the "INSP" position.

   e. On the Magnetek Drive Key Pad press the Right Arrow Key until the "Utility U0" menu is displayed.

   f. Press the Down Arrow Key until the Screen displays "U9 Basics".

   g. Press the Enter Key. This displays the current mode of operation.

h. Press the Enter Key followed by the Down Arrow Key until "Open Loop" is displayed.

i. Press the Enter Key to save this setting.

j. The Drive will ask that the Enter Key be pressed once more for confirmation.

k. The Drive will now transition from Closed Loop to Open Loop. An audible relay may be heard when the drive transitions between modes. Proceed to step 4.

l. With power applied verify the Magnetek motor parameters in the Motor A5 menu correspond to the current motor application. Do this by:

m. Pressing the Right Arrow Key on the Magnetek Key Pad until "Adjust A0" is displayed

n. Press the Down Arrow Key until "Motor A5" is Displayed.

o. Press the Enter Key followed by the Down Arrow Key to check the following parameters correspond to the data on the motor name plate.

4) The following is a list of important Open and Closed Loop Parameters for A5.

a. Motor ID: Typically 6 pole Default unless the motor rating exceeds 1500 RPM. In Open Loop select the appropriate 6 or 4 pole voltage in this parameter

b. Rated Motor Power: The Horse Power "HP" rating of the motor.

c. Rated Motor Volts: Typically the same as Line Voltage

d. Rated Excitation Frequency: Typically 60 Hz

e. Rated Motor Current: The rated Amps the motor will draw at speed

f. Motor Poles:

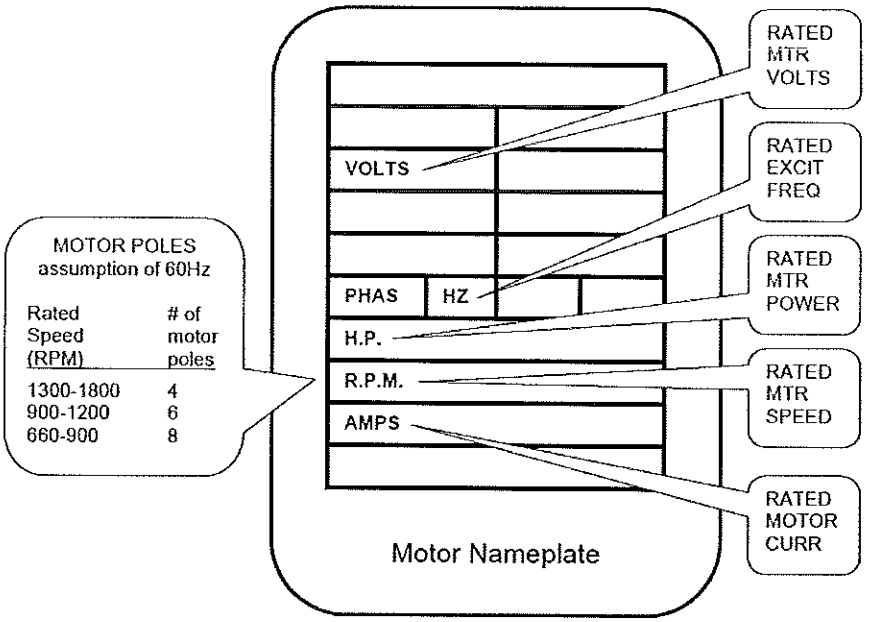
i. 4 Poles for a 1500 to 1800 RPM motor

ii. 6 Poles for a 1000 to 1200 RPM motor

iii. 8 Poles for a 750 to 900 RPM motor

iv. 10 Poles for a 600 to 700 RPM motor

g. Rated Motor Speed: set to 3 percent (3%) less than Rated motor RPM. Depending on the RPM rating of the motor see Set up Fault 1 in the Magnetek Manual for an algorithm. There is an acceptable range for this parameter which corresponds to permissible motor slip.



description	*parameter*	*4 pole dflt*	*6 pole dflt*
percentage no load current	% NO LOAD CURR	35.0 %	45.0 %
stator leakage reactance	STATOR LEAKAGE X	9.0 %	7.5 %
rotor leakage reactance	ROTOR LEAKAGE X	9.0 %	7.5 %
stator resistance	STATOR RESIST	1.5 %	1.5 %
motor loss - motor iron loss	MOTOR IRON LOSS	0.5 %	0.5 %
motor loss - motor mechanical loss	MOTOR MECH LOSS	1.0 %	1.0 %
flux curve - flux saturation break point	FLUX SAT BREAK	75 %	75 %
flux curve - flux saturation slope #1	FLUX SAT SLOPE 1	0 %	0 %
flux curve - flux saturation slope #2	FLUX SAT SLOPE 2	50 %	50 %

5) On the Smartrise Machine Room board:

   a. Go to **MAIN MENU | SETUP | MISC | BYPASS TERM LIMITS** under the LCD menu, and ensure that this parameter is set it to **"YES"**. This function bypasses the ETS limit switches (UETS and DETS, not yet wired) and the directional limits - which are derived from the edge of the door zone magnets at the terminal landings (DZ magnets not yet installed). This only applies to Construction and Inspection Modes.

   b. Verify the Smartrise Machine Room board LCD is not showing an active fault, as indicated by a flashing Red LED, and that it displays Construction Mode. If an active fault is displayed the controller will not command the car. Please refer to Appendix B for troubleshooting.

6) Close the Run Bug Stop Switch

7) Command the Car to move.

8) Ensure the brake is picking/holding after a valid run command is given. Also, ensure the brake is dropping once the command is removed.

9) Verify the timing and operation of the brake to ensure to motor is not running through the brake prior to it picking.

10) Adjustments can be made to the Brake Pick timing by going to **MAIN MENU | SETUP | TIMERS**

   a. Brake Pick Delay: The amount of time for the brake to lift before a non zero speed

is given

b. Brake Hold Time: The duration time between Brake Pick and Brake Hold

c. Brake Drop Delay: The amount of time the Brake will remain lifted after the car is given a zero speed command.

11) If the brake is inoperative make sure that it is wired correctly and then check the following:

a. Check for DC voltage between points K1 and K2 on the Machine Room DIN Rail.

b. Verify this voltage is also at the Brake Coil when commanded to pick.

c. Ensure this voltage corresponds to the voltage the Brake Coil is rated for.

12) If problems persist contact Smartrise for assistance.

13) If using Closed Loop the motor may respond sluggishly by moving at a very slow rate while the drive indicates Torque Limit. If this occurs remove line power and swap the encoder A and A- wires.

14) Reapply Line power and command the car to move. The car should now move at the programmed Inspection Speed.

15) If the Motor is running in a reverse direction from what is commanded perform the following.

a. On the Magnetek Key Pad press the Right Arrow Key until "Configure C0" is displayed.

b. Press the Down Arrow Key until "User Switches C1" is displayed.

c. Press Enter and press the Down Arrow Key Until "Motor Rotation" is displayed. The displays the current setting in either Forward or Reverse.

d. Press the Enter Key followed by the Up Arrow Key to change the setting from Forward to Reverse or vice versa.

e. Press the Enter Key to save this Parameter

16) Command the Car in both directions to ensure the car moves in the appropriate direction.

17) Open the TEMPORARY *car top stop switch* and verify that the car does not run. The controller should issue a contactor not closed fault which indicates the safety string is open.

18) Close the TEMPORARY *car top stop switch* and proceed with set up.

19) At this point you should be able to run the car using Construction Mode. Use this mode to run the traveler, install the tape, hall locks and the permanent safety string.

ADAPTIVE TUNE – MAGNETEK DRIVE

The Adaptive tune procedure is specified in the Magnetek manual for Closed Loop applications. If an encoder is not present on an application this procedure may be disregarded. The Adaptive tune procedure is designed to adjust the drive given load considerations. Performing an Adaptive Tune will ensure problems will not be encountered when trying to lift full load. The first step of the Adaptive Tune requires a BALANCED LOAD and that the car be ran at 70% of contract speed.

1) Put a Balanced Load in the car

2) Go to **MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | S(c) | S(c) MIN RUN DIST** and set the highest utilized speed value (S3 by default) value to a minimal value such as 5 feet.

a. S(c) Min Run Dist –	Original Value:_____

3) Go to **MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | S(c) | S(c) SPEED** and set the highest utilized speed value (S3 by Default) to 70% of Contract Speed.

a. S(c) Speed –	Original Value:_____

4) Enter Car Calls and verify the Car is traveling at the 70% requirement.

Follow the procedures specified in the Magnetek Manual for the remaining test procedures.

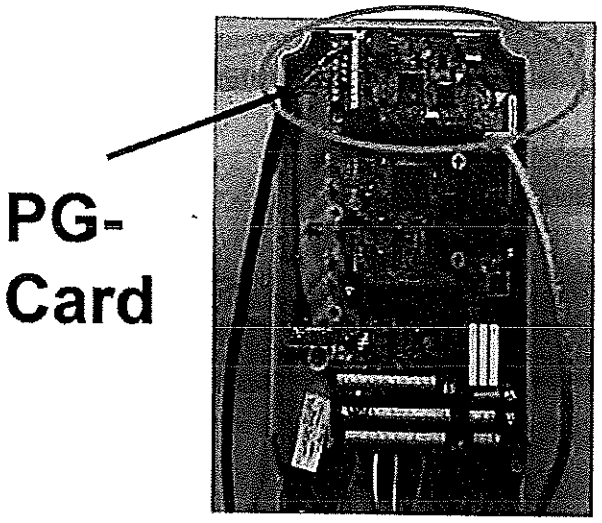
Note: For 100% testing restore the S(c) speed value changed in step 4.

YASKAWA DRIVE SETUP

1) Refer to the provided drawings when attaching wiring to the Yaskawa drive. Also refer to the Yaskawa manual "Mechanical Installation in Chapter 2".
2) Verify that the input voltage matches the drive's rating and that the the motor's wiring is correct for the application voltage and amperage.
3) Tighten all of the three-phase power and ground connections. Check that all control and signal terminations are also tight as they sometimes come loose during the shipment process.
4) Make sure that the mainline is connected to **R**/L1, **S**/L2 and **T**/L3 on the drive and that the motor leads are connected to **U**/T1, **V**/T2 and **W**/T3. **Never** connect main AC power to terminals **U, V & W.**
5) Check motor rotation direction. If motor is going in opposite direction than what's commanded check the Yaskawa parameter (B1-14) and change it from "0" to "1" or "1" to "0" depending on existing value.
6) Make sure your drive is configured for the correct mode you're operating in (A1-02):
   a. Open Loop (A1-02 = 2)
   b. Closed Loop for Induction (A1-02 = 3)
   c. Closed Loop for PM (A1-02 = 7)
7) If Closed Loop connection is selected install the encoder using the instructions in the Yaskawa manual or as listed on next page. Refer to parameter F1-xx for encoder information in the drive.
8) If your car is moving very slowly (approx. < 5fpm), make sure that the encoder wires A and A/ are on the correct terminals. See the Yaskawa manual for terminal block location. If you have a PG Encoder card installed refer to the PG Encoder section on next page.
9) On the Smartrise controller verify the following parameters in **MAIN MENU | DEBUG | ADJUST PARAMETERS:**
   a. 00-020 = xFD
   b. 13-000 = x05
   c. 13-001 = x06
   d. 13-002 = x07
10) Perform the autotune function that matches your motor type (i.e. Induction, PM, etc.).
11) If the drive displays an "**Hbb Safe Disable Circuit Fault Signal**" alarm this is normal when the drive is sitting at a standstill. This alarm does not effect operation nor cause the Smartrise controller to fault.
12) The table on the next page contains a partial list of encoders and the wiring data for installation:

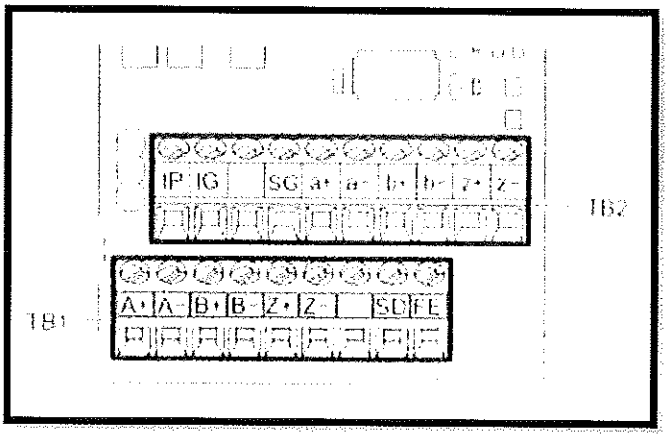
PG ENCODER CARD

1) If the Yaskawa is supplied with a PG encoder card you will need to remove the drives upper cover to access the terminals. Refer to the Yaskawa manual for the instructions how to remove the covers on the drive.



Please note:
For the PG option, use CN5-C port only.

2) Your encoder will wire directly to the PG encoder board on the Yaskawa drive.
Refer to ADDENDUM I for Encoder tables that show a list of wiring color code connections.
3) The terminals on the PG Encoder card are arranged like this:



YASKAWA STATIONARY AUTOTUNE FOR INDUCTION

1. At the main menu select Auto Tuning
2. At T1-01 enter a value of "1"
3. Continue to enter the values obtained from the Motor Nameplate for T1-02 through T1-09 as shown in the following table. Record your values in this table for future reference.

Parameter	Value	Meaning
T1-01	1	Selects Stationary Auto-Tune for Induction Motors
T1-02		Rated Motor Power (KW) = [HP * .74]
T1-03		Rated Motor Volts (VAC)
T1-04		Rated Motor Current (AMP)
T1-05		Rated Motor Frequency (HZ)
T1-06		Motor Poles (see RPM table)
T1-07		Rated Motor Speed (RPM)
T1-08		Encoder Pulses (PPR)
T1-09		No Load Motor Current (percentage) (Use a value of FLA * .45)

RPM Range	# Poles
	12
XXX-900	8
901-1200	6
1201 +	4

4. After the last value is entered the message '**Tuning Ready**' will be displayed. The mechanic must manually depress and hold in the M contactor. If the E-brake is installed and wired up you have to manually press and hold the B contactor to pick the E-brake along with the M contactor.
5. Press RUN on the drive while continuing to hold in the M contactor.
6. After a minute or two the drive will display either 'Success' or an error message.
7. Release the M contactor.
8. If 'Success' then the tune is complete. Otherwise, troubleshoot based on the error message received. Use the Yaskawa manual for troubleshooting reference.

YASKAWA STATIONARY AUTOTUNE FOR PM

A. *** **STEP 1 - T2-01 = 1** *** **Motor Tuning** (takes about 3 minutes)

1. At the main menu select Auto Tuning
2. At T2-01 and enter a value of 1
3. Continue to enter the values obtained from the Motor Nameplate for T1-02 through T1-09 as shown in the following table. Record your values in this table for future reference.

Parameter	Value	Meaning
T2-01	1	Selects Stationary Auto-Tune for PM Motor
T2-04		Rated Motor Power (KW) = [HP * .74]
T2-05		Rated Motor Volts (VAC)
T2-06		Rated Motor Current (AMP)
T2-08		Motor Poles (see RPM table)
T2-09		Rated Motor Speed (RPM)
T2-16		Encoder Pulses (PPR)

RPM Range	# Poles
	12
XXX-900	8
901-1200	6
1201 +	4

4. After the last value is entered the message **'Tuning Ready'** will be displayed. The mechanic must now manually depress and hold in the M contactor. If the E-brake is installed and wired up you have to manually press and hold the B contactor to pick the E-brake along with the M contactor.
5. Press RUN on the drive while continuing to hold in the M contactor.
6. After a minute or two the drive will display either 'Success' or an error message.
7. Release the M contactor.
8. If 'Success' then the tune is complete. Otherwise, troubleshoot based on the error message received.

B. *** **STEP 2 - T2-01 = 3** ***

1. 1st Phase of Encoder Tuning (takes about 1 minute)
2. Press and hold the M Contactor In.
3. Press RUN.

C. *** **STEP 3 - T2-01 = 4** ***

1. 2nd Phase of Encoder Tuning (takes about 1 minute)
2. Press and hold the M Contactor In.
3. Press RUN.

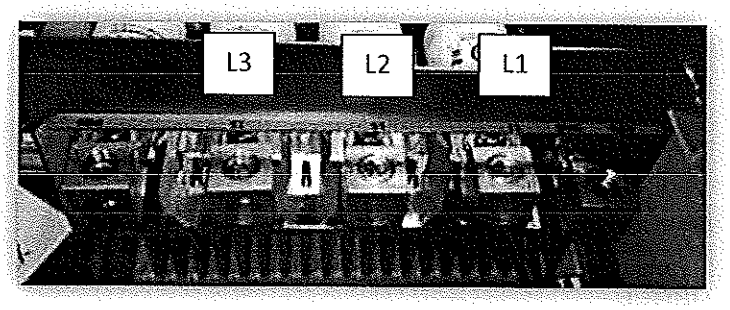
YASKAWA SPEED ADJUSTMENT (CMD = FPM)

1. This procedure is to adjust the Yaskawa drive so that the CMD speed and the FPM on the Smartrise controller are the same.
    a. Make sure your proper sheave diameter is saved in parameter o1-20 on the Yaskawa drive.
    b. Navigate to parameter o1-22 (Gear Ratio) on the Yaskawa drive.
    c. Adjust this value up/down until the FPM matches the CMD speed.
        i. FPM < CMD – Raise o1-22
        ii. FPM > CMD – Lower o1-22

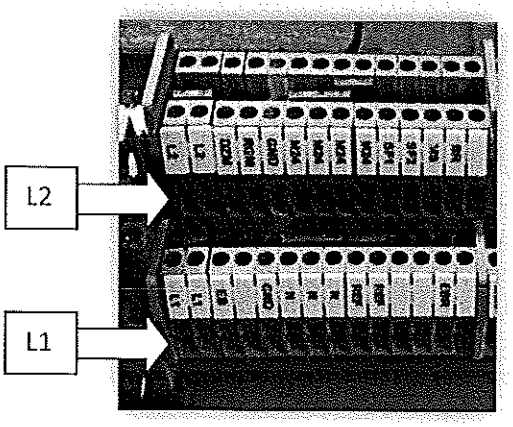
MAGNETEK DSD412 SETUP

Refer to the recommended connections shown in the connection diagrams. Attach a voltmeter across the 115vac source for the control power supply at A4TB3-1 & A4TB3-7.

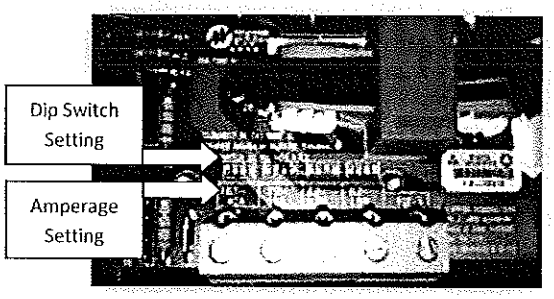
1. Attach L1, L2 & L3 to the cooresponding terminals on the drive.

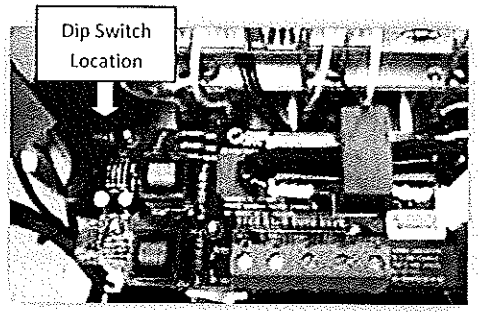


2. Attach wires from the L1 & L2 terminals to the L1 & L2 terminal block on the din rail.

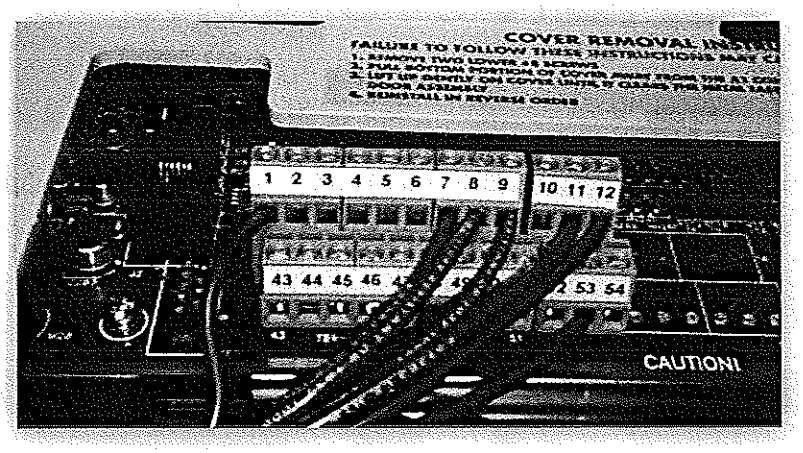


3. Connect the armature wiring to the terminal block according to the amperage rating listed on the motor. Make sure to set the dipswitch to the value that matches the amperage rating.





4. Connect the encoder to TB1 using the settings provided in the manual.



5. Apply the control and three-phase power and verify that the control power is between 103vac and 126vac. Then press the RESET push button on the front of the power cube, and observe the drive power-up sequence as described below.

DRIVE POWER-UP SEQUENCE

The power up sequence can be observed by monitoring the Standard Control/Display Unit (SCDU) on the front of the power cube.

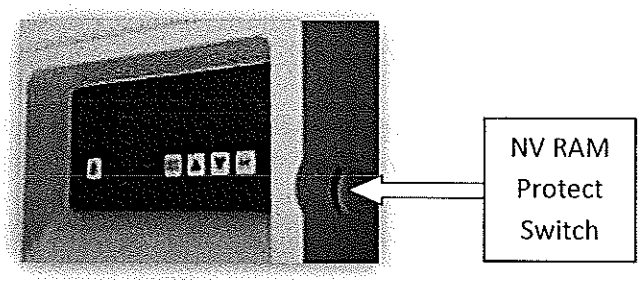
First, all of the segments on the digital LED display and all of the LEDs will light for about 1 second.
Then the LEDs and display should extinguish. The drive will perform internal checks. The SCDU will display 'tESt' while a self-test is being performed.
If the drive passes the self-test, then the SCDU will display 'P-UP'. READY LED will light.

ABNORMAL DISPLAY CONDITIONS

Displays other than those mentioned above may occur. The following is a list of abnormal display conditions that may occur, and the actions necessary to correct the situation:

1) If no digits or LEDs light up, then check for proper voltage between the 115vac control power lines, or for blown 115vac control power fuses, or for a defective Control Voltage Power Supply in the power cube.
2) If horizontal segment(s) of the SCDU display are lit, then one or more phases of the three-phase power are missing. Measure and verify three phase power input at the drive terminals. Check the three-phase power fuses.
3) If the FAULT LED lights, and a fault code appears on the SCDU, then refer to the Fault/Error Codes List to see what caused the fault and to find the correct solution. A fault code is the letter 'F' followed by a number representing the fault. See section describing standard control/display unit operation for more detailed information about fault reporting and clearing on page 25.

If the SCDU displays 'Prot', then the initial checks found that the protected non-volatile RAM (NVRAM) has not been initialized. Move the NV RAM PROTECTION switch to "OFF" in order to allow the microprocessor to initialize the NVRAM with preprogrammed default values. Notice that the NV RAM UNPROTECTED LED is now lit to indicate the NV RAM PROTECTION switch position. Next, press the RESET push button. The drive will go through its power up sequence again; however, this time it will initialize the unprotected NVRAM and load in factory supplied default parameter values.



FAN CHECK

1) On drives with a blower motor (power bridge fan), verify that the fans are working.

VERIFY PARAMETERS

When the READY LED on the SCDU is lit, all the selectable parameter data should be checked and/or verified to the proper values as follows:

1) VERIFY OR CHANGE EACH PARAMETER VALUE for the particular application and motor involved.
2) STORE PARAMETERS, Function # 994, so that power can be removed and reapplied without losing the entered parameters.
3) Set the NV RAM PROTECT switch to the protect position (UN PROT NV RAM light is off) to ensure that set up data cannot be corrupted.
4) Operate drive, using external control signal inputs shown on the Interconnection Diagram.

Verify the following parameters in the Magnetek DSD412 are set correct:

Parameter	Description	Recommended Value	Additional Information
2	Use Self Tune Logic	On	This parameter cannot be set to yes until performing the self tune.
3	Rated Armature Current	Motor Name Plate	
7	Rated Armature Voltage	Motor Name Plate	

Parameter	Description	Recommended Value	Additional Information
9	Nominal AC Voltage	Drive Supply Voltage	This is the voltage coming into the drive. Not necessarily the line voltage if a step-up or step-down transformer is being used.
10	Encoder PPR	Per Encoder	
11	Motor RPM	Motor Name Plate	
17	Rated Car Speed	Per Job Specification	
49	Weak Field Current	Motor Name Plate	If this value is greater than the Rated Field Current, then the field will never weaken.
50	Rated Field Current	Motor Name Plate	The drive must be configured for the correct field current range. See page 28 in the Magnetek manual for dip switch settings.
52	Rated Field Voltage	Motor Name Plate	
53	Standby Field Current	25%	
115	Run-Up/Run-Down Sel	On	Must be On for compatibility with Smartrise controller.
150	Binary Speed Select	On	Must be On for compatibility with Smartrise controller.
151	Speed 1 Reference	10	Smartrise Speed: Leveling
152	Speed 2 Reference	Per Job	Smartrise Speed: S1
153	Speed 3 Reference	50	Smartrise Speed: Inspection
154	Speed 4 Reference	Per Job	Smartrise Speed: S3
155	Speed 5 Reference	Per Job	Smartrise Speed :S2
156	Speed 6 Reference	Per Job	Smartrise Speed :S4
157	Speed 7 Reference	Per Job	Smartrise Speed: S5
170	Acceleration #1 Time	5.00	
172	Deceleration #1 Time	5.00	
174	Acceleration #1 %S Time	25.00	
176	Declaration #1 %S Time	25.00	

MAGNETEK DSD412 DRIVE SELF TUNE PROCEDURE

1. Place a jumper from 120 on the DIN rail to 11 on the LPR Relay.
2. Put the NVRAM Protected Switch in the 'Not Protected' position.
3. Perform PCU DIAGNOSTICS Function 998 to verify armature and field circuitry.
4. Perform SELF-TUNE PARAMETER TEST Function # 997. The drive should display PASS after a few seconds. Set Parameter #2 to 'Yes'.
5. Remove the jumper and perform Function #994 to permanently save the changed

values.

6. Go to **MAIN MENU | SETUP | MISC | BYPASS TERM LIMITS** under the LCD menu, and ensure that this parameter is set to **YES**. If not, change it and SAVE it by using the buttons below the LCD. This function bypasses the ETS limit switches (UETS and DETS, not yet wired) and the directional limits - which are derived from the edge of the door zone magnets at the terminal landings (door zone magnets not yet installed). This only applies to Construction and Inspection Modes.
7. Verify the Smartrise Machine Room board LCD is not showing an active fault, as indicated by a flashing Red LED, and Displays Construction Mode. If an active fault is displayed the controller will not command the car. Please refer to Appendix B for troubleshooting.
8. Close the Run Bug Stop Switch
9. Command the Car to move.
10. Ensure the brake is picking/holding after a valid run command is given. Also, ensure the brake is dropping once the command is removed.
11. Verify the timing and operation of the brake to ensure to motor is not running through the brake prior to it picking.
    a. Adjustments can be made to the Brake Pick timing by going to:
        i. **MAIN MENU | SETUP | TIMERS**
        ii. Brake Pick Delay: The amount of time for the brake to lift before a non zero speed is given
        iii. Brake Hold Time: The duration time between Brake Pick and Brake Hold
        iv. Brake Drop Delay: The amount of time the Brake will remain lifted after the car is given a zero speed command.
    b. If the brake is inoperative check the following:
    c. Check for DC voltage between points K1 and K2 on the Machine Room DIN Rail.
    d. Verify this voltage is also at the Brake Coil when commanded to pick.
    e. Ensure this voltage corresponds to the voltage the Brake Coil is rated for.
    f. If problems persist contact Smartrise for assistance.
12. The encoder feedback may be out of phase upon first power up. This may cause the motor to run faster than commanded and/or give drive fault 408/98. If this occurs remove line power and swap the encoder A and A- wires.
13. Reapply Line power and command the car to move. The car should now move at the programmed Inspection Speed.
14. If the Motor is running in a reverse direction from what is commanded swap the field (+) and (-) wires. It may be necessary to swap the encoder A and A- wires after changing the field wires.
15. Open the TEMPORARY *car top stop switch* and verify that the car does not run. The controller should issue a contactor not closed fault which indicates the safety string is open.

16. Close the *car top stop switch* and proceed with set up.
17. At this point proceed to Wiring and Installation to wire up the controller in Construction Mode. Use this mode to run the traveler, install the tape, hall locks and the permanent safety string.

SHUDDERING AT HIGH SPEED

1. Motor voltage vs transformer secondary input voltage – Recommendation is that the transformer secondary voltage be at a minimum equal to rated armature Vdc. For best results that account for sagging utility, etc, Vac = 1.05 x Vdc is a better number to use.
2. THEN make sure that the motor weak field current is adjusted so that with full load up at rated speed yields the rated Vdc used above.
3. Rope resonance – Use the high speed / low speed bandwidth adjustments. (#39 & 40) Reduce the setting of High speed bandwidth to maybe 50% of that for low speed. Set the gain change speed (#105) at 25-50% of rating. Elevator speeds of 350-500 with 2:1 roping can be problematic. Using the notch filter may help (#190, 191).
4. Make sure there is no slop/backlash in the encoder coupling and that the encoder is not wobbling or vibrating.
5. Keep Tach Rate Gain (#107) at zero.
6. Makes sure the installer has entered in correct motor & encoder data and performed diagnostics (#998) and self tune (#997) and used the values for self tune (#4, 6, 51). [Recommend copying them from (#613, 614, 615) to Manual settings and then specifying to use them (#2)].
7. Reduce motor armature response (#8) to 250 r/sec.
8. Make sure there is a ground bonding wire from motor frame to drive chassis.
9. Make sure the encoder is electrically insulated from the motor shaft and frame.
10. Using a friction wheel encoder? Make sure both surfaces are perfectly round.
11. System inertia should be set about 2.0. Where are the other response adjustments set? (#39, 40, 41, 42).

WIRING AND INSTALLATION

LANDING SYSTEM

Refer to your job prints for the specific connections required to interface the landing system and the Smartrise controller. Most Smartrise controllers use an IP8300 landing system. The IP8300 system uses a perforated steel tape that runs the length of the hoistway. Magnets are placed on the tape to mark door zones, UETS, and DETS positions. Guide shoes bring the tape through the reader head where sensors read the magnets. Speed and direction is detected as the holes in the tape interrupt two light beams producing a quadrature signal.

The IP8300 uses a Cat5 cable to connect the reader head to a breakout board with eight screw terminals. A Governor Encoder system uses the cigar sensors to transmit the signals to the proper terminals. The function of each terminal is described below.

C24, REF

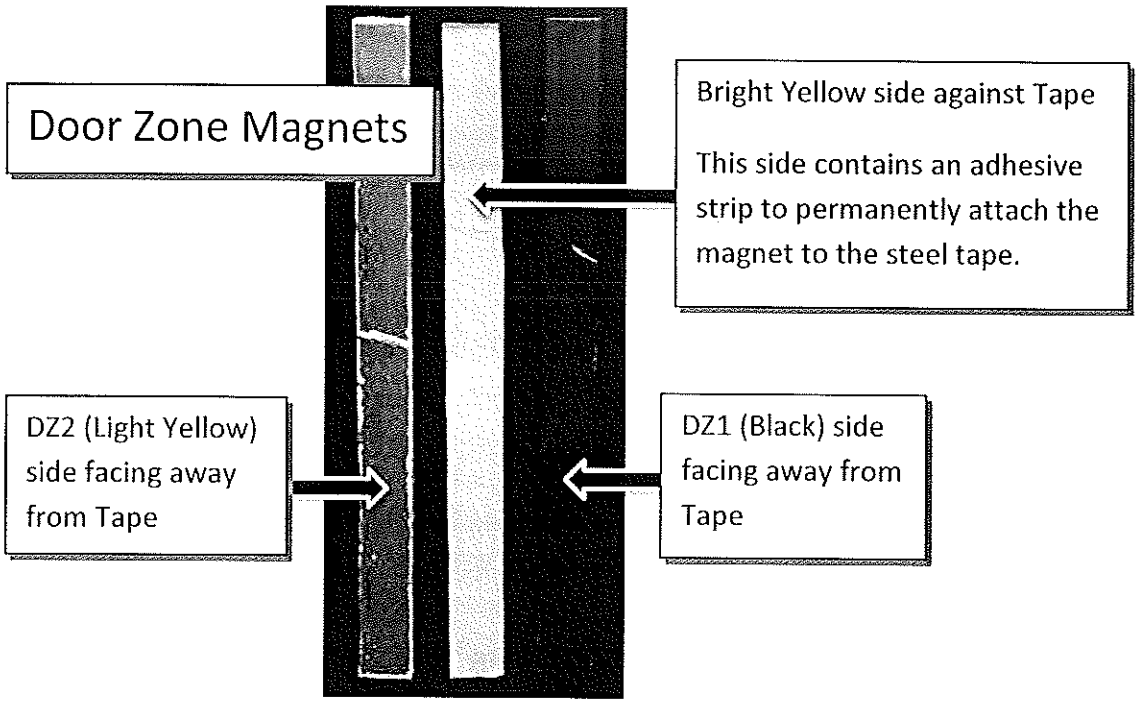
This is the 24 VDC power and reference to the IP8300 or governor encoder system.

DP1, DP2, GEA, GEB

This is the signal that provides speed and direction. DP1 (or GEA) connects to terminal **501** of the Cartop SRU board and DP2 (or GEB) connects to **502**. As the car moves, both signals should go on and off with one signal leading the other in one direction, the other signal leading in the opposite direction.

DZ1, DZ2

The DZ1 and DZ2 refer to the Door Zone magnets installed on your system. Installation of the door zone magnets is important. A tape system with the IP8300 selector uses DZ1 and a steel beam system with cigar sensors use DZ1 and DZ2 (double stacked).



UETS/DETS MAGNETS

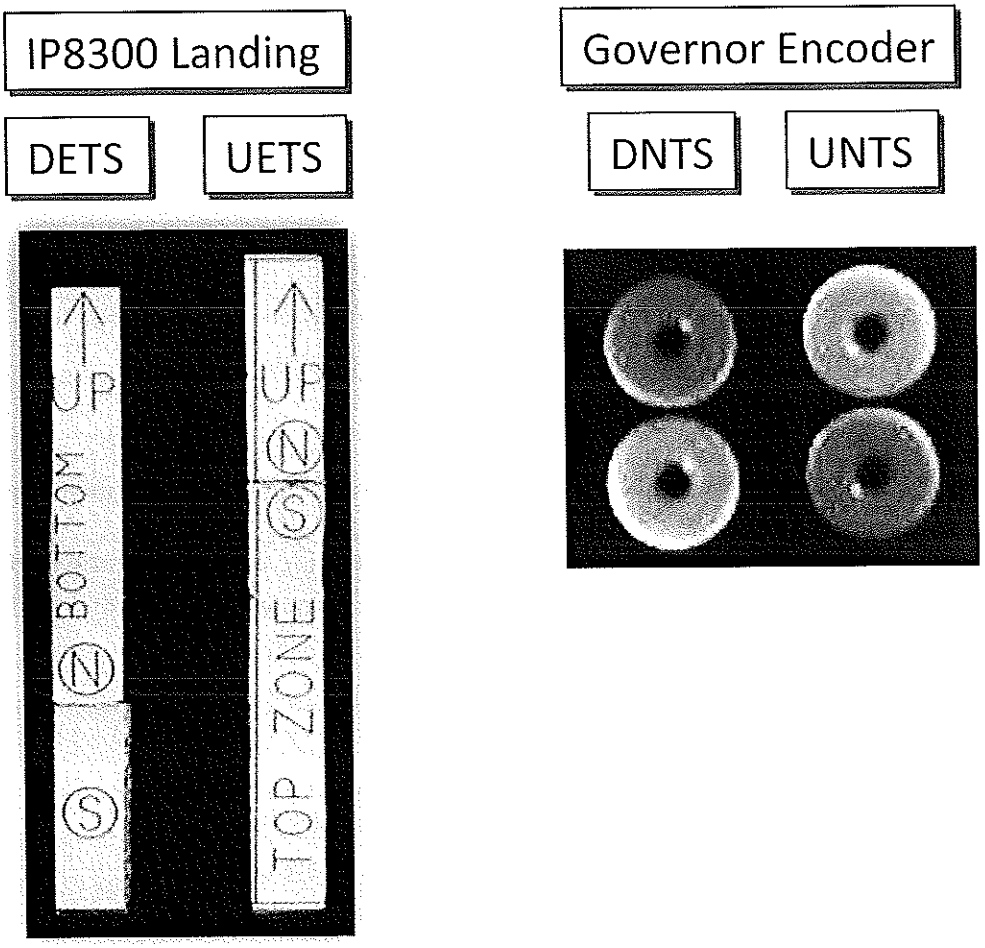
The Emergency Terminal Stopping magnets provide an indication that the car is near the top terminal (**UETS/UNTS**) or bottom terminal (**DETS/DNTS**). Orientation of the magnet is very important since this signal is driven by a relay within the reader head as it passes over the North/South magnets. Imporoper orientation will cause the signals to not function properly.

The **UETS** is a 1.5 inch North magnet above a 3.5 inch South magnet and the **UNTS** is a Green round magnet above a Red round magnet.

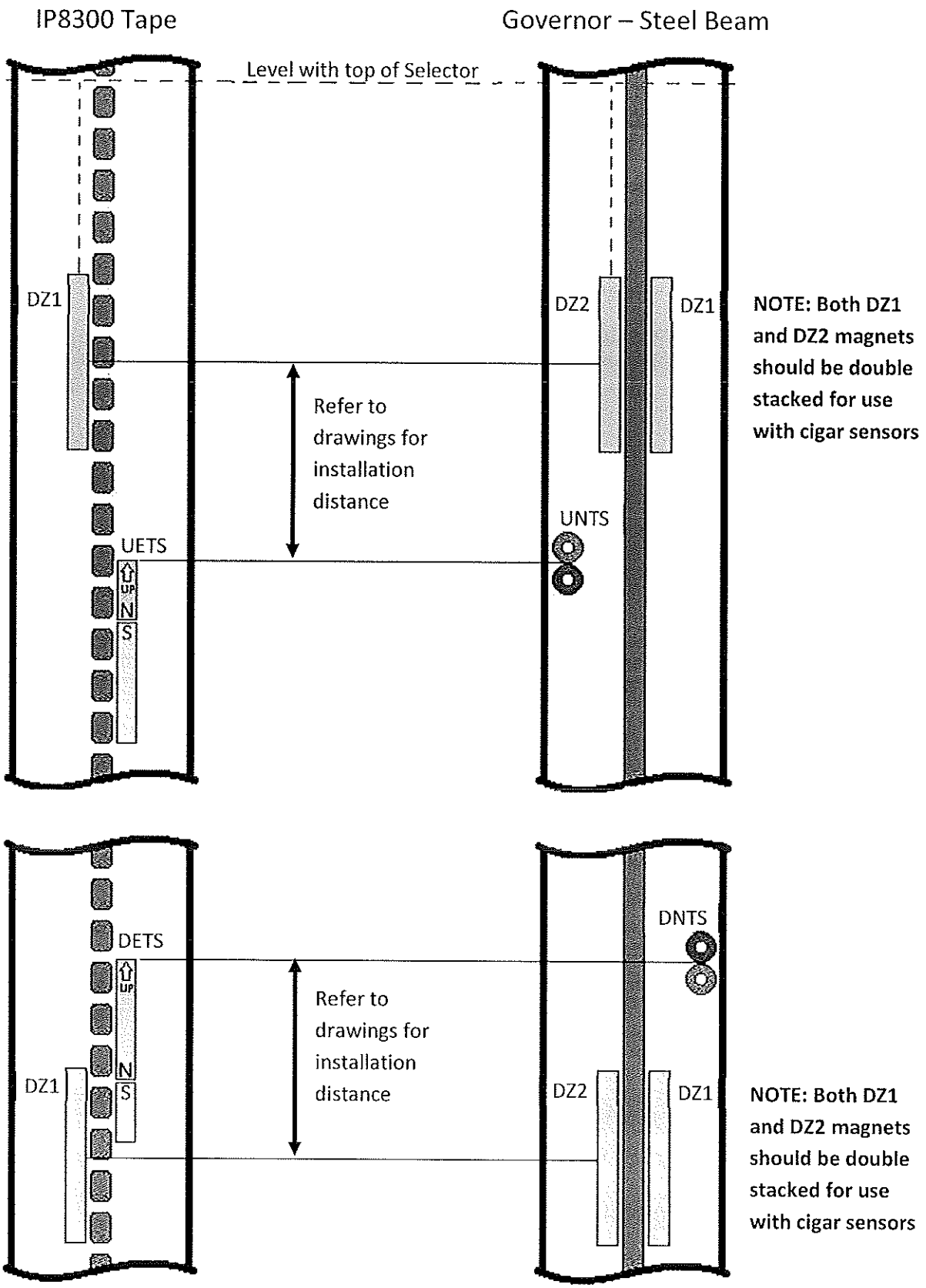
The **DETS** is a 3.5 inch North magnet above a 1.5 inch South magnet and the **DNTS** is a Red round magnet above a Green round magnet.

As the sensor moves over these pairs of magnets towards the terminal **DZ** magnet the relay contact opens. As the reader head moves past the pair away from the **DZ** magnet the relay closes. When closed, the signal is shorted to **C24** and then sent to the **UETS/DETS** inputs on the MR SRU board.

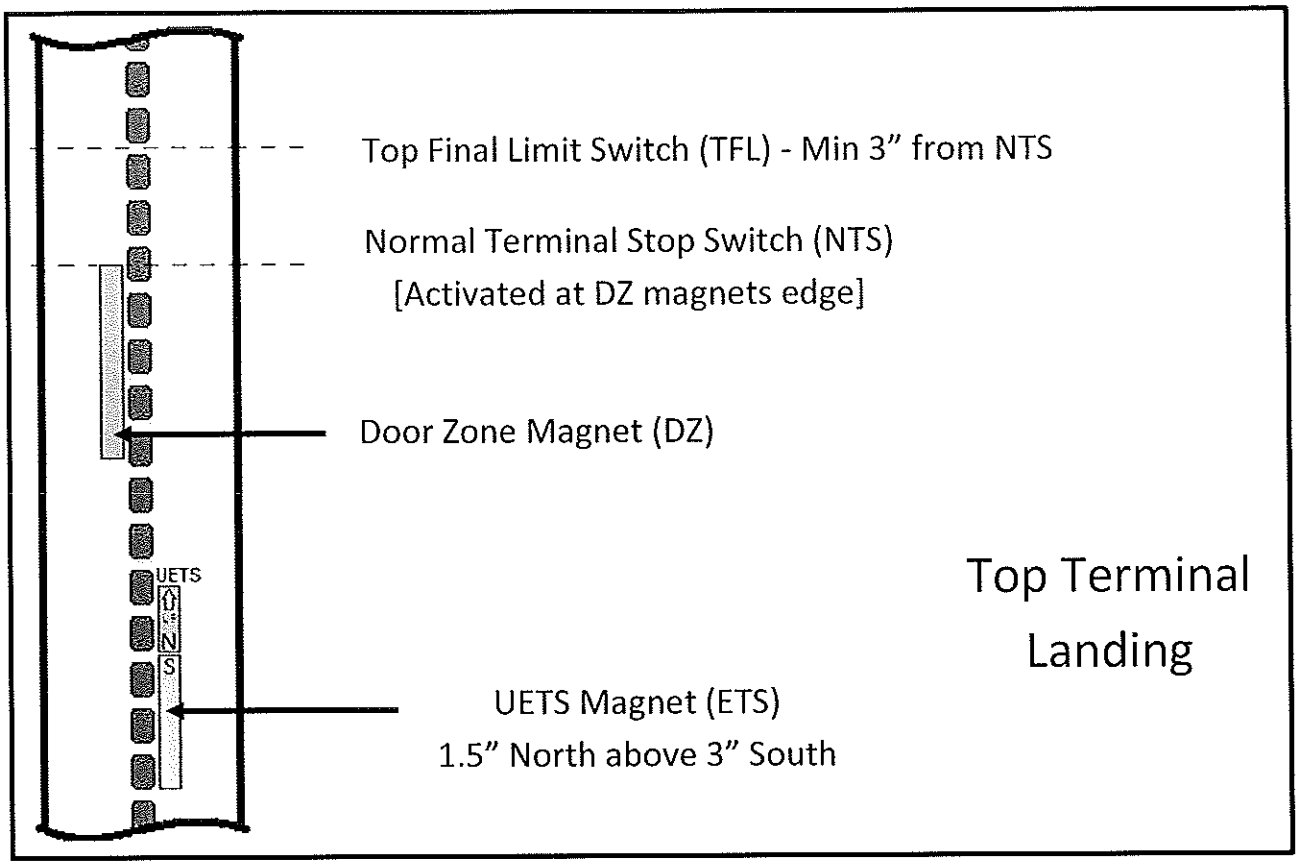
Because the sensor is latching (bistable), it remains in the correct state even when power is turned off.

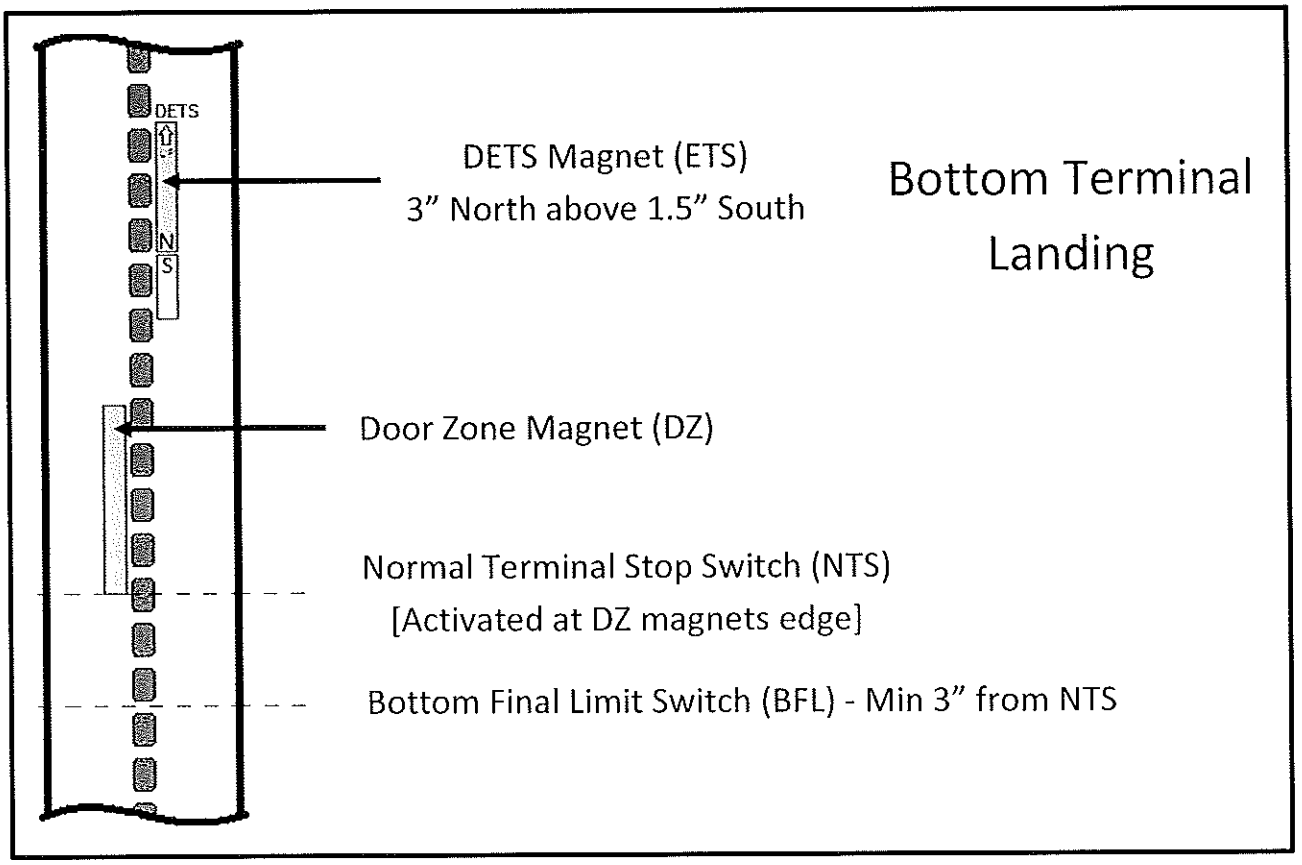


NTS Magnets


IP8300 Tape
Governor – Steel Beam
Level with top of Selector
DZ1
DZ2
DZ1
Refer to drawings for installation distance
UNTS
UETS
UP
N
S
NOTE: Both DZ1 and DZ2 magnets should be double stacked for use with cigar sensors
DETS
DNTS
UP
N
S
DZ1
Refer to drawings for installation distance
DZ2
DZ1
NOTE: Both DZ1 and DZ2 magnets should be double stacked for use with cigar sensors

Switch Placement - IP8300





SETTING UP MANUAL UETS, DETS AND FINAL LIMIT SWITCHES

1. Install the **UETS, DETS**, and Final Limit switches (if required) in the Hoistway.
2. The **UETS** and **DETS** are 24vdc switches that are normally closed. These switches open the circuit when the slowdown cam compresses the switch.
3. Placement of the switches in the Hoistway depends upon the rated contract speed of the car. Please refer to your provided drawings for the placement table.
4. **UETS** and **DETS** switch operation can be checked by going to **MAIN MENU | STATUS | I/O | INPUT GROUPS | SAFETY**. The two "X" inputs should disappear when the switch is actuated.
5. Ensure the switch inputs stay low the entire time the car is within the Door Zone.
6. Operation for the **UETS** and **DETS** is identical.
7. Install Final Limits in the safety string. The Finals must be placed after the **UETS** and **DETS** switches and above (top terminal) and below (bottom terminal) of the Door Zone Magnet. The Finals are installed such that when the car passes the terminal **DZ** magnets the final switches will open the safety string to prevent the car from running too far into the overhead or down onto buffer. When the Finals are actuated the car is stopped until the safety string is restored.
8. Install both switches such that if the car actuates the final limit switch the cam will still have the appropriate **UETS** or **DETS** switch actuated.
    a. **UETS** (Up Emergency Terminal Stopping device): this switch is located at the top terminal landing. By code, it is designed to catch an elevator over-speeding toward the terminal landing; therefore, it must be installed within the programmed slowdown distance to ensure that the controller has already started to slow down by the time the switch is actuated. The upper terminal slowdown is determined in the parameter **MAIN MENU | SETUP | SPEEDS AND SLOWDOWNS | S(c) | S(c) Slowdowns | Up NTS.** S(c) will be the highest speed (usually S3 on tractions, S1 on hydros) that matches your Contract Speed. You will increase/decrease this value as you fine tune the elevator ride. ***For the moment, put the physical switch at about 4 inches per 50fpm of contract speed down from the base of the top terminal landing.***
    b. For instance, if your contract speed is 200fpm, install the switch at 16 inches (4" x 4) down from the top floor level and make sure the "**S(c) Up NTS**" distance is greater than 16". Additionally, **UETS** is used for learning the Hoistway; therefore, check that the parameter "**Number of DZ above UETS**" is set to 1 when power is applied.
9. **DETS** (Down emergency terminal stopping device): same as **UETS**, but at the bottom terminal landing. This switch ***should be placed at a distance measured up from the center of the bottom terminal landing magnet.*** The bottom terminal slowdown is determined in the parameter **MAIN MENU | SETUP | SPEEDS AND SLOWDOWNS | S(c) | S(c) Slowdowns | Down NTS.**
10. Ensure **DP1** and **DP2** from the IP8300 Landing System or **GEA** and **GEB** for a governor encoder system is connected properly. They will be used to provide counts to the controller to determine the position and speed of the car. If they are connected

properly, you can see them function in step #16 below.

11. Connect Door Operator using provided Car Top and Door Operator Drawings.
12. Remove Temporary **DPM** jumper at Car Top Input 519 when making permanent **DPM** connection from Door Operator.
13. Remove the Temporary Gate switch jumper when installing the Gate Switch circuit.
14. Push DIP Switch #3 (third from the top) ON. This bypasses door operation and hall calls, which will be operationally checked later in this procedure
15. Apply Main Line Power
    c. Run the car on inspection from car top inspection box. When passing by the magnets in both directions verify that Car Top Door Zone Input illuminates.
    d. Run on inspection UP
    e. Verify the FPM on the LCD shows a positive value
    f. Run on inspection DOWN
    g. Verify the FPM on the LCD shows a negative value

MOTOR ENCODER REFERENCE

There are many types of encoders that work with the drives Smartrise provides with their systems. **Refer to ADDENDUM I for Encoder tables that show a list of wiring color code connections.**

GOVERNOR ENCODER

1. A governor encoder is designed to monitor the cars position using a cable and wheeled encoder setup.
2. This setup replaces the IP8300 selector and tape system. When a governor encoder is used then the NTS and door zone magnets are installed on a steel beam (instead of on a steel tape).
3. The following table shows typical governor encoder wiring connections:

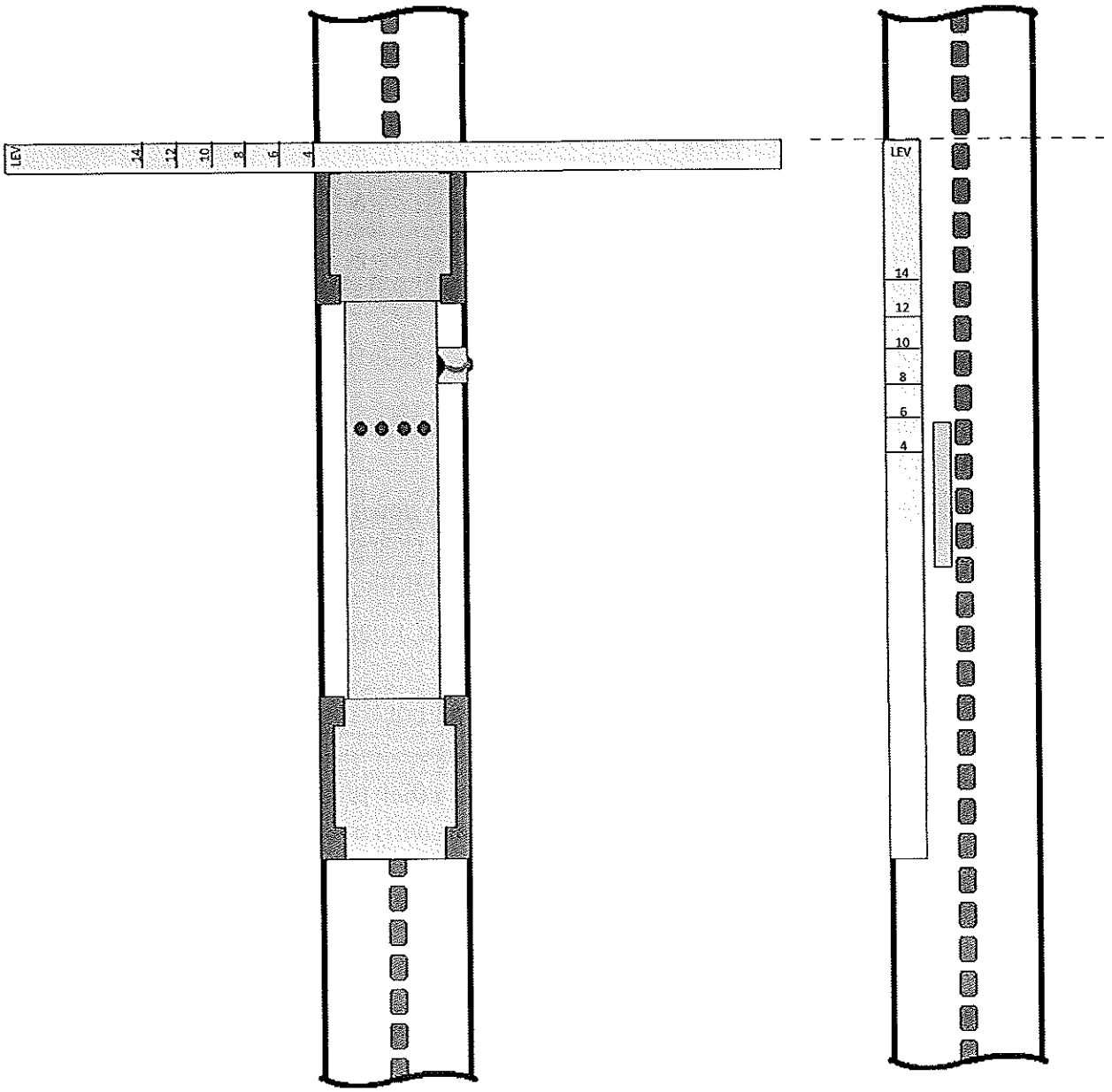
Accucoder 25 T		Cable		8 Pin AccuCoder		Cable
Function	Pin #	Turck RK4.5		Function	Pin #	Turck 10150815
Com	3	Blue		Com	3	Blue
+vdc	1	Brown		+vdc	1	Brown
A	4	Black		A	4	Black
B	2	White		B	2	White
Z	5	Grey		Z	5	Grey

TAPE, MAGNET AND SELECTOR SET UP

1) Use Inspection Mode to complete any Hoistway set up (i.e. running the tape, placing magnets, setting up the Hall Network, etc).
2) Make sure the tape has the proper tension. Torque down tension spring(s) at either end of the tape until tape has 1/2 to 1 full inch of play. Failing to torque down the tape may compromise the ability of the landing system to count the tape holes.
3) Install the IP8300 Landing system on the Cartop using the provided drawings for reference.
    a. Make sure to use a normal CAT5 cable and <u>not</u> a modified cable or **DP1** and/or **DP2** will not work.
    b. If **DP1** or **DP2** is constantly on while the other is flashing make sure that the IP8300 selector optical lights are aligned properly and not obstructed. Make sure all plates and covers are secure.
    c. Verify that a positive FPM feedback is displayed on the LCD during an UP command. If the values are backwards swap the **DP1** and **DP2** inputs on the Cartop Board.

Door Zone Magnets

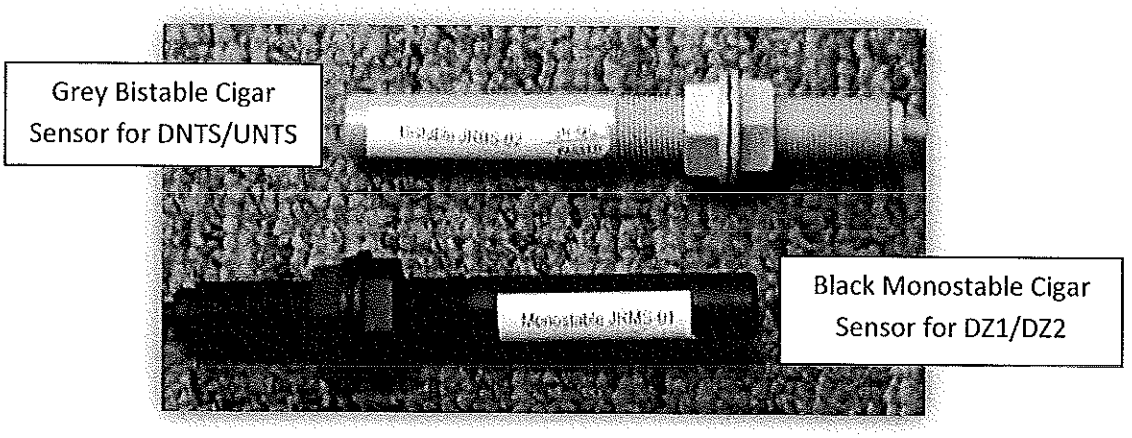
1. From the cartop, level the elevator to the floor (Landing) to access the tape.
2. Place the paper jig across the IP8300 tape selector guide rails. Mark a line on the steel tape at the top of the selector.
3. Move the car down to expose the tape enough to align the top of the paper jig with the scribed line. Fold the paper jig around the steel tape with the numbered side facing out and the "LEV" marking at the top.
4. Secure the 6" magnet to the steel tape at the 6 inch mark, 8" magnet at the 8" mark, etc.
5. On tapeless systems that use the cigar sensor magnets, it is recommended that you double stack both the DZ1 and DZ2 magnets to provide a stronger pickup signal.



"LIFESAVER" CIGAR SENSOR MAGNETS

UNTS/ETS - DNTS/ETS

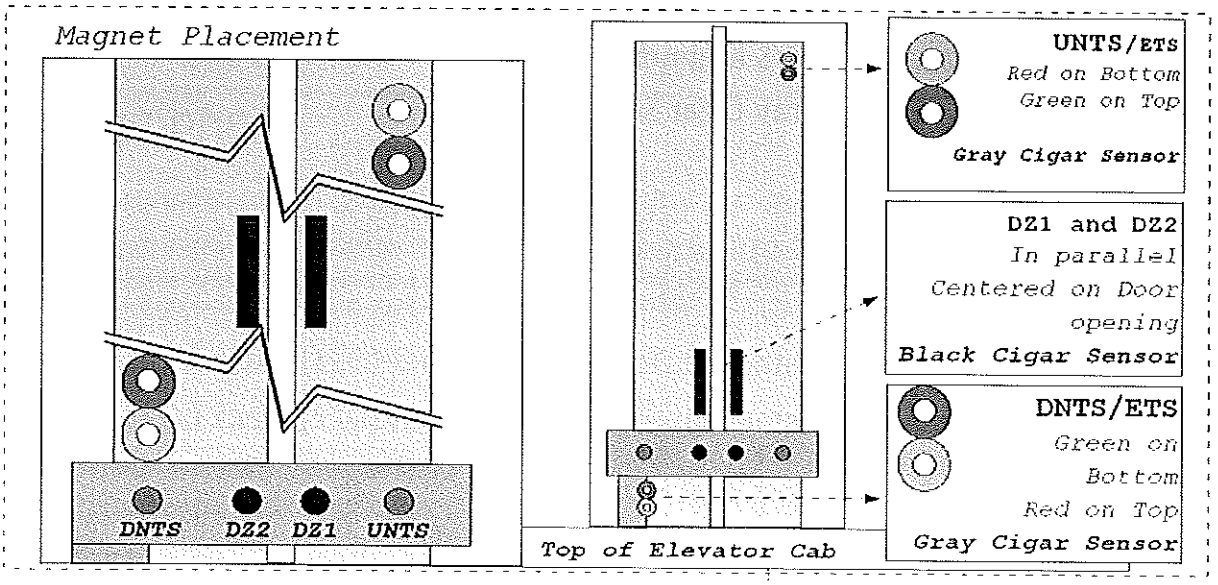
The "LifeSaver" magnets are installed when the steel tape and selector are not used. These are usually installed when a governor encoder is used. These magnets are placed on a steel beam, so that a reader, typically a "cigar" sensor mounted on the cartop, can see them when it passes over. They are usually aligned along the outside of the beam with the door zone magnets towards the inside (see picture below). The grey sensor is used to read the UNTS/DNTS and the black sensor is used to read the DZ1/DZ2 door zone magnets.



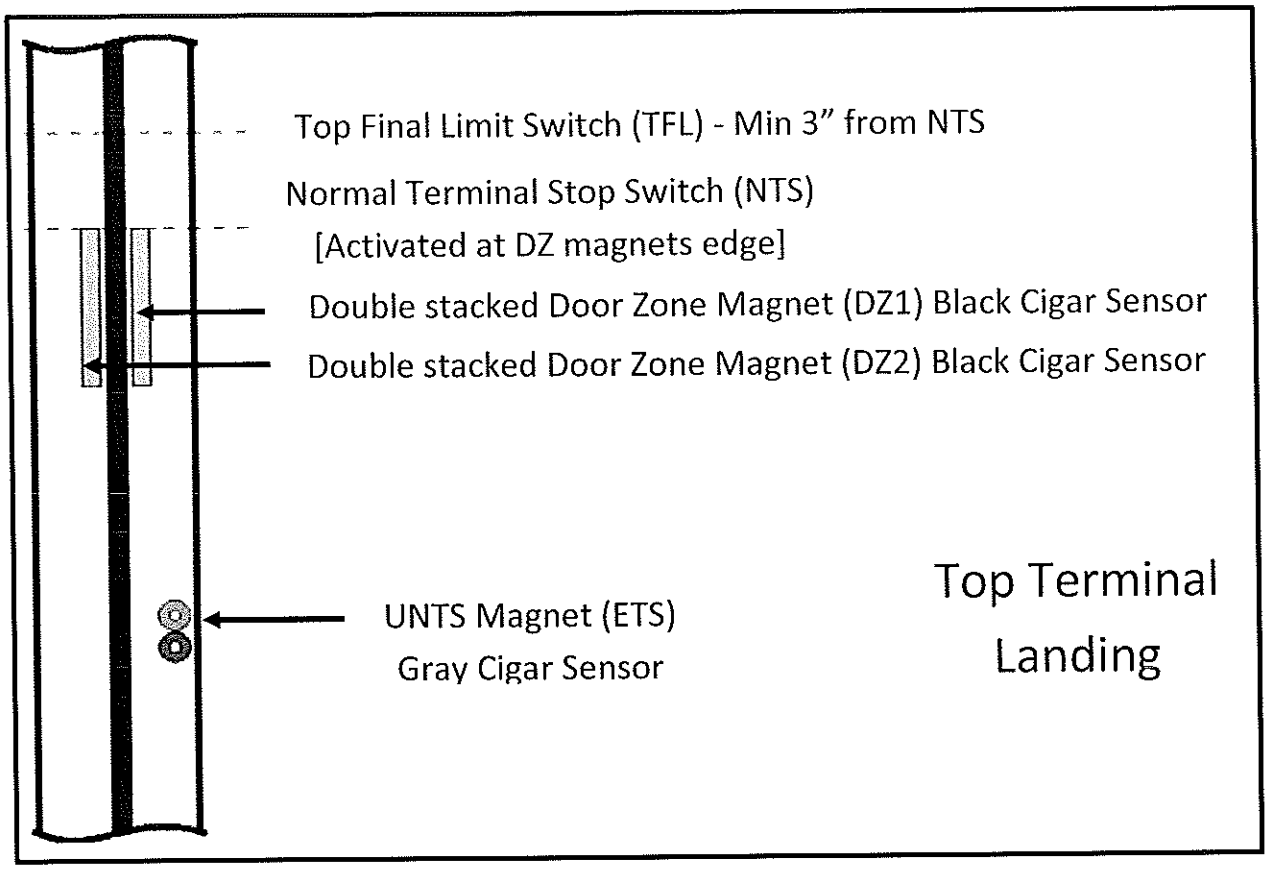
The proper orientation of the magnets is as follows:

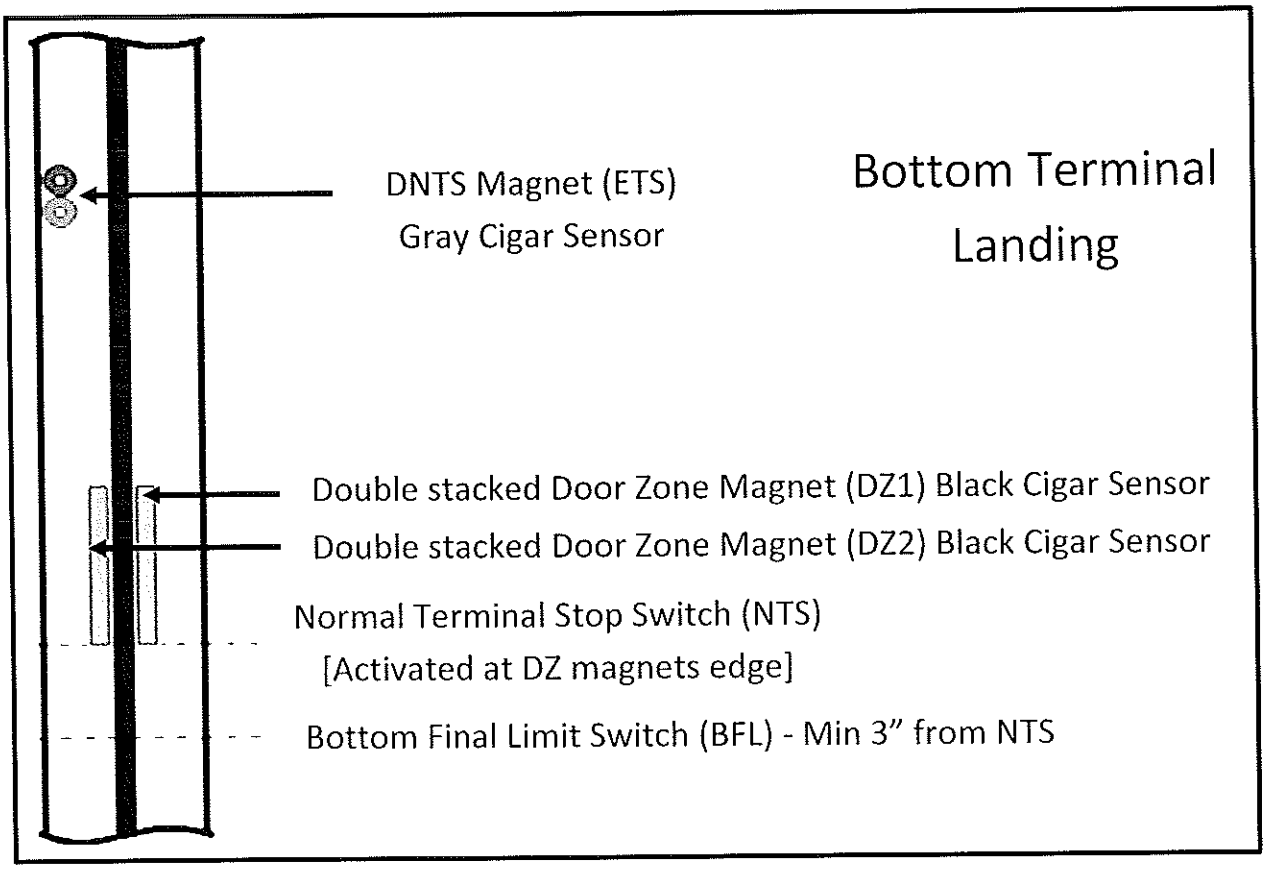
UNTS – Green magnet above Red magnet

DNTS – Red magnet above Green magnet



Magnet/Switch Placement - Governor





Refer to the "**Hoistway Switch Positioning Table**" below and on your provided drawings for proper placement distance from the DZ1 / DZ2 door zone magnets.

ETS Switch Positioning Table		
Contract Speed (FPM)	UETS	DETS
10 - 50	5	5
51 - 75	7	7
76 - 100	9	9
101 - 125	11	11
126 - 150	13	13
151 - 175	15	15
176 - 200	17	17
201 - 250	21	21
251 - 300	27	27
301 - 350	33	33
351 - 400	39	39
401 - 450	45	45
451 - 500	51	51

HALL DOOR LOCKS

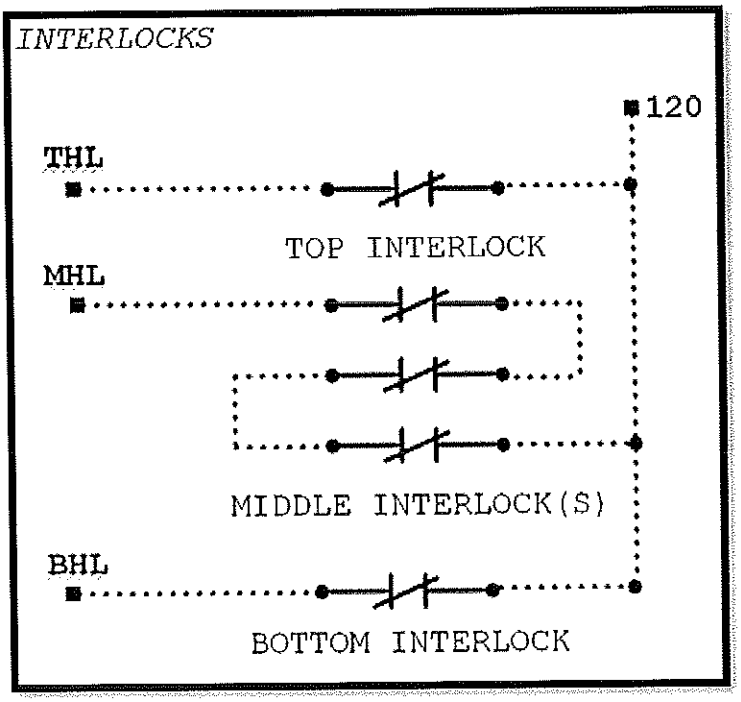
Wire your hall door locks as shown on your job prints. The hall locks are split into three separate circuits called BLOCK, MLOCK, and TLOCK. Most of the locks will be wired in series and connected to the MLOCK (middle locks) or **MHL** terminal in the machine room. The BLOCK (bottom lock) **BHL** terminal and TLOCK (top lock) **THL** terminals are only used to accommodate Hoistway Access.

When the car runs on Hoistway Access, it is allowed to run with one of the hall doors open. Since Hoistway Access is normally available at the top and bottom floors, a separate circuit monitors those two openings. Wire the hall lock adjacent to the bottom Hoistway Access key switch to the **BLOCK (BHL)** terminal and the hall lock adjacent to the top Hoistway Access key switch to the **TLOCK (THL)** terminal. If after wiring up the **TLOCK** and **BLOCK** the Access TOP or Access BOTTOM doesn't work, check the relays when the doors are open to make sure that the locks are not reversed. If they are simply swap the wires on the **BLOCK (BHL)** and **TLOCK (THL)** terminals.

*If your controller has front and rear doors, only wire the lock of the door next to the key switch to **BLOCK or TLOCK.*** Failure to wire the access doors to the **TLOCK/BLOCK** terminals will prevent ACCESS from functioning. Any opening that does not have a Hoistway Access key next to it should be wired in series with the other non-Access openings to the MLOCK terminal.

There are some localities that require the top Hoistway Access key be located at the second floor rather than at the top floor. In such a case, the **TLOCK** would be wired to that opening and the top terminal opening should be part of the **MLOCK** circuit. If your job does not have Hoistway Access, you can jump the **TLOCK** and **BLOCK** terminals to the power bus of the hall locks (normally **120**) and wire all your hall locks in series to **MLOCK**. Likewise, a 2-stop run will wire to the **TLOCK** and **BLOCK** terrminals and the **MLOCK** terminal will be jumped to the power bus of the hall locks (normally **120**).

Each of the lock circuits use 120vac to drive relays in the machine room. For redundancy, each of the three locks circuits (**BLOCK**, **MLOCK**, and **TLOCK**) drive two relays. You will therefore see two **BLOCK** relays, two **MLOCK** relays, and two **TLOCK** relays. When all the locks on a particular circuit are made, both of the corresponding relays in the machine room should be energized. Each relay switches a 24vdc signal to a terminal on the SRU board. Having two relays per circuit allows the controller to detect a failure of a relay and take the car out of service before it can become a safety hazard.



CAR STATION SRU BOARD AND TRAVELER CABLE

In a 3-board system you have the Machine Room board (located in machine room), the Cartop SRU board (located on top of the car) and the **COP** board (located behind the car operation panel). In a 2-board system, the Cartop SRU board is mounted behind the COP panel inside the car cabin. The SRU board normally comes mounted to a piece of DIN rail that also includes terminals for landing the traveler cable wiring. Mount the DIN rail with the SRU and terminals such that it will not obstruct the closing of the **COP** panel door. You will also want to mount it such that there is plenty of clearance for wires coming from the traveler cable and going to the top of the car.

Refer to the provided drawings for the connections required between the machine room and car. Due to the *serial* nature of the Smartrise controller architecture, most of the traveler wires will be power and communications. Whenever possible, control signals are sent serially rather than as discrete wires. This reduces the total number of wires in the traveler substantially.

Be aware that communication signals are normally sent on differential pairs with a plus (+) and minus (-) wire. The Car Network with its **CN+** and **CN-** signals is one such example. Signals like these should be connected via a shielded pair (or twisted pair if available) within the traveler cable. Pay close attention to your job prints about how to connect the shield. Sometimes the prints will show a shielded pair connected to the **REF** terminal and sometimes to **GROUND**. Also, note whether the shield is shown connected at one end only or at both ends. Connect as shown to avoid communication problems.

SMOKE SENSORS

To prevent the controller from going into Fire Recall during setup you must first bypass the smoke sensor inputs. If you don't have your Smoke sensors installed and wired to the SRU board install a temporary jumper from **M24** to the smoke Inputs on the SRU (refer to provided drawings for correct terminal locations).

To clear Fire Recall after jumping out the smoke sensors perform a **Dip (A) Switch 1** + **Reset** on the MR controller SRU.

Smoke 1 – All floors EXCEPT main floor alarms (sends car to main recall floor)
Smoke 2 – Main floor alarm (sends car to alternate recall floor)
Smoke 3 – Machine room sensor (sends car to main recall floor)
Smoke 4 – Hoistway alarm (sends car to main recall floor)

FIRE PHASE DEFINITIONS

There are two ways of engaging Fire Recall – Smoke Sensors 1~4 and the hall fire switch. Sensors send the car to predefined floor depending on which alarm is activated and the key switch brings car to the main recall floor.

1) FIRE RECALL

Hall Fire Switch Off – normal setting for Fire Recall switch

Hall Fire Switch On – starts Fire Recall mode and allows firemen to call car to specified floor.

Hall Fire Switch Reset – resets Fire Recall and returns car to normal operation

2) FIRE PHASE 2

Car Fire Switch Off – Normal off setting for Fire Phase 2 switch

Car Fire Switch On – Switches Fire Recall to Fire Phase 2 allowing car to accept car calls. Requires manual opening of doors at floors using Door Open / Close buttons.

Car Fire Switch Hold – Allows operator to hold the car at a level. Does not allow doors to operate. Will not accept Hall or Car Calls until switch is turned off hold.

Car Fire Switch Cancel – Cancels Fire Recall

Independent Service – Takes control of car immediately except during Fire Recall in which it will take over after 30 sec timer.

CAR SAFETY STRING

The Safety String is a SERIES based circuit where any open switch will cause the controller to be inoperative. Using the provided drawings wire the Traveler and Safety String to the appropriate terminals. In most cases, the Safety String is designed to:

1. Operates on 120vac or 240vac.
2. Pass through a customer installed Stop Switch and a series of safety switches (buffer, pit, hatch, machine room stop switch, etc.), the **SF2** relay on the Cartop and through the Machine Room **SF1** relay when commanded
3. Stops the car immediately if any switch is opened during operation
4. During Construction mode the Safety String is bypassed by jumping **SF1** to either **120** or **240** depending on your particular jobs safety string requirements.

LOAD WEIGHING

Traction systems occasionally use a load weighing system that monitors the weight of the car. The following shows the definitions of the inputs that the Smartrise SRU uses for the various load weighing devices.

1. Overload – this input will ignore hall and car calls until the load is lightened.
2. Full Load – this input will still answer car calls but ignore hall calls until load is lightened.
3. Light Load – this input is used for anti-nuisance purposes. This input will allow the controller to cancel multiple car calls as long as the light load is active. The amount of calls accepted can be changed in the parameters.

If you don't have a load weighing device installed but your system has the inputs programmed, don't wire any of the inputs and the car will operate as if on light load.

DOOR OPERATOR

NOTE: Verify that the voltage supplied to the door operator from breaker DR in machine room matches actual supply voltage (120vac / 240vac) for door operator before applying power.

Remove the Temporary Gate switch jumper when installing the Gate Switch circuit.

Remove Temporary **DPM** jumper at Cartop Input **519** when making permanent **DPM** connection from Door Operator. If the **DPM** is not used then you can jump it to the Gate Switch terminal. Check provided drawings for correct wiring.

A photoeye may be used as a separate input to the cartop controller or wired into the door operator. This will need to be installed for the doors to operate correctly. If a photoeye is not used then jump out the **PHE** Input to **C24** (refer to provided drawings for proper Input terminal).

Photoeyes can have main power of 24vdc or 120vac.

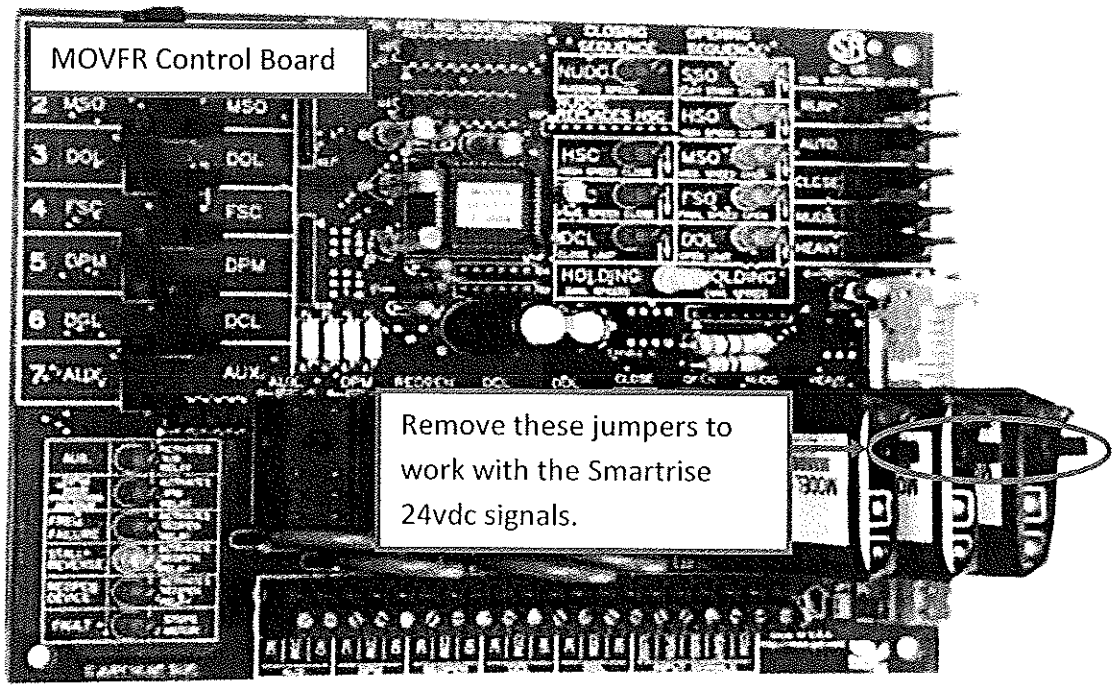
For 24vdc attach to **C24** and **REF**.

For 120vac attach to **120** and **N** terminals. Note: Never connect a 120vac photoeye to the terminals on the SRU board. **THE SRU TERMINALS OPERATE ON 24VDC ONLY.**

The normally closed contact (**NC**) can be connected between the door operator "reopen" terminal and the **PHE** Input terminal or, if door operator doesn't support a **PHE**, then connect between **C24** and **PHE** Input terminal.

Push DIP Switch #3 (third from the top) to the **ON** position. This bypasses door operation and hall calls which will be checked later in this procedure.

The MOVFR door operator requires jumpers to be removed when operated by the low voltage from a Smartrise SRU. See the following figure for jumper location.



SMARTRISE "SMARTVIEW" FAMILY

The following applications make up the Smartrise ' SmartView' family.

Smartview (MRM) – Monitor/interact with elevator(s) in or near the elevator machine room.

(Future application) SmartView (Remote) – Monitor/gather data/interact with SmartView (MRM) systems from anywhere.

(Future application) Smartview (Service) – Monitor the health of SmartView (MRM) systems and send out alerts.

(Future application) SmartView (Lobby) – View real-time state/interact with elevators in the building.

SmartView (MRM): This is the Windows application that runs on the computer located in or near (within 500 ft) the machine room of the elevator(s) being monitored. This application displays real-time state data and captures and stores historical data from the elevators being monitored.

- Monitors up to eight Smartrise equipped elevators in any combination of simplexes or groups.
- Displays real-time elevator state data, such as Speed, Landing, Door State, etc.
- Captures and stores data for historical reporting, such as wait times, faults, etc.
- Provides interaction with elevators, such as enter car/hall calls, secure floors, etc.
- Can connect to the internet to support remote monitoring.
- Analyze, view, and print historical data.

SmartView (Remote): This Windows application can be run on any internet connected Windows PC. This application can connect to one or more Smartview (MRM) equipped elevators. View real-time state data and retrieve historical data from any connected SmartView (MRM) equipped elevators for viewing, analyzing, and printing.

- Simultaneously monitor to one, one hundred (or more) StartView (MRM) units.
- View the state of the monitored elevators in real-time.
- Analyze, view, and print historical data.
- Interact with connected elevators (such as secure floors).

SmartView (Service): This Windows application can be run as a standalone application on any internet connected Windows PC or it can be installed as a module on SmartView (MRM), SmartView (Remote), or SmartView (Lobby). This application can connect to one or more Smartview (MRM) equipped elevators. This application monitors the health and performance of connected elevators and will contact/report issues to service personnel via various mediums (such as pages, email, etc)

- Create custom Alert Profiles for monitored elevators.
- Set notification methods for service/management personnel.
- Match Alert Profiles to service/management personnel.
- Can be added as a module to SmartView (MRM), (Remote), and (Lobby)

SmartView (Lobby) : This Windows application can be run on any Windows PC located within 500 ft of the elevator(s) being monitor. This application displays real-time state information from the connected elevators.

- View elevator state in real-time.
- Interact with connected elevators (such as call to lobby, enter car calls, etc).

LEARNING

OVERVIEW

This part of the manual explains how to learn the hoistway and adjust the car. Learning the hoistway is the operation where the controller runs the car from the bottom to the top of the hoistway, recording the location of switches and door zone magnets it sees along the way. Once the hoistway is learned, the controller can run on automatic operation and adjustments to the ride and performance can be made.

Perform the following Pre-Learn check:

A. Do the DZ magnets register on the selector when passed over?
B. On Hydro systems: is leveling speed < 30 FPM in both directions?
C. On the machine room SRU: does 509/510 go out when at top floor DZ and 511/512 goes out when at the bottom floor DZ?
D. On the LCD screen: when the car moves up is FPM positive and when moving down is FPM negative?

LEARNING THE HOISTWAY

The controller must be in "Learn" mode to learn the hoistway. On the Machine Room SRU board put the controller in Learn mode by flipping DIP Switch #2 (on Dip A) to the right (ON) position. Inspection takes priority over Learn so be sure all the Inspection/Hoistway Access switches in the machine room, cartop, and in the car are in the Normal (automatic) position.

The LCD of the SRU boards should now show "Learn" on the Home Screen. This indicates the controller is ready to learn the hoistway. If it still shows "Inspection" then you need to check to see which inspection input is not powered.

A. "Inspection (**MR**)" machine room inspection.
B. "Inspection (**CT**)" Cartop Inspection inputs.
C. "Inspection (**HA**)" Hoistway Access inputs.
D. "Inspection (**IC**)" In-Car inspection inputs.

There are three steps involved in learning the hoistway. They are all performed from the **MAIN MENU | SETUP | LEARN MODE COMMANDS** menu of the machine room SRU (this option is only available in the Machine Room).

STEP 1 – HOMING RUN

Select the menu option called "Homing Run" and press the Enter key. The car will move to the position of the **DETS** switch (or magnet) just above the bottom door zone. Depending on the condition of the **DETS** switch, the car will either move up or down to reach that switch. If the switch is on then the car will travel down to flag it. If the switch is off then the car will move up until it reaches the **DETS** switch. The car will continue to move until it sees the switch transition from its current state (open or closed). If the car runs down into the pit or

runs up beyond the top floor, it means that the **DETS** signal is not being seen by the controller. Check to make sure you don't have the **DETS** terminals jumped to M24. If the "Homing" run was completed successfully then press the left (ESC) arrow button to go back to the Learn menu.

STEP 2 – MOVE TO BOTTOM

Select the menu option called "Move to Bottom" and press the Enter key. The car will move from its current position on the **DETS** switch to the bottom door zone. If the car goes down into the pit it most likely means that the controller is not seeing the bottom door zone magnet or the **DZ** magnet is too close to the **DETS** magnet. Check that the selector is installed correctly, connected with a standard CAT5 cable and that the door zone magnet is properly placed with the correct side facing selector. Be sure your leveling speed is around 10 fpm. If the "Move to Bottom" run was completed successfully then press the left (ESC) arrow button to go back to the Learn menu.

STEP 3 – LEARN MAGNETS

Select the menu option called "Learn Magnets" and press the Enter key. When you begin Step 3, **DETS** should be off and **UETS** on. Shortly after leaving the bottom floor, **DETS** will come on. Both should remain on until the car is just short of the top door zone at which time **UETS** will drop out. The car will begin running up at leveling speed until it reaches the top door zone magnet. It will record the location of each door zone magnet it sees. When it comes onto the magnet it records the position count for the "bottom edge". When it leaves the magnet, it records the "top edge". To avoid clearance problems with going beyond the terminal floors, the controller assumes the top and bottom door zones to be 6 inches in length and only learns one edge of each.

The elevator should have automatically stopped at the top door zone. It may take up to 1 minute for the learned information to arrive from the Car SRU board. The floor PI's will not update during this operation. This is not an indication of a Learn failure.

After completing Step 3 turn off the Learn mode by flipping DIP Switch #2 (on Dip A) back to the left (OFF) position.

TROUBLESHOOTING THE LEARN PROCESS

If you get a "**A:F127:Term Limits**" fault then go to **MAIN MENU | SETUP | MISC | BYPASS TERM LIMITS** and set it to "**NO**".

If the controller logged an "**F91: Learn Error**" during or after the learn process, it could mean that it did not see the correct number of door zone magnets or that an ETS switch is overlapping a door zone. In this case, repeat the learn process and watch the "**DZ**" indicator on the Home Screen. See that the indicator comes on as the car passes each floor and goes off as it leaves. Watch the feet and inches count and make sure that **DZ** only comes on at the position of a floor. Also, be sure that you are not missing a door zone magnet at any floor. Finally, be sure that **UETS** and **DETS** are flagging on and off correctly.

ADJUSTMENTS

SETTING CAR SPEEDS

1. By default the Smartrise Controller is programmed to operate on High Speed equal to Contract Speed, Medium Speed equal to half of Contract Speed, and Low Speed equal to half of medium speed.
2. The Smartrise Speed settings permit the user to define and program up to 8 different car speeds id desired or performance requires additional programming. Target speed selection is automatic and is determined by the MINIMUN RUN DISTANCE parameter. Each MININMUM RUN DISTANCE parameter must be programmed by the user.
3. The operation of each speed must be defined such that speeds conform to this logic: S8>S7>S6>S5>S4>S3>S2>S1. Thus, the highest NON ZERO speed setting must correspond to the greatest "S" number. A setting of zero at any "S" speed disables the specified speed setting. For example, if the contract speed of the car is 400FPM the following parameters would be defaulted such that:
    a. Contract = 400 FPM
    b. Inspection = 50 FPM
    c. Leveling = 10 FPM
    d. S1 (Speed 1) = 100 FPM (Low Speed, 25% Contract)
    e. S2 (Speed 2) = 200 FPM (Medium Speed, 50% Contract)
    f. S3 (Speed 3) = 400 FPM (High Speed, Contract Speed)
    g. S4 thru S8 = 0 FPM (Disabled)
4. In this example, the controller will command any one of the 3 programmed target speeds based on the MIMNIMUM RUN DISTANCE. By manipulating the MINIMUM RUN DISTANCES correctly the user can ensure a smooth acceleration and deceleration through landings.
5. **Note: Figure 7 is oriented around Speed S2.** This figure depicts what happens when a car travels the MINIMUM RUN DISTANCE set for S2.

SPEED ADJUSTMENT ON MAGNETEK (DRIVE VS. FPM)

1. Make sure all your motor data is entered correctly.
2. On the Magnetek drive adjust this parameter:
    a. Motor Drive (A1) "Contract Mtr Spd" – Adjust this up or down to match CMD speed to FPM actual speed. This does not have to match your motor's actual RPM.

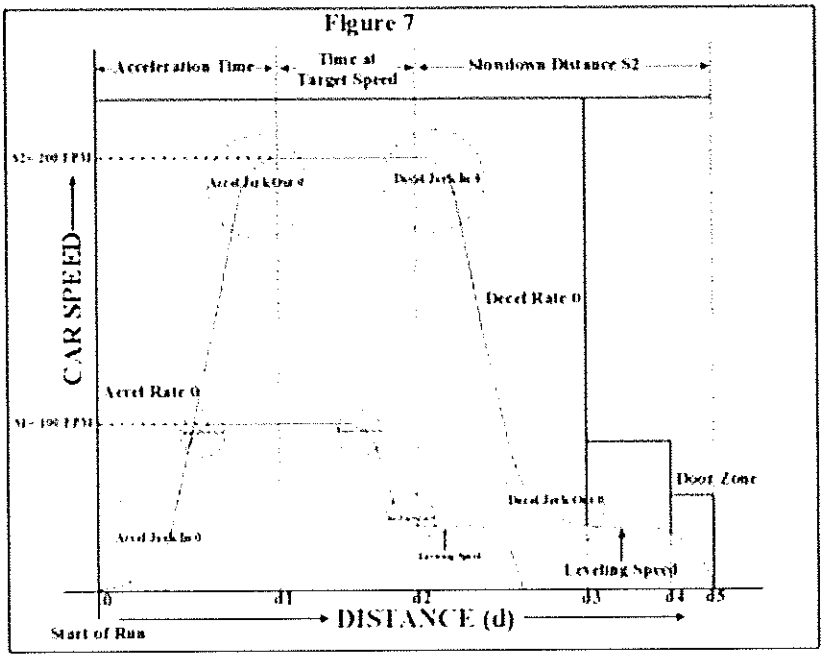
SPEED ADJUSTMENT ON YASKAWA (DRIVE VS. FPM)

1. On the SRU controller verify these parameters in **MAIN MENU | DEBUG | ADJUST PARAMETERS:**
   a. 13-000 - Make sure it's set to "**x05**"
   b. 13-001 - Make sure it's set to "**x06**"
   c. 13-002 - Make sure it's set to "**x07**"
2. On the Yaskawa drive verify these parameters:
   a. 01-20 (Sheave Diameter) - Make sure you have your correct sheave diameter set.
   b. 01-22 (Gear Ratio) - You can increase this number to raise the speed of the car to match the command speed of the drive. As the gear ratio goes up the actual speed of the car (FPM) goes up as well. Below is an example of gear ratio changing and its results:
      i. CMD = 250 / FPM = 165 GR (gear ratio) = 14
      ii. CMD = 250 / FPM = 206 GR (gear ratio) = 22
      iii. CMD = 250 / FPM = 248 GR (gear ratio) = 28

SETTING THE MINIMUM RUN DISTANCES FOR CAR SPEEDS

6. The MINIMUM RUN DISTANCE is driven by the calculated rise the car is being commanded execute. Accordingly, each programmed speed must also have setting in the **MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | S1, S2, S3, etc. | MIN RUN DISTANCE.**
   a. Adjust the MINIMUM RUN DISTANCES for every desired or programmed speed to account for the minimum floor height or desired number of floors required before a High Speed, Medium Speed, and Low Speed run is commanded. This is done by going to **MAIN MENU| SET UP| SPEEDS & SLOWDOWNS| S1, S2, etc. | MIN RUN DISTANCE**
7. NOTE: Do not command too much speed for too short of a rise. This will cause the car to over shoot the landing and fault the drive.

Figure 7



a. A car that travels at leveling speed for too long a duration can cause a fault.

b. As a further step to smooth the cars travel even further, resort to changing the acceleration and deceleration settings on the drive. This information can be found in Appendix C of the manual.

c. If the contract speed is relatively low, say 100 FPM, set the MINIMUM RUN DISTANCE of the highest speed command to a minimal value. This will ensure the car will command a uniform speed regardless of the calculated rise or rise threshold.

ADJUSTING SLOWDOWNS

1. As you adjust, you can look up the car speed on the LCD main screen at FPM where it says INSPECTION or NORMAL. This allows the user to judge the amount of slowdown the controller is utilizing.

   Note: If the Controller is power cycled or initialized in the middle of the Hoistway it will NOT command a high speed run until a terminal landing run has been achieved.

2. Move the car to the top of the Hoistway to begin adjusting the slowdown distances going down.

3. Accordingly, the car may level for an excessive period of time. As the Car runs observe the performance and reduce or expand the slowdown distance of EVERY Speed command to meet a sustained 4-6 inches of Leveling Speed prior to the car reaching floor level and stopping.

4. Adjust the Slowdowns Distances for BOTH directions for EVERY programmed speed by going to **| MAIN MENU | SETUP | SPEEDS AND SLOWDOWNS | S# | S# SLOWDOWNS.** Think of these parameters as being virtual magnets on the tape.

5. Start by setting ALL Slowdowns (S1, S2, etc) to 12 inches per 50 foot of commanded speed.

6. On the Machine Room, go to **| MAIN MENU | DEBUG | ENTER CAR CALLS** to enter Car Calls.

   a. Enter a Car Call for a 1 floor run DOWN and observe performance. The Controller should command 100 FPM so long as the commanded travel does not exceed the MINIMUM RUN DISTANCE.

7. Observe performance. If more or less slowdown is desired, simply increase or decrease the distance value in "S1 Down" by increasing or decreasing the count value as every count is roughly equivalent to $3/16^{th}$ of an inch.

8. Continue executing 1 floor runs and adjusting the slowdowns until optimal performance is achieved for the Low Speed.

9. Repeat Steps 6 through 8 to adjust the Medium and High Speeds in the Down Direction by commanding the Car to do multiple floor runs.

10. Once all the Slowdowns are set for the down direction repeat steps 6 through 8 for the Up Direction.

11. Enter car calls via **MAIN MENU | DEBUG | ENTER CAR CALLS** in both directions to make any final adjustments for the desired car speed, transitions and leveling at all landings.

FLOOR LEVELS OVERVIEW

This section will explain how to adjust the controller such that the car will stop level with the floor at each landing. This should only be done after you are satisfied with the car speeds, slowdowns, and 'S' curve setup on the drive since floor levels can be affected by those settings.

Smartrise also recommends that your car have at least 1 or 2 seconds of sustained leveling as the car comes into each floor. If the car comes in too "hot" it can be difficult to get a consistent, level stop.

The process of adjusting floor levels involves the setting of two parameters per floor – the Up Stop Point and the Down Stop Point. The Up Stop Point is an offset from the bottom edge of the door zone magnet. As the car comes into the floor the controller watches for the door zone input to come on. When it sees the magnet edge, the controller resets the relative position within the door zone to B+0. That means the car is 0 counts (position counts of the landing system) above the bottom edge of the magnet. As the car continues leveling up within the magnet, the relative count changes to B+1, B+2, etc. The controller waits until the B+ value reaches the Up Stop Point for that floor. When the values match, the controller commands stop.

When coming down into a floor, the same method is used only the relative position from the edge of the magnet is shown as T-0, T-1, T-2, etc. In this case T-2 means "two counts below the top edge of the magnet". The car will level down until the T- value reaches the Down Stop Point for that floor at which time the controller will command stop.

You can view the relative position within the door zone on the Home Screen. Look for the T- or B+ just below the DZ indicator. The car must be in a door zone for these values to show.

A typical Smartrise controller uses a landing system where each position count equals 3/16 of an inch. Since a door zone magnet is 6 inches long, you will see the position count step 32 times as the car passes a door zone.

Smartrise defaults all the Up Stop Points to B+14 and all the Down Stop Points to T-14. If the magnets are perfectly centered, floor level should be exactly 16 counts from either edge. Since the car cannot stop instantly, commanding a stop 2 counts (3/8") early, usually results in the car stopping level with the floor.

You will need to verify that the car comes in level at each floor from both directions. If the car comes into a floor and stops too high or too low, use either of the procedures below to adjust the car. Both methods can be done from any SRU board but it's usually easier to do from inside the car since you can see how far away from the landing the car stopped.

Note: Be sure releveling is turned off before attempting to adjust the floor levels. Navigate to **MAIN MENU | SETUP | FLOOR LEVELS | RELEVELING** and set it to "**NO**". You can turn it back on after all floor levels have been set.

THE "TOO HIGH / TOO LOW" METHOD (SIMPLE METHOD)

BOTTOM FLOOR

1. Send the car on a call down to the bottom floor.
2. When the car stops, see if it is level with the landing floor.
3. If the car is level you are finished adjusting this floor.
4. If the car is not level, navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | TOO HIGH/TOO LOW** screen.
5. Use the up and down arrow keys to specify how high or low the car is relative to the landing. Save the value. Be sure the car does not leave the bottom floor until the value has finished saving or that value may get applied to the next floor the car stops at.
6. Send the car to an upper floor then back down to the bottom floor.
7. The car should now stop level with the floor. If not, repeat steps 1-5.
8. You are now finished adjusting the bottom floor.

INTERMEDIATE FLOORS

1. Start with the car below the target floor (the floor you wish to adjust).
2. Send the car on a call up to the target floor.
3. When the car stops, see if it is level with the landing floor.
4. If the car is level go to step 13.
5. If the car is not level, navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | TOO HIGH/TOO LOW** screen.
6. Use the up and down arrow keys to specify how high or low the car is relative to the landing. Save the value. Be sure the car does not leave the target floor until the value has finished saving or that value may get applied to the next floor the car stops at.
7. Send the car down to a lower floor then back up to the target floor. The car should now stop level with the floor. If not, repeat steps 5-6.
8. Send the car to a floor above the target floor.
9. Enter a call to the target floor so that the car comes down into the floor.
10. When the car stops, see if it is level with the landing floor. If car is level then you are done adjusting this floor.
11. If the car is not level, perform steps 5-6 above.
12. Repeat these steps for all remaining intermidiate floors.

TOP FLOOR

1. Send the car on a call up to the top floor.
2. When the car stops, see if it is level with the landing floor.
3. If the car is level you are finished adjusting this floor.
4. If the car is not level, navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | TOO HIGH/TOO LOW** screen.

5. Use the up and down arrow keys to specify how high or low the car is relative to the landing. Save the value. Be sure the car does not leave the top floor until the value has finished saving or that value may get applied to the next floor the car stops at.
6. Run the car down to a lower floor and then back up to the terminal landing. Repeat steps 4-5 above until car is level when going into landing.
7. You are now finished adjusting the top floor.

DIRECT ADJUSTMENT METHOD (ADVANCED METHOD)

INTERMEDIATE FLOORS

1. Start with the car below the target floor (i.e. the floor you wish to adjust).
2. Send the car on a call up to the target floor.
3. When the car stops, see if it is level with the landing floor.
4. If the car is level go to step 9.
5. If the car is not level, navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | UP STOP POINTS** screen.
6. If the car stopped higher than the landing floor (overshot) then you need to decrease the Up Stop Point. This will cause the car to stop sooner. If the car stopped lower than the landing floor (undershot) then you need to increase the Up Stop Point. This will cause the car to level longer into the door zone before stopping. Press the up and down arrow keys to increase or decrease the stop point. Each count is 3/16". When you've adjusted the count by the desired amount, save it.
7. Send the car down to a lower floor then back up to the target floor.
8. The car should now stop level with the floor. If not, repeat steps 5-8.
9. Send the car to a floor above the target floor.
10. Enter a call to the target floor so that the car comes down into the floor.
11. When the car stops, see if it is level with the landing floor.
12. If car is level then you are done adjusting this floor. If there are any remaining intermediate floors to adjust, choose a new target floor and repeat all these steps.
13. If the car is not level, navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | DOWN STOP POINTS** screen.
14. If the car stopped lower than the landing floor (overshot) then you need to decrease the Up Stop Point. This will cause the car to stop sooner. If the car stopped higher than the landing floor (undershot) then you need to increase the Up Stop Point. This will cause the car to level longer into the door zone before stopping. Press the up and down arrow keys to increase or decrease the stop point. Each count is 3/16". When you've adjusted the count by the desired amount, save it.
15. Send the car to an upper floor then back down to the target floor.
16. The car should now stop level with the floor. If not, repeat steps 13-16.

TOP FLOOR

1. Start with the car below the top floor.
2. Send the car on a call up to the top floor.

3. When the car stops, see if it is level with the landing floor.
4. If the car is level go to step 9.
5. If the car is not level, navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | UP STOP POINTS** screen.
6. If the car stopped higher than the landing floor (overshot) then you need to decrease the Up Stop Point. This will cause the car to stop sooner. If the car stopped lower than the landing floor (undershot) then you need to increase the Up Stop Point. This will cause the car to level longer into the door zone before stopping. Press the up and down arrow keys to increase or decrease the stop point. Each count is 3/16". When you've adjusted the count by the desired amount, save it.
7. Send the car down to a lower floor then back up to the top floor.
8. The car should now stop level with the floor. If not, repeat steps 5-8.
9. Navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | UP STOP POINTS** screen.
10. Press the Up Arrow key until the top floor Up Stop Point (B + x) value is shown.

Record Value: B + ___

11. Navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | DOWN STOP POINTS** screen.
12. Press the Up Arrow key until the top floor Down Stop Point (T - y) value is shown.
13. Change the Down Stop Point to 32 - x (the Up Stop Point you wrote down).
14. Plug the values into the following formula: **(T – y) = 32 – ((B + x) + 3)**
    a. Example: Up Stop point value is B + 4
    b. 32 – (4 + 3) = 25
    c. Change the Down Stop Point for Top Terminal Landing to T - 25
15. You are now finished adjusting the top floor.

Note: Steps 9 – 14 above are included for installations where the magnets are not perfectly aligned with the landing. In version 2 software Smartrise made it so that it was not necessary to adjust the **Down Stop Point** at the Top terminal landing because if the car were to hit the ***Top Term Limit*** the Smartrise controller will automatically move the car to next floor below the terminal landing DZ (i.e. 4th floor on a 5-stop elevator) and level into that floor.

BOTTOM FLOOR

1. Start with the car above the bottom floor.
2. Send the car on a call down to the bottom floor.
3. When the car stops, see if it is level with the landing floor.
4. If the car is level go to step 9.
5. If the car is not level, navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | DOWN STOP POINTS** screen.
6. If the car stopped lower than the landing floor (overshot) then you need to decrease the Up Stop Point. This will cause the car to stop sooner. If the car stopped higher than the landing floor (undershot) then you need to increase the Up Stop Point. This will cause the car to level longer into the door zone before stopping. Press the up and down arrow

keys to increase or decrease the stop point. Each count is 3/16". When you've adjusted the count by the desired amount, save it.

7. Send the car to an upper floor then back down to the bottom floor.
8. The car should now stop level with the floor. If not, repeat steps 5-8.
9. Navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | DOWN STOP POINTS** screen.
10. Press the Up Arrow key until the bottom floor Down Stop Point (T - x) value is shown.

Record Value: T - ____

11. Navigate to the **MAIN MENU | SETUP | FLOOR LEVELS | UP STOP POINTS** screen.
12. Press the Down Arrow key until the bottom floor Up Stop Point (B + y) value is shown.
13. Change the Down Stop Point to 32 - x (the Up Stop Point you wrote down).
    a. Plug the values into the following formula: **(B + y) = 32 – ((T - x) + 3)**
        i. Example: Down Stop point value is T - 6
        ii. 32 – (6 + 3) = 23
        iii. Change the Up Stop Point for bottom Terminal Landing to B + 23
14. You are now finished adjusting the bottom floor.

Note: Steps 9 – 14 above are included for installations where the magnets are not perfectly aligned with the landing. In version 2 software Smartrise made it so that it was not necessary to adjust the **Up Stop Point** at the Top terminal landing because if the car were to hit the ***Bottom Term Limit*** the Smartrise controller will automatically move the car to next floor above the terminal landing DZ (i.e. 2nd floor) and level into that floor.

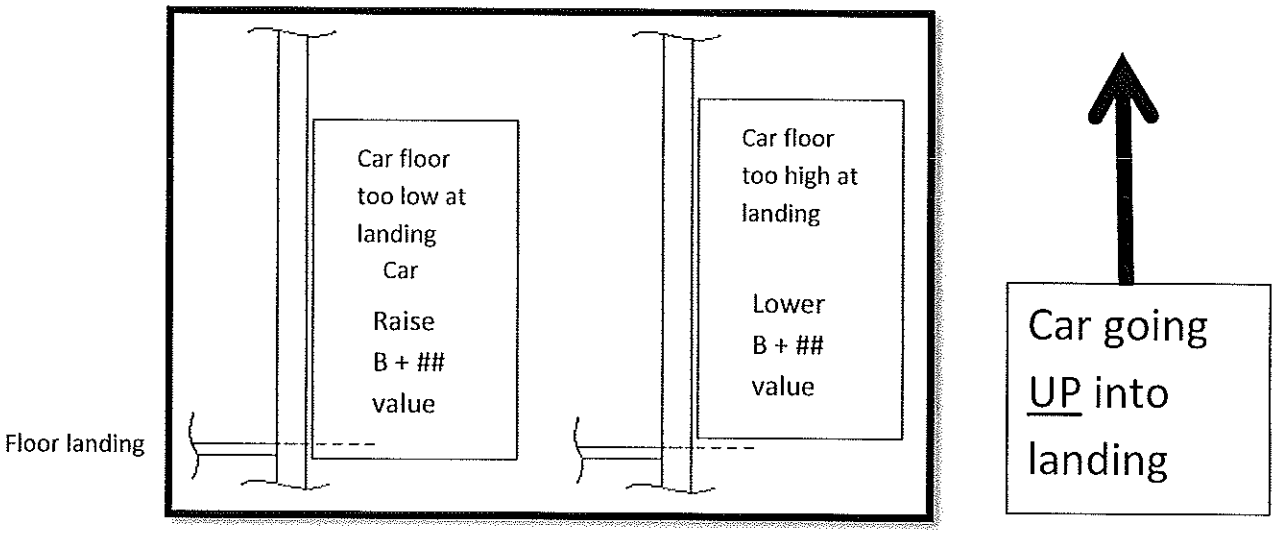
LANDING APPROACH ADJUSTMENTS

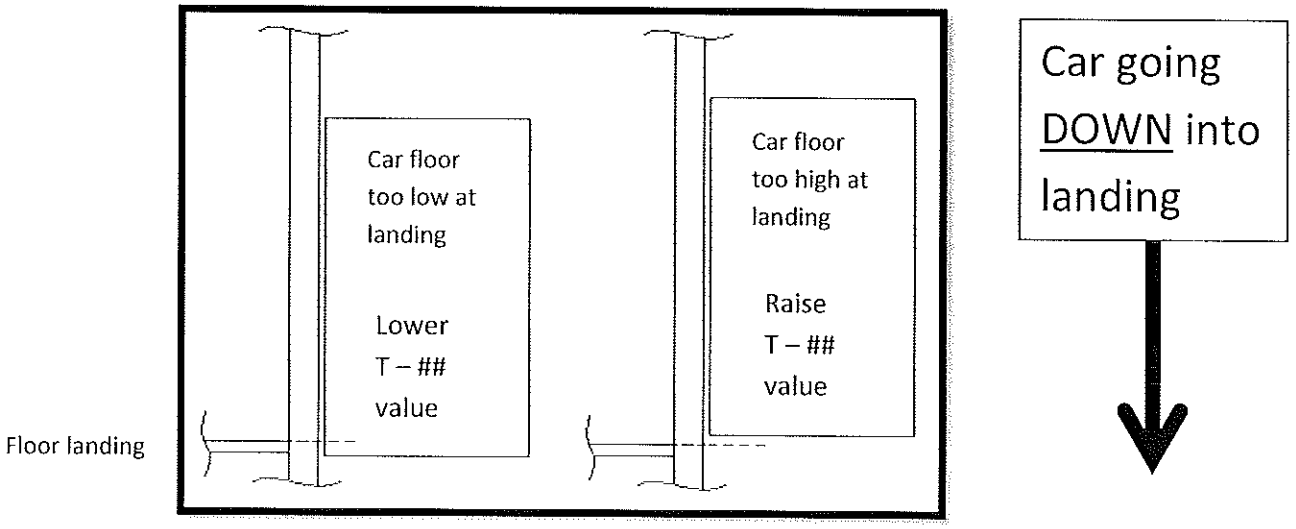
1) If further landing adjustments are needed continue with the procedure below to adjust the stop values for approaches to the desired landing.
    a. To modify the car's height going <u>UP</u> into a floor (B + ##) navigate to **MAIN MENU | SETUP | FLOOR LEVELS | UP STOP POINT** and scroll to the floor number to adjust. Change the step value to raise or lower the car's floor level with the landing level.
        i. If the cars floor is too high going up into the landing lower the B + ## value – (1 step = 3/16"). If the car is too low going up into the landing raise the B + ## value.
    b. To modify the car's height going <u>DOWN</u> onto a landing (T – ##) navigate to **MAIN MENU | SETUP | FLOOR LEVELS | DOWN STOP POINT** and scroll to the floor number to adjust. Change the step value to raise or lower the car's floor level with the landing level.
        i. If the cars floor is too high going down into the landing raise the T – ## value – (1 step = 3/16"). If the car is too low going down into the landing lower the T – ## value.
2) Once all floors have been leveled and checked for accuracy, go to **MAIN MENU | SET UP | FLOOR LEVELS | RELEVELING** and make sure this is set to "Yes".

The following illustrations show the position of the car in relation to the floor landing. Adjustments will be made depending on direction of travel. If the car is going UP into a landing then the value to change will be the UP STOP POINTS (B + #). If the car is going down into a landing then the value will be the DOWN STOP POINTS (T - #). The value to change is determined by where the car stops at the landing.

For UP STOP POINTS, if the car is too low then the "B" value will need to increase. If the car is too high then the "B" value will need to decrease.

For DOWN STOP POINTS, if the car is too low then the "T" value will need to decrease. If the car is too high then the "T" value will need to increase.





DOOR TIMES

You can specify how long the controller keeps the car doors open when answering a call. Navigate to the **MAIN MENU | SETUP | DOOR SETUP** menu. Use the following parameters to set the desired dwell times:

1. **DOOR DWELL HC**
   This parameter specifies how long the car will keep the doors open after answering a hall call. It may be desirable to keep the doors open longer when answering a hall call since the person waiting may not be at the elevator door when it arrives at the floor.

2. **DOOR DWELL CC**
   This parameter specifies how long the car will keep the doors open after answering a car call.

3. **DOOR DWELL REOPEN**
   This parameter specifies how long the car will keep the doors open after reopening them in response to a photo-eye, safety edge, or Door Open button being pressed. You may wish to make this timer relatively short.

4. **NO DEMAND DOOR OPEN**
   This option tells the controller to keep the door open until a call demand is entered into the system. This option is normally used when an automatic car door is opposite a swing style hall door.

5. **DOOR TIMEOUT OPEN/CLOSE/NUDGE**
   These three timers specify the maximum allowed time for the specified door operation. For example, when the car arrives at a floor, the controller will issue a door open command. If the controller does not see the Door Open Limit reached within the specified Door Timeout Open period, it will attempt to cycle the doors closed and open again. The close and nudge timeouts work in a similar way for those door operations.

6. **DCB CANCELS DWELL**
   This parameter allows the Door Close button to cancel the current door dwell and close the doors. If this parameter is set to "no" then the Door Close button has no effect during normal operation.

TESTING

Special Note:

- **When testing the limits at the top landings the car should be <u>empty</u> to provide the proper speeds.**
- **When testing the limits at the bottom landings the car should be <u>fully loaded</u> to overcome the counterweight and provide the proper speeds.**

NOTE:

- ❖ During limit testing you will need to adjust the contract speed of your car. This is different for every job. When you see the value **S(c)** it will represent the speed level (S1, S2, S3...S8) that contains your car's top speed.

NORMAL TERMINAL STOPPING DEVICE (NTS) AND SLOWDOWN LIMIT SWITCHES

1. Move the car to the top landing.
2. Go to **MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | S(c) | S(c) DOWN NORMAL,** record the existing value and temporarily set the new value to **00001.**

a. S(c) DOWN Normal –	Value:_____
b. S(c) DOWN Normal –	**Set to <u>00001</u>.** Save this parameter.

3. Enter a call <u>DOWN</u> to a couple of intermediate floors to obtain top speed. Manual car calls will only work from the MR or CT SRU boards.
4. Observe that car achieves top speed, blows through the called floor and logs an **A64:STOP: NO DZ** alarm message. This will confirm that the normal means of slowdown is disabled.
5. Send the car to the BOTTOM floor and observe that the car stops at the bottom terminal level with no errors. This will confirm the DOWN NTS setting is functioning properly.
6. Restore the previous recorded **S(c) DOWN Normal** parameter from (Step 2a).
7. Go to **MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | S(c) | S(c) UP NORMAL,** record the existing value and temporarily set the new value to **00001.**

a. S(c) UP Normal –	Value:_____
b. S(c) UP Normal –	**Set to <u>00001</u>.** Save this parameter.

8. With the car at the bottom landing, enter a call <u>UP</u> to a couple of intermediate floors to obtain top speed. Manual car calls will only work from the MR or CT SRU boards.
9. Observe that car achieves top speed, blows through the called floor and logs an ***A64:STOP NO DZ*** alarm message. This will confirm that the normal means of slowdown is disabled.
10. Send the car to the TOP floor and observe that the car stops at the top terminal level with no errors. This will confirm the UP NTS setting is functioning properly.

11. When testing is complete for the bottom landing restore the previous recorded **S(c) UP** parameter from (Step 7a).

EMERGENCY TERMINAL STOPPING DEVICE (ETS)

1. This procedure will test the UETS (up) and DETS (down) stopping devices. The procedure will demonstrate that the car will emergency stop (e-stop) as it passes the ETS locations at contract speed. To demonstrate the operation of the ETS, both the normal stopping means and the normal terminal stopping device (NTS) will need to be bypassed.
2. On MR controller turn on Dip switch #3 to disable door operation during testing.
3. Prior to starting this procedure take a moment and write down the parameters for S(c) Slowdowns. This is found by going to the **MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | S(c) | S(c) SLOWDOWNS.**
4. Write down the following 5-digit number for the parameters below:

a. S(c) UP Normal –	Value:_____
b. S(c) UP NTS –	Value: _____
c. S(c) Down Normal –	Value:_____
d. S(c) Down NTS –	Value: _____

5. These values will need to be manually restored after the ETS testing is completed.
6. Command the Car to several floors away from a top terminal and disable the normal stopping means by:
7. Go to **MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | S(c) | S(c) SLOWDOWNS | UP.**
   a. S(c) UP Normal – set **to 00001.** Save this parameter.
   b. S(c) UP NTS – set **to 00001.** Save this parameter.
8. Initiate a car call from **MAIN MENU | DEBUG | ENTER CAR CALLS** to send the car to the top terminal landing. Manual car calls will only work from the MR or CT SRU boards.
9. Run the car at contract speed to the top terminal landing and verify that the car e-stops (faults). The fault should be ***F81: UETS Overspeed***.
10. When testing is complete for the top landing restore the previous recorded **S(c) UP** parameter from (Step 4a-b).
11. Go to **MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | S(c) | S(c) SLOWDOWNS | DOWN.**
    a. S(c) DOWN Normal – set **to 00001.** Save this parameter.
    b. S(c) DOWN NTS – set **to 00001.** Save this parameter.
12. Run the car at contract speed from several floors above the bottom terminal landing and verify that the car e-stops (faults). The fault should be ***F80: DETS Overspeed***.
13. When testing is complete restore the previous recorded **S(c) DOWN** parameters from (Step 4c-d).

NORMAL/DIRECTIONAL LIMITS

1. These limits are physical switches electronically calculated by the Smartrise board.
2. Run the car on inspection toward the last door zone in either direction and verify that the car stops in the direction of travel when it reaches the last edge of the last door zone magnet.
    a. If the floor level is in the middle of the magnet then the limits are 3 inches below the magnet for the bottom terminal -- 3 inches above for the top magnet. If 3 inches of over-travel is too much, simply move the bottom magnet(s) up more and move the top magnet(s) down more in order to achieve your desired result.
    b. If magnets are moved a "Learn" procedure will have to be performed and floor height settings readjusted at these locations.
3. Once the edge of the magnet is reached the car should stop and "***A10: At Bottom Term***" (for bottom landing) or "***A9: At Top Term***" (for top landing) should be displayed on the LCD screen.

REDUNDANCY TEST

1. If there is a grey jumper installed on a Redundant Input:
    a. Remove the grey jumper on the terminal you are testing on the SRU board and then test the input. If a grey jumper is connecting two terminals then there should only be one wire going to it. When the state changes on this wired input and the grey jumper is removed then a RND: fault should occur.
2. If there are two wires going to a redundant input:
    a. Remove one wire and test the input. A RND: fault should occur.

BUFFER TEST

The physical goal of the buffer test for a traction system is to run the car at full speed into the buffer under power without dropping the brake, thus breaking traction. This is done in the down direction to test the car buffer and the up direction to test the counterweight buffer. A buffer test can also be performed on hydro systems as well.

<u>Hydro and Traction systems:</u>

1. Make sure the hoistway and car-top are clear of any personel and then move the car to the center of the hoistway to ensure the car runs at contract speed.
2. Set all the slowdowns to a value of **00001**. This will be done for the fastest speed S(c) - (usually S3 for tractions, S1 for Hydros). To do this go to **MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | S(c) | S(c) SLOWDOWNS | S(c) ALL.**
    a. Step 1: Record original value of S(c) All:_____
    b. Step 2: Temporarily change **S(c) All** to **00001** to perform test.

3. On the Din Rail:
    a. Jump the **UT1** to **DT1** terminals together. This will bypass the **UETS / DETS** switches.
    b. Bypass the final limit switchess by jumping terminal **SF1** to terminal **PIT** on the Din Rail.

Tractions:

1. Go to **MAIN MENU | SETUP | TIMERS | BRAKE DROP (FAULT)** and record original value.
    a. Record original value: _____
    b. Temporarily set it to the maximum of 2.55 seconds.
2. Enter a Car call to the bottom landing. The car should go full speed into the buffer. Care should be taken when operating the car at full speed without safety features in place.
3. Perform Step 2 in the UP direction to test the counterweight buffer.
4. Restore the **Brake Drop (Fault)** value recorded in Step 1.

Hydros:

1. Enter a Car call to the bottom landing. The car should go full speed into the buffer. Care should be taken when operating the car at full speed without safety features in place.

Test Completion:

1. Restore all slowdown values recorded in Step 2 of "***Hydros and Traction systems***" on previous page.
2. On the Din Rail:
    a. Remove the jumper from **UT1** to **DT1**.
    b. Remove the jumper from **SF1** to **PIT**.

STOP RING TEST – LOW SPEED

1. Make sure the hoistway and car-top are clear of any personel and then move the car to the top landing of the hoistway.
2. Go to **MAIN MENU | SETUP | MISC | BYPASS TERM LIMITS** and set to "**Yes**".
3. Verify that only the **UPL** valve goes on when moving in Inspection Speed. If not, go to **MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | INSPECTION SPEED** and lower it enough that only the **UPL** valve actuates when moving in Inspection Mode.
4. Bypass upper final limit switch (*if installed*).
5. Install a jumper from **UT1** (UETS Switch) on the din rail to **M24**.
6. Run car slowly up onto stop ring using Machine Room Inspection mode.
7. When test is complete, lower car back down to the top landing door zone.
8. Set Bypass Term Limits back to "**No**".
9. Set the Inspection Speed back to original value (*if changed*).

OVERSPEED AND GOVERNOR TEST – MAGNETEK DRIVE

There are three tests to perform for the Overspeed and Governor test; Smartrise Overspeed test, Governor Switch test and Governor Mechanical test. The following procedures will test all three items.

Smartrise Controller Overspeed test:

1. Move the car to the top landing.
2. Go to the Magnetek Drive Menu Parameter. Adjust **Drive A1:**

   a. Increase the "Contract Mtr Spd" by 50%:

   Original Value: _____ x (1.5) = New Value: _____

3. Enter a Car Call in the Down Direction via **MAIN MENU | DEBUG | ENTER CAR CALLS.**
4. The drive will run the motor at an increased speed causing it to run faster than commanded resulting in an overspeed fault. If more speed is required to achieve an overspeed condition, simply increase this parameter further.

Governor Electrical Switch test:

1. On the Smartrise controller, increase Contract speed by 150% (**MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | CONTRACT SPEED**).

   Original Value: _____ x (1.5) = New Value: _____

   NOTE: (Smartrise controllers cannot exceed 900FPM)

2. Set the S(c) speed by 50%. ***S(c) is your highest speed on SRU controller.***

   Original Value: _____ x (1.5) = New Value: _____

   NOTE: (Smartrise controllers cannot exceed 900FPM)

3. Enter a Car Call in the Down Direction via **MAIN MENU | DEBUG | ENTER CAR CALLS.**
4. At 125% of rated contract speed the Governor should trip causing the car to E-Stop.
   a. The Governor contact should open and the Machine Room Board Input should NOT be on.
   b. A mechanical reset might be needed if the Governor doesn't reset automatically.

Governor Mechanical test:

1. This test will reuse the settings changed in the previous two tests.
2. Apply a jumper from **M24** to the governor input on the Smartrise SRU board.
3. Enter a Car Call in the Down Direction via **MAIN MENU | DEBUG | ENTER CAR CALLS.**
4. The drive will run the motor at an increased speed causing it to run faster than commanded. At approximately 125%-150% of rated contract speed the Governor should mechanically trip causing the car to E-Stop.

Resetting and restoring values:

5. Reset the Magnetek parameter **Drive A1 - "Contract Mtr Spd"** and the SRU **Contract** speed back to original values.
6. Turn on DIP Switch #1 and press the Reset Button.
7. Turn off DIP switch #1 and the Car should return to Normal Operation.

OVERSPEED AND GOVERNOR TEST – YASKAWA

There are three tests to perform for the Overspeed and Governor test; Smartrise Overspeed test, Governor Switch test and Governor Mechanical test. The following procedures will test all three items.

Smartrise Controller Overspeed test:

1. Move the car to the top landing.
2. Go to the Yaskawa Drive Menu Parameter **E1-04** and **D1-0(x)**. ***D1-0x is the Yaskawa parameter that matches your highest speed setting on the SRU board (S1, S2, S3 etc.).*** Take note of the special condition when changing D1-0(x) in Step 3b below.
3. Adjust both of these values to 150% higher than currently set:
   a. Parameter **E1-04**

Original Value: _____ x (1.5) = New Value: _____

   b. Steps to change parameter **D1-0(x):**
      1. Save the original value first

Record original Value here: _____

      2. Exit to previous menu and then go back into **D1-0(x)**
      3. Input new value and then save it again.

Original Value: _____ x (1.5) = New Value: _____

4. Run car down on a multi-floor run. The Smartrise SRU should result in an overspeed fault.

NOTE: Do not restore original values until after the mechanical governor testing.

Governor Electrical Switch test:

1. On the Smartrise controller, increase Contract speed by 150% (**MAIN MENU | SETUP | SPEEDS & SLOWDOWNS | CONTRACT SPEED**). This should now match the Yaskawa D1-0(x) speed value from previous test.

Original Value: _____ x (1.5) = New Value: _____
NOTE: (Smartrise controllers cannot exceed 900FPM)

2. Enter a Car Call in the Down Direction via **MAIN MENU | DEBUG | ENTER CAR CALLS.**
3. The drive will run the motor at an increased speed causing it to run faster than commanded. At approximately 125% of rated contract speed the Governor should trip causing the car to E-Stop.

a. The Governor contact should open and the Machine Room Board Input should NOT be on.

b. A mechanical reset might be needed if the Governor doesn't reset automatically.

Governor Mechanical test:

5. This test will reuse the settings changed in the previous two tests.
6. Apply a jumper from **M24** to the governor input on the Smartrise SRU board.
7. Enter a Car Call in the Down Direction via **MAIN MENU | DEBUG | ENTER CAR CALLS.**
8. The drive will run the motor at an increased speed causing it to run faster than commanded. At approximately 125%-150% of rated contract speed the Governor should mechanically trip causing the car to E-Stop.

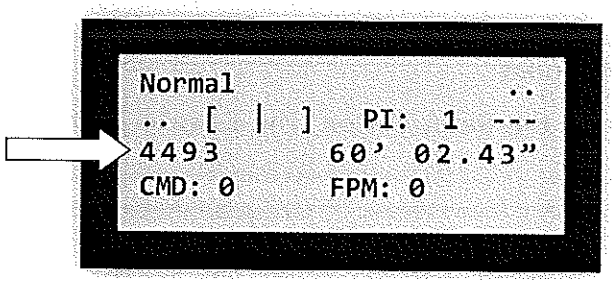
Resetting and restoring values:

1. Turn on DIP Switch #1 and press the Reset Button.
2. Turn off DIP switch #1 and the Car should return to Normal Operation.
3. Reset the Yaskawa parameters **E1-04, D1-0(x)** and the SRU **Contract** speed back to original values.

EARTHQUAKE COUNTERWEIGHT TEST

This test is designed to test the operation of earthquake and counterweight logic

1. Make sure the counterweight mid-point parameter is set. Go to **MAIN MENU | SETUP | FIRE/EARTHQUAKE | COUNTERWEIGHT MID PT** and input the midpoint distance of the hoistway. The midpoint distance can be determined by moving the car in the hoistway level with the counterweight and recording the step position from the SRU screen, located above the "CMD:" value in the lower left corner.



Record Midpoint Value here:

_____

2. Install a jumper from the **EQ** terminal on the Machine Room DIN rail to the Earth Ground terminal on the DIN rail.
3. The Car should stop and correct away from the counterweight to the nearest landing. There it will open the doors, fault out, and go out of service.
4. Turn DIP switch #2 on momentarily and then turn it off. This will reset the Earthquake logic.

UNINTENDED MOVEMENT

1. This test is designed to test the operation of the rope gripper in the event that the car moves unintentionally in a door zone with the doors open.
2. On any Smartrise Board go to **MAIN MENU | SETUP | DOOR SETUP** and set **NO DEMAND DO** to "**YES**" and **SAVE** it.
3. Enter a car call to the bottom landing.
4. The car should remain at the landing with the doors open so long as another Hall or Car call is not entered.
5. Manually lift the brake by:
    a. Install a jumper from **M24** to **A1** on the PICK relay.
    b. Install a jumper from **REF** to **A2** on the PICK relay.
6. Manually compress/close the M and B contactors. This will apply a picking voltage to the brake and it should lift.
    c. If the emergency brake is not a rope gripper (PM and other Gearless applications) manually energize the B2 contactor along with M and B1.
7. The car should drift up. If not the gearing of the machine may be low such that it may have to be turned via a wrench with the brake lifted.
8. If car still doesn't move try raising the car to the top landing and putting in weights to overcome the counterweight.
9. As soon as the controller detects an out of Door Zone state with the doors open the Controller will drop the Gripper.
10. Release the Brake or M and B Contactors.
11. If the doors did not close automatically, place the Car on Inspection MR and close the doors manually via **MAIN MENU | SETUP | DOOR SETUP | MANUALLY OPEN AND CLOSE**.
12. Remove all jumpers from the PICK relay.
13. Turn on DIP Switch #1 and press the Reset Button. The E-Brake fault may require a power cycle to clear.
14. Turn off DIP Switch #1.
15. On the SRU go to **MAIN MENU | SETUP | DOOR SETUP** and set **NO DEMAND DO** to "**NO**" and **SAVE** it.
16. The car should correct to the floor.

FINAL ADJUSTMENTS

ACCESS TOP/BOTTOM LIMITS

1. To set the access distance, simply adjust the parameters **ACCESS DIST TOP** and **ACCESS DIST BOTTOM** located under **MAIN MENU | SETUP**.

POSITION INDICATOR VIA CE

1. Floor labels can be programmed at **MAIN MENU | SETUP | PI LABELS** if a CE micro-com or Emotive fixture is installed.

PROGRAMMING SMOKE SENSOR FLOOR RECALLS

1. Go to **MAIN MENU | SETUP | FIRE/EARTHQUAKE**. For each smoke sensor (1-4) - Enter the floor location the car is to be recalled to for each smoke sensor once it is activated.
    a. Note: The Fire Key is the same as Smoke 1.
2. If the code requires a specific smoke detector to flash the fire hat in the Car Station and Hoistway then find the appropriate sensor in the above menu and set the **ALWAYS FLASH** option to "**YES**" and save it.

RESYNCHING - HYDROS

1. Set real-time clock time/date at **MAIN MENU | SETUP | REAL-TIME CLOCK**
2. Set relevelling to **Yes** in **MAIN MENU | SETUP | FLOOR LEVELS | RELEVELING**
3. Set resynch start time at **MAIN MENU | SETUP | MISC | RESYNCH START TIME**
4. Set resynch duration at **MAIN MENU | SETUP | MISC | RESYNCH DURATION**

SIMPLEX PARKING SETUP

1. Go to **MAIN MENU | SETUP | GROUP SETUP | PARK DELAY TIME** to setup the delay time until the car goes into park mode (000 secs)
2. Parameter **00-083** sets the park floor in **MAIN MENU | DEBUG | ADJUST PARAMETERS**
    a. (x00 = bottom floor, x02 = 2nd floor, etc.)
    b. Example: PI for a 4 stop is labeled: G, L, 2, 3
        i. 00-083 = x00 car will park at G,
        ii. 00-083 = x01 will park car at L, etc.

HYDRO RUPTURE SETUP

1. If you need to setup and adjust the rupture valve you need to move the car down in a mutli floor run at the highest speed possible.
    a. If your Contract speed is < 150fpm then you can increase your inspection speed to 150fpm and run it the car on Inspection.
    b. If your Contract speed is > 150fpm then you have to run the car in Normal mode. You can place car calls using **MAIN MENU | DEBUG | ENTER CAR CALLS**

GROUP PARKING SETUP

1. On Each Car:
    a. Go to **MAIN MENU | SETUP | GROUP SETUP | PARK DELAY TIME** to setup the delay time until the car goes into park mode (000 secs)
2. Group SRU board:
    a. Set Real-Time clock to your current date and time. It is set for PST when it leaves the Smartrise factory. Do this at: MAIN MENU | SETUP | REAL-TIME CLOCK.
    b. In **MAIN MENU | SETUP | GROUP SETUP** there are (3) Park Rules that can be programmed in the group controller. Each Park Rule can be setup up for different floors. Park Rule 1 is the default the group uses 24hrs/day - 7 days/wk unless another Park Rule is saved for a specific block of time.
3. Setting each Park Rule:
    a. Park Floor 1 – Sets the main floor you want the cars to park at.
    b. Park Floor 2 – Sets the alternate floor you want the cars to park at.
    c. Park w/Doors Open – Sets how many cars to park with the doors open.
    d. Park by Car ID – Allows specific cars to park on specific landings set in this parameter.
4. Park Times menu:
    a. Rule park times can be changed in the **MAIN MENU | SETUP | GROUP SETUP | PARK TIMES** menu item. These times are listed in 15 minute block increments.
    b. For example: Park Rule 1 can be set for the cars to park at the lobby at start of business from 5-7 am. Park Rule 2 can be used for the lunch hour 11-1 pm to move the cars to alternate floors to help facilitate higher lunch traffic on those floors. Park Rule 3 can be used for when people are leaving work to have the cars park at the work floors to facilitate the higher traffic use and then back to the lobby for all other times. The following is a programming example:
        i. Let's assume the cars are set to park at Lobby in Park Rule 1.
        ii. In **MAIN MENU | SETUP | GROUP SETUP | PARK RULE 2** set Park Floor 1 to #4.
        iii. To program Rule 2 for 1 hour from noon to 1pm go to **MAIN MENU | SETUP | GROUP SETUP | PARK TIMES** and save Rule 2 four times at the times: 12:00P – 12:15P, 12:15P-12:30P, 12:30P-12:45P & 12:45P-01:00P.
        iv. The cars will park at floor #4 from 12 pm to 1 pm.
        v. After 1 pm Rule 2 is complete and the group defaults back to Rule 1 to park the cars at the Lobby unless another rule is implemented for alternate floors.

APPENDIX A - MENU PARAMETER INDEX

Main Menu Item	1st Sub Menu Item	2nd Sub Menu Item	Default	Description
[Status]	I/O	Input Groups	N/A	Displays the real time status of any programmed input.
	Magnets	DZ 1 – All Top/Bottom	N/A	Displays the precise location, in feet and in counts, of the Top and Bottom on every programmed DZ magnet.
	Switches	Home Top	N/A	Displays the precise location, in feet and in counts, of the Home Top switch.
		Home Bottom	N/A	Displays the precise location, in feet and in counts, of the Home Bottom switch.
	Hall Boards	Access Bottom	N/A	Displays the communication and button status of the Access Bottom Hall Board.
		Access Top	N/A	Displays the communication and button status of the Access Top Hall Board.
		Fire Recall	N/A	Displays the communication and button status of the Fire Recall Hall Board.
		EMS	N/A	Displays the communication and button status of the EMS Hall Board.
		Hall Call Boards (F,R)	N/A	Displays the communication and button status of the Riser Hall Board.
		Hall Call Lanterns (F,R)	N/A	Displays the communication and button status of the Lantern Hall Board.
[Faults]	Active		N/A	Displays current active faults that are preventing the car from running.
	Logged		N/A	Displays the 15 latest faults stored in the board's non volatile memory.
	Clear Log		Yes / No	Clears the fault log history.
[Setup]	Speeds & Slowdowns	Contract	Set at Contract	Sets the Contract speed the car should or is actually running at. See actual car speed next to "FPM" to see if this value is correct.
		Inspection Speed	50 FPM	Sets the speed the Controller uses for all inspection modes. By code this speed may not exceed 150 FPM.
		Leveling Speed	10FPM	Sets the speed the Controller uses while leveling in a Door Zone.
		Releveling Speed	0	This speed is unused in hydraulic applications
		Limited Speed	N/A	This speed is unused in hydraulic applications
		NTS Offsets		The NTS switches are used to ensure the car does not approach a terminal at high speed.
		Up		Adjusts the NTS offset in the Up direction
		Down		Adjusts the NTS offset in the Down direction
	S1		N/A	Speed selection #1 – The following menu options are the same for S2~S8.
		S1 Speed	N/A	Speed set for S1. For tractions this is usually the slowest speed for the car. For Hydros this is usually the contract speed.

Main Menu Item	1st Sub Menu Item	2nd Sub Menu Item	Default	Description
		S1 Slowdowns	N/A	These following 5 parameters are a list of slowdown speeds for the up and down direction.
		S1 All	N/A	This parameter will set the same level for the Up and Down slowdowns. Use this if individual slowdowns are not needed.
		S1 Up	N/A	This is the slowdown distance for a car traveling Up into a Door Zone.
		S1 Down	N/A	This is the slowdown distance for a car traveling Down into a Door Zone.
		S1 Min Run Dist		Sets the min run distance for S1 speed.
	S2	(Same as S1)	N/A	This speed is unused in hydraulic applications. In tractions it is 50% of the S3 speed.
	S3	(Same as S1)	N/A	This speed is unused in hydraulic applications. In traction systems this is usually 100% of contract speed.
	S4-S8	(Same as S1)	N/A	These speeds are unused in hydraulic applications
	Numeric Command Speed		No	When enabled (Yes) this parameter will display the "CMD" speed numerically. Otherwise it will display the commanded speed in English (e.g. High).
	Floor Levels			This enables the user to adjust the car to each floor level.
		Too High/Low	N/A	This enables the user to set the car to floor level by pressing the up or down arrow keys.
		Dead Zone Size	006	This feature sets the maximum distance, in counts, the car is permitted to drift or creep before a re-level command is issued. **This parameter should not be changed.**
		Releveling	No	When this parameter is enabled (Yes) the controller will correct for out of Dead Zone conditions. Otherwise the controller will not make automatic corrections.
		Relevel Delay	.1 Sec	This parameter defines the time the controller will wait before engaging a Relevel command while in a Door Zone's Dead Zone.
		Up Stop Points	Floor B+14	This parameter permits the user to make advanced adjustments to floor levels. The stop point defined here is the point in the specific floor magnet where the leveling command is removed.
		Down Stop Points	Floor T -14	This parameter permits the user to make advanced adjustments to floor levels. The stop point defined here is the point in the specific floor magnet where the leveling command is removed.
	Timers			**Timers associated with a run command.**
		Brake Pick Delay	.1 Sec	At the beginning of a run the time between a nonzero speed command and the brake pick command

Main Menu Item	1st Sub Menu Item	2nd Sub Menu Item	Default	Description
		Brake Hold Time	2.55 Sec	The time interval between a brake pick command and a brake hold command
		Brake Drop (Norm)	.5 Sec	After a brake drop command, the time the controller waits before asserting a brake drop fault in Normal mode.
		Brake Drop (Insp)	.5 Sec	After a brake drop command, the time the controller waits before asserting a brake drop fault in Inspection mode
		Brake Drop (Fault)	.5 Sec	After a brake drop command, the time the controller waits before asserting a brake drop fault during a fault condition.
		DC Field Enable	N/A	**DC Traction controllers only.** The time after a run command the controller waits before asserting the DC Field enable output.
		Motor Energize Delay	.5 Sec	The duration the controller waits for the motor to become energized
		Run Drop (Norm)	1.00 Sec	This timer adjusts the duration of time after the brake drop command is given to remove the zero speed command. The drive and controller are still in control of the motor but after the brake has dropped. This timer aids in preventing roll back in Normal mode
		Run Drop (Insp)	2.00 Sec	This timer adjusts the duration of time after the brake drop command is given to remove the zero speed command. The drive and controller are still in control of the motor but after the brake has dropped. This timer aids in preventing roll back in Inspection mode.
		Run Drop (Fault)	2.00 Sec	This timer adjusts the duration of time after the brake drop command is given to remove the zero speed command. The drive and controller are still in control of the motor but after the brake has dropped. This timer aids in preventing roll back during a fault condition.
		Saf Drop Delay	1.00 Sec	At the end of a run, this timer adjusts the time the controller waits to drop the brake after a zero speed command is given
		Max Fault Delay	5 Sec	
		Up To Speed Delay	5 Sec	The amount of time the controller will run the motor before commanding the up valves to open. (Hydro Only)
		Pump Off Delay	.25 Sec	The time the controller will run the motor with the valves closed after arriving at a floor (Hydro Only)
		Saf Repick Delay	5 Sec	After the Pump Off Delay expires, the amount of time the controller will wait to activate the SF1 relay..
		Max Run Time	100 Sec	The maximum time allowed for the motor to run without the car reaching the destination. If this occurs a F114: run too long fault occurs

Main Menu Item	1st Sub Menu Item	2nd Sub Menu Item	Default	Description
		Fan & Light Time	100 Sec	For application with timed cab lighting: this defines the time the controller will keep cab lighting on after a hall or car call.
		E-Brake Drop Time	90 Sec	This is a timer for disengaging the ebrake when not in use. This is an energy saving feature.
	Learn Mode Commands			Used for learning the hoistway switches and magnets.
		Homing Run	No	Moves the Car to the DETS switch. If no switch is present the car will hit the buffer.
		Move to Bottom	No	Moves the car to next DZ magnet below the DETS. If a magnet is not present the car will hit the buffer.
		Learn Magnets	No	Learns the position of all magnets for programmed landings.
	Door Setup			Door Operation setup parameters.
		Manual Open and Close	N/A	Allows the user to open or nudge the doors closed on any mode of inspection.
		Door Dwell HC	3 Sec	The amount of time the controller will wait before asserting door close at the lobby. This time may be canceled by pressing the door close button or a car call button.
		Door Dwell CC	3 Sec	The amount of time the controller will wait before asserting door close at a non lobby landing. May be canceled as above.
		Door Dwell Reopen	3 Sec	The amount of time the controller will wait before asserting door close after a reopen command is given.
		Nudging Time	0 Sec	The amount of time the controller will permit the photo eye to be obstructed before asserting a nudging command. If left at 0 door nudging will be disabled.
		Lock Clip Time	.1 Sec	The amount of time the controller will disregard an open hall lock. This prevents intermittent interlock faults and should not exceed .5 seconds
		Preopening	No	When enabled (Yes) this parameter enables preopening of the doors while the car is leveling and in a Door Zone. Enabled after properly calibrated.
		No Demand Door Open	No	Allows the user to keep the car doors open at a landing with no active calls present.
		DC on Any Move	Yes	Applies a squeeze command when the car moves in any direction.
		Detect Door Jumpers	Yes	With this setting enabled (Yes) the controller will check that the gate switch and hall lock inputs mate and de-mate each time a door cycle occurs. ***Do not adjust without direction from Smartrise.***
		Swing Reopens Car	No	For manual hall swing doors: when enabled (yes) opening the swing door will cause the controller to issue a door reopen command.
		DCB Cancels Dwell	Yes	When enabled (Yes) "DCB" neglects the door dwell time and closes car doors.

Main Menu Item	1st Sub Menu Item	2nd Sub Menu Item	Default	Description
		Anti-Nuisance DO w/o PHE	000	How many calls allowed without a break in PHE before cancelling calls
		Nudge Output Normal	YES	When set to "NO" the Nudge output will be set to Normally Closed (NC).
	Group Setup	Car ID	N/A	Sets the Controller Car ID. For Group systems this specifies car number. For simplex systems this should default at 000.
		Park Delay Time	000 Sec	Set the amount of time the controller will wait before issuing a park command. If set to "0" the controller will NOT issue a park floor command.
	Fire / Earthquake	On Smoke 1/Key Go To	01	Sets the commanded floor when either Smoke 1 trips or when the fire recall key is turned on.
		On Smoke 2 Go To	01	Sets the commanded floor when Smoke 2 trips.
		On Smoke 3 Go To	01	Sets the commanded floor when Smoke 3 trips.
		On Smoke 4 Go To	01	Sets the commanded floor when Smoke 4 trips.
		Reset to Exit Phase 1	Yes	When enabled (Yes) a phase 1 key reset is required to return the car to normal operation after the fire recall sequence.
		Latch Smokes	Yes	If enabled (Yes) a momentary trip of a smoke input will latch Fire Recall. If set to No the controller will return to Normal operation after the Smoke input is remade.
		Latch Phase 1 Key	Yes	If enabled (Yes) a momentary contact of the Fire Recall Switch will put the controller in Fire Recall Mode. If disabled (No) the Fire Recall Switch must remain "On" until the car is placed on Fire Phase 2
		Phase 1 Bypass	No	When enabled (Yes) the controller will permit the fire recall system to be bypassed via a key switch. ***Do not adjust without Smartrise***
		DOL to exit Phase 2	No	When enabled (Yes) the controller will exit phase 2 operation when the DOL is achieved
		Ph2 DCB Momentary	No	If enabled (Yes), allows user to press "DCB" once instead of holding to close car door.
		Flash Smoke 2	No	Regardless of sequencing, if Smoke 2 is tripped the controller will illuminate the fire hat intermittently as required by group 4 code
		Flash Smoke 3	No	Regardless of sequencing, if Smoke 3 is tripped the controller will illuminate the fire hat intermittently as required by group 4 code
		Flash Smoke 4	No	Regardless of sequencing, if Smoke 4 is tripped the controller will illuminate the fire hat intermittently as required by group for code
		Counterweight Mid Point	00000	Sets the position at which the counterweight will pass the car.

Main Menu Item	1st Sub Menu Item	2nd Sub Menu Item	Default	Description
	Access Distance Top		0'00"	Sets the allowable distance the car is allowed to travel down on Top Access
	Access Distance Bottom		0'00"	Sets the allowable distance the car is allowed to travel up on Bottom Access
	PI Labels			This feature permits the user to label any landing to a 2 digit alpha-numeric or numeric configuration
	Real Time Clock	Time	N/A	This feature sets the internal clock time for fault identification
		Date	N/A	This feature sets the internal clock date for fault identification
	Local Inputs		N/A	The feature allows the user to see if the Smartrise SRU is registering an input. The inputs are board specific; For example, when looking on the Car Top SRU it will show just the Car Top inputs.
	Local Outputs		N/A	The feature allows the user to see the programmed output configuration for any Smartrise SRU. For example, if using the Machine Room SRU this would allow the user to see all programmed outputs on the Machine Room Board
	Security	Enable CC Lockout	No	When enabled (Yes) input(s) will become actively monitored to secure all car calls. The input requires a 24VC input from the security source.
		Timed Lockout HC		When enabled (Yes) the controller will lock out all Hall Calls in the programmed time period below.
		Use Floor Codes	No	When enabled (Yes) the user set codes for each floor are now active.
		Independent Service Overrides	Yes	When enabled (Yes) Independent Service will override all Car Call security specifications
		Start Time (M-F)	--:--	When timed Hall or Car call is enabled this parameter defines the time of the day Mon-Fri the controller will start locking out the call
		Stop Time (M-F)		
		Start Time (S-S)	--:--	When timed Hall or Car call is enabled this parameter defines the time of the day Sat-Sun the controller will stop locking out the call
		Stop Time (S-S)		
		Per Floor Options		Allows a user to set individual options dealing with car call security for each floor.
		Floor # (F) 24/7		This parameter turns on security for the front door of Floor # for 24hrs/7days week.
		Floor # (R) 24/7		This parameter turns on security for the rear door of Floor # for 24hrs/7days week.
		Floor # (F) Timed		This parameter turns on security for front door of Floor # based on time of day
		Floor # (R) Timed		This parameter turns on security for rear door of Floor # based on time of day
		Access Code (F)		This parameter will set an access code to be used for accessing the front door of a security enabled floor

Main Menu Item	1st Sub Menu Item	2nd Sub Menu Item	Default	Description
		Access Code (R)		This parameter will set an access code to be used for accessing the rear door of a security enabled floor
	Misc	Bypass Term Limits	No	When enabled (Yes) permits the controller to move above or below the bottom and top Door Zone magnets on inspection only.
		Emergency Power	No	When set to Yes the controller will monitor an Emergency Power input to determine when to initiate emergency power operation
		Monitor BPS	No	Not used for hydraulic applications
		BPS is NC	No	Not used for hydraulic applications
		Number of COP Expansion Boards	000	This parameter defines how many extra COP boards the controller is expecting. This parameter is only pertinent to specific applications.
		Hold with Pick	Yes	Not used for hydraulic applications
		Resynch Start Time	--:--	For hydraulic applications only. This parameter defines the time to initialize the jack re-synchronizing command
		Resynch Duration	0 Sec	For hydraulic applications only. This parameter defines the duration the controller will remain in jack re-synchronization
		Up Valve UL When UH	Yes	This turns on the UPL valve when the UPH valve is actuated (Hydros Only)
	Default All	Yes/No	No	Defaults all parameters to the conditions listed here. If DIP switch one is placed down in conjunction with a default all critical values will be defaulted as well.
|Debug|	Enter Car Calls		N/A	Allows the user to input a car call from the Car Top or the Machine Room
	View Memory		N/A	This is a troubleshooting parameter that is reserved for factory setup. Do not change unless directed by Smartrise
	Adjust Parameters		N/A	These are parameters that can be changed by the installer to adjust operation. Refer to Addendum III for a complete list of parameters available.
	Binary Parameters		N/A	This is a troubleshooting parameter that is reserved for factory direction. Do not change unless directed by Smartrise
	Comm Status			
	Passcode		00000	The password required to enable Normal Operation
|About|	Version			Describes the controller board, job name and software version the controller is using.

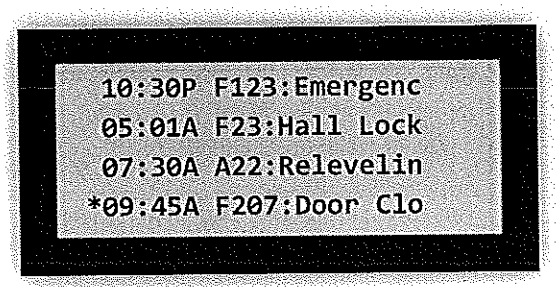
APPENDIX B – FAULT DESCRIPTIONS INDEX

Many faults are caused by loose wiring or cables. Check the wiring associated with the fault item before contacting Smartrise. On Cat5 cables, reseat cable in net port making sure that locking tab is fully secure.

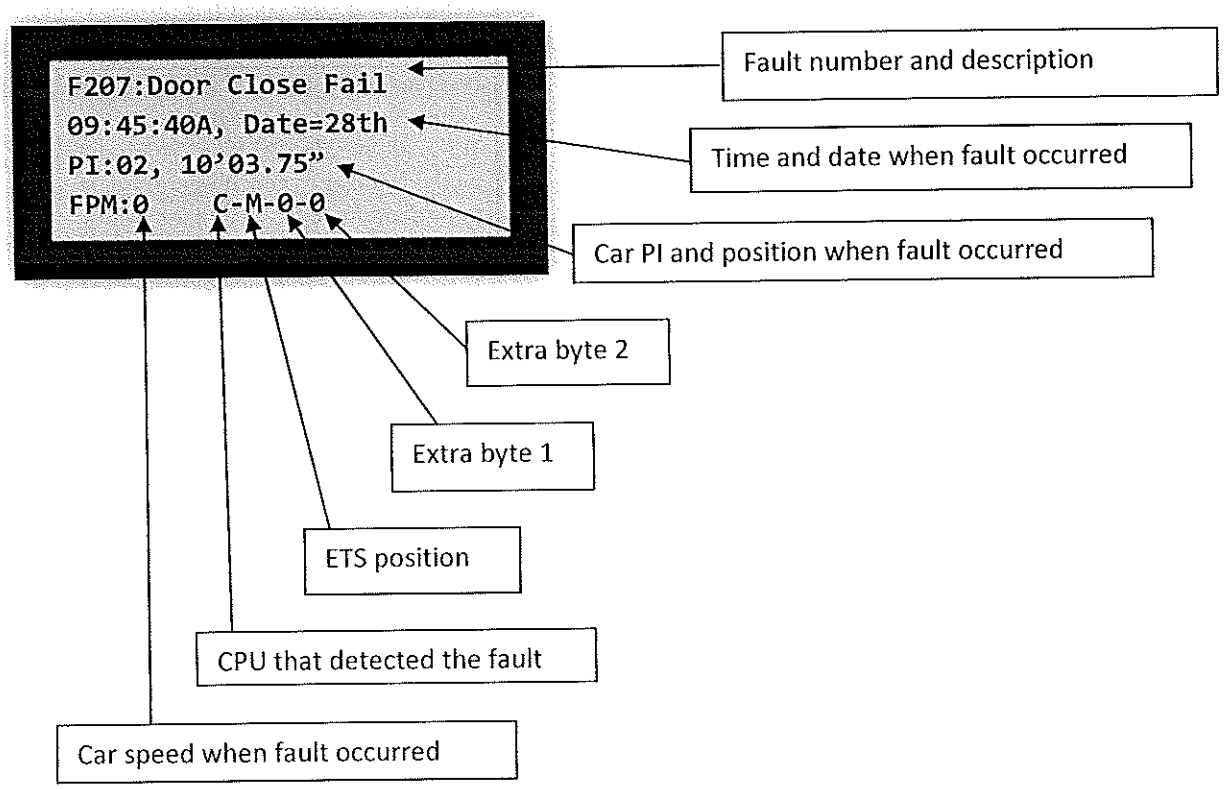
Note: **Faults** will cause a moving car to perform an emergency stop.
Each SRU board maintains a log of the last 15 faults and alarms. This log is maintained even if the controller is powered off. To view this fault history, navigate to:

MAIN MENU | FAULTS | LOGGED

You will see the fault log displayed as a list faults and alarms with the newest faults at the bottom of the list. Scroll up and down to see the entire list of recorded faults and alarms.



To get detailed information on a particular fault or alarm, move the cursor next to that fault and press the ENTER button.
Below is an example of how faults are displayed on the Fault Detail screen.



The fault number and descriptions are listed at the end of this appendix. The time and date indicate when the fault was written to the log. It is important that the real-time clock be set properly to have an accurate idea of when the faults occurred. The PI shows the floor label of the closest doors zone magnet and the position shows feet and inches. FPM indicates how fast the car was moving.

Four additional indicators on the bottom row show CPU, **ETS** position, and Extra Bytes 1 and 2.

CPU	*Computer that Detected the Fault or Alarm*
A	Machine Room SRU, J21 processor
B	Machine Room SRU, J22 processor
C	Cartop SRU, J21 processor
D	Cartop SRU, J22 processor

ETS Position	*Meaning*	*State of ETS Switches when Fault or Alarm Occurred*
B	Bottom	**DETS** switch was open, **UETS** switch was closed.
M	Middle	Both **DETS** and **UETS** switches were closed.
T	Top	**DETS** switch was closed, **UETS** switch was open.
U	Unknown	Either **DETS** or **UETS** were both open and the CPU recording the fault did not have accurate information about the state of the switches. Faults that occur shortly after a power on or during a system communication loss may indicate an unknown **ETS** position.

Extra Byte 1 and Extra Byte 2 are normally both zero indicating that no additional information is available. Several faults and alarms will store additional information in these bytes that can be used to diagnose the cause of the fault. The *F29: Out of Service* fault is one example that uses these bytes to indicate what caused the car to go out of service. See the fault and alarm description table below for more information on when these extra bytes are used.

F2: MS MR Mode

Main/Safety Machine Room Mode fault.

Causes	*Remedies*
The J22 processor on the Machine Room SRU board has detected that input 508 is not powered. This indicates that the controller should be either on Inspection or Construction mode. This fault occurs if the J21 processor reports a different operation mode. If a software upgrade has been performed recently then it is possible that one of the SRU boards was mis-programmed.	Verify the wiring on inputs 507 and 508 of the Machine Room SRU board. These inputs should go on and off together as the Machine Room Inspection Enable switch is toggled. Controller boards may need to be reprogrammed if they contain invalid software. Machine Room SRU board may need to be replaced. "MS" faults are often caused by a fast power glitch on an input rather than a longer glitch which will cause a "Rdn" F30 fault.

F4: MS Hall Locks

Main/Safety Hall Locks fault.

Causes	*Remedies*
The J22 processor on the Machine Room SRU board has determined the state of the hall door locks by scanning inputs 502, 504, and 506. The J21 processor which scans redundant inputs 501, 503, and 505 reports the hall door locks in a different state. If a software upgrade has been performed recently then it is possible that one of the SRU boards was mis-programmed.	Verify the wiring on inputs 501 through 506 of the Machine Room SRU board. These input pairs [501,502], [503,504], and [505,506] should go on and off together as the bottom, middle, and top hall locks open and close. Controller boards may need to be reprogrammed if they contain invalid software. Machine Room SRU board may need to be replaced. "MS" faults are often caused by a fast power glitch on an input rather than a longer glitch which will cause a "Rdn" F39-F41 fault.

F6:Safety String

Safety String has caused a contactor to not close.

The feedback from the M, B1 or B2 contactors shows a contactor in the open position when it should be closed. Use Extra Byte 1, 2 or 3 to determine the reason for the fault and how to correct it.

Extra Bytes 1-2	*Causes*	*Remedies*
1-0	Both SF1 and SF2 are energized but the M contactor feedback shows it open (de-energized). The M contactor should close (energize) whenever the safety string is made and the SAF relays are both energized. The machine room board monitors the normally closed auxiliary contact of the M contactor. This contact is normally wired to an input on the Machine Room SRU board but can be moved to another input. The input should be powered when the contactor is open and unpowered when the contactor is closed.	If the M contactor does not energize at all, check the safety circuit for an open switch. The coil of the M contactor gets its power from the safety circuit. Also check the SF1 and SF2 relays. Verify the relays are properly seated in the sockets and do not have any bent pins. If the M contactor does energize, verify the normally closed feedback input on the Machine Room SRU board is powered when contactor is de-energized, and not powered when contactor is energized. Verify the auxiliary contactor is securely attached to the M contactor. If the connection is loose, try to snap it back on more snugly.
2-0	The controller has been asserting a pick or hold command to the brake for at least one second but one or more of the B1 contactors feedback show they are not energized.	If the B1 contactor does energize, verify that the normally open feedback inputs on the Machine Room SRU board are powered when contactor is de-energized and not powered when contactor is energized. Verify the auxiliary contactor is securely attached to the B1 contactors. If a connection is loose, try to snap it back on more snugly.
3-0	The controller has been asserting a pick or hold command to the brake for at least one second but one or more of the B2 contactors feedback show they are not energized.	If the B2 contactor does energize, verify that the normally open feedback inputs on the Machine Room SRU board are powered when contactor is de-energized and not powered when contactor is energized. Verify the auxiliary contacts are securely attached to the B2 contactors. If a connection is loose, try to snap it back on more snugly.

F7:MS ETS Zone

Main/Safety ETS Zone fault.

Causes	*Remedies*
The J22 processor on the Machine Room SRU board has determined the state of the ETS hoistway switches by scanning inputs 510 and 512. The J21 processor which scans redundant inputs 509 and 511 reports the switches in a different position. If a software upgrade has been performed recently then it is possible that one of the SRU boards was mis-programmed.	Verify the wiring on inputs 509 through 512 of the Machine Room SRU board. The input pairs [509,510] and [511,512] should go on and off together as the car passes the UETS and DETS hoistway switches. Controller boards may need to be reprogrammed if they contain invalid software. Machine Room SRU board may need to be replaced. "MS" faults are often caused by a fast power glitch on an input rather than a longer glitch which will cause a "Rdn" F35-F36 fault.

F8:MSM GSW

Main/Safety Gate Switch fault.

Causes	*Remedies*
The J22 processor on the Cartop SRU board has determined the state of the gate switch by scanning input 508 (and 515 if car has rear doors). The J21 processor which scans redundant inputs 507 and 514 reports the switches in a different position. If a software upgrade has been performed recently then it is possible that one of the SRU boards was mis-programmed.	Verify the wiring on inputs 507 and 508 (and 514 and 515 if car has rear doors) of the Cartop SRU board. The input pairs [507,508] and [514,515] (if rear doors) should go on and off together as the car doors open and close. Controller boards may need to be reprogrammed if they contain invalid software. Cartop SRU board may need to be replaced. "MS" faults are often caused by a fast power glitch on an input rather than a longer glitch which will cause a "Rdn" F37 or F56 fault.

F9:SAF1 Open Fail

Safety Relay SAF1 Failed to Open

Causes	*Remedies*
The controller is trying to de-energize (open) safety relay SF1 but the feedback from the relay shows that it is still energized (closed). Output 601 on the Machine Room SRU board controls the coil of the relay. Input 520 is the normally closed feedback monitor. When 601 is off, 520 should be on. If 520 reports the wrong state for more than 1 second then this fault is logged.	Check to see if the SF1 relay is properly seated in the socket and does not have any bent pins. Check Jumper J19 (Rev 5-7 SRU) and J24 (Rev 8 SRU) for proper configuration. Refer to provided drawings. Check **MAIN MENU | STATUS | IO | INPUT GROUPS | CONTROLLER | SAF1** to see if the status is changing with Output 601

F10:SAF2 Open Fail

Safety Relay SAF2 Failed to Open

Causes	*Remedies*
The controller is trying to de-energize (open) safety relay SF2 but the feedback from the relay shows that it is still energized (closed). Output 601 on the Cartop SRU board controls the coil of the relay. Input 526 is the normally closed feedback monitor. When 601 is off, 526 should be on. If 526 reports the wrong state for more than 1 second then this fault is logged.	Check the SF2 relay. Verify it is properly seated in the socket and does not have any bent pins. Check Jumper J19 (Rev 5-7 SRU) and J24 (Rev 8 SRU) for proper configuration. Refer to provided drawings. Check **MAIN MENU | STATUS | IO | INPUT GROUPS | CONTROLLER | SAF2** to see if the status is changing with Output 601

F11:B Cont. Fail

B Contactor Failed to Open

CPU	*Extra Bytes 1-2*	*Causes*	*Remedies*
A	2-0	B1 Contactor auxiliary contact indicates the B1 is energized (closed) when it should be de-energized (open).	Check that the B1 contactor de-energizes (opens) when there is no demand to run. Check the auxiliary contact on B1. Verify it is properly seated on the contactor and that no wires have become loose or disconnected. Check input terminal on Machine Room SRU board to verify that the wire has not become loose or disconnected.
A	3-0	B2 Contactor auxiliary contact indicates the B2 is energized (closed) when it should be de-energized (open).	Check that the B2 contactor de-energizes (opens) after relays RGM and DZM de-energize. Check the auxiliary contact on B2. Verify it is properly seated on the contactor and that no wires have become loose or disconnected. Check input terminal on Machine Room SRU board to verify that the wire has not become loose or disconnected.

F12:M Cont. Fail

M Contactor Failed to Open

Causes	*Remedies*
The M contactor failed to open.	Check that the M contactor de-energizes (opens) when SF1 relay is de-energized. Check the auxiliary contact on M contactor. Verify it is properly seated on the contactor and that no wires have become loose or disconnected. Check input terminal on Machine Room SRU board to verify that the wire has not become loose or disconnected.

F13:MS CT Mode

Main/Safety Cartop Mode fault.

Causes	*Remedies*
The J22 processor on the Cartop SRU board has scanned inputs 504 and 506 (and 513 if In-Car Inspection option is enabled) to determine if car is on inspection or in automatic mode. The J21 processor has scanned redundant inputs 503 and 505 (and 512 if IC inspection) and determined a different mode of operation. If a software upgrade has been performed recently then it is possible that one of the SRU boards was mis-programmed.	Verify the wiring on inputs 503 through 506 (and 512 and 513 if IC inspection). The input pairs [503,504] and [505,506] (and [512, 513] if IC inspection) should go on and off together as the various inspection/access enable switches are toggled on and off. Controller boards may need to be reprogrammed if they contain invalid software. Cartop SRU board may need to be replaced. "MS" faults are often caused by a fast power glitch on an input rather than a longer glitch which will cause a "Rdn" F31, F32, or F38 fault.

F22:Gate Switch

Gate Switch fault.

CPU	*Extra Bytes 1-2*	*Causes*	*Remedies*
C	0-0 (any door)	Controller was trying to close or nudge the doors and timed out before seeing GSW, DPM and DCL. Car is on inspection, GSW is not made, and the Car Door Bypass enable switch is not active. Car is outside of a door zone and the GSW is not made.	Check inputs for GSW, DPM, and DCL. Verify they are transition properly as car door is opened and closed. If car is on inspection and needs to be moved then either close the car doors or activate the Car Door Bypass Enable switch. Note that the bypass switch will not work on Machine Room Inspection. A bad door zone magnet may cause the controller to lose the DZ input while stopped at a floor. If this happens while the doors are open this fault will be logged.
C	1-0 (front door)	The GSW input for the front (or only) door is not powered, the car is not in a door zone, and the current operating mode does not allow for running with the car doors open.	Verify that the front car door is closed. Verify that the GSW circuit is operating correctly. Verify that the door zone sensor and magnets are working.
C	2-0 (rear door)	Same as above but for rear door.	Same as above but for rear door.
D	0-0 (any door)	Controller detected no GSW for at least 500ms while outside a door zone and exceeding 20 fpm.	Check gate switch and wiring.

F23:Hall Locks

Hall Lock or Swing Door Closed fault.

Extra Byte 1 holds the hall door flags at the time of the fault.

Bit 0 = Bottom locks made

Bit 1 = Middle locks made

Bit 2 = Top locks made

Bit 3 = Bottom door closed

Bit 4 = Middle door closed

Bit 5 = Top door closed

Bit 6 = 0

Bit 7 = 0

Extra Byte 2 holds the time (in 10ms ticks) that the doors were in an unsafe position prior to generating the fault.

CPU	*Causes*	*Remedies*
A	Attempting to move car on inspection with one or more hall locks open and Bypass Hall Doors Enable switch off. Car is on Hoistway Access and the middle lock or closed input in not powered. Car was running and clipped a door lock. Car doors are closed and car is attempting to run for at least 5 seconds but hall locks have not yet made.	Try increasing the LOCK CLIP TIME under the DOOR SETUP menu. Check hall locks and wiring.
B	One or more locks was not made for more than 500 ms at a time when all locks should be made.	Check hall locks and wiring.

F24:In Car Stop

In-car Stop Switch in Stop Position

Causes	*Remedies*
One or both of the In-car stop switch inputs on the Cartop SRU board are not powered. Stop switch is not present on car but inputs have not been jumped out.	For redundancy, both inputs on the Cartop board must be powered for the car to run. Verify that the In-car Stop switch is wired to both these inputs. Verify the inputs have power when the switch is in the RUN position and that power is removed in the STOP position. If car does not have an In-car Stop switch then the Cartop SRU inputs must be jumpered to the C24 bus.

F27:Drive Comm

No Serial Communication with Drive

Causes	*Remedies*
Cat5 cable not plugged into DRIVE port. Smartrise drive parameter not configured for serial control of drive. Jumpers on Machine Room SRU board connector J20 set for half-duplex communication on DRIVE port. Bad cat5 communication cable. Magnetek drive not configured for serial communication. Bad comport on Machine Room SRU board. Excessive electrical noise or bad grounding. Bad comm port on Magnetek drive.	Reseat cat5 communication cable into DRIVE port. Verify parameter 00-020 = xFF for Magnetek. Verify parameter 00-020 = xFC for Hydros Verify there are no jumpers on Machine Room SRU board 10-pin header J20. This header is located at top left corner of SRU board. Replace cat5 drive cable. Verify Magnetek drive is configured for serial communication. Replace Machine Room SRU board. Be sure controller is properly grounded. Replace Magnetek drive.

F29:Out of Service

Out of Service Fault

Car will no longer run on Automatic operation. Use Extra Byte 1 and Extra Byte 2 to determine the reason for the fault and how to correct it.

Extra Bytes 1-2	*Causes*	*Remedies*
0-2	Hydro is in a "Can't Run Up" condition. This is a condition where it cannot run the pump motor. This can be due to low oil, running on battery power, or having exceeded the motor limit timer.	Correct the condition preventing the car from running the pump motor. You may also need to toggle the car on and off of inspection to manually clear the fault.
1-0	Car has exceeded the maximum number of *Starts Per Minute*. Parameter 00-042 limits how many times the controller may attempt to run the car in a one-minute period. If the safety logic detects too many attempts, it will take the car out of service until the minute field on the real-time clock changes.	Verify parameter 00-042 has a valid value. By default, the car is allowed to make 10 runs per minute. If the value is too small this fault may occur. Check that the real-time clock is set and working. Navigate to **MAIN MENU | SETUP | REAL-TIME CLOCK | TIME**. If the time is wrong, set it. If the time is correct, watch until the seconds reaches 59. Verify the minute value increments when the seconds rolls over to 00. If it does not the clock chip may need to be replaced. To prevent this fault from occurring, you can set parameter 00-042 = x00. This should only be done if the real-time clock is not working and a replacement is not immediately available.

Extra Bytes 1-2	*Causes*	*Remedies*
2-0	Car has exceeded the maximum number of *Faults Per Hour*. Parameter 00-041 limits how many times the controller may fault in a one-hour period. If the safety logic detects too many faults, it will take the car out of service until the hour field on the real-time clock changes.	During installation or testing, an excessive number of faults may be generated. You can set parameter 00-041 = x00 to disable this fault however it is recommended that you set it back to a non-zero number once the car is placed into normal operation. Check that the real-time clock is set and working. Navigate to **MAIN MENU | SETUP | REAL-TIME CLOCK | TIME**. If the time is wrong, set it. If the time is correct, verify that the hour value increments when the minutes rolls over from 59 to 00. If it does not the clock chip may need to be replaced. Set parameter 00-041 = x00 until the clock chip can be replaced.
6-6	Controller has lost communication with the Schmersal landing system receiver unit.	Check communication cable on MR DRIVE port. Check wiring between controller and Schmersal unit. Power cycle Schmersal unit (or entire controller). Replace Schmersal unit.
7-N where N is floor (1 = bottom)	Car has gone out of service due to activation of the HUGS infant abduction security system at a floor the car was serving.	Reset of the HUGS security system is required to put the car back in service.
8-8	An *Out of Service* input has been activated on one of the SRU boards. An out of service input will appear under *Local Inputs* as [CONTROLLER, GO OOS].	If the controller has external circuitry for taking the car out of service, check if it is functioning properly. The SRU input should be off for normal operation, on to take car out of service. Check the *Local Inputs* of each SRU board to see if any input is incorrectly assigned for the out of service function.
9-9	The *Out of Service Timer* is activated and took the car out of service.	The Out of Service Timer is under the **MAIN MENU | DEBUG | OOS** menu. To put the car back in service, the appropriate OOS LOCK CODE must be entered. Contact Smartrise for additional assistance if the lock code is not known.

F30:Rdn Insp MR
F31 Rdn Insp CT
F32:Rdn Insp IC
F33:Rdn IC Stop
F34:Rdn Fire Stop
F35:Rdn UETS
F36:Rdn DETS
F37:Rdn GSW (F)
F38:Rdn Access
F39:Rdn Top Lock
F40:Rdn Intr Lock
F41:Rdn Btm Lock
F56:Rdn GSW (R)

Safety Input Redundancy Faults

These faults are all very similar. They are all related to safety critical inputs that come in on two input terminals. Both input terminals should always show the same state. A fault occurs when one input is on and the other is off.

Causes	*Remedies*
F30:Rdn Insp MR Mismatch on MR input pair F31:Rdn Insp CT Mismatch on CT input pair F32:Rdn Insp IC Mismatch on CT input pair or controller was configured for In-car Inspection but car does not have IC Inspection key switch. F33:Rdn IC Stop Mismatch on CT input pair F35:Rdn UETS Mismatch on MR input pair F36:Rdn DETS Mismatch on MR input pair F37:Rdn GSW (F) Mismatch on CT input pair F38:Rdn Access Mismatch on CT input pair F39:Rdn Top Lock Mismatch on MR input pair F40:Rdn Intr Lock Mismatch on MR input pair F41:Rdn Btm Lock	Check for wiring mistakes on the inputs terminals. Check for plug-in terminal blocks on SRU board that might be defective. Verify input LEDs go on and off together. If LEDs do go on and off together, check SRU board for metal shavings or anything that might be grounding or shorting the components on the board. Replace SRU board. For fault F32 only, if car does not have an In-car Inspection key switch then set parameter 00-004 = x51 to disable this feature.

Causes	*Remedies*
Mismatch on MR input pair F56:Rdn GSW (R) Mismatch on CT input pair	

F47:Main<->Saf MR

F48:Main<->Saf MR

Loss of communication between the Main (J21) and Safety (J22) processors

Causes	*Remedies*
These faults will occur normally during an upgrade of the system software since the CPUs are halted during programming. If these faults occur during normal operation then it may indicate a bad board.	For F47 replace the Machine Room SRU board. For F48 replace the Cartop SRU board.

F49:Drive Fault

A Fault has occurred on the drive or a fault on the controller has registered as a drive fault.

Causes	*Remedies*
A drive fault can sometimes be the result of an emergency stop due to another fault. On hydraulic systems a softstart fault has occurred either from the fault contactor not closing or an actual drive fault. On traction systems an encoder that is connected wrong can often cause a drive fault.	Check the Smartrise fault log to see if another fault occurred at the same time as the drive fault. This may be the actual fault and the drive fault was just a result of the emergency stop. Check the softstart for faults and refer to the softstart manual for troubleshooting codes and corrections. Check the fault history on the drive itself. This will give additional details as to what caused the drive to fault.

F52:Overspeed Cmd

Attempt to Command Drive to Run at Illegal Speed

Causes	*Remedies*
Inspection speed set to a value greater than 150 fpm. One of the run speeds set greater than 110% of Contract Speed.	Verify car speed parameters (S1-S3) are set with the values included on provided drawings.

F53: Fault Log Cleared

All faults stored in memory have been automatically erased

Causes	*Remedies*
During power up of the controller, the software validates that the memory used to store the fault log is valid. An F53 fault is thrown and the fault log memory is cleared if it is found to contain invalid data.	With the exception of a dead RTC chip battery, an occasional F53 should not be a problem. If you suspect a dead battery, you will need to replace the RTC chip. Most SRU boards

Causes	*Remedies*
A new SRU board that has not been powered on may have invalid data in the area of memory used to store faults. Reprogramming an SRU with a new software version may cause the fault log to get cleared. If the controller lost power or an SRU board was reset during the recording of a fault, the log data may become invalid and have to be cleared. If the F53 fault happens every time the controller is powered up, it probably means that the battery that provides power to the Real-Time Clock chip is dead. This is the large chip in the center of the SRU board. It keeps track of time when the controller is powered off and also stores the fault log in RAM.	manufactured after 2009 have this chip socketed. If your board has the chip soldered, you will need to replace the board. It is perfectly safe to run the elevator with a dead battery in the RTC chip. It simply means that the fault log will be erased if you lose power. Also, any functions that require knowing the time and date (e.g. timed security) may not function properly after a power loss.

F56:Rdn GSW (R)

See fault F30.

F71:Speed Dev Err

Speed deviation error

Causes	*Remedies*
The detected car speed is different from the expected value.	Check for proper connection of DP1 and DP2 signals. Verify the DP1 and DP2 inputs toggle rapidly as the car moves. **IP8300:** Verify the CAT5 connection cable has not come loose or disconnected. **Encoder:** Verify that the encoder has not become loose or disconnected.

F75:Overspeed FPM

Actual Overspeed of Car Detected

Causes	*Remedies*
True car speed exceeded 110% of Contract Speed. True car speed exceeded 150 fpm while on Inspection.	Be sure Contract Speed parameter is set correctly to maximum speed at which the car will run. For hydraulic cars, high speed inspection may cause car to over speed. For traction cars, check contract motor speed on drive. Reduce the RPM value if necessary.

F77:CPU Stop Swch

CPU Stop Switch is Active

CPU	*Causes*	*Remedies*
A or B	DIP switch 1 on Machine Room SRU board is in the ON position.	Turn switch to OFF position to enable car to run.
C or D	DIP switch 1 on Cartop SRU board is in the ON position.	Turn switch to OFF position to enable car to run.

F80:DETS Overspeed

F81:UETS Overspeed

Overspeed of Car at DETS or UETS switch.

CPU	*Causes*	*Remedies*
A or B	Commanded car speed was 95% of Contract Speed as car crossed an ETS switch while approaching the terminal.	Increase the slowdown distance parameters. Move the ETS switch that caused the fault closer to the terminal.
C or D	Actual detected car speed was 95% of Contract Speed as car crossed an ETS switch while approaching the terminal.	Increase the slowdown distance parameters. Move the ETS switch that caused the fault closer to the terminal.

F91:Learn Error

Learn Error

Causes	*Remedies*
The LEARN MAGNETS command was given when car was not in the bottom door zone. Controller must see DZ on, DETS off, and UETS on to begin the learn.	Verify the LEARN MAGNETS command is given only when car is at bottom door zone. Verify the door zone input is correctly wired and magnets are reading properly. Verify DETS and UETS are installed correctly and do not overlap with any door zone magnets.

F100:CN 0

Loss of communication between Machine Room and Cartop

Causes	*Remedies*
CN+ and CN- wires in traveling cable not properly connected.	Verify the CN+ terminal in the machine room connects to the CN+ terminal on the cartop. Verify the CN- terminal in the machine room connects to the CN- terminal on the cartop.
Machine room REF terminal not connected to Cartop REF terminal.	Verify the REF terminal in the machine room connects to the REF terminal on the cartop. Verify the N terminal in the machine room connects to the N terminal on the cartop.
Shield on communication cable not connected to REF at <u>both</u> ends.	Verify the GND terminal in the machine room connects to the GND terminal on the cartop. **Verify the CN+ / CN- pair is shielded and that the shield is connected to REF at <u>both</u> ends.**
Cat5 cable between Cartop and COP board not properly connected.	Check communication status of J21:U0 under DEBUG | COMM STATUS. It should normally be 100% at all times. If it is 100% but then drops when the car runs, it is most likely a grounding problem.
Factory "pig tail" cat5 cables loose in machine room or cartop.	Unplug the cat5 cable that goes from the cartop to the COP board. If the F100 fault goes away with the cable unplugged it may be a bad cable. It might also be that the cable is plugged into the wrong comport. Verify the cat5 goes from NET on the Cartop board to NET on the COP board. For best results, a cat5 cable with the orange pair cut should be used.
Either the Machine Room SRU board or the Cartop SRU board is not powered.	Bring the Cartop SRU board to the machine room and connect it directly to the Machine Room SRU board. You will need to connect CN+, CN-, M24, and REF. If you have a standard cat5 cable[1] you can connect it from the MR NET port to the CT NET port. This will provide both power and CN signals. If the F100 fault goes away during this test then there is a problem in the wiring. If the F100 fault persists then one or both of the SRU boards is damaged. [1] *A standard PC cat5 cable must be used. The cat5 cable provided by Smartrise to link the Cartop and COP SRU boards usually has the internal orange pair cut and will not work for this test.*

F111:Closing SAF1

Safety Relay SAF1 Failed to Close

Causes	*Remedies*
Rev 5-7 Boards: Jumper J19 on the Machine Room SRU board may be in the wrong position. **Rev 8+ Boards:** Jumper J24:1 on the Machine Room SRU board may be in the wrong position. **All:** The controller is trying to energize (close) safety relay SAF1 but the feedback from the relay shows that it is still de-energized (open). Output 601 on the Machine Room SRU board controls the coil of the relay. Input 520 is the normally closed feedback monitor. When 601 is on, 520 should be off. If 520 reports the wrong state for more than 1 second then this fault is logged.	**Rev 5-7 Boards:** Verify the jumper on J19 shunts the upper two posts (pins 2 and 3). **Rev 8+ Boards:** Verify the jumper on J24:1 shunts the right two posts (pins 2 and 3). **All:** Check the SAF1 relay. Verify it is properly seated in the socket and does not have any bent pins.

F112:Closing SAF2

Safety Relay SAF2 Failed to Close

Causes	*Remedies*
Rev 5-7 Boards: Jumper J19 on the Cartop SRU board may be in the wrong position. **Rev 8+ Boards:** Jumper J24:1 on the Cartop SRU board may be in the wrong position. **All:** The controller is trying to energize (close) safety relay SAF2 but the feedback from the relay shows that it is still de-energized (open). Output 601 on the Cartop SRU board controls the coil of the relay. Input 526 is the normally closed feedback monitor. When 601 is on, 526 should be off. If 526 reports the wrong state for more than 1 second then this fault is logged.	**Rev 5-7 Boards:** Verify the jumper on J19 shunts the upper two posts (pins 2 and 3). **Rev 8+ Boards:** Verify the jumper on J24:1 shunts the right two posts (pins 2 and 3). **All:** Check the SAF1 relay. Verify it is properly seated in the socket and does not have any bent pins.

F118:Rdn Hall Byp

Primary and Redundant Hall Lock Inputs don't match

Causes	*Remedies*
The Hall Lock signals have a primary and a redundant input terminal on the controller. Under normal conditions, the two inputs should change together. If the controller detects a difference on the inputs, a redundancy fault is declared.	Check wiring between Hall Door Bypass switch and Machine Room SRU. Verify that both Hall Door Bypass witch input LEDs transition at the same time when toggling the switch.

F119:Rdn Car Byp

Primary and Redundant Car Bypass Switch Inputs don't match

Causes	*Remedies*
The Car Door Bypass Switch signals have a primary and a redundant input terminal on the controller. Under normal conditions, the two inputs should change together. If the controller detects a difference on the inputs, a redundancy fault is declared.	Check wiring between Car Door Bypass switch and Machine Room SRU. Verify that both Car Door Bypass witch input LEDs transition at the same time when toggling the switch.

F120:Hall Bypass

Hall Bypass Switch error

Causes	*Remedies*
Attempting to bypass locks when car is not on correct mode of Inspection.	If the controller is equipped with Hall Lock Bypass switch, it must be in the off position when not on Cartop or In-Car Inspection

F121:Car Bypass

Car Door Bypass Switch error

Causes	*Remedies*
Attempting to bypass gate switch when car is not on correct mode of Inspection.	If the controller is equipped with Car Door Bypass switch, it must be in the off position when not on Cartop or In-Car Inspection

F122:Low Pressure

Low pressure input is active

Causes	*Remedies*
This applies only to hydraulic controllers. The car is not allowed to move if low pressure is detected.	Verify that Low Pressure switch is wired and operating correctly. If Low Pressure switch is not needed, connect a permanent jumper from M24 to Low Pressure input terminal on Machine Room SRU

F123:Emergency Power

Controller is on emergency power and not selected to run

Causes	*Remedies*
The Emergency Power input on the car or group SRU board is active but this car is not selected to run.	Check that generator Up to Speed input. If this input is not active no car will be allowed to run. Check that the Emergency Power Selector Switch is set to AUTO or set to this car. Wait for group control board to select this car to run. In a multi-car group, normally only one car is allowed to run at a time under emergency power.

F127:Term Limits

The "Bypass Terminal Limits" parameter was left on

Causes	*Remedies*
The controller will not allow the car to run on automatic operation if the *Bypass Terminal Limits* parameter is turned on.	Turn the parameter off by setting **MAIN MENU | SETUP | MISC | BYPASS TERM LIMITS** = "NO" Check status of the following jumper located on SRU board and set per job specific provided drawings: Rev 5-7 SRU – Jumper J19 Rev 8 SRU – Jumper J24

F128:Overloaded

Car overload input is active

Causes	*Remedies*
The car is on automatic operation and the overload input is indicating that too much weight is in the car.	Remove weight from the car until below rated capacity. Verify that load weighing device is wired and configured correctly.

F129:RST #2 UN

F130:Power-on

F131:Reset

F132:RST #3 SW

F133:RST #4 MC

F134:RST #5 CO

F135:RST #6 CP

F136:RST #7 WD

Reset or Power-on of one of the computer processors

Causes	*Remedies*
Loss of power to an SRU board will generate an F130 on the J21 and J22 processors. Pressing the reset button on one of the SRU boards will generate an F131 on the J21 and J22 processors. Emergency stop where excessive electrical noise was generated due to arcing when the contactors opened. This will sometimes result in an F131 fault.	For F130 faults, check power to SRU boards. Verify M24 and C24 busses read 24vdc and that the wires are not loose. For F130 faults reported by CPU A or B, check for a short on the M24 bus. This includes power to the hoistway and hall call stations. For F130 faults reported by CPU C or D, check for a short on the C24 bus. This includes wiring on the cartop and COP stations.

Causes	*Remedies*
A short circuit on the M24 or C24 bus will cause the power supply to shut off while the short is present. This will result in an F130 fault when the short is corrected. Missing connection from REF in machine room to REF on cartop may cause intermittent F131 faults. AC power present on the M24 or C24 DC power busses may cause and F130 or F131 fault. Reset faults other than F130 and F131 may indicate a defective SRU board or mis-programmed software.	For F131 faults, see if another fault caused an emergency stop that might have caused the contactors to open in flight. This can sometimes cause enough electrical noise to make the board reset. Verify the REF terminal in the machine room is connected to the REF terminal on the cartop. Check for AC voltage on M24 or C24 busses. For F129, or F132 – F136, contact Smartrise as this may indicate a bad board or software.

F137:Counterweight

A derailment of the counterweight was detected

Causes	*Remedies*
The controller detected a loss of power on the counterweight input.	Do not attempt to run the car if you are uncertain about the status of the counterweight. Until this fault is reset, the car can only be run on Cartop Inspection. Once the counterweight has been confirmed as safe, you can reset this fault with the Earthquake Reset switch. If your controller is not configured for Earthquake Operation then resetting the machine room SRU board with DIP switch 1 on will clear this fault. If this fault occurred erroneously, check the counterweight derailment ("ring and string") circuit. Verify the grounding ring does not touch the wire at any point as the car moves.

F138:Construction

Construction input powered without Machine Room Inspection

Causes	*Remedies*
The Construction input (MR.523) is powered but the machine room inspection switch is in the "automatic" position.	If you are trying to run the car on Construction mode, turn the machine room inspection switch to the "inspect" position. If you are trying to run the car on standard inspection or automatic, remove the jumper wire from input 523 on the Machine Room SRU board.

F139:Governor

Speed governor tripped

Causes	*Remedies*
The controller detected a loss of power on the governor input. The controller monitors the electrical contact on the governor. This contact will normally open before the mechanical safeties engage.	Check the fault log to see what speed the car was at when the fault was recorded. If the car was overspeeding this could indicate a defective drive. Overspeeding can also occur if the drive is not properly configured. Try running the car on inspection and verify that the FPM speed feedback tracks the CMD speed. If it does not, check the drive parameters starting with the RPM value of DRIVE A1 | CONTRACT MTR SPD. If this fault occurred while the car was stopped or at low speed, it could be a problem with the governor switch or wiring.

F140:E. Brake

Emergency Brake or Gripper fault

Causes	*Remedies*
The Emergency brake or the Gripper has dropped or the Car Top relays are not active.	Manually reset the emergency brake. If the problem persists check the inputs on the Car Top board and Relays: RGM, DZM, RGC, DZC. Perform a Dip1+Reset on the Cartop bd. If that doesn't work then toggle the Cartop Inspection switch on then off.

F146:Gate Coupling

The gate switch is jumped out or inoperative

Causes	*Remedies*
During a door cycle the controller expects the status of the gate switch to change. This fault indicates no change occurred and power was never removed from the GSW inputs during the door cycle.	Check the Cartop board inputs for a jumped or shorted wire

F147:Hall Coupling

The hall locks are jumped out

Causes	*Remedies*
During a door cycle the controller expects the status of the hall locks to change. The correct sequence is that the Gate Switch is made up first and then the Hall locks are made up. This fault indicates that the switching sequence is opposite or no change occurred and power was never removed from the inputs during the door cycle.	Check the Machine Room board inputs for a jumped or shorted wire. Adjust door cams to activate gate switch before hall interlocks are activated. For troubleshooting purposes, this function may disabled by the detect door jumpers option in door set up. Set this value to "no" if this is the case.

F148:Brake Pick Switch

Brake failed to lift

Causes	*Remedies*
The controller is programmed to monitor the mechanical status of the brake.	Check the brake to see if mechanical lift occurs at the appropriate time. Next check to see if the brake inputs are registered appropriately. The most likely cause is the brake monitor on top of the brake.

F151:Passcode

The passcode required for normal operation is not entered

Causes	*Remedies*
The passcode required for normal operation is not entered	Contact Smartrise for access to the passcode

F160:Critical Params

One or more of the "critical" parameters is not valid

Causes	*Remedies*
One or more of the following parameters is not set to a valid value: *Number of floor* *Controller type* *Number of car doors* *Number of controller boards*	After a power-on or board reset, this fault may come on briefly. If the fault clears right away then no action is required. If the fault persists, you may need to default the parameters by selecting SETUP | DEFAULT ALL.

F161:Invalid Params

One or more of the "critical" parameters is not valid

Extra Bytes 1-2	*Causes*	*Remedies*
1-0	No Run Speeds set.	There are eight available Run Speeds (S1-S8). You must set at least one with a non-zero value.
2-0	Non-ascending Run Speeds.	The speed defined by S2 must be larger than S1. Likewise S3 must be larger than S2. This applies to all non-zero Run Speeds. All unused Run Speeds must be set to zero. Example: S1 = 50 fpm S2 = 175 fpm S3 = 300 fpm S4 ~ S8 = 0
3-0	One or more of the Run Speeds is set to a value greater than 900 fpm.	Reduce the offending Run Speed to less than 900 fpm or contact Smartrise for software to support higher speeds.

Extra Bytes 1-2	*Causes*	*Remedies*
4-0	Inspection Speed set greater than 150 fpm. To comply with A17.1 code, inspection speeds above 150 fpm are not allowed.	Reduce Inspection Speed to 150 fpm or less.
5-0	Unused Run Speeds not set to zero.	Set all Run Speeds above highest one used to zero.

F200:*

Internal software error.

Causes	*Remedies*
Software has encountered an unexpected problem.	An F200 fault will sometimes occur immediately after saving a parameter. This is due to technical details of how the CPUs update their internal Flash memory. No corrective action is required in this case. If an F200 fault occurs during normal operation, contact Smartrise. Please note the information on the Fault Detail screen including the value of the Extra Bytes.

F201:Control

Fault detected by the control logic.

Causes	*Remedies*
Commands to control the car movement are out of sequence or invalid for the current mode of operation.	Please note the information on the Fault Detail screen including the value of the Extra Bytes and contract Smartrise.

F202:DPM

DPM input indicates an open car door.

Extra Bytes 1-2	*Causes*	*Remedies*
1-0	The Door Position Monitor (DPM) input for the front (or only) door is not powered, the car is not in a door zone, and the current operating mode does not allow for running with the car doors open.	Verify that the front car door is closed. Verify that the DPM circuit is operating correctly. Verify that the door zone sensor and magnets are working.
2-0	Same as above but for rear door.	Same as above but for rear door.

F204:Fire Stop Sw

The Fire Stop Switch is in the STOP position

Causes	*Remedies*
The Fire Stop Switch is currently in the STOP position. The controller is configured with a Fire Stop Switch but the car does not have one.	Turn the Fire Stop Switch to the RUN position. If code does not require a Fire Stop Switch you can disable it. Find out which SRU board is configured to receive the Fire Stop Switch. On that board, navigate to **MAIN MENU | SETUP | LOCAL INPUTS** and set the input that is currently programmed for the Fire Stop Switch to "unused".

F205:Need to Learn

Controller needs to learn the hoistway

Causes	*Remedies*
The positions of the door zone magnets and/or ETS switches that are stored in the controller's memory are invalid. You can view the learned positions of the magnets under **MAIN MENU | STATUS | MAGNETS.** The ETS switches are viewable under **MAIN MENU | STATUS | SWITCHES.**	Put the controller in LEARN mode and relearn the hoistway.

F206:Brake w/o Drive

Brake lifted without drive run flag set

Causes	*Remedies*
The safety logic has detected that the brake pick or hold command is active without a run command being sent to the drive.	Contact Smartrise.

F207:Door Close Fail

Car door failed to close

Causes	*Remedies*
Controller attempted to close the car doors but did not achieve full closure within the timeout period. Controller detected 5 consecutive failures to nudge close the car doors.	Check doors for physical obstructions that might prevent doors from closing. Use fault log data to determine if door is failing to close at a specific floor or if it is happening at multiple floors. Verify that Gate Switch (GSW) and Door Position Monitor (DPM) inputs come on when doors close. Verify the Door Close Limit (DCL) input goes off when doors fully close.

Causes	*Remedies*
	Verify that the time it takes for the doors to close normally is less than the timeout specified by **MAIN MENU | SETUP | DOOR SETUP | DOOR TIMEOUT CLOSE.** Verify that the time it takes for the doors to nudge closed is less than the timeout specified by **MAIN MENU | SETUP | DOOR SETUP | DOOR TIMEOUT NUDGE.**

F208:Door Open Fail

Car door failed to open

Causes	*Remedies*
Controller detected 5 consecutive failures to open the car doors.	Verify the Door Open Limit (DOL) input goes off when doors fully open. Verify that the time it takes for the doors to open is less than the timeout specified by **MAIN MENU | SETUP | DOOR SETUP | DOOR TIMEOUT OPEN.**

F209:Can't Run Up

Pump motor not coming on in up direction

Causes	*Remedies*
Caused by any fault that prevents a hydraulic controller from running the pump motor. This fault will be accompanied by an alarm code specifying one of the following problems: Low Oil Input Motor Thermostat Motor Limit Timeout Battery Lowering	Check the status of inputs for Low Oil, Thermostat, and Battery Lowering.

F214:Drv Enb Relay

Drive Enable Relay

Causes	*Remedies*
Either the M contactor is energized and the Drive Ready relay is not or vice versa.	Check for drive faults. Check for safety string open.

F218: Safety String

Safety String is open

Causes	*Remedies*
Relay SS is de-energized because the safety string has lost power.	Verify that all stop switches, final limits, and other contacts in the safety string (see job specific drawings) are in the closed position.

F219: Flood Sensor

Description

Causes	*Remedies*
The elevator has been taken out of service at an upper floor due to flooding.	Verify that flood sensor is operating and wired correctly. If Flood Sensor is not required, place a permanent jumper from M24 to Flood Sensor input terminal on Machine Room SRU.

F220: UETS and DETS

Both UETS and DETS are active

Causes	*Remedies*
Both ETS switches are in the active state.	Check the switches and controller input terminals. Check the Cat5 cable connections between the IP8300 selector and the breakout board.

F222:Relay Feedback

Relay Feedback

Causes	*Remedies*
The software and the safety hardware circuit are not seeing the same feedback from one of the safety relays. That is, one circuit thinks the relay is picked and the other does not. Monitored relays include SF1, SFH, RGM, DZM, RGP, DZP.	The first of the two extra bytes shows the SRU input terminal (1=501, 2=502, etc.) monitoring the relay in question. Check inputs to see which relay is faulting. This fault can also be caused if traveler cable communication signals PN1, PN2, or PN3 are not working.

APPENDIX C – ALARM DESCRIPTION INDEX

Note: Alarms provide information to the user but do not cause an emergency stop.

A9: At Bottom Term

Description	*Cause / Correction*
At Bottom Terminal	A command to move the car to the bottom of the hoistway was given but the car is already there.

A10: At Top Term

Description	*Cause / Correction*
At Top Terminal	A command to move the car to the top of the hoistway was given but the car is already there.

A17: Door F Stalled

Description	*Cause / Correction*
Front Doors are Stalled	The controller was unable to open or close the doors after repeated attempts. Doors are now in a partially opened state.

A18: Nudging F Door

Description	*Cause / Correction*
Nudging front doors	The front doors are currently being nudged closed.

A22: Releveling

Description	*Cause / Correction*
The Car was in a relevel condition	The floor level may be set improperly. Check the re-level threshold - a count of 001 may be too small and may induce re-levels

A37: IC Key Required

Description	*Cause / Correction*
Cartop inspection requires in car inspection active or access	Check in car inspection or access is activated before running the car from cartop

A38: Battery Lowering

Description	*Cause / Correction*
Car is being lowered via battery power	Check the battery lowering input. If the input in low when it should be the problem is in the dry contact contained in the device

A39: Safety String

Description	*Cause / Correction*
Safety String open	The controller detected an open condition in the Safety String via the SF1 and SF2 relays. Check these relays to ensure they close only when the car is commanded

A40: Chk Car Door

Description	*Cause / Correction*
Awaiting Car Doors to Close	Check the gate switch and associated wiring

A41: Chk Hall Door

Description	*Cause / Correction*
Awaiting Hall Doors to Close	Check the interlock wiring at the associated landing

A42: HN/GN Restart

Description	*Cause / Correction*
Reset in the Hall or Group Network	This may occur during power up or after a manual reset. If it occurs any other time contact Smartrise for assistance

A43: Overheat

Description	*Cause / Correction*
Motor Overheat condition	The motor temperature sensor tripped. Check the motor to ensure this condition is not persistent

A44: Jack Resynch

Description	*Cause / Correction*
Resynching Jacks	The controller initiated a jack resynchronization.

A50: MLT

Description	*Cause / Correction*
Motor ran longer than Max Run Time	Check to make sure system has proper pressure.

A51: Low Oil Input

Description	*Cause / Correction*
Low Oil Input	Check oil level.

A52: Cold Oil Input

Description	*Cause / Correction*
Viscosity Input	Check oil level and temperature.

A53: Seismic

Description	*Cause / Correction*
Seismic Input	Reset the seismic unit.

A54: OOS Input

Description	*Cause / Correction*
Out of Service Input	The OOS input is active. No action needed.

A55: Auto Dispatch

Description	*Cause / Correction*
Group Comm Down	Check to see if group is communicating with car on (GN+/-). Check for loose wiring.

A56: Limited Speed

Description	*Cause / Correction*
Limit Speed input active	Reset any installed features that is limiting car speed.

A57: Smoke/Heat Sensor

Description	*Cause / Correction*
Smoke Active	Reset tripped smoke sensor; check for loose wiring on MR board.

A58: Lobby Fire Key

Description	*Cause / Correction*
Lobby Fire Key Active	Alert indicating the Lobby Fire Key is on.

A59: Remote Fire Key

Description	*Cause / Correction*
Remote Fire Key Active	Alert indicating Remote Fire Key is on.

A60: Position Error

Description	*Cause / Correction*
Car corrected position on DZ magnet	Monitor travel of car at DZ magnet. Check for overspeed at DZ.

A61: Checking Parameters

Description	*Cause / Correction*
Normal on startup	No action needed.

A62: Check DOL

Description	*Cause / Correction*
DOL problem	Check for loose wire or intermittent switch contacts on DOL sensor.

A63: Anti Nuisance

Description	*Cause / Correction*
Max calls for light load, max stops without PHE	

A64: Stop No DZ

Description	*Cause / Correction*
Stopped outside of door zone	Car has stopped outside of door zone. Check safety string.

A66: Ind. Service

Description	*Cause / Correction*
On Independent Service	Alert that car is on Independent Service. Turn off Ind. Srvc.

A70: UETS and DETS

Description	*Cause / Correction*
Both switches active	Check for loose wiring on MR inputs or

A148: Brake Pick Switch

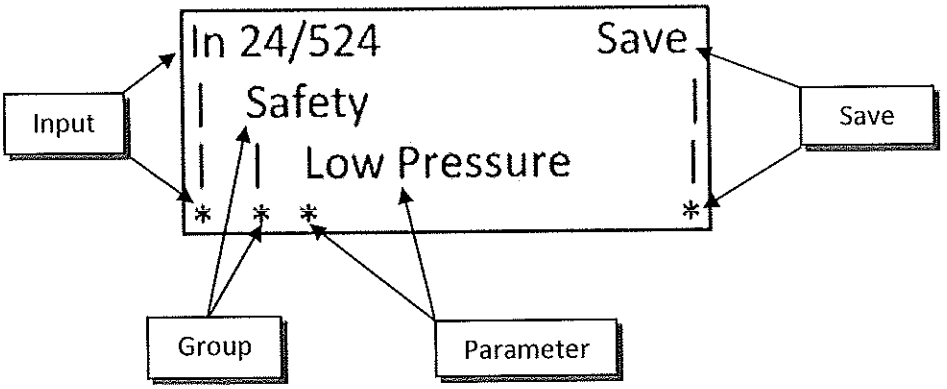
Description	*Cause / Correction*
The brake pick switch is at a different state than expected	Check for loose wiring, sticking contact or relay for BPS.

APPENDIX D – INPUT / OUTPUT PROGRAMMING TUTORIAL

The Smartrise SRU controller allows the user to program an Input or Output on any unused terminal.

The following example is how an Input is programmed for the addition of a Low Pressure switch on the machine room SRU board:

Example: Programming Instructions for adding an Input for Low Pressure Switch on Input 524



1) Go to **Main Menu | Setup | Local Inputs**
   a. With asterix on first line "Input" use up/down arrows to scroll to "In 24/524"
   b. Move asterix over with right arrow to second line (Group) & change to "Safety" using the up/down arrows
   c. Move asterix over with right arrow to "Parameter" section and change to "Low Pressure" using the up/down arrows
   d. Move asterix over with right arrow to "Save" line and press "Enter" button to save
2) You will need to supply the switch with 24vdc on one side and wire the other to this input port.

3) You can perform this for many different types of inputs and outputs. Take some time to scroll through the different categories to see which inputs / outputs are available.

   To program an Input you will need to go to **Main Menu | Setup | Local Inputs.**
   To program an Output you will need to go to **Main Menu | Setup | Local Outputs.**

Note: Not all controllers will have <u>ALL</u> of these options as they are based on software revisions. This is just a generic reference for determining which category has which input/outputs.

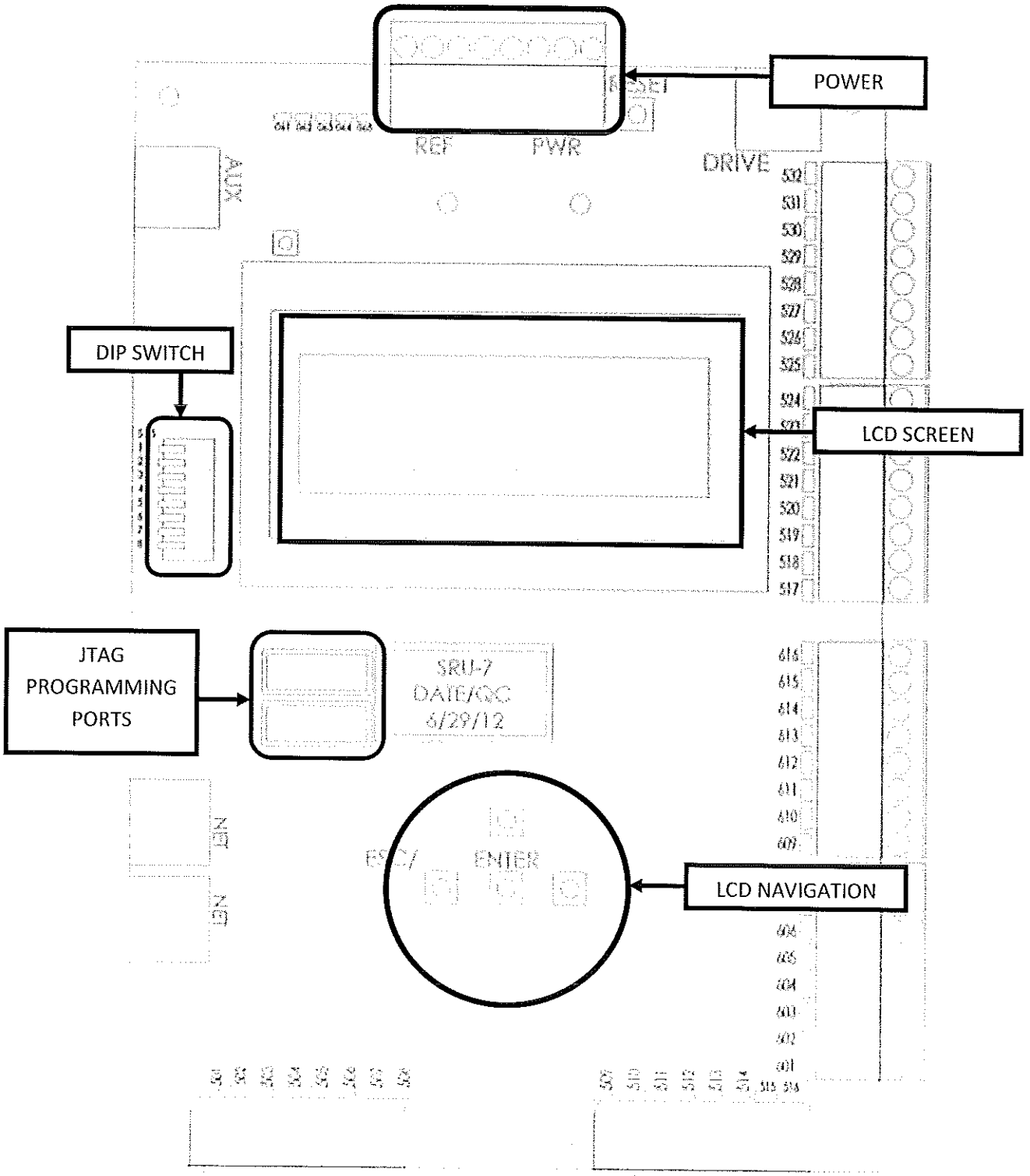
1. Auto Operation
    a. (**Inputs**) Enable All CCBs, Independent Service, Learn Mode, Light Load, Enable All HCBs, Door Hold, EMS IC Key, Chime Enable, Sabbath Enable, Attendant Enable, Attendant Up Button, Attendant Down Button, Attendant Bypass Button, Car To Lobby, Swing Operation, HC Lockout A~D, Capture Car, Night Shutdown, Call Cancel NF
    b. (**Outputs**) PI 1~8, Hall Lantern Up A~D, Hall Lantern Down A~D, Travelling Up, Travelling Down, Emergency Power, PI 9, In-Car Buzzer, Passing Chime, EMS IC Lamp, Sabbath Lamp, Disable PHE, Attendant Hall Call Above, Attendant Hall Call Below, In Service, In Use Lamp, Capture Car, Night Shutdown, Marine Normal
2. Doors (Front)
    a. (**Inputs**) GSW (1,2), DPM, DCL, DOL, PHE, Mechanical SE, DZ, DCB, DOB, Hall Close Slowdown, Hall Open Slowdown, Car Close Slowdown, Car Open Slowdown, Hall DOL
    b. (**Outputs**) Close Car Door, Open Car Door, Nudge Car Door, Run/DCP, Hall Lock Cam, Restrictor, Heavy Door, Door Hold Lamp, Car Lantern Up, Car Lantern Down, Close Hall, Open Hall, Slow Hall, Slow Car, Door Hold
3. Doors (Rear)
    a. Same as Doors (Front)
4. Fire/Earthquake
    a. (**Inputs**) Smoke 1~4, Phase2 Hold, Phase2 Off, Phase2 On, Call Cancel, Phase1 Reset, Phase1 On, Remote Key, Seismic, Counterweight, EQ Reset, Fire Stop Switch, On Emergency Power, EP (Emer Pwr) Up to Speed, Flash Fire Hat
    b. (**Outputs**) Fire Lamp IC, Fire Lamp Lobby, Earthquake Lamp, Fire Phase I, Fire Phase II, Fire Main, Fire Alt, Shunt Trip, Doors Open @ Lobby, Doors Open @ Recall
5. Inspect/Access
    a. (**Inputs**) Inspection MR Enable (1,2), Inspection MR Up, Inspection MR Down, Inspection CT Enable (1,2), Insp CT Up, Inspection CT Down, Access Enable (1,2), Access Bottom Up, Access Bottom Down, Access Top Up, Access Top Down, Inspection IC Enable (1,2), Inspection IC Up, Inspection IC Down
    b. (**Outputs**) On Inspection
6. Controller
    a. (**Inputs**) Brake Pick, Viscosity, Battery Power, Slowdown High, Slowdown Medium, B1 Cont NO (Normally Open), B2 Cont NO (Normally Open), M Contactor NC, SAF1 Relay NC, SAF2 Relay NC, DP1, DP2, Pos Ref Switch, Drive Ready, Drive Fault, E-Brake RGM, E-Brake RGC, E-Brake DZM, E-Brake DZC, Limit Speed, Go OOS, CPLD Comm, Jacks 1, Jacks 2
    b. (**Outputs**) SAF1 Relay, SAF2 Relay, SM Relay, Relay UPH, Relay UPL, Relay DNH, Relay DNL, Brake Pick, Brake Hold, Drive Fault Reset, Drive Field Enable, Drive Run Up, Drive Run Down, Drive S0~S3, Relay RGM, Relay RGC, Relay DZM, Relay DZC Slowdown High, Slowdown Medium, Fan/Light, Brake Relevel, Drive Enable, On Main Line, On Battery, Call Demand, R Relay, S Relay

7. Safety
    a. (**Inputs**) Locks Top (1,2), Locks Middle (1,2), Locks Bottom (1,2), Hall Closed Top (1), Hall Closed Middle (1), Hall Closed Bottom (1), DETS (1,2), UETS (1,2), Construction, Stop Switch IC (1,2), Low Oil, Low Pressure, Overloaded, Fully Loaded, Governor, Overheat, Bypass GSW (1,2), Bypass Locks (1,2), Normal Limit Top, Normal Limit Bottom, Safety String, Flood Sensor, Governor (2)
    b. (**Outputs**) Overloaded Lamp
8. Car Call (Front)
    a. (**Inputs**) Button 01~96
    b. (**Outputs**) Lamp 01~96
9. Car Call Enable (Front)
    a. (**Inputs**) Key 01~96
    b. (**Outputs**) N/A
10. Car Call (Rear)
    a. (**Inputs**) Button 01~96
    b. (**Outputs**) Lamp 01~96
11. Car Call Enable (Rear)
    a. (**Inputs**) Key 01~96
    b. (**Outputs**) N/A
12. Hall Call Up (Front)
    a. (**Inputs**) Button 01~32
    b. (**Outputs**) Lamp 01~32
13. Hall Call Down (Front)
    a. (**Inputs**) Button 01~32
    b. (**Outputs**) Lamp 01~32
14. Hall Call Up (Rear)
    a. (**Inputs**) Button 01~32
    b. (**Outputs**) Lamp 01~32
15. Hall Call Down (Rear)
    a. (**Inputs**) Button 01~32
    b. (**Outputs**) Lamp 01~32

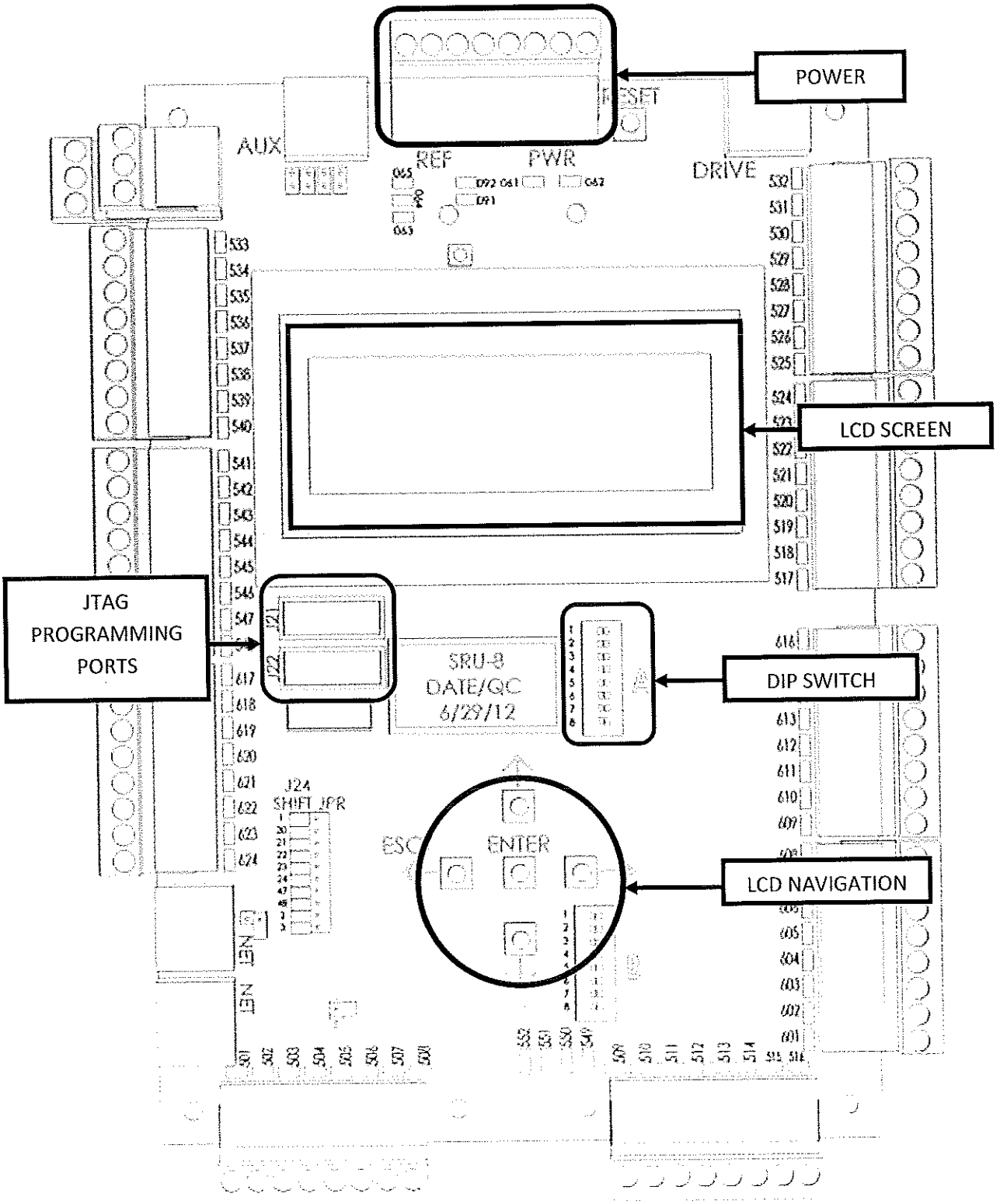
NOTE: Certain menu items are "Fixed" and cannot be changed. Contact Smartrise if you suspect a defective input or output terminal that is located on a fixed terminal.

APPENDIX E – SRU BOARD REVISIONS

Revision 5-7 Board



Revision 8 Board



APPENDIX F – REPLACING A DEFECTIVE SRU BOARD

The Machine Room (**MR**) board sends all settings and parameters to the Cartop (**CT**) and Car Operating Panel (**COP**) boards. These settings are stored in each board. If the Machine Room SRU goes out then the only way to save your jobs settings (Slowdowns, Floor Levels, Parameters, etc.) is to replace it and reprogram it with either the **COP** board or the **CT** board. Follow these steps:

1. Replace the **MR** board with either the **CT** or **COP** board
2. Reprogram it as the **MR** board.

**** DO NOT USE "DIP SWITCH 1" + "DEFAULT ALL" AFTER PROGRAMMING ****

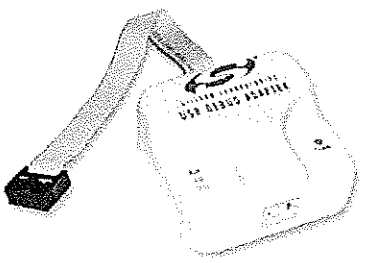
3. Install the new board as the **CT** or **COP** board and program it as such.

The previous settings in the reprogrammed **MR** board will then transfer to the new board and the car should operate as before with all the original settings.

You can replace either the **CT** or **COP** board at anytime as it will retrieve the settings from the MR board when powered up.

To program an SRU board you will need:

- **Smartrise Programming Pod**
- **A fully charged laptop with either of the following operating systems: Windows XP, Vista, 7 or newer.**
    - **Note: To check what operating system your Laptop has, click on the Start Menu on the lower left corner, right click on "My Computer", and click on properties. You will see the windows edition in this menu. If running on a Windows XP operating system, be sure that all updates are currently up to date.**



- **The software for your specific job is provided by Smartrise in two ways: a Smartrise CD included in the job binder OR by online download. Instructions for each option are detailed in "ADDENDUM I" of this tutorial.**

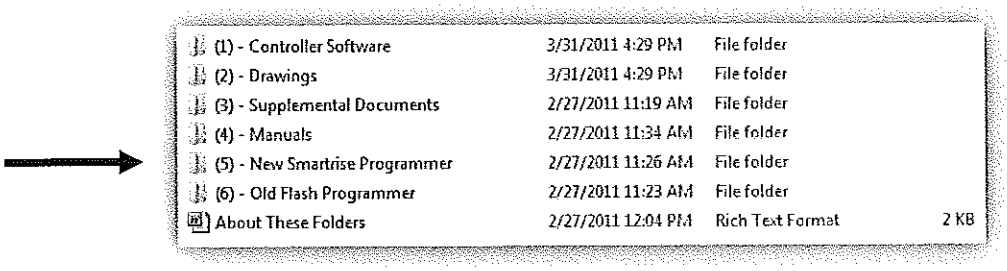
PROGRAMMER INSTALLATION TUTORIAL

Special considerations need to be made when installing the software:

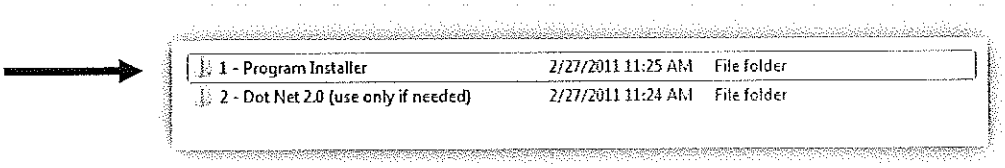
Do you have the Smartrise Programmer Application to install the software?

- **If not, install the application by doing the following:**

Open the (5) New Smartrise Programmer Folder in your software package



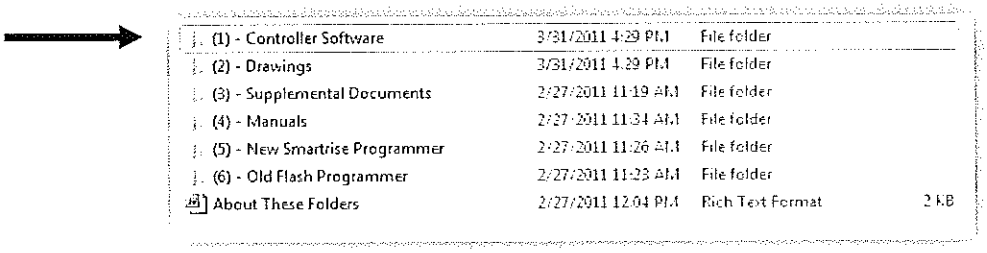
Open the 1 – Programmer Installer Folder



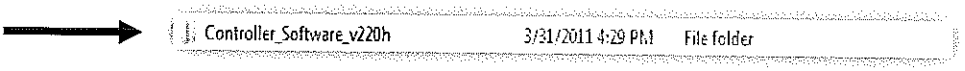
Install the Smartrise Programmer

Once the Smartrise Programmer is installed go back to the index of folders shown below and open the

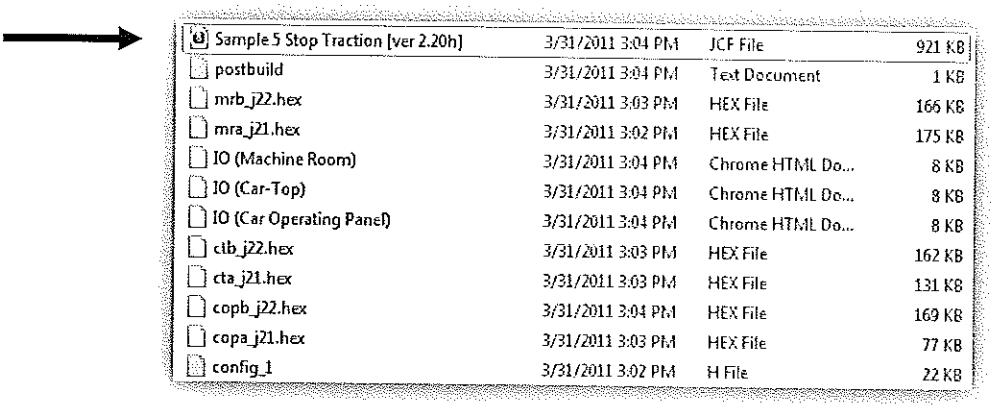
(1) Controller Software folder with the JCF Software file inside shown below:



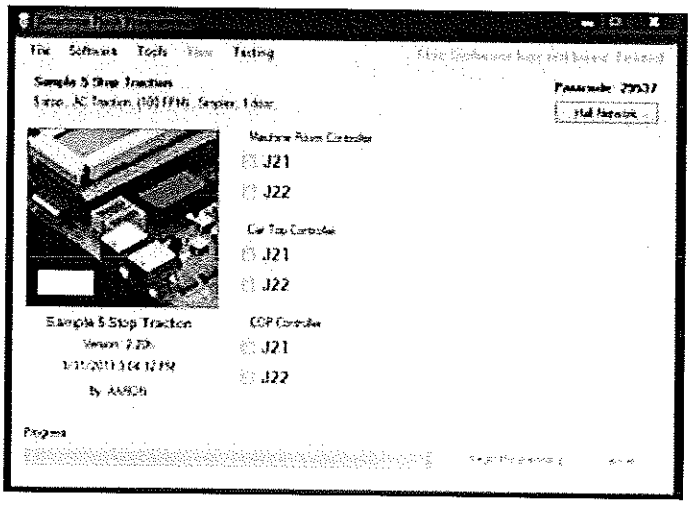
Open the Software Folder, in this example the version is 2.20h, the version will vary on how recent the job is.



Open the JCF file



The Smartrise Programmer interface



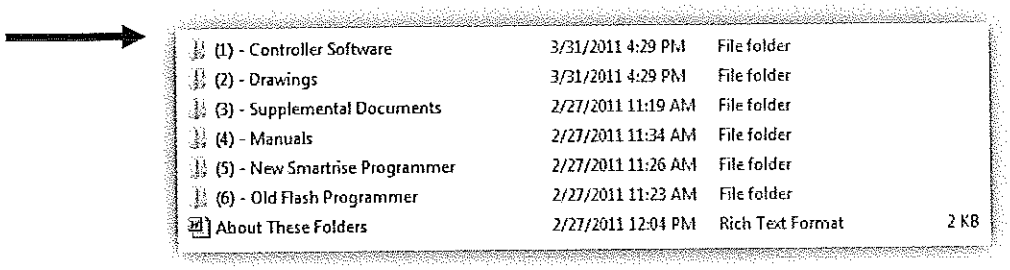
Note: All the controller software is located on this interface except the group software (Which is ignored if installing a simplex; this will be explained after installing the Car Top and Car operating Panel Controllers).

APPENDIX G – SOFTWARE INSTALLATION

Software provided by CD

Every Smartrise job is provided with a binder that consists of two CD's containing software for the specific job. Smartrise controllers are shipped initially with the software already installed on the controller; these CD's are provided as back-ups.

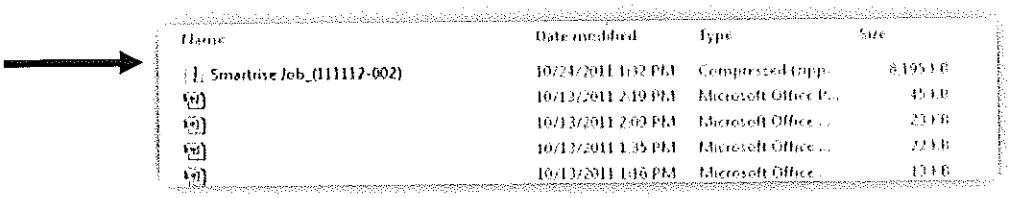
- Insert the supplied CD into the CD ROM drive. Usually a menu similar to the one shown below will appear. If no menu appears then open "My Computer" and click on the CD ROM drive.
- Click on the "Open folder to view files" option to explore the Smartrise CD folders. A list of folders with the software will appear. The software is located in the "(1) – Controller Software" folder.



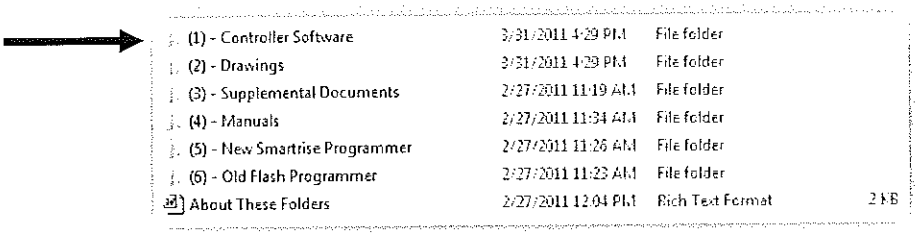
Software provided by online download link

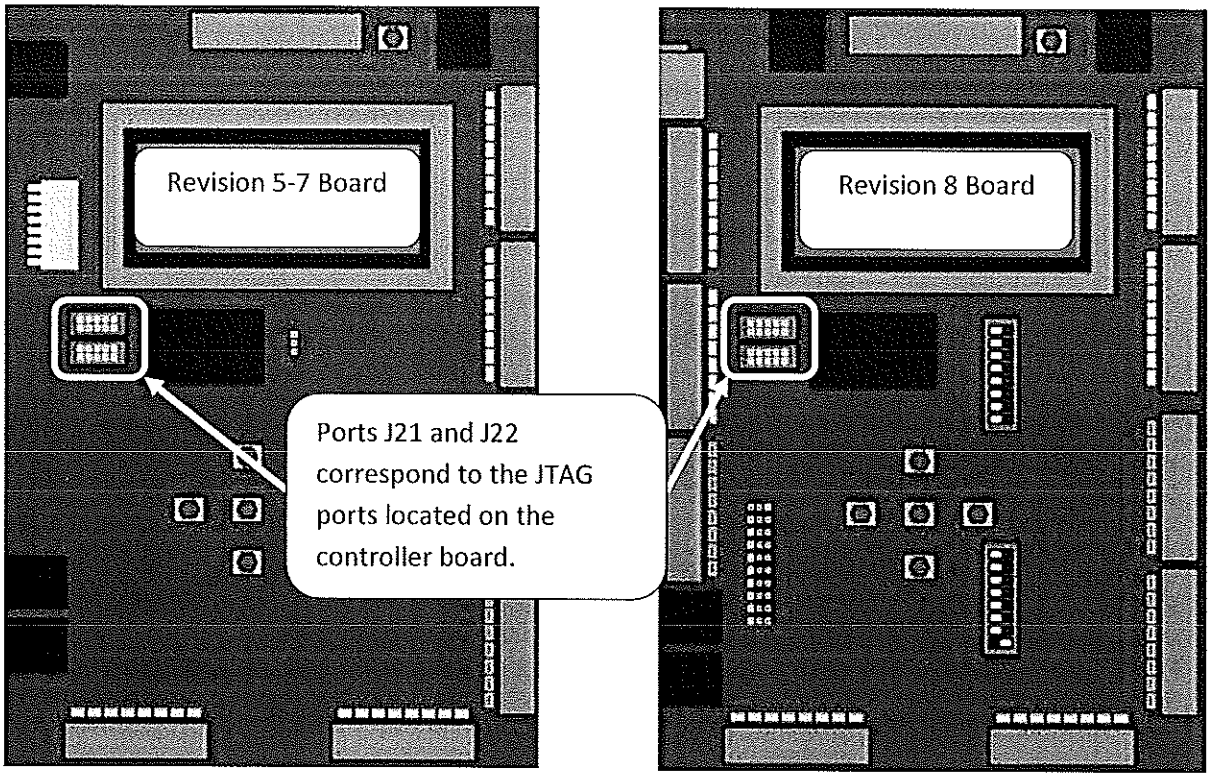
If an update was made to the job OR the CDs are missing, Smartrise can send an e-mail with a link to a downloadable zip file for the software. Download the file to a known location on the computer.

- Navigate to the location the file was downloaded to and double click the zipped folder as shown below.



- When the zip file is opened, the software will be located in the "(1) – Controller Software" folder.





It is imperative that you install the correct software onto the correct JTAG port.

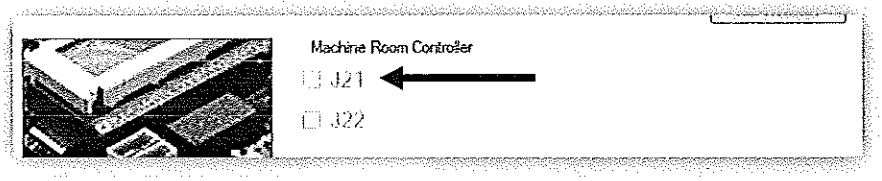
To do this, first connect your Smartrise programmer to your laptop via USB, and then connect the other end to the JTAG port on the controller.

Warning: **As mentioned earlier, your laptop needs to be fully charged for this process, plugging in your laptop to an AC source while installing software could result in damage to the SRU Board. Also, do not disconnect the programmed pod from the SRU board while the controller is being programmed.**

Identify which controller you are installing, IE: Machine room, car-top, cop.

Instructions for Programming a Machine Room Controller

- A controller cannot be programmed if unpowered, ensure that you have 24V supplied to the controller.
- When you activate **Dip Switch 1** you should see a "F77: CPU Stop Switch" fault on the controller. Do not be alarmed – this is normal.
- Plug in the programming pod into the J21 port first. Select the J21 checkbox on the Smartrise programming application show below.



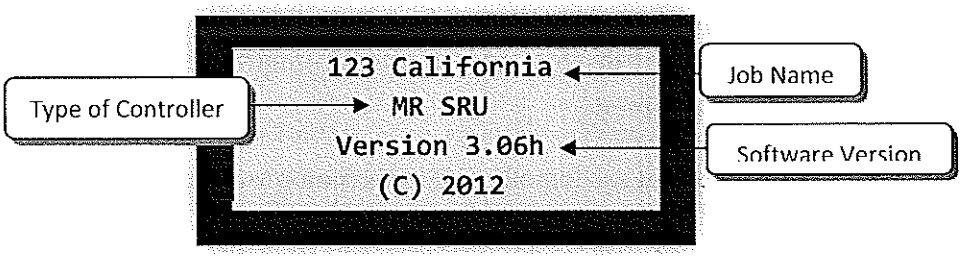
- Next, click the "**Begin Programming**" button on the bottom of the programming interface to begin programming your board.
- Notice the progress report bar, when programming is finished, you will see a "**Progress : Done**" when programming is finished.

NOTE: You will also want to verify that the POWER and RUN LED's on the programming pod itself are off before disconnecting from a controller.

- Next move your programming pod from port J21 to J22, then click on the J22 check box and begin programming.
- When programming is finished:

CYCLE POWER – ** *DO NOT PRESS THE RESET BUTTON* **

- Next, go to the **MAIN MENU | SET UP | DEFAULT ALL |** select "Yes" and press the center button. The controller will begin defaulting all the factory parameters to original programming (This could take several minutes). Once this is finished, cycle power again.
- When the controller is fully powered and finished loading, de-activate **Dip Switch 1**, the "F77: CPU Stop Switch" fault should go away.
- Verify that the controller is programmed correctly. This is done by going to the **MAIN MENU | ABOUT** screen.



- You will see something that resembles the figure below.

Software Version

- If all the information is correct, the Machine Room Controller has been successfully programmed.

Instructions for Programming a Car Top/Car Operating Panel Controller

Programming these boards is very similar to programming a machine room controller. When programming these boards it is not necessary to activate dip switch 1 and default all.

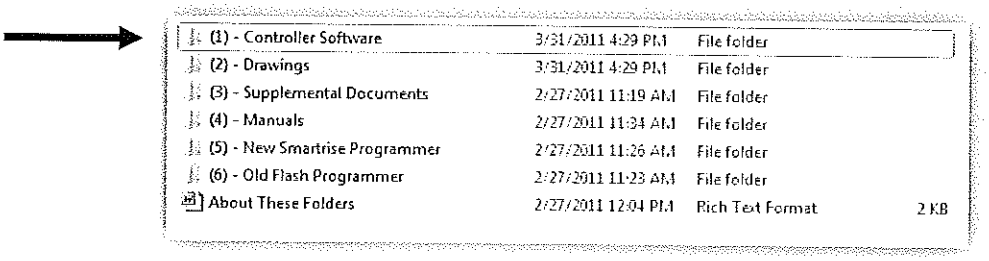
- A controller cannot be programmed if unpowered, ensure that there is 24V supplied to the controller.
- Plug in the programming pod into the J21 port first. Select the correct J21 checkbox on the Smartrise programming application for the corresponding controller.
- Next, click the "**Begin Programming**" button on the bottom of the programming interface to begin programming the board.
- Notice the progress report bar, when programming is finished, the display will show "**Progress: Done**". NOTE: Verify that the POWER and RUN LED's on the programming pod itself are off before disconnecting from the controller.
- Next move the programming pod from port J21 to J22, click on the J22 check box and then "Begin Programming".
- When programming is finished:

CYCLE POWER – ** ***DO NOT PRESS THE RESET BUTTON*** **

- When the controller is fully powered and finished loading, verify if the controller is programmed correctly by going to the **MAIN MENU | ABOUT**
- If all the information is correct, the controller software has been successfully installed.

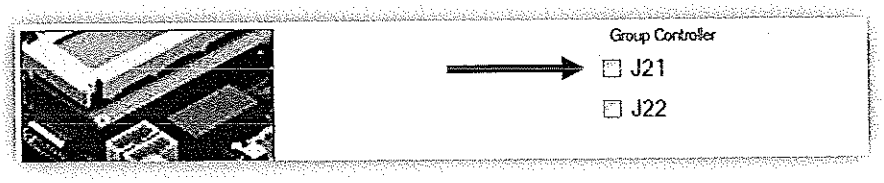
Instructions for Programming a Group Controller for Non-Simplex jobs

The group controller software will be located in the Controller Software folder.



Then locate the folder with the group software in it. The folder will clearly be labeled "GroupSoftware." After locating the file, proceed below.

- A controller cannot be programmed if unpowered, ensure that you have 24V supplied to the controller.
- Activate **Dip Switch #1** on the group controller. (The group controller will not fault like the machine room controller)
- Plug in the programming pod into the J21 port first. Select the J21 checkbox on the Smartrise programming application show below.



- Next, click the "**Begin Programming**" button on the bottom of the programming interface to begin programming the board.
- Notice the progress report bar, when programming is finished, the LCD display will show "**Progress: Done**". NOTE: Verify that the POWER and RUN LED's on the programming pod itself are off before disconnecting it from a controller.
- Next move the programming pod from port J21 to J22, click on the J22 check box and the the "Begin Programming" button.
- When programming is finished:

CYCLE POWER – ** *DO NOT PRESS THE RESET BUTTON* **

- Next, go to the **MAIN MENU | SET UP | DEFAULT ALL |** select "Yes" and press the center button. The controller will begin to default all the factory parameters (This could take several minutes). Once this is finished, cycle power again.
- When the controller is fully powered and finished loading, turn off **Dip Switch 1.**
- Verify that the controller is programmed correctly. This is done by going to the **MAIN MENU | ABOUT.** If all the information is correct, the controller software has been successfully installed.

ADDENDUM I – Encoder Wiring Tables

This is just a partial list of common encoder cable codes. This may not represent the actual cable you have received with your encoder. Please follow the actual pinout instructions that came with your existing encoder.

Encoder	HPV900 S2 Termination	Cable Color		
		Heidenhain	Ziehl	Other
A/	A-	Yellow & Black	Red & Blue	
A	A+	Green & Black	Grey & Pink	
B/	B-	Red & Black	Red	
B	B+	Blue & Black	Blue	
Data/	DAT-	Pink	Brown	
Data	DAT+	Grey	White	
Clock/	CLK-	Yellow	Black	
Clock	CLK+	Violet	Violet	
0V com	COM	White	Pink	
0V Sense (if present)	SEN-	Green & White	Yellow	
+5V	+5V	Brown	Grey	
+5V Sense (if present)	SEN+	Green & Blue	Green	

PWR	COM	A+	A/	B+	B/	Z	Z/	CLK+	CLK-	DAT+	DAT-	Shield	# Pins	Make/Model
Red (2)	Black (1)	White (3)	Black/White (6)	Blue (4)	Red/ Black (7)	Orange* (5)	Green* (8)					Shield		Imperial/PG-X3
Red (2)	Black (1)	White (3)	Brown (6)	Green (4)	Blue (7)	Yellow (5)	Orange (8)					Shell	9	10k PPM Magi encoder (DC DRIVE)
Brown	White	Green	Yellow	Grey	Pink	Blue	Red					Shield		Accu-encoder (cable 10130815)
Brown	White/Shield	Green	Red	Yellow	Black	Grey	Violet							Wachendorff encoders (Gov and Regular)
Brown (12)	White (10)	Green (5)	Yellow (6)	Blue (8)	Red (1)	Grey (3)	Pink (4)					Shield(s) (9)		Precilec 89002 (type: RCI444RF37 2048) (Cable info: 00F4R09-0010 PR-NR.1462322 2012/35/5010)
Red + Pink	Black + Red/white	Green	Brown	Blue	Yellow	n/a	n/a	Purple	White	Grey	Silver	BIG RED ONE		Torin ECN413 (YAS cable)
Brown Green & Blue	White Green & White	Green & Black	Yellow & Black	Blue & Black	Red & Black	n/a	n/a	Violet	Yellow	Grey	Pink			Heidenhain (from Magnetek manual)
Grey Green	Pink Yellow	Grey & Pink	Red & Blue	Blue	Red	n/a	n/a	Violet	Black	White	Brown			Ziehl (from Magnetek manual)

ADDENDUM II – Binary Adjustments

Binary Parameters (available in software version 2.31 or newer)

To turn on the options below, go to the **Main Menu | Debug | Binary Parameters** menu and set any of the following parameters.

Parameter:	OFF	ON
Fire Options:		
00-081.4	Smoke 1 to open front door.	Smoke 1 to open rear door.
00-081.5	Smoke 2 to open front door.	Smoke 2 to open rear door.
00-081.6	Smoke 3 to open front door.	Smoke 3 to open rear door.
00-081.7	Smoke 4 to open front door.	Smoke 4 to open rear door.
00-088.5	Fault on Locks Jumped on Fire Phase 2	Bypass Locks Jumped Fault on Fire Phase 2
00-088.6	Main or Remote fire key to override smokes.	Main **and** Remote Fire key to Override Smokes
00-088.7	Disable Remote Fire Key	Enable Remote Fire Key
00-106.0	Constant pressure Door Close button	Phase 2 Door Close Button Momentary
00-106.2	Don't auto Open at recall level	Phase 2 Auto-open at Recall Level
00-106.7	Lobby fire lamp does not flash.	Simplex Flash Fire Lobby Lamp when car lamp flashes.
Doors:		
00-109.7	Separate Front and rear arrival lanterns	Combine arrival lanterns on front lanterns
00-109.5	Single chime output on down arrival	Double chime output on down arrival
13-120.2	Open front door on Battery lowering walk through	Open rear door on Battery lowering walk through
EMS:		
13-014.0	Disable EMS/Code Blue	Enable EMS/Code Blue medical Service
13-014.1	EMT Medical Service	Code Blue medical Service
13-014.2	Phase 1 before Phase 2 Medical	Phase 2 Medical without Phase 1
Invert Signals:		
13-099.0	Low Oil Normally Closed	Low Oil Normally Open
13-099.1	Low Pressure Normally Closed	Low Pressure Normally Open
13-099.2	Door Close Limit Normally Closed	Door Close Limit Normally Open
13-099.3	Door open Limit Normally Closed	Door open Limit Normally Open
13-099.4	Overheat Normally Closed	Overheat Normally Open
13-099.5	Viscosity Normally Open	Viscosity Normally Closed
13-099.6	Floor Normally Closed	Floor Normally Open

Parameter:	OFF	ON
Flood:		
13-149.0	Car cannot run in normal on Flood	Car can run in normal operation in flood
13-149.1	Fire Overrides Flood	Flood overrides Fire
Other:		
13.149.2	No external key needed of car-top inspection	Requires In car or Access inspection to be tuned on to run in car-top inspection.
00-111.2	Normal Operation	Terminal to Terminal Test runs.
00-111.3	Up and down Hall calls per floor	Single hall call and in use lamp on every floor

Adjust Parameters

To turn on the options below, go to the **Main Menu | Debug | Adjust Parameters** menu and set any of the following parameters.

Pressing the enter key once will show a converted hex to binary number above the hex value, as well as other display options.

Parameter	Unit (shown in Hex)	Description:
00-025	1 Minute	Screen Saver Lockout timer.
15-002	Hex Code	Screen saver Lockout code.
00-041	Faults	Faults allowed Per hour before car going Out of Service
00-042	Starts	Starts per minute allowed before car going Out of Service.
00-046	100ms	Attendant Service Hall Call Buzzer Duration
00-053	1 Second	Door Hold button time
00-083	Base 0 floor	Simplex Parking floor (0 is first landing)
13-127	1 Second	Exit Swing operation timer
13-156	100ms	Wye Delta delay until swapping from S(start) to R(run) contacts.
13-140	0 == closest 1+ == landing	Out of service input, value of 0 will stop at the next available floor, any other value will drive car to that specific landing.